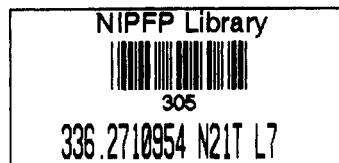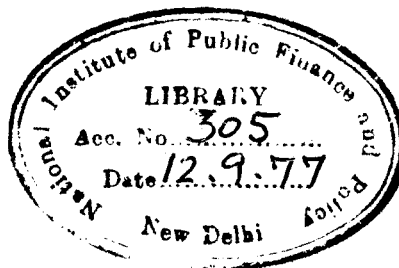NATIONAL INSTITUTE OF PUBLIC
FINANCE AND POLICY

Trends, Composition and Elasticity
of
Union Excise and Import Duties

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SUMMARY OF FINDINGS

This paper is basically concerned with the measurement and explanation of the buoyancy and elasticity[1] of Union excise duties and import duties. The period covered is from 1963-64 to 1975. The period witnessed vast changes in the structure of both excise taxes and import duties. The major occurences affecting the base of the import taxes and Union excise duties were, among other things, the devaluation of 1966, the oil price hike of 1973 and the high rate of inflation towards the end of the period. Given these major disturbances to the general trend, it is not easy to accurately compute the hypothetical automatic growth in revenue on which elasticity estimates have to be based. Therefore, our results are subject to some margin of error and have to be interpreted with caution.

Excise duties:

The elasticity of Union excise duties with respect to national income works out to 0.75. This implies that in response to a single percentage increase in national income, Union excise duties, on an average, increased by three quarters of a per cent. The structure of Union excise duties has thus proved to be inelastic. One of the main purposes of this paper is to obtain a disaggregated picture

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[1]The concepts of buoyancy and elasticity are explained in detail in the text, see Part I and Annexure II. Briefly, the buoyancy of a tax is computed by dividing the percentage change in the actual revenue by the percentage change in national income. However, if we correct the actual revenue series for discretionary changes (i.e. changes in the rate and base, or bringing in of new goods into the tax net) by the Government to obtain a "hypothetical" series of automatic growth in revenue, then the ratio of the percentage change in this series to the percentage change in national income gives us the elasticity of the tax.

by computing the elasticities of the major groups of excisable commodities. This would aid us in identifying the groups that are primarily responsible for the inelastic structure of excise taxes. Out of ten groups there are three that have a value of elasticity of 1 or above. These are chemicals (1.12), petroleum products (1.03) and machinery and transport equipment (1). These groups accounted on an average for about 42.3 per cent of the total revenue during the reference period. Values of elasticity substantially below unity are recorded for iron and steel (-0.16), food and beverages (0.01) and tobacco (0.13). (The last two estimates are not statistically acceptable.) These are the groups that are primarily responsible for the low overall elasticity.

It would seem intuitively obvious that those groups that have a largely ad valorem, as opposed to specific, structure of taxes would be expected to have a higher elasticity. This is largely borne out on the basis of data on the value of assessed turnover from 1970-71 to 1975-76. Chemicals, for example, moved progressively from specific to ad valorem rates of duty from 1965-66 onwards and this fact, at least in part, explains why this group displays the highest elasticity during 1963-64 to 1974-75. Food and beverages, textiles, and tobacco, on the other hand, largely have a specific tax structure, and predictably, have a low elasticity.

Low or high values of income elasticity could be explained by looking at how the tax revenue responded to the growth in base and how the base respond to the growth in national income. Such an exercise could be carried out only for the period 1970-71 to 1975-76. Analysing data on

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(vi)

the value of production (or base) of the excisable goods,
it is found that whereas the elasticity of the base to
income is 1.52, the elasticity of tax to base is 0.51. Among
the groups, the base to income elasticity is the highest for
petroleum products (3.11) and tobacco (2); however, the
elasticities of the tax to base are quite poor, 0.17 and
0.14 respectively. These groups largely have specific rates
of duty and the latter results therefore seem quite plausible.

The same kind of conclusions are reached by looking
at the index of industrial production, which may be treated
as a proxy base for excise duties. It is worth noting that
the indices in the case of all goods other than manufactured
goods rose faster than national income during the period
1963-64 to 1974-75.

For the period 1965-66 to 1974-75 we have tried to
determine the relative importance of three factors - namely,
bringing in new goods into the tax net, increases in the
tax base of the existing commodities, increases in the tax
rates on the existing commodities - in explaining the
increase in excise tax collection from Rs. 897.2 crore to
Rs. 3823.62 crore. It turns out that only a small fraction
(a little more than one tenth) of the increase in excise
tax revenues may be attributed to the bringing in of new
goods into the excise tax net. Increases in the rates
accounted for about one half of the total increase the
revenue, and the increase in base for about one third.

Import duties:

Compared to Union excise duties, the results obtained
for import duties have to be treated with much more caution
because events such as the devaluation of 1966 and the oil
price hike of 1973 very directly impinged upon the value of

importables, and hence on import duties. To these must be added the important fact that quantitative restrictions of various types have been the main feature of India's import policy. This implies that the automatic growth of import duties might not have a clear cut relationship with national income, or the value of importables.

As a result of the 1966 devaluation, the adjustment process in India's external trade continued right up till 1968-69. We have, therefore, concentrated our attention on the period 1969-70 to 1975-76. The elasticity of import duties with respect to both national income and the value of importables (excluding the value of cereals, fertilisers and petroleum products) works out to 1.72[1]. Among the groups, the highest elasticities were displayed by manufactured goods other than textiles (2.55) iron and steel (2.22) and chemicals (1.63). Iron and steel, which had an elasticity in the case of Union excise duties of -0.16, thus provide an interesting contrast.

Import duties during the period 1969-70 to 1975-76 seem to have fairly high income elasticities particularly when compared to excise taxes. There are three main reasons for this. First, import duties are entirely of the ad valorem type, whereas a substantial component (about 60 per cent) of excise duties collected was due to specific taxes. Secondly, due to the devaluation of 1966 and the industrial recession at the time, import duties declined up till 1969-70.

1/ It should be obvious that the elasticity of the value of importables with respect to national income worked out (approximately) to unity.

From the low base of Rs. 306 crore in 1969-70, import
duties grew rapidly to Rs. 1248 crore in 1975-76, a more
than four-fold increase. Thirdly, the higher degree of
liberalisation during the post devaluation era also
accounted for the rapid growth of import duties compared
to the growth of national income. The high elasticity
displayed for the period 1969-70 to 1975-76 cannot,
however, be expected to continue.

Trends, Composition and Elasticity of Union
Excise and Import Duties, 1963-64 - 1974-75

I.   INTRODUCTION

This paper analyses the major trends in the two
important indirect taxes levied by the Centre, namely Union
excise and import duties, and attempts to measure their
responsiveness to changes in national income. The period
covered is generally from 1963-64 to 1974-75, though for
particular computations, a shorter period has had to be
chosen.

The growth of taxes is generally judged in relation
to increases in national income, as absolute increases in
the yield of various taxes may not by themselves have much
significance. One way of getting a measure of the relative
growth of tax revenue or of the yield of a given tax is to
calculate the percentage change in revenue that has taken
place for a one per cent change in income. If this figure
comes out to be equal to one, it would mean that the yield
of the tax or taxes concerned has increased proportionately
with income.

Most taxes are based on, or in some ways related to,
income, wealth, expenditure, or capital transactions. These
bases of taxes tend to increase with the growth of national
income. Hence, taxes also may be expected to grow automati-
cally with an increase in national income. Great interest
attaches to the question of how responsive particular taxes
are to changes in real or money national income. To answer
this question, one must consider the automatic change in
the tax yield that takes place as a result of the growth of
income. This automatic change is usually different from the

actual change in the tax yield which is also influenced by
any discretionary tax measures introduced by the Government
during the reference period. The percentage automatic
change in the tax yield divided by the percentage change in
national income is defined as the 'elasticity' of the tax.[1]/
This is distinguished from the 'buoyancy' of the tax, which
is computed by dividing the percentage change in the actual
revenue collection by the percentage change in income. While
the elasticity co-efficient of a tax gives us an idea of the
inherent responsiveness of that tax to the growth or decline
in income, the buoyancy co-efficient simply indicates how
the actual growth of revenue compares with the growth in income
In fact, since actual collections are influenced by discre-
tionary tax (rate or base) changes introduced by the Govern-
ment, such collections may bear no systematic relationship
to national income in a period in which such actions have
been significant. It may be even conceptually illegitimate
to try to correlate actual revenue yield with national income.
However, buoyancy co-efficients are often used in practice
because it is not always possible to work out the hypotheti-
cal, automatic growth in revenue that would have taken place
in the absence of discretionary changes. Also, in several
cases, the buoyancy estimate may give us an idea of the extent
to which the Government has relied on particular sources of
revenue or has succeeded in bringing about increase in tax
revenues, over a given period.

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[1]/ Sometimes, the term 'built-in elasticity' is used to
emphasize the fact that only the automatic change in
the yield is being taken into account.

As Governments frequently effect changes in the legal
rates and bases of taxes, actual revenue series do not
generally reflect accurately the automatic growth of revenue.
Therefore, for the purpose of calculating the built-in
elasticity of a given tax, or of the tax system as a whole,
it is invariably necessary to work out a hypothetical revenue
series that would reflect the revenue growth that would have
taken place in the absence of discretionary changes. The
details of the methodology of constructing such "cleaned"
revenue series is discussed in Annexure II. Broadly, two
methods are employed, depending on the availability of data.
The first, called the proportional adjustment method,
consists in taking the Government's estimate of the revenue
effect of a discretionary action in the year in which the
action was taken and estimating the amounts of revenue in
subsequent years attributable to that action on the assump-
tion that the original revenue effect of the change grew
proportionately with the yield of the tax itself. The
estimated amounts are then added (or subtracted) from the
actual revenue series to obtain the "cleaned" series. The
second method, called the constant rate-base method, applies
the rates prevailing in the year chosen as the base year
to the taxable bases in different years. The latter method
could easily be applied in the case of Union excises, if
only information on the taxable base, namely, value or
quantity of clearance in respect of different excisable
commodities could be obtained. Unfortunately, information
on quantity cleared is not always given according to the
rate categories of different commodities; and in respect
of commodities subject to <u>ad</u> <u>valorem</u> duties, the value of
clearance is not always available. We have, therefore, been
led to resort to the proportional adjustment method in many
cases, even though, as is explained in Annexure II , this
method is subject to several limitations.

We attempt in the sections below to trace the trends in the automatic as well as the actual growth in revenue from excise and import duties. In both cases, the trends in the duties on major groups of commodities and in the total yield are shown and discussed separately. Following general practice, the assumption of a constant elasticity during the period under reference is made and a double-log (regression) equation is fitted to the revenue series to derive the values of elasticity co-efficients. Elasticities are computed not only with reference to national income, but also with reference to estimated bases.

II. UNION EXCISE DUTIES

A. Trends

The share of Union excise in the total tax revenue of the Central Government rose from 16.8 per cent in 1950-51 to 51.2 per cent in 1975-76. In the former year, it constituted only 0.7 per cent of national income; this percentage rapidly increased to 3.1 in 1960-61, 5.1 in 1970-71 and 6.1 in 1975-76 (Table 1). It is interesting to note that the percentage declined during the years 1972-73 and 1973-74 when there was a sizeable price inflation and the national income at current prices recorded an increase of 24 per cent. During the same two years excise tax revenue rose only by 12 per cent, indicating that they were by and large price in-elastic. We shall examine this characteristic of the excise system in greater detail at a later stage.

Over the period 1963-64 to 1975-76 the total revenue from excises increased at the rate of 15 per cent per annum. The rates of growth of revenue from the subgroups, however, varied widely, ranging from 35 per cent in the case of

non-ferrous metals down to 2.5 per cent in the case of vegetable oils and fats. Revenue from petroleum products and textiles grew more or less at the average rate. It is found that the shares of chemicals and non-ferrous metals increased significantly whereas those of vegetable oil, tobacco and iron and steel products fell. The shares of other groups did not change significantly by the end of the period even though there were fluctuations in the intervening years.

As of 1975-76, the largest revenue earning group consisted of petroleum products, accounting for nearly 27 per cent of the total. Next in order of importance came textiles (12.7 per cent), other manufactured goods (11.32 per cent), tobacco (8 per cent), chemicals (7.5 per cent) and food and beverages (7.1 per cent).

We may now consider the trends in excise duty collections from the major groups of commodities.

(a) Food and beverages:

The major items in this group are tea, coffee, package tea, sugar, khandsari and confectionaries. Of the total excise duties collected, this group accounted for roughly 8 per cent over the reference period. In 1963-64 and 1975-76 the excise duty collected from food and beverages were Rs. 170 crore and Rs. 271 crore respectively. In 1965-66 about the whole of the excise duties collected from this group could be attributed to specific types of duty. In 1974-75, only about 17 per cent of the duties collected could be attributed to specific rates of duty, the rest being ad valorem.

(b) Tobacco:

The items in this group are cigarettes, biris, smoking mixtures, unmanufactured tobacco, and manufactured tobacco. The major revenue earning item in this group is cigarettes, which have had ad valorem rates of duty since 1965-66. The ad valorem rates of duty have increased from 125 per cent in 1965 to 300 per cent in 1974-75. The duty collected from this group has increased from close to Rs. 100 crore in 1965-66 to Rs. 200 crore in 1970-71 and to Rs. 300 crore in 1975-76. However, as stated earlier, the share of this group in the total Union excise duty collected has fallen from about 11 per cent in 1965-66 to 8 per cent in 1975-76. All the items other than cigarettes in this group are subject to specific rates of duty, which, from 1970-71 onwards, have been accounting for about one quarter of all excise duties collected from tobacco.

(c) Petroleum products:

This is the single most important group from the point of view of revenue collection. The important items in this group are motor spirit, refined diesel oil and vaporising oil, kerosene oil, furnace oil and blended or compounded lubricating oils and greases. The duties collected have monotonically increased from Rs. 201 crore in 1963-64 to Rs. 1030 crore in 1975-76. Excise duties on items in this group have been almost completely of the specific type, but were revised upward from time to time. The share of this group in total Union excise duties which was about 30 per cent in 1965-66, went up to 34 per cent in 1970-71 but dropped to 27 per cent in 1975-76.

(d) Vegetable oils and fats:

The two items in this group are vegetable products and vegetable non-essential oils. This has been a relatively un-important group from the point of view of revenue collection. On top of it, over the last ten to twelve years tax con-cessions have been repeatedly awarded to commodities in this group (more on this later). The share of this group in the total excise duty collected kept consistently going down from 0.95 per cent in 1965-66 to 0.84 per cent in 1970-71 and to 0.56 per cent in 1975-76. More than 90 per cent of the tax collected from this group is of the ad valorem type. Another striking feature is that the tax collected from this group in absolute amount has been fluctuating as shown in the table below:

Excise Duty Collected from Vegetable Oils and Fats

Year	Revenue (In crores of Rs)
1963-64	16
1965-66	9
1970-71	15
1971-72	14
1972-73	16
1975-76	22

Source: Statistical Year Book, Central Excise and Customs.

It is interesting to note that the revenue collected in 1963-64 was surpassed only in 1972-73, i.e., nine years later.

(e) Chemicals:

The major commodities in this group are fertilizers, plastic materials and synthetic resins, patent and proprietary medicines, soap, synthetic and organic dye-stuffs, organic surface active agents, calcium carbide and bleaching powder. Between 1963-64 and 1975-76, there was a more than eleven fold increase in revenue from Rs. 26 crore to Rs. 238 crore, and the increase was monotonic. In 1965-66, about 70 per cent of the revenue collected from this group was from ad valorem rates of duty. By 1974-75 almost all the items in this group were subject to ad valorem rates of duty. The share of chemicals in the total excise duty collected has gone up from 3.5 per cent in 1965-66 to 7.5 per cent in 1975-76, i.e., its importance in total excise duties collected has more than doubled over these years.

(f) Metals:

i. Iron and steel: The major items in this group are iron and steel products, metal containers, crude iron, tin plates, wire ropes and iron and steel ingots. The excise duty collected has moved from Rs. 45 crore in 1963-64 to Rs. 157 crore in 1975-76. In 1965-66, almost all of the taxes collected from items in this group were in the nature of specific taxes; however, by 1974-75 the amount of tax attributable to specific taxes was only a little more than a half, the rest being accounted for by ad valorem taxes. The share of this group in the total excise duty collected has gone down from about 9 per cent in 1965-66 to 4 per cent in 1974-75. The reason for this is to be found in the fact that the clearance of some of the major items in this group has stagnated over the years, as shown in the table overleaf.

Clearance Data of Certain Major Commodities
(in the group of iron and steel)

(thousand million tonnes)

	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
Semi fini-shed steel including blooms, bi-llets, slabs bars, tin bars, etc.	1787	1929	1858	1971	2288	1848
Plates and sheets	1084	994	1011	967	1223	793
Pipes and tubes	181	181	200	179	200	142

Source: Statistical Year Book Central Excise and Customs

(f)ii. Metals other than iron and steel

The major items in this group are aluminium, copper and copper alloys, zinc and lead unwrought. This group has shown a remarkable increase in excise duty collected. The revenue collected has increased from Rs. 2 crore in 1963-64 to Rs. 83 crore in 1975-76, a more than forty fold increase over twelve years. The fraction of taxes collected attributable to ad valorem rates of duty increased from one quarter to three quarters between 1965-66 and 1974-75. Over the same period the share of this group in the total excise duty collected moved from a little less than 1 per cent to more than 2 per cent.

(g) Manufactured Goods

i. Textiles: The major items in this group
are cotton fabrics, cotton yarn, rayon and synthetic
fibres and yarn, artificial silk fabrics, woollen fab-
rics, woollen yarn, wool tops, jute twist yarn, ready
made garments and linoleum. More than 90 per cent of
the taxes collected from this group were until recently
due to specific rates of duty. The revenue collected moved
up from about Rs. 100 crore in 1963-64 to Rs. 486 crore
in 1975-76. After petroleum products, this group has been
one of the major revenue earners. Over the past ten years,
revenues from textiles have accounted for around 12-13
per cent of the total excise collected.

ii. Other manufactured goods: From the point of
view of revenue, the place of this group is next to that
of textiles. This group accounts for about 11-12 per cent
of the total excise duties collected. This group has a
large list of excisable items, the major revenue earning
items being tyres and tubes, cement, paper, matches, glass
and glassware, rubber products, chinaware and porcelain,
asbestos, cement products, footwear, plywood and steel
furniture. In 1965-66 about 12 per cent of revenue

collected from this group was due to taxes of the ad-
valorem type. In 1965-66, this proportion went up to
roughly 67 per cent. The tax revenue collected from
this source in 1975-76 was Rs. 432 crore, which showed
a more than four-fold increase over the figure in
1963-64.

(h) Machinery and transport equipment:

Among the large number of items in this group are
motor vehicles, motor vehicle parts and accessories, electric
batteries and parts thereof, electric wires and cables,
electric motors, motor starters, wireless receiving sets,
refrigerating and air conditioning appliances and machi-
nery. The revenue collected from this group has increased
from Rs. 34 crore in 1963-64 to Rs. 218 crore in 1975-76.
Whereas in 1965-66, only about 45 per cent of the revenue
collected from this group was from ad valorem duties,
by 1974-75 the entire group had only ad valorem rates of
duty. Over a ten-year period from 1965-66 to 1975-76,
the share of this group's revenue in the total moved up
from 4.7 per cent to 5.7 per cent.

The trends of the total revenue from Union excise
duties and of the yield from each of the major groups
of excisable commodities are visually presented in
Diagrams Nos.1 and 2 (which are appended to the report).

B. <u>Buoyancy and Elasticity of Union Excises</u>:

In the preceding section, the time trends in excise duty collections and major changes in the composition of excise duties were indicated. We shall now consider the responsiveness of excises to the growth in national income. Before we estimate elasticities for the period chosen, namely 1963-64 - 1974-75, it may be useful to review briefly the results of earlier studies in this field.

(a) A review of some earlier studies:

One of the earliest contributions in this area is that of Sahota (1961). He made estimates of the buoyancy and elasticity of all the major taxes in India for the period 1948-49 to 1956-57. The built-in elasticity of Union excise duties with reference to national expenditure at market prices was estimated by him to be 1.61, and its buoyancy for the period 1948-49 to 1957-58 to be 3.97. As will be seen presently, these estimates are substantially higher than the "corresponding" estimates we have made for the period 1963-64 to 1974-75. The commodities subject to excise during the period covered by Sahota's study were much narrower in range than now so that one could say that Sahota was dealing with a qualitatively different system. Besides, Sahota was dealing with a relatively short period of 8-9 years and the measure of statistical significance of his results was rather low (the R^2 value that Sahota obtains for the equation for the elasticity of Union excise duties is 0.7). For obtaining the hypothetical series to represent the automatic growth in revenue, Sahota made use of a method identical to the proportional adjustment method that we have employed[1].

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[1] See Chelliah, R.J. and Sheetal Chand (1974), "A Note on Techniques of Adjusting the Tax Revenue Series for Discretionary Changes", IMF Working Paper (Mimeo) for a demonstration that the two methods yield identical results.

Using data for the period 1960-61 to 1969-70 (10 observations) Lakdawala and Nambiar (1972) calculated the buoyancy and elasticity coefficients of Union excise duties to be equal to 1.32 and 0.61, respectively. For the same period they estimated the buoyancy of the tax system as a whole to be 1.19 and the elasticity to be 0.63. These authors used the constant rate-base method to arrive at the hypothetical series. They did, however, sound a note of caution that since there had been a large number of tax changes in the period 1960-70, and as the money equivalents of all these changes were difficult to ascertain accurately, the estimates might contain a significant margin of error.

Whereas both Sahota (1961) and Lakdawala and Nambiar (1972) were concerned with aggregate union excise duties, Dwivedi has recently attempted a commodity-wise estimate of the buoyancy of excises in his two papers (1976 a) and (1976 b). The two papers, however, present identical results except for some minor variations[1]. The period covered varies from one commodity to another, but generally at least a ten year time period is chosen. The author has divided the commodities covered into four categories, namely, (a) essential consumer goods (b) non-essential consumer goods (c) consumer cum commercial goods and (d) intermediate goods. Variations in excise tax yield are sought to be explained by variations in rate, base (physical) and price. Thus, what Dwivedi obtains are partial elasticity coefficients.

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[1] For example the rate and base elasticities of vegetable products (edible oil) work out respectively to 0.28 and 0.22 in (1976 a) and 0.30 and 0.40 in (1976 b).

Dwivedi's methodology requires the kind of data that
are simply not available. He attempts to measure the response
of excise revenue to changes in rates, bases and prices of
individual commodities[1]. In most cases, the specific rates of
duty (during the reference period) were different for different
varieties of particular commodities[2]. Also ad valorem rates
often differed as between differently priced varieties.
Therefore, it is almost impossible to translate legal rate
changes into changes in average effective rate for the group
concerned. Dwivedi makes use of the weighted average rate
for the group. Such an expedient will give valid results only
if the weights do not change during the period. Besides, it
is difficult even to get information on a proper set of
weights, because neither yield figures nor physical base
figures are given in the available statistics according to
the given rate categories. In the case of commodities subject
to ad valorem duties, Dwivedi has used the price index of
the brand assigned the highest weightage whenever indices of
all brands were not available. The devices used by him are
based on heroic assumptions which we would hesitate to make.

The results obtained by Dwivedi generally seem quite
implausible. For example, he obtains negative rate and base
elasticities in the case of matches, namely - 0.07 and - 0.73,
respectively. He argues that the low rate and base elastici-
ties of excise revenue from essential goods may be explained

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[1] For those goods that are subject to specific rates of duty,
only the rate and the base are considered to be the explana-
tory variables.

[2] Cigars and Cigarettes have been classified by Dwivedi
under goods subject to specific duties (p.246, 1976 a).
This classification is erroneous because since 1965-66
cigarettes have been subjected to ad valorem rates of duty.

in terms of switchover to inferior substitutes and in terms
of evasion. It is difficult to accept that when the price
elasticity of demand for matches is low, the rate elasticity
could be negative. Nor is it clear how evasion could be
used as an explanation when the recorded taxable base of
matches has been rising. Again, Dwivedi obtains partial price
elasticities of -3.1 and - 3.3 for revenue from electric bulbs
and electric fans, respectively, while the yield of relatively
more non-essential goods (with probably higher price elasti-
cities of demand) such as air conditioning machinery and cos-
metics are shown to possess price elasticities of 4.94 and
2.40 respectively. Finally, Dwivedi's study derives another
conclusion and the higher the degree of essentiality of a
commodity the lower will be the partial rate elasticity of
the excise revenue from it. This result also seems implau-
sible because it is precisely the items that are essential
whose yield would be expected to have a high rate elasticity.
The chief problem with Dwivedi's study is that he has employed
a single equation framework to explain the percentage change
in tax revenue in terms of percentage changes in the rate,
base and price of the excisable commodity. This is bound to
yield erroneous results because the explanatory variables
are highly interdependent, thereby giving rise to the
problem of multicollinearity.

    (b) Estimates of buoyancy and elasticity of revenue
          from Union excise duties:

    The buoyancy and elasticity of revenue from Union excise
duties with respect to net national product at current prices
(hereinafter referred to as national income) were calculated
for an 11-year period, from 1963-64 to 1974-75, and they work
out to 1.30 and 0.75, respectively[1] The estimate of

1/ The R^2 values of the buoyancy and elasticity regression equations
   were 0.975 and 0.962, respectively, indicating a fairly good
   fit. The elasticity of excises excluding petroleum products
   was also estimated and it turned out to be 0.61.

elasticity we obtained shows that the excise tax system was
quite unresponsive to increases in national income at current
prices. However, we have to sound a note of caution here.
The methodology we have adopted for adjusting actual revenue
collections for discretionary tax changes would give fairly
accurate results only if the effects of those discretionary
changes had been accurately estimated by Government. If,
as is quite possible, the estimates of additional taxation
were on the high side, the automatic **growth in**
revenue would be correspondingly under-estimated. This might
be one cause for our obtaining a fairly low value of elasticity.
Again, the increase in the rate of a given tax could lower the
automatic growth in revenue from other taxes. In any case,
since there were several discretionary changes during the
reference period yielding substantial amounts of revenue, the
elasticity co-efficient could not have been anywhere near
the buoyancy co-efficient and was in all probability below one.
We could safely conclude that all in all Union excise duties have
proved to be inelastic to changes in national income. As will
be seen, this conclusion is corroborated by an examination of
the elasticity of major groups of excisable commodities. It
is not in fact surprising that the elasticity of Union excise
duties should have turned out to be low, because, taking the
period as a whole, more than 60 per cent of the total revenue
from excise duties was derived from taxes of the specific type.

Arithmetically, the income elasticity of a tax is the
product of the elasticity of that tax to its base and the
elasticity of its base to national income[1].

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[1] The elasticity of the tax to base is equal to the percentage
change in tax ÷ the percentage change in base, and the
elasticity of base to income is equal to the percentage change
in base ÷ the percentage change in income. Hence the product
of the two gives the percentage change in tax ÷ the percentage
change in income.

In practice because of inevitable errors in estimation, the product of the estimates of these two component elasticities would only approximate the estimate of income elasticity. (the closer the fit of the equation, the closer will be the approximation). It follows that high or low elasticity of a tax could be explained by looking at tax to base and base to income elasticities. We could then see whether it is the tax structure, i.e., the structure of rate, that is inherently regressive with respect to the base or whether it is the base that has proved to be sluggish. Unfortunately, it was not possible for us to obtain data on the bases of excise duties for the whole period covered by our study. The Statistical Year Book, brought out by the Central Board of Excise and Customs, gives only figures of quantities cleared. Again, quantities of different varieties of a given commodity subject to different rates of tax are often clubbed together. Even when such was not the case, it was not possible to obtain the relevant price data so as to work out the value of clearances at ex-factory prices. Because of non-availability of data, we were unable to work out tax to base or base to income elasticities for the entire period.

However, we were able to obtain from the Directorate of Statistics and Intelligence, Central Board of Excise and Customs, information on the value of clearances of different excisable commodities from 1970-71 to 1975-76. The number of observations being limited, the regression method could not be used to derive elasticities. Therefore, we used a crude method, namely, computing the compound rates of growth of taxes, bases and income, and then estimating the elasticities of tax to base and base to income. Here the term base refers to assessed turnover or value of clearance.

On the basis of data from 1970-71 to 1975-76, we found that whereas the elasticity of base to income was as high as 1.5, the tax to base elasticity was only 0.5. This shows that the value of excisable commodities increased much faster than national income during this period, even if we exclude the commodities brought into the tax net during the period. The low income elasticity must be explained by the fact that the tax did not grow as fast as the base. In fact, it grew at half of the rate at which base was growing. This conclusion would be broadly valid even if we consider the elasticity of all excisable commodities other than petroleum products.

(c) Elasticities of the major groups of commodities:

The overall income elasticity of excise revenue is the weighted average of the elasticities of the yield from the various groups of excisable commodities. One could, therefore, gather an impression about the causes contributing to the low elasticity of excise revenue by examining the elasticities of the component groups. Also, the elasticities of the major groups of commodities are of interest in themselves. The following Table gives the buoyancies and elasticities of the same groups of commodities as were discussed in the section on trends.

Table A

Buoyancy and Elasticity of Union Excise Duties
with Respect to National Income* (1963-64 - 1974-75)

	Buoyancy	R^2	Elasticity	R^2
Total Union Excise Duties:	1.31	0.9748	0.75	0.9623
A: Food & beverages:	1.14	0.8595	0.01**	0.0010
B: Tobacco	1.09	0.9317	0.13**	0.1737
C: Petroleum products	1.43	0.9663	1.03	0.9409
D: Vegetable oils and fats	0.41	0.2968	0.86	0.8817
E: Chemicals	1.96	0.9536	1.12	0.9069
F: Metals:				
(a) Iron and steel	0.83	0.8771	-0.16	0.1753
(b) Non-ferrous metals	2.53	0.7911	0.58	0.3521
G: Manufactured goods:				
(a) Textiles	1.08	0.9617	0.38	0.8534
(b) Other manufactured goods	1.06	0.9597	0.89	0.9670
H: Machinery and transport equipment	1.54	0.9412	0.99	0.9689

* National income here refers to net national product at
factor cost (current prices)

**Estimates not acceptable for reasons stated in the text

Source: 1) Memorandum Explaining the Pro-
visions of the Finance Bill,
Central Government Budget

2) Explanatory Memorandum on the
Budget of the Central Government

3) National Accounts Statistics,
1960-61 to 1974-75, Central
Statistics Organisation

The buoyancy coefficients for eight out of the ten groups is greater than one, the highest being that of non-ferrous metals (2.53), followed by chemicals (1.96). The two groups that have a buoyancy co-efficient of less than one are iron and steel (0.83) and vegetable oils and fats (0.41). The additional resource mobilisation effort is seen to have been spread over all of the groups of commodities except the last-mentioned two groups. The buoyancy of iron and steel products is low largely because this industry grew sluggishly during 1963-64 to 1974-75. Vegetable oils and fats form a unique group for which the buoyancy is lower than elasticity. This is because during the reference period repeated tax concessions have been awarded to this group, as shown in the table below:

Vegetable Oils and Fats: Tax Concessions Awarded

(In lakhs of rupees)

	Additional revenue due to discretionary changes
1963-64	-381
1964-65	-
1965-66	-720
1966-67	-
1967-68	-
1968-69	-
1969-70	-
1970-71	-
1971-72	- 33
1972-73	- 46
1973-74	-
1974-75	-

Source: Memorandum Explaining the Provisions of the Finance Bill, Union Budget, Government of India

The most notable feature of the group-wise elastici-
ties is that only three out of the ten groups have an
elasticity of 1 or above. These are: Chemicals (1.12),
petroleum products (1.03) and machinery and transport equip-
ment (1.00). The average share of these groups in total
excise revenue during the reference period was about 42.3
per cent. The groups that had elasticity values of 0.5 or
less are food and beverages, tobacco, iron and steel and
textiles. These groups accounted on an average for about
36 per cent of the total revenue, and they are the ones
specially responsible for giving a lower bias to the overall
income elasticity of excise taxes.

The elasticity estimates that we have obtained for the
groups "food and beverages" and "tobacco products" are in
fact not acceptable. In the former case, the tax base was
rather narrow at the beginning of the period and so many
additional items were brought into the tax net during the
subsequent years that the entire structure of taxation on
this group of products changed. Under such circumstances
it becomes meaningless to measure the elasticity of a given
basic structure. In the latter case, our methodology of
adjusting for discretionary tax changes breaks down because
of two reasons: first, the continuous increases in the rates
of tax on tobacco products very clearly affected the automa-
tic growth in revenue as is shown by the near stagnation in
the volume of cigarettes sold since 1968-69 and even its
decline after 1971-72. (In the absence of the tax hikes
the automatic growth in revenue, and therefore, elasticity
would have been higher). Second, for some of the years,
Government's estimates of the yield of additional taxation
were higher than the actual increases in the total tax on
the products concerned. In such cases, the proportional
adjustment method understates the automatic growth in revenue.

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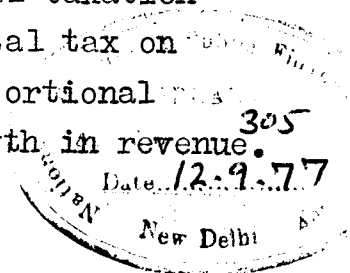
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REFERENCE BOOK.

Table B below gives the indices of industrial production, prices, and value of proxy base for selected groups of excisable commodities together with the index of national income. The corresponding income elasticity co-efficients are given alongside for ready reference:

Table B
Indices of Industrial Production and
of Prices of Excisable Commodities

(Selected Groups)
1963-64 to 1974-75

	Elasticity[1] (1963-64 to 1974-75)	1974-Index of Industrial production = I_o (Base 1963 = 100)	1974:Index of Prices = I_p (Base 1963 =100)	1974:Index of Value=I_v (Base 1963 =100)	Index of NNP 1974-75 (Base I_y 1963-64 = 100)
				$I_v = I_o \cdot I_p$	
1. All commodities	0.75	158.0	281.4	444.6	342.5
2. Petroleum products	1.03	257.4	261.4	672.8	342.5
3. Chemicals	1.12	220.0	224.0	492.8	342.5
4. Manufactures					
a) Textiles	0.38	97.9	234.4	229.5	342.5
b) Other manufactures	0.89	156.0	180.4	281.4	342.5
5. Machinery and transport equipments	0.99	185.5	212.1	393.4	342.5

Source: 1) <u>Monthly Production of Selected Industries</u>, C.S.O.

2) <u>Monthly Abstract of Statistics</u>, C.S.O.

3) <u>Index Number of Wholesale Prices</u>, Office of the Economic Adviser, Ministry of Industries and Civil Supplies.

[1] Elasticity of Union excise duties with respect to National Income.

It is seen that the indices of value of output - which may
be treated as a proxy potential base for the excise duties -
rose faster than national income in the case of all groups
other than manufactured goods. The value of output of all
excisable goods increased much faster than income, namely
by 344.6 per cent, and yet the elasticity of excise tax
revenue as a whole was only 0.75, partly because of the
prevalence of specific duties and partly because of down-
ward bias given by the elasticities of duties on tobacco and
food products referred to earlier. Chemicals and machinery
and equipment have been subject to predominantly ad valorem
rates of duty and we are able to see from the growth of their
base how they could be fairly income elastic sources of
revenue (elasticity nearly equal to 1). Petroleum products,
on the other hand, were subject to specific duties and the
higher than unit elasticity of these duties could only be
explained by a possible increase in the weight of the higher
taxed products (giving a higher value of the tax to base elas-
ticity). The group "other manufactured goods" has an elas-
ticity of nearly 0.9. Duties on them have gradually been
converted from specific to ad valorem. The value of their
proxy base, however, did not increase as fast as national
income. The progressive nature of the duties on these goods
must have contributed to some extent to the elasticity becom-
ing near unity.

The low value of elasticity of the yield from iron and
steel products (see Table A) is to be largely explained by the
fact that the production of the major items in this group such
as plates and sheets, blooms, billets, pipes and tubes etc.
had remained stagnant during the period 1965 to 1974.

We shall now consider the base data from 1970-71
to 1975-76 and comment on the behaviour of the groups in
terms of the tax to base and base to income elasticities[1].
These are given in Table C below. The elasticity of base
to income, except for vegetable oils and fats (0.6), is
greater than one for all groups. The highest is that of
petroleum products (3.11), followed by tobacco (1.99) and
iron and steel (1.9). These are precisely the groups with
the lowest tax to base elasticities-petroleum products
(0.17), tobacco (-0.14) and iron and steel (-0.21). These
groups have largely specific rates of duty and the results,
therefore, seem quite plausible.

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[1] These have been computed on the basis of the compound
rates of growth of the concerned variables, as indicated
earlier.

Table C

Tax and Base Elasticities of
Union Excise Duties

(1970-71 to 1975-76)

	Elasticity of taxes to income E_{TY}	Elasticity of taxes to the base of the taxes E_{TB}	Elasticity of base of taxes to income E_{BY}
Total Union Excise Duties	0.78	0.51	1.52
A: Food and beverages	0.34	0.31	1.09
B: Tobacco	(-) 0.28	(-) 0.14	1.99
C: Petroleum products	0.55	0.17	3.11
D: Vegetable oils and fats	0.58	0.97	0.60
E: Chemicals	1.37	0.86	1.59
F: Metals:			
a) Iron and steel	(-) 0.40	(-) 0.21	1.89
b) Non-ferrous metals	0.73	0.65	1.12
G: Manufactures:			
a) Textiles and jute	0.75	0.49	1.53
b) Other manufactured goods	1.03	0.85	1.22
H: Machinery and transport equipment	0.67	0.51	1.32

Source: 1) Memorandum Explaining the Provisions in the Finance Bill, Central Government Budget.

2) Explanatory Memorandum on the Budget of the Central Government.

3) National Accounts Statistics, 1960-61 to 1974-75, Central Statistical Organisation.

The highest tax to base elasticities are for vegetable oils and fats (0.97), chemicals (0.86), other manufactured goods (0.85) and non-ferrous metals (0.65). It is interesting that there is no group with tax to base elasticity of greater than one. The highest tax to base elasticity of nearly 1 for vegetable oils and fats is due to the fact that this group has predominantly ad valorem rates of duty. This reason is also valid in relation to chemicals to some extent.

The income elasticities of excises on these groups that are obtained on the basis of the tax and base data for 1970-71 to 1975-76 give us a somewhat different picture from the one that emerged from the calculations for the longer reference period. The income elasticity of excise tax revenue as a whole shows a moderate improvement; it stands at 0.78. Even though chemicals continues to have the highest elasticity (1.37) among all groups, the next in line are other manufactured goods (1.03), textiles and jute (0.76), non-ferrous metals (0.73) and machinery and transport equipment (0.67). The tax to income elasticity of petroleum products during this period turns out to be rather low at 0.55; the main reason for this seems to be that stiff increases in taxation towards the end of the period led to a fall in consumption.

The groups with the lowest elasticity of tax to income figures are iron and steel (-0.4), tobacco (-0.3) and food and beverages (0.3). Both iron and steel and tobacco, which have fairly impressive base to income elasticities have the lowest tax to income elasticities.

C. Factors Contributing to the Growth in Tax Revenues:

Finally, we shall attempt to separate out the increase in the tax yield due to the bringing in of new commodities into the tax net from that due to base increases and rate changes in relation to the commodities already subject to tax, with 1965-66 as the dividing year. Excise tax revenue increased from Rs. 897.2 crore in 1965-66 to Rs. 3823.62 crore in 1975-76, i.e., by Rs. 2925.70 crore. This increase can be attributed to three factors: (i) bringing in of new goods into the tax net, (ii) increase in the tax bases of commodities already subject to tax in 1965-66, and (iii) increases in the rates of taxes on these 'old' goods.

In order to identify the contribution of the three factors, we first substracted from each year's revenue collection, the yield from all the 'new' commodities taxed after 1965-66. The residual series represented the yield of the 'old' commodities. Applying the proportional adjustment method to this series, we obtained cleaned series that indicated the growth of revenue that would have taken place in the absence of rate changes in relation to 'old' goods. Thus we obtained three series as follows:

(In crores of rupees)

	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/7
1. Revenue from new goods	2.51	7.28	17.87	38.90	66.74	105.48	137.94	165.83	286.03	343.19
2. Growth in revenue due to rate changes	81.74	160.88	217.65	299.04	437.52	596.06	754.74	906.3	1200.72	1532.68
3. Automatic growth in revenue from old goods	81.61	82.44	304.71	288.45	389.26	479.69	558.3	649.8	884.64	1049.83

The last term in the first series gives us the contribution of new goods to the increase in revenue after 1965-66 and the last term in the second series gives the contribution of rate changes. Subtracting the last term in the third series from the total revenue in 1965-66, we obtain the contribution of the growth in base to the increase in revenue. Thus we have:

Contribution to increase in revenue from
(1965-66 to 1975-76)

		Rs.crore	% of total increase
(i)	New goods	343.19	11.73
(ii)	Rate changes in relation to goods taxed in 1965-66	1532.68	52.39
(iii)	Growth of base of goods already taxed in 1965-66	1049.83	35.88
		2925.70	

Thus, the introduction of new items brought in only a rather small percentage of the increase in revenue between 1965-66 and 1975-76. It is significant that rate increase brought in as much as 52.4 per cent of the increase in revenue, while the growth of the basis brought in 35.9 per cent. Even assuming that the method of adjustment that we have used tended somewhat to underestimate the latter, it is clear that during the period under reference predominent reliance was placed on rate increases for raising additional resources.

III. IMPORT DUTIES

A. Introduction:

India's customs duties have two components, viz.,
import duties and export duties, of which import duties
are by far the more important. In 1974-75, customs duties
yielded a revenue of Rs. 1333 crore of which Rs. 1194 crore,
i.e., 90 per cent, were derived from duties on imports.
The corresponding percentages for 1966-67 and 1970-71 were
79 and 75, respectively, which show that the importance of
import duties has somewhat increased over the years.

Import duties are of two types, namely, revenue
duties and protective duties. Of the revenue duties, machi-
nery, ferrous and non-ferrous metals, chemicals and petroleum
products constitute nearly two-thirds of the total. Apart from
the purpose of protecting infant industries and earning
revenue, import duties are also levied in order to influence
the composition of imports, which is dictated largely by the
needs and compulsions of the country's economy. It should
be obvious, therefore, that the revenue collected from import
duties, besides being dependent on the volume of imports,
will also depend on the type of trade policies pursued by
the country.

Imports into India have been subject to licensing
throughout the post-Independence period. The proportion of
licenses going to traders has gradually diminished from over
61 per cent of all licenses issued in 1951-52 to less than
3 per cent in 1970-71.[1] The proportion going directly to
producers has now taken over the bulk of available imports.

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[1] See Bhagwati and Srinivasan (1976), pp. 76-80

In the last twentyfive years or so, the structure
of imports has shifted in favour of capital goods, inter-
mediate goods and raw materials, the only consumer good
imported in any significant quantity being foodgrains.
Foodgrains, fertilisers and petroleum crude were the three
major items that were exempted from import duties.

a) Quantitative restrictive regime:

The Second Five Year Plan period was characterised
by a quantitative restriction (QR) regime which was genera-
ting import premia. From 1962-63 onwards import duties
were used with increasing frequency to mop up the import
premia generated by the QR regime.[1] Table 2 reflects this
trend, showing that the average incidence of import duties
rose steadily from 33 per cent in 1963-64 to 52 per cent
in 1965-66. Most of the increases in import duties were
selective and differential. In 1962-63 import duties were
raised on some iron and steel items, silk yarn, copra, cars
and machine tools. In 1963-64 import duties were raised on
raw cotton, machinery, rubber, palm oil, iron and steel,
manufactured mineral oils and dyes. In 1963-64 a surcharge
was levied on all durable articles at a flat rate of 10
per cent of the existing import duty. Further, a general
regulatory duty was levied at 10 per cent ad valorem which
came into effect on February 17, 1965[1]. On the whole, the
tariff structure lacked any clear rationale. This was not
surprising because the premia resulting from the various
degrees of import control pursued by the government had no
definite pattern as between different protected activities.

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[1] If the additional rate calculated at 25 per cent of the
existing duty worked out to be higher, then this higher
rate was applicable.

The tariff structure, moreover, lacked stability, and it
shifted with changes in premia resulting from the dynamic
interaction of domestic and foreign supplies and demand.
A measure of rationalisation of duties was brought about
in the same year when importables were broadly classified
into three categories, namely, raw materials, intermediate
goods and fully processed goods. The rationalisation was
arrived at by reducing the wide range of selectivity as well
as the number of rates. Table D below shows the rates
introduced:

Table D
Average Rates of Nominal Import Duty on Broad Classes of Commodities, Supplementary Budget
1965-66

Item	Percentage Rate of Import Duty[*]
Agricultural machinery	15
Plant and machinery	35
Basic industrial raw materials	40
Processed industrial materials	60
Fully manufactured goods	100

* To these we must add the regulatory duty of 10 per cent

Source: Bhagwati and Desai (1970)

Original   Source: Government of India, Ministry of
Finance, Department of Economic
Affairs, New Delhi

(b) Effective rate of protection:

Here we would like to draw a distinction between the above mentioned rates of duty and the effective rate of protection. The latter concept refers to the degree of protection of a particular process or economic activity as distinct from the 'nominal' tariff on output. The effective rate of protection on a process may be defined as the incremental value added (due to the tariffs) divided by the value added at c.i.f. prices[1]. In the short run, it is only the nominal tariff rate that determines the amount of import duties collected. However, in the long run it is the effective tariff rate that would be more relevant as a guide to the effect on the allocation of domestic resources and the relative outputs of different commodities. In the long run, therefore, it is the effective rate of protection that would determine which goods would be produced in what amounts, and how much of importables would be necessitated; the last would, in turn, determine the amount of import duties collected. Thus the long-run elasticity of import duties would be dependent on the effective rates of protection. We shall, however work only on the basis of the nominal rates of tariff.

(c) Import substitution:

Along with the maintenance of severe import restrictions, efforts have been made to encourage indigenous production of essential commodities, including raw materials and intermediates. An indication of the extent of import substitutions over the last few years is given by the substantial decline in the proportion of imports to total supplies of many of these commodities[2]. To the extent that

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1/ See Bhagwati and Desai (1970), P.336.
2/ See Economic Survey, 1964-65, Ministry of Finance, Government of India, P.36.

imports are substituted for by domestic production, the
magnitude of import duties would go down and excise duties
would go up, assuming that the relevant items are within
the excise tax net.

B. Trends and Composition of Import Duties:

Revenue from import duties, which constituted about
24 per cent of the total central taxes in 1963-64 and 1966-
67 stood a little lower at 23 per cent in 1974-75. Import
duties collected were Rs. 334 crore in 1963-64 and went up
to Rs. 548 crore in 1965-66. The devaluation of 1966 and
the recession of the next few years led to a declining yield
from import duties for four successive years; and in 1969-
70 the yield was only Rs. 306 crore. However, within the
next two years the revenue from import duties had doubled;
and by 1975-76, it had **quadrupled** over the level of
1969-70[1].

The major groups of items which account for about
70 per cent of the import revenue collected are the
following: (a) petroleum products (b) chemicals (c) iron
and steel (d) non-ferrous metals (e) textiles (f) manufac-
tured goods other than textiles and (g) machinery and
transport equipment.

Import tax revenue earned from petroleum products,
which formed about 15 per cent of the total duties collec-
ted in 1965-66, had declined in importance to about 8
per cent of the total by 1974-75. The revenue collected
in absolute terms has increased only a little over these
years - in 1965-66 it was Rs. 83 crore, it went down to
Rs. 30 crore in 1970-71 and gradually moved upto Rs. 96
crore by 1974-75. Note that petroleum crude was exempted

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1/ See Table 1

from import duties[1], so the items that earned the revenue were kerosene oil, high speed diesel oil and vaporising oil, motor spirit, individual fuel oils and lubricating oils.

'Chemicals' is the only group for which the import duties in absolute terms did not go down after the devaluation of 1966. The duty collected in 1965-66 was Rs. 27 crore which had steadily moved up to about Rs. 35 crore by 1969-70 and to Rs. 182 crore in 1974-75. The share of chemicals in the total increased from around 5 per cent in 1965-66 to 15 per cent in 1974-75.

The share of iron and steel that was about 11 per cent of the total import duties in 1965-66 had gone up to about 18 per cent in 1974-75. However, it had tapered down to 12 per cent in 1975-76. In absolute terms the duties went down from Rs. 62 crore in 65-66 to Rs. 34 crore in 1969-70, but it had gradually increased to Rs. 211 crore by 1974-75. The importance of non-ferrous metals is much less than that of iron and steel; the share of the former moved up from about 2 per cent in 1965-66 only to 4 per cent in 1974-75.

Import duties from textiles and jute have never been very important because India is a net exporter of jute and cotton textiles. However, certain specific items pertaining to textiles that are mostly in the nature of raw materials and not domestically available[2] are imported. The share of this group of items over the reference period[3] to 4 per cent of the total import duties. Among the manufactured goods

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[1] Import duties began to be levied on petroleum crude in 1975-76.

[2] These are certain varieties of raw wool, raw cotton, staple fibre (excluding yarn), artificial silk, yarn and thread, raw silk and artificial silk fabrics.

[3] i.e., 1963-64 to 1975-76.

other than textiles that contribute significantly to import
duties are cinematograph films, rubber, pulp, paper and
board, glass and glassware. The duties from these items,
again, form hardly 2 to 3 per cent of the total. In absolute
terms the import duty from both these groups was Rs. 31 crore
in 1965-66. This went down to Rs. 13 crore in 1969-70 but
it steadily moved up to Rs. 91 crore by 1975-76.

The most important revenue earning group is machinery
and transport equipment. Its share in the total import
duties has, however, fluctuated over the years. It increased
from 28 per cent in 1965-66 to 39 per cent in 1968-69 but
after that it fluctuated, and in 1975-76 it stood at 26 per cent.
In absolute terms, import duty collections on this group dro-
pped from Rs. 153 crore in 1965-66 to Rs. 105 crore in 1969-70
before moving up steadily to Rs. 326 crore in 1975-76.

The average incidence of import duties, that is, import
tax revenue as a percentage of the value of importables has
also been calculated. For this purpose the value of cereals
and fertilisers has been excluded from the base because these
items are exempted from import duties[1]. So in effect what is
calculated is the ratio of import duties to the value of
import trade minus the value of cereals and fertilizers. This
ratio moved up from 33 per cent in 1963-64 to 52 per cent in
1965-66 at the pre devaluation rupee parity. With the post
devaluation parity of the rupee, the ratio for 1965-66 was
34 per cent, which further went down to 25 per cent in
1969-70. This was due to the scaling down of import duties
which accompanied the devaluation. But since the duties were
raised in subsequent years, the ratio started to rise and
was 39 per cent in 1975-76.

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[1] As pointed out earlier, crude petroleum was exempted from
import duties uptil 1974-75, but subsequently it was brought
under the tariff the next year.

C.   Buoyancy and Elasticity of Import Duties:

If imports into a country are allowed fairly freely, i.e., if there are no quotas or quantitative restrictions, then total imports, and therefore, import duties, may be expected to respond positively to growth in national income. Since the middle 50's and right upto 1974-75, India was faced with acute foreign exchange shortage most of the time, and imports of various kinds were subjected to different degrees of import control. Because of this fact and two other crucial factors, namely, the devaluation of 1966 and the oil price hike of 1973-74; one cannot really expect to find a close relationship between import tax and national income during the period under reference.

We did, however, go through the exercise of computing the buoyancy and elasticity of total import duties and of import duties on the major groups of importables. As expected, the fit was not good. We obtained very low elasticities for the total as well as for most of the groups.

One further complication is that increases in import duties might themselves have affected the automatic growth in revenue. In such an event, as explained earlier in relation to excise duties on tobacco, the proportional adjustment method will give misleading results. However, given the data limitations, no other method of adjustment was possible.

Since the resulting elasticity estimates are implausible and are likely to mislead, we are not presenting them in relation to the period 1963-64 to 1974-75.

The buoyancy of total import duties and of the duties from five groups[1] of imports have been calculated (see Table E on the following page) with reference to (a) national income, (b) the value of total imports and (c) the value of non food imports[2]. The period covered is from 1963-64 to 1974-75. As pointed out earlier the buoyancy regressions do not display good fits with any of the above explanatory variables.

The buoyancy of total import duties with respect to the total value of importables works out to 0.93. The highest buoyancy is that of chemicals (1.73) and the lowest that of petroleum products. Machinery and transport equipment have a low buoyancy of 0.72.

As mentioned earlier the devaluation of 1966 had its reverberations right up till 1968-69. We have, therefore, separately analysed in Table F the trend of import duties from 1969-70 onwards till 1975-76. Because the number of observations are insufficient for a meaningful regression exercise, we have looked at the compound growth rates of the duties on the major groups as well as of the total import duties.

The compound rate of growth of total import duties during the period from 1969-70 to 1975-76 works out to 26.4 per cent. However, the automatic growth of revenue during the same period was at the compound rate of 19.6 per cent.

1/ The groups are petroleum products, chemicals, iron and steel, manufactured goods other than textiles and machinery and transport equipment.

2/ The results obtained with (b) and (c) as the explanatory variables are quite close.

Table **E**

Buoyancy of Total Import Duties and
of Certain Major Groups of Importables
(1963-64 to 1974-75)

	Buoyancy	
Total import duties: A[1]	0.86	0.5439
B[2]	0.93	0.6045
C[3]	0.96	0.6767
Petroluem products[2]	0.36	0.0770
Chemicals[2]	1.73	0.7525
Metals: iron and steel[3]	1.50	0.7562
Manufactured goods other than textiles[3]	1.25	0.7650
Machinery and transport equipment[2]	0.72	0.7049
Value of Imports	0.81	0.7054

1/ With respect to national income.

2/ With respect to the value of total imports.

3/ With respect to non-food imports.

Sources: (1) Memorandum Explaining the Provisions in the Finance Bill, Central Government Budget.

(2) Explanatory Memorandum on the Budget of the Central Government.

(3) National Accounts Statistics, 1960-61 - 1974-75, Central Statistical Organisation.

(4) Monthly Statistics of Foreign Trade, Vol.II, DGCI&S, Calcutta.

Table F

Compound Rates of Growth of Total Import Duties and Duties on Major Groups of Importables
(1969-70 to 1975-76)

	Compound Rates of Growth of the Actual Duties (percentage)	Buoyancy[1]	Compound Rates of Growth of the Hypothetical Series (percentage)	Elasticity[1]
Total import duties	26.38	2.31	19.64	1.72
Petrolum products	19.4	1.70	15.9	1.40
Chemicals	22.5	1.97	18.6	1.63
Metals (iron and steel)	28.3	2.48	25.3	2.22
Manufactured goods other than textiles	32.1	2.82	29.1	2.55
Machinery and transport equipment	24.8	2.18	11.5	1.00

[1] Both buoyancy and elasticity have been calculated with the value of importables (excluding the value of cereals, fertilisers and petroluem products) as the explanatory variable.

Sources: 1. Economic Survey, Government of India, 1969-70 to 1975-76.

2. Explanatory Memorandum, Government of India, 1969-70 to 1975-76.

With the value of dutiable imports as the explanatory
variable (which grew at the compound rate of 11.4 per cent)
the buoyancy and elasticity work out to 2.31 and 1.72,
respectively. The elasticity of import duties (I) with
respect to national income (Y) may be decomposed into the
product of the elasticity of import duties with respect
to the value of importables (B) and the elasticity of the
value of importables with respect to the national income.
In symbols this may be written thus:

$$E_{IY} = E_{IB} \cdot E_{BY}$$

It turns out that the compound rate of growth of national
income from 1969-70 to 1975-76 is 11.37 per cent. This
makes the value of E_{BY} approximately equal to unity[1] which
implies that the elasticities of import duties to national
income and import duties to the value of importables are
equal for the reference period.

In the groupwise analysis, 'manufactured goods other
than textiles' with a compound growth rate of 32.1 per cent
records the highest buoyancy of 2.82. The lowest buoyancy
figure is recorded for petroleum products (1.7). Machinery
and transport equipment which has generally accounted for
about one quarter to one third of the import duties has a
buoyancy of 2.18.

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[1] E_{BY} = 1 means that the compound growth rates of the
value of importables and national income kept pace
with each other during the reference period.

The group with the highest elasticity(as also the highest buoyancy) is manufactured goods other than textiles (2.55). Next to this is iron and steel with an elasticity of 2.22, which is in striking contrast to the elasticity of excise duties for this group - it was the lowest, and with a negative value (-0.16)[1]. The elasticity values for chemicals and petroleum products are 1.63 and 1.4 respectively. With the buoyancy figures for the above four groups at 2.82, 2.48, 1.97 and 1.7 respectively, it appears that discretionary measures were not much relied upon to mop up import duties in these four categories. The elasticity for machinery and transport equipment works out to 1. Compared to the buoyancy estimate of 2.18 it seems that there was a significant growth in the inflow of new machinery and transport equipment in this period. Further, it should be noted that the rate of automatic growth in import duties from this group more or less kept pace with the growth rate of the value of dutiable imports.

Thus it may be concluded on the basis of data from 1969-70 to 1975-76 that import duties are elastic with respect to the value of dutiable imports, i.e. the value of elasticity is greater than unity. This implies that the structure of import duties is not inherently sluggish as it is in the case of excise duties. The major reason for this, as we have discussed in part II, is that whereas all of import duties are of the ad valorem type, a substantial part of excise duties is due to specific taxes, which have a built-in bias towards inelasticity.

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[1] The reference period, however, was from 1963-64 to 1974-75 and the explanatory variable was national income.

RJC:ad

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SOURCES OF DATA

Data on additional yield due to discretionary changes
introduced in the Union excise taxes and import duties have
been obtained from the Memorandum Explaining the Provisions of
the Finance Bill. The major limitation with these data is that
the figures are supposed to be ex ante estimates, and hence may
or may not be equal to the actual realised figures. The Reserve
Bank of India Bulletin also publishes data on additional revenue
collected due to discretionary changes but these data, too, are
ex ante in nature. To our knowledge, no ex post data are avail-
able. Data on import duties and excise revenue collected from
each excisable item are available in the Explanatory Memorandum.
Data on the value of importables has been taken from the Economic
Survey. We have adopted the same groupings for commodities as
in the Explanatory Memorandum. Data on the quantity produced
and cleared of all excisable items have been obtained from the
Statistical Year Book, Central Excise, Vol.I, issued by the
Directorate of Statistics and Intelligence, Central Board of
Excise & Customs. Price data of all the excisable items from
1963-64 onwards are not easily available. The most well known
price statistics are the Index Numbers of Wholesale Prices in
India (New Series) published monthly by the office of the
Economic Adviser, Ministry of Industry and Civil Supplies.
However, the prices of not all the excisable items are available
in the monthly bulletin. Data on the value base, or assessed
turnover, of the excisable commodities were compiled for us by*
the Directorate of Statistics and Intelligence, Central Board
of Excise and Customs. For the construction of the indices of
industrial production we have made use of two publications of
the Central Statistical Organisation, namely, Monthly Production
of Selected Industries and the Monthly Abstract of Statistics.
National income figures have been taken from the National
Accounts Statistics, 1960-61 to 1974-75, also published by
the Central Statistical Organisation.

METHODOLOGY OF DERIVING HYPOTHETICAL TAX REVENUE SERIES TO REFLECT AUTOMATIC GROWTH IN REVENUE

Two methods are usually adopted to adjust the actual revenue series for the effects of discretionary changes. The first method, which we call the **proportional adjustment method** consists in making suitable adjustments to the actual revenue collected each year to arrive at the so called **cleaned series**. This involves two steps:

1. Subtract from the actual yield of each year the estimated amount attributed to the discretionary change in that year;

2. Refine the series thus obtained to get the final series which would exclude the continuing impact of each discretionary change in future years.

Define the following:

T_j: actual tax yield in year j. j = 1...n.

D_j: effect of discretionary change in the jth year on the jth year's revenue outturn.

$T_{i,j}$: jth year's actual yield adjusted to the tax structure that existed in year i.

We have

$T_{1,1} = T_1$

$T_{1,2} = T_2 - D_2$

$T_{1,3} = T_{1,2} + \dfrac{(T_3 - D_3 - T_2)}{T_2}$ $T_{1,2}$ $\dfrac{T_2 - D_2}{T_2} \times (T_3 - D_3)$

$T_{1,3} = \dfrac{(T_3 - D_3)}{T_2}$ $T_{1,2}$ ✓ $T_{1,2} \times T_3 - D_3$ over T_3

$T_{1,4} = \dfrac{T_{1,2}}{T_2} \times \dfrac{(T_3 - D_3)}{T_3} \times T_4 - D_4$

$T_{1,5} = \dfrac{T_{1,2}}{T_2} \times \dfrac{T_3 - D_3}{T_3} \times \dfrac{T_4 - D_4}{T_4} \times T_5 - D_5$

In general we have

$$T_{1,j} = T_{1,j-1} + \frac{(T_j - D_j - T_{j-1})}{T_{j-1}} \, T_{1,j-1}$$

$$= \frac{T_{j-1,j}}{T_{j-1}} \, T_{1,j-1}$$

$$= \frac{T_{j-1,j}}{T_{j-1}} \quad \frac{T_{j-2,j-1}}{T_{j-2}} \cdots \frac{T_{3,4}}{T_3} \quad \frac{T_{2,3}}{T_2} \, T_{1,2}$$

If we have i = 1, then making use of the above procedure, we can obtain the series $T_{1,1}$ $T_{1,2}$ .... $T_{1,n}$. This cleaned series may then be regressed on national income or other base variables to obtain the corresponding elasticities.

It must be mentioned, however, that the proportional adjustment method suffers from certain important limitations. First, the hypothetical yield series does not give the tax yield based on the rate structure of a given year but rather a series based on an average rate structure of all the years in the reference period[1]. Secondly, if the ratio of the additional revenue due to discretionary changes and the total excise revenue collected has a wide variance, then the proportional adjustment method might break down. Thirdly, if increases in taxes themselves affect the automatic growth in revenue, then again, the method is likely to give misleading results.

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[1] Chelliah, Raja J. and Chand, Sheetal K. (1974) have proved that the estimate of elasticity will be the same whether we choose year 1, or n, or indeed any intermediate year j, as the base year.

The second method is called the constant rate base method. Under this method, an attempt is made to derive a series on the size of the tax base in the different years according to an unchanged legal definition of the base of the tax. One of the years (usually the first) is chosen as the base year and that year's tax rate is then applied to the base series to derive the hypothetical revenue series to represent automatic growth. To apply this method in the case of excise duties, what we need to do is first to obtain the quantities cleared in each of the years of all the excisable items chosen for study. It is necessary that data on quantity cleared should be disaggregated according to rate categories. If such data are available then in the case of commodities subject to specific duties the legal rates in the base year could be applied to the respective quantities cleared. If the different qualities or types of products subject to different rates are lumped together in the data on quantities cleared, then one is forced to compute an average effective rate for different qualities of a product taken together, and such an average rate in the base year could be applied to quantities cleared of that product in other years. This procedure would be valid only on the assumption that the weights of the different varieties of products did not change during the reference period.

In case of commodities subject to ad valorem duties, it is obviously necessary to obtain the value of clearance of different excisable commodities. If this information is not available in the statistics published by the Department of Revenue (and this happens to be true in most cases of ad valorem duties), one has to collect data on ex-factory prices of the goods concerned to compute the value bases. The ad valorem rates of the base year could then be applied to the estimated values of clearance. Here again, unless we are able to obtain or work out the value of clearance

separately for each type of product subject to differential duties, the legal rates cannot be applied and we would have to make use of average effective rates in the base year.

If tax base data, i.e. data on the quantity or value of clearance, are available or can be computed, then we could calculate not only the elasticity of the tax with reference to national income, but also (a) the elasticity of the tax with reference to the base and (b) the elasticity of the base with reference to national income. In symbols, we have

Q_i^j : Quantity cleared of excisable item j in year i,

$$i = 1...n, \qquad j = 1.....m.$$

P_i^j : Price of the excisable item j in year i,

t_i^j : Specific tax rate on excisable item j in year i

a_i^j : ad valorem tax rate on excisable item j in year i.

Specific Tax

$$T_i^s = \sum_{j=1}^{k} t_i^j \, Q_i^j, \quad i = 1 ...n:$$ Denotes the total revenue collected from a particular group, where k is the number of items in the group.

Ad Valorem Tax:

$$T_i^a = \sum_{j=1}^{k} a_i^j \, P_i^j \, Q_i^j, \quad i = 1...n,$$ Denotes the total revenue collected from a group, where k is the number of items in the group

If a group consists of some items i... r having specific tax and the remaining items, r+1...k having ad valorem tax then the revenue yield may be denoted thus:

$$T_1^{as} = \sum_{j=1}^{r} t_i^j \, Q_i^j + \sum_{j=r+1}^{k} a_i^j \, P_i^j \, Q_i^j \;, \; i = 1 \ldots n$$

The tax yield in each of the above cases may be regressed on the value base, $\sum_{j=1}^{k} P_i^j \, Q_i^j$, and the value base, in turn, may be regressed on national income. In the event of low elasticity of tax yield of a particular group to the national income, we would be able to determine whether the low rate of increase of tax yield is due to the low rate of increase of the base or whether it is due to an inherently "regressive" tax structure. In a situation where most of the taxes within a group are of the specific type and we observe that the rate of increase of tax yield is very low compared to the rate of increase of tax base, then there is a good case for switching over to ad valorem taxes.

Statistical Appendix

Table 1

Proportion of Union Excise Duties in Central Taxes and in National Income

(In crores of rupees)

Year	Union excise duty	Central taxes	National income at current prices	Union excise duty as % of central taxes	Union excise duty as % of national income
1950-51	68	405	9530	16.8	0.7
1960-61	416	895	13263	46.5	3.1
1965-66	898	2061	20636	43.6	4.4
1966-67	1034	2307	23883	44.8	4.3
1967-68	1148	2353	28102	48.8	4.1
1968-69	1321	2510	28729	52.6	4.6
1969-70	1524	2823	31770	54.0	4.8
1970-71	1759	3207	34476	55.8	5.1
1971-72	2061	3872	36535	53.2	5.6
1972-73	2324	4505	39573	51.6	5.9
1973-74	2602	5070	49148	51.3	5.3
1974-75	3231	6322	60120	51.1	5.4
1975-76	3824	7470	62525	51.2	6.1

Source: Indian Economic Statistics, Part II, Public Finance, Government of India, Ministr of Finance, Department of Economic Affairs, September 1976.

Table 2

Trends in Excise Duty Collections from
Major Groups of Commodities

(In crores of rupees)

Groups	1963-64	1965-66	1970-71	1975-76	Compound rate of growth of revenue between 1963-64 & 1975-76 (in percentage)
Total excise taxes collected of which	729.58 (100)	897.92 (100)	1791.44 (100)	3823.62 (100)	14.8
A: Food & beverages	69.94 (6.5)	73.01 (8.1)	161.93 (9.0)	270.90 (7.1)	11.9
B: Tobacco	80.66 (11.1)	98.88 (11.0)	202.41 (11.3)	307.52 (8.0)	11.8
C: Petroleum products	201.77 (27.6)	272.78 (30.4)	608.18 (34.0)	1030.00 (26.9)	14.6
D: Vegetable oils and fats	15.96 (2.1)	8.55 (1.0)	15.00 (.8)	21.50 (.6)	2.5
E: Chemicals	25.96 (3.6)	31.93 (3.6)	95.03 (5.3)	287.91 (7.5)	.22.2
F: Metals:					
(a) Iron & steel	44.67 (6.1)	77.52 (8.6)	85.97 (4.8)	156.75 (4.1)	11.0
(b) Non-ferrous metals	2.27 (.3)	8.70 (1.0)	40.09 (2.2)	82.80 (2.2)	34.9
G: Manufactured goods:					
(a) textiles	99.17 (13.6)	108.48 (12.1)	218.13 (12.2)	485.84 (12.7)	14.2
(b) other manufactured goods	100.92 (13.8)	113.05 (12.6)	184.43 (10.3)	431.71 (11.3)	12.9
H: Machinery and transport equipment	33.69 (4.6)	42.54 (4.7)	80.36 (4.5)	218.25 (5.7)	

H.B. Figures in brackets denote the percentage to the total.

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Table 3

Estimated Values of Production of Excisable Commodities[1]

(In crores of rupees)

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	Average annual compound growth rate per cent
All commodities	6612.80	7674.02	8492.24	9837.71	13585.82	19192.14	23.75
A: Food & beverages	936.06	1005.62	1096.98	1243.56	1395.22	1720.93	12.93
B: Tobacco	242.93	259.67	283.10	310.44	384.43	759.14	25.59
C: Petroleum products	314.36	436.26	509.49	754.31	1582.57	1774.50	41.36
D: Vegetable oils & fats	361.34	367.21	447.79	477.32	483.85	508.37	7.07
E: Chemicals	784.24	921.06	1070.65	1157.53	1615.81	1920.66	19.62
F: Metals:							
(a) iron & steel	451.55	618.16	705.76	789.08	1176.31	1258.81	22.76
(b) non-ferrous metals	159.95	167.75	174.02	193.19	203.43	297.43	13.21
G: Manufactured goods:							
(a) textiles & Jute	1943.98	2105.75	2209.60	2715.69	3742.43	4626.67	18.94
(b) other manufactured goods	753.07	842.79	950.13	1033.03	1439.90	1583.48	16.03
H: Machinery & transport equipment	665.32	949.75	1044.72	1183.56	1561.87	4742.15	48.11

1/ The figures given here do not include excise duties

Source: Central Board of Excise &
Customs

PN/SP

Table 4

Estimated Proportions Of Ad Valorem And Specific Taxes

(for 1965-66, 1970-71 and 1974-75)

	1965-66			1970-71			1974-75		
	Commodities subjected to ad valorem rates of duty.	Commodities subjected to ad valorem and specific rates of duty.	Commodities subjected to specific rates of duty	Commodities subjected to ad valorem rates and duty.	Commodities subjected to ad valorem and specific rates of duty	Commodities subjected to specific rates of duty	Commodities subjected to ad valorem rates of duty	Commodities subjected to ad valorem and specific rates of duty	Commodities subjected to specific rates of duty
Total excise duties	15.8	4.1	80.1	37.0	3.6	59.4	36.4	1.7	61.9
A: Food and beverages	-	-	100.0	78.9	-	21.1	82.8	-	17.2
B: Tobacco	47.2	-	52.8	73.0	-	27.0	71.5	-	28.5
C: Petroleum products	4.6	-	95.4	-	-	100.0	-	-	100.0
D: Vegetable oils and fats	-	-	100.0	92.8	-	7.2	93.6	-	6.4
E: Chemicals	69.2	-	30.8	92.7	-	7.3	96.3	-	3.7
F: Metals:									
(a) Iron and Steel	-	-	100.0	56.1	-	43.9	46.5	-	53.5
(b) Non-ferrous metals	26.1	-	73.9	83.7	-	16.3	75.1	-	24.9
G: Manufactures:									
(a) Textiles and jute	2.0	4.1	93.9	1.3	6.0	92.7	0.5	6.2	93.3
(b) Other manufactured goods	12.0	-	88.0	57.4	-	42.6	66.4	-	33.6
H: Machinery and transport equipment	45.5	46.8	7.7	64.9	35.1	-	100.0	-	-

Estimated Values of Production Excisable Commodities for 1970-71 & 1974-75

(Classified by goods subject to specific and advalorem rates of duty)

(In crores of rupees)

	1970-71 [5]			1974-75 [5]		
	Commodities having ad valorem rates of duty	Commodities having specific rates of duty	All commodities	Commodities having ad valorem rates of duty	Commodities having specific rates of duty	All Commodities
excisable commodities	2456.65 (37.1)	3180.80 (48.1)	6612.80	5143.18 (37.9)	6807.39 (50.1)	13585.82
Food and beverages	122.46 (13.1)	813.60 (86.9)	936.06	226.22 (16.2)	1169.00 (83.8)	1395.22
Tobacco	127.20 (52.4)	115.73 (47.64)	242.93	196.77 (51.2)	187.66 (48.8)	384.43
Petroleum products	-	314.36 [4] (100.0)	314.36	-	1582.57 [4] (100.0)	1582.57
Vegetable oils and fats	310.94 (86.1)	50.40 (13.9)	361.34	362.38 (74.9)	121.47 (25.1)	483.85
Chemicals	725.27 (92.5)	58.97 (7.5)	784.24	1501.33 (92.9)	114.48 (7.1)	1615.81
Metals						
(a) iron and steel	105.61 (23.4)	345.94 (76.6)	451.55	176.72 (15.0)	999.59 (85.0)	1176.31
(b) non-ferrous metals	102.57 (64.1)	57.38 (35.9)		112.64 (55.4)	90.79 (44.6)	203.43
Manufactured goods						
(a) textiles and jute	35.54 (1.8)	1169.55 (60.2)	1943.98 [1]	44.70 (1.2)	2062.48 (55.1)	3742.43 [2]
(b) other manufacture goods	498.20 (66.2)	254.87 (33.8)	753.07	960.55 (66.7)	479.35 (33.3)	1439.90
Machinery and transport equipment	428.86 (64.5)	-	665.32 [3]	1561.87 (100.0)	-	1561.87

1/ Includes Rs.738.89 crores value of the commodities on which both specific and ad valorem rates of duty are applicable.
2/ Includes Rs.1635.25 crores value of the commodities on which both specific and ad valorem rates of duty are applicable.
3/ Includes Rs.236.46 crores value of the commodities on which both specific and ad valorem rates of duty are applicable.
4/ Includes Rs. the value of a few petroleum products on which ad valorem rates of duty are applicable
5/ Figures in brackets give the percentage the value of commodities subjected to ad valorem and specific taxes to the value of all commodities in the group

Source: Central Board of Excise and Customs.

Table 6

Relative Share of the Major Groups in Import Duties Collected

(In crores of rupees)

	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
Total import duties collected of which	334.25 (100)	404.64 (100)	547.69 (100)	462.37 (100)	382.9 (100)	343.08 (100)	306.29 (100)	391.95 (100)	611.51 (100)	755.88 (100)	895.16 (100)	1194.10 (100)	1348.05 (100)
Petroleum products	72.83 (21.79)	81.46 (20.13)	83.30 (15.21)	64.54 (13.96)	32.04 (8.37)	34.21 (9.97)	33.09 (10.80)	29.73 (7.59)	62.00 (10.14)	80.19 (10.61)	96.03 (10.73)	95.86 (8.03)	96.00 (7.69)
Chemicals	17.36 (5.19)	19.07 (4.71)	26.83 (4.90)	26.97 (5.83)	29.71 (7.76)	30.29 (8.83)	35.05 (11.44)	43.16 (11.01)	55.27 (9.04)	76.54 (10.13)	113.34 (12.66)	181.85 (15.25)	118.35 (9.48)
Iron and steel	27.76 (8.31)	37.47 (9.26)	62.31 (11.38)	48.58 (10.51)	46.84 (12.23)	37.91 (11.05)	33.62 (10.98)	56.01 (14.29)	117.99 (19.29)	122.95 (16.27)	138.60 (15.48)	211.18 (17.69)	150.00 (12.02)
Non ferrous metals	3.15 (0.94)	3.44 (0.85)	13.32 (2.43)	13.72 (2.97)	12.83 (3.35)	12.68 (3.70)	9.32 (3.04)	18.11 (4.62)	26.35 (4.31)	30.58 (4.05)	38.73 (4.33)	47.89 (4.01)	X
Textiles and jute	13.84 (4.14)	20.59 (5.09)	19.21 (3.51)	14.53 (3.14)	12.06 (3.15)	8.20 (2.39)	4.96 (1.62)	15.59 (3.98)	9.22 (1.51)	15.54 (2.06)	22.45 (2.51)	29.01 (2.43)	47.20 (3.78)
Manufactured goods other than textiles	5.96 (1.78)	7.21 (1.78)	11.84 (2.16)	11.43 (2.47)	10.48 (2.74)	6.73 (1.96)	8.23 (2.69)	8.59 (2.19)	11.45 (1.87)	18.59 (2.46)	21.51 (2.40)	36.04 (3.02)	43.70 (3.50)
Machinery and transport equipment	99.44 (29.75)	128.87 (31.85)	152.78 (27.90)	157.73 (34.12)	129.76 (33.89)	132.27 (38.55)	104.79 (34.21)	105.91 (27.03)	152.31 (24.91)	183.75 (24.31)	243.95 (27.25)	267.06 (22.36)	326.10 (26.13)

N.B.: Figures in brackets refer to percentages to total

Sources: Explanatory Memorandum, Government of India, 1963-64 to 1975-76.

Table 7

Average Incidence Of Import Duties, 1965-66 to 1975-76

(In crores of rupees)

Item	Pre Devaluation Parity			Post Devaluation Parity										
	1963-64	1964-65	1965-66	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
Total Imports	1230.7	1349	1349	2218.4	2078.4	2007.6	1861.6	1582.1	1634.2	1824.5	1867.4	2955.4	4468.1	5157.8
Deduct non-dutiable imports of														
(i) Food	198.7	282.1	309.1	507.2	651	518.2	336.6	261	213	131.2	80.8	473.1	763.8	1338.3
(ii) Fertilisers	13.2	28.9	38.9	81.4	124.9	209.5	198.1	117.3	99.9	111.3	145.7	226.8	577.9	556.3
Dutiable imports (estimates)	1018.8	1038	1046	1629.8	1302.5	1279.9	1326.9	1203.8	1321.3	1582.0	1640.9	2255.5	3126.4	3263.2
Total net import duty revenue	334.25	404.64	547.69	547.69	462.34	382.90	343.08	306.29	391.95	611.51	755.88	895.16	1194.1	1248.05
Average import duty as dutiable imports, %	32.81	38.98	52.36	33.6	35.5	29.9	25.9	25.4	29.7	38.7	46.1	39.7	38.2	38.8

Sources: 1/ Explanatory Memorandum, Union Excise 1963-64 to 1975-76.
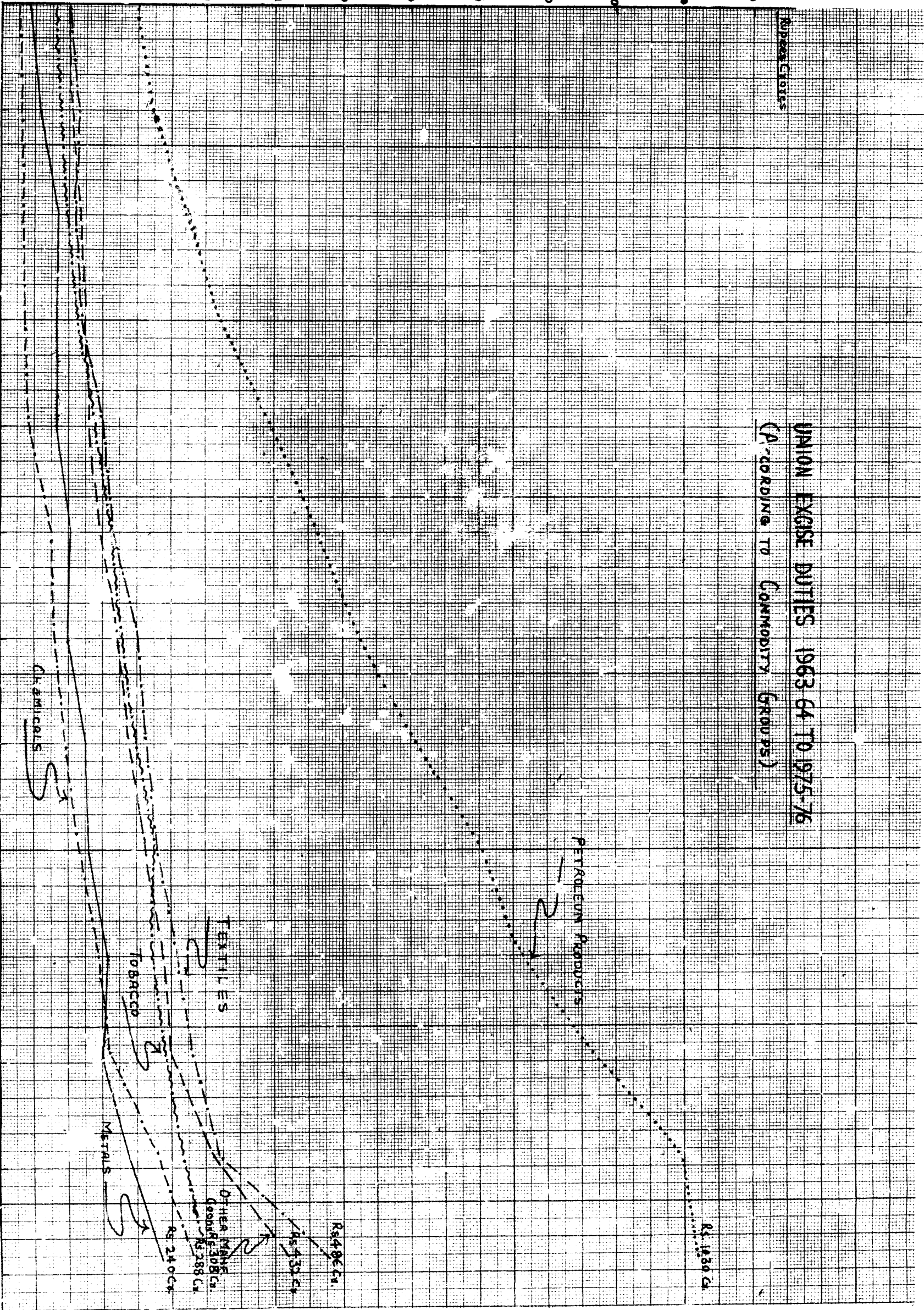
2/ Monthly Statistics of Foreign Trade DGCI&S.

UNION EXCISE DUTIES 1963-64 TO 1975-76
(According to Commodity Groups)

UNION EXCISE DUTIES 1963-64 TO 1975-76

Total Revenue (Rs. in crores)

1963-64	
1964-65	
1965-66	
1966-67	
1967-68	
1968-69	
1969-70	
1970-71	
1971-72	
1972-73	
1973-74	
1974-75	
1975-76	

Total Revenue

Estimated Revenues at pre-1964 Rates of Duties
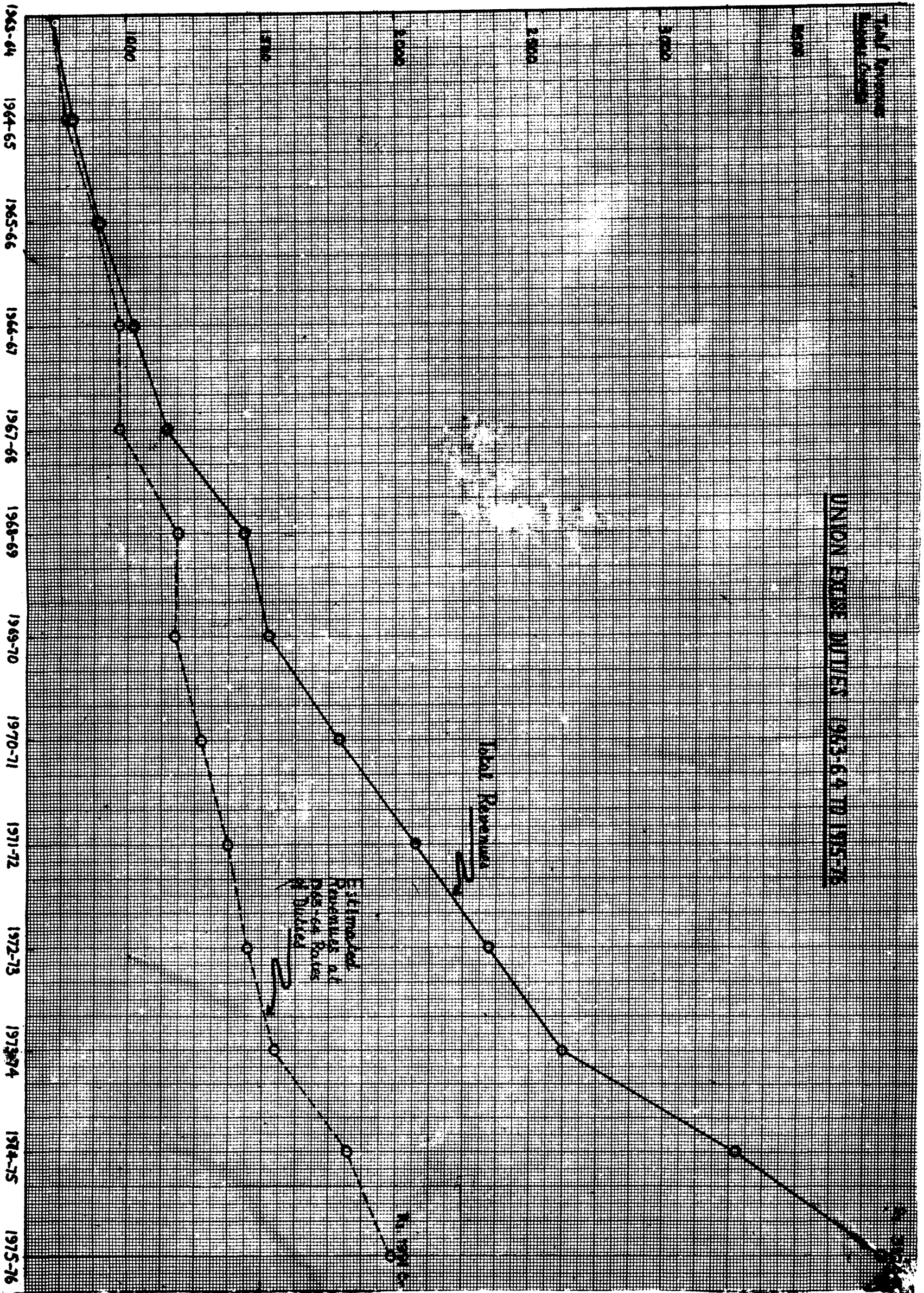
Relationship between Union Excise Duties & National Income

1963-64 — 1974-75

—————————— Actual Tax

— — — — — — Estimated Tax at 1963-64 Ratio of Duties

Union Excise Duties (T_2) (IN Rs. CRORES)

National Income (Y_2) (IN Rs. 100 CRORES)

$$T_2 = -531.22 + 0.026755\, Y_2 \quad (r^2 = .956)$$

$$T_2 = -944.02 + 0.064151\, Y_2 \quad (r^2 = .976)$$