EVASION OF EXCISE DUTIES IN INDIA

STUDIES OF COPPER, PLASTICS AND COTTON TEXTILE FABRICS

Evasion of Excise Duties in India

Studies of Copper, Plastics and Cotton Textile Fabrics

Reports submitted to the Central Board of
Excise & Customs
Ministry of Finance, Government of India

NATIONAL INSTITUTE OF PUBLIC FINANCE & POLICY
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Foreword

A study for the quantification of evasion of excise duty in respect of selected commodities was entrusted to the National Institute of Public Finance and Policy by the Central Board of Excise and Customs, Ministry of Finance, Government of India, in response to a suggestion made by the Estimates Committee (1978-79, 6th Lok Sabha). The commodities selected for this purpose were copper and copper alloys, plastics, cotton textile fabrics, domestic electrical appliances and wireless receiving sets including television sets. The present publication brings together the reports of the studies in respect of copper and copper alloys, plastics and cotton textile fabrics.

The economic significance of the three commodities studied is well-known. Copper and its alloys are a vital input for the generation and transmission of electricity and also for a wide range of industrial products, particularly capital goods. In contrast to this rather traditional item, plastics and their versatile applications are a relatively recent spin-off from the technological revolution in the petroleum and oil industry. Cotton textiles, on the other hand, constitute the most important consumer good industry from many angles. The contribution of these commodities to the exchequer in the form of excise revenue is also quite substantial. Any large-scale evasion of excise duties realisable from the commodities in question therefore cannot but be a matter for concern to the authorities.

While excise evasion is believed to be widespread in respect of all the three items mentioned, its extent remained a matter for conjecture. It was in this context that the present studies were commissioned by the Central Board of Excise and Customs.

Quantification of evasion of any tax is an unenviable task. The study teams of the Institute entrusted with the present studies have tried to do the best of a difficult job. While the conclusions reached by them are far from definitive, it is hoped that the studies will have provided policy-makers and the tax enforcement officials with useful insights into the problem of tax evasion. The methodologies devised for the studies should be of wide interest. The authors will feel rewarded if their reports evoke some debate on the methodologies, if not on the findings of the studies as such.

We are grateful to the Central Board of Excise and Customs for permission to publish the reports.

New Delhi
March 17,1986

A. BAGCHI
Director

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Evasion of Excise Duties in India: Study of Copper

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Preface

A study of the quantification of evasion of excise duty in respect of selected commodities was entrusted to the Institute by the Central Board of Excise and Customs, Ministry of Finance, Government of India. The commodities selected for this purpose are copper and copper alloys, plastics, textiles, domestic electrical appliances and wireless receiving sets including TV sets. The present report on the evasion of excise duty on copper and copper alloys is the first of a series of reports which the Institute would be submitting to the Board.

The study was entrusted to us in response to a suggestion made by the Estimates Committee (1978-79, 6th Lok Sabha) for working out at least a rough yardstick or method for estimating the extent of excise duty evasion. The study has been carried out by Dr. D.K. Srivastava, Senior Economist at the Institute. Shri P. D. Kapoor, Assistant Collector of Central Excise, who was deputed by the Board to work on this project in this Institute has been of great assistance in the study.

A. Bagchi
Director

Acknowledgements

Shri P.D. Kapoor has been working with us on secondment from the Directorate of Inspection and Audit, Customs and Central Excise. His knowledge of Central Excise Tariff, Rules and Laws has constantly been taxed by us along with his patience. Without his active help in various ways, it would have been difficult to bring this study to fruition. To him, we express our first and foremost thanks. We are also thankful to Shri S.A. Prabhu who, in a brief period of association with this study as a consultant, shared with us not only his thoughts and ideas but also the hazards of copper mines and its approach rounds. With them, as also with Dr. N. Sinha, our colleague who is presently on the scent of evasion in plastics, such blue and grey moments were shared as are attendant upon the pursuit of evasive objectives in uncharted seas.

Dr. R.J. Chelliah and Dr. A. Bagchi have meticulously gone through the entire manuscript and made valuable suggestions both stylistic and of substance. Their help is sincerely acknowledged.

Thanks are also due to Shri A. K. Bandhopadhyay, Member (CX); Shri J.P. Kaushik, Director (CX); Shri R.K. Chakravarty, Deputy Secretary (TRU); Shri S.R. Narayanan, Director (Statistics and Intelligence); Shri S.K. Kohli, Director (Anti-Evasion); and Shri R.C. Gupta (TRU) for their help and guidance at various stages. We are also thankful to various Collectors of Central Excise who have cared to reply to our questionnaire, and along with them, to other officers of the Department whom we consulted time and again.

Our understanding of the industry has been patiently deepened by various people and organisations. In particular, we would like to mention Shri U. Mitra, Shri H.V. Saptarishy and Shri T. Datta of Hindustan Copper Ltd., along wtih Shri L. C. Mittal, their legal consultant, whose help has been especially valuable in terms of materials and thoughts. He helped us negotiate many tricky corners of this study with skill and with generosity. Shri H.K. Raina of the MMTC also provided us with useful data.

Various manufacturers of copper semis and dealers of scrap have patiently helped us understand their practices and processes and their reactions to the existing tariff. We would like to particularly acknowledge the help of Shri M. K. Rao, Shri N.S. Surana and Shri S.R. Agarwal.

Tne Indian Copper Information Centre, Calcutta, did a small study for us regarding the consumption of primary copper in the manufacture of copper flats. Their help is gratefully acknowledged.

Computing assistance by Shri K.K. Atri and Shri A.K. Halen and research assistance, for a limited period, by Shri S. Gopalakrishnan is also gratefully acknowledged. Shri R.S. Tyagi has provided us with the typed version of the manuscript through its various drafts. We are very thankful to him.

While the help of all of these people has been indispensable, I undertake, albeit reluctantly, the responsibility of any errors that may yet remain. Given the particularly slippery bends of the present study, one would only wish that there were a way to pass off even some of the errors as due to them.

D.K. SRIVASTAVA

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Structure of Tariff and Industry

Introduction

COPPER, a metallic element of atomic number 29, a "dyad" with symbol Cu to the chemist, is known along with its alloys, as item 26-A of the Central Excise Tariff and heading 74 of the Customs Tariff to trade, industry and taxmen in India. For the industrial user, its specific gravity of 8.96, its melting point at 1093°C or its boiling point at 2325°C may be of relevance, but the common man takes a fancy to the tenacity of the metal and the peculiar hue of its distinctive red colour.

The word copper derives from the Latin word "cuprum", meaning the "metal of Cyprus", so named after its most noted ancient source. It should not be surprising, therefore, that imports account for a substantial share of our current use of primary copper although now-a-days these imports emanate mainly from what are known as the CIPEC countries, *viz.*, Chile, Peru, Zaire and Zambia. These are the most notable copper-exporting sources in modern times. During the period from 1971-72 to 1979-80, we have met 74.6 per cent of our requirement of primary copper by imports.

Nevertheless, copper mining and manufacturing activity is quite old and ancient in India. According to local belief, copper was mined in Khetri area during the Mauryan period (300 B.C.). Frequent mention of this metal is found in *Yajur Veda* and *Atharva-Veda* (1000 B.C.). In *Manu Samhita*, directions for the purification of copper are given. The metal is mentioned in many places in Kautilya's *Artha Shastra* (3rd Century B.C.).

Domestic production of primary copper in India is now-a-days handled by just one concern, *viz.*, Hindustan Copper Ltd. The Minerals and Metals Trading Corporation of India Ltd. acts as the canalising agency for imports of copper.

Copper contributes about Rs 18 crore in the form of excise tax revenue. In the period from 1968-69 to 1978-79 it has grown at a compound growth rate of 16.85 per cent per annum. The magnitude of revenue from copper in terms of import duty and countervailing duty is substantially higher, accounting to about Rs 150 crore annually.

For the year 1978-79, the contribution due to the domestic production of primary metal, mostly in the form of cathodes and wire-bars, was 46.6 per cent of the excise tax revenue from copper products. The contribution of secondary rerollers basically producing sheets, circles and strips was 32.4 per cent and the contribution from the manufacture of pipes and tubes was 20.5 per cent.

Industrial Uses of Copper

Copper is malleable, ductile and tenacious. It is a very good conductor of electricity and heat and as such it is at the heart of the electrical industry. It is used for electrical wiring, switches, plumbing, heating, roofing materials, chemical and pharmaceutical machinery, electro-plating, fungicides, and cooking and decorative utensils and articles. A considerable proportion of copper is used in the form of alloys, where it is used with such other metals as zinc, tin, aluminium and lead. As far as the Central Excise Tariff is concerned, according to the current definition, all such alloys where copper predominates by weight are to be considered as copper for purposes of inclusion under tariff item 26-A.

The family of copper alloys along with the proportions of other relevant metals is detailed on the facing page.

For the industry as a whole, the main alloys used are the various brasses and bronzes. Yellow brasses are used for making snap fasteners, musical instruments, automobiles'

TABLE 1.1

Copper Alloys

Mix (Per cent)

Name	Copper +
Yellow brasses	Zinc 30 – 40
Red brasses	Zinc 15
Lead brasses	Zinc 30—40 Lead 0.25 – 3
Special brasses	Zinc + other alloying elements
Commercial bronze	Zinc 10
Leaded bronze	Zinc 10 Lead 1—4
Phosphor bronze	Tin 1.25—10.5
Tobin bronze	Zinc 0.39 Tin 0.75
Aluminium bronze	Aluminium 5—9.5
Hitenso cadmium bronze	Cadmium 0.8—1
Cupro nickel	Nickel 5—30
Nickel silvers	Zinc 17—21 Nickel 5—30
Leaded nickel silvers	Zinc 17—21 Nickel 5—30 Lead 1—2.75
Everdur	Silicon 1.5—3 Manganese 0.25—1
Gun metal and bell metal	Zinc 3 Tin 10
German silver	Zinc 20 Nickel 20

Source : Hindustan Copper Ltd.

reflectors and lamps, artillery and cartridge cases, electrical sockets, lamp bases, pins, etc. Red brasses are used for water pipes, auto-radiators, drawn, stamped and spun parts, oil refineries, vanity cases, chemical processing and air-conditioning equipment. Commercial bronze is used for costume jewellery, grills, ammunition components, forgings, screws, rivets, hardware and stampings. Phosphor bronze is used for high strength springs, snap switches, fuse clips, diaphragms, screw plates, bearings and hardwares. Aluminium bronze is used for aircraft engine parts, valve seats and guides, propeller hub cases, and spark plug inserts.

Copper itself, i.e., of 99.5 to 99.9 per cent purity, is used for electrical wires, cables, water pipes and tubes, refrigerator tubes, gaskets, convector heaters, engravers' plates, roofing material, flushing and gutters. Wherever electrical uses are involved, electrolytically refined copper is used; for other uses, fire-refined copper is acceptable.

Due to its higher specific gravity in relation to aluminium, copper turns out to be a relatively heavier metal although it is a better conductor of electricity and heat. Due to a lower weight and a lower cost for comparable uses, a large-scale substitution of aluminium for copper has taken place world-wide. In India, once domestically produced aluminium became available in large quantities and on economic terms, aluminium has replaced copper in many electrical uses. Again, a similar substitution has taken place in regard to copper utensils. Apart from aluminium, steel is also being used extensively for making utensils. It has a better finish even though it is costlier. Due to these reasons, consumption of primary copper in the country declined sharply between 1965 and 1970, but it has picked up again since 1971 due to general industrial growth.

Structure of Copper Industry in India

The supply of copper in India is made from three sources: production of primary or virgin metal from copper ore; supply of secondary metal or scrap arising out of production processes and life-time recycling of the metal; and imports, both of virgin metal and scrap.

After the metal is released from the primary producer or imported or obtained through recycling, it would be used either as copper or as copper-base alloy. In the latter case, other alloying materials will be added. At this stage, the metal will be in the form of solids like wire-bars, bars, billets, slabs, etc. Subsequently, copper and its alloys will go through one or more of the following processes, *viz.*, forging, rolling, casting, extrusion and drawing. From wire-bars, wire-rods are rolled which are then drawn into wires and cables. Strips are cut from sheets or they are sometimes made from wires. In India, presently plates and foils are not generally made due to a lack of suitable facilities. In making pipes and tubes, first blanks or shells are extruded from billets and subsequently drawn into pipes and tubes.

The structure of the industry is detailed below:

a. Production of primary or virgin copper. Production of primary copper from ore has been nationalised and now there is only one producer of primary copper in India, *viz.*, Hindustan Copper Ltd. The company presently looks after copper complexes, deposits and projects at Ghatshila and Rakha in Bihar; Khetri, Dariba and Chandmari in Rajasthan; and Malanjkhand in Madhya Pradesh. While most projects are in a developmental stage, the two main complexes where the metal is currently being produced are Ghatshila (Bihar) and Khetri (Rajasthan).

In modern copper complexes such as Khetri Copper Complex (KCC) at Khetri and Integrated Copper Complex (ICC) at Ghatshila, copper ore is converted into metal, broadly speaking, through the following steps.

Ore is mined by blasting, crushed within the mine to small pieces, transported to factory (through conveyor belts), crushed further to fine dust and passed through froth-flotation cells, thickeners and filters. A lot of waste called tailing sand is removed in this process and the remaining material has a higher concentration of metal.

This higher grade material is roasted/fused leading to the formation of copper mattee which has 40 to 50 per cent of copper (Cu). This mattee is processed through smelters and converters producing blister copper containing 96-98 per cent Cu which is then cast into shapes called anodes. This is fire-refined copper. For making brass, or for other uses where fire-refined copper is acceptable, anodes may be directly used. For electrical uses, anodes are passed through an electrolytic refining process producing cathodes (99.5 per cent Cu) which are then melted and cast into wire-bars by using wire-bar moulds.

From the original copper ore, which is of a low grade in India, only a very small percentage is recoverable in the form of metal. There are various other byproducts recovered from the ore like sulphuric acid, nickel sulphate, gold and silver. The percentage of metal recovered from the type of ore found in Rajasthan and Bihar may be gauged from the following data.

TABLE 1.2

Recovery of Copper from Ore

(Tonnes)

Year	Ore milled	Blister copper	Column (3) as percentage of column (2)
(1)	(2)	(3)	(4)
1973—74	11,16,850	12,899	1.15
1974–75	14,28,224	15,801	1.11
1975–76	19,97,065	23,888	1.20
1976—77	23,71,282	23,715	1.00
1977—78	23,43,818	21,021	0.90
1978–79	22 32,108	21,888	0.98

Source : Hindustan Copper Ltd, Annual Reports.

The Working Group on Non-Ferrous Metals (1980) makes the following observation in this context:

> "The grade of the deposits is generally low, varying from 0.9 to 2.0% in the working mines, bulk of the deposits being below 1.5% Cu."

The low recovery ratio of copper from copper-ore in India, implies a heavy cost-structure as compared to production costs in other countries where copper is not considered worth producing from ore if the recovery ratio is anything less than 5 to 6 per cent.

b. *Manufacture of alloys*. The main alloys used in India are brasses and bronzes. Brass is made by the primary manufacturer at Ghatshila by mixing virgin copper, with virgin zinc and process scrap generated within the factory. The ratios may be varied according to the requirements of the end-users, but mostly the ratio is 60 copper to 40 zinc. In general, however, alloys are made by the secondary manufacturers.

These people generally combine :

(i) Virgin copper + Virgin zinc or other alloying material.

(ii) Virgin copper + scrap of copper or copper-base alloys + Virgin zinc or other alloying material.

(iii) Scrap of copper or copper-base alloys + Virgin zinc or other alloying material.

Zinc scrap by itself would rarely be used. Alloys are generally cast first in the form of solids like bars, billets, slabs, etc.

c. *Manufacture of wires, winding wires and cables.* Wires are drawn from wire-rods which are hot-rolled or extruded from wire-bars. Wires are cold-drawn from wire-rods. This old technology is now being replaced in most advanced countries by continuous casting methods where wire-rods are directly cast from cathodes thus bypassing the wire-bar stage. This technology is on the threshold of being introduced in India on a substantial scale. Further and further drawing produces wires of smaller and smaller diameters, i.e., higher and higher gauges.

d. *Manufacture of flats.* Flat products, *viz.*, plates, sheets, circles, strips and foils are classified as "semis". These are produced both in the organised sector and the non-organised sector. In the latter, only sheets and circles are made while in the former normally sheets, strips and foils are made.

In the organised sector, generally, primary metal, either in the form of virgin metal or in the form of pre-alloyed ingots in the case of alloys, are melted in electrical furnaces or oil-fired furnaces. About 60 per cent of process scrap is also charged along with the primary metal. The molten metal is cast in a metallic mould to obtain the hot-rolling stock, *viz.*, billet which is heated to a higher temperature for hot rolling. For reduction in thickness, these are further cold-rolled, having been annealed and pickled wherever necessary. At various stages, the flats are checked and unsuitable products are rejected as scrap and recycled. For producing thin gauge products like foils with very close dimensional tolerances, Z-mills are preferred. Recently, organised sector units have started using semi-continuous and continuous casting techniques for producing flat products.

Units in the non-organised sector use oil-fired furnaccs for melting the raw material which consists partially of virgin copper and alloying material like zinc for alloys, but mainly of old and process scrap. In come cases, ingots are made first for the sake of control on the chemical composition of the product. Casting is carried out in metal moulds. This is followed by hot rolling of billets and one or more rounds of cold-rollings punctuated by annealing and pickling at appropriate stages.

Some quanties of plates and sheets, and invariably the entire lot of strips and foils, are used for engineering applications. Such flat products undergo one or more rounds of further fabrications including slitting, blanking, bending, forming, soldering and finishing. Physical and mechanical characteristics of the flat products stipulated by specifications vary depending on the end use.

Plates, sheets and circles are used for non-industrial applications including manufacture of utensils, artwares and other decorative wares, involving cruder methods of bending, forming, soldering-brazing and finishing by a variety of techniques.

Circles are basically used in the utensil making industry. This sector also makes use of sheets. The copper utensil industry is one of the oldest in India. The concentration of the utensil-making industry is in places like Jagadhari, Rewari Hathras, Moradabad and Bombay. These manufacturers, mostly in the small-scale sector, make their own billets, and send these to "job-rollers" and get back circles and process scrap in return. Many a time small circles are cut from larger circles to meet specific requirements. For industrial uses, among the flats, mostly sheets and strips are used.

Sheets and circles may be cleared in a trimmed or an untrimmed condition. In the process of rolling, the edges on all sides do not remain uniform in thickness and have irregular or non-uniform ends and these have to be trimmed out before a sheet or a circle could be used for further manufacture. In the case of job-rollers, mostly untrimmed circles and sheets are sent back to the utensil manufacturers; or else, edges are sheared off, and scrap arising from these trimmings plus the trimmed sheets and circles are sent back to the utensil manufacturers who have cast and supplied the billets. Shearing charges in themselves are very nominal.

Strips are basically used in various user industries and are manufactured by medium to large-scale producers.

e. *Manufacture of hollows, viz., pipes, tubes, shells and blanks.* Pipes and tubes are made of copper as well as its alloys. They are generally seamless but they can be with a seam also.

In making pipes and tubes, first, billets are made of copper or the necessary alloy from wire-bars, process scrap generated within factory, or other pedigree scrap. Billets are then cut into smaller pieces and shells are extruded. In the process of extrusion, hot metal is forced through a suitable die by means of a ram. Shells are washed in a pickling tank, and one end is tapered, after which they are put through cold-drawings on draw benches. The operation of drawing is one of pulling while that of extrusion is that of pushing; further, in extrusion, the metal is hot, while in drawing, generally, it is cold. In order to reduce the wall-thickness and the diameter of the tube, it may have to be put through several draws, and it is generally subjected to annealing between draws for softening the metal.

The main types of tubes being manufactured in the country are (i) copper tubes for refrigeration industry, (ii) copper tube coils, (iii) heat exchanger tubes in copper and copper base alloys, (iv) admiralty and aluminium brass condenser tubes, (v) 90/10 cupro-nickel tubes, (vi) 70/30 alloy brass tubes for sugar mills, (vii) phosphor de-oxidised copper tubes and arsenical copper tubes for railways and general engineering industries and (viii) brass tubes for stove pressure lamp industry[1], agricultural sprayers, ball bearings and

[1] Sometimes these are made by drilling holes in rods at both ends. Then these belong to item 68 rather than item 26A.

other general engineering industries.

As the industry is organised at the moment, there are a few large-scale factories in the organised sector, producing pipes and tubes in an integrated process. Apart from these, there are a few extruders, who extrude shells out of billets which are then taken by small-scale producers who draw pipes and tubes from the shells and blanks.

Mostly virgin copper imported by MMTC is used for making pipes and tubes. Lately, the refrigeration industry has started accepting tubes made of imported copper scrap also and the refrigeration market is being captured by the small-scale people using scrap of copper.

f. *Industry-wise pattern of consumption.* The average percentage shares of consumption of primary copper by different industries for the period 1976-78 have been estimated in the *Report of the Working Group on Non-Ferrous Metals (1980)* as follows :

Industry	**Consumption (per cent)**
Winding wire	36.0
Electrical goods/motors/switch-gears/ transformers	6.0
Cables and wires	14.0
Automobiles and auto-ancillaries	3.5
Semis and alloys	18.0
Mint, ordnance factories and railways	11.9
Others	10.6
	100.00

Thus the highest percentage is in the electrical industry (36+6+14=56). Semis and alloys account for an appreciable part, *viz.*, 18 per cent of this total.

It should be remarked that, 1963 onwards, a large-scale substitution of copper by aluminium took place for use in overhead transmission lines.

Tariff Structure for Copper

First, we consider the tariff structure as it prevailed in 1978-79 which is our period of reference for purposes of comparison of an estimated potential tax base with the actual tax base in order to quantify evasion. We then consider the present tariff structure with a view to subsequently examining those aspects of it that have a bearing on evasion and avoidance.

a. *Statutory and effective rates.* Item 26-A, as it was in force, prior to 1.3. 1980 referred to

"Copper and copper alloys containing *not less than fifty per cent by weight* of copper".

This item was divided into four categories, *viz.*,

(1) In any crude form including ingots, bars, blocks, slabs, billets, shots and pellets;

(1a) Wire-bars, wire-rods, and castings, not otherwise specified;

(2) Manufactures, the following, namely:
Plates, sheets, circles, strips and foils in any form or size;

(3) Pipes and tubes.

Item 26-A was revised on 18.6.1980. Thenceforth it referred only to *copper*, the phrase "copper alloys ... fifty per cent by weight" having been dropped and the following explanation having been added:

" 'Copper' shall include *any alloy* in which copper predominates by weight over each of the other metals."

The division of the item into four categories stood as before.

Item 26-A was further revised on 1.3.1981. The item has been divided into six categories since then. The changes introduced at this time referred to the following:

(i) introduction of two new sub-items under 26-A, *viz.*,

"1b) Waste and scrap; and

4) Shells and blanks, for pipes and tubes".

Sub-item 3 was rewritten as

"3) Pipes and tubes, excluding shells and blanks, therefor". An Additional explanation was added saying

"(Explanation-II)

'Waste and Scrap' means waste and scrap of copper fit only for the recovery of metal or for use in the manufacture of chemicals, but does not include slag, dross, scalings, ash and other cuprous residues".

The statutory and effective rates for various sub-items under 26-A are detailed below. These rates were applicable in 1978-79 and they are also applicable to date.

TABLE 1.3

Statutory and Effective Rates of Duty*

Item	Unit	Statutory rate for basic duty	Effective rate for basic duty
1	M.T.	Rs 5600	Rs 3000
1a	M.T.	Rs 5600	Rs 3000
1b**	M.T.	Rs 5600	Rs 3000
2	M.T.	Rs 6300	Rs 3700
3	ad.v.	28%	28%
4**	ad.v.	28%	28%

* Compiled from Central Excise Tariffs and Relevant Notifications.

** Applicable since 1.3.1981.

In addition to the basic duty, a special excise duty at the rate of 10 per cent of the basic duty is applicable now. This rate was 5 per cent in the year 1978-79.

b. *Notifications and their revenue importance.* The revenue potential of any Central excise item depends on the effective rates and exemptions defined in the relevant notifications which the Central government is empowered to issue under various provisions of the Central Excises and Salt Act, 1944 and Central Excise Rules, 1944, especially under Rule 8 (1) of the said Rules.

Below we shall outline the nature of notifications relating to this item and their relative importance in terms of revenue.

First, let us take up the exemption clauses that have only a minor importance in terms of revenue. These relate to the use of strips and foils for imitation Zari, (Notifn. 117/61, and strips and foils made from scrap of copper alloys that are intended for the manufacture of trinkets (Notifn. 118/61).

Anode moulds, wire-bar moulds, mould plates and starter sheet blanks falling under this item are exempt from the whole of the duty if intended for use by the primary producers in the factory in which such anode moulds, etc., had been manufactured provided that these are subsequently melted in the same factory (Notifn. 236/75).

A concessional rate of duty (*viz.*, Rs 420/- per MT) is applicable for copper ingots, if these are intended for use in the manufacture of fungicides (Notifn. 181/66 as amended by Notifn. 113/77). Plates, sheets, circles, strips, foils, pipes and tubes of copper in any form or size, if manufactured in a Central government ordnance factory, are exempt from the whole of the duty (Notifn. 11/76). Strips or other manufactures of copper and copper alloys manufactured out of bare copper wires on which duty has already been paid under item 338 (ii), (Electric wires and cables NOS) are exempt from so much of duty of excise as is equivalent to the duty already paid (Notifn. 60/65).

The revenue importance of these notifications is minimal. Out of a total clearance of 1,12,658 tonnes in 1978-79, clearances under the above notifications accounted for almost negligible shares, as would be evident from Table 1.4.

TABLE 1.4
Clearances Under Specified Notifications (1978-79)

Notification	Clearance (Tonne)
117/61	—
118/61	—
236/75	25
142/76	—
181/66	—
11/76	149
60/65	15
TOTAL	189
TOTAL CLEARANCE	112658

Source: Directorate of Statistics and Intelligenee, Central Excise and Customs, *Statistical Year Book, 1978-79*, New Delhi.

Where the tax rate is nil, the clearance and production would not, of course, be reported in general, as in these cases the manufacturing units are not required to take a licence from the Central Excise Department under rule 174-A vide

Notifn. No. 31/76. This notification exempts "fully exempted copper and copper alloys" from licensing control. But, since there is no duty involved, the revenue impact is going to be nil in any case.

For purposes of calculations of duty incidence and the extent of evasion, these notifications can in general be ignored.

The substantive content of important notifications from the viewpoint of revenue is outlined below:

(i) Plates, sheets, circles, strips and foils under sub-item (2) in the manufacture of which copper falling under sub-item (1) or (1a) made out of 'old scrap of copper or copper alloys' or scrap obtained from duty-paid virgin metal is used, are exempt from so much of duty as is in excess of Rs 700/- per metric tonne (MT).
Subsequently, the expression under single quotes (*ours*) above has been changed to 'old scrap of copper waste'. (Notifn. 54/62 *et al*)

(ii) Plates, sheets, circles, strips and foils falling under sub-item (2), in the manufacture of which copper alloys in any form is used and on the virgin copper or the copper content of the alloy the prescribed amount of excise duties have been paid, or are deemed to have been paid, are exempt from so much of duty as is in excess of Rs 700 per (MT). (Notifn. 74/65 *et al*).

(iii) Sheets and circles of copper (i.e., two of the items mentioned above), if produced by a manufacturer on a *rolling mill* and issued therefrom in an untrimmed condition, are exempt from so much of the duty of excise leviable thereon as is in excess of Rs 600/- per MT provided that the sheets and circles as above are made from old scrap, or duty-paid virgin metal or duty-paid scrap from virgin metal and duty-paid waste and scrap. In other cases, the duty is Rs 3400 per MT (Notifn. 31/65 *et al*).

(iv) Pipes and tubes, if made from duty-paid metal in crude form or manufactures thereof, are entitled to an exemption equal to the amount of duty already paid (Notifn. 213/63 *et al.*)

(v) Copper and copper alloys in any crude form falling under sub-item (1) or (1a) are exempt from the whole of duty provided that these are made from old scrap of copper, scrap arising from duty-paid copper, duty-paid virgin copper, copper purchased from the market after August 20, 1966, and duty-paid waste and scrap of copper or combinations thereof. This has been covered under Notifn. 119/66 along with its subsequent modifications. Since the interpretation of this notification has led to some controversies recently, the full text of the notification as it now stands, is reproduced below.

"Copper in any crude form including ingots, bars, blocks, slabs, billets, shots and pellets, falling under sub-item (1) of this Item and wire-bars, wire rods and castings of copper falling under sub-item (1a) and waste and scrap of copper falling under sub-item (1b) of the said Item are exempt from the whole of the duty of excise leviable thereon, if made from any of the following materials or a combination thereof, namely:

(i) Old scrap of copper; or

(ii) Waste or scrap obtained from copper or copper alloys where the prescribed amount of duty of excise, or, as the case may be, the additional duty leviable under Section 2A of the Indian Tariff Act, 1934 (32 of 1934), has been paid on the copper or the copper content of alloys; or

(iii) Virgin copper in any crude form on which the prescribed amount of duty of excise, or, as the case may be, the additional duty leviable under Section 2A of the Indian Tariff Act, 1934 (32 of 1934), has already been paid; or

(iv) Copper in any crude form purchased from the market on or after the 20th day of August, 1966; or

(v) Waste or scrap of copper and copper alloys, falling under sub-item (1b) of the said Item No. 26-A, in respect of which the appropriate amount of duty of excise or, as the case may be, the additional duty leviable under Section 3 of the Customs Tariff Act, 1975 (51 of 1975), has already been paid on the copper or the copper content of the alloys.

2. This notification shall be deemed to have taken effect from 24th day of April, 1962.
3. The clause (iv) shall be deemed to have been inserted w.e.f. 20.8.1966.
4. The word inserted vide Notifn. No. 59/68-CE., dated 23.3.1968, shall be deemed always to have been inserted.

Vide Notification No. 119/66/CE., dated 16.7.1966 read with subsequent amendments".

The two main effective rates of duty relate to sub-items (1) and (1a) and item (2). The effective rates are Rs 3700 per MT for (2). These have been defined in Notifin. 113/78 and Notifn. 114/78, respectively.

The effective rate of duty for pipes and tubes is the same as the statutory rate, *viz.*, 28 per cent. There is a provision, however, for set-off of duty-paid on copper at the crude stage.

A summary of the five notifications referred to above along with two others is given below. These are the important notifications from the viewpoint of revenue.

Notifications[2]		*Subject*[3]
(i)	54/62	Effective rate of duty for sub-item (2), *viz.*, plates. sheets, etc., issued in a trimmed condition, if made from process scrap arising from duty-paid metal or old scrap.
(ii)	74/65	Effective rate of duty for plates, foils, strips, trimmed sheets and circles in the manufacture of which duty-paid virgin copper has been used.
(iii)	31/65	Effective rate of duty for sheets and circles under sub-item (2) if issued in an untrimmed condition and produced on a rolling mill

[2] Notification number refers to the original notifications and should be read with subsequent modifications, if any.

[3] What is detailed below indicates the general intent of the notifications. For all the necessary conditions, the full text of the notification will need to be consulted.

(iv) 213/63	Set-off for duty-paid copper used in the manufacture of pipes and tubes.
(v) 113/78	Effective rate of duty for sub-item (1) and (1a) if made from copper on which duty has not been paid at any earlier stage.
(vi) 114/78	Effective rate of duty for sub-item (2) if made from copper on which duty has not been paid at any earlier stage.
(vii) 119/66	Effective rate of duty (*viz*., zero) for copper under item (1) and (1a) made from old scrap or duty-paid virgin copper or copper purchased from the market after a specified date.

The relative importance of these notifications in terms of their percentage contribution in the total revenue raised, and in terms of their percentage shares in total clearances, can be gauged from Tables 1.5 and 1.6.

TABLE 1.5

Percentage Contribution of Important Notifications in Total Excise Tax Revenue for Copper

	Notifications							
Year	54/62	74/65	31/65	213/63	113/78	114/78	119/66	Total
1970-71	11.73	30.77	8.29	5.73	27.93	14.93	—	99.38
1971-72	11.38	23.97	6.72	6.70	19.73	11.95	—	80.45
1972-73	7.52	15.38	4.18	4.88	17.15	0.13	—	49.24
1973-74	7.08	15.54	3.77	5.71	19.11	5.09	—	56.30
1974-75	4.94	9.30	2.68	10.18	29.40	0.16	—	56.66
1975-76	3.78	7.26	2.26	9.77	34.53	0.04	—	57.64
1976-77	3.87	6.29	1.95	0.69	51.83	—	—	64.63
1977-78	6.50	9.77	3.17	9.54	63.98	·	—	92.96
1978-79	10.83	15.45	4.54	17.49	44.72	—	—	93.03

Note: No contribution from Notifn. No. 119/66 since effective rate of duty is zero.

Source: Directorate of Statistics and Intelligence, Central Excise and Customs. *Statistical Year Book, 1978-79*, New Delhi.

TABLE 1.6

Percentage Share of Important Notifications in Total Clearances

Year	Notifications							
	54/62	74/65	31/55	213/63	113/78	114/78	199/66	Total
1970-71	15.71	40.77	12.92	2.89	11.93	4.97	10.10	99.29
1971-72	16.95	35.56	12.72	3.62	10.41	4.18	6.17	89.61
1972-73	18.76	39.15	12.28	4.79	14.26	0.11	10.53	99.88
1973-74	16.12	32.55	11.21	3.53	15.10	3.09	17.47	99.88
1974-75	16.83	32.46	10.57	4.16	15.23	0.47	19.31	99.03
1975-76	14.16	27.62	10.05	3.39	16.18	0.17.	28.50	100.07
1976-77	14.02	22.09	8.36	2.39	27.17	—	24.95	99.79
1977-78	16.10	24.39	8.86	2.23	26.42	–	21.94	99.94
1978-79	17.57	25.06	8.57	2.22	19.63	—	26.55	99.06

Source: Directorate of Statistics and Intelligence, Central Excise and Customs. *Statistical Year Books, 1970-71 to 1978-79,* New Delhi

It would appear that the effective rates of duty for copper at different stages of production have the following main constituents:

Copper "in any crude form" and wire-bars, wire-rods and casting NOS	Rs 3.000 per tonne
Manufactures (sheets, circles, etc.) from duty-paid copper or old scrap	Rs 700 per tonne
Manufactures (sheets and circles in an untrimmed condition) from duty-paid copper or old scrap	Rs 600 per tonne
Manufactures (sheets, circles, etc., from copper on which no duty has been paid at any earlier stage)	Rs 3,700 per tonne
Manufactures (sheets, circles in an untrimmed condition) from copper on which duty has not been paid	Rs 3,400 per tonne
Pipes and tubes	28 per cent *ad valorem* (less duty paid on copper at the crude or semi-manufacture stage)

Subsequent to the modifications in the tariff on 1.3.1981, the following effective rates need to be mentioned.	
Waste and scrap arising from duty-paid metal, or recycled within the factory of use	Nil
Waste and scrap (Otherwise)	Rs 3,000 per tonne
Shells and blanks for pipes and tubes	28 per cent *ad valorem*

c *Collectorate-wise pattern of revenue.* Collectorate-wise revenue, percentage contribution and growth in revenue from copper are summarised in Table 1.7.

TABLE 1.7

Collectorate-Wise Generation Revenue from Copper

Selected collectorates*	Revenue in 1978-79 Amount (Rs '000)	As per cent of total	Compound growth rate (per cent per annum) between 1968-69 and 1978-79
Ahmedabad	1574	1.23	4.23
Allahabad	3948	3.09	5.21
Baroda	1391	1.09	(—)2.90
Bombay	27521	21.51	1.61
Calcutta	1076	0.08	4.28
Chandigarh	8439	6.60	8.77
Delhi	2525	1.97	**
Indore	1712	1.34	***
Jaipur	39179	30.62	@
Madras	1337	1.05	1.62
Mysore	1813	1.44	16.43
Patna	33709	26.35	14.69
Pune	1438	1.12	2.77

* Collectorates showing more than Rs 10 lakh as revenue in 1978-79.

** Shows a very sudden jump in 1978-79; previous level of revenue always less than Rs 1 lakh.

*** Only two observations are available.

@ Between 1974-75 and 1978-79.

Source: Directorate of Statistics and Intelligence, Central Excise and Customs. *Statistical Year Book, 1978-79,* New Delhi.

It is clear that only three collectorates out of twenty-five account for the bulk of the revenue obtained from copper. In 1978-79, these collectorates, *viz.*, Bombay, Jaipur and Patna, accounted for 78.5 per cent of the total excise duty revenue from copper whereas Jaipur and Patna collectorates cover the Khetri and Ghatshila units of the primary manufacturer of copper, *viz.*, Hindustan Copper Ltd., for Bombay, most of the revenues are derived from the duty on flats, pipes and tubes. Other collectorates showing potential for revenue, judging from the growth rates, are Chandigarh, Calcutta, Mysore and Allahabad.

d. *Item-wise pattern of revenue.* The three main types of items generating revenue are (i) "copper in any crude form" and wire bars; (ii) flats, *viz.*, plates, sheets, circles, strips and foils and (iii) pipes and tubes. Clearances for these items and their contribution to revenue are summarised in Tables 1.8 and 1.9, respectively, for the period 1970-71 to 1978-79. In interpreting the revenue figures, it should be noted that the bulk of the revenue for flats is based on the partial duty (Rs 700 or 600 per tonne in recent years) and the bulk of the revenue from pipes and tubes is based on the difference between the *ad valorem* duty (28 per cent in recent years) minus the set-off of duty paid on copper in any crude form (Rs 3,000 per tonne in recent years).

It would be observed that the relative contribution from the manufacture of primary copper has increased considerably, and that from flats has gone down substantially. In absolute terms, pipes and tubes are contributing a persistently increasing amount of revenue. This is primarily due to increases in their prices, the tax rate being *ad valorem*. It will be noted that the quantities cleared under this head do not show a corresponding increase.

Imports: Structure of Imports and Import Tariff

More than 65 per cent of our current requirements of primary copper are met by imports. Imports are required to meet shorfalls, both in the quantity and the quality, of domestically produced copper. In particular, imported copper

TABLE 1.8

Item-Wise Clearances in Copper

(Tonnes)

Year	Copper in any crude form	Flats	Pipes and tubes
1970-71	8172	50924	3847
1971-72	7825	52189	3668
1972-73	9072	44709	3075
1973-74	10792	45569	2571
1974-75	9896	39204	3177
1975-76	13031	41757	3781
1976-77	17904	48602	2949
1977-78*	26899	53238	2447
1978-79	20781	57700	2734

* Excludes clearances under the simplified procedure for some years as also those under some minor notifications.

Source: Directorate of Statistics and Intelligence, Central Excise and Customs. *Statistical Year Book*, 1970-71 to 1978-79 Editions, New Delhi.

TABLE 1.9

Item-Wise Revenue* From Copper

Year	Revenue* from						
	Copper in any crude form and wire bars		Flats		Pipes & tubes		Total
	Amount (Rs'000)	As per cent of total	Amount (Rs'000)	As per cent of total	Amount (Rs'000)	As per cent of total***	Basic duty (Rs'009)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1970-71	12257	27.3	29490	65.7	3093	6.9	44860
1971-72	11037	24.4	30226	66.8	3932	8.7	45240
1972-73	13609	29.8	21606	47.4	3887	8.7	45593
1973-74**	15520	30.3	26232	51.2	4675	9.5	51210
1974-75	32216	51.3	18718	29.8	11172	17.8	62835
1975-76	52129	59.6	20158	23.1	14817	16.9	87448

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1976-77	98607	71.1	23550	17.0	14137	10.2	138773
1977-78	111526	68.2	34055	.0.8	16880	10.3	163474
1978-79	56679	46.6	39455	32.4	24984	20.5	121749

* Refers to basic duty of excise.
** Includes auxiliary duty of excise.
*** Percentages do not always add to 100 as minor amounts of revenue under some notifications as also revenue under the simplified procedure for some years have been left out.

Source: Directorate of Statistics and Intelligence, Central Excise and Customs. *Statistical Year Books*, 1970-71 to 1978-79 Editions, New Delhi.

is needed for winding wires of high gauges as the domestically produced wire-bar is not soft enough for the purpose.

But apart from the needed quality in certain specified uses, the demand for copper as a whole far outstrips the domestic supply leading to considerable imports, evidenced by the fact that we are now even importing copper and copper-base scrap in substantial quantities.

a. *Import canalisation.* The canalising agency for imports of copper is MMTC. In 1978-79, for the release of copper by MMTC, the following procedure was outlined:

Copper is allocated to users by the MMTC and the HCL. In this regard, the *Handbook of Import-Export Procedures* specifies precise details. In recent years, the following arrangements were specified for the allocation of copper according to para 148a of the *Handbook.*

"(a) In the case of copper, eligible Actual Users (industrial) register their requirements with the canalising agency (MMTC) and the indigenous producer, M/s Hindustan Copper Ltd., as under:

MMTC	Hindustan Copper Ltd.
(i) Manufacturers of winding wires, commutators and switchboard cables/wires.	(i) All government departments.
(ii) Bharat Heavy Electricals Ltd.	(ii) All Central/State

	public enterprises, other than those under MMTC.
(iii) Hindustan Cables Ltd.	(iii) Manufacturers of semis, alloys and auto ancillaries.
(iv) Manufacturers of switch-gear and transformers.	(iv) Any other users.
(v) New Government Electric Factory, Bangalore.	
(vi) Manufacturers of Cables wires and Conductors.	

(b) Actual users eligible to secure the material as above, from the MMTC/Hindustan Copper Ltd. may register their requirements to the extent of their certified consumpion in 1978-79, 1979-80 or 1980-81, whichever is higher. However, this should not enable them to exceed 125 per cent of their licensed/registered capacity.

(c) New units or existing Actual Users as are in need of additional quantities may apply to the MMTC or Hindustan Copper Ltd., as per the above division of categories only after their demands are sponsored by the concerned sponsoring authorities."

b. *Magnitude and structure of imports.* Data for imports of copper and copper alloys are given in Table 1.10.

TABLE 1.10

Imports of Copper and Copper Alloys

(Tonnes)

Year	Copper and alloys refined or not unwrought	Copper and alloys worked	Copper waste scrap	Waste scrap of brass, bronze and other alloys	Others*	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970-71	46543	5244	—	—	—	47067
1971-72	50711	5462	—	—	—	56173

(1)	(2)	(3)	(4)	(5)	(6)	(7)
1972-73	50265	4191	—	—	—	54456
1973-74	49189	3433	—	—	—	52621
1974-75	39466	2300	—	—	—	41774
1975-76	11318	3492	463	2377	—	17650
1976-77	29703	1996	2478	5312	—	39489
1977-78	32609	4076	6358	11760	128	54931
1978-79	69706	5767	9886	12378	136	97873

*Includes nails, tacks, bolts, nuts, screws, and articles of copper and its alloys.

Source: Director-General of Commercial Intelligence, *Monthly Statistics of the Foreign Trade of India, Vol. II-Imports, Calcutta.*

It would be clear that the bulk of imports are those of "Copper and alloys refined or not unwrought". Wire bars fall under this category, and most of the imports are in this form. Once importation of copper scrap and copper-base scrap has been allowed, it is clear that substantial quantities of scrap have been imported.

TABLE 1.11

Total Consumption and Imports of Copper

Year	Consumption (tonnes)	3-Yearly moving average of col. (2)	Imports (tonnes)	3-Yearly moving average of col. (4)	Share of imports in consumption (per cent)	Column (5) as per cent of col. (3)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1971-72	64,000		56,200		87.3	
1972-73	57,200	60,300	54,500	54,433	95.3	90.3
1973-74	59,300	41,433	52,600	49,633	88.7	96.5
1974-75	37,800	48,200	41,800	36,700	110.6*	76.1
1975-76	47,500	46,670	15,700	32,700	33.1	70.1
1976-77	54,700	54,400	40,600	26,367	74.2	48.5
1977-78	61,000	67,900	22,800	47,500	37.4	70.0
1978-79	88,000	73,670	79,100	47,700	89.9	64.8
1979-80	72,000		41,200		57.2	
TOTAL	5,41,900		4,04,500		74.6	

*Indicates higher imports can be carried over for consumption in subsequent years.

Source: Director-General of Commercial Intelligence, *Monthly Statistics of the Foreign Trade of India, Vol. II-Imports*, Calcutta.

In Table 1.11, figures for total consumption and imports of copper (primary metal) are given highlighting the high contribution of imports in satisfying domestic demand for the virgin metal.

c. *Import tariff.* In Customs Tariff, 1975 onwards, copper has been referred to in Chapter 74.

Important features of the import tariff relating to copper are: (1) the classification of the item, and (ii) definition of alloys.

According to the notes contained in Section XV on "Base Metals and Articles of Base Metal", subject to other qualifications, an alloy of base metals is to be classified as an alloy of the metal which predominates by weight over each of the other metals.

It should be pointed out that the classification of copper under Chapter 74 of the Customs Tariff and the classification of copper under item 26-A of the Excise Tariff are considerably different, the former being based on the BTN classification and the latter on the older League of Nations classification.

Table 1.12 presents the statutory and effective rates for different items of copper under the Customs Tariff.

TABLE 1.12

Customs Tariff: Statutory and Effective Rates for Copper (As on 1.7.1980)

Heading No.	Description of article	Statutory rate (per cent)	Effective rate* (per cent)
74.01/02	Copper mattee		
	Unwrought copper	100	40
	(refined or not)	100	70
	Copper waste and scrap	100	80
	Master alloys	100	40
74.03	Wrought bars, rods, angles, shapes and sections.		
	(1) Not elsewhere specified	100	60
	(2) Bars, rods, angles, shapes, sections and wire of unalloyed copper'	100	60

74.06	Copper powders and flakes	100	100
74.07/08	Tubes and pipes and blanks therefor of copper; hollow bars of copper; tube and pipe fittings (for example, joints, elbows, sockets and flanges), of copper;		
	(1) Not elsewhere specified	100	60
	(2) Tubes and pipes and blanks therefor, and hollow bars, of nominal bore exceeding 19 millimetres	40	40
74.09/19	Other articles of copper including nails, tacks, staples, hooknails, spiked cramps, studs, spikes and drawing pins of iron or steel with heads of copper.	100	100

Note: For oxygen-free, high-conductivity copper wire, bars, rods, angles, shapes and sections, plates, sheets, strips, tubes and pipes the effective rate is 45 per cent.

* Subject to other notifications contained in Chapter 74 of the Customs Tariff

Source: *Customs Tariff* read with relevant notifications.

The Role of Secondary Metal or Scrap

Although the quantification of the extent of evasion has been attempted in Chapter 2 it will be seen that the determination of the supply of secondary metal is of crucial importance to that exercise. As a prologue to the estimation of evasion, and as a vital feature of the copper industry, we propose to discuss at length the supply and the role of scrap of copper and copper-base alloys in India.

Both because India has a limited supply of primary metal and because scrap of copper and copper-base alloys is readily reusable and can be substituted for virgin metal in most non-electrical uses, the recovery and recycling of scrap of copper and its alloys assume considerable significance for the copper industry in India.

Three types of scrap of copper or copper-base alloys can be distinguished:

a. New scrap or process scrap	This arises from current fabrication and manufacturing operations.
b. Old scrap or life-cycle scrap or scrap due to obsolescence	This arises when articles which are fully or partially made of copper, run out of their useful life or are rendered obsolete or otherwise discarded.
c. Ashes and residues	These arise largely from pyrometallurgical foundry and metal-finishing operations.

The Central excise tariff, after the introduction of item 1b, *viz.*, "waste and scrap", has defined it as :

"Waste and scrap of copper fit only for the recovery of metal or for use in the *manufacture* of chemicals, but does not include slug, dross, scalings, ash and other cuprous residues".

Process scrap is generally recycled back into the same process. Old scrap is very important in terms of augmenting the supply of primary metal available in the country. In many instances, it is the first choice of a manufacturer for production of semi-manufactures or chemicals. Copper-base scrap may be used for making copper alloys that are melted to meet stringent specifications, as also for castings that may be used under rigorous operating conditions.

Pedigree scrap, i.e., scrap whose antecedents are known or in other words, whose admixture of metal is known, is preferred to other types. It is also possible to test the admixture of metals chemically. However, this is feasible or economic only when a large amount of similar type of scrap is being recycled.

Different scrap grades are interchangeable to some extent between different user industries. Generally, the purity or the copper content of scrap will predetermine the uses which the remelted metal will be put to. Scrap arising from articles using electrolytically refined copper having a purity of 99.95 per cent like wires and cables may have a purity of 97.98 per cent plus when it is recycled and may still be used for electrical purposes. In other cases, where the copper content is lower, alloys like brasses and bronzes are made by adding zinc or other alloying material and even some virgin copper.

There is a well-developed, well organised and very old scrap market in India. Scrap dealers purchase scrap from street hawkers who might have procured scrap from manufacturing units using copper at an earlier stage, i.e., semi-manufactures or crude forms. This kind of scrap will generally be "process scrap". Hawkers also collect scrap from households and other collection points for old industrial scrap. Scrap dealers also purchase scrap directly from the factories. There are well-established channels for marketing stolen copper mostly in the form of wires and cables.

In order to place the generation and supply of scrap in its proper perspective in the process of manufacture of copper, the following figure may be helpful :

FIGURE 1.1

The Technical Process of the Manufacture of Copper

Mining
(Copper ore)
Concentration
Smelting
(blister)
Refined copper → Scrap (Source of Secondary copper)
Semi-manufacture
(Wire, tube, billets)
Final consumption
(e.g., electrical goods → Scrap dealers
Vehicles, construction
industries)

Source: World Copper Prospects, London: Bankers Trust Company 1973) p. 27.

a. *Generation of process scrap.* Process recycling or current recycling of copper scrap, as opposed to life-time recycling, arises from the fact that, in order to produce final articles of copper, the metal has to be put through various stages of manufacture and at each stage some scrap is likely to arise due to shearing, cutting, trimmings, dead ends, rejection of pieces for defects or unacceptable standards or proportions in the case of alloys.

Process scrap arises from the use of primary metal as well as secondary metal once these are subjected to manufacturing processes. In tracing different stages and types of process scraps, we can consider different categories of user industries separately.

(i) Manufactures of wire and cables

(i) a. *Winding wires.* These wires are made from wire-rods which are made from wire-bars. Wire-bars or billets cut from wire-bars are rolled into wire-rods from which wire is drawn. Scrap arising here may not be more than 10 per cent. Their first scrap can be recycled in the same use. However, the production of wire-bars needs some specialised facilities because of the need to control the amount of oxygen and sulphur. Very few units other than the primary manufacturer in India have such facilities. Scrap which is not recycled within the process is sold.

(i) b. *Electrical goods.* From wire-bars, bus-bars, strips and plates are made through fabrication and/or rolling. Scrap is mostly sold out and used for alloys or non-electrical uses of copper. Estimated process scrap in this category is 10-15 per cent.

(i) c. *Cables and wires.* These are drawn from wire-rods which are rolled from wire-bars/billets. Again, the scrap may not be more than 15-20 per cent which essentially represents burnt-out pieces.

(i) d. *Auto and auto-ancillaries.* In automobiles, about 30 to 40 kg of copper and brass per vehicle, more for heavier vehicles, is used, comprising electrical wires, cables, bearings, and rediators. In some of the uses copper has been slowly replaced by aluminium. Scrap generated in the manufacturing process may be about 25 per cent which is generally recycled within the industry.

(i) e. *Semis and alloys.* In this category, plates, sheets, circles strips and foils as also pipes and tubes made of copper as well as its alloys will fall. In India plates and foils are not generally manufactured, the former being too thick and the latter too thin, for available rolling facilities. Among flats, the main production is that of sheets, circles and strips.

Circles are rolled generally by small manufacturers who do it either as job-rollers, using billets rolled by utensil manufacturers or they themselves make their billets. Circles are generally used by utensil manufacturers or handicraft industries. Apart from some metal recoverable from the billet moulds scrap is generated when non-uniform edges are trimmed or smaller circles are cut out of larger circles. There are also some rejects and broken circles. More scrap arises when mechanical processes are used in making utensils in the shape of trimmings, dead ends, etc. Hand-made utensils also leave similar scrap, although it is less in quantity.

Sheets are made in integrated factories making their own billets as also by small job rollers. In integrated factories, after hot rolling, sheets are checked first for visible smelting defects. Sheets are then cold rolled and at each stage sorting is done, and rejects add to the scrap. In the end, trimming is done to make sheets of uniform and smooth edges and of the required width and length. The production of strips too follows similar steps. It is estimated that in every cycle, 45-50 per cent of process scrap is generated in the making of sheets, circles and strips. The proportion is somewhat less for integrated plants as compared to small-scale manufacturers.

b. *Generation of old scrap.* Copper and its alloys, except when they are used as chemicals, periodically keep coming back into circulation. When the useful life of the article in which these may have been used fully or partically comes to an end, copper and its alloys contained in these articles are recovered and reused. Knowledge about the pedigree of the scrap and the composition of the alloys would determine the uses to which it would be put. In electrical uses, the finest kind of copper in terms of purity and softness is used, while in the manufacture of utensils and copper and brass handicrafts even highly impure copper is acceptable.

Because the copper industry in India, has ages-old history the accumulated base for the generation of old scrap is likely to be very large.

Comments on average lives and the reasons for the scrapping of various articles made from copper and its alloys are presented below :

Article	*Average life*	*Reasons for scrapping*
Winding wire used in motors, transformers, TVs, record-players, etc.	5 years	Burning, shorting, wearing out.
Electrical wires and cables	15-20 years	Shorting, replacement by aluminium wires and cables, manufacturing defects like inadequate covering with PVC, and theft.
Parts of railway engines ship's engine and boilers	15 years	Burning, overheating; wearing out.
Earthing connections, lightning conductors	20 years	Lose effectiveness; Government policy of replacement after a certain number of years for government buildings.
Parts of wine and beer tanks and sugar and molasses tanks and pipelines in sugar mills, breweries, etc.	5-7 years	Wearing out.

Utensils	20 years (Range 0-200 years	Theft, loss of taste or preference of the owner, natural end, deshaping, accidents.
Other articles like locks, taps, pen-tips, sanitary fittings material, name-plates, fancy goods, nails, tacks, etc.	10 years	Theft, wearing out.
Pipes and tubes, basically used in refrigeration, milk depots; sanitary fittings (in earlier days)	10-15 years	Wearing out, accidents.

Available Estimates of Supply of Secondary Metal

Even though the supply of scrap is very important to the user industries there are no firm quantitative indications as to the extent of its availability in India. The Working Group on Non-Ferrous Metals (1980) observes:

> "... Scrap statistics are notoriously susceptible to double counting and other factors which make them unreliable, even in other industrially advanced countries. So far as India is concerned, hardly any statistics is available on availability and consumption of copper and copper base scrap." (p.47.)

We have come across only very few studies where a rough indication as to the quantity of secondary metal in India has been provided even in very broad terms.

In the *Report of the Working Group on Non-Ferrous Metals* (1980), the following observations have been included:

> "No statistics of actual quantities of copper and brass scrap recycled in India is available. A rough estimate puts the figure of scrap consumption at 15 per cent of the total copper consumption in the country."

If we work on this basis, the following estimates of secondary metal emerge from the data on the consumption of primary copper.

Suppose consumption of primary metal is P, and that of secondary metal is S. Then total consumption is P+S. And S is 15 per cent of P+S. Thus we have

$S = .15\,(P+S)$

or $S = 0.1765\,P$

Using data for P for five years beginning 1975-76, we get the corresponding estimates for secondary metal, as given in Table 1.13.

TABLE 1.13

Estimate Consumption of Secondary Metal (1975-76 to 1978-80)

Year	Consumption of	
	Primary metal	Secondary metal
	(1)	(2)
1975-76	45,500	8382.35
1976-77	54,700	9652.94
1977-78	61,000	10764.71
1978-79	88,000	15529.41
1979-80	72,000	12705.88

Source : Column 1, Government of India, Ministry of Steel and Mines (1980). *Report of the Working Group on Non-Ferrous Metals*, New Delhi.

The level of consumption of secondary metal calculated in this manner seems to be very considerably on the low side. A further difficulty arises in using this approach by linking secondary metal to primary metal for a current year. Secondary metal should normally be a monotonically increasing series, so far as old scrap is concerned or should reflect cycles experienced in the past consumption of copper and not so much of that in the current consumption of copper. If for any reason demand for copper goes down in a current year, domestically available scrap would still be used and it is the imports which would normally be curtailed. The estimates provided above include both the supply of process scrap and old scrap. While the study in question has done a detailed analysis of the generation of process scrap, the estimation of old scrap appears to be rather summarily dealt with.

A second estimate is given by the Indirect Taxation Enquiry Committee (1977). They made the following observations:

> "The above consumption pattern, however, does not take into account the consumption of scrap-based copper and its manufactures produced by secondary manufacturers, which is approximately *20000* tonnes per annum."

This figure relates to the year 1976.

In estimating secondary metal, both these estimates include process scrap and old scrap. It should be borne in mind that the process scrap arising out of current manufacturing processes does not augment the supply of the metal. If we start with 100 tonnes of virgin metal, then all the process scrap having been recycled, it would provide only 100 tonnes of metal in the final products, ignoring melt losses. Thus, the recycling of process scrap only ensures the full utilisation of the original supply of virgin metal, and it should not be construed as if it increases it by any amount. It is only the old scrap which augments the supply of metal over and above the primary metal.

It is our understanding that the estimate included in the *Report of the Indirect Taxation Enquiry Committee* (1977) is based on the Central Excise Year Books. There are several difficulties in making any estimate on the basis of the data given there.

The main notifications under which data relating to scrap may be reported are Notifn. Nos. 119/66, 54/62 and 31/65. Notifn No. 119/66 deals with the manufacture of copper in the forms defined for sub-items (1) and (1a) of item 26-A of the Central Excise Tariff, *viz.*, items like slabs, billets, wirebars, bars, rods, etc., out of duty-paid virgin copper, old scrap of copper and its alloys or pre-tariff stock of copper. Until a recent clarification given by the Central Board of Excise and Custom,[1] the effect of this notification was to exempt almost all manufacture of copper in the forms defined for sub-items (1) and (1a) by manufacturers other than Hindustan Copper Ltd. from duty. Once there is total exemption, units are not required to take licence from the Central Excise Department under Rule 174-A of Central Excise Rules, 1944. Consequently, their production is also not reported to the Department. As such, whatever data are reported under this notification in the Central Excise Year Books would only be partial because they will only cover those units who are producing some dutiable items along with the goods falling under Notifn. No. 119/66. In addition to this, there is also the problem of disaggregating the production reported under this head between that which is due to the use of (i) duty-paid virgin metal, and that which is due to process scrap, and (ii) old scrap. Unless one gets hold of this disaggregation it is not possible to estimate, using Central Excise data, the amount by which the supply of the metal is increased due to old scrap.

Notifns. 54/62 and 31/65 deal with semi-manufactures, *viz.*, plates, sheets, etc. Some of the clearance under these may relate to primary metal. Furthermore, flats by themselves would not account for all the old scrap.

It is still instructive to note the amount of production reported under these notifications for the last few years. This information is given in Table 1.14.

In our opinion both the estimates of the Working Group on Non-Ferrous Metals (1980) and the Indirect Taxation Enquiry Committee (1977) are on the low side. A fresh attempt needs to be made for determining the supply of secondary metal of copper in India. One should also distinguish between supply of process scrap and old scrap.

We start out with the following observations:

1. The supply of secondary metal in the long run is dependent on the supply of primary metal in the past. While for short periods, *viz.*, one to three months, people may hold

[1] Discussed in Chapter 3.

TABLE 1.14

Production Reported Under Specified Notifications

(Tonnes)

Year	Notifications 119/66	54/62	31/65
1970-71	6953	10821	9143
1971-72	4630	12805	10143
1972-73	6729	11984	8186
1973-74	12523	11537	8398
1974-75	12690	10910	6932
1975-76	22970	11601	8150
1976-77	31343	15387	8986
1977-78	24938	17337	9746
1978-79	31224	20162	12018

Source: Directorate of Statistics and Intelligence, Central Excise and Customs, *Statistical Year Books*, 1970-71 to 1978-79 Editions, New Delhi.

on to scrap in the expectation of a price-rise, for longer periods the cost of holding becomes prohibitive as even scrap is highly priced. The long-run supply of scrap is, however, expected to be price-inelastic.

2. This tendency is reinforced by the fact that in the International Metal Exchanges, the price of primary copper, with which the price of secondary copper is linked, does not show any noticeable trend although it shows considerable short-term variations. Indian copper prices are linked to the international prices and would show the same pattern. This means that, in the long run, price variations would not affect the supply of secondary metal.

3. Old scrap arises when the useful life of an article in which copper has been used, or which is fully made of copper or its alloys, is finished. The article is then discarded and the copper content removed for purposes of recycling. Secondary metal also arises because of substantial stealing of copper articles, especially wires and cables. There is an extensive network of dealers in copper-base scrap all over India. The price of copper is so high that most of the copper is brought

back into circulation again and again. We expect that if copper had been used in an article, a very small proportion of it would be irrecoverably lost. This may be the case with copper chemicals, salts used as fungicides, or copper-reinforcements used in the structures supporting bridges, etc.

4. Since copper is an age-old industry in India, the base of copper in the country has been increasing over the years and the level of supply of metal due to obsolescence must be high.

In order to determine the supply of secondary metal in the form of old scrap of copper and copper-base alloys in any given year, one has to consider the time-profile of the supply of metal in previous years. Total metal used in any year consists of (i) primary copper, (ii) old scrap of copper, (iii) old scrap of copper-base alloys, and (iv) other metals used in the making of alloys. Let us call these components, respectively, P, S_1, S_2, and A.

About 10 per cent of $(P + S_1)$ goes into the making of alloys, i.e., $= .1\ (P + S_1)$. The weight of this increases due to the contribution of A, i.e., due to the use of other alloying material. The implied increase in the weight of $(P + S_1)$ is about 5.5 per cent. About the same amount, however, is lost as irrecoverable for future use in the process of manufacture either as melt-losses or due to use in chemicals, etc. The total weight of the metal used in any given year, that can be recovered in future years is thus $P + S_1 + S_2$, the contribution of A cancelling out against melt-losses, use in chemicals, etc.

It is expected that all or most of this total weight of the metal would be recycled back into the economy in subsequent years. In the first year after production, a very small proportion of the metal would come back, may be due to theft, accidents, burnings; in the second year, a slightly higher proportion would come back, and so on. The largest parts would come back after a certain number of years depending on the frequency distribution of average lives of different articles made of copper and its alloys. After that the proportions of recycling would keep falling as they are further and further distanced from the year of manufacture, tapering off to zero in the end. Thus, there is an inverted V-shape to the curve of weight that governs the recycling of the metal used up in any given years. The inverted V-shape may have to be modified for extraneous reasons like large-scale substitution of copper by some other metal. For the time being, however, we have worked on the basis of a symmetric inverted V-shape of the weight function.

In other words, suppose the articles made from copper, whether from primary or secondary metal, in any given year, have in them a quantity Z (tonnes) of copper. Out of this, suppose a proportion w_1 is recycled the next year, w_2 in the second year, until in the year n, a proportion w_n is recovered. Suppose a proportion k of Z is never recovered. Then we have,

$$w_1 + w_2 + w_3 + \dots\dots\dots + w_n = (1\text{-}k)$$

A priori, we assume that w_i's are generated from a function with an inverted V-shape weights rising to a peak and then symmetrically declining.

A number of alternative functions can be used to generate these weights.

The method which we have used tentatively is to generate the weights from

$$w_i = b.i$$

$$\text{for} \quad i = \left(1, \dots\dots\dots, \frac{n+1}{2}\right)$$

$$\text{and} \quad w_i = b.\,(n + 1 - i)$$

$$\text{for} \quad i = \left(\frac{n+3}{2}, \dots\dots\dots, n\right)$$

For the sake of simplicity we have taken n to be an odd number so as to get a unique mid-point. The value of b is determined by using the relationship:

$$\sum_{i=1}^{n} w_i = (1 - k)$$

In alternative schemes we have asssumed k = .40, .35, .30, .25 and .20 indicating that 60, 65, 70, 75 and 80 per cent, respectively, of the metal used in any given year is recycled back in n years, the rest being irrecoverably lost for purposes of recycling. Weights have been generated for the following combinations of w_i and n:

TABLE 1.15

Combinations of Parameters Used for Determining Weights for Estimation of Supply of Secondary Metal Due to Obsolescence

n/ Σ wi	0.60	.65	.70	.75	.80
21	√	√	√	√	√
25	√	√	√	√	√
31	√	√	√	√	√
35	√	√	√	√	√

In order to calculate the secondary metal and the total consumption of metal, we go through the following steps.

Suppose, from a historical period, we have inherited a supply of secondary metal S_0 at the beginning of the analysis, say, year, 1. Suppose total metal used in any given year i, is $Z_i = S_i + P_i$,

Where S_i is domestically procured secondary metal and P_i is non-secondary metal used in the economy including domestically produced and imported virgin metal plus imports of scrap.

Then we have

$$S_1 = w_1S_0$$
$$S_2 = w_2S_0 + w_1 Z_1$$
$$S_3 = w_3S_0 + w_2 Z_1 + w_1 Z_2$$
$$S_4 = w_4S_0 + w_3 Z_1 + w_2 Z_2 \; w_1Z_3$$
$$S_5 = w_5S_0 + w_4 Z_1 + w_3 Z_2 + w_2Z_3 + w_1Z_4$$

$$S_j = w_jS_0 + \sum_{i=1}^{j-1} w_{j-i} Z_i$$

$$(\text{If } j > n,\ w_j = 0)$$
$$\text{and } Z_i = P_i + S_i$$

We have data on total consumption of primary metal for 31 years, which are given in the Appendix. So we start the cycle 31 years ago with hypothetical figures for the inherited initial stock as 1000 tonnes, 2000 tonnes, 5000 tonnes and 10,000 tonnes.

TABLE 1.16

Estimates of Secondary Metal (Old scrap)

(Quantities in tonnes)

Period of recovery (years)	Initial stock 5000	10000	15000	20000
			$\Sigma w = .60$	
21	48323	48423	48524	48625
25	44480	44591	44703	44815
31	36939	37039	37139	37239
35	32146	32259	32373	32487
			$\Sigma w = .65$	
21	56192	56327	56462	56596
25	49383	49518	49653	49789
31	40614	40732	40849	40967
35	35229	35358	35488	35618
			$\Sigma w = .70$	
21	62608	62773	62938	63103
25	54495	54657	54818	54980
31	42392	42517	42643	42769
35	38309	38408	38506	31605
			$\Sigma w = .75$	
21	69405	69605	69805	70005
25	59821	60012	60203	60394
31	48326	48485	48643	48802
35	41593	41759	41926	42091
			$\Sigma w = .80$	
21	69951	70144	70337	70529
25	65370	65593	65817	66040
31	52333	52515	52697	52878
35	40923	41090	41257	41423

Note: Σw indicates per cent of metal recovered, $(i - \Sigma w)$ indicates per cent of metal never recovered. Thus, a value of $\Sigma w = .70$ indicates that 30 per cent of copper, once produced, would not be recycled back.

The resultant estimates of secondary metal for 1978-79 are presented in Table 1.16.

It should be noted that these estimates vary with the following parameters:

(i) initial stock;

(ii) sum of weights, incorporating information on what proportion of metal is never recovered;

(iii) average life-cycle of articles in which copper has been used.

In addition, the estimates are also dependent on the schemes of weights which we have used.

It would be observed that the estimates are not very sensitive to the initial stock levels. They are more sensitive to changes in the assumption regarding irrecoverable losses (i.e., $1-\Sigma w_i$) and the length of the period in which the metal is assumed to be recovered.

If we assume that (i) copper used in articles would be recycled back within a span of 31 to 35 years, (ii) 30 per cent of it is never recovered, and (iii) that the inherited stock of metal some 30 years ago was in the range of 5,000 to 20,000 tonnes, we come out with an estimate of about 40,000 tonnes of secondary metal from old scrap for 1978-79.

It has been indicated to us that the recovery period for copper articles for recycling is 25 years plus and that peak recoveries for any given year's supply would occur 12 to 13 years ahead of the year of supply. Similarly, expert opinions in the field indicate that apart from powders and chemicals and antiques, most other copper articles would be brought back into circulation. Given the scarcity of the metal in the country, the rate of recovery is relatively higher than in other countries and 70 per cent recovery seems to be a reasonable assumption, especially since a lot of demand for low-grade and non-electrolytic uses of copper exists in the country.

2

Estimation of Extent of Tax Evasion

In order to estimate the extent of excise tax evasion in copper, we have attempted, as a first step, the reconstruction of a hypothetical tax base that would have been available for taxation in the absence of evasion. Applying appropriate tax rates to different categories of this hypothetical tax base, potential tax revenue is estimated. The excess of the potential over the actual tax revenue is interpreted as evasion. The hypothetical tax base has been constructed, proceeding from the input side, tracing the supply of metal as obtained from primary production, imports, old scrap and marketed process scrap, and relating these inputs to taxable outputs by applying appropriate ratios and conversion factors where necessary. The advantage in using this input-side approach lies in an almost one-to-one correspondence between the weight of the input and that of the output in the context of a specific rate of duty for item 26-A for all items other than pipes and tubes (and blanks and shells, therefor). There are, however, a few snags in following this approach. For some ratios or proportions, reasonably reliable estimates are available; however, the variation may be over a wider range for some others. In order to get over this difficulty, we have attempted to estimate tax evasion by varying the values of a few parameters over a range and study the sensitivity of estimated evasion in response to variations in the values of these parameters.

The exercise relating to the estimation of the extent of evasion has been done with reference to the financial year 1978-79, as mentioned in Chapter 1.

Flow Diagram relating Inputs to Taxable Outputs

The following flow diagram would be helpful in tracing the channels relating inputs to the manufactures that are taxable under item 26-A.

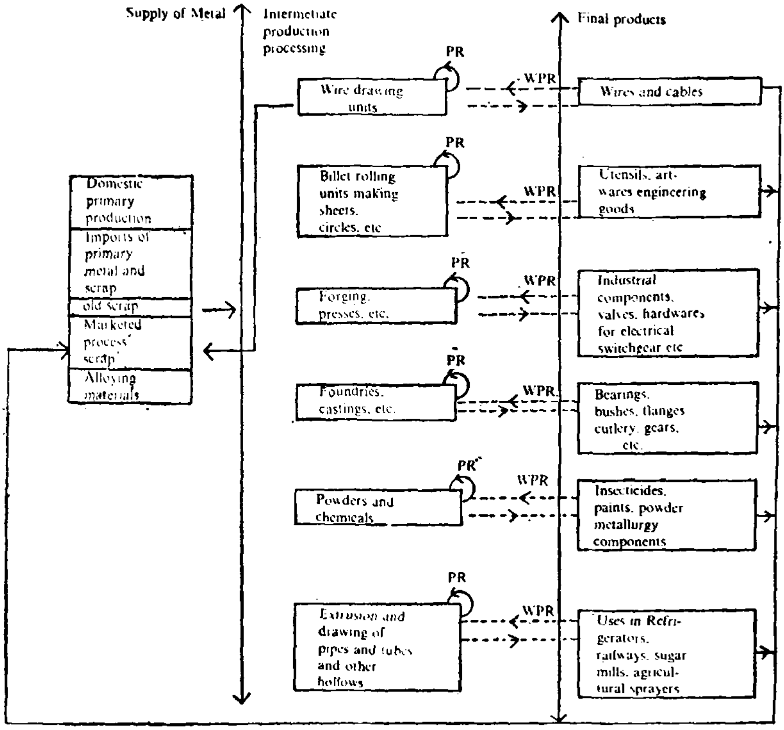
The taxable outputs with reference to the year 1978-79 are: (i) copper in any crude form; (ii) flats, *viz.*, plates, sheets, circles, strips and foils; and (iii) hollows, *viz.*, pipes and tubes. As far as copper in any crude form is concerned, only the production of the primary producer is taxable, subject to minor exceptions. This is in the form of wire-bars and cathodes. Virtually all other production of billets, slabs, ingots, etc., is exempt under Notification 119/66. The inputs for flats and hollows come from the domestic production of primary metal, old scrap, marketed process scrap, imports of virgin metal, and imports of scrap. A substantial proportion of these inputs is, however, channelled into producing outputs that are subject to taxation under other items, e.g., item 338 (electric wires and cables) or item 68 (e.g., brass wires, sections, profiles).

It is necessary, therefore, to estimate the proportion of the total supply of metal which goes into the production of flats and that which goes into the production of pipes and tubes.

Furthermore, process scrap arising in downstream activities in converting flats into final articles is recycled into the manufacture of flats. For this reason, the figure for production of sheets and circles, etc., for purposes of taxation will be higher than the figure for the ultimate consumption of metal in any given accounting period. In order to establish this cleavage, we shall distinguish between (i) the initial supply of metal consisting of virgin copper, virgin alloying materials, imported primary copper and scrap, process scrap, obtained from the market (arising from other sectors) and old scrap that goes into the flats' sector; and (ii) subsequent process recycling of the metal with reference to the down-

FIGURE II.1

Diagram Indicating the Flow of Copper and Copper-Base Alloys



Notes : WPR = Within sector process recycling with reference to downstream activities on the products of a given sector.

PR = Process recycling within the same unit or group of units of production.

Most intermediate productian/processing units cast their own ingots/billets. There are, in addition, a number of units which only cast ingot, billets, etc., and supply these to the processing units.

stream activities for converting these flats into final articles. The implication of this kind of sectoral recycling of metal *vis-a-vis* our method of estimation of the potential tax base is explained below.

Process Recycling between Semi-Manufactures and Final Goods

For purposes of illustration, suppose we start with 100 tonnes of copper in any crude form as the initial supply of metal. Suppose these are converted into trimmed sheets. After allowing for 1 per cent of melt-loss, suppose ultimately 99 tonnes of sheets are made from the crude copper. On these 99 tonnes, duty will be paid at the rate of Rs 700 per tonne assuming that the crude-stage duty liability is deemed to have been discharged.

Now, from these 99 tonnes of sheets, stamping, utensils, and other such articles are punched, cut out or otherwise fabricated. In the process, some scrap will arise. Suppose this is 20 per cent (this figure is used only for the purpose of illustration here) of the 99 tonnes of sheets, i.e., 19.8 tonnes. Suppose, all of this is taken back to produce sheets again. With a melt-loss of 1 per cent in converting scrap to the form of billets, and again a 1 per per cent loss in converting billets to sheets, 19.406 tonnes of sheets are made in the second cycle and are subjected to tax. These sheets will again give rise to 20 per cent scrap during the production of final articles. As this process is repeated, starting out with 100 tonnes of metal, tax will be levied on approximately 123 tonnes of sheets whereas in the end the total weight of final articles will be only 98.51 tonnes. The parameters in this example like the percentage of melt-loss and the proportion of generation of scrap can be varied. However, the main point which should be clear is that whereas 100 tonnes of metal is consumed, partial duty of Rs 700 is paid on a substantially higher amount, namely, 123 tonnes, with reference to the example given above. This process has been tabulated in Table 2.1 for purposes of illustration.

TABLE 2.1

Recycling between Semi-Manufactures and Final Goods*

$l = .99$, $b_1 = .20$

Metal in crude form	Semi-manufactures (trimmed)	Final goods	Process scrap
A or $(b_1 l^2 A)$	lA	$(1-b_1)lA$	$b_1 lA$
100.000	99.000	79.200	19.800
19.602	19.406	15.525	3.881
3.842	3.804	3.043	0.761
0.753	0.746	0.597	0.149
⋮	⋮	⋮	⋮
124.381	123.137	98.510	24.627
$= \frac{A}{1-b_1 l^2}$	$= \frac{lA}{1-b_1 l^2}$	$= \frac{(1-b_1)lA}{1-b_1 l^2}$	$= \frac{b_1 lA}{1-b_1 l^2}$

Key: l=ratio of melt-loss; b_1 = Proportion of recycling

* Each column has been summed up as a geometric series having an initial term and a constant retio. Melt-loss arises at two stages. Parameters values are hypothetical here and used for the purpose of illustration only.

Implicit Equivalence of Taxation of Trimmed and Untrimmed Circles and Sheets

Before we embark upon the exercise relating to the quantification of the extent of evasion, there is another relationship that we need to conceptually clarify. This relates to the rate differential between the effective duty on trimmed sheets and circles and that on untrimmed sheets and circles.

The effective rate of tax on plates, sheets, circles, strips, and foils is Rs 700 per tonne, whereas the tax on sheets and circles, if made on a rolling mill and issued in an untrimmed condition, is Rs 500 per tonne. It appears that this difference has been allowed for so that trimmings arising from untrimmed sheets and circles may not get taxed again and again. For purposes of illustration, we assume that melt-losses are 1 per cent in rolling billets into sheets and circles and 1 per cent in converting the trimmings into billets.

Further, suppose that the trimmings are 15 per cent of the weight of the untrimmed sheets or circles. It is shown in Table 2.2, that a manufacturer, starting with 100 tonnes of metal, can clear either 98.65 tonnes of trimmed sheets and circles at Rs 700 per tonne or 116 tonnes of untrimmed sheets and circles at Rs 600 per tonne, assuming that the sheets and circles are trimmed outside his factory and he recycles these trimmings.

It will be observed that the relationship between the tax rates on trimmed sheets and circles and untrimmed sheets and circles is implicitly governed by the formula:

$$\left(\frac{lA}{1-b_2 l^2}\right) R\,(UNT) = \left(\frac{(1-b_2)lA}{1-b_2 l^2}\right) R(T)$$

where

l = ratio of melt-loss

b_2 = ratio of trimmings to the weight of untrimmed sheets or circles.

R(UNT) = effective rate of tax for untrimmed sheets or circles

R(T) = effective rate of tax for trimmed sheets or circles

Both R(UNT) and R(T) relate to rates where the semi-manufactures arise from metal on which the crude stage duty is deemed to have been paid.

The above relationship can be reduced to

$R(UNT) = (1 - b_2)\ R(T)$

Thus, given R(UNT) and R(T), i.e., Rs 600 and Rs 700 per tonne, respectively, one can work out the value of b_2, i.e., the recycling coefficient implicit in the rate differential which comes out to be 14.28 per cent. Alternatively, given the value of b_2 and R(T), one can work out the value of R(UNT), thus providing the corresponding rate differential. It has been pointed out to us that the appropriate value of b_2 is nearer 25 per cent rather than 15 per cent as implicit in the current rate differential of Rs 100 per tonne.

This implies that the existing rate differential does not fully correct for the recycling of trimmings. We have recommended subsequently for a marginal increase in the differential. For the purpose of the present exercise, we have used

TABLE 2.2

Explanation of Rate Differential between Trimmed and Untrimmed Circles and Sheets

$l = .99,\ b_2 = .15$

Metal in crude form	Sheets and circles untrimmed	Sheets and circles trimmed	Process scrap (trimmings)
A or ($b_2 l^2 A$)	lA	$lA(1-b_2)$	$b_2 lA$
100.000	99.000	84.150	14.850
14.702	14.554	12.371	2.183
2.161	2.140	1.819	0.321
,	,	,	,
,	,	,	,
,	,	,	,
117.235	116.063	98.654	17.409
$= A/(1-b_2 l^2)$	$= lA/(1-b_2 l^2)$	$= (1-b_2)lA/(1-b_2 l^2)$	$= b_2 lA/(1-bl^2)$

Key: l = ratio of melt-loss; b_2 = proportion of trimmings.

the relationship between the taxation of trimmed and untrimmed sheets and circles, and treated all clearances as if they were in the trimmed form only, paying the higher rate of duty but on a lower weight. Thus, in following the input side approach for reconstructing the tax base, we shall be able to consider the total weight of flats only in a trimmed condition. This procedure helps us get round the problem of dividing the potential tax base into trimmed and untrimmed categories.[1] It should further be pointed out that in terms of the actual figures, only a small proportion of clearances relates to untrimmed sheets and circles.

[1] This might involve a minor discrepancy if the implicit ratio of recycling of trimmings in the existing rate-differential does not fully reflect the correct picture of the industry. The discrepancy involved is of the order of Rs 7 lakh per 10,000 tonnes of clearances of untrimmed sheets and circles, if the correct parameters in the industry for the ratio of trimmings is .25, whereas the one reflected in the rate-differential is .15.

Estimation of the Extent of Evasion

We shall estimate potential excise tax revenue from copper by applying effective tax rates to the potential tax bases of the three relevant sub-items of item 26-A, *viz.*, (1) and (1a), (2) and (3), separately. We shall then make an item-wise comparison between the potential and the actual tax revenue, thus providing an estimate of evasion for each sub-item.

a. *Tax revenue from copper in any crude form.* The declared production and clearance of cathodes and wire-bars, respectively, by Hindustan Copper Ltd., for the year 1978-79 were as follows:

		(Tonnes)
	Production	Clearance
Wire-bars	13235.93	12741.48
Cathodes	8112.58	8042.03
TOTAL	21348.51	20783.51

Since the production incentive scheme (Notifn. 198/76) was operative in the year 1978-79, a total of 7557 tonnes were cleared at 75 per cent of the basic duty of Rs 3,000 per tonne, that is, at the rate of Rs 2,250 per tonne. Thus, the total basic duty from copper in any crude form can be calculated as given below:

		(Rs '000)
7557 tonnes at Rs 2,250	=	17003
The remaining amount i.e., (20783.51 − 7557) = 13226 tonnes at Rs 3,000 per tonne	=	39678
TOTAL	=	56681

This, of course, matches the actual tax revenue raised which is Rs 56679 thousand.

In the year 1978-79 the simplified procedure was also applicable under which some copper in any crude form was cleared by manufacturers other than the primary producer (a total of 265 tonnes) giving a total revenus of Rs 104 thousand.

Thus, in the case of item 26-A(1, 1a), we do not have any evasion to highlight.

b. *Tax revenue from sheets, circles, etc.* In order to determine the tax base for item 26-A(2), we represent relevant variables and parameters in the following manner:

(i) A is the amount of virgin metal (domestic plus imported allocated (used) in the production of flats;

(ii) a proportion r of total available[2] scrap (B+I+P), where B is domestic old scrap, I is imported scrap and P is marketed process scrap, is used in the production of flats;

(iii) due to the addition of alloying materials, the weight of the virgin metal goes up in weight by a factor (n-1); and

(iv) due to the addition of alloying materials, the weight of the scrap utilised in the manufacture of flats goes up by a factor (m−1)

Thus, for the initial cycle, the total weight of copper and copper-base alloys is

$$[nA + mr\,(B + I + P)]$$

Due to process recycling between flats cleared in a trimmed shape and downstream activities in converting these flats into final articles, the initial weight is increased by a factor $(1/1-bl^2)$ as discussed in Section 2 of this Chapter.

The total production of flats, starting with an initial amount and going through the sectoral process recycling *vis-a-vis* the downstream activities of this sector, would come out to be:[3]

$$[nA + mr\,(B + I + P)]\left(\frac{1}{1 - bl^2}\right)$$

This provides us with the hypothetical tax base on which the necessary effective rate of duty should be applied.

We have used the following values for the relevant variables and parameters.

A = 10,000

B = 40,000 (as estimated in Chapter 1)

[2] This does not include sectoral recycling of process scrap which is accounted for subsequently.

[3] The expression within brackets takes the place of 'A' in Table 2.1, and for b_2 we are just writing b.

$$
\begin{aligned}
I &= 22{,}264\\
P &= 6{,}720\\
n &= 1.35\\
\left.\begin{array}{l} m = 1.29 \\ r = 0.40 \end{array}\right\} &\text{ (and a range of values for m.r taken together)}\\
l &= 0.985\\
b &= 0.35 \quad \text{(and a range of values)}
\end{aligned}
$$

For some of the parameters, we have used what we consider are relatively firm estimates. For some others, we have simulated over a reasonable range of values. The derivation of the levels of the determinants is discussed below variable by variable.

(i) *Estimation of use of primary copper in flats (A).* The total production of primary metal in the form of wire bars and cathodes in 1978-79 was 20,785 tonnes. Furthermore, 68,880 tonnes of primary metal were sold by the MMTC during this year. Out of a total of 89,663 tonnes, about 18 per cent was allocated to the sector labelled "semis and alloys" consisting primarily of flats, hollows (i e., pipes and tubes), and castings. Thus, about 16,139 tonnes was allocated to this sector.

From the production figures for pipes and tubes declared to Central Excise authorities, we have worked out (see Section c) a figure of 2,500 tonnes (approximately) as virgin copper consumed in the production of pipes and tubes. Furthermore, on a rough estimate, approximately 3,700 tonnes of virgin copper are being allowed for as having been used in the manufacture of other products of alloys. Thus, we have a figure about 10,000 tonnes of virgin metal used in the manufacture of flats at the very minimum.

This figure is corroborated by the following analysis. A capacity of about 45,000 tonnes per annum for making flats exists in the country in the organised sector. According to the information provided to us by the Indian Copper Information Centre, Calcutta, about 40 per cent of the capacity was utilised in the organised sector in 1978-79. In their estimate, something like 10,320 tonnes of copper and alloying materials were used by the organised sector out of which the share of copper was estimated to be 7,998 tonnes. Apart from some process scrap, most of the copper used by the organised sector is virgin metal. Making a deduction of 1,500 tonnes for the use of process scrap, and allowing for at least 2,500 tonnes of consumption of virgin copper in the non-organised sector, a figure of 10,000 tonnes of primary copper consumed in the manufacture of flats is obtained. This figure, thus, appears to be a reasonable estimate.

(ii) *Estimation of the level of marketed process scrap (P)*. For this purpose, it is useful to divide manufacturers of copper into the following categories:

(a) Drawn wire products (winding wires, wires, cables)
(b) Rolled products (sheets, circles, strips)
(c) Extruded/drawn products (solids and hollows, other than (i) above
(d) Forged products
(e) Cast products
(f) Powders and chemicals

The manufacturers of rolled, forged and cast products are likely to use all of their process scrap arising in their own factories or in the downstream activities related to their products. On the other hand, manufacturers of wires and cables are likely to put out a substantial portion of their process scrap on the market. It is estimated that something like 20 per cent of process scrap is generated in this sector and about 80 per cent of this is sold in the market. Most of the input in this sector is virgin copper. Some good quality old scrap is also used.

The quality of available domestic plus imported virgin copper was about 90,000 tonnes in 1978-79. According to the sector-wise allocation figures (*Report of the Working Group on Non-Ferrous Metals*, 1980), 50 per cent of this quantity was assigned to the wires and cables sector. Thus, we have 45,000 tonnes of copper utilised in this sector. Furthermore, about 5 per cent of old scrap (40,000 tonnes), i.e., 2,000 tonnes may also be included as utilised in this sector, giving a total of 47,000 tonnes. Using the ratios mentioned earlier, 8,400 tonnes of this quantity is scrapped and 6,720 tonnes of it is out to the market, the rest being used in the wires and cables sector itself.

The term "market process scrap" in this discussion is taken to mean that scrap which is generated in the production activities of one sector including the downstream processing of its products, but which becomes available for use in other sectors[4].

(iii) *Estimation of production of utilisation of scrap in teh flats' sector* (r). The main user sectors of old scrap, marketed process scrap and imported scrap are the manufacturers of rolled, cast and forged products. From available information from the trade, as also from a comparison of installed capacity of different types of producers such as forgings, foundries, rollers, extruders, etc., we have worked out the following ratios as pertaining to the use of old scrap in different sctors.

TABLE 2.3

Sector-Wise Utilisation of Scrap

Sector	Percentage share
Drawn products (wires)	5
Rolled flats	40
Extruded/drawn hollows and solids	10
Forged and cast products	35
Others	10

For our purposes, only the percentage share of 40 for the rolled products is pertinent. Even if the relative shares of other sectors may be marginally in error, the relevant point for the present exercise is that their shares taken together should add to about 60 per cent.

(iv) *Estimation of the alloying coefficient* (n). According to the general understanding in trade, as also the figures supplied to us by the Indian Copper Information Centre,

[4] Inter-sectoral exchanges of process scrap between other sectors are minimal and are assumed to cancel out in the present context when movements to and from the flats' sector are considered.

Calcutta, about 25 per cent of unalloyed copper is used in making copper flats, while the remaining 75 per cent would be used for making flats of alloys. Using a ratio of 65:25 between copper and alloying materials, after such materials are added, the initial weight of the primary metal used in the flats' sector (A) is raised to the following level:

$$.25\,A + \frac{100}{65}\,(.75\,A) = 1.3538\,A$$

This gives a value of $n = 1.3538$; or, $(n-1) = .3538$. Thus, the weight of the primary metal goes up by about 35 per cent due to the addition of alloying materials in the flats sector.

(v) *Estimation of the alloying coefficient* (m). M indicates the factor by which the weight of scrap used in the manufacture of copper flats and flats of copper-base alloys goes up due to the addition of alloying materials.

The scrap used in the manufacture of flats, in terms of the symbols we have used, is

$$r\,[(B + P) + Ic + Ia]$$

where Ic and Ia, respectively, represent imports of copper scrap and scrap of copper-base alloys. For these, exact figures are available, *viz.*, 9,886 and 12,378 tonnes, respectively, for the year 1978-79.

Domestically available scrap (B + P) is also of two types: copper scrap and scrap of copper-base alloys. The dominant portion of allocation of primary copper in the year 1978-79 as also in earlier years has been for copper products, especially wires and cables. The proportion allocated for alloys has remained below 20 per cent over the years. Considering that about 80 per cent of (B + P) would be scrap of copper-base alloys, we have the following figures.

Utilisation of scrap in the manufacture of flats (1978-79)

Copper scrap: $r\,[\,.80\,(B + P) + Ic\,]$	= 18905
Copper-base alloy scrap: $r\,[\,.20\,(B+P) + Ia\,]$	= 8689
	= 27594 (Tonnes)

where $r = .40$, as worked out earlier.

Since demand for pure copper flats would be met mostly by utilising virgin copper (for electrolytic grade uses) as also to some extent by using scrap of copper, we have supposed that 30 per cent of copper scrap (i.e., 5672 tonnes) would be uesd in making copper flats, and the remaining portion (i.e., 13,234 tonnes) would be used for flats of alloys. The weight of this would be raised by a factor (100/65) assuming an average 65:35 ratio for copper and alloying materials in this sector. Thus, a total weight of 20,560 tonnes, due to the conversion of this portion of scrap (13,234 tonnes) into copper-base alloys, is obtained.

Furthermore, even for the scrap of alloys that are to be further used in making alloys, there will be some addition of alloying materials to compensate for the loss of zinc, etc., over the past periods and to obtain desirable ratios. The alloying proportion, however, will be much smaller in this case. We assume that this factor is (100/90). The relevant figure for copper-base alloy scrap, *viz.*, 8689 tonnes, raised by this factor, provides 9654 tonnes of copper base alloys.

Thus, starting with a total weight of 27,594 tonnes of metal, we obtain a weight of $(5672 + 20{,}360 + 9654) = 35{,}686$ tonnes of metal, giving us a value of $m = 1.2933$.

(vi) *Estimation of extent of evasion in plates, sheets, circles, etc.* If we represnt the hypothetical tax-base by the symbol Q, we have,

$$Q = [\,nA + mr\,(B + I + P)\,]\,(1/1 - bl^2)$$

Since, generally, there is always a difference between production and clearance, we modify the hypothetical tax base above by the clearance-to-production ratio for flats in 1978-79 which is .9789, so as to obtain the quantity of clearance corresponding to Q. Applying an effective tax rate of Rs 735 per tonne (this includes special excise duty at 5 per cent of the basic duty as in 1978-79) on this adjusted figure, and taking the difference between this and the actual revenue raised from flats including special excise duty (Rs 41,428 thousand), we get the amount of evasion, say R, as below:

$$R = [(.9789\ Q)\,(.735) - 41428] \qquad \text{(Rs'000)}$$

Evasion as a percentage of potential revenue in the absence of evasion is then calculated as below:

$$E = (R/\,PR) \times 103 \text{ (per cent)}$$

where PR = potential revenue, i.e., R + 41428

For 1 we have used a value of .985, indicating 1.5 per cent of irrecoverable loss at the relevant stages. The levels of A = 10,000 tonnes and (B + I + P) = 68,984 tonnes are taken as relatively firm figures. Similarly, the value of n = 1.35 is also taken as a firm figure. We are then left with m, r and b where perhaps a range of values should be considered. Since m and r occur together in the formula given above, we can study the effect of changes in the value of (m.r) and b.

In our estimate, the plausible value of m and r are, respectively, 1.29 and .40, given m.r = 0.516. For b, in our opinion, the plausible value is .35, i.e., 35 per cent recycling of metal *vis-a-vis* downstream activities relating to the flats' sector. Evasion, E, with these values for the relevant parameters comes out to be *21.1* per cent of potential tax revenue and Rs 11,257 thousand, i.e., Rs 112-57 lakh in absolute terms. This is 27.17 per cent of actual tax revenue for item 26-A (2).

With a view to simulating over a range of values for (m.r) and (b) we have calculated the following values for E.

TABLE 2. 4

Estimate of Extent of Evasion (E) with Reference to Two Parameters

(Per Cent)

	b				
m.r	.32	.34	.35	.36	.38
	Extent of evasion for different values of b and m.r				
0.510	17.21	19.53	20.70	21.86	24.19
0.512	17.43	19.76	20.92	22.08	24.41
0.514	17.67	19.99	21.55	22.30	24.62
0.516	17.90	20.21	21.37	22.52	24.83
0.518	18.13	20.43	21.59	22.74	25.04
0.520	18.35	20.66	21.80	22.95	25.25

Although a range of the values indicating the extent of evasion has been provided here, in our opinion the likely values of the parameters are such that the extent of evasion should be taken to be centred in this range. It would further be observed that although there is a positive change in the extent of evasion as the values of b or m.r are increased, the increases are not very substantial, for any single-step change, with the sensitivity being slightly more for variations in b rather than m.r.

c. *Tax revenue from pipes and tubes.* From the *Central Excise Year Book* for 1978-79 we obtain the following figures pertaining to pipes and tubes.

	Production	Clearance	Revenue (basic duty) (Rs '000)
Statutory rate	M.T. 304	228	2597
	No. 60	50	
Notifn. 213/63	M.T. 2649	2500	22387

For item 26-A (3), where an *ad valorem* tax rate is involved, we have concentrated on estimating evasion due to undervaluation. Furthermore, there is duty avoidance when pipes and tubes cleared at lower values and subjected to further draws in separate premises, at which point no further duty is charged. The method of estimation which we have used in the context of pipes and tubes, works out jointly the extent of revenue loss due to undervaluation and the duty-avoidance mentioned above. It should also be noted that we have not considered direct suppression of output as a prevalent means ef evasion in this context.

We have attempted to work out the revenue implication of evasion and avoidance jointly, by comparing the average implicit price of pipes and tubes in the figures reported above with the weighted average ex-factory price of pipes and tubes obtained from the trade for the year 1978-79.

According to the information provided by the trade, about 45 per cent of the tubes are copper tubes while the remaining are of copper-base alloys.

For calculating the average implicit price relating to the clearances under Notifn. 213/63 we proceed in the following manner. Suppose the average price per tonne is **P**. Using the proportion given above, 45 per cent of copper tubes from a total 2500 tonnes of clearances, would indicate the following apportioning of the total weight:

Pipes and tubes of copper	1125 (tonnes)
Pipes and tubes of copper-base alloys	1375 (tonnes)

In the case of pipes and tubes, the average ratio of copper to alloying materials has been indicated as 70:30. This information is needed for working out the amount of set-off for the duty paid at the crude stage which is applicable for all the copper in copper tubes and the copper portion in the tubes of copper alloys.

Thus, the total set-off considering basic plus special duty which was 5 per cent of the basic duty in 1978-79, can be calculated as below:

$(1125)(3.150) + (.7)(1375)(3.15) = 6575$ (Rs '000)

For an ex-factory price of P, duty (basic + special) on tubes comes out to be

$(2500)(.294)\,P - 6576$ (Rs '000)

This should be equal to 22387 plus 1119 for the special duty (i.e., 23506) (Rs '000)

Thus,

$$P = \frac{23506 + 6576}{(2500)(.294)}$$

$= 40.93$ (Rs '000 per tonne)

Similarly, the average implicit price with reference to the clearance of 228 tonnes plus 55 numbers at the statutory rate can be worked out. An average weight of 100 kg per pipe is used to convert 55 numbers into 5.5 tonnes.

This figure is added to 228 tonnes to obtain a total weight of 233.5 tonnes. Applying a tax rate of 29.4 per cent, we obtain $(233.5)\,P\,(.294) = 2597 + 130 = 2727$

or $P = 39.72$ (Rs '000)

The implicit average price of pipes and tubes at which duty has actually been paid, thus, works out to be in the range of Rs 40 to Rs 41 per kg.

This figure may be compared with the actual ex-factory prices for the main varieties of pipes and tubes as obtained from some integrated units producing pipes and tubes. These prices along with relevant weights for different categories of pipes and tubes *vis-a-vis* their share in the total production are given below:

	Copper tubes	70/30 Brass tubes	Admiralty brass tubes	Aluminium brass tubes
Price (Rs per kg.)	50	42	48	52
Proportion in total production (per cent)	45	15	30	10

The proportions are based on expert opinions obtained from the trade. The prices relate to the actual declared ex-factory prices before the system of declaring cum-duty prices was introduced and refer to mid-1978. There are a few other varieties of pipes and tubes of alloys accounting for a minor proportion of the total output and these have, in general, a higher price than the ones given above due to a higher cost of alloying materials. So, if anything, the calculation of the weighted average price here may be a slight underestimate.

The weighted average price from these figures comes out to be Rs 48.40 per kg. Making a deduction of Rs 1.40 per kg. from this to allow for slightly lower variable costs in the smaller units as also to adjust for any upward bias in our estimates of prices due to the availability of limited information, and taking the higher figure of Rs 41 per kg. as the implicit average price at which taxes have been paid, it appears that there is still a difference of Rs 6 per kg. This, in our view, indicates the extent of undervaluation and avoidance. Applying this figure to a total tonnage of (2500+233.5), we can indicate the extent of evasion due to undervaluation plus avoidance relating to pipes and tubes, as

$$(2733.5)\ (6)\ (.294) = 4822 \qquad \text{(Rs '000)}$$

As a percentage of revenue raised from pipes and tubes including the special excise duty (this total being Rs 262.33 lakh), the amount of evasion and avoidance is 18.38 per cent. With reference to the total potential revenue (i.e., Rs 310.55 lakh), this amount is 15.53 per cent.

In addition, there might be some evasion due to clandestine removal of pipes and tubes. We have not been able to calculate the extent of evasion due to this source. However, we are of the opinion that this is not likely to be substantial as a large portion of the total output of pipes and tubes produced in the country comes from the organised sector. Furthermore, in order to take advantage of the set-off provision, inputs have to be properly related to outputs. In any case, the extent of evasion calculated by us should be taken as the lower limit.

Incidentally, we have derived a figure of 2470 tonnes (primary copper plus own process scrap) as copper consumed in 1978-79 in the production of pipes and tubes. This figure has been used in an earlier section. For working out this figure, recall that behind the clearance of 2500 tonnes of tubes we have estimated a figure 2087.5 tonnes of copper. Using the same method, we estimate 195 tonnes of copper behind the clearance of 233.5 tonnes of tubes at the statutory rate. This gives a total 2282.5 tonnes of copper which is raised by the production to clearance ratio of 1.0825 in the case of pipes and tubes in 1978-79 to account for the difference between production and clearance. Thus, a total of approximately 2470 tonnes of copper consumed in the production of pipes and tubes is obtained. This figure would be raised to about 2500 tonnes, if we allow for 1.5 per cent of irrecoverable losses between inputs and outputs.

d. *Evasion in 26-A.* Considering all the sub-items together, we have a total of estimated evasion (plus avoidance in pipes and tubes) equal to Rs (11,257 + 4822) = 16,079 thousand. The actual revenue in 1978-79 from item 26-A was Rs 1,21,663 thousand. Both the figures given above are inclusive of the special excise duty. Evasion (and avoidance) as a percentage of the potential tax revenue for the item as a whole comes out to be 11.67 per cent. As a percentage of actual tax revenue from item 26-A, this figure is 13.22 per cent. It should be clear that the percentage of evasion for the item as a whole goes down because revenue from "copper in any crude form", where there is virtually no evasion, is now being included in the denominator. It also reduces the sensitivity of evasion with reference to variations in the values of the parameters considered in section b, thus making the results more robust when the entire item is considered as a whole.

Comments on Modes and Methods of Evasion in Copper

Our results indicate that evasion takes place basically in relation to items 26-A (2) and 26-A (3). In the context of sheets, circles, etc., the most prevalent means of evasion appears to be clandestine removal of output. For pipes and tubes, there is some evasion through undervaluation. This is supplemented by avoidance when advantage is taken of the legal definition of the term "manufacture" which requires, among other things, the transformation of a good such that it moves from one sub-item of the Central Excise Tariff to another sub-item. Thus, if pipes and tubes are made out of duty-paid pipes and tubes, they remain item 26-A (3). Since no "manufacture" is involved, no further duty can be attracted even though the new pipes and tubes have an enhanced value.

In order to get round this problem the category of "blanks and shells, therefor" has recently been introduced as item 26-A (4). Blanks and shells are extruded products. If they are subjected to just one draw, they can be cleared as pipes and tubes. Again, further duty liability would not arise when these pipes and tubes are subjected to further draws. Thus, the basic problem remains even after the introduction of a new sub-item although it is now one step removed in comparison to the situation in 1978-79 when item 26-A (4) was not existent.

The modes of evasion mentioned above are used, in our view, systematically and extensively. In addition, a few other modes and methods of evasion can be mentioned which are subject to sporadic use in isolated instances.

In the context of the rate differential between trimmed and untrimmed sheets and circles, sometimes the former products are cleared in the latter category which bears a lower rate of duty. This can be labelled as misclassification. As far as our method of estimation of evasion is concerned, this amounts to partial suppression of output. If duty is paid on X tonnes of output at Rs 600 per tonne, whereas the appropriate rate is Rs 700 per tonne, it would amount to a suppression of (700-600) X /600 = X /6 tonnes in output.

Sometimes copper articles are misclassified as item 68 goods either deliberately or due to lack of firm defintions. Thus, 26-A (2) products may be misclassified as shapes, sections or profiles or other such products and advantage taken of the exemption of upto Rs 30 lakh of clearance under item 68. This also amounts to a suppression of output.

In the context of the distinction between wires which do not fall under item 33-B (and thus fall under item 68) and wire-rods which fall under item 26-A, it is advantageous for the producers to classify these as item 26-A goods, thus incurring no additional tax liability. We have not attempted to quantify this aspect of evasion. In any case, it would be interpreted as evasion of tax under item 68 rather than item 26-A.

Before "waste and scrap" was introduced as a separate sub-item in the tariff relating to item 26-A, manufacture of ingots, billets, etc., using imported stock of scrap of which no countervailing duty under item 26-A had been paid, could not have availed of the exemption under Notifin. 119/66, as it then existed. In case such exemption was utilised by virtue of non-declaration of output to the tax authorities, it would amount to evasion. However, this problem has since been solved by introducing waste and scrap as a separate item under 26-A, so that appropriate countervailing duty can be levied.

It is arguable that if a job order is for untrimmed sheets and circles, and if hired labour is used to trim the sheets and circles in the premises of the job rollers, those sheets and circles should first be cleared in the untrlmmed condition. It has been argued that the process of manufacture is complete even while the circles are uncut and they should be so cleared before trimming is done. It is true that such clearances in an untrimmed shape would result in a minor revenue advantage to the government as full correction for the recycling of trimmings has not been done in the rate differential of Rs 100 in the two rates, as argued earlier in this chapter. This revenue advantage, however, does not appear to be intentional, and we have argued in Chapter 3 that the rate differential should be increased so as to fully take account of the recycling of trimmings.

In some instances, tubes such as "torch bodies" have been misdeclared as falling under item 68 and advantage taken of either the minimum exemption limit or the fact that the manufacture may have been done without the aid of power or machines. Such exemption would not be admissible if the relevent goods are proparly classified as falling under item 26-A. This is also a case of misclassification.

The declaration of copper waste in the form of scales as an item 26-A good, where duty liability would not arise if the waste arises from duty-paid copper, also amounts to evasion. Properly classified, scalings, dross and slag do not fall under item 26-A and should pay duty under item 68.

Sometimes imported and new copper pipes and tubes, after some deliberate roughing up, may be cleared as scrap, paying a lower amount of specific countervailing duty and then sold in the market after polishing or a draw as new pipes and tubes.

It should be pointed out that although we have mentioned various methods and modes of evasion, we have attempted to quantify evasion only with reference to what we consider systematic and extensive evasion. Evasion under the other categories is not expected to be substantial.

Comments on an Anomaly in the Production and Clearance Data in the Central Excise Year Books

From the *Statistical Year Books of Central Excise*, yearwise data on production reported and clearances effected under the title, "crude copper and copper manufactures, on which duty has not been paid at any previous stage" may be compiled as given below:

TABLE 2.5

(Tonnes)

Year	Production	Clearance
1969—70	13575*	9897
1970—71	12192	11576
1971—72	12283	10972
1972—73	14293	12067
1973—74	14249	13584
1974—75	12156	10199
1975—76	16987	13045
1976—77	29269	28910
1977—78	49467	28443
1978—79	81350	51732

* Figure mentioned as 18575 in the 1978—79 *Year Book* and as 13575 in earlier *Year Books*.

Source: Directorate of Statistics and Intelligence, Central Excise and Customs, *Statistical Year Book*, 1978—79, Dew Delhi.

It would be observed that in every year, without exception, production is more than the clearance. This excess should be carried over to the next year. If in some years clearances were more than production, over time the differences would get cancelled. However, since production continues to be always more than the clearance, it is implied that there is a stock of uncleared production at the end of 1978-79 of an amount equal to (2,55,821—1,90,425/=65,396 tonnes. This appears to be quite illogical. Although we are not saying that this should be taken as evasion, it is clear that the matter should be checked by the data collecting authorities carefully so as to locate the source of the anomaly. A similar remark can be made about the production and clearance data under the title "crude copper and copper manufactures including pipes and tubes made from duty-paid copper". Apart from misprints, some double-counting might also be involved.

Summary of Findings

The following summary (Table 2.6) may be helpful in highlighting the main conclusion regarding the quantification of the extent of excise tax evasion in copper.

TABLE 2.6

Extent of Excise Tax Evasion in Item 26-A : Summary

(per cent)

Evasion in	As a per cent of Actual tax revenue	As a per cent of Potential tax revenue
26–A (1, 1a) "Copper in any crude form"	Nil	Nil
26–A (2) sheets and circles, etc.	27.17	21.10
26–A (3) pipes and tubes*	18.38	15.53
26–A copper	13.22	11.67

* Includes avoidance.

3

Rationalisation of Tariff

In discussing the rationalisation of the tariff relating to item 26-A, our main focus is on the issues relating to evasion and avoidance. In order, however, to make this discussion more comprehensive, we have also brought within the purview of this analysis some relevant allied issues. These relate to disputes about definitions of various copper products and the interface of item 26-A with the residuary item 68, the question of specific *vs ad valorem* duty for pipes and tubes, classification of sub-items of item 26-A in relation to the classification in Chapter 74 of the customs tariff in the context of the levy of countervailing duties, and the relative burden of the excise tax on different types of copper manufactures.

As far as evasion and avoidance are concerned, our main findings are that there is suppression of output of flat products [26-A (2)], and that there is undervaluation and avoidance in the context of pipes and tubes [26-A (3)]. Our recommendations dealing with these aspects of the issue are (i) transfer of partial duty on sheets, etc., to the crude stage, and (ii) making the duty on pipes and tubes specific-cum-*ad valorem*. However, these options have to be examined carefully. In order to open up these issues as also to highlight other aspects of the tariff, we have taken up the question of rationalisation of the tariff for item 26-A on a broader plane.

In this context, it has to be considered as to how far, within the overall canopy of the revenue objective of the government, the perspectives of the manufacturers and the administering authorities can be accommodated in order to increase production and productivity and minimise evasion and avoidance in this industry. There is thus a need to examine these issues from the viewpoints of (i) the primary manufacturer of copper; (ii) secondary re-rollers of copper-making sheets, circles, etc.; (iii) manufacturers of pipes and tubes; (iv) tax-administering authoritise; and (v) users of copper products at stages other than those covered by item 26-A.

Since the impact of the tax at the primary stage is substantial at the existing rates, it would be useful to discuss the implications of the tax for the primary manufacturer in some detail.

Primary Manufacturer of Copper

With a specific rate of duty at the crude stage, it does not appear likely that there would be any evasion of duty by the primary manufacturer of copper in the country, especially as the firm is a government undertaking. However, there are several issues that need to be analysed in the context of the production of primary metal in the country *vis-a-vis* excise taxation. It should be borne in mind that copper prices in India are based on the London Metal Exchange prices and are fixed by the MMTC. The primary manufacturer has, therefore, no control over the price of virgin copper.

Questions relating to excise taxation which mainly concern the primary producer are taxation of inputs, differential incidence of the tax if it is administered at any early stage in the production cycle, and duty rebates under production incentive schemes. In this context, the following points need to be considered.

a. *Taxation of cathodes and/or wire-bars.* Hindustan Copper Ltd. produces cathodes which fall under item (1) of 26-A and from these cathodes it produces wire-bars which fall under item (1a) of 26-A. Cathodes are electrolytically refined copper and they have many direct applications. Cathodes are melted and cast in wire-bar moulds to make wire-bars. In this conversion, about 1.5 per cent of melt-loss is involved. In order to conserve energy, where cathodes can be used directly, e.g., in making alloys, they are so cleared from the factory after paying the appropriate amount of duty. A government recommendation to this effect, i.e., that cathodes should be directly sold, also exists.

As soon as cathodes are produced, they are identified as copper "in any crude form", for purposes of tax under item 26-A. It is clear that for cathodes which are cleared from the factory for users outside the factory, the appropriate amount of duty should be discharged. In relation to the cathodes that are put to captive use, the practice in the past was to charge duty when the wire-bars made out of these cathodes were cleared from the factory, in pursuance of the "later the better" principle. In view of the provision of Notifin. No. 20/81 dated 20.2.1982 pertaining to Rules 9 and 49 of the Central Excise Rules, 1944, the "later the better" principle has since become redundant, as explained below.

The present practic is to ask for clearance on payment of duty at the cathode stage for those cathodes also which are to be captively consumed, and allow proforma credit adjustment. Once wire-bars are manufactured and cleared from the factory, the duty-liability has to be discharged. This duty liability is adjusted in the proforma credit balance of the manufacturer. The effective duties for cathodes and wire-bars are equal, *viz.*, Rs 3,300 per tonne [1]. However, about 1.5 per cent of melt-loss (after taking into account the re-cycled recoverable waste) is involved in the production of wire-bars from cathodes. In view of this, when we consider the two systems of administering the tax mentioned above, the following picture emerges.

A comparison of the two systems, namely, "duty-paid clearance at cathode stage and availing of proforma credit for clearancc at wire-bar stage", and "duty on cathodes/wire-bars at clearance from factory only" clearly indicates that the former procedure would turn out to be substantially costlier to the producer. In order to clarify this, consider the following hypothetical example. Suppose the primary manufacturer clears 11,820 tonnes of wire-bars, captively consum-

[1] Including special excise duty.

ing 12,000 tonnes of cathodes, annually. The corresponding monthly figures are 985 and 1,000 tonnes, respectively. Suppose the time-lag between the cleurance of 1,000 tonnes of cathodes and the clearance of 985 tonnes of wire-bars made out of these cathodes is one month.

Suppose the primary manufacturer clears 1,000 tonnes of cathodes on the first day of the month by depositing Rs 33 lakh in the PLA. It also takes proforma credit on the same day, thus transferring this amount to RG-23. On the last day of the month suppose 985 tonnes of wire-bars are cleared. The duty liability is Rs 3250.5 thousand which is debited to RG-23 and the balance of Rs 49.5 thousand remains in RG-23. Suppose this process is repeated twelve times a year. The relevant figures are given in Table 3.1.

TABLE 3.1

Implications of Duty-Paid Clearance of Cathodes with Proforma Credit Adjustment for Wire-Bars

	(Tonnes)						(Rs thousand)
Date	Clearance of		PLA		RG-23		
	Cathodes	Wire-bars	Credit	Debit	Credit	Debit	Balance
First day of month	1,000	—	3,300	3,300	3,300	—	3,300
Last day of month	—	985	—	—	—	3250.5	49.5
Repeated 12 times							
First day of last month	1,000	—	3,300	3,300	3,300	—	3,495
Last day of the year	—	985	—	—	—	3250.5	594
TOTAL	12,000	11 820	39,600	39,600	39,600	39,006	594

In this process, government revenue comes from the deposits on the first day of each month of Rs 33 lakh per month multiplied by 12. The balance of Rs 5.94 lakh remains in RG-23. This amount, however, cannot be transferred to the PLA nor can it be refunded. It appears that it cannot also be utilised for payment of duty on cathodes which is being done through the PLA. As such this money is lost to the producer for good. The relevant provisions of Rule 56-A are quoted below:

"(3) (vi) (a)

The credit of duty allowed in respect of any material or component parts may be utilised towards payment of duty on any finished excisable goods for the manufacture of which such material or component parts were permitted to be brought into the factory under sub-rule 2 or where such material or component parts are cleared from the factory as such, on such material or component parts.

(vi) (b)

No part of such credit shall be utilised save as provided in sub-clause (a) or shall be refunded in cash or by cheque".

Furthermore, in comparison to the "later the better" principle where payment of duty would have been Rs 32.505 lakh at the end of each month in this example, the manufacturer has to obtain a credit of Rs 33 lakh for a period of one month, the process being repeated 12 times. This is so because he will get the tax element back from the customer only when the wire-bars are cleared at the end of the month, with reference to this example. The interest cost to the producer, for obtaining this credit, calculated at the rate of 15 per cent per annum, is thus Rs 4.95 lakh. In all then, in the clearance of 12,000 tonnes of wire bars, the additional cost to the manufacturer is (i) Rs 5.94 lakh due to the locked-up money in RG-23, and (ii) Rs 4.95 lakh due to the credit cost for obtaining money at an earlier stage. The total of these two elements adds to Rs 10.89 lakh, i.e., about Rs 11 lakh per year in the above hypothetical example.

The effect of point (i) above, as long as the duty on cathodes and wire-bars are at the same rate, is to virtually make the producer of copper pay duty on melt-losses which are never recovered and which never reach any users of the product. It would be appropriate if the duty is charged on cathodes as item 26-A (1) when they are so cleared from the factory, and on wire-bars as item 26-A (1a), when they are so cleared from the factory. Duty may not be charged on all the cathodes, and again on wire-bars allowing proforma credit for the reasons already mentioned. This might involve invoking the "later the better" principle. However, recent amendments to Rules 9 and 49 of the Central Excise Rules, 1944 have the effect of making this principle inconsistent with the amended rules. Another option which might be considered in order to get round the problem raised above is to merge sub-items (1) and (1a) and redefine them in consonance with the classification in the Customs Tariff. Subsequently, we have attempted to justify this on other grounds also.

b. *Scrapping of moulds.* Anode moulds, wire-bar moulds, mould plates, and starter sheet blanks are exempt from duty under Notifn. No. 236/75 from the whole of duty if: (i) these are intended for use by the primary producers during the manufacture of copper, in the factory of production in which such anode moulds, wire-bar moulds, mould plates or starter sheet blanks had been manufactured; and (ii) the anode moulds etc. are melted, after such use in the said factory.

Due to technical reasons, many a time it is not feasible to remelt used anode moulds, etc., and these are to be sold as scrap. In this case, since condition (ii) above is not satisfied, the exemption under Notifn. No. 236/75 is not admissible. As such, duty is chargeable on fresh moulds. Later when they are cleared as scrap arising from duty-paid metal, no more duty is to be paid. It would be desirable to modify condition (ii) above to stipulate that if they are not melted after such use in the said factory, they can be cleared as item 26-A (1b), after payment of duty. This would harmonise the situation and allow duty exemption on all fresh anode moulds, charging duty only on those which are cleared out of the factory as scrap.

c. *Taxation of oxygen used as an input.* In the production of copper from copper are, reverts, that ore solid mined intermediate products, varying from 25 to 40 per cent of the matte treated in convertor, result. These reverts are treated in oxygen-enriched convertors for recovering copper. The use of oxygen speeds up removal of impurities and is an essential part of the process. It is comparable to the use of oxygen in the LD process of steel making. There is an exemption given to the oxygen used for manufacturing iron (item 25), steel ingots (item 26) and iron and steel products (item 26AA), vide Notifn. No. 224/75 under similar circumstances. Since the primary producer does not have any control over the price of its final product, feasibility of extending the exemption mentioned above to item 26-A may be considered.

d. *Revised definition of alloys.* Since 18.6.1980 copper has been defined to include any alloy in which copper predominates by weight over each of the other metals. In view of this change in the definition, it is possible to construe, though mistakenly, that copper concentrates, copper matte and copper blister, if they contain more than 50 per cent of copper, should be cleared after payment of duty within the factory for further captive consumption.

It would be anomalous to treat copper concentrates, matte and blister as copper alloys. This matter should be clarified through executive instructions.

Manufacturers of Flats

It appears that the greatest scope of tax evasion is in the manufacture of flats, *viz.*, plates, sheets, circles, strips, and foils, especially in the unorganised sector. This is also the implication of the discussion contained in Chapter 2 of this Report. The possibility of evasion in this sector arises as there are many small-scale producers, catering to users of copper flats which are themselves operating on a small scale, sometimes just next door to the producers of flats. In adequately checking such a large number of manufacturers, concentrated geographically in a few areas, and operating in quite an organised manner as far as evasion is concerned, it is apparent that the Departmental resources would, of necessity, be thinly spread.

The Excise Department has no control over utensil manufacturers as also most other users of copper flats, and as soon as the latter enter into their premises, the Excise Department cannot have its track for verification and checks.

First, however, some of the difficulties pointed out by the manufacturers of flats (made from scrap or duty-paid virgin metal through the stage of billets) on their part need to be mentioned. These are given below:

a. *Interpretation of Notifn. No. 119/76.* The full text of this notification as it now stands is given in Chapter 1 (p. 19-22/). This notification has recently been subject to some controversy due to the interpretation of the Law Ministry at one stage, *viz.*, that since zinc and other alloying materials are not specifically mentioned in the text of the notification, when copper alloys "in any crude form" are made using zinc, etc., they should be subjected to the full amount of duty. The problem has arisen since 1979 and since then it has caused considerable uncertainty in trade for all types of manufacturers of copper who use or produce copper alloys. Apparently the Department had issued notices asking for a recovery of duty for the last five years or so. It is quite clear that whatever may be the language of the notification, the intention must be to exempt copper alloys, "in any crude form" from the whole of duty because copper alloys cannot generally be made without using virgin zinc or other similar alloying materials. Hence, the notification would be basically redundant unless it covers these cases. It appears that necessary clarification to this effect has since been issued.

b. *Taxation of scrap.* In the matter of clearance of scrap for some secondary rerollers who clear circles cut out of brass sheets, there has been a problem. Copper scrap and waste is taxed under item 26-A (1b). However, by Notifn. No. 34/81 copper scrap/waste is exempt from duty if it is used within the factory of production. Further by Notifn. No. 33/81, as amended by Notifn. No. 181/81, copper waste/scrap is exempt from duty if:

(i) such waste/scrap is manufactured from copper in which the appropriate excise duty or countervailing duty has already been paid, and

(ii) such waste/scrap arises from products falling under any other item (i.e., electric wires and cables, i.e., item 33B) manufactured or produced in India.

This notification implies that if copper waste/scrap arises out of the use of non-duty paid copper and removed out of the factory, full duty has to be paid. In the case of those secondary rerollers who clear circles cut out of brass sheets as well as the scrap that is left over after cutting circles from sheets, there is a difficulty as it cannot be said that this scrap has arisen out of duty-paid copper, that is, the sheets on which the differential duty has not been paid. The anomaly is that if such scrap is remelted and used for the production of sheets/circles again within the premises of the secondary rerollers, it will not pay duty, but if it is cleared out and melted for the same purpose by the utensil manufacturers to be sent back to the secondary rerollers, it has to pay duty. For getting round this problem, a notification providing for exemption from duty for scrap if it arises out of copper on which duty has been paid at the crude stage, is needed.

Manufacturers of Pipes and Tubes, Blanks and Shells

There are some grounds to believe that in the manufacture of hollows, *viz.*, pipes and tubes, and blanks and shells for pipes and tubes, there is some evasion, primarily in the form of undervaluation. In addition, there is some avoidance also. This arises because of the fact that whereas there are a few integrated factories producing pipes and tubes, there are also a number of extruders who supply pipes and tubes from blanks and shells after one draw, for further drawing, to small-scale manufacturers having a few draw benches. The process of further drawing pipes and tubes of smaller diameters from pipes and tubes of larger diameters does not amount to "manufacture" as the goods are not taken from one taxable sub-item to another, and as such no additional duty applies. Furthermore, these small-scale drawers are importing reusable pipes and tubes and are allowed clearance as scrap, though incorrectly, and subjecting them to further draws. Although duty will then have to be paid, in practice it may actually be evaded. Thus, due to duty avoidance, and due to the use of imported pipes and tubes cleared as scrap for further drawing, there is a clearcut revenue loss. It is necessary to find out a means by which the revenue loss due to non-taxation of further drawing of duty-paid blanks, shells, pipes and tubes could be mitigated.

One problem that the manufacturers of pipes and tubes have faced in the recent past is related to the benefit of proforma credit under Rule 56-A, that is, taken when duty-paid inputs of "copper in any crude form" or wire-bars are brought into the factory.

Under Notifn. No. 213/63, a set-off of excise duty and/or countervailing duty already paid on copper or copper alloys in any crude form or manufactures thereof is to be allowed. In taking the set-off, the manufacturer has the option to avail himself of thc proforma credit procedure.

Since 1978 prices of pipes and tubes are quoted to customers inclusive of excise duty. The determination of the ex-factory price from the "cum-duty" price in view of the benefit given by Notifn. No. 213/63, has been a matter of contention. In order to illustrate this problem the following examples may be considered.

Suppose the ex-factory price of pipes is Rs X per kg. and the duty-inclusive price is Rs 70 per kg. Given that the basic + special excise duty on copper in any crude form is Rs 3.3 per kg. and the tax on pipes and tubes is 30.8 per cent *ad valorem* inclusive of special excise duty on the ex-factory price, the problem is to determine, the ex-factory price, namely, X. The following two options may be considered for this purpose.

EXAMPLE 1

The duty exclusive price can be worked out as indicated below:

$$X + .308\, X = 70$$

$$X = \frac{70}{1.308} = 33.52$$

EXAMPLE 2

It appears that at least in some Collectorates, the method of working out the duty exclusive price was as given below:

$$X + (.308\,X - 3.3) = 70$$

$$X = \frac{70 + 3.3}{1.308} = 56.039$$

In this matter, any ambiguity has been set at rest by the recent amendment to Section 4 of the Central Excise and Salt Act, 1944. It is clear that the appropriate way to work out the duty liability in the presence of proforma credit should be consistent with Example 1 given above.

The matter should be unambiguously clarified through executive instructions.

Another problem which arises in the context of the manufacturers of pipes and tubes is the set-off relating to the use of zinc and other such materials on which appropriate amount of excise duty or countervailing duty has been paid. It is easy to see that the principle on which the set-off is given for the duty paid on "copper in any crude form", under Notifn. No. 180/81, should be extended to the use of other inputs also.

In this context, the government did come up with a notification, namely, 91/80, providing the relevant set-off. The notification provided for set-off, among other things, for the duty paid on zinc, aluminium and lead, when these are used in making copper alloys. This notification was amended vide Notifn. No. 138/81 which left the set-offs for the other alloys included in the earlier notification intact, but withdrew the set-offs for copper alloys. It is clear that the principle on which inputs are being exempted from tax, *viz.*, copper in the case of copper alloys as per Notifn. 180/81, and copper, lead, zinc and aluminium inputs in the case of other alloys, as per Notifn. No. 91/80, should be extended to manufacturers of pipes and tubes of copper alloys in respect of zinc and such other alloying materials. This problem is even more important in the context of an increase in the statutory rate of duty on zinc in the current financial year. However, it should be remarked that this set-off is needed in the context of the high rate of duty on pipes and tubes and it should not be of a general nature as in the original Notifn. No 91/80. It is not expected that there would be a substantial revenue loss due to the provision of this set-off. It will remove an existing anomaly, and the question of increasing the tax rate marginally may be considered with a view to making up the revenue loss.

A similar problem relates to the use of old pipes and tubes as scrap for the manufacture of new pipes and tubes. Here no set-off is admissible for scrap and as such it becomes less costly to use virgin metal as compared to used metal for making pipes and tubes.

Interface with Item 68

Item 68, i.e., "not elsewhere specified", provides a major bone of contentionw hen goods made of copper or copper alloys are assessed to duty under this item due to definitional interpretations. Item 68 carries a duty rate of 8 per cent *ad valorem.*

There are some basic features of item 68. Item 68 goods are exempt from duty if these are:

(i) Produced in premises which are not defined as "factory" within the meaning of the Factories Act, 1948;

(ii) produced without the aid of power;

(iii) produced by small-scale units in respect of clearances upto the value of Rs 30 lakh in a financial year subject to certain conditions; and if,

(iv) these are intended for use within the factory of production, except when such goods are "machinery" meant for processing or manufacture of any goods.

If item 68 goods are used as inputs, proforma credit for the duty paid is allowed for adjustment against the duty due on the products made therefrom. However, no such credit is allowed for the countervailing duty paid on imported item 68 inputs. Furthermore, when duty-paid goods, belonging to any of the items from 1 to 67, are used as inputs for producing item 68 goods, no set-off or proforma credit is allowed.

Goods made from copper, if not specified under item 26-A, or any other item in the tariff, have to pay duty under the residuary item. Copper is a costly item. At an average price of, say, Rs 40,000 per tonne for copper products, the limit of Rs 30 lakh is crossed after the clearance of just 7.5 tonnes of products. After that the duty incidence is very high because of lack of appropriate set-off facilities for the excise duty paid at the crude stage. In view of this, the duty incidence on products of copper may be substantially higher if they get assessed under item 68 and miss the specification under item 26-A even by a narrow margin. As such, definitional clarity assumes considerable importance.

In the tariff, various expression like "bars", "wire-bars", "wire-rods", "rods" and "wires" have not been specifically defined in the context of item 26-A.

Some of the important definitional problems that have arisen from time to time in the past are mentioned below.

(i) There has been a difficulty relating to the distinction between wires and rods, the relevant parameters establishing the distinction being (a) the length of the diameter (10mm. or 6mm. being alternative dividing lines), and (b) whether the supply is in straight lengths or coils. Due to changing interpretations, the trade has had to put up with much confusion. In order to put all controversy at rest, it is necessary that the relevant definitions should be provided in the tariff itself.

(ii) Similar problems have arisen in the case of (a) copper and brass round rods, copper and brass squares and hexagonal rods in coil form and (b) copper and brass sections and profiles and brass wires. The position at the moment is that items mentioned under (a) above are being taxed under item 26-A, and those under (b) are being taxed under item 68, vide CBEC letter No. F-138/10/79 CD 4, dated 27-11-1979.

(iii) A similar problem relates to whether hollow rods and sections should be taxed under item 26-A or 68. It has been considered that hollow rods are not pipes and tubes. Sections are also in irregular shapes. The position at the moment is that the product (*viz.*, bars) would first pay duty as rods under item No. 26-A (1) and they would then pay duty as hollow rods and sections under item 68.

As a general principle, it is desirable to give unambiguous definitions of various copper items within the tariff itself. Furthermore, it is better to specify, after due consideration, such copper manufactures as easily reach the limit of Rs 30 lakh, within item 26-A so that proper tax credit for the crude-stage duty can be given where necessary rather than leaving them in the stranglehold of the residuary item.

Classification

The classification pertaining to copper and copper manufactures in the Customs Tariff is far more exhaustive than that for item 26-A of the Central Excise Tariff.

The question of a proper and adequately exhaustive classification assumes importance from the point of view of (i) countervailing duties, and (ii) the difficulties in relation to item 68 *vis-a-vis* 26-A. It is obvious that since imports have to pay countervailing duties according to the excise tax rates applicable for domestic production, the customs classification and the excise classification must at least broadly tally. Secondly, in view of the points raised in the previous section, it seems desirable that most articles of copper should be specified outside the scope of item 68. For a good like, say, brass wire of less than 10mm. diameter supplied in coils as compared to brass wire (rod) of 10.1 mm. diameter in straight lengths, the duty differential is substantial. The latter does not pay any duty, while the former pays 8 per cent *ad valorem* without any set-off for the crude-stage duty as in the case of pipes and tubes. In any case, the more clearly the taxable goods are defined or specified, the greater is the attention that can be paid to their tax incidence rather than when they are left within the purview of item 68.

From a comparison of the excise classification with the customs classification relating to copper, the following observations can be made.

(a) Products mentioned under 26-A (1) and (1a) are unwrought forms of copper. This includes wire-bars even though they have tapered ends.

(b) Only five semi-manufactures have been defined under

26-A (2), namely, plates, sheets, circles, strips and foils. Semi-manufactures are generally obtained by rolling, extruding, drawing, or forging. In the customs tariff, chapter headings 74.03 to 74.06 have specified the semi-manufactures as below:

(i) Wrought bars, rods, angles, shapes and sections of copper; copper wire;

(ii) Wrought plates, sheets and strips of copper;

(iii) Copper foils (whether or not embossed, cut to shape. perforated, coated, printed or backed with paper or other reinforcing material), of a thickness (excluding any backing) not exceding 0.15mm.; and

(iv) copper powders and flakes;

(c) Pipes and tubes and blanks and shells for pipes and tubes are the only articles of copper that have been separately specified by the Central Excise Tariff. Other articles, given in headings 74.07 to 74.08 BTN have been missed out in the Central Excise Tariff.

These articles are mentioned below:

(i) blanks for tubes and pipes[2] and hollow bars;

(ii) tube and pipe fittings (e.g., joints, elbows, sockets and flanges) of copper;

(iii) reservoirs, tanks, vats and similar containers, for any material, of copper, of a capacity exceeding 300 l., whether or not lined or heat insulated, but not fitted with mechanical or thermal equipment;

(iv) stranded wire, cables, cordage, ropes, plated bands and the like, of copper wire, but excluding insulated electric wires and cables;

(v) gauze, cloth, grill, netting, fencing, reinforcing fabric and similar materials (including endless bands), of copper wire;

(vi) expanded metal, of copper:

(vii) chain and parts thereof, of copper;

(viii) nails, tacks, staples, hook-nails, spiked cramps, studs,

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[2] Included in item 26-A (4) since 1.3.1981.

spikes and drawing pins of copper or of iron or steel with heads of copper;

(ix) bolts and nuts including bolt ends and screw studs, whether or not threaded or tapped and screws (including screw hooks and screw rings, of copper; rivets, cotters, cotter-pins, washers and spring washers, of copper;

(x) springs, of copper;

(xi) cooking and heating apparatus of a kind used for domestic purposes, not electrically operated, and parts thereof, of copper;

(xii) other articles of a kind commonly used for domestic purpose, buildings' sanitary ware for indoor use, and parts of such articles and ware, of copper; and

(xiii) other articles, of copper.

Out of these, apart from blanks and shells, specified under item 26-A (4) since 1.3.1981, wires and cables specified under item 33B, and bolts and nuts which fall under item 52, the other articles would attract duty under item 68. We have subsequently suggested that copper articles where the turnover of a small-scale unit is likely to easily exceed the limit of Rs 30 lakh, should be brought from item 68 to item 26-A.

Revision of Item 26-A: Aspects of Evasion

The upshot of the argument presented in Chapter 2 is that for item 26-A, evasion of excise tax arises mainly in relation to the production of flats. Apart from this, there is some evasion/avoidance in pipes and tubes. Furthermore, misclassification of item 68 goods as item 26-A goods might also be leading to some evasion although this is evasion under item 68 rather than that under item 26-A.

In order to deal with evasion with reference to item 26-A (2), there are two options open to the government:

(i) transfer 26-A (2) from SRP to physical control procedure; or, evolve a more stringent system of checks and controls while still applying the SRP;

(ii) abolish the partial duty on item 26-A (2), transferring the tax-incidence of item 26-A (1) for making up the revenue loss.

Option (i) above may not, however, be very successful. The units involved in manufacturing 26-A (2) items, especially in the unorganised sector, are numerous. The cost of collection would, therefore, significantly go up. Furthermore, to the extent collusion of staff leads to evasion, SRP or physical control would not make much difference.

a. *Transfer of the duty on plates, sheets, etc., to primary stage.* The second option is almost throwing the proverbial baby out with the bath water. Here, the incidence of Rs 700 per tonne, i.e., the partial duty element on trimmed sheets, circles, etc., may be transferred to the crude stage. First, it should be noted that in order to make up for the revenue loss due to the abolition of the Rs 700 duty on flats, the increase in the crude stage duty is very nominal when countervailing duties are also taken into account, as they must be. For example, in 1978-79, the revenue from flats was Rs 394.55 lakh (Table 1.9). Clearance of "copper in any crude form" was 20,781 tonnes(Table 1.8). Furthermore, imports for items that will pay the crude-stage countervailing duty including scrap was 91,970 tonnes. In order to make up the loss of Rs 394.55 lakh, from a tax base of (20,781+91,970 =) 112,751 tonnes, one would only need to levy an additional duty of about Rs 350 per tonne. Thus, if the basic duty is increased from Rs 3,000 to Rs 3,350, all the necessary revenue is recovered In order also to recover the unobtained revenue due to evasion, the increase in the crude-stage duty should be about Rs 450. It should be noted, however, that the shift suggested is not from a final stage to the primary stage, but only from an intermediate stage to the primary stage

Some of the important implications *vis-a-vis* the transfer of the tax at the crude stage are mentioned below:

(i) The same or augmented revenues would come from excise tax and countervailing duties taken together.
(ii) Difficulties about movement of scrap between circle rollers and utensil makers would be removed as there is no duty-liability at the sheet stage.

(iii) Administratively, the task of collection of revenue would be very simple. The domestic producer being a public undertaking, and imports having to pass through necessary formalities, the possibilities of evasion would be minimised.

(iv) There would not be any increase in the tax liability for pipes and tubes, since they get set-off for the crude-stage duty.

(v) The burden on the primary manufacturer will increase in view of the points discussed in Section 1a. However, their problems need to be solved even with reference to the existing structure of rates. The change suggested above must not be implemented without working out a solution to the problems.

(iv) Under certain circumstances, there would be an increase in the duty incidence of other articles made from:

(a) domestically produced virgin copper;

(b) imported virgin copper, and

(c) imported scrap.

(vii) On imported 26-A (2) goods, there will be reduction in the duty incidence. However, apart from plates and foils, not many flats are imported.

(viii) The relative burden on copper articles which are not made from flats or pipes and tubes, e.g, articles that are directly cast or forged, will increase, from its present level. However, the existing structure itself seems inequitous, in that it permits a lower incidence of tax on articles made through castings and forgings.

(ix) Articles made from copper which fall under items other than 26-A, such as electric wires and cables (33B), zip fasteners (61), and cooling coils [29A (3)], there will be a higher incidence of duty. In these cases, it should be considered whether the effective rate of duty should be reduced so as to maintain the status quo.

The transfer of the duty of the primary stage does, however, go contrary to the standard economic advice in the matter where levying taxes on final goods and intermediate goods with appropriate set-offs is recommended so that the incidence of the tax on the users can be more effectively controlled, cascading effects are avoided and the burden on producers of primary and intermediate goods is reduced for the greater overall benefit of the industry. In the present context, it also seems a little unreasonable to leave the value-added untaxed when old scrap is reused for making flats. On the whole, however, it seems that administrative convenience and the ease with which the same amount of revenue can be earned by not only transferring the tax to the primary stage but also lowering its rate, are so substantial, that it may ust be worthwhile to make an exception to the standard economic advice on the matter.

b. *Specific vs.* ad valorem *duty for pipes and tubes*.. As far as "pipes and tubes" are concerned, the problem of duty avoidance and undervaluation referred to earlier can be taken care of by making the tax rate specific where this is calculated with reference to some "notional" price. It seems that the same amount of revenue as at present rates can be generated by having a basic tax rate of about Rs 12,000 per MT with a set-off of Rs 3,000 per MT for the crude-stage duty. The "notional" price in this case is the current ex-duty price of pipes and tubes calculated as a weighted average for different varieties.

The difficulty in this approach is that prices of pipes and tubes vary according to the dimensions, uses and the cost of alloying materials. In general, a pipe that has been subjected to a greater number of draws will have a higher price. In having an *ad valorem* tax, this additional value-added gets taxed, if duty is not avoided, as mentioned before. On economic grounds, therefore, an *ad valorem* rate seems desirable.

In view of the considerations given above, it might be worthwhile considering a specific-cum-*ad valorem* duty, thus establishing a compromise between the two ends. In the current Central Excise Tariff, there are a few cases where such a tax is levied. It should be remarked that most clearance of pipes and tubes are in terms of weight and only a very few are cleared in terms of numbers.

The best option is of course, to continue with the *ad valorem* tax but redefine "manufacture" in such a way that drawing of pipes and tubes from pipes and tubes can be taxed. However, the precise method by which it can be made legally admissible needs to be carefully examined.

Revisions in Tariff

To recapitulate the problems that have been raised so far in this chapter, a summary of these is given below:

Primary Manufacturer of Copper

(i) Cathode stage taxation vs. wire-bar stage taxation
(ii) Taxation of anode moulds, wire-bar moulds, etc.
(iii) Taxation of oxygen as an input
(iv) Problems arising out of the revised definition of copper alloys.

Manufacturer of Flats

(v) Interpretation of Notifn. No. 119/66
(vi) Taxation of scrap in relation to manufacture of circles
(vii) Rate differential between trimmed and untrimmed sheets and circles (See Chapter 2).

Manufacturer of Pipes and Tubes

(viii) Determination of ex-duty price
(ix) Set-off for duty paid on zinc and other alloying materials
(x) Set-off for used pipes and tubes.

Issues Relating to Evasion and Avoidance

(xi) Suppression of quantity product; elimination of the flat-stage duty
(xii) Avoidance of duty in the redrawing of pipes and tubes.

Other Issues

(xiii) Definitional problems and interface with item 68.

(xiv) Taxation of scrap; imported and domestically produced.

In order to deal with these problems, the government has to use a combination of the three types of instruments that are available to it, namely, changes in the tariff, changes in notifications, and executive orders or instructions.

It is our suggestion that some of the substantive issues should be dealt with by a change in the tariff itself. In particular, points (i), (xi) and (xiii) should be dealt with in this manner. Point (xii) above can be dealt with by changing the *ad valorem* rate to a specific-cum-*ad valorem* rate; or by appropriately defining "manufacture" in the case of pipes and tubes within the Act (Section II) itself just as in the case of P&P medicines, etc. Both these options, however, need to be carefully examined.

The revised item 26-A that would take care of the relevant points mentioned above is indicated below:

RECAST ITEM 26-A

"*26-A, Copper*	*Rate of duty*
(1) Copper matte; unwrought copper (refined or not); waste and scrap	Rs 5,600 per MT
(2) Wrought bars, rods, angles, shapes and sections of copper other than hollow bars. Copper wires other than electric wires falling under item No. 33B.	Rs 5,600 per MT
(3) Wrought plates, sheets, circles, strips and foils of copper in any form or size	Rs 6,300 per MT
Option 1	
(4) Tubes and pipes and blanks and shells therefor of copper; hollow bars of copper	Rs 6,500 per MT plus 10 per cent *ad valorem* (with set-off for duty paid at earlier stages)

Option 2

(4a) Tubes and pipes of copper	28 per cent *ad valorem*
(4b) Blanks and shells therefor, of copper; hollow bars of copper	28 per cent *ad valorem*

Explanations I and II should be retained from the existing tariff. An additional explanation should be added to provide definitions for relevant terms as below:

Explanation III:

(i) "unwrought copper" includes wire-bars and billets with their ends tapered or otherwise worked simply to facilitate their entry into machine for converting them into, for example, wire-rod or tube;

(ii) "wires" means rolled, extruded or drawn products of solid section of any cross-sectional shape, of which no cross-sectional dimension exceeds 6 millimetres;

(iii) "wrought bars, rods, angles, shapes and sections" means rolled, extruded, drawn or forged products of solid section, of which the maximum cross-sectional dimension exceeds 6 millimetres and which, if they are flat, have a thickness exceeding one-tenth of the width; and cast or sintered products, of any form or size;

(iv) "wrought plates, sheets and strips" means flat-surfaced, wrought products (coiled or not) of which the maximum cross-sectional dimension exceeds 6 millimetres and of which the thickness exceeds 0.15 millimetres but does not exceed one-tenth of the width".

In view of these revisions in the tariff, the following effects should be brought about by additional notifications or revisions of existing notifications:

(i) exempt copper, matte, or unrefined copper, that is unwrought copper obtained for example by smelting (black or blister copper), or by precipitation or cementation (cement copper or copper precipitate, which is a black powder);

(ii) provide for duty-free clearance of scrap/waste on the condition that the crude-stage duty has been paid on the copper from which scrap/waste has been generated;

(iii) *Option a*

continue with the present structure of duties on plates, sheets, etc., only introducing the minor change of increasing the differential between trimmed and untrimmed circles and sheets by Rs 50 at present rates;

Option b

make the differential effective duty more on all flat products domestically produced and increase the crude × stage duty by Rs 450 per MT (that is Rs 3,450 per MT at the present rates); and, simultaneously,

(i) provide for set-off of duty paid on copper at the crude stage for pipes and tubes, blanks and shells therefor, and hollow bars; and,

(ii) provide for set-off of duty paid on alloying materials like zinc, etc., in the case of pipes and tubes, blanks and shells therefor, and hollow bars.

APPENDIX

TABLE A.1

Consumption, Import and Production of Copper (Primary Metal) (1948 to 1979-80)

(Quantities in tonnes)

Year	Consumption	Import	Production
(1)	(2)	(3)	(4)
1948	24,700		
1949	28,400		
1950	31,500		
1951	33,200		
1952	30,000		
1953	20,500		
1954	16,700		
1955	23,700		
1956	33,800		
1957	47,500		
1958	37,600		
1959	53,900		
1960	62,400		
1961	68,000		
1962	77,700		
1963	78,600		
1964	65,400		
1965	63,100		
1966	32,700		
1967	42,300		
1968	38,800		
1969	45,800		
1970	49,000		
1971-72	64,400	56,200	6,500

(1)	(2)	(3)	(4)
1972-73	57,200	54,500	8,700
1973-74	50,300	52,600	8,300
1974-75	37,800	41,800	9,900
1975-76	47,500	15,700	18,600
1976-77	54,700	40,600	22,400
1977-78	61,000	22,800	21,400
1978-79	88,000	79,100	18,600
1979-80	72,000	41,200	18,800+ 7,400*

* Copper received by HCL against toll smelting of copper reverts abroad.

Source: Government of India, Ministry of Steel and Mines (1980), *Report of the Working Group on Non-Ferrous Metals.*

TABLE A.2

Production, Clearance and Tax Revenue from Copper (Item 26-A) (1978-79)

	Production (tonnes)	Clearance (tonnes)	Revenue (Rs '000)
	(1)	(2)	(3)
1. In any crude form	7259	7152	21455
2. Wire-bars, rods, castings, NOS	5985	6072	18220
3. Wire-bars, rods, etc., from virgin metal (Notifn. 198/76)	8102	7557	17004
TOTAL of 1, 2 and 3			56679
4. Pipes and tubes	304 + 60 numbers	228 + 55 numbers	2597
5. Pipes and tubes (Notifn. 213/63)	2649	2500	22387
TOTAL of 4 and 5			24984

TABLE A.2 (Contd.)

	(1)	(2)	(3)
Manufactures of Copper and Copper Alloys			
6. Notifn. 74/65 *et al.*	27298	28237	19777
7. Notifn. 54/62 *et al.*	20162	19799	13865
8. Notifn. 31/65 *et al.*	12018	9664	5813
TOTAL of 6, 7 and 8			39455
9. Notifn. 11/76 Ordnance Factories	150	149	—
10. Notifn. 119/66	31224	29919	—
11. Notifns. 117/61 and 118/61	—	—	—
12. Notifn. 60/65	11	15	1
13. Notifn. 236/75	25	25	—
14. Notifn. 142/76	—	—	—
Simplified Procedure			
(a) Copper and copper alloys in any crude form	104	105	60
(b) Wire-bars, wire-rods, and castings NOS.	58	60	44
(c) Plates, sheets, etc.	1145	1128	440
(d) Pipes and tubes	48	48	—
Total of basic duty			121663
Special duty			6192
Miscellaneous			86
GRAND TOTAL			127941

Source: (Adapted from) Government of India, Directorate of Statistics Intelligence, Central Excise and Customs, *Year Book: Central Excise*, Vol. I, 1978-79.

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Evasion of Excise Duties in India: Study of Plastics

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Preface

The National Institute of Public Finance and Policy is an autonomous, non-profit organisation whose major functions are to carry out research, do consultancy work and undertake training, in the area of public finance and policy.

The present study on the Evasion of Excise Duty on Plastics is the second part of a larger study on the evasion of excise relating to a selected number of commodities, entrusted to the Institute by the Central Board of Excise and Customs, Government of India. The first part relating to Evasion of Excise Duty on Copper was completed and submitted to the Government in 1982.

The present study was carried out by Dr Narain Sinha who also prepared the initial draft. The study as well as the draft report have been revised by Dr A. Bagchi and Mr B. L. Sud.

R J Chelliah

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Revenue Significance and Structure of Plastics Industry

Revenue Significance of Plastics

PLASTICS were brought under excise duty for the first time in 1961 with the incorporation of item 15A in the Central Excise Tariff Schedule. At first, the coverage of the item was somewhat limited and was applicable to certain specified plastic materials and products, namely: (i) moulding powders, granules and flakes; and (ii) polyethylene films, lay flat tubings and PVC sheets. The duty was leviable at the rate of 20 per cent *ad valorem*. The description of the tariff head was expanded later and the rate of duty was raised from time to time. Currently, the tariff head is broken up under four sub-heads and extends not only to plastics materials and articles made of such material but also to polyurethane foams and articles manufactured therefrom. Cellophane and polyester films which were for some time taxed separately are now included under plastics for purposes of excise duty. The basic tariff rates are 50 per cent *ad valorem* on resins and articles coming under the first two sub-heads of tariff item 15A and 75 per cent *ad valorem* on polyurethane foam and articles thereof taxable under sub-items 15A(3) and 15A(4), respectively. The effective rates of basic duty vary from 10 per cent *ad valorem* to 75 per cent *ad valorem*. In addition, there is a special excise duty at the rate of 5 per cent of the effective basic rate.

The revenue from plastics at first was not very significant and fetched barely Rs 1 crore in 1961-62 forming less than 0.3 per cent of the total Central excise revenue. With the growth of the plastics industry in the country and increasing use of plastic products for a variety of purposes, the revenue from plastics has increased and for the year 1982-83, stood at Rs 142 crore, out of a total Central excise revenue of Rs 8302 crore, forming about 1.7 per cent of the excise revenue. According to the budget estimates for the year 1983-84, the revenue from plastics is expected to be around Rs 169 crore out of a total Central excise revenue of Rs 10,050 crore (vide Table 1.1). Although the contribution of plastics to excise revenue has usually not exceeded 2 per cent except in one or two years, plastics come within the first 13 articles in terms of revenue, in the list of commodities included in the Central Excise Tariff Schedule.

Although there has been a fairly rapid growth of revenue from plastics, in fact, the growth has been faster than that of Central excise revenue as a whole, there is a feeling that evasion is widespread in plastics partly because of the complex rate structure and partly due to the structure of the industry with a large number of units manufacturing plastics material and products all over the country. It was, therefore, desired by the CBEC that some attempt may be made to investigate the extent of evasion of excise duty on plastics and suggest ways of minimising the revenue loss. The present report is the outcome of the study undertaken by the NIPFP at the instance of the CBEC.

Before proceeding to consider the possible scope of evasion and assessing the quantative dimensions of the possible revenue loss, it is necessary to examine briefly the nature of the product coming under the description of "Plastics" and the structure of the industry.

Plastics Industry

Plastics are acknowledgedly the wonder pr^duct of the twentieth century. In the course of a few decades plastics have come to occupy a very important place in man's life and compete with traditional items like steel, cement, aluminium

TABLE 1.1

Revenue Significance of Plastics (Tariff Item 15A) (1961-62 to 1983-84)

Year	Revenue from excise duties (Rs Lakh)		Column (2) as percentage of column (3)
	Plastics including cellophane and polyester films	All commodities	
(1)	(2)	(3)	(4)
1961-62	142	48931	0.29
1962-63	196	59883	0.33
1963-64	307	72958	0.42
1964-65	621	80151	0.77
1965-66	659	89792	0.73
1966-67	721	103377	0.70
1967-68	1172	114825	1.02
1968-69	1347	132067	1.02
1969-70	2001	152431	1.31
1970-71	2581	175855	1.47
1971-72	3022	206110	1.47
1972-73	3589	232425	1.54
1973-74	4108	260213	1.58
1974-75	7911	323053	2.45
1975-76	7757	384478	2.02
1976-77	6830	422145	1.62
1977-78	6815	444751	1.53
1978-79	9464	534195	1.77
1979-80	11309	601109	1.88
1980-81	12773	650002	1.97
1981-82	14346	742074	1.93
1982-83 (RE)	14215*	830190	1.71
1983-84 (BE)	16800	1005042	1.67

Note : *Provisional

Sources : 1. For column (2) Directorate of Statistics and Intelligence, *Statistical Year Book*, Central Excise, relevant issues.

2. For column (3), *Explanatory Memorandum on the Budget of the Central Government.*

and wood as a basic input of a wide range of industrial products. In fact, plastics have proved to be more versatile than most of the traditional inputs of industrial products because of their property of light weight, dimensional stability and easy processability to form any desired shape, and the low energy requirement for conversion into different products. Another advantage of plastics is that processing can be performed in small units, providing opportunities for self-employment and industrialisation at low capital cost.

As of 1979 there were 523 factories manufacturing plastic material and products registered with the Central Excise authorities. In 1981-82 the number was 477. Of these 115 or nearly one-fourth came under the jurisdiction of Bombay Collectorates, accounting for about two-fifths of total revenue (Table 1.2).

Revenue collected per factory during the years 1978-79 and 1981-82 is given in columns 10 and 11 of Table 1.2. The collection per factory seems to be high at centres where plastic materials (as distinguished from plastic products) are manufactured.

Structure of the Plastics Industry

Broadly, the plastics industry may be grouped under three broad sectors:

i. plastics raw material manufacturers;

ii. plastics processors; and

iii. plastics users, i.e., manufacturers of articles of plastics.

Manufacturers of plastics raw materials use several chemicals. These raw materials are used to manufacture various types of plastic materials, finished and semifinished. The semi-finished articles are those from which the finished articles and components for industry and everyday use are produced. Processors of semi-finished plastics materials comprise moulders, laminators, fabricators, and others. These people manufacture largely articles such as sheets, films, etc., which are used in the manufacture of various kinds of final products.

Plastics raw materials may be classified into two groups: (i) thermosets and (ii) thermoplastics. Thermosetting materials, when heated, undergo a chemical change and become hardened and further heating produces no further change. In this

TABLE 1.2

Distribution of Factories and Revenue Collected Under T.I. 15A

Sl. No.	Collectorate	Excise revenue (Rs '000)					Number of factories as on		Revenue per factory (Rs'000)	
		1976-77	1977-78	1978-79	1980-81	1981-82	March 1979	March 1982	Column (5) ÷ Column (8)	Column 7 ÷ Column 9
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	Allahabad	1235	1924	2549	—	—	7	4	364	—
2.	Bombay (1 + 11)	371408	342255	438421	491095	523085	104	115	4216	4549
3.	West Bengal and Calcutta	46251	47747	50174	50181	43158	81	74	619	583
4.	Delhi	4164	4558	8441	31288	30011	34	27	248	1112
5.	Madras	29069	31405	37959	50061	62307	23	24	1650	2596
6.	Shillong	8619	8653	9292	7599	4628	19	23	489	201
7.	Baroda	44407	47700	166859	405223	485975	95	72	1756	6750
8.	Hyderabad	37833	35008	40019	58139	71870	12	18	3335	3993
9.	Mysore	12759	13187	13138	12062	12900	19	18	691	717
10.	Pune	21534	25127	48387	24984	28452	58	22	834	1293

TABLE 1.2 Contd.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
11.	Nagpur	772	287	297	972	1013	3	8	99	127
12.	Patna	1002	1022	1597	1752	2692	3	4	532	673
13.	Jaipur	31234	36832	46814	50407	29314	2	4	23407	7329
14.	Cochin	2768	3116	3839	4116	6150	16	10	240	615
15.	Kanpur	4571	6913	6996	2538	2409	13	5	538	482
16.	Chandigarh	17239	17945	14752	1817	4327	3	6	4917	721
17.	Goa	52	59	145	211	279	1	4	145	70
18.	Guntur	13960	16860	18913	19429	45858	6	6	3152	7643
19.	Ahmedabad	5457	5817	7720	12394	13198	10	11	772	1200
20.	Madurai	7394	14487	—	—	—	1	1	—	—
21.	Bhubaneshwar	29	—	13	—	—	1	1	13	—
22.	Indore	—	1393	658	1297	1552	12	11	55	141
23.	Meerut	—	—	—	9356	11168	—	9	—	1241
Total/Average		661787	662295	916983	1234921	1380346	523	477	117557	2931

Note: Does not include figures for cellophane and polyester films.

Source: Directorate of Statistics and Intelligence, *Statistical Year Book*, Central Excise, relevant issues.

sense the reaction is permanent. Thermoplastic materials, on the other hand, soften when heated but become solid on cooling and the physical change can be repeated. Because of this property, thermoplastics can be recycled.

Nevertheless, one advantage which thermosets have over thermoplastics is in their stability under pressure and high temperatures. Because of their stability, the thermosets cannot be recycled. Most of their applications therefore are in the industrial field. Generally, the thermoset materials are manufactured either in the small or the medium sector by methods like condensation and polymerisation by the application of heat and pressure.

Plastics materials can be manufactured in a variety of forms, such as solid or liquid resins, moulding and extrusion materials, coating and impregnating resins, emulsions, and among others, sheets, rods, tubes, films, foils, and profile shapes. The basis of each form is the synthetic resin or polymer, but according to the requirement, some fillers, plasticisers, stabilisers, pigments and other chemicals are also added to yield the final plastics materials in a suitable condition for use in producing finished plastics articles. Mostly, the concerns involved in manufacture of these materials are large companies having expensive plants with a large capital investment.

The following are the most important plastics raw materials:

i. Thermosetting materials:
   - Phenol-formaldehyde
   - Amino-plastics
   - Urea-formaldehyde
   - Melamine-formaldehyde
   - Alkyds

ii. Thermoplastics materials:
   - Polyethylene
   - Polyvinyl chloride
   - Polystyrene
   - Polymethylmethacrylate
   - Cellulose acetate
   - Cellulose nitrate

a. **Thermosets.** Most of the thermosets are products of either condensation or polycondensation or polyaddition. The principal items in this group are phenoplastics, aminoplast, alkyds, polyallyl esters and other unsaturated polyesters, epoxide resins and silicones. These resins are mainly used in the preparation of varnishes and paints. Some of them are used as surface coatings or impregnants, adhesives, moulding and casting resins. But a large part of the production is supplied to the fabricating or moulding trade in the form of moulding powders. These are made by incorporating with the resin, while it is still in a fusible state, various materials, some of which assist the moulding process and others which are intended to give certain specific properties to the moulded articles. The principal use of moulding powders is in the production of electrical insulation parts. This rather unspectacular use constitutes by far the largest general application of these materials.

The important resins and moulding powders coming under the "thermoset" category are phenol resins (moulding powder), melamine formaldehyde, urea formaldehyde, alkyd resins and terpene phenolic resins. These resins are used in the manufacture of laminated boards, rods and tubes by a modified moulding technique. Briefly, the technique consists of impregnating sheets of paper on cloth with the resin. The standard technique is to stack a number of treated sheets together like a pack of cards and subject the pack to heat and pressure until the resin is cured and the layers are bonded together. The layers of paper or cloth play the part of fillers imparting great mechnical strength to the product. Various methods of impregnating are available.

b. **Thermoplastics.** Unlike the thermosets, the thermoplastics undergo no chemical change during the moulding process. They merely soften and in some cases melt when heated and become rigid again on cooling. They do not require any fillers. However, in some cases a suitable plasticiser is incorporated. It acts as a kind of internal lubricant and improves the flow during moulding. It also adds toughness to the material, decreasing the brittleness and, if added in sufficient quantity, increases the flexibility particularly in materials like polyvinylchloride.

Thermoplastics are generally the products of polymerisation and copolymerisation. Polymerisation products are obtained by the union of several simple molecules of the same chemical constitution (known as monomers) with multiple carbon-carbon bonds. Similarly, copolymerisation products are obtained from simple molecules of different chemical constitution. Most of the thermoplastic resins can be processed by any of the processing techniques such as extrusion, calendering, injection moulding, thermoforming, and casting film. Extrusion is a major technique of the plastics industry, especially for the continuous production of pipes, sheetings and films, wire covering for insulation, etc. This process can be used also for making thick sheets. Calendering is convenient for flexible PVC sheets, plain or embossed and can be used for the purpose of laminating a sheet to fabric or to another plastic sheet (to make tiles).

Generally, the thermoplastic resins consist of cellulose derivatives, addition polymers and condensation polymers. The most important cellulose derivatives are the esters like cellulose-nitrate, cellulose-acetate etc., and the ethers like ether-cellulose. The common characteristic of these materials is that they are all based on naturally recurring chain of monomers. Raw materials for these are materials like wood pulp and light cotton linters. The cellulose derivatives especially cellulose-nitrate can be extruded to form plain sheets, whereas cellulose-acetate or triacetate is used to coat films. These films are mostly used for packaging.

Addition polymers are the most important class of materials among the thermoplastics. Polyethylene, which constitutes the principal member of addition polymer group, is made in two principal qualities, *viz.*, low-density and high-density. In terms of the rigidity characteristics and surface property, high-density polyethylene (HDPE) is comparable with polystyrene (PS) which is another form of thermoplastics. The low-density polyethylene (LDPE) is principally used in the form of film for bags and other packaging purposes. The thickness of such films ranges from 0.006mm to 0.12mm.

Another member of the group of addition polymers is polypropylene (PP) made by polymerisation of propylene. It is considered stronger and more rigid than polyethylene. Though quite light, polypropylene is prone to oxidation unless appropriate stabilisers are added. The pp films are used in packaging and fabrics. It also can be made in thickness down to 0.005mm.

Polyvinylchloride (PVC) is mainly processed in a highly plasticised form with varying degrees of flexibility by processes like calendering, extrusion and mouding. Like polyethylene, two varieties of PVC are available—rigid and flexible—with entirely different characteristics. Extrusion, calendering and moulding of rigid PVC is possible only with additions of stabilisers. When copolymerised with vinyl-acetate, it is suitable for making records.

The derivatives of acrylic acid are called acrylics. These are cast as sheets. Another important member of this group is styrene—a water-white resin, ideal as an injection material. Films extruded from this material can be vacuum-formed to be used in packaging.

Lastly, the condensation polymers consist mainly of engineering plastics like nylon, and polycarbonates. The extruded films of nylon are used in packaging and can be easily laminated with polyethylene. Polycarbonates can be injection-moulded, blow-moulded and extruded. Polyamides are available as film, laminating resins, adhesives and moulded compounds.

In Chart 1, we present a flow-chart showing how some of the principal plastics polymers are derived from the basic feedstocks.

Growth of Plastics Raw Materials in India

a. *Production of Plastics.* At present (as of April 1, 1982) total installed capacity of plastics raw materials in India is about 2,97,590 metric tonnes per annum (MTA). In this the share of thermosets is about 6.5 per cent. Out of the total capacity of 19,340 MTA for the thermoset industry, hardly 42 per cent is being used. Currentl y, the the moplastics industry has a production capacity of 2,78,250 MTA. Its share in the total production capacity of plastics comes to about 94 per cent. A similar situation prevails in actual production of plastics raw materials. In Table 1.3 we present the production of major plastics raw materials in the country during 1970-71 to 1982-83. The share of thermoset resins in the total production of plastics was about 6 per cent in 1970-71 which declined to 4.4 per cent by 1978-79. It has further decreased since then and in 1982-83 it was just 3.6 per cent. On the other hand, the importance of thermoplastics has been on the rise during this period. This is to be expected in view of the fact that thermoplastics can be recycled and find their use in many ways.

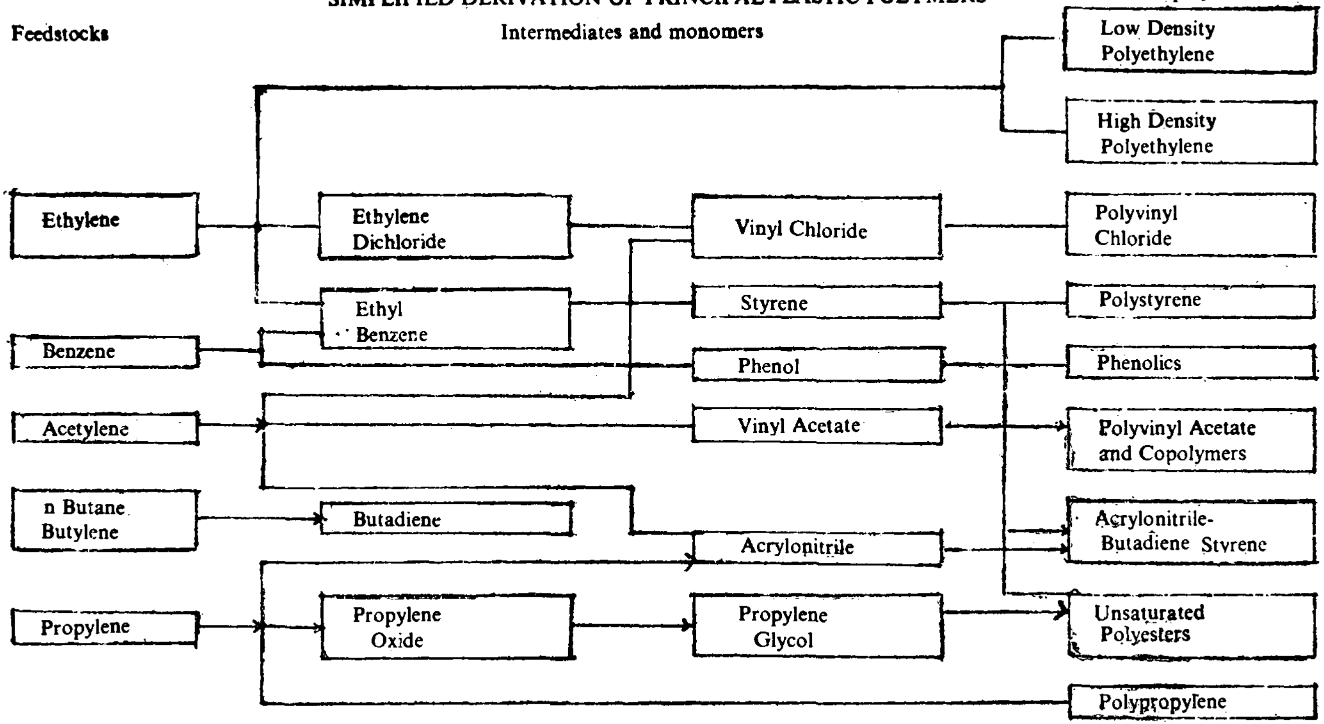
An examination of growth rates of production of various types of plastics raw materials reveals interesting trends. Among the thermosets, melamine formaldehyde has grown fast as compared to other resins. But its share in total production being the least, it has had a negligible impact on the overall growth of thermoset resins. Similarly, among the thermoplastics the growth of low-density polyethylene (LDPE) has been the most impressive. It is followed by HDPE and PS resins.

b. *Consumption of plastics.* Data on actual consumption of plastics in India are not available. If imports of plastics raw material are added to their production and exports are substracted we arrive at their total domestic availability. This is termed as total consumption of plastics by Ministry of Petroleum which is the main source of date on the Indian petro-chemical industry. In the absence of reliable data on the inventory of these raw materials held by manufacturers and users, the consumption figure estimated in this way may be taken as the actual consumption. These data are set out in Table 1.4.

In the year 1970-71, the consumption of thermoset resins was 6.79 per cent of the total consumption of plastics. The share fell to 3.50 per cent in 1978-79, in 1980-81 it further declined to 31.6 per cent. Among the thermoplastics, the consumption of PVC was 38.4 per cent of the total plastics consumption in 1980-81. It was followed by LDPE (32.9 per

SIMPLIFIED DERIVATION OF PRINCIPAL PLASTIC POLYMERS

Plastic polymers



Source: Industry sources.

TABLE 1.3

Production of Plastics Raw Materials

(Tonnes)

Products	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. *Thermoset*						
M.F. moulding powder	78	145	160	168	109	120
P.F. moulding power	8286	4363.40	4434.40	6038.20	3681.00	3665
U.F. moulding power	1735	1825.60	1861.30	2012.90	1590.00	1887
C.A. moulding power	1084	1284.30	1536.60	1603.40	1008.60	1133
Sub-Total (A)	6183	7618	7992	9822	6389	6805
B. *Thermoplastic*						
LDPE	24437	28061.00	28426.40	27301.40	26948.70	27636
HDPE	21153	21933.30	21546.30	23065.30	24058.80	20018
PS	8925	12317.20	13097.70	14376.60	8024.20	9203
PVC resins	41472	42850.60	48836.00	48005.60	46746.10	43818
PP	—	—	—	—	—	—
Sub-Total (B)	95987	105162	111906	112749	105778	100675
Grand TOTAL	102170	112780	119898	122571	112167	107480

TABLE 1.3 (Cont'd.)

(Tonnes)

Products	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83-
(1)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
A, *Thermoset*							
M.F. moulding power	144	180	178	245	214	328	386
P'F. moulding power	4078.60	4378	4236	4592	4794	4556	4308
U.F. moulding power	2280.90	2226	2497	3077	2845	3249	2795
C.A. moulding power	1025.80	990	765	627	324	291	677
Sub-Total (A)	7530	7774	7676	8541	8177	8424	8166
B. *Thermoplastic*							
LDPE	25741.20	18451	56028	71275	87154	94293	106148
HDPE	25177.30	25585	28073	25380	24293	31732	32702
PS	13398.20	13569	14474	12036	10205	7642	12580
PVC resins	47499.70	59023	62643	49891	52050	37037	41648
PP	—	—	7127	13425	16729	20644	24018
Sub-Total (B)	111816	116628	168345	172007	180431	191348	217096
Grand TOTAL	119346	124402	176021	180548	188608	199772	225262

Note: * Provisional

Source: Ministry of Petroleum, *Indian Petrolem and Petrochemicals Statistics*, Economics and Statistics Division, Government of India, New Delhi (various issues).

Table 1. 4
Estimated Consumption of Plastic Raw Materials

(Tonnes)

Products	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. Thermosets											
M.F. moulding Powder	78	148	160	168	76	120	144	180	178	245	214
P.F. moulding powder	3367	4333	4466	5912	3893	3661	4042	4673	4287	4753	5214
U.F. moulding powder	1663	1823	1893	2005	1685	1939	2283	2261	2506	3071	2870
C.A. moulding powder	1170	1384	1676	1706	1397	1465	1068	1235	1093	689	387
Sub-Total (A)	6278	7685	8198	9791	7051	7185	7537	8349	8064	8758	8685
B. Thermoplastics											
LDPE	22988	28525	30013	33202	27621	35012	34230	53738	83770	73633	90544
HDPE	13590	21575	24275	29029	27199	21479	33367	48574	54251	62706	59624
PS	8189	12443	13510	14840	8181	9610	13639	14102	15531	12457	10552
PVC resins	41452	42540	49586	48973	47453	44223	47796	67227	68736	81953	105768
Sub-Total (B)	86219	105083	117384	126044	110454	110324	129032	183641	222288	230749	266488
Grand TOTAL (A+B)	92497	112768	125582	135835	117505	117509	136569	191990	230352	239507	275173

Source: Ministry of Petroleum, *Indian Petroleum and Petrochemicals Statistics*, Economics and Statistics Division, Government of India, New Delhi (various issues).

cent) and HDPE (21.7 per cent). The share of these three resins in the total was as high as 93.0 per cent. The above figures, however, do not include the consumption of pp.

c. *End-use applications.* The major end-use of thermosets is in power generation and distribution, electronics and telecommunications, fertiliser and chemical industries, defence, etc. These applications account for almost 60 per cent of their consumption.

Generally, thermoplastic resins have a spectrum end-use. Some of their products are final, whereas others are intermediate items which need further processing in order to make them usable. Depending upon the desired physical and chemical properties in the final product, more than one type of thermoplastic material can be used in the manufacture of final products In other words, wide substitutability exists among the use of thermoplastic resins. The second factor that may influence the pattern is the process adopted in the manufacturing of the product. Some of the thermoplastc resins are suitable for a particular type of process such as injection moulding, extrusion, blow moulding etc.

A broad end-use pattern of major thermoplastic materials for the years 1970 to 1981 is given in Table 1. 5. Fro n this table it would be seen that in the case of LDPE 70 per cent of the raw material goes for the production of films which are mainly used in packaging, and around 10 per cent for the production of household goods The sheets and films made from this material are easily vacuum-formed to make blister packages

HDPE is a fine low-friction material often used for drawer slides. Other attractive electrical properties of this raw material makes this polymer suitable for cable insulation. Its markets include injection moulding products like household articles; blow moulding goods such as consumer and industry packaging items; and extrusion products, such as films and sheets, monofilament cane strapping, pipes and cables etc. Films and sheets account for hardly 4 per cent of the total production of HDPE while the use of HDPE in blow moulding and other extrusion production (such as cane strapping, pipes and cables and woven sacks) is increasing.

TABLE 1. 5

End-Use of Thermoplastics by Broad Categories

(Per Cent)

Polymer	Applications	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
LDPE	i. Film & Coating	74.3	73.8	74.3	64.6	75.9	76.7	72.3	76.9	69.7	85.2	85.6	74.3
	ii. Moulding	6.8	7.0	6.4	6.8	6.3	6.3	6.4	13.8	12.5	7.8	8.3	12.0
	iii. Wires and Pipes	7.9	7.9	8.0	8.3	8.2	7.5	6.9	7.2	7 4	2.8	1.7	2.0
	iv. Miscellaneous	11.0	11.3	11.3	10.3	9.6	9.5	14.4	2.1	10,4	4.2	4.4	11.7
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100 0	100.0	100.0	100.0	100.0
PVC	i. Wires and Cables	27.5	30.3	30.5	28.6	25.5	28.8	26.5	24.2	20.3	32.6	26.1	18.9
	ii. Pipes, fitting conduits	6.1	7.7	13.5	16.0	25.1	17.1	20.0	21.8	24.2	25.4	31.0	43.0
	iii. Leather cloth and sheets/film	17.5	18.0	20.4	20.1	18.9	24.0	24.7	28.3	26.4	22.3	27.8	21.8
	iv. Footwear	22.3	19.2	17.4	17.1	11.1	11.6	8.8	10.0	7.3	9.2	4.2	6.1
	v. Compounders	18.3	14.4	10.7	10.6	10.4	7.9	7.8	7.2	10.1	2.3	0.2	0.3
	vi. Miscellaneous	8.9	10.4	7.5	7.4	9.1	9.6	1.2	8.5	11.7	8.2	10.7	9.9
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100·0	100.0	100.0	100.0

TABLE 1.5 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
LDPE	i. Injection moulding	63.7	52.5	40.3	32.4	31.6	31.6	34.0	33.6	35.9	26.6	19.8	29.7
	ii. Blow moulding	17.9	19.0	25.3	27.2	26.6	18.6	21.8	25.7	27.4	29.6	31.3	25.4
	iii. Extrusion	18.4	28.5	34.4	40.5	41.8	49.8	44.2	40.7	36.7	43.8	48.9	44.9
	(a) Film and sheets	5.0	5.4	2.9	3.3	2.8	4.1	3.1	3.7	2.5	3.0	3.0	3.5
	(b) Others	13.4	23.1	31.5	37.2	39.0	45.7	41.1	37.0	34.2	40.8	45.0	41.4
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.4	100.0	100.0	100.0	100.0

Source: Ministry of Petroleum, *Indian Petroleum and Petrochemicals Statistics*, Economic and Statistics Division, Government of India, New Delhi (various issues).

PVC, one of the relatively low-cost materials, is a single-volume plastic material which is in general use. It has achieved the market leadership because of its good physical properties, compounding versatility for a wide variety of applications, low cost and processing ease. Its products are usually made by extrusion, injection moulding, rotational moulding, compression and blow moulding, calendering and foaming procedures. Principal markets for rigid PVC include pipes, conduits, pipe fittings, wire and cable insulation. Flexible PVC sheets are used for rain coats, bottles, film sheetings, garden base, curtains, novelties and wire insulation. PVC is also a useful blow-moulding material as its bottles combine a high level of clarity approaching that of glass with break resistance as good as that of polyethylene. Sheetings and films have an increasing share in the consumption of PVC. A similar trend is observed for wire and cable insulation, and pipe fittings and conduits.

Other types of thermoplastic material like polycarbonates, polybutylene, cellulose acetate etc., are not used for the manufactcre of extrusion or calendering products such as tubes, films etc.

Studies carried out in the past show that the cost of thermoplastic resins constitutes a significant proportion of material costs in most of their end-use applications[1]. In particular, in polythene bags made of HDPE resins constitute 95 per cent. Similarly, the novelty items which are manufactured from PVC sheets, the proportion is about 65 per cent. Given that the price of naphtha accounts for a high proportion of the total material costs in the naphtha-based thermoplastic materials, the increase in the price of naphtha in recent years has affected end-product prices significantly.

Profile of the Industry

The Indian plastics industry may be conveniently considered as consisting of raw material manufacturers and

[1] Tata Economic Consultancy Services, "The Small Scale Plastic Industry in Greater Bombay", 1972.

plastics processers.

a. *Raw material manufacturing—Indian thermoset industry.* In the organised sector thermoset resins are manufactured by Indian Plastics Ltd (IPL), Bakelite Hylams (BH), and the Industrial Plastics Corporation Pvt. Ltd (TIPCO). In addition, there are three units, *viz.*, Nuchem Plastics, Ciba and Allied Resin and Chemical manufacturing urea formaldehyde resin and moulding powder. Both urea and melamine are white crystalline substances showing some chemical resemblance. Each reacts with formaldehyde to form a resin having many points in common with phenolic resins, and these can be made into moulding powders by similar methods. The users of these resins are generally located in the small and tiny sectors.[2] Resins such as phenolic, alkyd and maleic resins are thermoplastic in nature, but once converted into moulding powder they become thermosets.

Phenol formaldehyde, belonging to phenoplast group, is derived from the condensation phenol or any number of its homologues with aldehyde, particularly formaldehyde. For the phenols, the major supplier is Rashtriya Chemical and Fertilisers while formaldehyde is supplied by Herdillia Pharmaceuticals. The nature of the final product varies according to the conditions under which the reaction is conducted. In other words, by changing the temperature, time and pressure (or vacuum), many grades of phenolic resins can be obtained such that each grade will have a special application. For instance, TIPCO alone manufactured about 77 different grades of PFMP whose ex-factory prices ranged from Rs 5.00 to Rs 48.80 per kilogram in the year 1981

Thermoset resins whether phenolic, maleic or urea cannot be used as such. They have to be converted into moulding powder. There are many small units which manufacture phenol formaldehyde resins for the purpose of captive consumption while making laminated sheets.

PF resins are mainly used for making decorative laminates

[2] It is pertinent to point out that about 200 small-scale units are operating currently on thermosets.

and industrial laminates. The decorative laminates are glossy, mat and woodtex, while the industrial laminates are used extensively in the electrical, electronic and engineering industries.

b. *Indian thermoplastic industry*. Four important types of products are manufactured in India. They are:

i. Polyethylenes, both high and low densities,

ii. Polystyrene,

iii. Polyvinyl derivatives, and

iv. Polyacrylic and polymethacrylic derivatives.

i. *Polyethylene*. Among the polyethylenes, the two popular types are the HDPE and LDPE. In India, only Poleolefin India Limited (PIL) in the corporate sector manufactures HDPE, with ethylene supplied by its sister unit NOCIL. Its production started in 1968. The attractive electrical properties of HDPE makes it desirable as a cable insulator. Its main large markets include users of pipe, pipe fittings, packaging films, surgical implements, wire coatings and cable insulation, disposable products, beverage cases, bottles and closures. Poleolefin manufactured 32,702 tonnes of HDPE in the year 1982-83.

LDPE is one of the major polymerised plastics. Its production in India started when Alkali and Chemical Corporation of India Limited (ACCI) was established in 1955 with its 2,500 MTA plant based on alcohol ethylene. The second manufacturing facility was provided by Union Carbide India Limited (UCIL) with commissioning of a 3,000-MTA plant in 1961. This plant is based on petro-ethylene. By 1979-80, the production capacity of ACCI increased to 12,000 MTA whereas that of UCIL to 28,000 MTA. Total production of LDPE of these two units was around 28,000 MT indicating about 70 per cent of the capacity utilisation. One more naphtha-based plant in the public sector has been commissioned in 1978-79 with installed capacity of 80,000 MTA. The total production of LDPE during 1982-83 was of the order of 1,06,148 MT, IPCL contributing 74.1 per cent, UCIL 17.1 per cent and ACCI 8.8 per cent, respectively.

Among the major applications of LDPE, films and coatings are the most important ones. LDPE films can be used for a wider variety of packaging and for manufacturing bags. Another fast developing use of these films is in the manufacture of canal linings in agriculture.

ii. *Polystyrene*. It is prepared from ethylene and benzene. Ethylene is made from natural gas or petroleum whereas benzene is often obtained as a by-product from coke-ovens. Polystyrene (PS) is a polymerised product being manufactured in India by Polychem and Hindustan Polymers with a total capacity of 17,500 MTA (as of 1975-76). The capacity increased to 23,500 MTA in 1979-80. These units use both petro-ethylene as well as alcohol-ethylene, but the break-ups are not available. In other words, none of these units maintain any account as to how much is produced from which type of ethylene. The performance of Polychem and Hindustan Polymers over this period has been characterised by contrasting trends. While in the former, capacity utilisation declined from 74.69 per cent to 40.57 per cent, in the latter it increased from 22.49 per cent to 74 per cent during 1975-76 to 1979-80. This was partly due to the fact that while Polychem expanded its installed capacity from 10,000 MTA in 1975-76 to 16,000 MTA in 1979-80, its production actually declined from 7,469 MT to 6,492 MT during this period. In 1982-83, Polychem produced 5,839 MT of polystyrene as against 6,741 MT manufactured by Hindustan Polymers.

iii. *Polyvinyl derivatives*. It is perhaps one of the lowest cost materials which has achieved a kind of market leadership in the plastics industry because of its physical properties, compounding versatility for a wide variety of applications and processing ease. Its compounds range from soft, flexible films to rigid, high-strength producets. Plasticisers, lubricants, fillers and stabilisers are used to produce this kind of versatility. Apart from this, it is possible to make a compound with the right balance of properties for almost any application. Its products are usually made by extrusion, injection moulding, blow moulding and calendering. The principal products of rigid PVC include pipes, conduits, weather. stripping, etc., whereas flexible PVC is used for raincoats, baby pants, films, sheeting, curtains, novelties and many other such items.

To begin with, five units, *viz.*, National Organic Chemical Industry Limited (NOCIL), Chemplast, Calico, Sri Ram and Plastics Resins and Chemical (PRC)[3] were in the production line of PVC. Total installed capacity with these five companies was 90,200 MTA as on 31.3.1976. Due to a massive expansion programme at Sri Ram Chemicals, the total capacity grew to 1,03,400 MTA by 31.3.1980. The installed capacity of some of the other units is also fairly high. For instance, Calico is one such unit, but most of its production is for captive consumption.

Besides petro-ethylene, alcohol-ethylene and acetylene are also used in the manufacture of PVC. Currently, Sri Ram and Calico use calcium carbide as the basic raw material, whereas Chemplast is alcohol-based and NOCIL is naphtha-based.

Two grades of resins are manufactured in the country. These are suspension grade and emulsion grade. The suspension grade constitutes about 93 per cent of the total availability of PVC resins, while only two units, *viz.*, Chemplast and Calico have the facility to produce emulsion grade. The total production of PVC during 1982-83 was 41465 tonnes, Chemplast contributing 19,183 tonnes, Nocil 18,493 tonnes, Sri Ram 2,604 tonnes and Calico 1,185 tonnes, respectively.

The polyvinyl acetate resins are used as an adhesive for all sorts of materials, including paper, metal, mica, glass, plastic sheets, wood and porcelain. This polymer is manufactured both in the small-scale sector as well as by medium or large manufacturers. Among the big units are Calico Chemicals and Plastics Division, Hoechst, Parekh Dyechem, Hico, Indofil, Colour Chem, Surfactant and Chemical, P.C. Chande, BASF and Quinn India. Besides, there are a number of small manufacturers of this polymer.

iv. *Polypropylene (pp)*. The pp resins are polymerised propylene gas generated at relatively low temperatures and

[3] Subsequently, Plastics Resins and Chemical closed down in 1978 due to uneconomic working conditions.

pressures. This resin is light in weight, translucent in its natural state, and can be readily coloured. It surpasses polyethylenes in many fields because of its higher thermal operating range. It has good surface hardness and fair abrasion resistance. Products are made from pp by all of the conventional processes for thermoplastics. The production of pp resins started in the country in 1978 when the IPCL was commissioned. The annual production capacity of this plant is 30,000 MTA and its production in 1982-83 was of the order of 24,018 MT.

b. *Plastics semi-finished goods.* Plastic materials have a wide range of applications due to their common characteristic of plasticity, that is, the capability of being formed under external influence into shapes which are retained even after the external influences are removed. The shaping processes used include moulding, casting, extruding, etc. Some of these applications lie in the finished products while others are semi-finished in nature. Though the semi-finished products sometimes possess the characteristics of finished articles ready for use, they are classified, as a general rule, as "semi-finished", irrespective of whether or not they are surface-worked.

Semi-finished products include plastic boards, sheets, sheeting, films and lay flat tubings. Plastic boards, generally made of thermoset resins, especially phenolic resins, are used for industrial purposes. These boards are rigid in nature. Besides plastic boards made of phenolic resins and rigid PVC, other similar materials within the thermoset group are also used in manufacturing these boards. Sheets and sheeting are thinner than the plastic boards, but thicker than the films. The dividing line between sheets and films is rather thin.[4] The sheets can be laminated ones. Two or more sheets joined together form a board. Similarly, two or more films make a laminated film. A lay flat tubing, on the other hand, is a seamless flexible tube made by the extrusion process. If it is cut vertically it becomes a film. A film can also be manufac-

[4] The term 'film' is used for sheeting having nominal thickness not greater than 0.010 inch ASTM D—883—76, p. 369 (= 0.0256 cm = 25mm).

tured by the calendering process. The advantage with an extruded film lies in that its maximum width can be more than what is possible for a calendered film. But a calendered film is superior because of its uniform thickness. Generally, extrusion moulding is used to make such continuous shapes. This process is also used in making articles of various profile shapes. Extrusion coating is employed to add a thin layer of plastics on a substance such as textile or paper. Sometimes, thick-sheet extrusion is also possible. All these articles, whether semi-finished or unfinished, are used in varied applications such as lining in refrigeration, packaging, bags, raincoats, etc.

In the organised sector, only five firms are registered with DGTD for manufacturing PVC rigid and flexible sheets and films by the calendering process. These are Bhor, Caprihans, Calico, Amartara and Indian Cork Limited. In all, they have nine plants, Bhor and Caprihans having more plants. Because of the very high capital costs involved in a calendering plant, these units are all of medium size. However, for extruded films there are a number of small units. These units generally first make lay flat tubings and then cut them vertically to get a film. The materials used in the lay flat tubings are PVC, LDPE and pp. The main use of these films, sheeting and lay flat tubings is in packaging garments and other similar products. The type of resin to be based depends on the transparency and clarity required in the film.

Sheets made of HIPS and PVC are used as a "liner" in refrigerators and other similar products. LDPE films are used for canal lining and for storage purposes. Polyester films, if metallised, are used for zari yarn and packaging, whereas unmetallised films are used for manufacture of magnetic tapes used in tape recorders and floppy discs used in computers. Acrylic sheets are mainly used as a stationery item. Cellulose acetate films are used in X-ray films. Several concerns are engaged in the production of these films.

Sheets and films made of plasticised PVC by a calendering process can be sewn, heat-sealed, or electrically-sealed. It is used for apparel, protective clothing and the like. Thicker sheets are coloured and embossed for women's handbags, luggage, seat covers, and upholstery. Thin PVC film is used for packaging, especially of meat and fruits. Another important use is as a laminate for printed papers.

Flooring tiles, largely made of PVC, are manufactured by lamination and decorated either by printing or by rolling in colour chips; the commonest tile is vinylasbestos, pressed into sheets on calender and then embossed and cut into tiles.

Rigid PVC sheets have high dimensional stability and in the corrugated form are used for building construction, partitions, rain gutters, downspouts, industrial tank linings, vacuum-formed signs and lighting panels.

Styrene film is widely used for semirigid food containers especially used for packaging.

Acrylonitrile butadiene styrene or ABS possesses a wide range of properties, notably scuff resistance, plus high impact strength at lower temperature, making it suitable for high-quality luggage, refrigerator linings, and food and detergent containers because of its chemical resistance.

Nylon films are ideal for food packaging because of strength, impermeability to oils and greases, and high melting point. As such films are steam sterilisable, they find many uses in hospitals. They are frequently laminated. Acrylic sheets have high resistance to ultraviolet light and external exposure. Their prime use is in surfacing laminates.

To conclude, articles like plastic boards, sheets, sheeting and films are made of a variety of plastic raw materials. Such articles are mainly used for packaging purposes. It has been estimated that consumer packaging currently absorbs approximately 60,000 MT of plastic raw materials a year. This accounts for roughly 34 per cent of the total consumption of thermoplastics in the country.

c. *Polyurethane foam and articles thereof.* Polyurethane is used either as flexible or rigid foam or as elastomers. Internationally, polyurethane is a large volume product with several sophisticated applications. It is well-known as a cold insulant which can contribute substantially to energy saving. In India, the major use is in the production of mats, mattresses, pillows, cushions, etc. The production of rigid foam in India is yet in its infancy. U-foam and Allwyn are the pioneers in the industry. Polyurethane elastomer products are also manufactured by U-foam (Hyderabad), but the quantity produced is not significant.

The main raw materials for the production of flexible foam are polyol and TDI, both of which happen to be imported products. For production of one tonne of flexible foam, on an average 1.0871 tonne of raw materials are required, polyol contributing roughly 0.6728 tonne, respectively. For rigid foam, TDI is replaced by MDI. For producing one tonne of rigid foam, 1.0859 tonnes of raw materials comprising polyol 0.4748 tonne, MDI 0.5979 and others 0.0132 tonne are required. For polyurethane elastomer products, polyol, NDI and catalysts are used.

2

Structure of Excise Duty on Plastics

Introduction

THIS chapter gives a brief account of the structure of excise duty on artificial or synthetic resins and plastic materials and other specified materials.

The tariff item under which plastics are brought under excise duty at present is much wider in scope than when the item was first incorporated in the Cental Excise Tariff Schedule. Excise duty on plastics came to be levied in 1961 with the introduction of item 15A in the Tariff Schedule with the title and description of "PLASTICS, ALL SORTS, namely, (i) moulding powders, granules and flakes (thermosetting and thermoplastics); (ii) polyethylene films, lay flat tubings and PVC sheets (that is to say, polyvinyl chloride sheets)". The tariff head in question underwent many changes since its incorporation and eventually came to be divided into four sub-items. In 1982, when the item was last reworded, sub-item (1) was aligned with item 39.01/06 of the Indian Customs Tariff Schedule to facilitate classifications of indigenous as well as imported plastics for purposes of levying excise duty and additional duty of customs. This alignment further expanded the scope of the item. 'Cellophane' which had earlier come under a separate head was omitted and merged in tariff item 15A. Likewise, 'polyester films' which had been incorporated in the excise tariff schedule as a separate item 15BB in 1981 Budget became part of item 15A. An account of the evolution of the tariff item 15 A and the duty structure is given in Appendices I and II. The paragraphs below contain a brief description of the components and coverage of the tariff item 15A as it stands now and some of the anomalies noticed in definition of the respective sub-items.

Sub-items of Tariff Item 15A

As of September, 1983, Tariff Item 15A contains four sub-items, namely:

(1) Resins and materials;
(2) Articles of materials;
(3) Polyurethane foam; and;
(4) Articles of polyurethane foam.

Of the four, (1) is by far the most important from the tax angle, accounting for 81.85 per cent of revenue in the year 1981-82. Sub-item (2) contributed 13.45 per cent and sub-items (3) and (4) taken together accounted for the remaining 4.70 per cent (Table 2.1).

a. **Resins and materials.** Resins and materials which are taxed under tariff head 15 A (1) fetching the bulk of the revenue from plastics include mainly the following categories of plastic materials/products:

i. Condensation, polycondensation and polyaddition products;
ii. Polymerisation and co-polymerisation products;
iii. Chemical derivatives of cellulose;
iv. Regenerated cellulose;
v. Vulcanised fibre;
vi. Hardened proteins;
vii. Natural resins modified by fusion (rungum);
viii. Ester gums;
ix. Chlorinated rubber, rubber hydrochloride, oxidised rubber, cyclised rubber;

TABLE 2.1

Revenue from Basic Duty under 15A—Sub-itemwise

(Rs.' 000)

Sub-items	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
(1)	(2)	(3)	(4)	(5)	(6)	(7)
15A (1)	132509	195609	272633	310168	448372	419303
	(71.58)	(78.15)	(80.09)	(79.29)	(77.59)	(77.76)
15A (2)	56617	41560	60325	70157	118712	105072
	(28.42)	(17.50)	(17.72)	(17.93)	(20.54)	(19.49)
15A (3)	—	8965	5599	6256	5901	8267
		(3.77)	(1.64)	(1.60)	(1.02)	(1.53)
15A (4)	—	1392	1877	4597	4914	6580
		(0.59)	(0,55)	(1.18)	(0.85)	(1.22)
Total	185126	237526	340434	391178	577899	539222
	(100.00)	(100.00)	(100.00)	100.00)	100.00)	(100.00)
Miscellaneous duty	17174	618	792	906	3817	1507
Total basic duty	203300	238144	341226	392014	481716	540729

TABLE 2.1 (Contd.)

Sub-items	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82
(1)	(8)	(9)	(10)	(11)	(12)	(13)
15A (1)	387123	477099	729125	N.A.	1004494	1073888
	(81.26)	(76.80)	(83.36)		(84.79)	(81.85)
15A (2)	68870	113388	110548	N.A.	132692	176413
	(14.46)	(19.33)	(12.64)		(11.20)	(13.45)
15A (3)	9148	12850	16803	N.A.	28034	20094
	(1.92)	(2.19)	(1.92)		(2.37)	(1.53)
15A (4)	11266	17906	18209	N.A.	19509	41647
	(2.36)	(3.04)	(2.08)		(1.64)	(3.17)
Total	476405	621243	874685	1096383	1184729	1312042
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100,00)
Miscellaneous duty	541	1905	687	—	2683	2577
Total basic duty	476946	623148	875372	1096383	1187412	1314619

Notes: 1. Figures in parentheses are the percentages.

2. Does not include data in respect of cellophane and polyester films falling under Tariff Item No. 15B and 15 B B.

Source: *Statistical Year Book*, Central Excise—relevant issues.

x. Alginic acid, its salts and esters; and

xi. Linoxyn.

The sub-item, however, does not include artificial waxes and starches.

Explanation III to the Tariff item makes it clear that sub-item (1) is to be taken to apply to materials in the following forms only;

(a) liquid or pasty (including emulsions, dispersions and solutions);

(b) blocks, lumps, powders (including moulding powders), granules, flakes and similar bulk forms; and

(c) waste and scrap.

Part (a) of the explanation is in line with 'note 3(a)' of chapter 39 of the Indian Customs Tariff. As indicated later, the explanation is not adequate to clear doubts about the nature of certain plastic materials like aqueous solution. In the absence of the term 'solutions' in (a), aqueous solutions of resin have been declared as not artificial or synthetic resin in liquid form in a judgement by the Delhi High Court ('Indian Plastics and Chemical Pvt., Limited versus Union of India', decided in 1980).

The basic tariff rate for 15A(1) is 50 per cent *ad valorem*. However, through notifications issued under the Central Excise rules, the effective rates have been reduced for all items. For important items of thermoplastics, the rates broadly range from 27 per cent to 35 per cent, for polypropylene, it is 27 per cent, for LDPE, 30 per cent and for PVC and HDPE, the rate is 35 per cent. For thermosetting plastics, the rate is 15 per cent *ad valorem* both for resins and moulding powders. The 15 per cent is also applicable to certain resins (including moulding powders) like polyester resins, ABC resins, polystyrene resins, nylon resins, and epoxy resins. For certain new items like vulcanised fibre, dextran and chlorinated rubber, the rate of duty is 10 per cent *ad valorem*. Alkyd resins and maleic resin including fumeric resin whether modified or not are wholly exempted from duty, but their moulding powders or compounds in any form are dutiable. For phenolic resins and terpene phenolic resins, the duty is 20 per cent *ad valorem.*

Alkyd, maleic (including fumeric) phenolic and terpene phenolic resins have been so defined as to exclude blends with other artificial or synthetic resins. For residuary items not separately mentioned in the exemption notifications, the rate of duty is 40 per cent *ad valorem.* Differential rates prescribed earlier for naphtha-based and other than naphtha-based plastics have been done away with and uniform rates rates are now applicable except in the case of HDPE, for which the rate is 35 per cent *ad valorem* if naphtha-based. By inference, the rate for other than naphtha-based HDPE may be taken to be 40 per cent, but since IPCL is the only manufacturer of this item, and it is naphtha-based, the distinction is of academic interest only.

PVC compound and polyester polymer chips are wholly exempted from duty, but cellulose acetate moulding granules are dutiable at 10 per cent *ad valorem.* Plastic materials reprocessed from or produced out of scrap or waste of plastic materials and articles of plastics are exempted from duty. There are a few conditional exemptions related to end-use, e.g., cellulose acetate if used in the manufacture of acetate yarn; polyamide chips for manufacture of nylon yarn; resins for particle boards, etc., are exempt from duty.

This sub-item is also covered by the general exemption scheme for small manufacturers. Under this scheme, which has been discussed at some length elsewhere, clearances upto Rs 5 lakh are exempt from duty and clearances in excess of Rs 5 lakh upto Rs 25 lakh enjoy a concessional rate of 75 per cent of the normal duty payable.

Excise duty relief scheme for encouraging higher production is also applicable to this sub-item. Under this scheme, the quantum of relief is as under:

(a) Where effective basic excise duty is not more than 20 per cent *ad valorem*	Upto 110 per cen of base clearances	30 per cent of the duty paid on excess clearances
	In excess of 110 per cent of base	40 per cent of the duty paid on cle-

	clearances	arances in excess of 110 per cent of base clearances
(b) Where effective basic excise duty exceeds 20 per cent *ad valorem*	Upto 110 per cent of base clearances	15 per cent of duty paid on excess clearances
	In excess of 110 per cent of base clearances	20 per cent of the duty paid on clearances in excess of 110 per cent of base clearances

A close look at tariff sub-item 15A(1), shows that this item has certain features which could facilitate evasion. For instance, alkyd and maleic resins (including fumeric resins) have been defined in notification No. 157/81 CE dated 29.8.1981 so as to exclude blends of mixtures of such resins with other artificial or synthetic resins. While these resins are duty-free, the duty on their blends, being residuary items, is 40 per cent *ad valorem*. Such wide difference in tax incidence prompts manufacturers especially those using these blends/mixtures to declare their products as resins. This happens more especially in factories which use these blends for captive consumption.

A similar tendency is noticeable in the case of producers of phenolic resins and terpene phenolic resins where also the definition excludes blends. In the case of phenolic resins, the problem is further accentuated by the prescription of lower duty at 15 per cent *ad valorem* in the case of phenol formaldehyde resin including moulding powder (under notification No.241/82 CE dated 1.11.1982) as against 20 per cent *ad valorem* for phenolic resin (under notification No. 157/81 CE dated 29.8.1981). Phenol formaldehyde resin is a type of phenolic resin, in fact, is its principal variety and yet, while the latter has been defined in the notification, no formal definition has been given for the former. This leads to confusion and is a source of litigation. Several manufacturers are paying duty on phenolic resin under protest and it will not be surprising if some manufacturers clear the product at lower rates even though as per definition, the duty payable would be higher.

The prescription of lower duty on certain moulding powders with naphtha as the base without simultaneously changing the rates for resins, accentuated the tendency to evade by misclassifying the products. Fortunately, the tendency has been neutralised by recently revised notifications (Nos.190/82 and 241/82) levying the same duty both on moulding powders and resins and also by doing away with the distinction between naphtha-based and other than naphtha-based products.

b. *Sub item 15A(2) or articles of materials described in sub-item (1).* Tariff item 15A (2) brings under the charge of excise duty "articles of materials described in sub-item (1)". Not all such articles are, however, excisable. The sub-item specifies the articles on which duty is leviable. These are: boards, sheeting, sheets and films whether lacquered or metallised or laminated or not; and lay flat tubings not containing any textile material. These articles become excisable if made of any of the materials specified under 15A (1). Thus one could say that not all boards, sheeting, sheets etc., are excisable under 15A(2); only those which are made of materials specified under 15A (1), that is to say, articles which conform to the description of boards, sheeting, sheets, films, etc., and are made of materials described in sub-item (1) are liable to excise duty. This description is decidedly better than the earlier formulation of the sub-item whereby articles made of plastics, all sorts (including tubes, rods, sheets, etc,) were covered and duty was confined to boards, sheets, sheeting, films, etc., through exemption notification. The earlier description led to some litigation (refer to Gujarat High Court ruling in the case of Jalal Plastics Industries given in December, 1980). Presumably, the present description seeks to clear the doubt which led to such litigation. The Customs Tariff Schedule also uses the words 'articles of materials' under item 39.07.

From the revenue point of view, the scope of sub-item 15A (2) has been further circumscribed by two exemption notifications of 1982 (Nos. 149/82 CE and 150/82 CE). The second notification exempted articles made of non-plastic material dutiable under sub-item 15A (1), provided duty has been paid on such material. Through notification No.149/82, articles made of plastics, all sorts other than the following have been exempted from duty provided they are produced out of duty-paid artificial resins or plastic materials or cellulose esters and ethers in any form or such articles are produced out of scrap of plastics:

i. films or sheet of regenerated cellulose and polyester films, whether lacquered or laminated or metallised or not:

ii. rigid plastic boards, sheeting, sheets and film whether lacquered or laminated or metallised or not; and

iii. flexible polyvinyl chloride sheeting, sheets, films whether lacquered or laminated or metallised or not and lay flat tubings not containing any textile material. As tariff item 15 A except films or sheet of regenerated cellulose is covered by the Rule 56A, even in the case of the above three items except films or sheets of regenerated cellulose, duty is set off by the proforma credit, of the duty paid on raw materials falling under this tariff item. Provisions have also been made for relief of duty on:

(a) cellophane, paper or cotton fabrics used in the manufacture of rigid articles of other than PVC; and

(b) cellophane, paper, cotton fabrics, adhesives, coated copper foils or plain copper foils used in the manufacture of rigid PVC articles.

Acrylic sheets and acrylic plastic bangle tubes are also exempt from duty if produced out of duty-paid artificial resins and plastic materials, and/or scraps of plastics, and or methyl methacrylate monomer. Like-wise, metallised cellophane is exempt from duty if made from duty-paid plain cellophane film.

There are some end-use exemptions also. For instance:

i. flexible PVC sheeting, sheets and films not containing any textile material are exempt from duty if used within the factory of production in the manufacture of coated textile fabrics, etc., falling under Tariff Item Nos. 19,22 and 22B. Prior to 1.3.1983, concession was also available even when these sheeting, etc., were used outside the factory of their production;

ii. cellulose triacetate, and cellulose triacetate film are exempt from duty if intended for use in the manufacture of cine-films, X-ray films or photograph films.

Goods coming under this sub-item do not come within the purview of the general exemption available to small-scale industries. However, PVC films of thickness below 0.25mm. and lay flat tubings, produced by extrusion process by an industrial unit with initial investment in plant and machinery not exceeding Rs 20 lakh are exempt from duty. Prior to March 1, 1981, the critical limit for investment was Rs 10 lakh.

As mentioned earlier, an important feature of the structure of duties for products coming under sub-item 15A (2) is that such products are distinguished on the basis of rigidity/flexibility. In exemption notification (No. 149/82 CE dated 22.4.1982) criteria for rigidity and flexibility have been laid down as follows:

i. The expression 'flexible' in relation to an article made of plastics, means articles which have a modulus of elasticity either in flexture or in tension of not over 700 kilogram per square centimetre at 23 degrees centigrade and 50 per cent relative humidity when tested in accordance with the method of test for stiffness of plastics (ASTM Designation D-747-63), for flextural properties of plastics (ASTM Designation D-790-63), for tensile properties of plastics (ASTM Designation D-638-64T), or for tensile properties of thin plastic sheeting (ASTM Designation D-882-64T); and

ii. The expression "rigid" in relation to an article made of plastics, means all articles other than "flexible" as defined in (i) above.

The above criteria for rigidity have been in operation for duty purposes since January, 1977. However, when applied to polyethene films, the criteria have resulted in some anomalies and led to abuse. Test results from the National Test House, Calcutta, revealed that plastic films which are very thin in dimension and appear to be not at all rigid in its ordinary sense are actually "rigid" for duty purpose as their modulus of elasticity far exceeds 750 kilograms per sq.cm. and therefore should be treated as dutiable. But in practice these were passed as flexible and so not liable to duty. The result was that there was substantial leakage of excise duty as many manufacturers all over India did not pay any duty on such plastic films. The confusion was compounded by the fact that in the field of plastic technology these films were not really treated as rigid films, but categorised as semi-rigid. It is understood that whenever declarations were obtained from the assessees, the assessees showed them as flexible because of their apparent thinness. The defence of the assessees was that they did not have any machinery to ascertain the modulus or elasticity by ASTM. Thus, excise duty amounting to crores of rupees is believed to have been evaded by plastic sheet manufacturers through misclassification of rigid sheets as flexible. The problem has now practically been got over with the issue of notification No.231/82 CE of October, 1982. This notification exempts films or sheets upto and including thickness of 0.25mm. other than those manufactured from PVC from duty leviable thereon provided such films and sheets are produced out of duty-paid (excise or countervailing customs duty as the case may be) artificial resins or plastic materials or cellulose esters and ethers.

Thus the current position regarding duty liability of articles under sub-item 15A (2) is as follows:

i. Rigid plastic boards, sheeting, sheets and films whether of PVC or other than PVC are liable to duty. However, films and sheets made of plastic material other than PVC is exempt, provided the thickness does not exceed 0.25mm. and the non-PVC ingredient is manufactured from duty-paid artificial resins or plastic materials or cellulose esters and ethers;

ii. Rigid plastic boards, sheeting, sheets and films of PVC are dutiable;

iii. Flexible PVC sheeting, sheets and films are dutiable. However, PVC films, whether rigid or flexible, of thickness below 0.25mm. and lay flat tubings made by small manufacturers have been specifically exempted;

iv. Films or sheet of regenerated cellulose (cellophane) are dutiable; and

v. Polyester films are dutiable.

The basic tariff duty on sub-items 15A (2) is 50 per cent *ad valorem*, but through exemption notifications, the rates have been reduced to 30 per cent *ad valorem* on (i), (ii), (iii) and (v) above and to 20 per cent *ad valorem* on (iv).

In the light of the preceding discussion on the structure of sub-item 15A (2), two suggestions are offered below for reform in order to avoid confusion.

a. *Notification No. 39/73.* In item (iii) of this notification, 'polyvinyl chloride lay flat tubings' may be replaced by 'polyviny chloride lay flat tubings not containing any textile material'. The latter description will be in consonaace with the description of tariff sub-item 15 A (2) and avoid confusion.

b. *Criteria for rigidity/flexibility.* Since films or sheets of other than polyvinyl chloride with maximum thickness of 0.25mm. have been exempted from duty, it does not seem to be necessary to distinguish between rigid and flexible films of other than PVC for duty purpose. Both could be made dutiable. In that case, there will be hardly any need for ASTM for this purpose.

Polyurethane Foam and Articles made of Polyurethane Foam: Sub-item 15A(3) and 15A (4).

Basic tariff rates for these two sub-items are 75 per cent *ad valorem.* The effective rates are also the same except in the case of rigid polyurethane foams for which the effective rate is 15 per cent. The concessional rate for rigid polyurethane is applicable with effect from 9.6.1982. The same rate is applicable to rigid polyurethane foam if such foam is not removed from the factory but is consumed or utilised as such or after subjection to any process or processes in the manufacture of any other goods of polyurethane foam. The following articles made of polyurethane foam are excisable:

(a) Sheets and sheeting,
(b) Mattresses and the like,
(c) Quilts and the like,
(d) Pillows,
(e) Cushions,
(f) Mats,

in any shape or size. Other articles made of polyurethane foam are exempt from duty if produced out of duty-paid (excise or additional duty under section 3 of Indian Custom Tariff Act) polyurethane foam. Articles of polyurethane foam are also exempt from duty if manufactured from wastes or scrap of polyurethane from, or from waste and scrap of articles of polyurethane foam.

Special Excise Duty

Besides basic duty, tariff item 15A is subjected to special excise duty. The latter is levied as a fraction of the former. While the tariff rate of special duty is 10 per cent of the basic duty, the effective rate is 5 per cent of the basic duty. For some time beginning with 1st March, 1974, this item was subjected to auxiliary duty as well, but it was merged with basic duty with effect from 16th March, 1977.

Critical Appraisal of the Tax Structure

The preceding paragraphs give an idea of the current excise tax structure of this item. The evolution of the duty structure relating to plastics since inception is surveyed in Appendices I and II. Two notable points which emerge from this survey are:

i. the tax is levied both at the raw material stage and also at the article stage;
ii. the tax structure does not appear to have been viewed in totality at one time.

Taking the second point first, we find that the existing duty structure is the outcome of attempts made over the years to tackle problems as and when they have arisen without going fully into their overall implications. This has resulted in frequent changes and instability of the tariff structure. Rates have occasionally been changed. It is not clear whether their effect on other similar items was taken fully into account. This has resulted in imbalances, encouraging misclassification, evasion and litigation. In the 1982 Budget the tariff head was aligned with the customs tariff and the form and description of the tariff was changed and yet the notifications issued still read as if the old tariff was in vogue.

Coming to the first point, it is sometimes argued that it might be preferable to levy the duty at one stage only, perferably at the raw material stage. The underlying assumption is that such a step would ease assessment, reduce disputes and make for smoother and easier collection.

Though administratively attractive, shifting the point of levy to the raw material stage only without granting full set-off at the product stage which is possible only under a system of value-added tax, is not desirable. The present system of levying duty both at the raw material and the product stage thus has its merits. In any case, with changed description of the tariff, difficulties of levying duty at the product stage have been considerably reduced.

3

Evasion

Introduction

As in the case of several other commodities, a significant proportion of the duty due on plastics is believed to be evaded through some means or the other. The common methods of excise duty evasion especially where the duty is *ad valorem*, are the following:

—Underreporting;
—Misclassification; and
—Undervaluation.

Underreporting of production is one of the common methods of evading taxes, be it income tax or excise duty. Since it is possible to correlate production with inputs, even though roughly, underreporting of production calls for suppression of purchase of raw materials too. Alternatively, the figure of output can be reduced simply by overstating the proportion of wastage in the production process. However, the conversion of raw materials into plastic products takes place through a chemical reaction and the process does not differ materially from unit to unit. Some norms can be set up for the proportion of wastage and these can be applied for several years until any significant technological change takes place. Hence overstating wastage does not offer a convenient device for underreporting output in plastics.

Misclassification is also a very common way of minimising the tax liability in commodity taxes where different rates of tax are laid down for products which look similar. Units manufacturing a wide range of products which cannot be easily distinguished from each other can evade duty by misclassification if the products are taxed differentially. Obviously, the larger the differential, the greater the temptation to misclassify and show articles carrying high rates as ones going in the low-tax category.

When the duty is *ad valorem*, under-valuation also offers scope for evasion. Understatement of the excisable value is resorted to in various ways, e.g., by appointing sales agents of one's choice and showing the sale price at a lower figure than the price at which it is actually sold. Another way is to show a part of such price as "post-manufacturing expense" and reduce the excisable value thereby.

Finally, in addition to the above-mentioned methods, the SRP Committee pointed out a few more common tax evasion practices adopted by larger units. These include manipulation of accounts, duplication of gate pass book, transportation of more than one consignment on a single gate pass, misdeclaration of composition of excisable goods, understatement of raw material stock position, overstatement of wastage and damage during production, inflation of weight of containers or packing materials, 'damage' during storage and transit and even manipulation of treasury challans.

Evasion through Under-reporting of Production

If excise taxes are to be evaded by underreporting output, the factory concerned has to suppress the actual consumption of inputs also in its accounts. In the plastics industry, especially thermoplastics, the basic raw materials are supplied by government or government-controlled sources. Naphtha, which is an important raw material for several categories of plastics, is supplied by government refineries. In the case of thermoset materials also, formaldehyde is supplied by Rashtriya Chemical and Fertilizer (RCF), which is again in the public sector. Similarly, phenol, the other raw material, essential for manufacturing thermoset plastics has only one manufacturer in the country, *viz.*, Herdillia which is in the large corporate sector. It is unlikely that these undertakings would resort to concealment of their output and this probably is one of the main considerations for taxing plastics by levying the duty mainly on resins and materials while exempting articles made from duty-paid materials.

However, the possibility of underreporting of production cannot be ruled out altogether. But, even assuming that underreporting is practised by some units, quantification of the unreported production poses formidable problems since that requires reliable data on the quantity of feedstocks of different categories supplied to manufacturers of plastic materials and the quantity of materials manufactured in each category. Some of the plastic materials are also produced in the small-scale sector. There are no reliable data on the production of the small sector by type of product or on the quantity of inputs used by small-scale units. The only way one can check whether the clearances of plastic materials are in line with actual production is to compare the figures of clearances compiled by the Central Excise Department with production data available from other sources.

A comparison of the statistics regarding production of plastic materials available from different sources and the clearance figures gathered from the *Statistical Year Book* of the Central Excise Department shows that clearances under sub-item 15A(1) in the aggregate did not fall short of the production in the years for which data are available (vide Table 3.1). It must be mentioned, however, that a proper investigation of the incidence of evasion of excise duty through underreporting could not be undertaken in the absence of adequate information regarding quantity of feedstock used in the production of plastic materials in the country. It is understood that the field offices of Central Excise authorities do collect information regarding inputs but these are not collected or compiled at one place and so a valuable source of information goes unutilised.

Another way of checking the reliability or otherwise of the reported production figures of an industry is to check the quantity of production disclosed with the consumption of the article in question and inventory change in a given year. In the case of plastic materials, to estimate underreporting by the consumption route is rather difficult because of the heterogeneous nature of the plastic products and the difficulty of relating actual consumption to the figures given in the *Statistical Year Book* under different sub-heads of the tariff item in question. However, this method was tried for the present study in the case of polyurethane foam and the results are discussed elsewhere.

(a) *Suggested methodology for estimating evasion in 15A(2).* It has been mentioned earlier that item 15A (2) was intended to comprise the following three major categories of semi-finished goods for taxation purposes:

i. Rigid PVC items;
ii. Flexible PVC items; and
iii. Rigid items manufactured from resins other than PVC.

With the changes made through the 1982 Budget, cellophane and polyester films have been included in 15A(2). While in the case of (i) and (ii), films of thickness below 0.25 mm. and lay flat tubings made by small-scale industry were exempt from duty, in the case of (iii) also exemption has been extended to films and sheets with maximum thickness of 0.25 mm. w.e.f. October, 1982. In the case of (i) and (ii), it should be possible to get an idea of the magnitude of evasion by correlating the end-use of the polymer with the clearances of semi-finished product, the only constraint being the paucity of data on production in the exempted sector. The methodology is explained below:

Starting with the production of the polymer. from end-use analysis one can get an idea of the quantity of polymer used in the manufacture of profile shapes such as particle boards, films, sheets and sheeting. As the duty is *ad valorem*, precise data on prices of various items are necessary for deriving the figure of production in quantitative terms from the amount of duty paid.

To use some algebra, let Q_i be the total quantity of production of a particular resin (say i) and x_i be the proportion of this resin used in the manufacture of excisable goods. Further, let y_i be the conversion factor, i.e., one unit of the polymer required in the production of y_i units of the final

TABLE 3.1

Production/Clearances of Plastic Resins and Materials

(Tonne '000)

Resins/Materials	Petroleum Ministry (Production)				DGTD (Production)				DSIE & C (Clearances)			
	1977-78	1978-79	1980-81	1981-82	1977-78	1978-79	1980-81	1981-82	1977-78	1978-79	1980-81	1981-82
1. Thermoplasts												
a. LDPE	18.45	56.03	87.15	94.29	19.10	57.11	87.06	92.72	—	—	—	—
b. HDPE	25.59	28.07	24.29	31.73	25.60	28.07	24.29	31.73	—	—	—	—
c. PVC	59.02	62.64	42.05	37.04	55.57	62.64	39.41	37.26	—	—	—	—
d. PS	13.57	14.47	10.21	7.64	13.50	14.47	10.20	7.94	—	—	—	—
e. PP	—	7.13	16.73	20.64	—	—	16.73	20.64	—	—	—	—
TOTAL—1	116.63	168.34	180.43	191.34	113.77	162.29	177.69	190.29	—	—	—	—

TABLE 3.1 (Contd.)

2. Thermosets												
a. MFMP	0.18	0.18	0.21	0.33	—	—	0.19*	0.43*	—	—	—	—
b. PFMP	4.38	4.24	4.79	4.56	4.49*	3.81*	4.73†	5.25†	—	—	—	—
c. UFM	2.23	2.50	2.85	3.25	2.19†	2.11†	3.15†	3.42†	—	—	—	—
d. CAMP	0.99	0.77	0.32	0.29	—	—	0.26†	0.31†	—	—		—
TOTAL—2	7.78	7.69	8.17	8.43	6.68†	5.92†	8.33	9.41	—	—	—	—
TOTAL (1 + 2)	124.41	176.03	188.60	199.77	120.45	168.21	186.02	199.70	189.31††	231.71††	216.63††	282.24††

Notes: †For calendar year beginning with

††Does not include data reported in units other than tonne. Details of production, clearances and revenue as per DSIE & C for all the four sub-items of Tariff Item 15A are shown in Table 3.1a.

Sources: 1. Directorate of Statistics and Intelligence, *Statistical Year Book-Central Excise*—relevant issues.

2. Ministry of Petroleum.

3. D.G.T.D.

TABLE 3.1a

Production, Clearance and Revenue* of Artificial or Synthetic Resins and Plastic Materials and Articles

Tariff item/Revenue		Unit		1976-77		1977-78		1978-79		1980-81		1981-82	
				Production	Clearance	Production	Clearance	Production	Clearance	Production	Clearance	Production	Clearance
				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
15A(1)	Artificial or synthetic resins and plastic material in any form	Nos.	('000)	164	161	—	—	2317	1816	415	260	42987	20140
		Litres	('000)	448	278	1750	1806	2469	2455	896	930	2035	2062
		Kgs.	('000)	196846	188518	204378	189306	268068	231712	223384	216629	287349	282239
		Metres	('000)	—	—	—	—	—	—	19	21	8844	7762
		Sq.m.	('0C0)	—	—	—	—	356	61	82	83	115	91
	Revenue	(Rs)	('000)	387123		477099		729125		1004494		1073888	
15A(2)	Articles made of plastics	Nos.	('000)	78993	75513	71533	60696	78274	73345	85064	76462	31447	31001
		Litres	('009)	—	—	—	—	22	23	5	1	—	—
		Kgs.	('000)	9689	8759	20726	21835	15040	12971	18941	13137	21179	18418
		Metres	('000)	15229	17022	30331	26858	34390	31492	29406	22809	29085	29052
		Sq.M.	('000)	—	—	—	—	3746	2005	2043	1973	3707	2772
		Rims	('000)	—	—	—	—	1376	837	—	—	—	—
	Revenue	(Rs)	('000)	68870		113388		110548		132692		176413	

TABLE 3.1a (Contd.)

				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
15A(3)	Polyurethane foam	Nos.	('000)	130	132	182	189	313	330	1234	1262	719	720
		Litres	('000)	—	—	—	—	—	—	—	—	—	—
		Kgs.	('000)	985	902	1157	905	1509	1169	1034	1011	555	560
		Metres	('000)	—	—	—	—	—	—	32	43	27	19
		Sq.M.	('000)	—	—	—	—	37	37	52	46	8	3
	Revenue	(Rs)	('000)	9146		12850		16803		28034		20094	
15A(4)	Articles made of polyurethane foam	Nos.	('000)	986	945	1662	1673	1751	1964	1266	1437	3102	3084
		Litres	('000)	—	—	—	—	—	—	—	—	—	—
		Kgs.	('000)	601	609	829	679	588	586	479	446	1587	1295
		Metres	('000)	—	—	—	—	—	—	7	5	227	236
		Sq.m.	('000)	—	—	—	—	—	—	7	5	171	172
	Revenue	(Rs)	('000)	11266		17906		18209		19509		41647	
	TOTAL Revenue	(Rs)	('000)	476405		621243		874685		1184729		1312042	

Note: *Revenue from basic duty.

Source: Compiled from various issues of the *Statistical Year Book-Central Excise*, published by Directorate of Statistics and Intelligence.

product. If the price of the final product is p_1 and t_1 the rate of duty then the gross yield of excise dulty is $T = x_1 y_1 Q_1 P_1 t_1$.

If price of polymer is p_1 and the rate of excise duty paid on the polymer is T_1, the value of proforma credit available is obtained as

$P_1 (x_1 Q_1) T_1$ and the net potentiai tax revenue is

$$PT = x_1 y_1 Q_1 P_1 t_1 - x_1 p_1 Q_1 T_1$$
$$= x_1 Q_1 (y_1 p_1 t_1 - p_1 T_1)$$

The revenue potential estimated in the above manner as compared to the revenue actually collected on the items would give an idea of the extent of evasion of excise duty, provided some adjustment can be made to allow for production of profile shapes in the exempted sector on which no duty is payable.

Theoretically, the above method could also be applied for estimating evasion in the case of rigid items manufactured from plastic materials other than PVC. However, in practice, one faces a host of difficulties. In the first place, the item is composed of a heterogeneous group of products manufactured from different types of polymers with prices differing widely both for the final products and for the polymers. Secondly, the excise records show the revenue for the item as a whole and not separately for each product. Thirdly, no record is maintained about the quantity cleared free of duty, especially in the case of manufacturers who are not required to take out a licence. Fourthly, the quantity of polymers used in the production of rigid and flexible items according to end-use is not known. Finally, the criterion of rigidity is still not entirely clear. In view of these difficulties, it has not been possible to make use of this method for determining the quantum of evasion in the case of rigid items of plastics other than PVC.

The production approach suffers from another serious constraint, *viz.*, the intermingling of production, clearances and revenue figures of various materials and products, either at the reporting stage or at the compilation stage or at both. It is stated that there are five items, *viz.*, polyethylene;

polyester films; rigid PVC boards, films, sheeting, sheets; flexible PVC films, sheeting, sheets; and boards, films, sheeting, sheets of other than PVC where the current rate of basic duty is 30 per cent *ad valorem* in each case. Data regarding these items are mixed up, rendering it difficult to derive precisely the actual base for comparison with the estimated figures. This is a serious drawback particularly in this industry, thwarting any serious attempt to arrive at a precise estimate of evasion.

For estimating the extent of evasion in PVC articles, we started with the year 1977-78. Available data show that the consumption of PVC resins during the year was of the order of 67, 227 MT of which 28.3 per cent was used in the manufacture of films, sheets, lay flat tubing, etc. Applying this proportion to the total PVC consumption, the quantity of PVC resins used in making films works out to 19,294.15 MT. Our assumption is that 15 per cent of the said 19, 294.15 MT. (or 2.894.12 MT.) went into the manufacture of rigid films and the remaining 85 per cent (i.e., 16,400.03 MT.) was used for producing films of the flexible category.[1]

To calculate the amount of set-off available for each of these two types of films, the quantity of PVC resins used in manufacturing rigid and flexible films was multiplied by the value and the relevant rates of excise duty (*viz.*, Rs 5, 748.67 per MT. and 42 per cent *ad valorem*, respectively).[2] Based on these data the set-off for rigid films worked out to Rs 69,87,683 and for flexible films to Rs 3,95,96,911.

The production figure of rigid and flexible films could be obtained by applying the relevant conversion factors. Raw material requirements for these films as gathered from industry sources are given below (Table 3. 2.).

[1] Report of the Reconstituted Working Group on Petrochemicals, Ministry of Petroleum, Chemicals and Fertilisers, New Delhi.

[2] Price of PVC resins used here is the weighted average of individual prices of each of the five manufacturers of PVC resins.

TABLE 3. 2

Raw Material Requirement of PVC Films

Ingredients	Flexible films	Rigid films
PVC resins	80.30 kgs.	92.24 kgs.
Plasticizers	17.75 kgs.	1.91 kgs.
Stabilizers	1.61 kgs.	2.38 kgs.
Pigments etc.	0.40 kgs.	0.46 kgs.
Total weights of final product	99.86 kgs.	99.93 kg..

Source: Industry source.

From the above table it will be observed that one kg. of PVC resins yields approximately 1.08 kgs. of rigid films. Similarly, one kg of resin yields 1.24 kgs. of flexible films. Thus, 2,894.12 MT of PVC resins should normally yield 3,135.4896 MT of rigid films. Likewise, 16,400.03 MT of PVC resins should yield 20,395.077 MT of flexible films. Assuming that the average price of these films was around Rs 15,019.76 per MT, [3] the value of rigid films comes to Rs 4,70,94,301 and that of flexible films, Rs 30,63,32,900.

To estimate the maximum realisable revenue from excise duty on these two types of films, we take the rate of duty on rigid film at 25.2 per cent and that on flexible fiilm at 31.5 per cent.[4] Applying these rates, the potential revenue from excise duty on rigid films worked out to Rs 1,18,67,763, and

[3] Prices of rigid and flexible films vary quite widely, depending upon various factors such as thickness, colourability, etc. For the five calendering units the figures were available for production in physical quantities and value thereof from the DGTD.. Of these five units, the product of two big ones, *viz.*, Bhor and Caprihans, manufacturing similar products have been considered here while for computing a representative price of the films, we have taken a weighted average of these prices.

[4] In the year 1977-78, the rate of basic duty on rigid films was 24 per cent whereas that on flexible films was 30 per cent. In addition, 5 per cent of the basic duty was charged by way of special excise. Thus the effective rates for rigid and flexible films worked out to 25.2 per cent and 31.5 per cent, respectively, for the year under considerat-ion.

from flexible films, Rs 9,64,94,863.

To obtain the net tax liability or the potential tax revenue, we have to subtract the amount of set-off available from the duty paid on resins following the method described earlier for each of these films. Allowing for set-off, the potential tax from the rigid films came to Rs 48, 80, 080. Similarly, the potential tax for flexible films worked out to Rs. 5,68,96,741.

The actual revenue from the basic duty on rigid films in 1977-78 was Rs 44,13,000, while on flexible films it was Rs 2, 25, 80, 000. Besides basic duty revenue from auxiliary and special duties should also be added to the yield of the basic duty. To carry out this adjustment, first, a ratio of the total revenue from auxiliary and/or special duty to the total gross revenue had to be obtained. The required ratio, i.e., the adjustment factor was $\frac{34193}{623151}$ or 0.0547.

The realised revenue from the basic duty on each of the two types of films was raised by the above proportion. The adjusted yield of excise duty on rigid films and other similar products came to Rs 44,13,000 (1+0.0547) or Rs 46,54,391. Similarly, the total revenue from flexible films worked out to Rs 2, 25, 80,000 (1 + 0.0647) or Rs 2, 38, 15, 126. Hence the degree of evasion in the case of rigid films may be put at $(1 = \frac{46,54,391}{48,80,080})$ or 4.6 per cent of the potential.

By this method the incidence of evasion in the case of rigid films and other similar items made of PVC turns out to be roughly 5 per cent of the potential. In other words, roughly 95.00 per cent of the potential revenue was realised.

In the case of flexible films, we may assume that 57 per cent of total production takes place in the extruding units.[5] If K is the proportion of extruded films (i.e., K per cent of the production of lay flat tubings marketed as films), then the potential revenue of excise duty from these films in the year in question should have been Rs 5,68,96,741 (0.43 + 0.57K), depending on the value of K. Obviously the value of K

[5] This figure has been supplied by the AIPMA.

would lie between O and 1.

Scenario 1

Taking K to be equal to zero, that is, assuming that the production of lay flat tubings is not sold as films at all, the potential revenue will be the revenue of the excise duty collected from the calendering units alone. On this assumption the potential revenue from flexible films in the year under consideration was Rs 2,44,65,598. Comparing this figure with the actual revenue, we find that roughly 97.34 per cent of the potential was realised and, the extent of evasion was 2.66 per cent.

Scenario 2

If K=1, that is, all extruded films are marketed as flexible film, the potential revenue comes to Rs 5,68,96, 741.

Comparing this figure with actual revenue it is noticed that only 41.86 per cent of the estimated potential was realised. If this assumption happens to be valid, the incidence of evasion comes to about 58 per cent of the potential in the year in question.

In estimating the extent of evasion both for rigid and flexible PVC films, etc., it was not possible to adjust the potential to allow for the production of flexible films of thickness below 0.25 mm. and lay flat tubings by extrusion process in the small-scale units. The data required for such adjustment are not available. Again, flexible PVC sheeting, sheets and films used in the manufacture of impregnated or coated fabrics were exempt from duty. Some adjustment is needed in the consumption data of PVC for flexible films to allow for these uses also as otherwise the estimate of evasion gets inflated. Again, the use of flexible PVC sheets, films and sheeting elsewhere than in the factory of production of these sheets, films, etc., was subject to the procedure set out in Rule 56 A. It is anybody's guess as to what is the amount of proforma credit availed of under this Rule. Evidently, the estimate of evasion would be on the high side unless some allowance is made for proforma credit as well. The *Statistical Year Book* of the Excise Department gives some statistics of production and clearances of flexible films, sheets, etc., cleared free of duty for use in the manufacture of impregnated and coated fabrics. But, the data are given in varying units, rendering it difficult to use them for the purpose we had in mind. It is said that 60 per cent of the consumption of flexible sheets is accounted for by leather cloth. Assuming this to be true, the further question regarding the size of proforma credit availed of still remains to be answered. Further, against proforma credit, there would not be any set-off of material stage duty. This could also be worked out, but that would involve many assumptions which may not be valid in fact. Hence the matter was not pursued further.

It was not possible to attempt any estimate of evasion for subsequent years, partly because of the problems mentioned above and partly because the data for subsequent years except 1978-79 are either not available or are not reliable. For 1979-80, the relevant data have not been compiled. For 1980-81, data for different types of films, sheets and sheetings appear to have got enmeshed. For 1981-82, the consumption figures of PVC could not be obtained from the Ministry of Petroleum as they are not yet ready.

b. *Polyurethane foam*. In the case of polyurethane foam, coming under sub-item 15 A (3), it was not possible to estimate the potential for comparison with actual production due to non-availability of import statistics in respect of TDI and polyol, the two principal inputs. These raw materials are on the OGL list and their imports are not separately reported. However, an attempt was made by examining production figures against the utilisation of raw materials by various factories and the results are set-out below. Likewise in the case of articles of polyurethane foam [sub-item 15 A (4)] no comparison between estimated production could be attempted as the actual production figures of articles are reported in heterogeneous units and therefore cannot be matched.

Table 3. 3 sets out the data on raw materials used and flexible polyurethane foam produced in seven factories. The weighted average of raw materials used in the seven factories for producing one tonne of flexible polyurethane foam works out to 1.0871 tonne. The utilisation of raw materials for producing one tonne of foam for each factory was compared with the norm of 1.0871 and the differences noted. Standard error of these differences was worked out and it came out to 1.24. As the sample was small, 't' test was applied. It was noted that standard error is not significant either at 10 per cent or 5 per cent level.

TABLE 3. 3

	Production (tonne)	Raw material utilised (tonne)	Average quantity utilised for producing one tonne of foam (tonne)
Factory I	103	115.7	1.1233
Factory II	379.58	404.47	1.0656
Factory III	182.26	194.44	1.0668
Factory IV	274.39	297.541	1.0843
Factory V	23.91	27.56	1.1527
Factory VI	344.30	379.40	1.1020
Factory VII	144	158.80	1.1028

The variations could, therefore, have arisen due to errors and no inference regarding evasion can be drawn.

Evasion through Misclassification

Misclassification is another common method of evading commodity taxes. Ambiguity in the definition of the tariff item is the main factor which facilitates evasion through this device. The more ambiguous the tariff head and the notifications, the greater the scope for evasion and litigation. The tendency to exploit ambiguity and lack of clarity increases where the items are assessable to duty *ad valorem*. For with *ad valorem* duty, evasion is all the more paying as generally high-priced articles are subjected to comparatively high rates of duty. We have earlier drawn attention to the possible loss of revenue arising from the lack of clarity in the criterion for flexibility in the case of films, sheets and sheeting of non-PVC materials. Here we examine the scope for evasion in phenol formaldehyde moulding powders and a few other items.

a. *Phenol formaldehyde moulding powders.* Currently the effective rates of basic duty on moulding powder of phenol formaldehyde is 15 per cent *ad valorem*, effective from June 3, 1982. The same rate is also applicable to phenol formaldehyde resins. On phenolic resins, however, the effective rate of duty at present is 20 per cent under notification No. 157/81 CE of 29.8.1981. Explanation (iii) of the said notification runs as follows:

Explanation—For the purpose of this notification—(iii) the expression "phenolic resins" means synthetic resin manufactured by reacting any of the phenols with an aldehyde and includes chemically modified phenolic resins and liquid phenolic resins but does not include blends of the phenolic resins with other artificial or synthetic resins.

Since phenolic formaldehyde resins are also synthetic resins and manufactured by reacting phenol with formaldehyde (an aldehyde), one would have thought that they ordinarily come under the category of "phenolic resins". The rate of basic excise duty on the phenol formaldehyde resins including their moulding powders is 15 per cent *ad valorem* by virtue of notification No. 241/82 CE of 1.11.1982. On phenolic resins other than those of formaldehyde, however, the rate is 20 per cent *ad valorem*.

The position was different during the period February, 1980 to June, 1982. During this period, (i) the general effective basic duty rate was 40 per cent *ad valorem* on tariff item 15A (1) (notification No. 5/80 CE of 27.2.1980); the rate of duty on phenolic resins was 20 per cent *ad valorem* (notification No. 122/71 CE of 1.6.1971 as amended from time to time); (iii) since phenolic formaldehyde resins are also phenolic resins, the rate on these could also be assumed to be 20 per cent *ad valorem*: (iv) however, the rate of duty on phenol formaldehyde moulding powder manufactured from duty-paid raw naphtha or any chemical derived therefrom was 30 per cent *ad valorem.* Thus by derivation, the rate of duty applicable to other phenol formaldehyde moulding powder would be the general rate, i.e., 40 per cent *ad valorem.*

According to the DGTD and the Ministry of Petroleum, there are three major factories which produce phenol formaldehyde moulding powder. They are (i) M/s Indian Plastics Ltd., Kandivili, of Bombay (IPL); (ii) The Industrial Plastics Corporation Pvt. Ltd. (TIPCO) and (iii) Bakelite Hylam, Sanathnagar, Hyderabad (BH). From statistics maintained by the Ministry of Petroleum, it appears that these three factories produced 4,693 tonnes of phenol formaldehyde moulding powder during the year 1981. In the year 1982, while the total production was of the order of 4,351 tonnes, the contribution of IPL was 1,615.1 tonnes, TIPCO 1,444.2 tonnes and BH 1.291.7 tonnes, respectively. TIPCO's production of 1,444.2 tonnes includes a certain quantity of resins also for which separate figures are not available. However, from excise records, it appears that in the months of April and May, 1982, the total production of 221.6 tonnes included 20.7 tonnes of resins, i.e., less than 10 per cent of the total production.

From what has been stated earlier, it would be seen that the rate of basic excise duty on phenol formaldehyde moulding powder during the period 27th February, 1980 to 2nd June, 1982 was 30 per cent *ad valorem* if manufactured from duty-paid naphtha or any chemicals derived therefrom and 40 per cent otherwise. From a perusal of RT 12 returns for April and May, 1982 (extracts given in Table 3.4) it will be seen that two factories, *viz.*, IPL and TIPCO, cleared their goods by paying basic duty at the rate of 20 per cent *ad valorem.* Thus, *prima facie*, they seem to have short-paid the duty by 50 per cent. The shortfall in duty realisation from the two factories comes to approximately Rs 63 lakh in 1981-82. It is to be noted, however, that there is no differential now in the rate of duty on formaldehyde resins and moulding powder. Hence these factories have been paying duty at the rate of 15 per cent *ad valorem* from June, 1982 onwards.

In the case of the third factory, *viz.*, M/s Bakelite Hylam

Ltd., nothing wrong was found as the factory paid duty at the rate of 30 per cent *ad valorem* on the powder manufactured by them, the powder manufactured being, presumably, naphtha-based.

b. *Non-PVC rigid films, sheets, sheeting.* Earlier we have explained the difficulty in applying the PVC approach in measuring evasion to non-PVC plastics products. At the same time, our study suggests that a sizeable amount of duty was probably evaded because of the non-application of the American Standard of flexibility in the case of plastics products. It is difficult to make any precise estimate of revenue loss on this account. However, comparing the value of clearances of this item in the first six months of 1982-83 with that of the first six months of 1981-82, one notices a rather large difference. The value of clearances in the period April to September, 1982 was of the order of Rs. 26.91 crore as against Rs. 18.33 crore in the period April to September, 1981. The sharp rise in the clearances during April-September, 1982 cannot be explained entirely by increase in production. There is reason to think that rigorous enforcement of the ASTM standard in the later period has led to the disclosure of clearances which escaped the revenue net earlier.

With the rate of duty at 31.5 per cent *ad valorem* (basic and special), the shortfall in revenue within the first six months of 1981-82 as compared to that realised in the corresponding period of 1982-83 comes to Rs. 2.70 crore. The gap for the entire year 1981-82 due to misclassification may, therefore, be placed at Rs. 5.40 crore. This is a rather crude way of looking at the problem but the large gap does indicate substantial evasion which, however, has now been taken care of to a considerable extent though rationalisation of rates.

c. *Ambiguity about the relevant tariff head for plastics products.* Products containing plastics material often give rise to problems of classification and thus evasion/avoidance also because of uncertainty as to whether they are assessable under tariff item 15A (2) or under some other specific head or under the residuary head item 68. There have been disputes regarding the tariff head under which plastics products ought to be taxed in several cases. For instance, in a case which

TABLE 3.4

Extracts from RT 12 Returns

Dated	Description	Production (kg.)	Duty-Paid clearances for home consumption: Outside the factory (kg.)	Within the factory (kg.)	Value of clearance (Rs)	Basic duty (Rs)	Rate of duty (per cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1. INDIAN PLASTICS LTD., KANDIVILI, BOMBAY (IPL)						
1. April 1982	(i) Phenolic resin	58009	56119	1380	1462908	292580	20
	(ii) P.F. moulding powder	138394	107028	365	1417662	283532	-do-
	(iii) P.F. moulding powder nylon filled	—	215	—	12335	3700	30
	(iv) P.F. modified M.F., U.F. resins	1425	1000	—	9124	3650	40
2. May 1982	(i) Phenolic resin	45297	45698	550	1145816	229163	20
	(ii) P.F. moulding powder	129393	123537	300	1658552	331710	20
	(iii) P.F. moulding powder nylon filled	—	299	—	17153	5146	30

TABLE 3.4 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(iv) P.F. modified, M.F. and U.F. resins	601	706	—	6660	2664	40
	2. THE INDUSTRIAL PLASTICS CORPORATION PVT. LTD. (TIPCO)						
3. April 1982	Phenolic material 'M' P.F. resins in form of moulding powder	111813	102933	—	1378385	275677	20
	Phenolic material 'O', i.e., P.F. resins in forms other than moulding powders	12408	17433	—	388321	77665	20
	N.B. Clearances, without payment of duty for other purposes were 3,800 kgs. and 17,515 kgs. respectively.						
4. May 1982	Phenolic material 'M' i.e., P.F. resins in form of moulding powder	89033	74768	—	817069	163424	20
	Phenolic material 'O', i.e., P.F. resins in form other than moulding powder	8328	9628	—	205042	41008	20

N.B Issue for reprocess of phenolic material 'M' 535 kgs.

went up before the Gujarat High Court, the question was whether marble floor tiles with a given composition were liable to excise duty under tariff item 15A(2). The Court took the view that the tiles in question were not articles made of plastics because plastics materials constituted only 10 to 15 per cent of the total quantity of a tile and served only as a binding agent and not as the principle ingredient (Bhor Industries Limited vs. Union of India). A similar problem arose in the classification of plastic bangles made out of a monomer, technically known as methyl methacrylate. The monomer in question is not a plastic material but undergoes polymerisation in the process of manufacuring bangles. The Court held that these bangles were not excisable under tariff item 15A. In another case, the question arose whether torches made of plastics came under tariff item 15A(2). In yet another case, the question was about the classification of certain PVC sealing tapes.

An important factor which seems to have been responsible for giving rise to litigation over classification of products made out of plastics was the wide coverage of sub-item 15A(2) as it stood before the change made through the 1982 Budget. The coverage of the item then was wide and thus any article which contained even a small quantity of plastic material was liable to be classified under item 15A(2). The sub-item in question has since been redefined and its scope considerably narrowed down with the result that product of plastics other those those clearly specified under the sub-item 15A (2) now come under some other head such as item 68. The exemption granted to items of plastics under item 68 also has served to reduce litigation over classification of plastic products. Further, a uniform rate of basic duty, i.e., 30 per cent *ad valorem* is now applicable to all the three, rigid PVC items, flexible PVC items, and rigid items manufactured from resins other than PVC. This also should have acted as a disincentive for evasion. However, there is still scope for improvement as indicated in the chapter on suggestions and recommendations.

Evasion through Undervaluation

As indicated in Chapter 2, plastics are subjected to excise duty at *ad valorem* rates. On some of the plastic materials and products, the rates of duty are quite high. For instance, on polyurethane foam and foam products the rate of duty is as high as 78.5 per cent. On four out of five items covered under sub-item 15A(2), the rate of duty is 31.5 per cent *ad valorem* and on cellophane, the fifth item under this head, the rate is 21 per cent. While the rates of duty in respect of several resins and powders covered under sub-item 15 A (1) have been reduced, the rates on the main items like PVC, LDPE and HDPE remain high. Not surprisingly, this creates a tendency among manufacturers to undervalue their products and in the proccss to evade duty. Multiplicity of products and variation in quality provide scope for undervaluation in plastics more than in products with standardised quality and price.

Whether and if so to what extent undervaluation is resorted to in order to defraud revenue is not easy to make out in the absence of reliable information regarding the prevailing prices of the various products at arm's length transactions. However, from the RT 12 returns it was noticed that resins produced for captive consumption within a factory are often undervalued. A sample check of the RT 12 returns revealed that against an average price of Rs 15.55 per kg. in December, 1982, the prices reported for valuation purposes were unduly low in the case of some important manufactures and users or phenolic resin. The prices of the products were lower than Rs 10 per kg. in the case of these manufacturers. Such variation is difficult to explain even if some allowance is made for differences in quality between manufacturers.

For LDPE films, the value was strikingly low in respect of one important factory in Chandigarh collectorate. The relevant figures are given below:

TABLE 3.5

November, 1982

Production		63,501 kgs.
Removal		
Outside the factory		1,231 kgs.
Within the factory		6,2663 kgs.
Value	Rs	10,11,776
Duty (Basic)	Rs	2,94,766

There are three factories manufacturing LDPE. An examination of the assessable value of these factories during the period April to June, 1982 showed that there were large variations in their assessable value, as will be evident from the following table:

TABLE 3.6
Low-Density Polyethylene

Factory	Removal during April to June, 1982 (tonne)	Assessable Value	
		Total (Rs '000)	Per tonne (Rs)
IPCL	17,949	2,23,447	12,449
UCIL	3,672	51,203	13,944
ACCI	2,572	27,951	10,867

It would be seen that the assessable value per tonne in respect of ACCI is 87.3 per cent of the assessable value of IPCL and 77.9 per cent of the assessable value of UCIL. The difference may be due to the fact that IPCL and UCIL are naphtha-based whereas ACCI is alcohol-based. Even so, such differences appear to be somewhat intriguing.

There have been numerous disputes over valuation in Central Excise. Sometimes, the Courts' interpretation of the law on the point has been conflicting. The question whether post-manufacturing expenses should be included in the excisable value has been a matter for dispute until the recent judgement of the Supreme Court. To what extent the uncertainty on the point affected the collection of duty under item 15A is not known. Even after the law is settled on the question, the scope for evasion through undervaluation will remain. However, the extent of such evasion is difficult to quantify at the aggregate level and has to be found out case by case, which is beyond the scope of this study.

Abuse of Concessions in the Small-Scale Sector

Another potent source of tax evasion is the misuse of concessions given to the small-scale sector. Prior to March, 1978, small manufacturers of commodities under the Central

Excise control enjoyed concessions based on varying criteria for different commodities. In the 1978 Budget, an attempt was made to rationalise the structure of exemption of small manufacturers. With this end in view, 69 excisable commodities were specified and full exemption was given for clearances upto Rs 5 lakh in respect of manufacturers, whose total clearances, for domestic consumption of the specified goods, during the preceding financial year did not exceed Rs 15 lakh. Consequential changes were made simultaneously in the existing exemptions relating to small manufacturers, wherever applicable, and the changes were enforced with effect from the 1st April, 1978. The annual loss of revenue due to this change was estimated at Rs 28 crore.

One more item was added later and at the time of the introduction of the Finance (No. 2) Bill, 1980, 70 specified items were covered under the general scheme of exemption for small manufacturers. The scope of the scheme was widened by including three more items, *viz.*, (1) certain specified chemicals; (ii) artificial or synthetic resin and plastic material; and (iii) all varieties of paper and paper board and a comprehensive notification No. 80/80 CE was issued on the 19th June, 1980. This notification also provided additional relief in excise duty to the extent of 25 per cent of the duty leviable on each of the items in respect of units which were eligible for the said exemption and whose clearances exceeded Rs 5 lakh, in a financial year. The concessional rate was made applicable on clearances upto a value of Rs 10 lakh in excess of the clearance of Rs 5 lakh. For becoming eligible for the concessions, the aggregate value of clearances of the specified goods for home consumption should not have exceeded Rs 15 lakh of the specified goods or of Rs 20 lakh of all excisable goods manufactured.

From 1.4.1981, the existing limit for duty-free clearances was raised from Rs 5 lakh to Rs 7.5 lakh, per annum. Thus, from 1.4.1981, full exemption was available on the first clearances of Rs 7.5 lakh of specified goods in a financial year to a manufacturer, whose clearances of such goods from one oe more factories during the preceding financial year did not exceed Rs 15 lakh, but where the manufacturer was also engaged in the production of other excisable goods, the value of all excisable goods should not have been in excess of Rs 20 lakh. Further, for such manufacturers, further clearances of specified goods of Rs 7.5 lakh were chargeable to duty at only 75 per cent of the Central excise duty leviable thereon.

With effect from the financial year 1983, the general scheme was again modified and is now applicable to 67 specified items. The limit of duty-free clearance has been reduced again to Rs 5 lakh. For clearances in excess of Rs 5 lakh upto Rs 25 lakh, reduced rate equal to 75 per cent of the effective duty would be chargeable. In the earlier schemes, there were two eligibility limits of Rs 15 lakh and Rs 20 lakh relating to the clearances of specified goods and the clearances of all excisable goods respectively. Under the new scheme, there is only one eligibility limit of Rs 25 lakh relating to clearances of all excisable goods. Under the new scheme, for the purpose of computing the aggregate value of clearances, the value of goods completely exempt from duty is not to be taken into account. As in the old scheme, in the new scheme also, small manufacturers of artificial or synthetic resins and plastic materials and other specified materials under tariff 15A(1) are covered.

From the preceding discussion, it would be seen that artificial or synthetic resins and plastic materials were brought under the general scheme of exemption for small manufacturers only from June, 1980. It is to be noted that initially (i.e., in June, 1980) the exemption was granted only to sub-item (1) of tariff item 15A and that in the year of its introduction, it was estimated that this relief measure would cost the exchequer Rs 1 crore annually. In 1981-82, when the duty-free limit was raised from Rs 5 lakh to Rs 7.5 lakh per annum, the revenue loss was estimated at Rs 4.00 crore for all the 72 specified commodities. Separate estimate for tariff item 15A(1) is not available. However, it could roughly be placed at Rs 12 lakh (vide Table 3.7).

Taking into account the possible growth in clearances and increase in prices, the revenue cost of the relief to small units may be placed at Rs 1.20 crore in the year 1981-82.

TABLE 3.7

	(Rs crore)
1. Estimate of relief for 69 commodities 1968	28.00
2. Estimate for relief of 8 commodities added in 1980	
Plastics Tariff item 15A (1)	1.00
Paper Tariff item No. 17	0.87
Chemicals Tariff item 14 AA	0.13
	2.00
3. Estimated relief due to 25 per cent concession over certain clearances	4.50
4. Total of 1 and 2 and 3	34.50
5. Additional relief in 1981 for 72 items	4.00
6. Share of plastics	$\frac{4.00 \times 1.00}{34.50} = 0.12$

Source: Memorandum explaining provisions of the Finance Bill—various issues.

There is, however, reason to think that the cost of the concession to small units may be much more than Rs. 1.20 crore. For, firstly, the estimate of revenue cost seems to be based primarily on the revenue which would have been payable by units with clearances between Rs 7.5 lakh and Rs 15 lakh had there been no concession. It does not include the revenue forgone in respect of producers with clearances below Rs 7.5 lakh. What is more, the concession provides scope for evasion by splitting up units with clearances above the critical limit.

To what extent this is resorted to in practice is difficult to specify, again because of absence of information from an independent source regarding the number of small units and their production.

From data available from the Annual Survey of Industries (ASI) it appears that in 1975-76, 1976-77 and 1977-78 there were more than 1,500 factories producing "plastic products not elsewhere classified" (NIC 303) and the value of their production was of the order of Rs 210 to 340 crore a year (vide Table 3. 8).

TABLE 3.8

Manufacture of Plastic Products Not Elsewhere Classified (Except House Furnishing)

Year	Sector	Factories (number)	Fixed capital (Rs lakh)	All workers (number)	Total output (Rs lakh)	Value of product per factory (Rs lakh)
1975-76	F.S.	1175	3551	21764	14523	12.36
	C.S.	156	1588	8636	6326	40.55
1976-77	F.S.	1335	3923	24505	22175	16.61
	C.S.	184	2003	9595	9811	53.32
1977-78	F.S	1313	4635	25698	24837	18.92
	C.S	84	1773	8462	9483	112.89

Notes: F.S. Factory Sector
C.S. Census Sector

Source: Annual Survey of Industry

The total number of factories paying excise duty under 15A was less than 750 in the years just mentioned. The value of clearances of products under 15 A (2) does not seem to have exceeded Rs 60 crore in any year. It is possible that many of the products coming under NIC 303 are exempt from duty and some are possibly taxed under other tariff heads of Central Excise. Even, so, the large gap seems somewhat puzzling.

Concluding Remarks

In the preceding sections an attempt has been made to examine the possibility of evasion of excise duty on plastics and the devices adopted for evasion. It was, however, not possible to quantify the magnitude of evasion because of intractable problems. The problems stem from the following factors:

(i) The tariff item in question is composed of a heterogeneous group of commodities and raw materials which have several other alternative uses. It was not possible to relate output to input in the absence of data on the raw materials used and the final products:

(ii) varying rates of *ad valorem* duty have been prescribed and statistics for various products are not maintained separately. Besides, wherever the same rates have been prescribed, statistics regarding production of several articles are mixed together;

(iii) Numerous notifications giving partial or complete exemption from duty have been issued from time to time and there have been frequent changes in the incidence of duty. Statistics of production, clearances, etc., separately to show the impact of each notification are either not maintained or are maintained in varying units rendering any comparison difficult. It is understood that statistics on value of clearances are collected, but these are not given in the Statistical Year Book. Figures of clearances are given in quantities only. Thus a valuable item of information remains unutilised ;

(iv) Statistics on material utilisation are not compiled centrally and hence comparability of conversion ratios of raw material into product in different manufactures is not possible;

(v) Information collected and compiled is mostly tariff-oriented. For reviewing tariff as well as for studies on evasion, tradewise information is essential. It would be helpful to have an annual return from producers giving trade nomenclature-wise information on production, etc., to be collected either by Central Excise authorities or by DGTD. This will strengthen the data base for estimating total production. It may be added that detailed trade nomenclature-wise information is either not collected by any other organisation and if collected it becomes obsolete by the time it is to be put to use;

(iv) The plastic industry is in the developing stage. New products are coming up, and old products are finding varied uses. Techniques of manufacture and processing are also changing. In view of these factors, classification problems arise all the time. Loss of revenue through misclassification unless deliberately resorted to can hardly be called evasion and yet the Government loses revenue. Since each case of misclassification is unique in itself, it becomes difficult to quantify evasion due to these factors at the macro level; and

(vii) Lastly, some important revenue-yielding products are manufactured by a few manufacturers. For example, there is only one manufacturer of HDPE and polypropylene, only two for polystyrene, while for LDPE, there are three and these three products account for a sizeable portion of the revenue from the industry. Investigation regarding evasion in such cases has to be undertaken at the micro-level, especially when two or three concerns manufacturing the same product are using different materials for production. In the case of LDPE, out of three factories, two are napha-based and the third alcohol-based. Given this background, a macro-level study of evasion cannot possibly make much headway in detecting evasion.

However, a rough estimate of the magnitude of evasion was attempted on the basis of alternative assumptions. The findings may be summed up as follows:

a. Evasion through under-reporting. No estimate was possible of the extent of evasion through under-reporting of production of plastic materials which are taxable under 15A (1) because of severe data problems.

So far as articles dutiable under item 15A (2) are concerned, the quantum of evasion may be about 5 per cent of the potential in the case of rigid PVC. The percentage may be higher in the case of flexible items. Due to the heterogenous nature of non-PVC items, it is difficult to apply the potential production approach to estimate evasion with the with the present state of statistical data.

As for products dutiable under item 15A (3), the utilisation of raw materials per unit of production of polyurethane foam did not show significant variation as between factories. In the case of articles of polyurethane foam, no comparison between the estimated potential and the actual production could be attempted as the actual production figure of the articles of polyurethane foam is reported in heterogeneous units.

b. Evasion through misclassification. Ambiguity in the definition of the tariff item facilitates evasion through misclassification. In 1981-82, two factories evaded duty to the tune of Rs 63 lakh by paying duty on phenol formaldehyde moulding powder manufactured by them at the lower rate applicable to phenolic resin. Again, a sizeable amount of duty appears to have been evaded by taking advantage of imprecision in the criterion of flexibility applied in the case of non-PVC rigid articles. The evasion could be contained if the American Standard of flexibility was applied.

In several cases there have been disputes regarding the tariff head under which a given plastic product ought to be taxed. The recent formulation of the definition of articles dutiable under 15A (2) has imparted some precision to the tariff head and considerably reduced the scope of avoidance and disputes. Moreover, the introduction of a uniform duty rate of 30 per cent *ad valorem* on all the three products dutiable under the head, *viz.*, rigid PVC articles, flexible PVC articles and rigid articles made out of non-PVC material has also served to minimise the scope for evasion through misclassification.

c. Evasion through undervaluation. Very high rates of duty on some items create an impetus among manufacturers for undervaluing their products and thereby to evade duty. Prices for valuation purposes for phenolic resin were unduly low in the case of certain manufacturers, giving rise to suspicion of evasion. Likewise, the price of LDPE films for one manufacturer was abnormally low, bearing, *prima facie* evidence of evasion. Again, wide differences in the assessable value of LDPE produced by three manufacturers appear to be somewhat intriguing and call for some deeper probe than was possible to undertake for this study.

d. Evasion through abuse of concessions to the small-scale sector. The actual resource cost of concession to small units is in all probability substantially higher than estimated. The concession provides scope for evasion by splitting up units which would otherwise have clearances above the critical limit. It is difficult to make any precise estimate of evasion through the device of splitting up units but large gaps are noticeable in the data regarding the value of clearances as reported by the Excise Department and the production data thrown up by the ASI. The reasons for such wide variation are not very clear. Part of the variation can perhaps be attributed to evasion by small units.

4

Conclusions and Recommendations

OUR study of revenue from excise duty on plastics, which was undertaken primarily from the angle of evasion, showed that the revenue has steadily grown over the years. Between 1970-71 and 1982-83, excise revenue from plastics grew at the compound rate of 15.6 per cent per annum. The revenue growth has beeen much faster than the growth in the production of some of the basic plastic materials, *viz.*, thermosets and thermoplastics. The production of thermosets increased during this period in terms of quantity at the rate of 1.3 per cent (from 6183 tonnes to 8166 tonnes) and that of thermoplastics at the rate 6.9 per cent (from 95987 tonnes to 21, 7, 096 tonnes). Consumption of thermosets has also increased but only at the rate of 1.7 per cent while that of thermoplastics increased at the rate of 11.1 per cent per annum. Thus, judging by the growth of production, the revenue growth does not appear to be inadequate.

However, there was a sharp rise in the price of plastic materials during the seventies, reflecting the escalation in prices of petroleum-based materials, The price of LDPE increased from Rs 5,130 per tonne in 1971 to about Rs 22,000 per tonne in 1982, registering an increase of about 14 per cent per annum. The prices of other plastic materials, HDPE and PVC, have also increased significantly at rates varying between 12 and 14 per cent per annum. Viewed against the background of price increase of this order and increase in production and consumption noted above, the growth of revenue from plastics does not seem to have been commensurate with the value of the products consumed in the economy. There were no significant changes in the structure of duty during this period. Some relief was given in the form of set-off for duty paid at the earlier stages, but, on the whole, the nominal incidence remained more or less the same during the seventies. The rate of duty on certain resins and powders was reduced only in 1982. One would, therefore, have expected a faster growth of revenue from the item than is actually observed. *Prime facie*, it would thus appear that revenue from plastics has not kept pace with the increase in the volume of production and prices although the duty is levied at *ad valorem* rates.

It would, however, not be appropriate to conclude that the apparent lack of elasticity in the revenue from plastics was caused only or even mainly by evasion. For, firstly, even though the rate of duty did not undergo much change during the period, the effective coverage of the item 15A varied from time to time because of the operation of the concessions granted through notifications, the exact impact of which cannot be easily determined. Secondly, for a heterogeneous item like plastics, in examining whether revenue has kept pace with production and prices one should proced item by item, that is, compare the figures of production and prices with the revenue from and clearances of each item individually. This was not possible because of paucity of data. Moreover, the bulk of the duty is collected from materials used for manufacturing plastics and these materials are produced mainly by a few large producers, some of whom are in the public sector. Plastic products except a few specified ones are exempt from duty. Nevertheless, the possibility of evasion of sizeable revenue cannot be ruled out especially in view of the fact that the total revenue from the item has not grown commensurately with the increase in the production and prices of plastic materials. The number of producers in the case of some item like resins and films is also large and this gives rise to the possibility of evasion. Hence, it is necessary to exercise vigilance and to explore ways in which the scope for evasion can be reduced. The possible lines on which measures could be taken towards this end are briefly indicated below.

a. Measures for reducing under-reporting. The most profitable method of evading taxes is under-reporting of production. This not only helps to evade excise duty but also other taxes like sales tax and income tax. It is widely believed that the practics of under-reporting production is quite common in many industries.

Whether and, if so, to what extent under-reporting is resorted to in plastics is difficult to specify with any degree of precision at the aggregate level because of the heterogeneous character of the industry and the alternatives available in the matter of choice material out of which the products can be manufactured. Hence, relating inputs to the production of the final product by using any conversion norm becomes difficult at the aggregative level. Even so, since under-reporting of production presupposes concealment of information on consumption of inputs, an effective way of checking evasion is to monitor the input and output figures both in the aggregate as well as at the factory level at least for the major items. In order to minimise the possibility of under-reporting, it is necessary to devise a method of relating inputs to output for the main plastic products. In the case of major plastic materials like polyethylene, polypropylene and PVC, it should not be difficult to exercise a check in this way since both the products of these items as well as suppliers of raw materials are limited in number' Examination of the correlation of the entries in the raw materials register of the producers with corresponding entries of suppliers should help to check leakage. However, this can be done only at the factory level. In the case of plastic products like sheets, films and sheeting also, the suppliers of materials are not very large in number and hence it should be possible to check whether the supplies are duly accounted for by the producers.

Once some effective control is exercised on the input of raw material, the next step is to correlate production to the utilisation of the raw materials. It appears that data on raw materials are collected at the field level but these are not compiled centrally. It is suggested that the information available from the raw material returns should be compiled by the Excise Department centrally and an attempt should be made to correlate the inputs with the production figures on the basis of information compiled from the RT 12 returns. It would facilitate such comparison if a separate return was obtained annually from producers giving details of their production according to the prevailing trade nomenclature. Norms of conversion ratios of inputs into outputs may then be worked out in consultation with the industry so that any significant deviation from the norms could be identified for possible leakage.

The problem, however, is not simple in the case of polyurethane foam. The raw materials for this commodity are mostly imported from other countries on OGL. Unless the import figures of these raw materials are compiled separately at the ports or by the DGCI & S and made available to some centralised agencies, it may not be possible to check whether the imports are duly accounted for by consumption of manufacturers of foam and foam products. Hence it is suggested that for these items some contralised agency should be made responsible for correlating imports to receipts by the factories, and for monitoring output figures in order to see that the total production is commensurate with the input consumption.

Another common source of leakage of revenue is underreporting of production by taking undue advantage of the exemption granted to small units. As will be seen from the discussion on the structure of duty on plastics in Chapter 2, the bulk of the revenue from plastics comes from sub-item-15A (1). The major part of the production of items falling under 15A(1) takes place in the large factories. While there are a number of small units producing resins of various kinds, these are mostly for their own captive consumption. In any case, small units producing materials taxable under 15A (1) have been exempted from duty liability subject to the specified limits of clearances. The possibility of evasion through the misuse of this exemption cannot be ruled out but the magnitude is unlikely to be very large. It is, however, noticed that in the past changes have often been made in the exemption limit for small units as well as in the eligibility criteria. Too frequent changes in the law create problems in enforcement and should, as far as possible, be avoided.

Items dutiable under item 15A (2) are also produced in the small sector. But here again, the bulk of the production comes from relatively large units. In any case, plastic products except films, sheets, sheeting, boards and lay-flat tubing are now exempt from duty. The items which are taxed are generally produced in the big and medium-size factories. Exemption is given to small-scale units with reference to the size of investment in plant and machinery. This can no doubt provide scope for evasion by splitting up medium-size units. However, the possibility of evasion on large scale by misusing this concession may not be very high.

b. *Measures for reducing misclassification.* A widely practised method of evading duty on commodities which are taxed selectively or at varying rates for different products of the same industry or for essentially similar products, is misclassification. Misclassification has been a source of revenue leakage in plastics too, though the extent is difficult to specify. The scope for misclassification of duty payable under 15A (1) arises from differential treatment of apparently similar products, *viz.*, maleic resins, alkyd resins and phenolic resins. Earlier, only alkyd resins were exempt while the other two bore duty at rates varying between 15 and 20 per cent. The three resins look alike. Hence, there was scope for misclassification. At present, maleic resins have also been exempt from duty but phenolic resins are subject to tax at the rate of 20 per cent. The scope for misclassification has thus been reduced so far as alkyd and maleic resins are concerned but classification between these two resins on the one hand and phenolic resins on the other can give rise to evasion.

Further, two different rates have been prescribed for formaldehyde resin and moulding powder on the one hand and phenolic, on the other. This can also create confusion. The confusion can be removed either by prescribing the same rate of duty for all the three or by defining phenolic resin as excluding formaldehyde resin. It is also suggested that lower rates should be prescribed for blends of alkyd including fumeric resin, phenolic resin and terpene phenolic resin, as in the absence of such rates these resins become liable to the rate of 40 per cent *ad-valorem*, thus encouraging evasion and litigation.

As for misclassification under 15A (2), classification disputes were many when the coverage of this sub-item was wide. With restricted coverage of the item as contemplated now, the chances of misclassification have been reduced. Still, there are areas where ambiguity remains and misclassification can be used as a device for evading duty.

So far as plastic products are concerned, the general exemption is based on a classification of PVC and non-PVC products and on whether they are rigid or flexible. PVC products are all taxable while non-PVC items are taxable only if they are rigid. As noted earlier, the criterion of rigidity applied in practice led to some problems as the industry sometimes classifies products which are rigid by the standard contemplated in the excise laws, as semirigid and thus flexible. However, the problem seems to have eased somewhat as films of thickness of not more than 0.25 mm. have now been exempted from duty. But the criterion used earlier in terms of modulus of elasticity still remains. Although films of thickness greater than 0.25 mm. are mostly rigid, the possibility of misclassification and disputes remains. Hence, it might be helpful if the criterion in terms of elasticity is withdrawn and both flexible and rigid items of non-PVC items made taxable.

It is to be noted, however, that in the case of PVC films, it appears that there has been a decline in the production by calendering units since 1977. PVC films can be produced by calendering or by extrusion. PVC films of more than 0.25 mm. thickness are now exempt from duty if produced by the extrusion process in a small-scale unit. The decline in the production of films manufactured through calendering might be the result of some diversion in production from calendering to extrusion or plain evasion. The rate of excise duty on calendered PVC films is 31.5 per cent. As Tariff item 15A is covered by Rule 56A procedure, the excise duty paid on the resin is adjusted, but still there is a price advantage of approximately 20 per cent in the small units since no excise duty is payable on films extruded in small units. It is learnt that there has been a substantial growth of extruder units in the small-scale sector. The exemption for small units manufacturing PVC films through extrusion needs to be reviewed.

c. *Undervaluation*. Where the tax is *ad valorem*, valuation proves an intractable problem and, as is well-known, undervaluation is widely resorted to in evading the tax. In plastics too undervaluation is reported to be fairly common but a solution to the problem is not easy to find. For, prices can vary substantially simply because of variations in quality, and deliberate undervaluation is difficult to establish with evidence. In polyethylene, for instance, in September, 1982, the average value inclusive of duty varied from Rs 14,230 to Rs 18,326 per tonne whereas the market price (wholesale) varied from Rs 18,250 to Rs 21,700 per tonne. Similarly, in PVC, the assessable values ranged from Rs 12,011 per tonne to Rs 13,452 per tonne while market prices varied from Rs17,000 to Rs 22,550 per tonne. Whether the gap is due to undervaluation cannot be stated with certainty without looking at the quality of the product of each factory.

Under the excise law, value has been defined as the normal price, i.e., the price at which goods are ordinarily sold by the assessee to a buyer in the course of wholesale trade for delivery at the time and place of removal, where the buyer is not a related person and the price is the sole consideration for the sale. The concept though apparently simple has led to a lot of litigation. The onus of proving sale to a related person rests with the assessing authority and this is not easy to discharge. Hence many cases of undervaluation have gone undetected because of lack of adequate evidence. The courts also have been somewhat liberal in absolving the assessees of the charge of undervaluation where clear-cut proof of the sale to the related person could not be established. Although no conclusive evidence is available, as noted in Chapter 3, there are indications that undervaluation is resorted to in plastics to minimise the incidence of duty. Hence it is necessary to consider whether alternative modes of assessment such as taxation through a specific levy can be used to stop leakage of revenue through undervaluation.

Ad valorem assessment has many advantages in that with every increase in price, revenue automatically goes up. Being proportional to value, *ad valorem* taxation also helps to mitigate the regressive nature of a commodity tax. However, *ad valorem* levies create scope for evasion through manipulation of value.

Leakage of revenue through undervaluation can be checked to some extent and at the same time the merit of *ad valorem* can be partly retained if *ad valorem* assessments are replaced by *ad valorem*-cum-specific rates of tax. As the Tariff item for plastics comprises a number of heterogeneous goods, each with its own specific characteristics, it should be possible to prescribe *ad valorem*-cum-specific rates in a number of cases. The share of specific and *ad valorem* components could be decided in the light of factors like the price of the goods, the current rate of duty and the extent of leakage apprehended.

Under the Central excise law, each manufacturer of excisable goods is supposed to submit a classification list enumerating the excisable items produced by him and also show the rate at which they are assessable. In the case of commodities assessable *ad valorem*, the assessee is in addition required to submit a valuation list indicating the assessable value of each item manufactured by him. He is supposed to submit a fresh classification and valuation list whenever there is any change. For standardised goods, valuation of various manufacturers could be compared centrally and in case wide variations are noticed, inquiries could be instituted. However, such comparison may not be possible in the case of non-standardised goods.

Comparison of ex-factory, wholesale and retail prices of goods on a continuing basis could also be helpful in detecting cases of undervaluation. A wide variation between ex-factory and wholesale prices without any apparent reason should lead to investigation to find out whether the sales were genuine. This however calls for continuous monitoring of prices and assessable values.

d. *Other methods*. While discussing the tax structure of the duty on 'resins and materials' it was noted that Explanation III of the tariff item is not adequate to clear doubts about the nature of certain plastics like aqueous solution of resins and attention was drawn to the Delhi High Court judgement where aqueous solution of resin was declared as not artificial or synthetic resin in liquid form. From the wording of the Explanation, it appears that the intention is to include such solution in the tax base, although because of the ambiguity the intended result may not be achieved in all cases. In view of this, it is suggested that the word 'materials' in Explanation III should be substituted by 'resins and materials' or simply 'goods'. A similar change should also be made in the heading of sub-item 15A(2) as well. The world 'materials' presumably has been used in the generic sense in the explanation but the use of the same term in the specific sense in the heading of Tariff Item 15A may cause problems.

While investigating the extent of evasion in plastics, we made some observations about the weaknesses of the data base. The following suggestions are offered for strengthening the information system to facilitate investigation of evasion:

(i) Value of clearances wherever possible should be exhibited in the annual reports, i.e., year books;

(ii) Manufacturers may be requested to report quantity figures in a given unit to be prescribed by the Central authority for this purpose;

(iii) Detailed statistics of production according to the trade nomenclature should be collected and compiled annually. The nomenclature should, as far as possible, correspond to that used for collection of statistics through the Annual Survey of Industries and for the small-scale sector;

(iv) Returns pertaining to utilisation of raw materials should be compiled centrally at least once a year;

(v) Intermingling of the data should be avoided by prescribing suitable procedure for reporting, compilation, etc. under appropriate commodity classification.

Appendix I

Description of Central Excise Tariff Item 15(A) Artificial or Synthetic Resins and Plastic Materials and other Specified Materials and Articles from the levy of duty to date

1. *From 1.3.1961*

15 A — Plastics, All Sorts, Namely

(i) Moulding powders, granules and flakes (thermosetting and thermoplastics)

(ii) Polyethylene films, lay flat tubings and PVC sheets (that is to say polyvinyl chloride sheets).

2. *From 2.4.1962*

15 A — Plastics, all sorts

(i) Moulding powders, granules and flakes (thermosetting and thermoplastics)

(ii) Polyethylene films, lay flat tubings and PVC sheets (that is to say, polyvinyl chloride sheets)

(iii) Not otherwise specified.

3. *From 1.3.1964*

15 A — Artificial or synthetic resins and plastic materials, and articles thereof

(1) Artificial or synthetic resins and plastic materials in any form, whether solid, liquid or pasty, or as powder, granules or flakes, or in the form of moulding powders, the following, namely;

(i) Condensation, polycondensation and polyaddition products, whether or not modified or polymerised, including phenoplasts, aminoplasts, alkyds, polyurethane, polyallyl esters and other Unsaturated polyesters;

(ii) Polymerisation and copolymerisation products including polyethylene and polyterahaloethylene, polyisobutylene, polystyrene, polyvinyl chloride, polyvinyl acetate, polyvinyl chloroacetate and other polyvinyl derivatives, polyamides, polyacrylic and polymethacrylic derivatives and coumarone-indene resins; and

(iii) Cellulose acetate (including di- or triacetate), cellulose acetate butyrate and cellulose propionate, cellulose acetate propionate, ethyl cellulose and benzyl cellulose, whether plasticised or not, and plasticised cellulose nitrate.

(2) Articles made of plastics, all sorts, including tubes, rods, sheets, foils, sticks, other rectangular or profile shapes, whether laminated or not, and whether rigid or flexible, including lay flat tubings and polyvinyl chloride sheets.

Explanation: For the purpose of sub-item (2), 'Plastics' means the various artificial or synthetic resins or plastic material included in sub-item (1).

4. *From 17.6.1977*

15A—Artificial or synthetic resins and plastic materials and cellulose esters and ethers, and articles thereof;

(1) The following artificial or synthetic resins and plastic materials, and cellulose esters and ethers, in any form, whether solid, liquid or pasty, or as powder, granules or flakes or in the form of moulding powders, namely:

(i) Condensation, polycondensation and polyaddition products, whether or not modified or polymerised; and whether or not linear such as phenoplasts, aminoplasts, alkyds, polyamides, super polyamides, polyesters, poly allyl esters, polycarbonates, polyethers, polyethyleneimines, polyurethanes, epoxide resins and Silicones;

(ii) Polymerisation and copolymerisation products such as polyethylene, polytetrahaloethylenes, polyisobutylene polystyrene, polyvinyl chloride, polyvinyl acetate, polyviny chloroacetate and other polyvinyl derivatives, polyacrylic and polymethacrylic derivatives and coumarone-indene resins; and

(iii) Cellulose acetate (including cellulose diacetate or cellulose triacetate), cellulose acetate butyrate and cellulose propionate, cellulose acetate propionate, ethylcellulose and Benzyl cellulose, whether plasticised or not, and plasticised cellulose nitrate.

(2) Articles, made of plastics, all sorts, including tubes, rods, sheets, foils, strips, other rectangular or profile shapes, whether laminated or not, and whether rigid or flexible, including lay flat tubings, and polyvinyl chloride sheets, not otherwise specfied.

(3) Polyurethane foam

(4) Articles made of Polyurethane foam
Explanation: For the purpose of sub-item (2) "Plastics" means the various artificial or synthetic resins or plastic materials or cellulose esters and ethers included in sub-item (1).

5. *From 1.3.1979*

The same as from 18.6 1977 except the explanation was numbered as explanation I and after that explanation as so numbered, the following explanation inserted, namely, "Explanation II—This item does not include electrical insulators or electrical insulating fittings or parts of such insulators or insulating fittings."

6. *From 1.3.1981*

The same as earlier, except that for Explanation II, the following explanation II was substituted.

Explanation II: This item does not include

(a) Polyester films; and
(b) Electrical insulators or electrical insulating fittings or parts of such insulators or insulating fittings.

N.B. From the same date Polyester films was formed a separate tariff item 15BB.

7. *From 28.2.1982*

15A—Artificial or synthetic resins and plastic materials, and other materials and articles specified below:

(1) Condensation, polycondensation and polyaddition products, whether or not modified or polymerised, and whether or not linear (for example, pheno-plasts, amino-plasts, alkyds, polyallyl esters and other unsaturated polyesters, silicones); Polymerisation and copolymerisation products (for example, polyethylene, polytetrahaloethylenes, polyisobutylene, polystyrene, polyvinyl chloride, polyvinyl acetate, polyvinyl chloroacetate, and other polyvinyl derivatives, polyacrylic and polymethacrylic derivatives, coumaroneindene resins); regenerated cellulose; cellulose nitrate, cellulose acetate and other cellulose esters, cellulose ethers and other chemical derivatives of cellulose, plasticised or not (for example, collodions, celluloid); vulcanised fibre; hardened protein (for example, hardened casein and hardened gelatin); natural resins modified by fusion (run gums); artificial resins obtained by esterification of natural resins or of resinic acids (ester gums); chemical derivatives of natural rubber (for example, chlorinated rubber, rubber hydrochloride, oxidised rubber, cyclised rubber); other high polymers, artificial resins and artificial plastic materials, including alginic acid, its salts and esters; linoxyn.

(2) Articles of materials described in sub-item (1), the following namely:

Boards, sheeting, sheets and films whether lacquered or metallised or laminated or not; lay flat tubings not containing any textile material.

(3) Polyurethane foam

(4) Articles made of polyurethane foam.

Explanation I: Sub-item (1) does not include:

(i) Polyurethane foam;

(ii) Artificial waxes; and

(iii) Starches (including dextrin and other forms of modified starches).

Explanation II: In sub-item (1) "condensation, polycondensation, polyaddition, polymerisation and copolymerisation products" are to be taken to apply only to goods of any kind produced by chemical synthesis answering to one of the following descriptions:

(a) artificial plastics, including artificial resins;

(b) silicones; and

(c) resols, liquid polyisobutylene, and similar artificial polycondensation or polymerisation products."

Explanation III: Sub-item (1) is to be taken to apply to materials in the following forms only:

(a) liquid or pasty (including emulsions, dispersions and solutions);

(b) blocks, lumps, powders (including moulding powders), granules, flakes and similar bulk forms; and

(c) waste and scrap.

Appendix II

Rates of Excise Duty under 15A—Artificial or Synthetic Resins and Plastic Materials and other specified Materials and Articles

A. Resins and Materials

(Effective rate of excise duty in %)

Sl. No.	period	Basic (adv.)	Special (adv.)	Auxiliary (adv.)	Total (adv.)
	(1)	(2)	(3)	(4)	(5)
1.	1.3.61 to 28.2 63	20	—	—	20
2.	1.3.63 to 25.5.67	20	4	—	24
3.	26.5.67 to 16.3.72	30	6	—	36
4.	17.3.72 to 28.2.74	40	—	—	40
5.	1.3.74 to 31.7.74	40	—	8	48
6.	1.8.74 to 15.3.76	40	—	16	56
7.	16.3.76 to 17.6.77	30	—	10	40
8.	18.6.77 to 28.2.78	40	—	—	40
9.	1.3.78 to 28.2.79	40	2	—	42
10.	1.3.79 to 3.12.79	40	—	—	40
11.	4.12.79 to 26.2.80	40	—	—	40
	Naphtha based				
	LDPE	27	—	—	27
	HDPE	27	—	—	27
	Polypropylene	27	—	—	27
	Polyvinyl chloride	33	—	—	33
12.	*27.2.80 to date others* (special duty applicable from 16.6.80 only)	40	2	—	42
	Polyvinyl chloride (upto 12.11.81	45	2.25	—	47.25

Contd....

(1)	(2)	(3)	(4)	(5)
From 13.11.81)	35	1.75	—	36.75
Naphtha based Polyvinyl chloride (upto 12.11.81)	33	1.65	—	34.65
P,V.C. Compound	—	—	—	—
Naphtha based *LDPE* (upto 12.11.81)	27	1.35	—	28.35
LDPE from 13.11.81 if manufactured by undertaking with annual licensed capacity less than one lakh tonne	30	1 50	—	31.50
LDPE from 28.2.82 required for use in the manufacture of laminated paper for milk packing and subject to chapter X procedure	—	—	—	—
Naphtha based HDPE (upto 26.3.81)	27	1.35	—	28.35
from 27.3.81	35	1.75	—	36.75
Naphtha based polypropylene	27	1.35	—	28.35
from 13.11.81 polypropylene	27	1.35	—	28.35
Naphtha based polystyrene upto 2.6.82	27	1.35	—	28.35
Polystyrene resins and moulding powder from 3.6.82	15	0.75	—	15.75
Naphtha based polyester resin (upto 2.6.82)	29	1.45	—	30.45
Polyester resin and moulding powder from 3.6.82	15	0.75	—	15.75
Naphtha based *acrylonitrile* Butadiene styrene (upto 2.6.82)	20	1.45	—	30.45
Acrylonitrile butadiene styrene resin including moulding powder from 3.6.82	15	0.75	—	15.75

Contd...

(1)	(2)	(3)	(4)	(5)
Naphtha based Nylon *moulding powder* (upto 2.6.82)	36	1.80	—	37.80
Nylon resins or its moulding powder from 3.6.82	15	0.75	—	15.75
Naphtha based *Phenol* formaldehyde moulding powder upto 2.6.82	30	1.50	—	31.50
Phenol formaldehyde resin and moulding powder from 3.6.82	15	0.75	—	15.75
Naphtha based *Urea* formaldehyde moulding power (upto 2.6.82)	33	1.65	—	34.65
Urea formaldehyde resin moulding powder from 3.6.82	15	0.75	—	15.75
The following goods including their moulding powders from 3.6.82				
(a) Melamine formaldehyde resins	15	0.75	—	15.75
(b) Epoxy resins	15	0.75	—	15.75
(c) Styrene acrylonitrile	15	0.75	—	15.75
(d) Polymethyl methacrylate	15	0.75	—	15.75
(e) Polyphonylene oxide	15	0.75	—	15.75
(f) Polybutyl terepthalate	15	0.75	—	15.75
(g) Polycarbonate resins	15	0.75	—	15.75
(h) Polyacetals resins	15	0.75	—	15.75
(i) Polytetraflueresthylene	15	0.75	—	15.75
(j) Polysulphones	15	0.75	—	15.75
Vulcanised fibre from 28.2.82	8	0.40	—	8.40
from 1.3.83.	10	0.50	—	10.50
Chlorinated rubber from				

Contd...

(1)	(2)	(3)	(4)	(5)
22.4.28	10	0.50	—	10.50
Dextran from 22.4.82	10	0.50	—	10.50
Ester gum from 22.4.82	10	0.50	—	10.50
from 22.4.82 Ester gum if used in the factory of production for manufacture of good falling under Tariff item No. 14	—	—	—	—
From 22.4.82 Linoxyn when used in the manufacture of Linoleum in the factory of production	—	—	—	—
Non-plasticised cellulose nitrate from 28.2.82	8	0.40	...	8.40
From 1.3.83	10	0.50	.	10.50
From 27.6.84 polyvinyl alcohol manufactured from duty paid (excise or additional duty under Section 3 of the Customs Tariff Act 1975) Vinyl acetate monomer	10	0.50	—	10.50
From 1.3.83, diallyl phthalate resins including moulding powders) if used in the manufacture of connectors or switches, subject to following of chapter X procedure in case of use elsewhere than in the factory of production	—	—	—	—
Cellulose acctate moulding granulose from 26.12.81	10	0.50	—	10.50

Note: i. *Alkyd* resins were exempted from duty with effect from 23.9.65 and the exemption has continued since then.

ii. For *maleic* and *phenolic* resins a specific basic duty of 80 paise per kilogramme was prescribed with effect from 23.9.65. This was changed to 10 per cent *ad valorem* for maleic resin and 15 per cent *ad valorem* for phenolic resins with effect from 1.6.71. A special excise of 20 per cent of the basic duty was also leviable on them till 16.3.72. The total effective duty remained unchanged in 1972 merger of the basic and special duties, the basic duty being stepped to 12 per cent and 18 per cent respectively. The auxiliary duty of 20 per cent of the basic duty with effect from 1.3.74 and 40 per cent of the basic duty with effect from 1.8.74 was imposed in the 1974 Budget. In 1976-77 Budget, the basic duty was reduced for the two resins to 9 per cent and 13.5 per cent respectively, and auxiliary duty changed to 1/3 of the basic duty. In 1977-78 Budget, after merger of the auxiliary duty with the basic duty, the rates on these resins were fixed at 12 per cent and 18 per cent respectively. In 1978 budget, special excise duty at the rate of 5 per cent of the basic duty was again levied with effect from 1.3.78 and the total rates became 12.60 per cent and 18.90 per cent respectively. In 1979 Budget, basic duty rates were again stepped upto 15 per cent for maleic resin and 20 per cent for phenolic resin. However, the special duty was discontinued. Special excise duty at the rate of 5 per cent of the effective basic duty was reimposed with effect from 19.6.80 at it is continued since then. With effect from 29.8.81, maleic resins including fumeric resin have been exempted from duty and phenolic resin and terpene phenolic resin have been subjected to excise duty at the rate of 20 per cent *advalorem*, in addition to the continuation of special duty. Thus, currently the total burden on phenolic resin and terpene phenolic resin is 21 per cent *ad valorem*.

iii. *Polyester polymerchips* are exempt from duty with effect from 1.3.73.

iv. *Polyamide chips* are exempt from duty with effect from 1.3.73 if used in the manufacture of nylon yarn, subject to the following of Chapter X procedure where such use is elsewhere than in the factory of production.

v. *Cellulose acetate* is exempt from duty with effect from 1.3.73 if used in the manufacture of acetate yarn, subject to the following of Chapter X procedure where such use is elsewhere than in the factory of production.

vi. *Plastics materials* in any form reprocessed from or produced out of scrap or waste of (i) plastic materials, (ii) articles of plastics are exempt from duty with effect from 12.2.73.

vii. Artificial or synthetic resins used in the manufacture of *particle boards* are exempt from duty with effeect from 5.8.70. Notification 158/70 and 255/77.

viii Samples of goods under item 15A(1) when cleared for test purposes provided quantity of such clearances during a year not exceeding 0.03 per cent of total quantity of goods produced in the previous year and the quantity of each sample not exceeding 2 kilogramme are exempt from duty.

ix. With effect from 15.4.83, copolymers of acrylonitrile used in the factory of production for manufacture of acrylic fibre is exempt from duty.

x. With effect from 21.5.83 resorcinol formaldehyde solution (dip solution) used within factory of production for manufacture of tyre is exempt from duty.

xi. Cellulose acetate moulding compound was exempt from so much of duty of excise as is equivalent to 3 per cent *ad valorem* upto 25.12.81.

xii. Cellulose tri-acetate intended for use in the manufacture of cine-films, X-ray films or photographic films subject to following of Chapter X procedure in case of use elsewhere than in the factory of production, is exempt from duty.

xiii. In the case of artificial of synthetic resins, duty on the cost of packing of a durable nature and supplied by the buyer is exempted.

xiv. Cellulose xanthate for manufacture of cellophane or viscose filament yarn subject to following of Chapter X procedure for use elsewhere than in the factory of production, is exempt from duty.

B. Rate of Excise Duty under 15A(3) and 15A(4)

Polyurethane foam and articles made of polyurethane foam.

From 29th May, 1971, higher rates of excise duty were prescribed for these items. Rates from 29.5.71 onward are shown below.

(Effective rate of excise duty in %)

Sl. No.			Base (adv.)	Special (adv.)	Auxiliary (adv).	Total (adv.)
(1)			(2)	(3)	(4)	(5)
1.	29 5.71	to 16.3.72	40	8	—	48
2.	17.3.72	to 28.2.74	50	—	—	50
3.	1.3.74	to 31.7.74	50	—	10	60
4.	1.8.74	to 15.3.76	50	—	20	70
5.	16.3.76	to 17.6.77	50	—	20	70
6.	18.6.77	to 28.2.78	70	—	—	70
7.	1.3.78	to 28.2.79	70	3.5	—	73.5
8.	1.3.79	to 18.6.80	75	—	—	75
9.	19.6.80	to date	75	3.75		78.75

N.B. 1. Excise duty on rigid polyurethane foam is 15.75 per cent *ad valorem* including special excise duty with effect from 9.6.82.

2(a) The following articles made of polyurethane foam are excisable

1. Sheets and sheeting
2. Mattresses and the like
3. Quilts and the like

4. Pillows
5. Cushions
6. Mats

in any shape or size.

(b) Other articles made of polyurethane foam are exempt from duty if produced out of duty-paid polyurethane foam on which the duty of excise or the additional duty under Section 2A of the Indian Tariff Act, 1934 (32 of 1934), as the case may be, has already been paid.

C. Rates of Excise Duty on Articles Sariff Sub-item 15A(2)

1. *Cellophane*

from 1.3.61	to 28.2.63	20% *ad valorem*
grom 1.3.63	to 19.2.64	24% *ad v*. including special duty
from 1.3.64	to 28.2.78	20% *ad v*.
from 1.3.78	to 28.2.79	21%*ad v*. including special duty
from 1.3.79	to 18.6.80	20% *ad v*.
from 19.6.80	to date	21% *ad v*. including special duty

N. B. Metallised cellophane is exempt from duty with effect from 9.7.66 if proved to the satisfaction of the proper officer that excise duty or additional duty under Section 2A of the Indian Tariff Act, 1934 in respect of plain cellophane used as base material has already been paid.

2. *Polyester films*—from 1.3.81 to date rate of duty is 31.5% adv.

Prior to 1 3.81, it was part of 15(A); from 1.3.81 to 26.2.82, it was separate item 15BB; from 27.2 82, again part of 15(A).

3. *Others (current rates only):*

i. Articles of non-plastic materials if produced out of duty-paid (excise or additional duty under Section 3 of Customs Tariff Act, 1975) goods falling under sub-item 15(A) (1) are exempt from duty.

ii. Articles made of plastics, all sorts other than (a) films or sheets of regenerated cellulose, (b) rigid plastic boards, sheeting, sheets and films; (c) flexible polyvinyl chloride sheets, sheeting, films and lay flat tubings not containing any textile material are exempt from duty if produced out of (i) duty paid (excise or additional duty under Section 3 of the Customs Tariff Act, 1975) artificial resins or plastic materials or cellulose esters and ether: (ii) Scrap of plasttcs.

iii. Rigid plastic boards, sheeting, sheets and films, whether lacquered or metallised or laminated or not; and flexible polyvinyl sheeting, sheets, films, whether lacquered or metallised, laminated or not and lay flat tubings, not containing any textile material are leviable to duty at the rate of 3.I5 per cent adv. inclusive of special excise duty. However, rigid PVC boards, sheeting sheets and films, whether lacquered or metallised or laminated or not are exempt from duty, (excise or countervailing customs) already paid on cellophane, paper, cotton fabrics, adhesives, coated copper foils or plain copper foils, used in the manufacture of the former). Similarly, rigid plastic boards, sheeting, sheets and films, whether lacquered or metallised or laminated or not, other than manufactured from PVC are exempt from duty (excise orc ountervailing customs) already paid on cellophane, paper or cotton fabrics used in the manufacture of the former. In both above cases, exemption is admissible if procedure set out in Rule 56 A is allowed.

iv. Films or sheets upto and including thickness of 0.25mm other than those manufactured from polyvinyl chloride and if produced out of duty-paid (excise and countervailing customs) artificial resins or plastic materials or cellulose esters and ethers in any form are exempt from duty.

v. PVC films of thickness below 0.25mm and lay flat tubings produced by extrusion process, by an industrial unit with capital investment on plant and machinery only, installed therein, as on date or dates of initial installation of plant and machinery being not more than Rs 20 lakhs are exempt from excise duty.

vi. Flexible PVC sheeting, sheets and films not containing any textile material used within the factory of production in the manufacture of textile fabrics impregnated or coated with preparations of cellulose derivatives or of other artificial plastic materials are exempt from duty.

vii. Cellulose triacetate, and cellulose tri-acetate films when intended for use in the manufacture of cine-films, X-ray films or photographic films, subject to the following of Chapter X procedure for use elsewhere than in the factory of production are exempt from duty.

viii. Acrylic sheets and acrylic plastic bangle tubes if produced of any of the following materials or combination thereof, namely; (a) Duty paid (excise or countervailing customs) artificial resins or plastic materials in any form; and/or (b) Scrap of plastics; and/or (c) methylmethacrylate monomer, are exempt from duty.

Evasion of Excise Duties in India: Study of Cotton Textile Fabrics

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Preface

THE National Institute of Public Finance and Policy is an autonomous, non-profit organisation whose major functions are to carry out research, do consultancy work and undertake training in the area of public finance and policy.

The study of Excise Duty Evasion on Cotton Textile Fabrics was entrusted to the Institute by the Central Board of Excise and Customs, Ministry of Finance, Government of India. This report which is being submitted to the Board was prepared by a staff team under the leadership of Dr. M Govinda Rao who took over from Dr. D K Srivastava who started the study. Dr. Rao planned and organised the study, and drafted it jointly with Dr. Gopinath Pradhan.

It is earnestly hoped that the painstaking work undertaken by the study team and the comprehensive analysis of various issues presented in the report would be found useful for the work of the Board.

The Governing Body of the Institute does not take responsibility for any of the views expressed by the authors in the research publications of the Institute. The responsibility for the views expressed belongs to the Director and the staff of the Institute and more particularly to the authors of the concerned report.

R.J. CHELLIAH

Introduction

COUNTERING evasion of excise duties with suitable policy measures necessitates understanding of the *modus operandi* and quantification of the extent of evasion in respect of important commodities. Therefore, the 28th Report of the Estimates Committee (1978-79: 6th Lok Sabha, para 7.25) stated "...that evolution of some empiric, though loose, yardsticks to attempt a guess, if not an estimate, about the extent of excise evasion is very necessary and that a fresh determined bid may be made for the purpose." Keeping this in view, the Central Board of Excise and Customs entrusted a study to the National Institute of Public Finance and Policy to undertake empirical studies on the evasion of excise duty in respect of some important commodities. The Institute has already completed the studies and submitted reports on two important commodities, namely Copper and Copper Alloys, and Plastics. The present study is concerned with the evasion of excise duty in respect of another important commodity—cotton textile fabrics.

We adopted a broad strategy to understand the *modus operandi* of evasion and to evolve a suitable approach to quantify it by holding discussions with academic economists, concerned Government officials, textile technologists and representatives of textile manufacturers' associations. Among the officials with whom we held useful discussions were the officials of the Collectorate of Central Excise, Bombay; Office of the Textile Commissioner, Bombay; Bureau of Industrial Costs and Prices, New Delhi; Mill Owners' Association, Bombay and Powerloom Industries Association, Bombay. Besides, we visited some textile mills and held extensive discussions with the officials there. These discussions have been extremely useful in identifying the issues and evolving a methodology to estimate the extent of evasion.

It is necessary to recall the help we have received from various persons in conducting this study. Our principal debt is to Dr. R J Chelliah, who was a constant source of encouragement throughout. Besides a number of useful discussions we have had with him, he went through the draft of the Report with meticulous care and suggested numerous improvements. The project was initially started by Dr. D K Srivastava; we have had the benefit of referring to the elaborate notes prepared and a wealth of information gathered by him, particularly the information collected from the mills through a special survey. He also prepared three draft chapters of the report which, because of the different methodology adopted by us, could not be utilised. Meaningful comments on the draft by Dr. Shankar N Acharya and Dr. Arun Kumar have resulted in vast improvement in the methodology and presentation of the study. We are indebted also to Prof. D U Sastry of the Institute of Economic Growth, New Delhi, Mr. P R V Ramanan, Additional Collector of Excise, New Delhi, Mr. R L N Vijayanagar, Secretary General, Mill Owners' Association, Bombay, and Dr. K R Salhota and Dr. V K Aggarwal, Department of Textile Technology, Indian Institute of Technology, New Delhi, for sparing time for discussion at various stages of the study. Editorial assistance was received from Mr. Christopher Cecil. Research assistance to the project was rendered by Mr. Satya Pal and the Report was typed by Mr. Perianna and Mr. R S Tyagi while final typing was done by Mr. Jagdish Arya. We are thankful to all of them.

M. Govinda Rao
Gopinath Pradhan

Contents

1

Excise Duty on Cotton Textile Fabrics: Revenue Yield and Evasion

Overview

ALTHOUGH tax evasion is a universal phenomenon, it is of particular concern to policy makers in developing countries. In these countries, the pressing need for mobilising savings and attempts to combine multiple objectives in the tax laws have enormously complicated the tax structure. The resulting high and differential tax rates with varied exemptions and deductions open up numerous avenues of evasion; the existence of large unorganised factor and product markets and low levels of monetisation render evasion easier, thereby making the problem more serious. As in other developing countries, in India too the issue is of immense relevance to the larger task of socio-economic development.

In spite of the importance of the subject in policy-making, very few studies have been conducted in India on tax evasion. Further, the few studies that exist have been largely confined to the evasion of direct taxes, particularly the personal income tax, and there is hardly any important empirical study on the evasion of commodity taxes[1]. Given that the yield of

[1] The studies on the evasion of sales tax conducted by the Commodity Taxes Enquiry Committee (1976) in Kerala and by the National Institute of Public Finance and Policy (NIPFP, 1981) in Bihar are exceptions to this.

commodity taxes predominates in the tax revenues of the developing countries, this is an obvious lacuna and the present study attempts to fill the gap, at least partially. The purpose of the present study is to analyse and quantify the extent of evasion of excise duties in respect of an important commodity, namely, cotton textile fabrics[2].

Excise on Cotton Textile Fabrics: Trends and Issues

Cotton textile fabrics have been subject to excise duty since 1949. Being one of the oldest levies, it has not only been used to mobilise substantial revenues over the years, but has also served as an important tool in regulating the growth of the cotton textile industry.

The revenue contribution of cotton fabrics through basic, special and additional duties of excise has by no means been small. These duties on fabrics contributed as much as Rs 168.3 crore in 1981-82. Together with the duties on cotton yarn, the contribution in the year amounted to Rs 271.7 crore. Of the total tax yield from cotton fabrics, almost 70 per cent was contributed by the composite mills and the rest was collected from powerlooms and handlooms.

Although in absolute terms the yield seems impressive, as a proportion of total excise revenue, the contribution from cotton textile fabrics is not only small but has also been declining over time. The proportion of excise revenue from cotton fabrics to total excise revenue declined from 4.2 per cent in 1970-71 to a mere 2.3 per cent in 1981-82. During the period, the rate of growth of excise revenue from cotton fabrics (7.39 per cent) was almost half of the growth of excise revenue in the aggregate (13.8 per cent).

The relative stagnancy in the yield of excise on cotton fabrics should truly be of great concern to the policy-makers. There are reasons to believe that the limitations placed on the output and the discriminatory taxation of the composite mill

[2] Similar studies in respect of two other commodities, namely, copper (Srivastava, 1982) and plastics (Sinha, Bagchi and Sud, 1983), form the preceding sections of this publication.

sector *vis-a-vis* the decentralised sector are important factors contributing to this sluggishness. To examine this, we have related the excise yield of cotton fabrics with the output index and the price indices in log-linear regression model. The information on output has been taken from the *Handbook of Statistics on Cotton Textile Industry* published by the Textile Commissioner and the information on the price variable relates to the wholesale price index of Cotton Textiles given the *Reserve Bank of India Bulletin.* The period of analysis is from 1970-71 to 1981-82. The results are given below:

1. $$\text{Log } T = 0.87238 \underset{-(1.2081)}{-\ 0.2012} \text{ Log } O_t + \underset{(24.1157)}{1.0011^*} \text{ Log } P$$

$$\bar{R}^2 = 0.9797 \quad F = 290.85 \quad \text{D.W. Stat.} = 2.2501$$

2. $$\text{Log } T = 0.5252 \underset{-(05811}{-\ 0.0703} \text{ Log } O_m \underset{-(0.7486)}{-\ 0.1339} \text{ Log } O_d + \underset{(10.9230)}{1.0191^*} \text{ Log } P$$

$$\bar{R}^2 = 0.9761 \quad F = 164.08 \quad \text{D.W. Stat.} = 2.1708$$

where

T	=	Excise revenue from cotton textile fabrics,
O_t	=	Total textile production index,
O_m	=	Textile production index of composite mills,
O_d	=	Textile production index of the decentralised sector,
P	=	Wholesale price index of cotton textiles,
*	=	Significant at 1 per cent level. Figures in brackets represent t statistics.

These regression equations provide interesting insights. It may be seen that increases in revenue from the excise duty on cotton fabrics are almost entirely explained by price increases having the elasticity value of around unity. Increases in output, both when taken in the aggregate as well as when composite mill output and decentralised sector output are taken separately, do not affect the revenue from excises at all. In fact, the negative signs of the output variable, although insignificant, show a tendency of inverse relationship between revenue from excise duty and the output variables.

The lack of relationship between changes in aggregate output of textiles and changes in the excise yield could be sought to be explained by two causes. First, the proportion of the output of the decentralised sector having higher exemption and lower tax rates might have increased over time so that the yield has remained rather stagnant although output in the aggregate has shown increases over time. But, although the proportion of the output of decentralised sector has increased over time, this explanation would not be entirely satisfactory, for, the revenue from excise duties does not show any significant relationship with the output index even when the mill sector and decentralised sector indices are taken separately. Secondly, the absence of relationship is possible if the tax rates have fallen over time, but as we do not discern such a tendency this explanation too cannot hold.

The absence of relationship between revenue from excise duties and output index of the mill sector, too, cannot be easily explained. The proportion of mill output exempted from excise duties, that is, exports, in fact fell from 9.72 per cent in 1970-71 to 7.29 per cent in 1981-82[3]. Similarly, the proportion of controlled cloth produced in the mill sector on which lower tax rates are applicable, fell from 18.48 per cent in 1974-75 to 11.39 per cent in 1981-82. As the rates of tax did not fall over time, there does not seem to be a satisfactory explanation. The only plausible explanation is that the degree of evasion of excise duties on mill sector cloth has increased over time.

Another point of interest is that the revenue from excise duties and production of cloth in the decentralised sector are also unrelated. Given the tax rate, such lack of relationship can occur when (i) the proportion of items subject to lower tax rates has increased over time or (ii) items on which higher rates of duty are leviable are increasingly misclassified as those subject to lower rates of duty. Broadly speaking, the proportion of powerloom output which is subject to higher

[3] With effect from 1.4.1980, full exemption has been granted also to controlled cloth as against 50 per cent reduction in rates that prevailed earlier.

rates of taxation than the handloom output has been increasing over time and, therefore, the hypothesis at (i) above is not helpful in explaining the lack of relationship. However, there does exist independent evidence of powerloom output being misclassified as the output of the handloom sector and the extent of this misclassification could indeed have been increasing over time. Similarly, evidence of misclassifying power-processed fabrics as hand-processed also exists. These will be explored further in Chapter 3.

Model of Tax Evasion—Some Obvious Lessons

The theoretical models of tax evasion, generally, have been built on the basis of the experiences of personal income taxes. On the assumption that utility is a function of income only, it can be said that the taxpayer in order to maximise his utility chooses to declare only a portion of his income (Allingham and Sandmo, 1972; Srinivasan, 1973). The proportion of income declared for tax purposes would depend upon the changes in the level of his income, the tax rate, the probability of investigation and detection and the penalty rate that would be imposed.

In this model the effect of changes in the level of income and tax rates on the declared income is not clear. When the actual income varies the proportion of income declared increases, stays constant or decreases, depending upon whether the tendency towards risk aversion increases, remains constant or decreases with income. Similarly, although increases in the tax rates make it more profitable to evade taxes on the margin (substitution effect), they also make the taxpayer less wealthy and hence act in the opposite direction to reduce evasion (income effect).[4]

The other two parameters of the model, namely, the penalty rate and probability of detection, however, show unambiguous results. Both an increase in the penalty rate as well as higher probability of detection have a deterrent effect

[4] This, however, requires an additional assumption of decreasing absolute risk aversion on the income scale.

on evasion. Besides, they are inter-related in their effects on tax evasion and the policy-makers do have the option of choosing the appropriate policy mix of penal rate and strengthening the enforcement machinery to check tax evasion.

It should be noted that the probability of detection has an important bearing on the methods of evasion. It is logical to presume that the taxpayer assigns different probabilities to different methods of evasion and chooses those having the lowest probabilities. Thus, a person can take recourse to more than one method of evasion if he assigns equally low probabilities to these methods. Similarly, in an economy, there can exist several methods of evasion as the probabilities assigned to the alternative methods may differ among different taxpayers.

Though these models of tax evasion are pertinent to the personal income taxes, the generalisations can also be applied to the evasion of commodity taxes with equal validity, and the extent and methods of tax evasion would indeed depend upon the factors mentioned above.

The methods adopted to evade taxes depend upon the avenues of tax evasion which arise from the nature of the tax structure itself. The evolution of the tax structure is determined by the objectives of tax policy and the importance of various pressure groups in influencing it. Levying of *ad valorem* taxes to raise revenues which would keep pace with the price situation gives rise to the possibility of evasion by understating the value of output either by suppressing the quantity or undervaluing the goods. Imposition of a rate structure differentiated according to different qualities of a commodity in the pursuit of equity could give rise to misclassification of the product. Levying taxes at higher rates on the products of the capital-intensive sector than on the labour-intensive sector to promote employment generation may lead to evasion of the tax through inter-sectoral misclassification of the commodity.

Plan of the study

Thus, the methods employed to evade taxes could arise from the tax structure itself. But attempts to evade and avoid taxes influence the pattern of production in terms of the quality and type of goods produced, the processes of production adopted and the type of technology employed. Sometimes, it may be possible to infer the nature and extent of tax evasion by examining the pattern of production of the concerned products in relation to the structure of taxation on these commodities.

Keeping the above fact in view, we devote the second chapter to an analysis of the profile of the cotton textile industry in India. Chapter 3 discusses the structure of the excise tax and relates it with the possible methods of evasion. Chapter 4 makes an attempt to quantify the revenue loss that could have occurred due to the adoption of different methods of evasion. The choice of a reference year, 1978- 79, for this purpose is largely guided by the availability of data. Finally, we have tried to address the broad issues of reform of the excise on cotton textile fabrics in Chapter 5.

2

Anatomy of Cotton Textile Industry: Some Important Features

Introduction

As mentioned in the previous chapter, there is a two-way relationship between the structure of excise duty and structure and growth of the cotton textile industry. The structure of excise duty through its impact on relative prices affects the demand pattern for cotton textiles in terms of different qualities of fabrics and fabrics of different sectors, besides affecting the relative demand for cotton cloth as a whole *vis-a-vis* the demand for other commodities. At the same time the changed production pattern due to both the changed demand pattern and the supply situation affects the excise revenue from cotton textile fabrics. Thus, the pattern of production of cotton textiles and the structure of excise levy are interconnected. An analysis of the pattern of growth over time of cotton textile production could therefore provide useful insights into the possibility and extent of excise evasion.

Unfortunately, we do not have adequate information on the number of looms and cloth produced in the powerloom and handloom sectors in the country. On the number of looms, whatever information we have is based on some surveys conducted for various study groups on these sectors appointed by the Commerce and Industry Ministries. As regards the cloth produced in the different sectors, the estimates are arrived at on the basis of yarn deliveries for civil consumption. All yarn delivered in hank form is construed to have been used by the handlooms and the rest of the yarn delivered for the decentralised sector is presumed to have been used by the powerlooms. The estimates of cloth produced are arrived at by merely applying the conversion ratio of 10 metres of cloth for every kilogram of yarn used. While it is recognised that these estimates do have a systemic bias, a matter which will be discussed in detail in Chapter 4, we have to adopt such estimates for the purpose of analysing the growth of the cotton textile industry in India.

Growth of the Cotton Textile Industry: An Inter-Sectoral Analysis

An important feature of the growth of the textile industry during the last 30 years is the phenomenal growth of the decentralised sector in general and powerlooms in particular. The number of looms in the powerloom sector, as may be seen in Table 2.1, increased substantially from 23,800 in 1951 to 4,83,000 in 1982, thus registering a growth rate of 10.5 per cent per annum. The corresponding growth rates of looms in both the mill sector and the handloom sector were very low at 0.2 per cent and 1.1 per cent respectively. Thus, the powerloom sector which constituted only 0.8 per cent of the total looms in 1951 phenomenally increased its share to 10.3 per cent in 1982, at the expense of the share of both the mill and the handloom sectors. The share of the mill sector declined over the period by 1.8 percentage points from 6.3 to 4.5 and the decline in the handloom sector during the period was of a higher magnitude at 7.7 percentage points.

Although the above figures refer to all types of textiles, there is no reason to believe that the trend in cotton textiles has been different. In fact, the available information indicates that the growth of cotton looms in the powerloom sector has been even faster. For example, cotton looms in 1963 numbered around 80,000, forming only 54.8 per cent of the total number of looms, whereas in 1982, they numbered 3,07,000 and formed 63.6 per cent of the looms in the sector.

TABLE 2.1

Growth of Looms in Cotton Textile Industry

Year	Mills	Powerlooms*	Handlooms	Total
1951	1,94,400	23,800	28,50,000	30,68,000
	(6.3)	(0.8)	(92.9)	(100.0)
1963	2,00,000	1,46,000	20,00,000	23,46,000
	(8.5)	(6.2)	(85.3)	(100.0)
1982	2,10,000	4,83 000	40,00,000	46,93,000
	(4.5)	(10.3)	(85.2)	(100.0)
Compound growth rate of looms (per cent per annum)	0.2	10.4	1.1	1.4

Note: * Includes non-cotton looms also.

Source: Mill Owner's Association, Bombay. Memorandum submitted to the Tripartite Committee on the conditions of workmen of the Textile Mill Industry and the Problems of the Textile Industry, December, 1982, p.79.

In terms of cotton cloth production also, the trend has been similar. Even if we take the official estimate, it is seen that the output of powerlooms increased at a phenomenal rate of about 11.9 per cent per annum from 151 million metres in 1956 to 2721 million metres in 1982, (Table 2.2) As against this, the output of the composite mill sector declined substantially even in absolute terms and that of handlooms increased at a much slower rate of 2.3 per cent. The powerloom output which in 1956 formed only 2.3 per cent of the total cloth output, increased by about 18 times over a quarter century to form about 35 per cent. It should be noted that official estimates understate the production of powerlooms significantly, for, it is believed that a large part of the hank yarn is consumed by powerlooms [1] (Desai, 1981;

[1] It is believed that the official estimates understate power loom output also for other reasons. First, on the basis of a survey, it is known that about 7-10 per cent of hank yarn is used by the powerlooms in the manufacture of certain categories of output like sarees. Second, a kilogram of yarn produces 15 metres of cloth for higher counts of yarn (more than 41s) as against 8 metres for lower counts. As the proportion of higher count yarn consumed by the powerlooms is larger, the official estimates are understated. (On this, see Mazumdar, 1984 and Jain, 1983.)

TABLE 2.2

Estimated Cotton Cloth Production in Different Sectors

(In million metres)

Year	Mills	Powerlooms	Handlooms	Total
	(1)	(2)	(3)	(4)
1956	4852	151	1483	6486
	(74.8)	(2.3)	(22.9)	(100.0)
1960	4616	491	1642	6749
	(68.4)	(7.3)	(24.3)	(100.0)
1971	3957	1419	1980	7356
	(53.8)	(19.3)	(26.9)	(100.0)
1976	3881	1734	2330	7945
	(48.8)	(21.8)	(29.3)	(100.0)
1977	3223	1638	2040	6901
	(46.7)	(23.7)	(29.6)	(100.0)
1978	3251	1884	2190	7325
	(44.4)	(25.7)	(29.8)	(100.0)
1979	3206	2014	2320	5740
	(42.5)	(26.7)	(30.8)	(100.0)
1980	3476	2268	2570	8314
	(47.8)	(27.3)	(30 9)	(100.0)
1981	3147	2453	2520	8120
	(38.5)	(30.2)	(31.0)	(100.0)
1982	2347	2721	2720	7788
	(30.2)	(34.9)	(34.9)	(100.0)

Notes : 1. Figures in parentheses indicate percentages of total.
2. Figures in Col. (2) are estimated by deducting volume of handloom cloth from that of total cotton cloth production in the decentralised sector.

Source : For Col. (1): Indian Cotton Mills Federation —*Handbook of Statistics on Cotton Textile Industry*, Bombay, 1983.
For Col. (2): *Ibid.* (Estimated on the basis of figures pertaining to delivery of hank yarn.)

Anand, 1979 and Jain, 1983). If this is taken account of, the proportion of powerloom output would be much larger and the growth of powerloom output would be much higher.

Thus, both in terms of number of looms and cloth manufactured, the powerloom sector has shown a phenomenal growth. It has increased its share in the output significantly over the time period considered at the expense of the shares of both the mill and the handloom sectors. Thus, although the output per loom has shown a declining trend in all the three sectors, the decline over the period from 1963 to 1982 has been much slower in the case of powerlooms (16 per cent) than in the case of the mill sector (50 per cent) and the handloom sector (33 per cent). A part of this tremendous fall in the mill sector output can be explained by the heavy production losses incurred during the year 1982 due to the textile strike, but even the relevant figures for 1981 show that per loom output declined by about 40 per cent from the level existing in 1963.

Admittedly, this is the outcome of the Government policy translated in terms of banning the expansion of weaving capacity in the mill sector since 1956, and the discriminatory levy of excise duties on the output of the mill sector *vis-a-vis* those of the powerlooms and the handlooms. Coupled with this is the greater possibility of evasion of the duty in the powerloom sector than in the mill sector. As powerlooms of various sizes operate throughout the country and it is likely that a large number of them are unauthorised, the probability of detecting evasion in decentralised units is remote. Thus, the difficulties of monitoring the levy can give rise to widespread evasion of the duty on the output of the powerloom sector. The precise manner in which this could be done will be discussed in the next chapter.

Pattern of Production

As mentioned earlier, Government policy has been generally to restrict the expansion of the weaving capacity in the composite mill sector. Nevertheless, it was expected that the mills would produce sufficient yarn to cater to the needs of the decentralised sector—particularly the powerlooms. As a result, the expansion of mills was predominantly in their spindlage. The number of spindles over the last decade grew at the rate of 1.7 per cent per year although growth of cotton yarn output during the period was only 0.5 per cent.

An important feature of yarn production, however, is the count-wise production of yarn in relation to the quality of cotton available for spinning. Till 1966, there was little indigenous production of long-staple cotton which was used to produce higher counts of yarn. But since then, the production of these varieties of cotton increased substantially and by 1980, more than 25 per cent of the cotton used was the long-staple variety produced indigenously. What is notable however is, that although the production pattern of yarn also did move towards higher counts during this period, it did not increase commensurately with the shift in the staple composition of cotton available for spinning. It thus seems that the new supplies of long-staple cotton are used largely in the production of yarn of medium counts occasioned by the demand pattern for cloth influenced, among other things, by the structure of excise duty on yarn and cloth. The implication of this to the economy is clearly lower total cloth output, for, the yarn-to-cloth conversion ratio for higher counts of yarn is higher.

An important feature of production of cloth in the country is the relative specialisation of the three different sectors. The examination of the production pattern reveals that while the mill and handloom sectors produce, in the main, fabrics of medium and coarse varieties. the production of the powerloom sector is largely confined to cloth of higher counts (Table 2.3). Thus, in 1978-79 while the proportion of cloth of less than 41 counts in the total cloth output of composite mills and handlooms was as high as 92 per cent and 86 per cent, respectively, the corresponding percentage for powerlooms was only 72. Similarly, while the share of cloth of more than 41 counts in the case of powerlooms was as much as 28 per cent, the shares of handlooms and the composite mills were much lower at 14 and 8 per cent, respectively. This relative specialisation of the three sectors indicates one important feature. As higher counts of cloth are charged excise duty at higher rates, the amount and the rate of tax saved by evading and avoiding the tax would be higher for cloth of higher counts. Given further that the powerloom output is a closer substitute to the mill output than the output of handlooms, and that the probability of detection of

TABLE 2.3

Variety-wise Production of Cotton Fabrics in Different Sectors in (1978-79)

(In million metres)

Variety	Yarn used (in count groups)	Mill Sector	Powerloom	Handloom	Total
Superfine	61s and above	167	195	103	465
		(5.23)	(11.03)	(5.04)	(6.64)
Fine	41s to below 61s	94	301	191	586
		(2.95)	(17.02)	(9.34)	(8.37)
Medium-A	26s to below 41s	1623	696	445	2764
		(50.86)	(39.27)	(21.76)	(36.46)
Medium-B	17s to below 26s	889	347	753	1989
		(27.86)	(19.63)	(36.82)	(28.40)
Coarse	Below 17s	418	229	553	1200
		(13.10)	(12.95)	(27.04)	(17.13)
TOTAL		3191	1768	2045	7004
		(100.00)	(100.00)	(100.00	(100.00)

Note: Figures in parentheses indicate percentage of production.

Source : Government of India, Ministry of Finance, Department of Revenue. *Report of the Expert Committee on Tax Measures to Promote Employment*, New Delhi, 1980.

evasion is low in this sector due to its decentralised nature, it is not surprising that it specialises in the production of these superior varieties of cloth.

The salient features of the textile industry noted above are, at least in part, due to the structure of excise duty on cotton textile fabrics and the industry's response to this by evolving a pattern in its attempt to avoid and evade the tax. It would, therefore, be interesting to analyse the structure of excise duty on cotton textile fabrics and identify the means of evasion of the tax. This, we attempt in the next chapter.

3

Structure of Excise Duty on Cotton Textiles

Introduction

THE structure of a tax is determined by, *inter alia*, the objectives of tax policy. In the case of excise duties on cotton textile fabrics, the objective of making revenue keep pace with inflation has resulted in the levy of *ad valorem* tax as against a specific levy. The intention to encourage labour-intensive production has resulted in the discriminatory taxation of yarn as well as fabrics produced in the different sectors—the rates of tax varying inversely with labour intensity. The objective of vertical equity has led to differential taxing of the fabrics produced within a sector, the rates differing according to the yarn counts used in the fabric as well as the price of the fabric. It should be noted that when the tax is made to serve these various objectives, the structure of the tax gets complicated. Consequently, avenues of evasion and avoidance open up and attempts to block these through further amendments complicate the structure further.

Evasion of a tax is influenced by, among other factors, the existing structure of the tax and its evolution over the years. Therefore, an understanding of the salient features of the tax and its evolution is important for identifying the avenues of evasion. The present chapter highlights the salient features of the tax structure.

The reference year chosen by us for the estimation of the extent of evasion in 1978-79. The choice of this year is guided mainly by the consideration of the availability of data and detailed information on production and consumption at the required level of disaggregation. Besides, the structure of the excise duty which underwent a qualitative change by being switched over to graded telescopic *ad valorem* rates in 1977-78, did not undergo any significant qualitative changes thereafter and the degree of evasion estimated for this year would therefore be taken to be indicative of the relative magnitude of evasion in more recent years.

It is necessary to mention at the outset that our primary interest is to estimate the extent of evasion of excise duty on cotton cloth. Therefore, we intend in this chapter to highlight the salient features of the structure of excise duty on cotton cloth. Nevertheless, in the course of our analysis, we will identify certain obvious methods of evasion of the duty on cotton yarn and this evasion can be easily quantified. For this reason, it would be necessary to give a brief background of the duty structure in regard to cotton yarn also. Again, here we cover only the salient features of the tax structure in 1978-79 and its evolution thereto. A detailed account of the evolution of the excise duties on cotton cloth to date and their present structure is given in Appendix I.

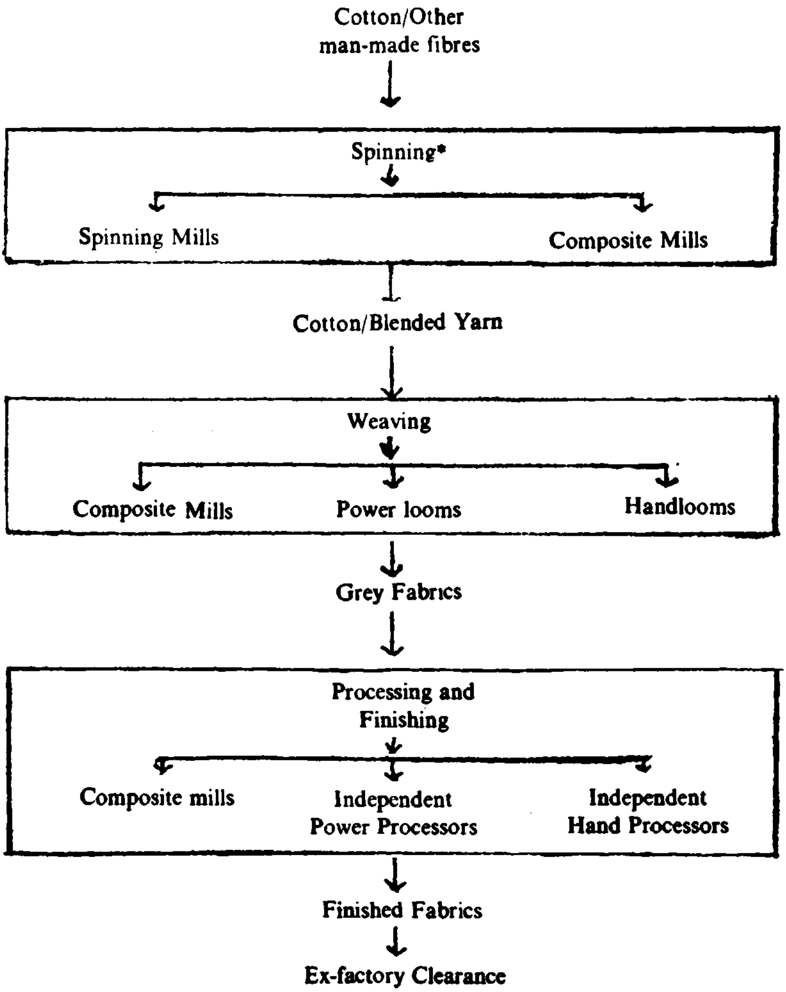
Inter-Flows between Different Sectors of the Textile Industry

In order to locate the major avenue of evasion, it is necessary to understand the inter-linkages among the different sectors of the textile industry and to identify the different points of levy. The manufacture of cotton cloth involves three main stages, namely, (i) spinning of yarn from cotton, (ii) weaving of the yarn into grey cloth and (iii) processing and finishing of the grey cloth. While spinning is done by spinning and composite mills, weaving into grey cloth is done by composite mills, powerlooms and handlooms. Processing and finishing of the fabrics is done by composite mills as well as independent processing units run either with the aid of power or steam or manually.

The direction of input-output flows according to types

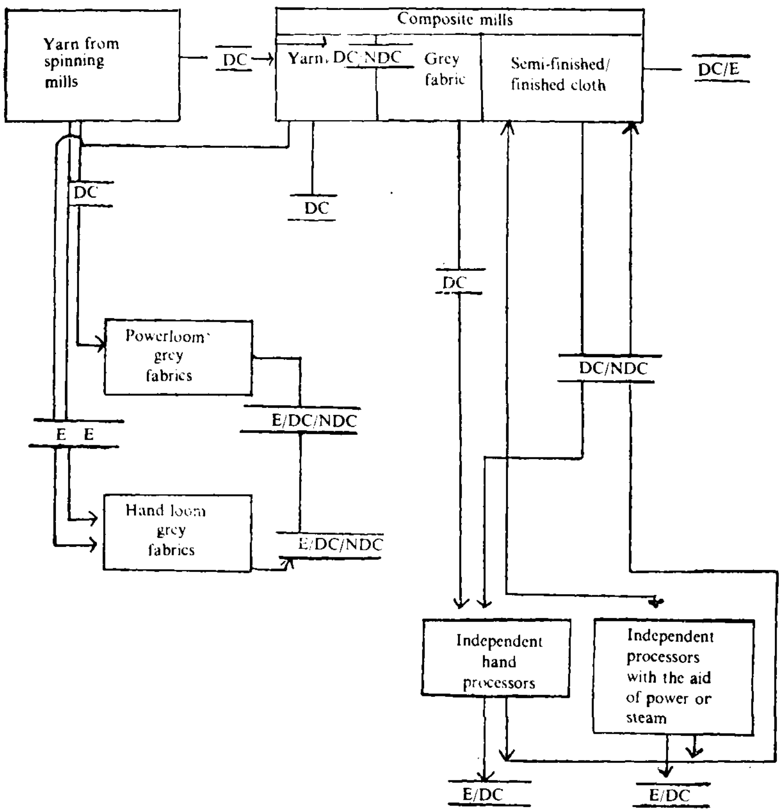
FLOW DIAGRAM I

Manufacturing Stages and Types of Units



*Handspinning done for the production of Khadi Cloth is ignored here.

FLOW DIAGRAM II



Key: DC = Duty-paid clearance
NDC = Non-duty clearance under bond
E = Exempted.

of mills and the interlinkages among the different sectors of the textiles industry alongwith the points of levy of excise duty are shown in the flow diagrams I and II. It is seen that the yarn produced in spinning mills is woven in composite mills, powerlooms as well as handlooms. Similarly, the yarn produced in the composite mills is woven in handlooms and powerlooms besides composite mills themselves. Again, all woven cloth can be processed in composite mills or independent processing units run either with the aid of power or steam or manually. It is thus seen that there is a two-way flow between the organised mill sector and the decentralised weaving and processing sector.

Evolution of Excise Duties on Yarn and Cotton Fabrics

The excise duty on yarn, introduced in 1961, was a simple levy. The yarn used in all sound fabrics was taxed at a single rate but the yarn used in fents was charged at two different rates[1], one rate (Rs 0.15/kg.) applicable to yarn used in the manufacture of superfine and fine fabrics and another (0.10/kg.) on the remaining. Yarn in hank form, however, was exempted. Since then several changes have taken place, increasing the differentiation in the tax rates.

Two features of the levy on cotton yarn as existing in 1978-79 are important from our point of view. First, the labour-intensive handloom sector was sought to be encouraged by exempting cotton yarn in hank form on the presumption that this is necessarily used only in the handlooms. However, the beneficiary of this policy has turned out to be largely the powerloom sector. It is known that the powerlooms do weave some items such as 'sarees' and 'dhotis' from yarn received in hank form (Anand, 1979). Besides, powerlooms are known to purchase sizeable quantities of hank yarn and rewind it into cones or pirns in order to evade excise duty on yarn (Jain, L.C., 1983).

The second important feature of the excise duty on yarn was its differentiated rates (Annexure I). The rate structure

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[1] For the definition of Fents and Rags, see Appendix I.

prevailing in 1978-79 is summarised in Table A.1 in the Annexure. Progressivity in the structure was sought to be brought about by levying higher rates of tax on higher counts of yarn. As the conversion of yarn from hanks into cones or pirns, noted in the previous paragraph, involves a cost, it becomes economical to do so only for yarns of higher counts and, thus, diversion of the yarn and consequent evasion of the duty was beneficial only in respect of higher counts of yarn. Another important consequence of this was the tendency of the spinning mills, in order to avoid higher taxes, to spin lower counts of yarn even though they could spin higher counts from long-staple cotton. One important feature, noted in the previous chapter, that is, the yarn output of higher counts not increasing proportionately with the long-staple cotton used in their manufacture, can thus be attributed to the excise policy. It may be noted that this results in lower cloth output as the yield of cloth per kilogram of yarn is lower for lower counts of yarn.

In the post-1947 era the excise duty on cotton fabrics has been imposed since 1949 under the Tariff item No. 19. Initially, the tax applied only to superfine cloth, but soon, fine, medium and coarse cloth were also brought within the excise net, albeit at lower rates. The levy of handloom cess since 1953 and additional excise duties in lieu of sales tax from 1957 were other important developments in the field of excise policy on cotton fabrics. A number of changes in the rate structure were made since then, the most important one in 1976 when the basic duties were changed from specific to *ad valorem* rates. Another important change was introduced in 1977 when both the tariff description and duty structure were altered.

Another aspect of the evolution of the excise on cotton fabrics is the inter-sectoral discrimination. For example, from 1955, small powerloom units were subjected to only a compounded levy. Since then, the rate has been altered a number of times. With effect from 1977, even this was abolished on all authorised powerlooms and all grey fabrics produced on powerlooms were exempted. Again, grey fabrics produced on handlooms have continued to be exempt and although the tariff description in 1960 was amended to include them, they were exempted through a separate notification.

As mentioned in the preceding paragraphs, notable changes in the tariff structure were made in 1977. The salient features of the structure of excise on cotton fabrics prevailing in 1978-79 are summarised below:

For the purpose of the Central Excise Tariff, 'cotton fabrics' were defined so as to include all varieties of fabrics where cotton predominated by weight and contained more than 40 per cent by weight of cotton and 50 per cent or more by weight of non-cellulosic fibres or yarn or both. In the case of fabrics such as embroidery in piece and fabrics impregnated and coated, these percentages referred to the base fabrics.

Cotton fabrics were divided into three categories, for which statutory rates were fixed. Accordingly, the basic rates ranged from 20 to 30 per cent [2]. However, these rates represented only the ceiling rates and the actual tax rates were governed by the effective rates notified by the Government from time to time.

The rate structure prevailing in 1978-79 in the mill, the powerloom and the handloom sectors is outlined in Table 3.1. Three important features of the tax structure are relevant for our purposes and hence, may be noted. First, discriminatory rates of taxation of the fabrics produced in different sectors were imposed. Second, differentiation in the rate structure was made to depend upon both the yarn counts used in the manufacture of the fabric. as well as the price of the fabric. Third, differential rates of tax were levied on the fabrics termed as 'sounds', 'fents' and 'rags'. These features have important implications for the method and quantum of evasion and hence call for further elaboration.

The policy of encouraging labour-intensive technology has resulted in the levying of discriminatory rates of taxation on the products of mill, powerloom and handloom sectors.

[2] Since 1980, the number of categories has been increased to four.

The rates of tax levied were inversely related to the labour-intensity in production. Thus, while products of the mill sector were subjected to the highest tax rates, the output of the powerloom and handloom sectors processed by the composite mills or independent processors were subjected to lower rates, the rates being lower by 30 per cent subject to a maximum reduction of 3 percentage points and 60 per cent subject to maximum reduction of 6 percentage points, respectively. The grey fabrics produced in both authorised power-looms and handlooms were completely exempted. Even the processed fabrics of these sectors were exempted if they were processed by independent hand processors not using electricity or steam.

TABLE 3.1

Rates of Excise Duty on Cotton Fabrics Sector-wise (1978-79)

(Per cent)

Sl. No.	Description	Mill made	Handloom Fabrics — Processed by independent processors — Approved by Govt.	Handloom Fabrics — Processed by independent processors — Not approved by Govt.	Powerloom fabrics processed by independent processors
1.	Cotton Fabrics (including fents and rags) in which the average count of yarn is 41s or more	15	5 without printing or dyeing or both	8**	8
			9 with printing or dyeing or both	12	12
2.	Cotton Fabrics (other than those in which the average count of yarn is 41s or more)* whose value per square metre:				
	(a) Does not exceed Rs 4	2	0.80	1.40	1.40
	(b) Exceeds Rs 4 but does not exceed Rs 6	3	1.20	2.10	2.10

(Table 3.1 Contd.)

(c) Exceeds Rs 6 but does not exceed Rs 7	4	1.60	2.80	2.80
(d) Exceeds Rs 7 but does not exceed Rs 8	6	2.40	4.20	4.20
(e) Exceeds Rs 8 but does not exceed Rs 9	8	3.20	5.60	5.60
(f) Exceeds Rs 9 but does not exceed Rs 10	10	4.00	7.00	7.00
(g) Exceeds Rs 10 but does not exceed Rs 11	12	6.00	9.00	9.00
(h) Exceeds Rs 11 but does not exceed Rs 12	14	8.00	11.00	11.00
(i) Exceeds Rs 12	15	9.00	12.00	12.00
3. Fents and rags with average count of yarn less than 41 s whose value per square metre:				
(a) Does not exceed Rs 4	2	0.80	1.40	
(b) Exceeds Rs 4 but does not exceed Rs 7	3	1.20	2.10	2.10
(c) Exceeds Rs 7 but does not exceed Rs. 9	6	2.40	4.20	4.20
(d) Exceeds Rs 9 but does not exceed Rs 12	10	4.20	7.00	7.00
(e) Exceeds Rs 12	15	9.00	12.00	12.00

Notes:

* Cotton fabrics of this group when classified under 'controlled cloth' variety, are subject to a tax rate reduced by 50 per cent.

** In the budget proposal effective from 1.3.1979 the duty was increased from 8 per cent to 12 per cent. It was subsequently reduced to 11 per cent with effect from 24.4.1979.

(i) The effective rate on further processing of duty-paid fabrics of composite mills (both for less than and more than 41 counts groups) is less of tax already paid.

(ii) Handloom fabrics processed by registered handloom cooperative societies and hand processors not using power or steam are exempted from paying duty.

(iii) The above effective rates of duty on cotton fabrics are composite ones representing basic and additional duty in lieu of sales tax. The allocation between basic and additional duty is 75 per cent and 25 per cent, respectively.

(iv) In addition to the above, there is a special excise duty of 5 per cent on basic duty effective from 1.3.1978 and additional excise duty at 10 per cent of basic duty effective from 4.10.1978.

(v) For handloom fabrics processed by independent power processors not approved by Government and powerloom fabrics processed by independent power processors, there was a concessional rate of duty on processing (i.e., bleaching) without printing or dyeing or both of 8 per cent *ad valorem* vide notification No. 226/77 dated 15.7.1977. This concession has been withdrawn through the 1979-80 budget vide notification No. 60/79 dated 1.3.1979.

Sources: 1. Government of India, Ministry of Finance, Department of Revenue, *Report of Expert Committee on tax measures to promote employment*, 1980, New Delhi.

2. Cencus Publications, *Cencus Central Excise Tariff, 1978-79*, New Delhi.

The pursuance of the objective of equity has resulted in the taxing of fabrics of different qualities at different rates. The quality differences in fabrics were measured through two different indicators, the yarn count and the price of the fabric. Different rates of tax were levied on fabrics of 41 counts and above, and below 41 counts [3]. On fabrics of below 41 counts, again, different tax rates were levied depending upon the price per sq. metre of the fabric. Thus, for example, mill fabrics of over 41 counts, irrespective of the price, were subjected to 15 per cent basic duty and those of less than 41 counts were subjected to varying rates of duty depending upon the price of the fabric, subject to a maximum basic rate of 15 per cent. This did indeed create an anomaly in that fabrics of higher counts were subjected to the highest rate of taxation, irrespective of the price of the fabric and the economic status of the consumer.

Another important feature of the tax structure is the differential taxation of 'sounds', fents' and 'rags'. The tax rates on fabrics of higher counts were the same for all the three categories. However, fents and rags of lower counts were charged at slightly lower rates, although the range of the tax rates was the same (2 per cent to 15 per cent).

[3] Since 15.7.1982, the distinction is made between 51 counts and above and below 51 counts.

Implications of the Structure of Excise—
Possible Avenues of Evasion

The inter-sectoral and intra-sectoral differentiation in the exemptions and the rates of tax on yarn as well as fabrics have important implications for the method and quantum of evasion of excise duty. In this section, we attempt to explore this aspect.

We had mentioned in Chapter 1, that evasion of a tax is a function of, among other factors, the probability of detection. Thus, a taxpayer would employ those methods of evasion which have low probabilities of being detected. This would imply that there are no standard methods of evading taxes on all commodities and the methods employed in relation to each commodity would differ depending upon the structure of the tax, the production pattern and trade channels of the commodity in question.

The structure of excise on cotton textile fabrics and the production pattern of the commodity would indicate the following major methods of evasion: Evasion through (i) inter-sectoral misclassification of the output and (ii) intra-sectoral misclassification which also involves understatements of production and under-valuation.

The existence of inter-sectoral rate differences could provide avenues of evasion through inter-sectoral misclassification of the output. It may be difficult to misclassify the output of the mill sector, for, it being an organised sector, evasion by this means has a higher probability of being detected. On the other hand, misclassification of powerloom output as handloom output can be done with less fear of detection, for it is not possible to monitor production flows in units in the decentralised sector. Further, not much information is available even to the authorities on the output of powerlooms and handlooms; estimates of their production figures are based mainly on yarn deliveries, hank yarn being taken to be entirely used in the handlooms. Given that hank yarn is exempt from the excise duty, evasion of the tax by rewinding hank yarn into cones or pirns and using them in powerlooms would be beneficial so long as the duty evaded exceeds the cost of rewinding. As higer rates of duty are levied on higher counts of yarn, this is specifically viable for yarn counts higher than 40[4]. Thus, in the process of evading the duty on yarn, powerloom output is misclassified as handloom output.

Another inter-sectoral avenue of evasion of the tax arises from the misclassification of powerloom fabrics processed by independent processors using power, as hand-processed fabric. It may be recalled that the hand-processed powerloom fabrics are exempted from the excise duty whereas those processed with use of power are required to pay the tax—the rates ranging from 1.4 per cent to 12 per cent. Given the unorganised nature of the industry, it may not be difficult to misdeclare the power-processed fabrics as hand-processed and claim exemptions. It should be noted that the hand-processing machinery is by no means unsophisticated—rather, it is identical to the power-processing machines and hence, the products would not be different. Each unit processes about 20,000 metres of cloth per day (Government of India, 1980b) It is common knowledge that in some places hand-processing and power-processing units do operate in adjacent sheds in *benami* names, making it easier to indulge in misdeclaration. We have also heard often that the same unit is run on power usually, but is manually operated at the time of inspection. Again, the structure of tax rates provides greater incentive for the evasion of tax on the fabrics of higher counts as the tax rates are higher on them.

Given the structure of excise duties, we can trace an optimal path of excise evasion wherein a producer can evade the tax, throughout the production flow, both on the yarn and on the cloth. A producer can purchase hank yarn which is exempted, rewind it into cones or pirns and weave it on the powerlooms. Grey cloth produced by the powerlooms is exempt. This grey cloth could be processed in independent

[4] The Mill Owners Association (1982) contends that the cost of rewinding hank yarn into cones is around Rs 1 to 2 per kg of yarn. As the excise duty on yarn of 40 counts is Rs 1.63 per kg., conversion becomes economical for yarn of counts higher than 40.

hand-processing units whereby the duty is avoided. However, when it is processed in power processing units and misclassified as hand-processed, duty is evaded. Now, the producer stamps a name and trade mark of a reputed mill, an inflated ex-mill price on the cloth and the excise duty payable and sells it to the consumers.

However, evading of the tax in the way mentioned above requires coordination of the activities of different sectors of the textile industry. In other words, the powerloom owners may not stand to gain directly from the evasion of the tax at the processing stage. Similarly, tax evasion at the spinning stage may not be directly beneficial to independent processors. It is in this context that we have to understand the role of the traders.

Traders occupy a prominent place in almost all the activities of textile manufacturing. Many a time, they are instrumental in coordinating all the activities subsequent to spinning. They buy the hank yarn, rewind it into cones or pirns by paying appropriate charges, weave it in powerlooms by paying a rental to the powerloom owner and process them in independent processing units. Subsequenty, they illicitly stamp an inflated price as well as the trade mark of a reputed mill on the cloth and sell it through wholesale and retail outlets.

Evasion arising out of the intra-sectoral tax rate differential can be classified under two categories, namely, (i) suppression of quantity of cloth produced in a sector and (ii) undervaluation of the cloth produced. Under the latter, we may include the misclassification of the higher priced categories as those belonging to lower price categories, misclassification of the count of yarn used, misclassification of sound fabrics as fents or rags, tie-in-sales and such other methods usually employed in the trade to evade taxes (Government of India, 1976).

Although it is possible, it may not be very probable that the mill sector evades taxes by suppressing the quantity of output. The organised nature of the mill sector and the constant monitoring of the production flows, from the cotton used to the cloth produced, by the excise officials makes it difficult to evade taxes by suppressing the output without the connivance of the officials. In other words, the probability of getting detected by suppressing output would be high and therefore, use of this method to evade taxes may not be frequent. On the contrary, given the graded nature of the tax structure, the evasion of the tax through undervaluation could be sizeable. As the rates vary with the count of the fabric and its price if the fabric is of less than 41 counts, misclassification among the count groups is not difficult (because it may not be possible to subject all the fabrics to laboratory tests). Similarly, excise officials may not be able to monitor the evasion arising from the tie-in-sales and misclassification of higher priced items into lower priced categories. Even direct undervaluation may escape the attention of the officials as it may not be possible to monitor the entire distributive flows. In any case, the method and the quantum of tax evasion in relation to textile fabrics is basically an empirical issue which we deal with in the next chapter.

We have highlighted the salient features of the tax structure prevailing in 1978-79, which is the reference year for estimated evasion of the tax. Since 1978-79, there have not been any qualitative changes in the structure of the tax. The structure continues to be a graded one although the cut-off point for rate differentiation was changed from 41 counts to 51 counts in 1980-81. The fabrics of less than 51 counts again have a differential rate structure depending upon the the price. As there have not been significant qualitative changes in the tax structure, it need not be apprehended that the methods and the relative magnitude of evasion estimated by us for 1978-79 would be drastically different from what they are now.

4

Excise Duty Evasion—An Empirical Estimate

Introduction

In the previous chapter, we have explained that intersectoral and intra-sectoral differences in exemptions and the structure of rates lead to evasion of the excise duty on cotton textile fabrics. Inter-sectoral tax differences cause evasion of the yarn duty through misclassification of the yarn used by powerlooms as yarn used by handlooms. Besides, this causes evasion of the duty on cloth also, as the powerloom cloth processed using power can be misclassified as hand-processed. Intra-sectoral tax rate differences may cause evasion of the tax largely in the mill sector, when mills either understate or undervalue their output. To estimate the total evasion of the duty, therefore, we have to estimate the evasion caused by each of these methods and aggregate the individual estimates. In this chapter, we make such an attempt.

Evasion of Duty through Inter-Sectoral Misclassification

a. Evasion of the yarn duty

We have already mentioned that the exemption of hank yarn from excise duty leads to evasion of the yarn duty through illicit rewinding of hank yarn into cones or pirns and weaving them on powerlooms. As the rate of duty is higher on yarn of higher counts, tax evasion on such yarn becomes specially tempting. Subsequently, as the official estimates of handloom and powerloom production depend on the yarn deliveries in hank and non-hank form, respectively, due to the diversion, the official estimate of handloom production is overstated and powerloom production estimates are understated. It is common knowledge that hank yarn is used for the warp when yarn-dyed fabrics are produced on powerlooms. Besides this, diversion of hank yarn to powerlooms takes place on a significant scale to take advantage of the excise rate differentials.

The existence of an upward bias in handloom production and the consequent downward bias in powerloom production in the official estimates is a well-known fact. A Planning Commission study (Anand, 1979) places the misclassification at 500 million metres for the year 1975. Jain (1983) similarly estimates that 840 million metres of powerloom cloth would have been misclassified as handloom cloth in 1981. The Mill Owner' Association places the misclassified quantity of cloth at 600 million metres in the year 1981. It thus seems that the diversion of hank yarn and the consequent evasion of yarn and the consequent evasion of yarn duty arising therefrom is considerable.

We can estimate the quantum of yarn diversion by independently estimating the consumption of yarn by the handlooms and comparing it with the hank yarn deliveries. In other words, if we can estimate the production of handlooms independently (not on the basis of yarn deliveries, as is done officially), we can arrive at the estimate of yarn diversion and the amount of cloth misclassified by comparing it with the officially estimated production figure.

We have attempted to estimate the amount of yarn diversion and cloth misclassification by independently estimating the production figures. An estimate of production can be arrived at by adding the consumption of handloom cloth to the exports of such cloth. Estimates of household consumption of handlooms are available in the *Consumer Purchases of Textiles*, an annual publication of the Textile Committee, Market Research Wing, Ministry of Commerce, Government of India. We have adjusted the calendar year data given in this publication proportionately to correspond to the fiscal year 1978-79. Similarly, adjustments had to be made in the reported export figures also, for, although data on the export of handloom cloth are available in both quantities and values, data on the export of handloom manufactures are available only in value terms. Assuming the price per metre of the latter, we have estimated the quantity of handloom manufactures.

The estimated misclassification of yarn is presented in Table 4.1. It is seen that total household consumption of handloom cotton cloth in 1978-79 amounted to 962.59 million metres. *Consumer Purchases of Textiles* (Government of India, 1978, 1979) gives us the estimated non-household consumption of cotton fabrics, but the handloom component is not separately available. However, the Planning Commission's study (Anand, 1979) estimates non-household consumption of handloom for the year 1975 at 300 million metres which in that year formed 63.5 per cent of total non-household consumption (Institutional Purchases). Assuming the proportion to remain the same in 1978-79, we have estimated the non-household consumption of handloom in the year at 520.19 million metres. The estimated total consumption of handloom in 1978-79, thus, is placed at 1482.78 million metres.

TABLE 4.1

Estimated Production of Handloom Cloth (1978-79)

Household consumption	962.59 mn. metres
Non-household consumption	520.19 mn. metres
Export of handloom cloth	84.60 mn. metres
Export of handloom cloth manufactures (value of Rs 28.91 crore at the rate of Rs 7.42 per metre)	38.95 mn. metres
Total Estimated Production	1606.33 mn. metres

During the year, the export of handloom cotton cloth was 84.6 million metres having a value of Rs 628 million. Besides this, handloom manufactures worth Rs 289.1 million were also exported. If the price per metre of cloth of the former (Rs 7.42) is assumed, the exported quantity of cotton manufactures would amount to 38.95 million metres.

By adding the estimated consumption to estimated exports, we get an estimate of the production of cloth, which comes to 1606.33 million metres for the year 1978-79. Estimation made on the basis of hank yarn deliveries, however, places handloom production at 2119.23 million metres, as may be seen from Table 4.2. Thus, 512.91 million metres of powerloom cloth seem to have been misclassified as handloom cloth.

To arrive at the exact amount of duty loss due to yarn diversion, we have to estimate the diversion of cloth and yarn of various counts. However, certain assumptions are called for as the data in the required disaggregation are not available. We have assumed that there would be no misclassification of cloth through the diversion of yarn for cloth upto 20 counts because for such cloth, the cost of rewinding the yarn would far exceed the benefit from excise evasion. Further, it is assumed that the misclassification of cloth of the remaining count groups would be proportional to the estimated production of cloth (derived on the basis of yarn deliveries)[1]. By applying an appropriate cloth-yarn conversion ratio to the misclassified cloth production estimates we have obtained an estimate of yarn diversion in different count groups (Table 4.2). By applying appropriate rates of duty on the diverted yarn, the amount of duty evaded can easily be derived. As seen in the table, the duty thus evaded amounts to Rs 6.92 crore, about 8 per cent of the actual collections[2]. Collection

[1] It may be mentioned that this is an assumption which leads to a very conservative estimate of evasion, for, given the structure of excise duty the diversion of yarn would be disproportionately higher for higher count categories. But, as we do not have reliable estimates on this, we have made this conservative assumption.

[2] Here, it may be noted that the actual collection in a year consists of the duty paid for that year plus the previous year's arrears collected in the year. It does not include duty liability not discharged during the year.

TABLE 4.2

Estimate of Yarn Diversion and Evasion of Duty (1978-79)

Count groups	Hank yarn deliveries (in thousand kgs.)	Cloth produceable per kg. of yarn	Estimate of cloth production on the basis of yarn deliveries (million metres)	Our estimate of cloth production (million metres)	Misclassified production[1] (million metres)	Estimated yarn diversion (million kgs.)	Average basic duty (paise/kgs.)	*Amount of Evasion* Basic	Special (Rs millions)	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1 – 10s	54673.50	8	437.39	437.39	0	0	–	0	0	0
11 — 20s	72994.25	8	583.95	583.95	0	0	—	0	0	0
21 – 30s	26991.75	10	269.92	143.82	126.10	12.61	43.25	5.45	0.27	5.72
31 — 40s	36633.75	10	366.34	195.20	171.14	17.11	88.00	15.06	0.75	15.81
41 — 60s	20061.75	15	300.93	160.34	140.59	9.37	234.25	21.95	1.10	23.05

TABLE 4.2 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
61 — 80s	7649.75	15	114.75	61.14	53.61	3.57	387.75	13.84	0.69	14.53
Above 80s	3064.25	15	45.96	24.49	21.47	1.43	668.00	9.55	0.48	10.03
TOTAL	222069.00		2119.23	1606.33	512.91	44.09		65.86	3.29	69.15

Notes : 1 We have assumed that the yarn of upto 20 counts will not be diverted and hence our estimates and the estimates based on yarn deliveries do not differ for cloth of upto 20 counts. The remaining portion of our estimates has been distributed among the different count groups in proportion to the estimated production of clotb of different counts derived from yarn delivery figures.

2. Figures in column 2 which represent hank yarn delivery according to the fiscal year 1978-79 are adjusted from the calendar year data given in the Indian Cotton Mills Federation, *Handbook of Statistics on Cotton Textile Industry*, Bombay.

3. The information on cloth produceable per kg. of yarn given in column 3 is taken from Mazumdar (1984).

of this amount would have resulted in the total excise collection from yarn of Rs 94.79 crore and evasion on this account as a proportion of the total works out to 7.3 per cent.

b. Evasion of duty on cloth

As stated earlier, the diversion of hank yarn to evade yarn duty also results in the evasion of the duty on cloth. We have already estimated above that about 513 million metres of powerloom cloth were misclassified as handloom cloth in 1978-79. There is no reason to expect that excise duty would have been paid on this cloth.

Basically, evasion of the cloth duty can be included in a more general form of evasion-misclassifying power-processed fabrics as hand-processed. It should be noted that the grey fabrics produced on powerlooms were exempted from excise duty. Again, even on the processed fabrics, the duty was not leviable if the cloth was processed without the aid of power or steam. Duty on powerloom fabrics, thus, was leviable only if the cloth was processed in the power processors. This, as we have already mentioned in the previous chapter, leads to misclassification of very sizeable amounts of power-processed fabrics as hand-processed and hence, the evasion of the duty.

We do not have any reliable estimate of the misclassification of powerloom cloth processed by processors using power or steam as having been hand-processed. The Mill Owners Association feels that of about 4500 million metres of cloth produced in the powerloom sector, as much as 2000 million metres could have been thus misclassified. We do not know on what basis this estimate has been arrived at; hence it is not possible to judge its reliability. Nor are we able to present alternative estimates of misclassification of cloth and consequent loss of revenue for want of sufficient information on the unorganised cloth-processing industry. Nevertheless, we would like to emphasise that the quantum of misclassification could be substantial and the amount of duty thus evaded could be sizeable.

We have, in our analysis, assumed that excise duty on the powerloom cloth misclassified as handloom cloth could be the minimum that would escape the tax net. It is not very obvious that excise duty would be necessarily evaded on all misclassified cloth. Also, it is not necessary that powerloom cloth misclassified as handloom cloth should be processed in independent processing units using power but misclassified as hand-processed. It is here that the crucial role of the trader comes to the fore. The trader coordinates the activities at all stages. Given the fact that the misclassified cloth is made of yarn of higher counts which basically is intended to compete with the mill fabrics, we may presume that this would be processed in mechanically operated units employing modern machinery which would necessarily use electricity. Further, given the relative ease of misclassifying power-processed fabrics as hand-processed, there is no reason why the trader-manufacturer would not resort to this. Thus, there is no reason to believe that excise duty would have been paid on the misclassified cloth even though it would have been processed with the aid of power or steam. This could at least be taken as the minimum that would escape the tax net, although in actuality, the amount of evasion on this account would surely be substantially higher.

To estimate the evasion arising from the misclassification of cloth, we require data on the value of cloth of more than 41 counts and less than 41 counts, the latter again disaggregated into relevant price ranges. To arrive at this, we need two sets of information, namely,

(i) prices of powerloom cloth of various count groups; and

(ii) distribution of the powerloom cloth of less than 41 counts in terms of price ranges matching with the tax rate categories.

We have some information on the prices of powerloom cloth averaged for coarse, medium A, medium B, fine and superfine fabrics, obtained from the Report of the Committee on Tax Measures to Promote Employment (Government of India, 1980). The latter four groups correspond to the count groups of 21 to 30, 31 to 40, 41 to 60 and above 60 and, therefore, the value of fabrics in different count groups can be estimated. But information on the distribution in terms of price ranges of powerloom cloth of less than 41 counts is not available. We have, therefore, used the information contained in the memorandum submitted by the Mill Owners Association to the Tripartite Committee (1981) on the price range-wise break-up of mill fabrics of less than 41 counts. Applying the relevant tax rates applicable to powerloom fabrics on the value of fabrics of over and less than 41 counts disaggregated into different price ranges, we have estimated the loss of revenue arising from the misclassification.

The computations are detailed in Table 4.3. The aggregate loss of duty on account of misclassification of the cloth amounts to Rs 12.66 crore, the basic duty amounting to Rs 11.00 crore and special and additional duties amounting to Rs 1.65 crore. These form 8.71 per cent of the actual collection of excise duty on cotton textile fabrics.

Intra-sectoral Tax Differences and Evasion of Duty

Basically, evasion of excise duty arising from the intra-sectoral tax differences is confined to the composite mill sector. As mentioned earlier, we can identify two broad types of evasion under this category, namely,

(i) evasion through suppression or understatement of the quantity of cloth produced; and

(ii) evasion through undervaluation of fabrics; under this, we may include, besides direct undervaluation, methods such as misclassification of count groups, price groups and sounds into fents and rags, tie-in-sales and such other methods usually employed to understate the value of the cloth.

a. *Suppression of production and evasion of duty*

In order to examine whether the composite mills, in fact, indulge in large-scale suppression of output to evade the excise duty, we have attempted to independently estimate the yarn and cloth production on the basis of the availability of

TABLE 4.3

Evasion of Excise Duty on Misclassified Cloth

Variety	Quantity of misclassified cloth (in million metres)		Ex-factory price per sq. metre (Rs)	Value of misclassified* cloth (Rs. million)	Total tax payable*		
	Linear metres	Sq. metres@			Basic	Additional plus special (Rs million)	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Medium B	126.10	132.38	3.15	417.00	21.18	3.18	24.36
Medium A	171.14	179.66	4.05	727.62			
Fine	140.59	147.59	5.55	819.13	88.86	13.33	102.19
Superfine	75.08	78.82	3.70	291.63			
TOTAL	512.91	538.45		2255.38	110.04	16.51	126.55

Notes: @ On the basis of a survey, we have found that the average width of the cloth is 1.0498 metres. Using this information column 2 is derived from column 1.

* Distribution of the quantity of cloth according to relevant price ranges, the corresponding tax rates and tax payable are shown in Table 4.4.

Sources: 1. For Col. (1): Table 4.2.

2. For Col. (3): Government of India, Ministry of Finance, Department of Revenue, *Report of the Expert Committee on Tax Measures to Promote Employment* (1980), p. 83.

TABLE 4.4

Evasion of Excise Duty on Misclassified Cloth of Med-B and Med-A Varieties

Price ranges		Quantity of mis-classified cloth belonging to Med-B and Med-A categories (million sq. metres)	Value of cloth (Rs million)	Price per sq. metre (Rs)	Tax rate applicable (basic) (percentage)	Tax payable (basic) (Rs. million)
		(1)	(2)	(3)	(4)	(5)
Upto	Rs 4 per sq. metre	57.29	119.84	2.09	1.4	1.64
	Rs 4- 6 per sq. metre	114.21	358.38	3.14	1.4	5.02
	Rs 6- 7 per sq. metre	66.62	262.80	3.94	1.4	3.68
	Rs 7- 8 per sq. metre	30.39	138.16	4.55	2.1	2.90
	Rs 8- 9 per sq. metre	15.66	80.58	5.15	2.1	1.69
	Rs 9-10 per sq. metre	12.17	69.83	5.74	2.1	1.47
	Rs 10-11 per sq. metre	4.87	30.79	6.32	2.8	0.86
	Rs 11-12 per sq. metre	4.34	29.99	6.91	2.8	0.84
Above	Rs 12 per sq. metre	6.49	54.25	8.36	5.6	3.04
	TOTAL	312.04	1144.62			21.18

Notes: 1. The value of 226.41 million sq. metres of fine and superfine cloth was estimated at Rs 1110.76 million. At 8 per cent of basic tax rate, which is levied on these varieties of powerloom cloth, the total basic tax payable would be Rs 88.86 million.

2. While distributing the quantity and value of med-B and Med-A powerloom cloth in various price ranges, the pattern given in the memorandum submitted by the Mill Owners Association, Bombay, to the Tripartite Committee, 1982, has been followed.

the basic raw material, namely, cotton. Applying the norms stipulated by the textile technologists for the conversion of cotton into yarn and yarn into fabrics, we have estimated the amount of yarn and fabrics that could, in fact, have been produced. These estimates are then compared with the cotton and yarn consumption figures reported in the mill sector to examine the possibility of suppression of yarn and cloth output in this sector.

We have estimated cotton availability for spinning as follows: Production estimates of cotton are added to the net imports (imports less exports) and changes in the stock of cotton to arrive at the total cotton available in the year. By adjusting this for other uses of cotton and cotton used in hand-spinning (the production of khadi), we have estimated the cotton available for spinning and composite mills.

In the manufacture of yarn from cotton, certain wastages are involved primarily due to the existence of trash in mixing, blowroom droppings, gutter losses, semi-high production card waste and unaccounted losses such as those arising from comber waste, sweepings, clean waste, hard waste and invisible losses. The Ahmedabad Textile Industry's Research Association (ATIRA) gives the norms for wastages under each of these heads for different warp and weft count-groups of yarn. Taking into account these norms we can obtain the estimates of cotton that is reported to have been consumed in the mill sector. By comparing cotton availability with the reported cotton consumption, we can estimate the quantity of suppressed yarn.

We can estimate the understated quantity of cloth also by following a similar methodology. Applying the wastage norms to the availability of cotton we can obtain an estimate of the yarn that could be produced. By making adjustments for the import and export of yarn, yarn deliveries to the decentralised sector and changes in stocks, we can arrive at the estimates of yarn available to the mill sector for weaving or the yarn that would, in fact, have been consumed in the mill sector. Applying the wastage involved in weaving, as per the norms given by the textile technologists, on the reported production of cloth in the mill sector, we can arrive at the ertimated consumption of yarn pertaining to the reported production of cloth or the reported consumption of yarn. The extent of understatement of cloth production can be estimated on the basis of the difference between yarn that would have been consumed and that is reported to have been consumed.

We have broadly followed the method explained above to examine whether the mill sector indulges in significant understatement of the quantity of cloth produced. To begin with, we considered the cotton availability for spinning by the mills. For the year 1978-79, it is estimated that domestic production plus net imports minus other uses including hand-spinning of cotton amounted to 74.18 lakh bales each of 170 kgs. As the change in stocks was of the order of 0.17 lakh bales, during the year, the total availability works out to 74.35 lakh bales or 1263.95 million kgs.[3]

To estimate the cotton that would have been consumed to produce the reported quantity of yarn we have used the ATIRA wastage-norms. These norms are given for yarn of various warp and weft count-groups, as may be seen from Table 4.5. The yarn production figures, however, are given in count-groups different from the groups for which wastage norms are available. We have assumed that wastage norms are uniform within a count-group and re-estimated the yarn realisation percentages for the count-groups for which yarn production data are available.

While it is easy to compute the cotton consumption required for the reported cotton yarn production, estimation of cotton consumption for the reported blended yarn becomes difficult for want of data on the cotton content in blended yarn. However, on the basis of the discussion we have had with the textile technologists and some manufacturers, we have assumed that the share of cotton in blended yarn is

[3] These items of information have been taken from the Indian Cotton Mills Federation, *Handbook of Statistics*. Bombay, 1983. The data given in the Handbook relate to calendar years and therefore, we have adjusted them to obtain the corresponding figures for financial years.

TABLE 4.5

Wastes and Yarn Realisation (As Percentages of Cotton Consumed)

Mixing	Carded				Combed				
Warp count group (No.)	4-9	10-13	14-25	26-34	28-34	35-44	45-70	71-99	100-140
Corresponding weft counts	4-9	10-13	14-29	30-39	30-38	39-49	50-79	80-109	110-140
Trash in mixing* (per cent)	11.0	10.0	7.0	5.0	5.0	4.0	3.0	2.0	2.0
Wastes (per cent):									
Blowroom Droppings	12.0	11.0	7.7	5.4	5.4	4.4	3.2	2.2	2.2
Gutter Loss	1.2	1.1	0.8	0.5	0.5	0.4	0.3	0.2	0.2
SHP card waste**	4.2	4.2	4.4	4.5	4.5	4.3	4.3	4.4	4.4
Unaccounted loss (per cent):									
Comber waste	—	—	—	—	9.0	10.9	12.0	13.0	14.0
Sweepings	2.0	1.8	1.6	1.4	1.4	1.2	1.0	1.0	1.0
Cleaner waste	0.6	0.5	0.4	0.4	0.4	0.3	0.2	0.2	0.2
Hard waste	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Invisible loss	1.8	1.7	1.6	1.5	1.5	1.3	1.3	1.3	1.3
Yarn realisation (per cent)	77.6	79.2	83.1	86.0	77.0	76.9	77.4	77.4	76.4

Notes: *If trash is less by 1 per cent, yarn realisation increases by 1 per cent and *vice versa.*

**SHP=semi-high production cards. With high production cards, the yarn realisation improves by about 0.4 per cent owing to about 0.5 per cent less waste extracted at cards. With tandem carding, the yarn realisation is reduced by about 0.9 per cent compared to SHP cards.

Source: Ahmedabad Textile Industry's Research Association, *Norms for the Textile Industry*, Ahmedabad, 1982, P.S. 28.

35 per cent and have estimated the total mill consumption of cotton for producing the reported quantity of blended yarn in the year 1978-79.

An estimate of the reported consumption of cotton is presented in Table 4.6. It is seen from the table that the reported total consumption of cotton amounts to 1243.78 million kgs. This estimate comes very close to that of the cotton that would have been consumed for spinning—1263.95 million kgs. Thus, the difference is only 20.17 million kgs (1.6 per cent). This order of difference is too small to be definitively attributed to the suppression of yarn because our assumption of 35 per cent of cotton in blended yarn may be too conservative a figure. Besides, in actuality the wastages could be higher, albeit marginally, than the ATIRA's norms on yarn realisation applied in our study. Thus, *prima facie*, there does not appear to be any significant under-reporting of the yarn production and hence evasion of yarn duty on this account, if any, seems to be negligible.

We have attempted also to estimate the extent of suppression of cloth output by the mill sector in the year 1978-79. These computations are detailed in Table 4.7 and largely these are self-explanatory. Given that the suppression of yarn output is negligible, by merely adding the reported cotton yarn consumption to changes in stocks, we can arrive at the estimated yarn that would been consumed in the mill sector. By applying the norms of loss involved in converting yarn into cloth, we can arrive at the possible cloth output from yarn availability and compare it with the reported cloth output. Alternatively, we can derive the actual yarn consumption from the reported cloth production and compare it with the yarn availability estimates to quantify the suppression of cloth output in the mill sector.

To estimate the expected yarn consumption for producing the reported cotton cloth, it is necessary to convert the quantity figures given in terms of metres into kgs. A National Productivity Council study (1976) gives the equivalents of these collected from the Indian Cotton Mills Federation for various qualities of fabrics. Using these equivalents and assuming the cotton content of blended cloth at 35 per cent,

TABLE 4.6

Expected Consumption of Cotton in Spinning and Composite Mills (1978-79)

Count-group of yarn	Production of yarn (million kgs.)		Yarn realisation* (percentage)	Expected consumption of cotton (Million kgs.)		Total cotton consumption
	Cotton	Blended		Cotton Yarn	Blended** Yarn	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 — 10s	130.75	1.50	76.60	133.70	0.68	134.38
11 — 20s	274.50	14.75	81.90	335.16	6.30	341.46
21 — 30s	233.00	48.00	84.80	275.74	19.88	295.62
31 — 40s	205.25	83.50	77.00	266.56	37.96	304.52
41 — 60s	63.75	45.75	77.00	82.79	20.79	103.58
61 — 80s	27.25	17.00	77.00	35.06	7.84	42.90
Above 80s	14.75	4.75	77.00	19.16	2.16	21.32
TOTAL	922.00	922.00	215.50	1148.17	95.61	1243.78

Memorandum items:

1. Availability of cotton for mill consumption 1263. 95mn, kgs,
2. Reported cotton consumption by the mill sector derived on the basis of the yarn produced : 1243. 78mn. kgs.

(Contd.)

TABLE 4.6 *(Contd.)*

3. Difference	:	20. 17mn. kgs.

*Based on the norms of Ahmedabad Textile Industry's Research Association (1982).

**Assuming that the cotton component in blended yarn is 35 per cent. This consists of production available for mill sector consumption (74.18 lakh bales of 170 kgs. each) and changes in stock (0.17 lakh bales of 170 kgs. each).

Source: For Cols. (2) and (3) : Government of India, Ministry of Commerce, Office of the Textile Commissioner, *Indian Textile Bulletin*, Bombay, 1980.

TABLE 4.7

Difference between Declared and Estimated Yarn Consumption (1978-79)

Sl. No.	Quality of cloth and yarn counts*	Declared cotton yarn consumption of mills (million kgs.)	Declared cotton cloth production of mills		Estimated yarn consumption*** (million kgs.)	Differences between declared and estimated consumption (million kgs.)
			Million mertres	Million** kgs.		
	1	2	3	4	5	6
1.	Coarse (1 – 16s)	116.90	435.00	92.05	96.89	20.01
2.	Med-B (17— 25s)	137.60	921.25	116.91	123.06	14.54
3.	Med-A (26 — 40s)	161.75	1675.50	182.46	192.06	−30.31
4.	Fine (41 — 60s)	10.75	80.75	10.09	10.62	0.13

(Codtd.)

TABLE 4.7 *(Contd.)*

1	2	3	4	5	6
5. Superfine (61s and above)	10.00	127.25	9.21	9.68	0.32
TOTAL	437,00	3239.75	410.72	432.31	4.69

Notes: *Data on count-groups of yarn are available in the intervals of 1-10s, 11-20s, etc. Therefore, to get the count-groups 1-16s, 17-25s. etc., which corresponded to the variety of cloth (like coarse, Med-B.), we have assumed uniform distribution of yarn within the intervals 1-10s, 11-20s and arrived at the above count-groups.

**For converting the cloth data given in metres into kilograms we have taken the equivalents averaged for five years (1969-1973) on the basis of the data given in National Productivity Council (1976). The computed equivalents per 100 metres of coarse, medium B, medium A, fine and super fine cloth are 21.16 kgs., 12.69 kgs., 10.89 kgs., 12.50 kgs., and 7.23 kgs,, respectively.

**In the process of weaving the cloth, the estimated loss of yarn is about 3 per cent (ATIRA) to 5 per cent (Dr. Aggarwal, IIT, Delhi). In the above figures a 5 per cent loss is assumed.

we have arrived at the total weight of the cloth produced in the mill sector.

According to the ATIRA norms, the losses involved in weaving yarn at winding, warping, sizing and other stages should aggregate about 3 per cent. This, however, is the minimum wastage involved and, in actuality, the wastage could indeed be higher. On the basis of our discussion with textile technologists we have taken the wastage at 5 per cent and estimated the expected consumption of yarn. The difference between the yarn that would have been consumed and the actual consumption indicates the extent of understatement of cloth production.

Our estimates, as may be seen from the table, do not indicate significant understatement of cloth output. The underestimation seems to be of the order of only 1.00 per cent of the cloth production. This again cannot definitely be attributed to tax evasion as our assumption regarding the cotton content in blended fabrics and the wastage norms are subject to some margin of error.

However, it is necessary to note that the estimate of understatement is very sensitive to the length-to weight conversion ratio we have employed in the study. If indeed these are overestimates, we could conclude that the mill sector does in fact indulge in under-reporting of its production in order to evade excise duty. The suspicion that the ratio could be over-estimated arises from the fact that the length-to-weight ratio is taken from the Indian Cotton Mills Federation (ICMF) which may already include an element of understatement of the output. Again, the resulting cloth-yarn ratio in the mill sector works out to be much lower than the conversion norms used in the case of handlooms and powerlooms. But, to be able to conclusively state that the length-to-weight ratio is overestimated, we have to prove that understatement has been done only in respect of the meterage (length) of cloth and not its weight. If both have been equally understated the ratio would remain the same. We have no reason to presume that understatement would have been done in respect of only the length of the cloth produced and not its weight. On the issue of the mill sector's cloth-to-yarn conversion ratio being lower than that of the handloom and powerloom sectors, we may state that this can happen due to differences in weaving technology, category-mix of cloth, the average width of cloth as well as the density of yarn in the cloth. In order to avoid any bias arising from the instability of the length-to-weight ratio, we have employed yearly average ratios for five years (1969-73) for each quality of cloth. Nevertheless, it is possible that these ratios are over-stated and evasion arising from understatement of the quantity of output is apparent, and not proved.

On the whole, it appears that there is no significant degree of evasion of duty on cotton textile fabrics through the suppression of output. This, as we have reasoned earlier, is plausible since the production flows in the composite mill sector can be easily monitored and therefore, the probability of being detected is higher if the tax is evaded by suppressing output.

b. *Undervaluation and evasion of duty*

Undervaluation for evasion of the excise duty can be done in many ways. Given that the tax rates levied on the fabrics are graded in terms of counts of fabrics and their prices, undervaluation can easily be done by both misclassifying the fabric count and the price of the fabric. Other methods of undervaluation brought to our notice include tie-in-sales[4] and misclassification of sound fabrics as 'fents' and 'rags'. Again, there can also be understatement of the manufacturing sale price [5]. As it may not be possible to monitor the distributive

[4] When a dealer buys fabrics of two different prices, the volume of purchases of the fabric of lower price may be overstated and that of higher price correspondingly understated. This method is called 'tie-in-sales'.

[5] It is very difficult to draw a distinction between evasion and avoidance in such cases. It is well known that the invoice price of the cloth is generally almost 15 to 25 per cent lower than the stamped price. While the retailer recovers the sale margins at various stages of transaction added to the stamped price, including the excise duty thereon from the consumer, the government receives a much lower

(Contd.) p. 259

channels as much as the production flows, the probability of detecting evasion would be lower when these methods are employed and, therefore, we have hypothesised that under this method, the evasion could indeed be significant.

Revenue loss arising from evasion of the tax through undervaluation can be quantified by independently estimating the amount of tax that should have been collected (potential) on the basis of household consumption of textiles and comparing the estimate with the actual collection [6]. As we have found that revenue loss due to the suppression of quantity is negligible, the discrepancy between the potential and the actual could easily be ascribed to evasion through undervaluation.

To estimate the extent of evasion, we have to proceed through various steps which are detailed in Table 4.8. The *Consumer Purchases of Textiles* (Govenrment of India, 1978, 1979) gives us the price-range-wise details on household purchases of categories of cloth such as dhoties, sarees, drill shirting, coating, suiting, ladies' dress materials, bed cover, bed sheet, chadder, long cloth and sheeting. These together constitute 67 per cent of total quantity of cloth consumed and 71 per cent of the value of cloth consumed. From the total consumption we have excluded the consumption of handloom and khadi cloth purchases, the data on which are available in *Consumer Purchases of Texiiles* (Government of

[6] Actually, comparison should be made with the duty liability for that year's declared production and not actual collections. But the data on the former are not available and hence we have to compare with the latter. The implicit assumption in doing so is that the amount of arrears in that year is not different from the previous year's.

Footnote contd. from p. 258

amount of excise revenue than that payable on the stamped price. This arises because of the lack of coordination between the offices of Textile Commissioner which merely require the price to be stamped on the cloth and that of the Excise department which collects excise duties on the invoice price irrespective of the stamped price. The illegality of the discrepancy cannot be established easily and therefore the loss of duty under this head is on the borderline between evasion and avoidance.

TABLE 4.8

Estimation of Consumption of Mill Cloth of Different Varieties

Q = Quantity in million metres
V = Value in million rupees

Varieties	Consumption per household		Total consumption		Controlled cloth		Handloom textiles	
	Q in metres	V=Rs	Q	V	Q	V	Q	V
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Dhoti	11.6617	61.8653	1171.7618	6216.1944	66.6878	278.5213	153.3317	690.5956
2. Saree	16.2050	105.3554	1628.2703	10586.0579	44.8588	197·8554	274.8114	1740.6255
3. Shirting	10.1288	71.4905	1017.7368	7183.3297	103 3528	330.0976	31.6510	312.7927
4. Coating/Suiting	1.3577	13·1209	136.4210	1318.3815	14.4422	27.6002	12 9618	113.2404
5. Ladies' dress material	8.2241	59.8994	826.3534	6018.6618	—	—	6.0288	61.8954
6. Bed sheet/bed cover/ chaddar/wearable chaddar	1.9182	17.7214	192.7398	1780.6374	—	—	7.0336	71.2400
7. Long cloth/sheeting	5.2933	27.0240	531.8681	2715.3580	108.3975	431.3003	4.1197	17.3829
TOTAL	54.7888	356.4769	5505.1512	35818.6207	337.7391	1265.3747	489.9380	3011.7225

Contd.

TABLE 4.8 (contd.)

Varieties	Khadi textiles Q	Khadi textiles V	Powerloom and Mill sector Q (3)– (5)+ (7)+ (9)	Powerloom and Mill sector V (4)– (6)+ (8)+ (9)	Consumption considered of powerloom Q	Consumption considered of powerloom V Value at ex—factory price	Powerloom Value at retail price	Consumption of mill sector Q (11)—(13)	Consumption of mill sector V (12)—(15)
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1. Dhoti	15.4738	64.8093	938.2685	5182.2682	301.7450	1149.6230	1547.9520	634.5230	3636.3160
2. Saree	4.9235	10.9523	1303.6766	8632.6247	419.9740	1915.3490	2729.8310	883.7030	5902.7940
3. Shirting	9.9676	95.9579	872.7654	6444.4815	281.2220	1429.9520	1889.8120	591.5430	4054.6700
4. Coating/suiting	15.4738	117.2596	93.5431	1060.2813	30.1890	235.4480	329.6640	63.3540	730.6170
5. Ladies' dress material	10.0178	91.2354	810.3068	5865.5310	261.1450	1300.8350	1781.0090	549.1620	4084.5220
6. Bed sheet/bed cover/chaddar/wearable chaddar	6.0991	36.4740	179.6071	1672.9234	57.8500	370.7800	514.8650	121.7570	1158.0500

Contd.

TABLE 4.8 (Contd.)

	9	10	11	12	13	14	15	16	17
7. Long cloth/ sheeting	—	—	419.3509	2266.6748	135.0340	502.6580	668.4180	184.3170	1598.2570
TOTAL	61.9556	416.6885	4615.5184	31124.7849	1487.1590	6904.6450	9461.5510	3128.3590	21663.2340

Notes: 1. Columns (1) and (2) are calculated from *Consumer Purchases and Price Trends of Textiles*, Monthly Bulletin.

2. Total consumption both quantity and value columns (3) and (4) is derived by taking total no. of households (=100479500) in 1978-79.

3. Controlled cloth [columns (5) and (6)] is from Textile Commissioners' Office and relates to packing of controlled cloth.

4. Columns (7), (8), (9) and (10) are arrived at by multiplying the total number of households with the per household data available on consumers' purchases.

5. After taking total production of powerlooms from the report of the *Expert Committee on Tax Measures to Promote Employment*, Government of India, (1980) the quantity of cloth due to diversion of hank yarn from handloom sector was added to get actual quantities of powerloom cloth. From the total production, quantity of powerloom cloth exported was deducted to get the quantity available for home consumption. The value of the powerloom cloth available for home consumption was derived from the price data available in the abovementioned report. Taking 67 per cent of the quantity and 71 per cent of the value, the distribution in each category was made in the same proportion of columns (11) and (12) for quantity and value of powerloom cloth, respectively,

India, 1978, 1979). Also we have excluded the quantity and value of controlled cloth consumption from the mill sector on the basis of the data on controlled cloth packed during the period as given by the Textile Commissioner's Office. The value of controlled cloth has been estimated on the basis of the information on prices of the mill sector cloth of different quantities available in the *Report on Tax Measures to Promote Employment* (Goverment of India, 1980), adjusted for the subsidies assuming subsidy per square metre of controlled cloth.

The third important adjustment pertains to the exclusion of powerloom cloth consumption. This necessitates the estimation of both the quantity and value of the consumption of powerloom cloth. Assuming that the changes in stocks are zero, consumption of powerloom cloth would be equivalent to its production *minus* exports. However, as worked out earlier, official productiom estimates of powerloom cloth are understated to the tune of 513 million metres as these have been misclassified as handloom cloth. Therefore, we have added these to the production estimates of powerloom cloth given in the *Report on Tax Measures to Promote Employment* (Government of India, 1980) to arrive at the quantity of powerloom cloth production. The report gives the estimates in terms of different qualities, namely, coarse, medium-B, medium-A, fine and superfine. The misclassified quantity of cloth can also be easily disaggregated into these categories. The report also gives the average producers' prices of the five qualities of cloth on the basis of which we have arrived at the estimated ex-mill value of production of powerloom cloth. Estimates of the quantity and value of consumption of powerloom cloth have beed obtained by deducting the quantity and value of exports from the relevant production estimates. The value of consumption in retail prices has been estimated by adding the margins derived by us on the basis of the replies to the questionnaire circulated among the textile mills[7].

In order to estimate the extent of evasion arising from undervaluation of cotton textile fabrics, we have relied heavily on the data on consumer purchases of textiles collected by the Market Research wing of the Textile Committee. These data have been collected since 1969 for the sample households stratified over size of towns spread across the country and income classes of the households. The information on the purchase of cloth is collected for 7450 such households that voluntered the information and information from these households is collected on a continuous basis every year. Besides, about 20-25 per cent of the sample is replaced every year to obviate the bias arising out of staticness of the sample.

These data on consumption of textiles are collected on a scientific basis and have definite advantages over other sources for various reasons[8]. First, no other source gives the data at the level of disaggregation as this source does. Second, unlike the other important source of data on consumption, namely, the National Sample Survey, there is no reason to believe that the present source would have a significant downward bias. This is mainly because, as the sample households are the same every year, the questionnaires will be filled on the basis of the account of their purchases kept by them rather than on the basis of their memory. Again, as the data are collected by the Textile Committee and not the taxation departments, there is no cause for households to understate their purchases.

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[7] We circulated a questionnaire to a number of textile mills to obtain information on the difference between ex-factory and retail prices of cotton fabrics of categories such as shirting, suiting, dhoti, long cloth, drill, saree, ladies' dress material. coating, sheeting, bed sheet, covers and chaddar. From the same survey, we have obtained information on the average width of the various types of fabrics also. The questionnaire is given in Appendix II.

[8] A detailed exposition of the method of collecting these data is given in the *Report on Consumer Purchase of Textiles* published annually by the Textile Committee, Ministry of Commerce, Government of India.

We have mentioned earlier that consumption of the seven categories of the cloth considered by us constitutes 67per cent of the quantity of cloth consumed and 71 per cent of the value of cloth consumed in the aggregate. But if we consider the consumption of mill sector cloth alone, these categories constitute 69.3 per cent of the quantity and 75.7 per cent of the value.

It is necessary to note an important anomaly here. The seven categories constituting 69.3 per cent of the quantity of mill sector cloth consumed aggregate to 3128 million metres. However, this is only 112 million metres less than the aggregate total production of 3240 million metres as was reported in Table 2.2. The production figures available for domestic consumption (production—exports ± changes in stocks) would work out to be lower than the estimated consumption of the seven categories which forms only 69.3 per cent of total cloth consumption. This raises the suspicion that either the production figures are understated or consumption figures are overstated.

Understatement of the production figures is possible due to either of the following reasons:

(i) The yarn production figures are understated, which means that the cotton production figures are understated or yarn deliveries to the handloom and powerloom sectors are overstated.

(ii) The length-to-weight ratio employed to examine the extent of understatement of output could be an overestimate. The existence of wide discrepancy leads to the suspicion that some amount of evasion may indeed be taking place by understating the production figure, although we are unable to quantify the extent of understatement.

The discrepancy pointed out above may also arise if the consumption estimates are overstated. As we have already explained, the sampling of the households and the collection of the consumption data have been done on a scientific basis and therefore, we do not have any reason to presume that there could be a significant over-estimation of the consumption figures. However, there is a possibility that our assumption of the constancy of changes in stock may not be entirely realistic. The stock here refers to the sum total of stocks in the wholesale and retail outlets, on which we do not have any information. To the extent that the stock figure for 1978-79 is different from that of the previous year, there can be a discrepancy between the production and consumption figures. Also, it is possible that mis-stamping of powerloom cloth as composite mill cloth could have to some extent inflated the consumption estimates. In any case, if the consumption figures are over-estimated, our evasion estimates would have, to that extent, an upward bias.

To calculate the tax potential in respect of the categories of fabrics considered by us, we require information on the purchases of mill fabrics of more than 41 counts and less than 41 counts, the latter disaggregated further in terms of different ex-mill price ranges corresponding to the tax rate categories. We have separated the consumption of cloth of below 41 counts in proportion to the production estimates of coarse, medium-A and medium-B fabrics given in the *Reporton Tax Measures to Promote Employment* (Government of India, 1980). Correspondingly, the proportion of fine and superfine cloth production is applied to the total consumption to arrive at the consumption of cloth above 41 counts. The values of these categories have been obtained by multiplying the quantities with retail prices, which are arrived at by adding appropriate margins to the ex-mill prices given in the same report.

As the rates of excise duty on cotton fabrics of below 41 counts vary according to the price of the fabric, we have to obtain the quantities, and values of these fabrics in terms of different price ranges corresponding to tax rate categories. Fortunately, *Consumer Purchases of Textiles* (Government of India, 1978, 1979) gives us data on the price-range-wise purchases of different varieties of cloth considered by us. We have apportioned the mill cloth consumption of less than 41 counts according to the data in these price-range-wise purchases. This does not impart a significant bias in the estimation, for, the cloth of less than 41 counts constitutes almost 92 per cent of the quantity of cloth purchases and 91 per cent of the value of purchases. An additional assumption involved in this exercise is that the purchase of the cloth of the decentralised sector would fall into a pattern similar to that of the mill sector's cloth.

All the price ranges and values so far derived are in retail prices. To estimate the tax potential from these, we have to convert them into ex-factory prices. Similarly, the quantities are in terms of linear metres whereas the tax rates are specified per square metre. As mentioned earlier, on the basis of the response received from the mills to a questionnaire circulated to them, we have obtained both the average width of the cloth of different varieties considered by us and the average margin of increase of retail prices over the ex-factory prices. From these, by applying the relevant rates of taxation, we have estimated the excise tax potential in respect of the categories of mill cloth considered by us. These computations are detailed in in Tables 4.9 to 4.16 and the aggregate tax potential is derived in Table 4.17.

It is seen from Table 4.17 that the categories considered by us should have yielded excise revenue amounting to Rs 93.71 crore from the levy of only the basic duty and another Rs 14.06 crore from the levy of special and additional duties. As mentioned, the categories considered by us constitute only 75.7 per cent of the value of total consumption of textiles. Assuming that the tax potential varies proportionately with the amount of cloth, the total excise duty potential in respect of cotton fabrics of the mill sector would increase by the same proportion. This would amount to Rs 140.51 crore. But the actual collections in 1978-79, as given in the *Statistical Year Book of Central Excise* (Government of India, 1984), amounted to only Rs 100.97 crore (Rs 87.80 crore basic duty + Rs 13.17 crore special and additional) [9], Thus, the estimated excise duty evasion by means of undervaluation of mill sector fabrics alone amounted to Rs 39.54 crore in 1978-79. This formed as much as 28.1 per cent of the excise duty collection from cotton textile fabrics.

[9] Again, it should be noted that taking actual collections rather than the duty liability from declared production makes an implicit assumption that amount of arrears in the year has not changed from the previous year.

TABLE 4.9

Potential Tax Base and Revenue from Basic Excise Duty (1978-79) on Cloth of Over 41 Counts of Yarn

Varieties	Quantity (million metres)	Value at retail price (Rs in million)	Percentage decrease of ex-factory price over retail price	Estimated value at ex-factory price: Col. (2)— $\frac{\text{Col (2)}\times(3)}{100}$ (Rs in million)	Rate of basic excise duty (per cent *ad valorem*)	Basic duty liability $\frac{\text{Col. (4)}\times(5)}{100}$ (Rs in million)
	(1)	(2)	(3)	(4)	(5)	(6)
1. Dhoti	51.90	334.72	25.75	248.53		37.28
2. Saree	72.29	543.65	29.85	381.37		57.21
3. Shirting	48.39	419.48	24.42	317.04		47.56
4. Coating/suiting	5.18	67.29	28.59	48.05	15	7.21
5. Ladies' dress material	44.92	376.18	26.93	274.87		41.23
6. Bed sheet/bed cover/ chaddar/ wearable chaddar	9.96	106.66	28.00	76.79		11.52
7. Long cloth/sheeting	23.26	147.20	24.86	110.61		16.59
TOTAL	255.90	1995.18				218.60

TABLE 4.10

Potential Tax Base and Revenue from Basic Excise Duty (1978-79) on Cloth of Below 41 Counts of Yarn (Variety : Dhoti)

(Price range (Rs)) Exceeds	Does not exceed	Q= quantity in million metres	V= value at retail price (Rs in million)	Percentage decrease of ex-factory price from retail price	Estimated value at ex-factory price Col.(2)— Col.(2)× (3) / 100 (Rs in million)	Estimated ex-factory price per metre (Rs) Col.(4)/ Col.(1)	Estmated ex-factory price per sq.metre (Rs) Col.(5) / (1.1741)*	Rate of basic excise duty (per cent ad valorem)	Basic duty liability Col.(4)× Col.(7) / 100 (Rs in million)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
—	2	20.68	39.93		29.65	1.43	1.22		0.59
2	3	69.56	201.94		149.94	2.15	1.83		3.00
3	5	158.36	634.84		471.37	2.98	2.54	2	9.43
5	6	106.04	539.48		400.56	3.78	3.22		8.01
6	7	81.04	500.88		371.90	4.59	3.91		7.44
7	8	57.56	424.66	25.75	315.31	5.48	4.67	3	9.46
8	10	31.81	275 19		204.33	6.42	5.47		6.13
10	11	24.18	241.86		179.58	7.43	6.33	4	7.18
11	12	6.47	71.60		53.16	8.22	7.00		2.13
12	15	18.06	2 8.43		162.18	8.98	7.65	6	9.73
15	20	5 83	84.47		62.72	10.77	9.17	10	6.27
20	—	3.03	66.32		49.24	16 25	13.84	15	7.39
TOTAL		582.62	3299.60						76.76

Note: • Average width of the cloth is 1.1741 metres.

TABLE 4.11

Potential Tax Base and Revenue from Basic Excise Duty (1978-79) on Cloth of Below 41 Counts of Yarn (Variety: Saree)

Price range (Rs) Exceeds	Price range (Rs) Does not exceed	Quantity in million metres	Value at retail price (Rs in million	Percentage decrease of ex-factory price from retail price	Estimated value at ex-factory price. Col.(2)— Col.(2)×(3)/100 (Rs in million)	Estimated ex-factory price per metre.(Rs) Col.(4)/Col.(1)	Estimated ex-factory price per sq. metre (Rs) Col.(5)/(1.0919)*	Rate of basic excise duty (per cent) *ad valorem*	Basic duty liability Col.(4)×Col.(7)/100 (Rs in million)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
—	2	21.10	38.05		26.69	1.26	1.15		0.53
2	3	50.39	129.16		90.61	1.80	1.65		1.81
3	4	103.21	353.17		247.75	2.40	2.20		4.96
4	5	113.76	496.79		348.50	3.06	2.80	2	6.97
5	6	102.08	536.99		376.70	3.69	3.38		7.53
6	7	83.33	523.59		367.30	4.41	4.04		11.02
7	8	98.51	709.55		497.75	5.05	4.62		14.93
8	9	63.70	521.98	29.85	366.17	5.75	5.27	3	10.99
9	10	47.31	435.70		305.64	6.46	5.92		9.17

(Contd.)

TABLE 4.11 (Contd.)

		1	2	3	4	5	6	7	8
10	12	60.61	635.06		445.49	7.35	6.73	4	17.82
12	15	47.06	615.77		431.96	9.18	8.41	8	34.56
15	18	14.69	241.70		169.55	11.54	10.57	12	20.35
18	25	3.90	72.35		50.75	13.01	11.92	14	7.11
25	30	1.38	36.98		25.94	18.80	17.22	15	3.89
30	—	0.41	12.33		8.65	21.10	19.32		1.30
TOTAL		811.44	5359.17						152.94

Note: * Average width of the cloth is 1.0919 metres.

TABLE 4.12

Potential Tax Base and Revenue from Basic Excise Duty (1978-79) on Cloth of Below 41 Counts of Yarn (Variety:Shirting)

Price range (Rs) Exceeds	Price range (Rs) Does not exceed	Quantity in million metres	Value at retail price (Rs in million)	Percentage decrease of ex-factory price from retail price	Estimated value at ex-factory price. col. (2)— $\frac{\text{col. (2)}\times(3)}{100}$ (Rs in million)	Estimated ex-factory price per metre. (Rs) col. (4)/ col. (1)	Estimated ex-factory price (per sq. metre) $\frac{\text{(col. (5)}}{(0.8876)^{*}}$ (Rs)	Rate of basic excise duty (per cent *ad valorem*	Basic duty liability $\frac{\text{col (4)}\times\text{col. (7)}}{100}$ (Rs in million
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
—	2	1.14	2.07		1.80	1.58	1.78		0.04
2	3	7.33	19.44	13.14	16.89	2.30	2.59	2	0.34
3	4	17.22	61.20		53.16	3.09	3.48		1.06
4	5	58.44	267.96	17.48	221.12	3.78	4.26		6.63
5	6	101.79	564.04	17.79	463.70	4.56	5.14	3	13.91
6	7	102.93	678.17	19.68	544.71	5.29	5.96		16.34

(Contd.)

TABLE 4.12 (Contd.)

		1	2	3	4	5	6	7	8
7	8	75.12	576.86	21.07	455.32	6.06	6.83	4	18.21
8	9	73.65	641.37	23.55	490.33	6.66	7.50	6	29.42
9	10	23.14	227.02	25.65	168.79	7.29	8.21	8	13.50
10	12	40.30	447.84	33.85	296.25	7.35	8.28		23.70
12	15	27.86	376.72		249.20	8.94	10.07	12	29.90
15	20	10.48	180.29		119.26	11.38	12.82	15	17.89
20	—	3.75	92.22		61.00	16.27	18.33		9.15
TOTAL		543.15	4135.20						180.09

Note: * Average width of the cloth is 0.8876 metre.

TABLE 4.13

Potential Tax Base and Revenue from Basic Excise Duty (1978-79) on Cloth of Below 41 Counts of Yarn (Variety : Coating/suiting)

Price range (Rs) Exceeds	Price range (Rs) Does not exceed	Quantity in million metres	Value at retail price (Rs in million)	Percentage decrease of ex-factory price from retail price	Estimated value at ex-factory price Col. (2)—Col(2)×(3)/100 (Rs in million)	Estimaten ex-factory price per metre. (Rs) Col. (4)/Col (1)	Estimated ex-factory price per sq.metre (Rs) Col. (5)/(0.9933)*	Rate of basic excise duty (per cent *ad valorem*)	Basic duty liability Col,(4)×Col.(7)/100 (Rs in million
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
—	3.50	0.10	0.33		0.24	2.40	2.42	2	Neg.
3.50	5.00	1.09	4.05		2.89	2.65	2.67		0.06
5 00	6.00	2.66	13.33		9.52	3.58	3 60		0.20
6.00	7.00	5.03	31.24		22.31	4.44	4.47	3	0.67
7.00	8.00	6.87	49.62		35.43	5.16	5.19		1.06
8.00	9.00	6.59	55.65		39.74	6.03	6.07	4	1.59

(Contd.)

TABLE 4.13 (Contd.)

		1	2	3	4	5	6	7	8
9.00	10.00	10.62	101.62	28.59	72.57	6.83	6.88	4	2.90
10.00	12.00	4.50	48.03		34.30	7.62	7.67	6	2.06
12.00	15.00	5.54	67.39		48.12	8.69	8.75	8	3.85
15.00	19.00	7.35	110.31		78.77	10.72	10.79	12	9·45
19.00	25.00	4.83	93.66		66.88	13.85	13.94	15	10.03
25.00	—	2.99	88.09		62.91	21.04	21.18	—	9.44
TOTAL		58.17	663.32						41.31

Note: * Average width of the cloth is 0.9933 metre.

TABLE 4.14

Potential Tax Base and Revenue from Basic Duty (1978-79) on Cloth of Below 41 Counts of Yarn (Variety:Ladies Dress Material

Price range (Rs) Exceeds	Price range (Rs) Does not exceed	Quantity in million metres	Value at retail price (Rs in million)	Percentage decrease of ex-factory price from retail price	Estimated value at ex-factory price Col. (2)— Col. (2)×(3)/100 (Rs in million)	Estimated ex-factory price per metre. (Rs) Col. (4)/ Col. (1)	Estimated ex-factory price per sq. metre. (Rs) Col. (5)/(0 9334)*	Rate of basic excise duty (per cent *ad valorem*)	Basic duty liability col.(4)× col. (7)/100 (Rs in million)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
—	2	2.87	3.71		2.71	0.94	1.01		0.05
2	3	10.89	27.81		10.32	1.87	2.00		0.41
3	4	25.62	82.70		60.43	2.36	2.53	2	1.21
4	5	60.82	250.99		187.78	3.09	3.31		3.76
5	6	90.86	467.25		341.42	3.76	4.03		10.24
6	7	68.48	423.12		309.17	4.51	4.83	3	9.28

(Contd).

TABLE 4.14 (Contd.)

		1	2	3	4	5	6	7	8
7	8	52.59	377.51	26.93	275.85	5.25	5.62	3	8.28
8	9	55.92	456.87		333.83	5.97	6.40	4	13.35
9	10	25.36	232.88		170.17	6.79	7.19	6	10.21
10	12	56.48	589.63		430.84	7.63	8.17	8	34.47
12	15	36.31	463.91		338.38	9.34	10.01	12	40.68
15	20	13.97	230.66		168.54	12.06	12.92	15	25.28
20	—	4.08	95.30		69.64	17.07	18.29		10.45
TOTAL		504.24	3708.34						167 67

Note: • Average width of the cloth is 0.9334 metre.

TABLE 4.15

Potential Tax Base and Revenue from Basic Duty (1978-78) on Cloth of Below 41 Counts of Yarn (Variety: Bed Sheet/Bedcover Chaddar)

Price range (Rs) Exceeds	Price range (Rs) Does not exceed	Quantity in million metres	Value at retail price (Rs in million)	Percentage decrease of ex-factory price from retail price	Estimated value at ex-factory price. Col. (2)— Col. (2)×(3)/100 (Rs in million)	Estimated ex-factory price per metre. (Rs) Col. (4)/ Col. (1)	Estimated ex-factory price per sq. metre. (Rs) Col. (5)/(1.375)	Rate of basic excise duty (per cent *ad valorem*)	Basic liability Col.(4)× Col. (7)/100 (Rs in million)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
—	2	0.50	0.74		0.53	1.06	1.02		0 01
2	3	1.42	3.37		2.43	1.71	1.65		0.05
3	4	3.99	14.19		10.22	2.56	2.47		0.20
4	5	8.81	40.27		28.99	3.29	3.17	2	0.58
5	6	12.10	69.81		50.26	4.15	4.00		1.01
	7	13.93	93.36		67.22	4.83	4.66	3	2.02

(Contd.)

TABLE 4.15 (Contd.)

		1	2	3	4	5	6	7	8
7	8	10.96	82.01		59.05	5.39	5.20	3	1.77
8	9	16.49	141.83	28.00	102.12	6.19	5.97		3.06
9	10	8.09	78.86		56.78	7.02	6.77	4	2.27
10	12	13.23	150.04		108.03	8.17	7.87	6	6.48
12	15	10.36	140.89		101.44	9.79	9.44	10	10.14
15	20	7.83	132.37		95.31	12.17	11.73	14	13.34
20	25	2.84	64.24		46.25	16.29	15.70		6.94
25	29	0.36	9.88		7.11	19.75	19.04	15	1.07
29	35	0.62	18.29		13.17	21.24	20.47		1.98
35	40	0.16	3.79		2.73	27.30	26.31		0.41
40	—	0.18	7.47		5.38	29.89	28.81		0.81
TOTAL		111.81	1051.41						52.13

Note : * Average width of the cloth is 1.0375 metres,

TABLE 4.16

Potential Tax Base and Revenue from Basic Excise Duty (1978-79) on Cloth of Below 41 Counts of Yarn (Variety : Long Cloth/Sheeting)

Price range (Rs) Exceeds	Price range (Rs) Does not exceed	Quantity in million metres	Value of retail price (Rs in million)	Percentage decrease of ex-factory price from retail price	Estimated value at ex-factory price Col. (2)— $\frac{\text{Col.}(2)\times(3)}{100}$ (Rs in milllion)	Estimated ex-factory price per sq.metre (Rs) Col. (4)/ Col. (1)	Estimated ex-factory price per sq.metre (Rs) $\frac{\text{Col. (5)}}{1\ 1574)^{*}}$	Rate of basic excise duty (per cent *ad valorem*)	Basic duty liability $\frac{\text{Col.(4)} \times \text{Col. (7)}}{100}$ (Rs in million)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
—	1.50	0.39	0.58		0.46	1.18	1.02		0.01
1.50	2.00	3.37	6.53		5.23	1.55	1.34		0.10
2.00	2.50	10.63	24.96		20.00	1.88	1.62	2	0.40
2.50	3.00	14.67	41.21		33.02	2.25	1.94		0.66
3.00	3.50	17.18	58.04	19.87	46.51	2.71	2.34		0.93
3.50	4.00	10.03	50.50		40.47	3.11	2.69		0.81

(Contd.)

TABLE 4.16 (Contd.)

		1	2	3	4	5	6	6	7
4.00	5.00	52.94	243.34		19.499	3 68	3.18	2	3.90
5 00	6.00	58.95	331.71	19.87	265.83	4.51	3.90		5.32
6.00	7.00	49.29	327.79		243.84	4.95	4.28		7.32
7.00	8.00	17.96	139.30		103.63	5.77	4.99	3	3.11
8.00	9.00	13.11	114.49	25.61	85.17	6.50	5.62		2.56
9.00	10.00	2.90	28.73		21.37	7.37	6.37	4	0.85
10.00	—	6.66	83.87		62.39	9.37	8.10	8	4.99
TOTAL		261.08	1451.05						30.96

Note: * Average width of the cloth is 1.1574 metres.

TABLE 4.17

Aggregate Tax Potential from the Considered Varieties of Cloth

(Rs in million)

	Variety	*Potential tax liability (Basic)*		
		Variety upto 41 counts	Variety above 41 counts	Total
1.	Dhoti	76.76	37.28	114.04
2.	Saree	152.94	57.21	210.15
3.	Shirting	180.09	47.56	227.65
4.	Coating/suiting	41.31	7.21	48.52
5.	Ladies dress material	167.67	41.25	208.90
6.	Bed sheet/bed cover wearable chaddar	52.13	11.52	63.65
7.	Long cloth/sheeting	30.96	16.59	47.55
	TOTAL	701.86	218.60	920.46

Note: Rs 920. 46 million, shown as the total potential tax, however, does not include the amount that is due from the controlled cloth. Adding Rs 1.66 crore of potential tax from the controlled cloth, the total works out to Rs 93.71 crore.

Aggregate Loss of Duty on Cotton Textile Fabrics

The evasion of duty on cotton cloth through inter-sectoral misclassification was estimated earlier at Rs. 12.70 crore. The loss of revenue to the exchequer by means of undervaluation in the mill sector fabrics has been estimated at Rs 39.54 crore. Thus, in the aggregate about Rs 52.24 crore seem to have been evaded. Had this amount been collected, the aggregate excise duty from cotton textile fabrics would have amounted to Rs 184.85 crore [10]. Thus, the extent of evasion works out to as much as 28.3 per cent. In other words, almost 47.2 per cent of the actual duty collection from cotton textile fabrics seems to have been evaded.

[10] The amount of excise duty collected in 1978-79 is shown to be Rs 132.61 crore.

We may now summarise the findings of our study. We have hypothesised that excise duty is evaded by taking advantage of inter-sectoral and intra-sectoral differences in the structure of the excise duty. Duty evasion through misclassification of yarn was estimated at Rs 6.90 crore, forming 7 per cent of the yarn duty. The inter-sectoral missclassification of cloth is estimated to have resulted in evasion of duty to the tune of Rs 12.70 crore. As regards evasion arising from the intra-sectoral differences in the tax structure, our analysis reveals that suppression of quantity does not seem to have been practised by the mill sector on a significant scale, which also conforms to our *a priori* reasoning. However, through undervaluation of the mill sector cloth, a sizeable amount of revenue amounting to Rs 35.54 crore seems to have been evaded.

Limitations of the Study

The complexity of the structure of excise duty on cotton textile fabrics and the lack of detailed disaggregated data corresponding to the complex excise tariff schedule makes imperative certain assumptions while estimating the evasion of excise duty. We have made the assumptions explicit in appropriate places while explaining the methodology. However, it seems necessary to re-capitulate so as to indicate the possible directions and size of bias in our estimates.

Second, in our estimation, we have considered excise evasion arising out of inter-sectoral misclassification of yarn and cloth, on the one hand, and understatement and undervaluation of the output of the composite mill sector, on the other. While considering evasion in the composite mill sector, it is necessary to point out that our emphasis has been mainly on pure cotton fabrics. However, as was pointed out earlier, some portion of blended fabrics falls within the Central excise definition of cotton fabrics. Although the possible underestimation and evasion of the duty therefrom is taken into account by assuming the cotton content in blended yarn as 35 per cent, the possible evasion of the duty arising from undervaluation of blended fabrics could not be estimated by us. This is because we do not have any information on the proportion of blended fabrics falling within the excise definition of cotton fabrics. In any case, the amount of evasion arising from this source may not be substantial as, the blended fabric forms only 16 per cent of the cotton plus blended fabrics and the proportion of blended fabrics falling within the excise definition of cotton fabrics would be much smaller. Nevertheless, it is necessary to note that, to that extent, our estimate of evasion has a downward bias.

We have already pointed out the anomaly arising from the discrepancies in production and consumption estimates. This would imply that either production estimates are understated, which means our conclusion that evasion due to suppression of quantity is insignificant, needs to be qualified, or consumption estimates are overstated, which implies that our estimate of evasion due to undervaluation has an element of upward bias.

It is necessary to mention that our attempt at measuring the extent of evasion has been confined to cotton textile fabrics (Tariff Item 19) and any generalisation from this on the extent of evasion by the textile sector as a whole would not be appropriate. Although we have estimated the evasion of yarn duty arising from the conversion of hank yarn into other forms, we have not made a comprehensive study of this or the evasion of duty in respect of other articles in the textile sector.

We had mentioned earlier in this chapter that a significant amount of tax evasion seems to have been taking place through the misclassification of power-processed fabrics as hand-processed. As we do not have any reliable information that would help us to estimate the evasion thus practised in the unorganised sector, we have not attempted to measure this. We have taken only the recorded amount of powerloom cloth misclassified as handloom cloth as the lower limit for measuring the extent of evasion in this regard. While the actual evasion on this account may not be as high as the estimates made by the Mill Owners Association (Rs 120 crore in 1981-82), we think that it would be sizeable and certainly higher than our estimates.

While estimating the extent of evasion arising from the undervaluation of the fabrics in the composite mill sector, for want of data at the desired level of disaggregation, we had to make a number of assumptions. The important among these assumptions are: (i) The data on cotton cloth consumption given in the *Consumer Purchases of Textiles* (Government of India, 1978, 1979) are reliable; (ii) the level of retail stocks at the end of the year has not changed in comparison with that at the beginning of the year, so that production minus exports does, in fact, represent consumption; (iii) the pattern of consumption of mill sector cloth is identical to the pattern of its production. Thus, the purchase of cloth of more than 41 counts and less than 41 counts, the latter disaggregated in terms of various price ranges, could be derived in proportion to the relevant production pattern, the data for which are available; (iv) the category-wise consumption of mill and powerloom cloth is identical. Hence the total mill cloth could be allocated among the different items in the category in proportion to their relative shares in the mill and powerloom cloth taken together, and (v) the distribution of the categories considered by us in terms of tax rate categories is identical to the distribution of cloth of the categories not considered by us. Accordingly, on the basis of the evasion figures obtained on the categories considered in the study forming about 70 per cent of total purchase, the total evasion estimates are obtained by blowing up our estimates proportionately. It is necessary to mention that assumption (iv) may result in an upward bias in our estimates of evasion. This is because, as we have pointed out earlier, the proportion of fabrics of higher counts in the consumption of powerloom fabrics is higher. If these fabrics are priced higher, then our estimates of the consumption of higher-priced categories of mill sector cloth get exaggerated; hence, the estimates of evasion also get exaggerated accordingly.

5

Reform of Excise Duty on Cotton Textiles—Broad Issues

Introduction

IT has been our contention that, *inter alia*, the nature of the industry and the structure of excise duty partly determine the method of evading the excise duty on cotton textile fabrics. Again, the nature of the industry itself has been an outcome of, among other factors, the complex structure of excise duty which leaves open some avenues of evasion. Attempts to achieve multiple objectives have complicated the structure of excise duty.

The discussion on policy issues directed towards reforming the structure of excises to reduce evasion, therefore, has to address itself to the objectives that have contributed to the complicated structure. Specifically, the discussion should be concerned with two questions: (i) whether the objectives pursued are appropriate and (ii) whether the methods employed to achieve the objectives are efficient.

Besides the objective of raising revenue, the two other major objectives of the excise rate policy on cotton textile fabrics seem to be (i) equity and (ii) encouragement of labour-intensive techniques of production. Equity is sought to be achieved by means of a graded tax structure with reference to count groups of fabrics as well as differential tax rates on fabrics of different prices. Encouragement to labour-intensive techniques is sought to be given by levying differential tax rates on fabrics produced in different sectors, the rates varying inversely with the labour intensitsy in production.

It is beyond the scope of this study to make any judgement on the merits of the policy objectives and the emphasis placed on them. Again, it is the prerogatiye of the Government to decide upon the extent of equity to be achieved through providing cheap cloth to the common consumer and discriminating against the richer consumer *vis-a-vis* the poorer consumer. However, when inter-sectoral discrimination is made in order to promote labour intensity in production, the issue of relative efficiencies of the three sectors—mill, powerloom and handloom—also become important. Unfortunately, little systematic work has been done to examine whether the interest outlay saved by reducing capital costs in the labour-intensive sector is greater than the increased wage biil. If such a situation indeed exists, the labour-intensive sector would be profitable, and excise rate discrimination would be required only to enhance this. If, on the contrary, the increased wage bill is higher than the interest saved, there is a cost in terms of the loss of efficiency in promoting the labour-intensive sector.

A recent World Bank study (Mazumdar, 1984) which examines the relative efficiency of the three sectors, concluded that given the wage levels prevailing in the three sectors, only powerlooms were profitable. Further, the enormous wage differential that existed betweeu the mill and the powerloom sectors was crucial to the private profitability of the powerlooms[1]. Now the pertinent decision should be whether additional encouragement of the powerloom sector in terms of lower excise rates is required and, if so, by how much. In other words, the structure of excise rates should be decided on the basis of detailed studies on the relative efficiency of the different sectors. Again, greater employment intensity but lower labour productivity, in the segment of

[1] If, however, labour is valued at a uniform (lower) powerloom wage in both the miil and powerloom sectors, the study concludes that the social profitability is very much lower.

the textile sector which produces basically wage goods, has to be set off against increasing employment in labour-intensive capital formation sectors. Only then the decision to encourage the sectors or any segment of the sectors can be taken. The excise rate policy can be appropriately designed only after such a careful analysis.

The second important issue is whether the means to achieve the objectives are appropriate. In other words, the issue is whether the excise rate policy is the most efficient method of achieving the specified objectives.

As mentioned earlier, an important reason for having a differential rate structure of excise duties for cotton fabrics—depending upon the count of the fabric as well as its price—is the desire to aehieve equity. But the attainment of equity is possible only if the richer sections consume higher-priced fabrics as well as fabrics of higher counts. But gradation of rates with reference to count groups and prices seems to be unnecessary to serve the objective of equity. If indeed fabrics of higher counts are priced higher, the highest basic tax rate (15 per cent in the case of mill fabrics) would automatically apply. On the other hand, if fabrics of higher counts are priced lower, they could be consumed by the poorer sections of society and taxing them at very high rates irrespective of their price would be inequitous. Thus, there is really no case for differentiation with reference to count groups; differential taxation with reference to broad price catagories alone should serve the purpose of equity.

The discrimination in tax rates in respect of both count groups and price ranges has two important unintended effects. First, it provides a vast avenue for the evasion of the tax through misclassification of both count categories and price ranges. To prevent the misclassifieation of cloth of different count groups, the laboratory tests required at present can be avoided by levying tax rates varying only with the broad price ranges of the cloth. It is necessary to stress that differentiation has to be made only in terms of broad price categories to reduce the possibility of evasion of the tax through price misclassification; for, rate differenti ation on narrow price-range categories enhances the possibility of misclassification. Secondly, rate differentiation by count groups produces the unintended effect of less efficient utilisation of inputs. As a consequence of this tax policy, the spinning mills would produce yarn of lower counts even from long staple cotton to avoid paying excise duty at higher rates although yarn of higher counts can be produced. As yarn of lower counts yields lower quantity of cloth, total cloth output would be much less as a consequence of the excise rate policy[2] (Desai, 1981).

The excise duty on cotton yarn too adds to this unintended effect. The specific nature of the duty, the rate increasing with yarn count, provides the incentive to manufacture yarn of lower counts even though higher counts can be produced from a given quality of cotton. It would therefore seem to be rational to recommend that cotton yarn may be subjected to *ad valorem* rates of tax, the rates varying with the price of yarn, on the lines suggested by the Indirect Taxation Enquiry Committee (Government of India, 1978). This would, besides ensuring more efficient utilisation of cotton, also avoid elaborate laboratory tests by the Excise Department to verify the yarn count.

The Indirect Taxation Enquiry Committee examined this issue in detail and concluded that there was no justification for taxing the lower priced cloth consumed by the poorer sections of the community at very high rates merely because the cloth was made from yarn of higher counts. The Committee recommended a telescopic rate structure in terms of broad price categories. Consequently, the five-fold rate categorisation in terms of coarse, medium A, medium B, fine and superfine cloth was abolished in 1977, but categorisation was still made in terms of fabrics of more and less than 41 counts[3]. This, in our opinion, seems to be wholly unnecessary. As stated by the Indirect Taxation

[2] A kilogram of yarn of about 40 counts yields only 10 metres of cloth whereas yarns of higher counts yield 15 metres of cloth per kilogram.

[3] Changed subequently to 51 counts.

Enquiry Committee, "the real test to apply in distinguishing between the cloth consumed by the rich and the poor should be the price factor and on this basis, the cheaper cloth should be taxed at lower rate." We would therefore suggest that the recommendation of the Committee on the rate structure should be implemented in its entirety and a telescopic rate structure should be imposed on fabrics distinguished in terms of broad price categories.

We have mentioned earlier that inter-sectoral differentiation in the rates of excise duty leads to inter-sectoral misclassification and evasion of duty. The two important avenues of such evasion are: (i) exemption of hank yarn which is presumed to be used only in handlooms and (ii) exemption of powerloom fabrics processed in hand processors. We have mentioned the existence of widespread evasion of excise duty on yarn as well as fabrics through the abuse of these exemption provisions. Use of hank yarn on a significant scale in the powerlooms after the rewinding of the hank yarn into cones or pirns results in the widespread evasion of the yarn duty. Similarly, misdeclaring power-processed fabrics as hand-processed leads to evasion of the duty on cloth on a significant scale.

In view of the widespread evasion of the tax through misclassification of cloth, it is necessary to question whether it is wise to continue with these exemptions and whether the excise policy is really appropriate for encouraging the concerned sectors. Besides the estimate of evasion of excise duty, even the official information on cloth production derived from yarn delivery is rendered misleading due to this misclassification.

Given that the exemption accorded to hank yarn is the basic cause of this misclassification and tax evasion, withdrawal of the exemption becomes imperative. The issue, however, is how this can be done if we have to continue the encouragement to the labour-intensive handloom sector.

In our opinion, this can be done in either of two ways. Firstly, one can evolve a bonded movement system wherein hank yarn can be sold to handloom cooperatives who would ensure the distribution of the yarn to the actual producers.

This may, however, create enormous administrative problems for the proposed cooperatives as there exist a very large number of very small producers in this sector. Alternatively, it may be preferable to levy the tax on hank yarn at the rates applicable to non-hank yarn, and the amount thus collected may be ploughed back to the handloom industry through a scheme of subsidies. The method will be similar to the levy of "additional" excise duty, the proceeds of which are earmarked to subsidise controlled cloth and Janata cloth. We are therefore of the view that exemption accorded to hank yarn should be withdrawn.

Another important avenue of evasion arises from the exemption accorded to the powerloom and handloom fabrics processed by the hand-processors. Processing includes singeing, desizing, scouring, mercerising, bleaching, dyeing, printing, pre-shrinking and chemical finishing operations. The traditional hand-processing industry did not use machines and even today, there is much to be said in favour of encouring artisans in this sector by giving excise exemption and other advantages to them. In recent times, however, a new class of hand-processors has emerged using sophisticated machines identical to the power-processors and each processing about 20,000 metres of cloth per day. It is estimated that in 1977 they processed about 1225 million metres of cloth and employed about 80,000 workers (Government of India, 1980b) On these processors, excise duty at compounded rates was levied from 1973-74 until 1.4.1978. This was abolished with effect from 1.4.1978. when the powerloom cloth processed in hand-processing units was completely exempted. However,under the notification 130 of 1982, eligibility for exemption has been limited to 15,000 metres per day in a hand-processing unit. But, it should be noted that this limit is adequate enough to claim exemption for virtually the entire amount of cloth processed in hand-processing units. The rates of compound levy in 1976-77, on the stentering and mercerising machines respectively, were Rs 4500 and Rs 5000 per year.

There is much to be said in favour of imposing at least a compounded levy on these independent hand-processors as it existed from 1973-74 to 1976-77. We have already stated that the existing study on the relative efficiencies of the three sectors indicates that powerlooms are more profitable than the mill sector due to the existence of enormous wage differentials, and a further advantage in terms of excise concessions does not seem to be necessary. Besides, it should be noted that the stentering and mercerising machines used by the hand-processors are identical to those used by the power-processors, and although to operate them, they have to employ a larger number of labourers, the labourers find the work very exhausting (Government of India, 1980b). Besides, the Working Group on Hand Printing and Hand Processing Industry concluded that "... the substantial excise benefits enjoyed by the hand-processing units are not being passed on to the consumers or the labourers employed in the Industry" (Government of India, 1980b, p.6). Further, exemptions granted to the powerloom fabrics processed by independent hand-processors have resulted in the large-scale evasion of the tax through misclassification of power-processed fabrics as hand-processed. In view of these, there does not seem to be really a case for giving exemptions to hand processing units which use machines for stentering and mercerising and the tax applicable to power-processed powerloom cloth should be applicable to these. However, it may be difficult to administer the levy due to the existence of a large number of hand-processors. Therefore, to begin with, a compounded levy on the lines that existed during the period 1973-74 to 1976-77, on stentering and mercerising machines could be revived, but perhaps at higher rates. Gradually, the levy should be made to vary with the value of cloth output. The Working Group on Hand Printing and Hand Processing Industry (Government of India, 1980b) also has recommended the levy of excise at 3 per cent on all manually operated machines processing cotton textiles, which could be imposed when it becomes possible to monitor the production flow of these units.

Another important issue that requires the immediate attention of policy makers is the urgent need to foster cooperation particularly between the Office of the Textile Commissioner and the Central Board of Excise and Customs. The lack of coordination between the two has resulted in enormous loss of revenue through avoidance and evasion of the excise duty. Specifically, while the Office of the Textile Commissioner requires only that the mill cloth be stamped, it does not go into the question of whether the tax is in fact paid according to the stamped price. Nor does it examine in detail whether the stamped price has any relevance to the cost of producing the specified quality of cloth. The Excise Department on its part is indifferent to the stamped price and merely collects excise duty according to the invoice price. Our investigation has revealed that often the invoice prices are lower than the stamped prices by over 20 per cent. The consumer, however, generally, does not get the benefit of the lower tax paid as he does not have any means of knowing the invoice price.

Thus, while the manufacturers and traders can recover the tax on the stamped price from the consumers, they would pay a substantially lower amount to the Government. To avoid this, two important measures are called for. First, the Textile Commissioner's Office and the Excise Department should work in close cooperation and it should be mandatory that the invoice price on which excise duty is paid should be the stamped price. Secondly, the Textile Commissioner's Office should examine the relationship between the cost of production and the invoice/stamped price of the cloth. In this, they could seek the cooperation of the Bureau of Industrial Costs and Prices which could undertake detailed cost studies.

Coordination between the offices of the Textile Commissioner and the Central Board of Excise and Customs can also be helpful in preventing evasion through suppression of the output of yarn and fabrics. Although we have not found any significant extent of evasion through this method, we do not altogether rule out the possibility in some specific cases. Actually, the Report of the Expert Group on Textiles (Government of India, 1976) mentions the cases of some mills showing lower production in Central Excise records than what is shown in the returns furnished to the Textile Commissioner. This can be easily avoided by cooperation between the two departments.

An important factor inhibiting the effective implementation of the tax on the unorganised sector is the lack of information on this sector. The number of powerlooms, handlooms, mechanised hand-processors and power-processors, the type of technology employed in them, and the quantum of cloth manufactured and processed, by quality and price ranges, are some of the points on which regular flow of information is essential for effectively enforcing the tax. This can be collected only through periodic surveys, which we think should be conducted. Besides, it is also essential to conduct studies on the relative efficiencies of the three sectors on the lines of the World Bank study (Mazumdar, 1984) by enhancing the sample size. These should effectively plug the information gap and should go a long way in ensuring better administration and enforcement of the tax.

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Appendix I

Structure of Excise Duty on Cotton Textile Fabrics

Evolution of the Levy

Excise duty on cotton textile fabrics levied under tariff item No.19, is one of the oldest levies. Originally, in the late 19th century, the levy was conceived as an antiprotective measure to enhance the competitiveness of the cloth produced in Lancashire mills. In independent India, the levy was introduced in January, 1949, on only the superfine variety of cloth at the rate of 25 per cent. Gradually, other varieties were brought into the fold of the excise net. The levy of handloom cess in 1953, additional excise duties in lieu of sales tax in 1957, introduction of compounded levy procedure for smaller powerloom units in 1955 and its withdrawal in 1977, replacement of specific structure with an *ad valorem* structure in 1976, and major changes in tariff description and duty structure in 1977 are important landmarks in the evolution of the structure of excise duty on cotton textile fabrics.[1]

The major changes brought about in 1977 were of far-reaching significance and since then only a few minor changes have been made. Therefore, the currently prevailing structure is largely determined, albeit with minor modifications, by these changes. Essentially, besides the change in tariff description of cotton fabrics, the rate structure was also changed from the five-fold classification of superfine, fine, medium A,

[1] A detailed discussion on the evolution of excise duty on cotton textiles is provided in the *Report of Indirect Taxation Enquiry Committee*, Government of India, 1977.

medium B and coarse into largely an *ad valorem* telescopic form. The changes effected were, total exemption of non-power/steam processed powerloom and handloom fabrics, lower rates on powerloom and handloom fabrics processed by independent processors, exemption from compounded levy on powerlooms excepting unauthorised powerlooms and exemption of yarn duty for the composite mills. Subsequently, further modifications were made wherein yarn duty exemption for the composite mill sector was repealed and the structure of tax rates reverted to a graded, differential form, the rates depending on the price of leviable fabrics in respect of fabrics of less than 41 counts, while a uniform rate applied to fabrics of higher counts. In the following paragraphs, we explain the structure of excise duty prevailing in 1978-79, the year for which we have estimated the extent of evasion. The important changes effected in subsequent years are explained thereafter.

Definition of Cotton Fabrics

For the purpose of the Central Excise Tariff, 'cotton fabrics' are defined so as to include all varieties of fabrics manufactured either wholly or partly from cotton. In the latter case, a fabric is classified as cotton fabric if (i) in such fabric, cotton predominates in weight or (ii) such fabric contains more than 40 per cent by weight of cotton and 50 per cent or more by weight of non-cellulosic fibres or yarn or both.

It is specified that the varieties of cloth under tariff item 19 would include dhoties, sarees, chaddars, bed sheets, counterpanes, table-cloths, embroidery in the piece, in strips or in motifs and fabrics impregnated, coated, or laminated with preparations of cellulose derivatives or of other artificial plastic materials.

In the case of fabrics embroidered, and impregnated, coated, etc., the percentages referred to above are to be considered with reference to the base fabrics.

The statutory classification of Tariff item 19 refers to the following three categories, as far as our reference year, *viz.* 1978-79, is concerned:

(i) Cotton fabrics other than (i) embroidery in the piece, in strips or in motifs, and (ii) fabrics impregnated, or laminated with preparations of cellulosic derivatives or of other artificial plastic materials.

(ii) Embroidery, in the piece, in strips, or in motifs, in or in relation to the manufacture of which any process is ordinarily carried on with the aid of power.

(iii) Cotton fabrics impregnated, coated, or laminated with preparations of cellulosic derivatives or of other artificial plastic materials.

A fourth category was added to the statutory classification in 1980, as:

(iv) Cotton fabrics covered partially or fully with textile flocks or with preparations containing textile flocks such as flock printed fabrics and flock coated fabrics. Besides this, sub-item I was redefined to exclude sub-item IV, in addition to sub-items II and III. Moreover, sub-item I was divided into the following two categories:

(a) Cotton fabrics, not subjected to any process.

(b) Cotton fabrics, subjected to the process of bleaching, mercerising, dyeing, printing, water-proofing, rubberising, shrink-proofing, organdie processing, or any other process or any two or more of these processes.

The statutory basic rates of duty for sub-items I and II were fixed at 20 per cent. On sub-items III and IV, the statutory rate was fixed at 30 per cent. In addition to the basic duty, a special duty levied at 5 per cent earlier was enhanced to 10 per cent in 1980.

The statutory rates merely represent the ceiling rates—these are the maximum rates the Government can levy. The actually levied rates are governed by the effective rates notified by the Government from time to time.

Structure of Effective Rates 1978-79

Cotton textile fabrics are subjected to the basic, additional and special excise duties. In addition, handloom cess is also levied, the proceeds of which are earmarked for the development of the handloom sector. The proceeds from additonal excise duties are earmarked to subsidise the controlled cloth and Janata cloth schemes.

In order to understand the structure of effective rates that prevailed in 1978-79, it is necessary to distinguish between (i) compoiste mills; (ii) powerlooms, and (iii) handlooms and (iv) embroidered impregnated and coated fabrics. The structure of tax rates on composite mills, powerlooms and handlooms is outlined in Table A.1. The rates applicable on embroidery, impregnated and coated fabrics are indicated in Table A.2.

Table A. 1 is self-explanatory, but a few observations may not be out of place. First, distinction is made between cloth of more than 41 counts and that of less than 41 counts. All cloths of more than 41 counts are taxed at uniform rates within the sector, irrespective of price and category (sound, fent or rag). On cloths of less than 41 counts, however, tax rates vary according to the price of the fabric and category. The second important feature of the rate structure is the existence of inter-sectoral rate differences. Generally, on powerloom fabrics processed by composite mills and independent processors (with the aid of power), the tax rates are respectively lower than those imposed in the mill sector, by 30 per cent subject to a maximum reduction of 3 percentage points. Similarly, duty at 55 per cent and 40 per cent of the mill rates are applicable on handloom fabrics when processed by the composite mills and independent processors.

Structure of Exemption

There exist a number of notifications exempting various types of cotton fabrics from payment of duty. The important one among these from our point of view is the exemption accorded to cloth produced in the decentralised sector. It should be noted that grey fabrics manufactured in powerlooms and handlooms are completely exempted. Even these fabrics if processed without the aid of power or steam are not subject

TABLE A.1

Rates of Excise Duty on Cotton Fabrics Sector-wise (1978-79)
(All rates given are in percentage)

Sl. No.	Description	Mill-made	Handloom Fabrics Processed by independent processors: Approved by Govt.	Handloom Fabrics Processed by independent processors: Not approved by Govt.	Powerloom fabrics processed by independent processors
	(1)	(2)	(3)	(4)	(5)
1.	Cotton Fabrics (including fents and rags) in which the average count of yarn is 41s or more	15	5 without printing or dyeing or both	8**	*
			9 with printing or dyeing or both	12	12
2.	Cotton Fabrics (other than those in which the average count of yarn is 41s or more)* whose value per square metre:				
	(a) Does not exceed Rs 4	2	0.80	1.40	1.40
	(b) Exceeds Rs 4 but does not exceed Rs 6	3	1.20	2.10	2.10
	(c) Exceeds Rs 6 but does not exceed Rs 7	4	1.60	2.80	2.80
	(d) Exceeds Rs 7 but does not exceed Rs 8	6	2.40	4.20	4.20

Contd.

TABLE A.1 Contd.

(1)	(2)	(3)	(4)	(5)
(e) Exceeds Rs 8 but does not exceed Rs 9	8	3.20	5.60	5.60
(f) Exceeds Rs 9 but does not exceed Rs 10	10	4.00	7.00	7.00
(g) Exceeds Rs 10 but does not exceed Rs 11	12	6.00	9.00	9.00
(h) Exceeds Rs 11 but does not exceed Rs 12	14	8.00	11.00	11.00
(i) Exceeds Rs 12	15	9.00	12.00	12.00
3. Fents and rags with average count of yarn less than 4's whose value per square metre:				
(a) Does not exceed Rs 4	2	0.80	1.40	1.40
(b) Exceeds Rs 4 but does not exceed Rs 7	3	1.20	2.10	2.10
(c) Exceeds Rs 7 but does not exceed Rs 9	6	2.40	4.20	4.20
(d) Exceeds Rs 9 but does not exceed Rs 12	10	4.20	7.00	7.00
(e) Exceeds Rs 12	15	9.00	12.00	12.00

Notes:

* Cotton fabrics of this group when classified under 'controlled cloth' variety, are subject to a tax rate reduced by 50 per cent.

(Notes contd)

TABLE A.1 Notes contd.

** In the budget proposal effective from 1.3.1979 the duty was increased from 8 per cent to 12 per cent. It was subsequently reduced to 11 per cent with effect from 24.4.1979.

(i) The effective rate on further processing of duty-paid fabrics of composite mills (both for less than and more than 41 counts groups) is less of tax already paid.

(ii) Handloom fabrics processed by registered handloom cooperative societies and hand processors not using power or steam are exempted from paying duty.

(iii) The above effective rates of duty on cotton fabrics are composite ones representing basic and additional duty in lieu of sales tax. The allocaiion between basic and additional duty is 75 per cent and 25 per cent, respectively.

(iv) In addition to the above, there is a special excise duty of 5 per cent on basic duty effective from 1.3.1978 and additional excise duty @ 10 per cent of basic duty effective from 4.10.1978.

(v) For handloom fabrics processed by independent power processors not approved by Government and powerloom fabrics processed by independent power processors, there was a concessional rate of duty on processing (i.e., bleaching) without printing or dyeing or both of 8 per cent *ad valorem* vide notification No. 226/77 dated 15.7.1977. This concession has been withdrawn through the 1979-80 budget vide notification No. 60/79 dated 1.3.1979.

Source: Government of India, Ministry of Finance, Department of Revenue. *Report of Expert Committee on Tax Measures to Promote Employment*, 1980, New Delhi.

2. Cencus Publications, *Cencus Central Excise Tariff, 1978-79*, New Delhi.

TABLE A.2

Effective Rates : Embroidery etc.
(As on 1.3.1978)

Effective rates (per cent) *ad valorem*	Description of goods	Notification number
Rs 9.35 per metre of embroidery machine per shift plus the duty payable on base fabrics.	Embroidery in the piece, in strips and in motifs.	85/71
7 *plus* duty payable on base fabrics, if not already paid.	Embroidery in the piece, in strips, and motifs, where provisions under notification number 85/71 are not applied.	65/69, 271/77 and 272/77
30 *plus* duty payable on base fabrics, if not already paid.	Cotton fabrics impregnated, coated or laminated with preparations of cellulose derivatives or other artificial plastic materials (other than low density polyethylene) excluding PVC coated conveyor belting.	100/77 and 273/77
24 *plus* duty payable on base fabrics, if not already paid.	PVC coated or impregnated conveyor belting.	273/77 and 100/77

Source: Cencus Publications (1978) *Cencus Central Excise Tariff 1978-79*, New Delhi.

to tax. A summary of various exemptions along with the relevant notifications is presented in Table A3.

Changes in the Tariff Subsequent to 1978-79

In order to bring the discussion up-to-date, we have presented below a summary of changes that were introduced after 1978-79. These changes have reference to the tariff structure as it was on 1.3.1978 in comparison to its position on 1.4.1979, 1.4.1980, 1.3.1981 and 15.7.1982. These dates refer to the Working Schedules of the Central Excise Tariff published subsequently.

As on 1.4.1979

(i) Explanation (III) was added to the definition of the item specifying that floor coverings falling under item 22G are not included under item 19.

(ii) Exemption on rubberised cotton fabrics was withdrawn (Notification No. 39/68).

TABLE A.3
Schedule of Exempted Fabrics

Sl. No.	Description of goods	Notification No.
	(1)	(2)
1.	Damaged or sub-standard fabrics (chindies of 23 cms. or less in length) belonging to item 19(I) and (II) or otherwise discarded fabrics during processing.	69/69
2.	Fabrics belonging to item 19(I) fully exempted depending on the following end-uses: (i) intended for use in textile printing, dyeing, bleaching, or sizing process; (ii) drill, long cloth, and markin intended for use in the coated abrasives industry; (iii) intended for use in manufacturing cotton absorbent lint; (iv) hosiery garments; (v) trimmings and cuttings of less than 7.5 cms. in width if intended for use in making paper; (vi) Indian National Flags; (vii) surgical absorbent lint in pack of 5 kgs. or less; (viii) fabrics of 15 cms. or less in width; (ix) unprocessed cotton fabrics if	70/69

(1)	(2)
manufactured on a handloom; (x) processed khadi; (xi) unprocessed cotton hosepipes and belting woven as such; (xii) hosiery.	
3. Fents of duty-paid processed cotton fabrics arising out of further processing.	135/69
4. Chindies (6 cms. or less in length) of laminated, coated, etc., fabrics (19 III).	67/70
5. Cotton fabrics falling under item 19(I) when subjected to finishing processes specified below: Calendering (other than calendering with grooved rollers), flanellete-rising, stentering, damping on grey and bleached sorts, back filling on grey and bleached, singeing, scouring, cropping or butta-cutting, curing or heat setting and padding.	80/76
6. Samples of excisable goods	171/70
7. Rags of duty-paid processed cotton fabrics arising out of further processing	106/70
8. Unprocessed cotton fabrics falling under item 19(I) manufactured on powerloom other than fabrics containing more than 1/6th by weight of fibre or yarn or both of non-cellulosic origin, and coating, suiting, etc.	230/77
9. Cotton fabrics [item 19(I)] when processed without the aid of power or steam.	137/77
10. All varieties of fabrics coated or laminated with preparations of low	100/77

(1)	(2)
density polyethelene.	
11. Purchases of cotton fabrics out of cash donations for relief of the cyclone-affected people in Andhra Pradesh, Tamil Nadu, Pondicherry, Lakshwadeep, Orissa, etc.	337/77

Source: Same as for Table A.I.2

(iii) Exemption to composite mills with respect to duty on that part of value which represented duty on yarn has been withdrawn (Notification No. 99/77 para 13).

(iv) 6 per cent *ad valorem* reduction in the effective rate applicable to canvas, duck, and filter cloth (sound, fents and rags) manufactured on powerlooms has been extended to (a) cotton fabrics containing more than 1/6th by weight of fibre or yarn, etc., of non-cellulosic origin, (b) coating, suiting, etc., and (c) canvas, duck, and filter cloth (Notification No. 223/77).

(v) The distinction made in col. (iii) of Notification No. 323/77 between average counts of yarn of 41s or more and less than 41s and the corresponding maximum reduction has been deleted and substituted by a maximum reduction of three per cent *ad valorem* in all cases.

(vi) Similar changes in the case of fents and rags were also introduced.

(vii) Unprocessed cotton fabrics used in the same factory for processing were exempted from duty (Notification No. 290/79).

(viii) Processed cotton fabrics when subjected to further processing in the same factory were exempted from duty (Notification No. 291/79).

As on 1.4.1980

(i) Special excise duty was raised to 10 per cent.

(ii) A new category was created for cotton fabrics covered partially or fully with textile flocks, etc. The statutory rate of duty for this category was fixed at thirty per cent *ad valo-*

rem plus the duty payable on the base fabrics.

(iii) With reference to the exemption regarding specified finishing processes (para 9) two conditions have been added: (a) No exemption is available if unprocessed cotton fabrics falling under sub-item I (a) on which excise duty is leviable are subjected to any of these processes within the factory where the unprocessed fabrics have been produced or (b) if cotton falling under sub-item I are also subjected to any process other than specified in the given table within the same factory.

Two processes have been added in the list, i.e., (i) expanding and (ii) hydro-extraction with the aid of power.

(iv) The distinction between fabrics of an average count of 41s or more and those of less than 41s in Col. (iii) of notification No. 323/77 was re-introduced. The rates for sound fabrics, and fents and rags, is to be reduced by 30 per cent in both cases but in the latter case the reduction in the rate shall not exceed 3 per cent *ad valorem.*

(v) For controlled dhoti, saree, etc., full exemption is granted in place of the existing 50 per cent reduction.

(vi) Set-off for finishing processes under clause (vi) of Notification No. 313/77 is not included at this place in the amended notification.

As on 1.3.1981

The effective rate of duty on flocked cotton fabrics, i.e., item 19(IV) has been specified as duty leviable on the base fabrics plus 15 per cent *ad valorem* (Notification No. 29/81).

As on 15.7.1982

(i) Two new provisions were added to the existing list pertaining to the compounded levy rates for powerlooms as indicated below:

Provided that in the case of any person who has applied to the Textile Commissioner for written permission for the installation and working of powerloom on/or before the 31st day of December, 1979, the rate of duty shall, subject to the production of necessary evidence to the satisfaction of the proper Officer of the Central Excise, be nil until such permission is granted by the Textile Commissioner.

Provided further that where such person has not produced the written permission of the Textile Commissioner by the 30th day of June, 1981 to the proper Officer, the duty fixed under this notification shall be payable for the entire period for which he was assessed nil rate of duty under the first proviso.

(Vide Notification No. 104/81 dated 8.4.1981.)

(ii) The distinction so far based on the dividing line provided by the average count of yarn of 41s has been redefined with reference to 51s both for sound fabrics as well as fents and rags.

(iii) The fifty per cent reduction for the processing of cotton fabrics [provision (iia) of Notification No. 136/77 and (iiia) of Notification No. 226/77], has been changed to a seventy-five per cent reduction.

(iv) With reference to the rate schedule given in Notification No. 226/77, apart from Sl.No.1, referring to fabrics with an average count of yarn of 41s or more, and Sl. No. 2, referring to fabrics with an average count of yarn of less than 41s, the following third category has been added: "Cotton fabrics not specified in Sl. Nos. 1 and 2". The effective rate of duty for this category has been fixed as 15 per cent *ad valorem.*

As on 1983-84

(i) The effective rate of duty on cotton fabrics containing more than 40 per cent but less than 50 per cent polyester was reduced from 15 per cent to 6.5 per cent *ad valorem.*

(ii) Additional duty in lieu of sales tax on cotton fabrics impregnated, coated or laminated with preparation of cellulose derivatives or of other artificial plastic material is duty for the time being leviable on fabrics, if not already paid, plus 10 per cent *ad valorem.*

(iii) The above rate of (ii) is also applicable to the cotton fabrics covered partially or fully with textile flocks such as flock printed fabrics and flock coated fabrics.

(iv) The effective rates of additional duty in lieu of sales tax on cotton fabrics impregnated, coated or laminated with preparations of cellulose derivatives or of other artificial plastic material except LDPE is fixed at the duty leviable on the base fabrics, if not already paid, plus 5 per cent *ad valorem.*

(v) The effective rates of additional duty in lieu of sales tax on cotton fabrics covered partially or fully with textile flocks or with preparations containing textile flocks such as flock printed fabrics and flock coated fabrics is fixed at the duty leviable on base fabrics, if not already paid, plus 5 per cent *ad valorem.*

Important Tariff Definitions

Apart from the definition of cotton fabrics, discussed earlier, other important terms frequently used in the context of Excise Tariff relating to cotton fabrics are base fabrics, fents, rags, composite mills, count and average count of yarn. The definitions relating to these are given below:

BASE FABRICS

Means—

Fabrics falling under sub-item I of this item which are subjected to the process of embroidery or which are impregnated, coated or laminated, with preparations of cellulose derivatives or of other plastic materials.

Where two or more of the following fibres, that is to say,

(i) man-made fibre of cellulosic orgin;
(ii) cotton;
(iii) wool;
(iv) silk (including silk noil);
(v) jute (including Bimlipatam jute or mesta fibre);
(vi) man-made fibre of non-cellulosic origin;
(vii) flax; and
(viii) ramie.

in any fabric are equal by weight, then, such one of those fibres, the predominance of which would render such fabric, falls under that item (hereafter in this explanation referred to as the applicable item) among item Nos. 19,20,21,22A and 22AA, which read with the relevant notification, if any, for the time being in force issued under the Central Excise Rules, 1944, involves the highest amount of duty, shall be deemed to be predominant in such fabric and accordingly such fabric shall be deemed to fall under the applicable item.

FENTS

Means—

(i) *Bonafide* cut-pieces of cotton fabrics of length (excluding cut-pieces of towels) of length 45 cms. or more but not exceeding 90 cms. where the width of the fabric is one metre or more, and of length 65 cms. or more but not exceeding 135 cms. where the width of the fabric is less than one metre, arising during the normal course of manufacturing (including processing) or packing or drawing samples;

(ii) damaged cotton fabrics (excluding damaged towels) of length 45 cms. or more but not exceeding 90 cms. where the width of the fabric is one metre or more, and of length 65 cms. or more but not exceeding 135 cms. where the width of the fabric is less than one metre; and

(iii) cut-pieces of length 45 cms. or more but not exceeding 90 cms. where the width of the fabric is one metre or more, and of length 65 cms. or more but not exceeding 135 cms. where the width of the fabric is less than one metre, cut from damaged dhoties or sarees.

RAGS

Means—

(i) *Bonafide* cut-pieces of cotton fabrics of length more than 23 cms. but less than 45 cms. where the width of the fabric is one metre or more, and of length more than 23 cms. but less than 65 cms. where the width of the fabric is less than one metre, arising during the normal course of manufacturing (including processing) or packing or drawing samples; and

(ii) Cut pieces of damaged or sub-standard cotton fabrics of length more than 23 cms. but less than 45 cms. where the width of the fabric is one metre or more and of length more than 23 cms. but less than 65 cms. where the width of the fabric is less than one metre.

COMPOSITE MILL

(i) Means a manufacturer who is engaged in spinning of cotton yarn or weaving or processing of cotton fabrics with the aid of power and has a proprietary interest in at least two of such manufacturing activities;

(ii) "Handloom fabrics" means cotton fabrics made from cotton yarn (other than hand-spun cotton yarn) and woven on looms worked by manual labour;

(iii) "Independent processor" means a manufacturer who is engaged exclusively in the processing of cloth with the aid of power and who has no proprietary interest in any factory engaged in the spinning of yarn or weaving of cotton fabrics.

COUNT

Means the count of grey yarn.

AVERAGE COUNT OF YARN

(i) Yarn used in the borders of selvedges shall be ignored;

(ii) For multiple-fold yarn, the count of the basic single yarn shall be taken and the number of ends per 25.4 mm. in the reed or the number of picks per 25.4 mm. as the case may be, shall be multiplied by the number of piles in the yarn; where there is basic single yarn of different counts, the count of the basic single yarn which has the highest count shall be taken to be the count of each basic single yarn;

(iii) In the case of fabrics manufactured from cotton and other yarn, the other yarn shall, for the aforesaid purpose, be deemed to be cotton yarn;

(iv) Where there are yarns of different counts in warp or weft or both, the count of the yarn which has the highest count shall be taken to be the count of warp or weft, as the case may be; and

(v) The average count can be obtained by applying the following formula:

$$[(W_1 Z_1 + W_2 Z_2/(Z_1 + Z_2)]$$

where,

W_1 = Count of warp
W_2 = Count of weft
Z_1 = Number of ends per 25.4 mm. in the reed
Z_2 = Number of picks per 25.4 mm. in the weft,

the result being rounded off, wherever necessary, by treating any fraction which is one half or more as one, and disregarding any fraction which is less than one half.

Appendix II

Questionnaire Circulated for the Survey on Cotton Textile Fabrics

1. Name of the manufacturer
2. Type of fabrics and description
3. Nature of processing and sort No.
4. Date
5. Count warp
6. Width of the fabrics (in cms.)
7. Weight per sq. mtr. in yarn
8. Percentage of different fibre/yarn
9. Ex-factory cx-fabric stage price (Rs per sq. metre)
10. Basic duty
11. Additional duty (ST)
12. Additional duty (TX)

13. Special duty ________________
14. Handloom cess ________________
15. Duty on yarn ________________
16. Total ________________
17. *Ad valorem* incidence of duty (Per cent) ________________
18. Wholesale price including all excise duties ________________
19. Octroi ________________
20. Local taxes ________________
21. Others ________________
22. Retail price including all duties ________________
23. Remarks ________________

TABLE A.II.1

Number of Observations in Different Varieties of Cloth Covered by the Survey

Sl. No.	Variety	Number of observations
1.	Dhoti	27
2.	Saree	26
3.	Shirting	117
4.	Coating/suiting/drill	25
5.	Ladies dress material	32
6.	Bed sheet/bed cover/chaddars	8
7.	Longcloth/sheeting	57
	TOTAL	292