Vol XXVI
No. 3

ISSN 0019-5014

JULY-
SEPTEMBER
1971

INDIAN JOURNAL OF AGRICULTURAL ECONOMICS

INDIAN SOCIETY OF
AGRICULTURAL ECONOMICS,
BOMBAY

AN INTER-SECTORAL ANALYSIS OF TAXABLE CAPACITY AND TAX BURDEN*

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This study presents the estimates and analysis of relative taxable capacity and tax burden in respect of farm and non-farm sectors in India during the first eighteen years of planning. These estimates and analysis, undertaken at the aggregative sectoral level, form the first part of a comprehensive examination of the hypothesis that the farm sector in India is under-taxed. The other part comprises inter-class analysis of tax burden in the two sectors and the estimates of potential tax revenue which the farm sector would have given to the State exchequer if, based on inter-sectoral equity, the farm sector were also subjected to the identical incidence levels as those borne by the non-farm sector. Before we attempt a detailed inter-class analysis, we must recognize the existence of agricultural and non-agricultural dichotomy, which is a historical phenomenon and which is gaining importance due to the functional roles assigned to the respective sectors in the process of overall economic development.

I

RELATIVE TAXABLE CAPACITY

The Concept

There is considerable difficulty in arriving at an acceptable definition of taxable capacity. Yet, it is not as "dim and confused"[1] a concept as some writers make it out to be. There are some basic ingredients of the concept which are relevant to our study. First, "taxable capacity like equity is a relative concept."[2] The absolute levels of taxable capacity, whether of countries or of sectors within a country, have no interpretative significance unless they are compared with each other. Secondly, it is generally accepted that the absolute taxable capacity can be measured by the surplus principle—the excess of income over the minimum subsistence needs of the population.[3] Lastly, the concept, in its theoretical form as well as in empirical estimation, should be placed in a dynamic setting. This involves making allowance for two elements :

(*i*) a permitted rate of increase in the minimum consumption requirements (for, any organized society aims at certain improvements in its existing consumption standard) ;

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* This paper is an abridged version of the first four chapters of the author's doctoral dissertation on "Tax Burden on Farm and Non-farm Sectors in India (An Inter-sectoral and Inter-class Analysis)," submitted to the University of Bombay in 1970. The author is grateful to the late Principal H. C. Malkani, Dr. C. H. Shah, Dr. E. T. Mathew and Shri V. M. Jakhade for their valuable suggestions and encouragement at various stages of the study.

1. Hugh Dalton : Principles of Public Finance, Ninth Revised Edition, George Routledge and Sons, Ltd., London, 1936. p. 163.

2. Report of the Taxation Enquiry Commission: 1953-54, Vol. I, Government of India, New Delhi, 1955, p. 150.

3. See Nicholas Kaldor, "The Role of Taxation in Economic Development," Chapter 8, (pp. 170-189) in E. A. G. Robinson (Ed.) : Problems in Economic Development, Macmillan and Co. Ltd., London, 1965, p. 172.

(*ii*) a minimal investment rate required for (*a*) protecting the existing production apparatus, lest it should get depreciated and give reduced income, and (*b*) facilitating the increase in the minimum consumption requirements.

In sum, the concept of taxable capacity in per capita terms for a given year gets defined thus :

$$\bar{t} = (\bar{y} - \bar{c}_m) - \bar{i} = (\bar{s} - \bar{i}),$$

where $\bar{t}$ represents taxable capacity, $\bar{y}$ income, $\bar{c}_m$ minimum consumption requirements, $\bar{s}$ potential surplus, and $\bar{i}$ allowance for minimal investment.

Minimum Consumption Requirements

In the measurement of taxable capacity, the most elusive concept is the concept of minimum consumption requirements. These depend on so many factors—economic restraints, biological and geographical necessities, conventional standard and sociological habits—that it is difficult to signify the quantum of consumption requirements without involving oneself in value judgments of a controversial nature. But, food and living habits may differ; the composition of the consumers' budget may vary from household to household; yet it is possible to indicate broadly in money terms the minimum consumption requirements for an average family in a sector.

Sources of Data

The National Sample Survey (NSS) has been publishing *inter alia* the crucial data on the consumption of cereals and pulses in terms of quantity (*i.e.*, seers) by 12 monthly per capita expenditure classes, separately for rural and urban households. These data are employed for spotting the expenditure class at which the minimum consumption requirements are satisfied. This is done on the criterion of dietary needs recommended by nutritional experts.[4] After making allowance for the age-sex composition in India, the nature of activity, the degree of losses which can occur between the retail level and the physiological level on account of spoilage and storage, etc., it is estimated that, on an average, food requirements at the retail level should be such as to provide about 2,250 calories per capita per day. These requirements are to be obtained from the entire diet, consisting of foodgrains, sugar, fruits, meat, fish, eggs, milk, oils and fats, etc. However, data on the quantities consumed in respect of items other than foodgrains are not available in the published versions of the NSS Rounds. It is, therefore, necessary to derive the extent of calorie requirements to be met exclusively from 'foodgrains.' In this regard, it is observed that the calories derived from foodgrains ought to be more in the rural areas than in the urban areas, since, in the latter, a relatively large part of the calorie requirements is satisfied from food items other than foodgrains. It is estimated that "under the existing dietary composition, the urban

4. For details, see P. V. Sukhatme : Feeding India's Growing Millions, Asia Publishing House, Bombay, 1965, pp. 18-23; and S. S. Madalgi, "Foodgrains Demand Projections : 1964-65 to 1975-76," *Reserve Bank of India Bulletin*, Vol. XXI, No. 1, January, 1967, pp. 21-25.

population will have to have foodgrains enough to supply 1,500 calories, *i.e.*, 66 per cent of total calorie requirements; the corresponding figure for the rural people will be 1,800 calories, *i.e.*, 80 per cent of total calorie requirements."[5]

Table I presents the data on consumption of foodgrains in quantity (seers) in respect of three different heads, namely, cereals, cereal substitutes, and pulses and products as revealed by the NSS in its Fifteenth Round (1959-60). These quantities in seers have been converted into calories at the ratio of one seer = 3,213 calories for cereals and one seer = 2,857 calories for pulses[6] (Table I).

TABLE I—CONSUMPTION OF FOODGRAINS AND CALORIE SUPPLIES PER PERSON IN RURAL AND URBAN AREAS: JULY 1959—JUNE 1960

Monthly per capita expenditure class (Rs.)	Quantity	Rural areas					
		Cereals	Pulses	Total of cereals and pulses	After adjusting for over-reporting to the extent of		Cereal substitutes
					10.0 per cent	26.2 per cent	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0— 8	Seers	9.87	0.47	10.34	—	—	1.20
	Calories	1,057	45	1,102	992	813	129
8—11	Seers	13.53	0.78	14.31	—	—	1.13
	Calories	1,449	74	1,523	1,371	1,125	121
11—13	Seers	15.50	0.92	16.42	—	—	1.17
	Calories	1,660	88	1,748	1,573	1,292	125
13—15	Seers	16.53	1.27	17.80	—	—	0.59
	Calories	1,770	121	1,891	1,702	1,395	63
15—18	Seers	18.64	1.30	19.94	—	—	0.83
	Calories	1,996	124	2,120	1,908	1,564	89
18—21	Seers	20.07	1.52	21.59	—	—	1.16
	Calories	2,149	145	2,294	2,065	1,692	124
21—24	Seers	19.97	1.70	21.67	—	—	0.78
	Calories	2,139	162	2,301	2,071	1,696	84
24—28	Seers	22.31	2.00	24.31	—	—	0.52
	Calories	2,389	190	2,579	2,321	1,902	56
28—34	Seers	24.29	2.04	26.33	—	—	1.13
	Calories	2,601	194	2,795	2,516	2,063	121
34—43	Seers	25.62	2.32	27.94	—	—	0.60
	Calories	2,744	221	2,965	2,669	2,186	64
43—55	Seers	27.42	2.48	29.90	—	—	0.20
	Calories	2,937	236	3,173	2,856	2,338	21
55 and above	Seers	34.46	3.31	37.59	—	—	0.27
	Calories	3,961	298	4,259	3,833	2,937	29
All classes	Seers	18.63	1.41	20.04	—	—	0.91
	Calories	1,995	134	2,129	1,916	1,570	97

(*Contd.*)

5. S. S. Madalgi, *op. cit.*, p. 22.
6. *ibid.*, p. 24.

TABLE I—CONSUMPTION OF FOODGRAINS AND CALORIE SUPPLIES PER PERSON IN RURAL AND URBAN AREAS: JULY 1959—JUNE 1960 (*Concld.*)

Monthly per capita expenditure class (Rs.)	Quantity	Rural areas			Urban areas				
		Total of (5) and (8)	Total of (6) and (8)	Total of (7) and (8)	Cereals	Pulses	Total of cereals and pulses	Cereal substitutes	Total of (14) and (15)
(1)	(2)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
0— 8 ..	Seers	—	—	—	8.43	0.48	8.91	0.14	—
	Calories	1,231	1,121	942	903	46	949	15	964
8—11 ..	Seers	—	—	—	10.50	0.72	11.22	0.15	—
	Calories	1,644	1,492	1,236	1,125	69	1,194	16	1,210
11—13 ..	Seers	—	—	—	11.77	0.83	12.60	0.14	—
	Calories	1,873	1,698	1,417	1,261	79	1,340	15	1,355
13—15 ..	Seers	—	—	—	11.75	0.86	12.61	0.21	—
	Calories	1,954	1,765	1,458	1,258	82	1,340	22	1,362
15—18 ..	Seers	—	—	—	12.36	0.97	13.33	0.32	—
	Calories	2,209	1,997	1,653	1,324	92	1,416	34	1,450
18—21 ..	Seers	—	—	—	13.48	1.20	14.68	0.07	—
	Calories	2,418	2,189	1,816	1,448	114	1,562	7	1,569
21—24 ..	Seers	—	—	—	12.81	1.21	14.02	0.22	—
	Calories	2,385	2,155	1,780	1,372	115	1,487	24	1,511
24—28 ..	Seers	—	—	—	13.43	1.51	14.94	0.11	—
	Calories	2,635	2,377	1,958	1,438	144	1,582	12	1,594
28—34 ..	Seers	—	—	—	13.21	1.57	14.78	0.07	—
	Calories	2,916	2,637	2,184	1,415	150	1,565	7	1,572
34—43 ..	Seers	—	—	—	15.15	1.67	16.82	0.57	—
	Calories	3,029	2,733	2,850	1,623	159	1,782	61	1,843
43—55 ..	Seers	—	—	—	16.25	1.83	18.08	0.04	—
	Calories	3,194	2,877	2,559	1,740	174	1,914	4	1,918
55 and above ..	Seers	—	—	—	16.13	2.18	18.31	0.17	—
	Calories	4,288	3,862	2,966	1,728	208	1,936	18	1,954
All classes ..	Seers	—	—	—	13.15	1.28	14.43	0.19	—
	Calories	2,226	2,013	1,667	1,408	122	1,530	20	1,550

Note : (*i*) Quantity of seers is for a period of *thirty days* and quantity of calories is for *a day*. (*ii*) Quantities of cereals (including cereal substitutes) and pulses have been converted into calories in the conversion ratio of one seer of cereal=3,213 calories and one seer of pulses=2,857 calories.

Source : The National Sample Survey: Fifteenth Round: July 1959—June 1960, Number 104 —Tables with Notes on Consumer Expenditure, Cabinet Secretariat, Government of India, 1966, pp. 31-32 and 60-61.

Incidentally, "The National Sample Survey data in this regard are subject to serious comments especially for over-estimation of per capita consumption."[7] Madalgi examined the extent of over-reporting in the results of the NSS Fifteenth Round (1959-60) among rural and urban households and came to the conclusion

7. P. V. Sukhatme: *op. cit.*, p. 15. See also S. S. Madalgi, *op. cit.*, pp. 22-24.

that over-reporting was possible only among rural households.[8] He also subjected the NSS results on foodgrains consumption to a rigorous comparison with the official estimates of foodgrains output and availability and found that over-reporting could be to the extent of 26.2 per cent among all the rural households. In this regard, the following additional factors have got to be taken into account.

First, since Madalgi was concerned with foodgrains demand projections, he ignored cereal substitutes like tapioca, peas, etc., "which are primarily consumed in the rural sector."[9] True, there is no possibility of over-reporting in these rare varieties, but their consumption has to be taken into account here. Secondly, the degree of over-reporting is likely to be more among higher expenditure classes than among the lower ones. Madalgi himself cited overwhelming reasons for over-reporting among high expenditure classes. "It is possible that the consumption levels of National Sample Survey represent not so much the actual quantity consumed as the quantity retained for consumption."[10] And there are many reasons for this higher retention : liberal provision for household consumption, payment in kind for labour, desire to show low surplus, etc. Therefore, we have employed two alternative assumptions, namely, (*i*) an over-reporting of 26.2 per cent by all rural households as assumed by Madalgi, and (*ii*) an over-reporting of 10 per cent among lower expenditure classes and 26.2 per cent among higher expenditure classes.

The third qualification is that the actual consumption level has also yet to be adjusted downwards to the extent of over-reporting of foodgrains considered likely. To amplify, according to the NSS Fifteenth Round, average consumption expenditure per capita for a period of 30 days in respect of the expenditure class Rs. 18—21 in the rural areas is Rs. 19.68. Of this, a little more than Rs.9.00 has been spent on 'foodgrains.'[11] If 'foodgrains' consumption is estimated to have been over-reported to the extent of 26.2 per cent, then the average total consumer expenditure also gets reduced; in respect of the expenditure class cited above, it works out to Rs. 17.25 instead of Rs. 19.68.

After making allowance for these factors, we have spotted the expenditure classes within which the minimum requirements fall. In respect of the rural sector, these lie within the expenditure class of Rs. 15—18 and in respect of the urban sector, within Rs. 24—28. Average consumer expenditures revealed by the NSS against these expenditure classes (for food and non-food items of consumption together) are assumed to be the estimates of minimum consumption requirements for farm and non-farm sectors, respectively. They are : for farm households, Rs. 16.46 and for non-farm households, Rs. 25.16, each per person for a period of 30 days or on an annual basis, Rs. 200 and Rs. 312, respectively.

In this regard, it is clear from the data presented in Table I that even if alternative assumptions are adopted, minimum consumption requirements in respect of the non-farm sector cannot go beyond the expenditure class of Rs. 24—28 and

8. S. S. Madalgi, *op. cit.*
9. See The National Sample Survey : Fifteenth Round : July 1959—June 1960, No. 104—Tables with Notes on Consumer Expenditure, *op. cit.*, p. 9.
10. S. S. Madalgi, *op.cit.*, pp. 23-24.
11. The NSS Fifteenth Round (1959-60), *op. cit.*, p. 25.

in respect of the farm sector, below the expenditure class of Rs. 15—18. Therefore, the resultant taxable capacity is the lower limit in respect of the non-farm sector and the upper limit in respect of the farm sector. In turn, the relative taxable capacity—taxable capacity of the non-farm sector as ratio of taxable capacity of the farm sector—is the "lowest" possible.

Time-Series of Minimum Consumption

Given the estimate of minimum consumption requirements for 1959-60, the only method of deriving the time-series of these minimum consumption requirements is to vary the available estimate by the price factor. In respect of the farm sector a derived price index has been constructed for eighteen years from 1950-51 to 1968-69 on the basis of the weighting diagram which reflects the consumption pattern of those farm households which fall within the expenditure class of Rs. 15—18. The variations in "price relatives" are based on annual variations in the prices of individual commodities revealed by (Government of India) Economic Adviser's Index Numbers of Wholesale Prices (Base: 1952-53=100). For non-farm households, we have directly employed the percentage variations in the (Government of India) Labour Bureau's Working Class Consumer Price Index Numbers (Base : 1949=100) which truly measure changes in the monetary value of the cost of living in urban areas over a period of years. These Index Numbers are constructed on the basis of actual survey conducted in "a large number of important towns and cities among the working class and middle class employee population."[12] The time-series of minimum consumption requirements in per capita terms, estimated for farm and non-farm sectors, are presented in Table II. We have also made allowance for a nominal increase of one per cent per annum in the minimum consumption requirements for both the sectors, since household expenditure data for the economy as a whole do not reveal any increase in the per capita consumption expenditure in real terms. The estimates of potential surplus are presented in Table III.

As for the minimum investment necessary in order to sustain the existing production apparatus, CSO's estimates of net national product which have been employed here make due allowance for depreciation. However, for conceptional comprehensiveness, we have made further nominal allowance for investment necessary for achieving a reasonable rate of increase in the minimum consumption level. This is facilitated by the farm household investment data by asset-size thrown up by the Reserve Bank of India's All-India Rural Debt and Investment Survey : 1961-62.[13] The non-farm activities should have a significantly high capital-output ratio. Based on a Reserve Bank of India study, it is assumed that the minimum investment outlay necessary for the non-farm sector for any year is three times the amount necessary for the farm sector.[14] However, the allo-

12. A. Basu, "Consumer Price Index Number—Weighting Problems," *Indian Labour Journal*, Vol. II, No. 6, June, 1961, p. 476.

13. See *Reserve Bank of India Bulletin*, Vol. XIX, No. 6, June, 1965, pp. 807-866. This is done by juxtaposing the distribution of households according to the NSS data with the distribution of households according to the Reserve Bank data.

14. See "Estimates of Tangible Wealth in India," *Reserve Bank of India Bulletin*, Vol. XVII, No. 1, January, 1963, p. 8. We have related the sectorwise reproducible wealth to sectoral incomes.

TABLE II—MINIMUM CONSUMPTION REQUIREMENTS PER PERSON PER ANNUM FOR FARM AND NON-FARM SECTORS

Period	Farm sector			Non-farm sector		
	Percentage variation in the price factor	Minimum consumption requirements derived from variations in the price factor (Rs.)	Minimum consumption requirements after allowing for an increase of one per cent per annum (Rs.)	Consumer price index numbers-working class* (Base : 1949=100)	Minimum consumption requirements based on consumer price index numbers (Rs.)	Minimum consumption requirements after allowing for an increase of one per cent per annum (Rs.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Average for First Plan (1951-52—1955-56) ..	— 3.46	177	179	102	259	262
Average for Second Plan (1956-57—1960-61) ..	+ 7·11	196†	198	117	296†	299
Average for Third Plan (1961-62—1965-66)	+ 7·76	244	246	144	366	369
Average for Annual Plans (1966-67—1968-69)	+10·22	381	384	206‡	522	527

* The Consumer Price Index Numbers—Working Class (Base : 1949 = 100) are regularly published in Reserve Bank of India publications; see *Reserve Bank of India Bulletin* (Monthly) and Report on Currency and Finance (Annual)

† The estimates of minimum consumption requirements for 1959-60 are derived from the National Sample Survey data on consumer expenditure.

‡ The Consumer Price Index Numbers for 1968-69 is an average for ten months (April, 1968 to January, 1969).

wance for minimum investment made here is so small in amount that even its exclusion does not alter the overall results regarding relative taxable capacity. The estimates of per capita taxable capacities for farm and non-farm sectors are also presented in Table III. Further, on the basis of these per capita estimates and the corresponding estimated population, estimates of aggregate potential surplus and taxable capacities are presented in Table IV. These two tables also contain the relative taxable capacities based on per capita and aggregate estimates with which the study is most concerned.

TABLE III—ESTIMATES OF POTENTIAL SURPLUS FOR FARM AND NON-FARM SECTORS

Period	Farm sector				Non-farm sector			
	Per capita income	Per capita minimum consumption requirement	Per capita potential surplus (2—3)	Per capita taxable capacity	Per capita income	Per capita minimum consumption requirement	Per capita potential surplus (5—6)	Per capita taxable capacity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Average for First Plan (1951-52—1955-56) ..	191	179	12	9	435	262	173	165
Average for Second Plan (1956-57—1960-61) ..	217	198	19	16	488	299	189	180
Average for Third Plan (1961-62—1965-66) ..	272	246	26	23	629	369	250	249
Average for Annual Plans (1966-67—1968-69) ..	420	384	36	31	749	527	222	207

Note : Sectoral incomes per capita are estimated on the basis of data presented by Central Statistical Organisation (CSO) on national income originating in different sectors and estimated sectoral population. Country's aggregate population is assumed to be as implied in CSO's national income and per capita income estimates. The sectoral population estimates are derived by distributing the total population between farm and non-farm sectors in the proportions of 69·8 : 30·2 and 69·6 : 30·4 as revealed by 1957 and 1961 Censuses respectively. The proportions revealed by the 1961 Census are based on classification of workers into different industrial categories.

The Concept Modified

So far, the average minimum consumption requirements per person are uniformly applied to the entire population. The aggregate potential surplus for a sector, therefore, took the following form :

$S = (\bar{y} - \bar{c}_m) P$, where $\bar{y}$ is per capita income, $\bar{c}$ is per capita minimum consumption requirements and P, aggregate sectoral population.

$= \bar{y} P - \bar{c}_m P$ where $\bar{y} P$ is aggregate sectoral income and $\bar{c}_m P$, aggregate minimum consumption requirements for the sector.

In reality, there is a considerable number of households in each sector whose actual consumption is less than the estimated minimum consumption requirements

TABLE IV—RELATIVE TAXABLE CAPACITY BASED ON AGGREGATE ESTIMATES

	Average for First Plan (1951-52 to 1955-56)	Average for Second Plan (1956-57 to 1960-61)	Average for Third Plan (1961-62 to 1965-66)	Average for Annual Plans (1966-67 to 1968-69)
Farm sector				
National income originating in farm sector (crore Rs.)	5021	6288	8853	15045
Per capita potential surplus (Rs.) ..	12	19	26	36
Per capita taxable capacity (Rs.)	9	16	23	31
Sectoral population (thousands) ..	26,32,52	28,97,36	32,42,44	35,81,57
Aggregate potential surplus (crore Rs.) ..	315·90	550·50	843·03	1321·34
Aggregate taxable capacity (crore Rs.) ..	236·93	463·58	745·76	1137·82
Potential surplus as percentage of sectoral income	6·3	8·8	9·5	8·8
Taxable capacity as percentage of sectoral income	4·7	7·4	8·4	7·6
Non-farm sector				
National income originating in non-farm sector (crore Rs.)	4951	6190	8926	11718
Per capita potential surplus (Rs.) ..	173	189	260	222
Per capita taxable capacity (Rs.)	165	180	249	207
Sectoral population (thousands) ..	11,39,00	12,65,52	14,06,24	15,64,37
Aggregate potential surplus (crore Rs.) ..	1970·47	2391·83	3656·22	3472·90
Aggregate taxable capacity (crore Rs.) ..	1879·35	2277·94	3515·60	3238·24
Potential surplus as percentage of sectoral income	39·80	38·64	40·96	29·63
Taxable capacity as percentage of sectoral income	37·96	36·80	39·39	27·63
Relative Ratios* :				
Potential surplus	6·2	4·3	4·3	2·6
Taxable capacity	7·9	4·9	4·7	2·8

* Relative ratios are derived thus : estimates of absolute potential surplus/taxable capacity of the non-farm sector *divided* by estimates of absolute potential surplus/taxable capacity of the farm sector.

and the potential surplus is concentrated in the rest of the households. The consumption deficit of the former is not compensated by the latter households. Therefore, the equation of aggregate potential surplus should get modified thus :

$S = Y - (\bar{c}P_1 + \bar{c}_m P_2)$, where Y represents aggregate sectoral income, $\bar{c}$ the actual per capita consumption of deficit households with population P_1 and $\bar{c}_m$ the estimated per capita minimum consumption requirements for the surplus households with population P_2.

The quantitative estimation of the surplus concept under the modified form is again attempted with the help of the NSS data on consumer expenditure. In these data, it is possible to spot the break-even expenditure class at which the minimum consumption requirements are satisfied. For the households below the break-even class, we take the actual consumption expenditure as revealed by the NSS and for households above the break-even class, the estimated minimum consumption requirements. For this purpose, a representative Round of the NSS is selected for each of the four periods, namely, the first three Five-Year Plan periods and the subsequent Annual Plans period (1966-69). The Rounds selected are : Seventh Round (1953-54) for the First Plan period; Fourteenth Round (1958-59) for the Second Plan period; and Eighteenth Round (1963-64) for the Third Plan period. Since no subsequent Round results are available, the Eighteenth Round data are applied to the Annual Plans period.

The various processes involved in the *corrected estimates* of taxable capacity are presented in Table V.

Absolute Taxable Capacity in Relation to Sectoral Incomes

The significance of the difference between the *uncorrected* estimates and *corrected* estimates is brought out when these are presented as percentages of sectoral incomes, as is done in Table VI. While according to the *uncorrected* estimates, taxable capacity for the farm sector as a proportion of the sector's income ranged between 5 per cent and 8 per cent during the eighteen-year period, according to the *corrected* estimates, the taxable capacity ranged between 23 per cent and 46 per cent of the sector's income. Such differences are observed even in respect of the non-farm sector.

Another significant observation regarding the farm sector is that during the Annual Plans period, there was a significant improvement in farm incomes, and it is likely that more of these increased incomes have accrued to the high income farm groups. This is, in fact, reflected in the *corrected* estimates of taxable capacity, which as a percentage of the sector's income increased from 28.3 per cent during the Third Plan period to 46.2 per cent during the Annual Plans period. On the other hand, the *uncorrected* estimates show a fall in the percentage of farm sector's taxable capacity to its income from 8.4 per cent in the Third Plan to 7.6 per cent in the Annual Plans period.

Relative Taxable Capacity

It must be emphasized, again, that the absolute taxable capacity has no direct interpretative significance in a study of tax incidence. But the relative taxable

TABLE V—AGGREGATE AND PER CAPITA TAXABLE CAPACITY IN FARM AND NON-FARM SECTORS DURING THE PLAN PERIODS

	Farm sector				Non-farm sector			
	First Plan	Second Plan	Third Plan	Annual Plans	First Plan	Second Plan	Third Plan	Annual Plans
Estimates of Absolute Taxable Capacity								
1. National income originating in sectors at current prices (crore Rs.)	5021	6288	8853	15045	4951	6190	8926	11718
2. Aggregate expenditure (crore Rs.) ..	3772	4675	6251	7914	2290	3029	4005	5111
3. Potential surplus (1)—(2) (crore Rs.) ..	1249	1613	2602	7131	2661	3161	4921	6607
4. Investment allowance (crore Rs.) ..	79	87	97	179	91	114	141	235
5. Aggregate taxable capacity (3)—(4) (crore Rs.)	1170	1526	2505	6952	2570	3047	4780	6372
6. Population estimates (thousands) ..	26,32,52	28,97,36	32,42,44	35,81,57	11,39,00	12,65,52	14,06,24	15,64,37
7. Per capita taxable capacity (Rs.) ..	44	53	77	194	226	241	340	407

	Estimates of Relative Taxable Capacity			
	First Plan	Second Plan	Third Plan	Annual Plans
8. Relative taxable capacity :				
(A) Based on aggregate estimates in item 5 above $\left(T = \frac{T_b}{T_a}\right)$	2·20	2·00	1·91	0·92
(B) Based on per capita estimates in item 7 above $\left(\bar{t} = \frac{\bar{t}_b}{\bar{t}_a}\right)$	5·13	4·55	4·42	2·10

TABLE VI—ABSOLUTE TAXABLE CAPACITY AS PERCENTAGE OF SECTORAL INCOME

Period	Uncorrected estimates		Corrected estimates	
	Farm	Non-farm	Farm	Non-farm
First Plan	4·7	38·0	23·3	51·9
Second Plan	7·4	36·8	24·3	49·2
Third Plan	8·4	39·4	28·3	53·6
Annual Plans period	7·6	27·6	46·2	54·4

capacity, by and large, expresses a reliable index which has the merit of indicating as to where one sector stands in relation to the other. Thus, in respect of both *uncorrected* and *corrected* estimates, we have two forms of relative taxable capacity, one based on per capita estimates and another based on aggregate estimates.

They are :

$$(1)\quad \bar{t} = \frac{\bar{t}_b}{\bar{t}_a} = \frac{\text{Per capita taxable capacity of the non-farm sector}}{\text{Per capita taxable capacity of the farm sector.}}$$

$$(2)\quad T = \frac{T_b}{T_a} = \frac{\text{Aggregate taxable capacity of the non-farm sector}}{\text{Aggregate taxable capacity of the farm sector.}}$$

These relative capacity ratios have also been worked out and presented along with the absolute figures in Tables IV and V. Except for some year-to-year fluctuations shown in the *uncorrected* estimates, the ratios show a consistent picture. However, in order to discern a meaningful trend of their behaviour during the Plan periods, we rely on the simple averages for these periods even in respect of *uncorrected* estimates. The two sets of ratios derived from *uncorrected* and *corrected* estimates are shown in Table VII.

TABLE VII—RATIOS OF RELATIVE TAXABLE CAPACITY

Period / Average for	Uncorrected estimates		Corrected estimates	
	Based on per capita figures	Based on aggregate figures	Based on per capita figures	Based on aggregate figures
First Plan	18·3	7·9	5·1	2·2
Second Plan	11·3	4·9	4·5	2·0
Third Plan	10·8	4·7	4·4	1·9
Annual Plans period	6·7	2·8	2·1	0·9

Note : Details are in Tables IV and V.

Among these, since the *corrected* estimates are an improved version of relative capacity in the two sectors, the same are employed for further scrutiny. The broad conclusions which emerge from the results of these estimates are given below.

The estimates of taxable capacity for the non-farm sector in per capita terms for the First Plan period were about five times as high as those for the farm sector. But, the relative capacity in terms of the aggregate showed that the non-farm sector possessed a little more than twice the capacity of the farm sector. During the subsequent periods, the ratios in terms of both per capita and aggregate estimates steadily declined. Even then, during the Third Plan period, the respective ratios still remained at as high levels as 4.4 and 1.9. It was only during the last period that there was a perceptible decline in this ratio—so much so that in aggregate terms, the relative capacity ratios stood at near about unity. In per capita terms, however, the capacity of the non-farm sector still stood at about twice the capacity in the farm sector. This trend is basically in conformity with the growth in sectoral incomes at current prices. During the Second and Third Plan periods, both farm and non-farm incomes were rising at almost the same pace. During the last period, on the other hand, there was a sharp recovery in farm incomes, while the non-farm incomes remained at near-stagnation levels.

Critique of an Existing Estimate of Relative Taxable Capacity

It is observed that possibly the only systematic attempt to estimate relative taxable capacity for farm and non-farm sectors in India is that of Gandhi.[15] His estimates significantly differ from those of ours. The differences are easily explained by the differences in the methodology employed and the assumptions made. The estimates of taxable capacity are essentially dependent on the estimates of minimum consumption requirements. Gandhi has worked out the minimum consumption requirements in respect of only one year, 1950-51. "For the present, the subsistence requirements of the populations of both the sectors will be assumed to have remained constant during the last ten years. Based upon this assumption, the question of inter-sectoral inequity in tax burdens can be discussed."[16] For the entire part of substantive analysis, Gandhi has kept them constant, though he has stated in one place that the price "factor will be considered later in the analysis."[17] His study does not seem to have withdrawn this assumption of constancy in minimum consumption requirements at any stage in the study. This is surely inadmissible.

And on what did Gandhi base his estimates of taxable capacity ? "The 30th percentile of the population in the two sectors will be regarded as having no taxable capacity and having subsistence or below subsistence income."[18] On the contrary, the proportions of households earning less than the minimum consumption requirements stand at around 60 per cent of the total households in both the sectors.

According to the Eighth Round of the National Sample Survey on land holdings (Rural Sector) for 1954-55 the results of which are reproduced by Gandhi,[19]

15. Ved P. Gandhi : Tax Burden on Indian Agriculture, The Law School of Harvard University, Cambridge, U.S.A., 1966, p. 61.
16. *ibid.*, p. 61.
17. *ibid.*, p. 61.
18. *ibid.*, p. 58.
19. *ibid.*, Table 28 on p. 126.

about 54.8 per cent of rural households had operational holdings of less than 2.50 acres. According to the Sixteenth Round (1960-61) of the National Sample Survey on land holdings, the proportion stood at 40.7 per cent.[20] In fact, according to the Eighth Round, about 40.23 per cent of the rural households were cultivating less than one acre. Are we to conclude that households cultivating less than one acre have earnings equivalent to a subsistence income ? Gandhi himself has estimated, relying on a study by Jakhade and Mujumdar,[21] that "a family having a production of about 3,000 lbs., or 38 maunds, may be regarded as a subsistence family."[22] The very study which Gandhi has relied on has given the subsistence norm in terms of acres of cultivation though only with respect to "the physical quantity of foodgrains required to maintain an average family."[23]

According to this study, for a family of an average size of five persons, the acreage requirement, "indicating the size of a farm which produces just the minimum foodgrains requirements"[24] stands at more than 2.2 acres in 12 out of 13 districts or at more than 2.5 acres in 10 out of 13 districts. Even Rao's independent estimates[25] for the period 1958-59 to 1960-61 show that the average annual yield per acre for all foodgrains was 606 lbs. Even if the acreage requirement for subsistence is placed at 2.5 acres, for the production of 3,000 lbs. of foodgrains, the yield per acre should be as high as 1,200 lbs. Not a single district studied by Jakhade and Mujumdar had produced such a high yield per acre. Rao's estimates also showed that the maximum yield per acre was 1,137 lbs. in respect of Kerala and the next best was 954 lbs. in respect of Madras.[26] Gandhi's estimates of 3,000 lbs., or 38 maunds were initially for the year 1950-51. The subsistence norm prescribed in Jakhade and Mujumdar's study was for the triennium ending 1957-58, and Rao's estimates for the period 1958-59 to 1960-61. Therefore, the incompatibility of Gandhi's method of estimating the subsistence income needs no further comment.

Gandhi has estimated Rs. 140 and Rs. 270 as the per capita subsistence requirements for farm and non-farm sectors for a single year 1950-51, and this single year estimates are utilized by him for working out the relative taxable capacity of the two sectors. On the basis of such results, he writes that "if per capita income is regarded as the measure of economic capacity of the sector, under the assumption of constant subsistence requirements over a period of time, the taxable capacity of average person in *A* sector was about 51 per cent of that of *N* sector in 1950-51, and 29 per cent of that of *N* sector in 1961-62."[27] This shows that the relative

20. The National Sample Survey : Sixteenth Round : July 1960—June 1961, No. 113—Tables with Notes on Agricultural Holdings in Rural India, Cabinet Secretariat, Government of India, 1967, p. 21.

21. V. M. Jakhade and N. A. Mujumdar, "Subsistence Sector in Indian Agriculture," *Reserve Bank of India Bulletin*, Vol. XVII, No. 9, September, 1963, p. 1144.

22. Ved P. Gandhi : *op. cit.*, p. 69.

23. V. M. Jakhade and N. A. Mujumdar, *op. cit.*, p. 1147 and Table II on p. 1153 therein. Incidentally, minimum consumption requirements entail some expenditure on items other than foodgrains too.

24. *ibid.*, p. 1147.

25. V. K. R. V. Rao, "Agricultural Production and Productivity during Plan Periods. : A Review of the Past and Some Reflections on the Future," Presidential Address at 21st Annual Conference of the Indian Society of Agricultural Economics, See *Indian Journal of Agricultural Economics*, Vol. XVII, No. 1, January-March, 1962, pp. 8-21.

26. *ibid.*, p. 17.

27. Ved P. Gandhi : *op. cit.*, p. 62. In Gandhi's study, *A* sector refers to the agricultural sector and *N* sector refers to the non-agricultural sector.

taxable capacity of the farm sector has considerably declined over a period of years. This is of course on the assumption of constant subsistence requirements. On the other hand, on *a priori* grounds, it is inferred that on account of persistent rise in prices, especially since the beginning of the Second Five-Year Plan,[28] the minimum consumption requirements of the non-farm household in money terms would have risen considerably in recent years. True, Gandhi has referred to this phenomenon without, however, making any allowance therefor. He writes thus : "If the subsistence requirements of the population of the *N* sector are assumed to rise by a greater amount than those of *A* sector over time due to inflation, the decline in relative taxable capacity might be smaller than indicated in Table 5."[29]

II

ESTIMATES OF RELATIVE TAX BURDEN

Having worked out the relative taxable capacities of the farm and non-farm sectors, we propose to present in this section the estimates of relative tax burdens. It is only by juxtaposing the incidence of the prevailing taxes against the relative taxable capacity that we can possibly examine the hypothesis of under-taxation of the farm sector. Thus, we propose to make a searching examination of the following hypothesis : the relative tax burden of the non-farm sector vis-a-vis the farm sector is higher than what its relative taxable capacity would warrant.

While it is impossible to give any quantitative meaning to the concept of 'effects' of taxation, an attempt is made to work out the distribution of 'money burden' of all taxes—direct and indirect, Central and States—between farm and non-farm sectors.[30] In this regard, the following broad assumptions are made :

1. All direct taxes of the Centre and the States are borne by persons on whom they are first imposed and that their incidence is not shifted. Accordingly, the following taxes are assigned to the non-farm sector: Central income-tax, corporation tax, expenditure tax, wealth tax, profession tax and urban immovable property tax. The following are assigned to the farm sector : land revenue and agricultural income-tax. Estate duty is distributed between farm and non-farm sectors based on the duties derived from farm or non-farm estates. Based on some broad indicators, 80 per cent of stamp and registration duties are assigned to the non-farm sector and 20 per cent to the farm sector.

2. All indirect taxes of the Centre and the States are assumed to be borne by the final consumers of consumption goods and services and the entire indirect tax burden is shifted on to them. Included here are Central and States excise duties, sales tax, sales tax on motor spirit, motor vehicles tax, import duties and miscellaneous taxes. The Taxation Enquiry Commission had attempted a systematic study on the incidence of Central and State indirect taxes on rural and urban

28. See T. K. Velayudham, "Price Trends during the Three Plan Periods," *Reserve Bank of India Bulletin*, Vol. XXI, No. 6, June, 1967, pp. 740-774.
29. Ved. P. Gandhi : *op. cit.*, p. 63.
30. We have employed the term to mean 'incidence' of taxation in the sense of : "The total direct money burden is equal to the total yield of the tax to the public treasury." Hugh Dalton: *op. cit.*, p. 51.

households by different expenditure groups for 1953-54.[31] Subsequently, follow-up studies have been carried out by the Tax Research Unit of Union Finance Ministry for two reference years, 1958-59 and 1963-64.[32] These studies provide, in respect of every Central and State indirect tax, the per capita burden in the rural and urban sectors separately. These are presented in Table VIII. Assuming

TABLE VIII—TAX PER CAPITA PER MONTH IN RUPEES

Taxes	1953-54		1958-59		1963-64	
	Rural	Urban	Rural	Urban	Rural	Urban
Central taxes						
1. Central excise	0.17	0.42	0.48	1.18	0.97	2.70
2. Import duties	0.19	0.54	0.16	0.50	0.44	1.18
3. Railway passenger fares	—	—	0.01	0.06	—	—
All Central taxes ..	0.36	0.96	0.65	1.74	0.13	0.17
State taxes						
1. State excise	0.09	0.11	0.08	0.13	0.13	0.17
2. Sales tax	0.10	0.35	0.13	0.54	0.20	0.98
3. Sales tax on motor spirits	0.03	0.12	0.05	0.17	0.03	0.14
4. Motor vehicles tax ..					0.08	0.22
5. Electricity duties ..	—	—	—	—	0.03	0.11
6. Entertainment tax ..	—	0.05	0.01	0.09	0.02	0.16
All State taxes	0.23	0.66	0.28	0.96	0.56	1.94

Source : (1) Incidence of Indirect Taxation : 1958-59, *op. cit.*, Statements I and II, and (2) Incidence of Indirect Taxation : 1963-64, *op. cit.*, Table VI, p. 33. The Finance Ministry's study for 1958-59 made certain minor adjustments in the Taxation Enquiry Commission findings on two grounds : (*i*) Taxation Enquiry Commission had used the revised budgetary estimates for the year 1953-54, while the actuals were used by the Finance Ministry; and (*ii*) the rate of population growth as revealed by the 1961 Census which was not available to the Commission is different from the rate revealed by the 1951 Census. The Finance Ministry's study has used the 1961 Census estimates.

that per capita indirect taxes paid by the rural and urban sectors are applicable to the farm and non-farm sectors, respectively, and taking farm and non-farm population estimates for individual years, the percentage ratios are worked out for distributing the individual tax revenues between the farm and non-farm sectors. The

31. Report of the Taxation Enquiry Commission : 1953-54, Vol. I, *op. cit.*, pp. 45-84.
32. See (*i*) Incidence of Indirect Taxation : 1958-59 and (*ii*) Incidence of Indirect Taxation 1963-64, Ministry of Finance, Government of India, New Delhi, 1961 and 1969, respectively.

TABLE IX—DISTRIBUTION OF INDIRECT TAXES BURDEN BETWEEN FARM AND NON-FARM SECTORS

(in percentage)

Taxes	1953-54			1958-59			1963-64		
	Farm	Non-farm	Total	Farm	Non-farm	Total	Farm	Non-farm	Total
Central taxes									
1. Central excise	48.33	51.67	100.00	48.22	51.78	100.00	45.13	54.87	100.00
2. Import duties	44.85	55.15	100.00	42.28	57.72	100.00	46.05	53.95	100.00
3. Duty on railway passenger fares ..	—	—	—	27.62	72.38	100.00	—	—	—
All Central taxes	—	—	—	—	—	—	—	—	—
State taxes									
1. State excise	65.41	34.59	100.00	58.49	41.51	100.00	63.65	36.35	100.00
2. Sales tax	39.77	60.23	100.00	35.53	64.47	100.00	31.84	68.16	100.00
3. Sales tax on motor spirits }	36.62	63.38	100.00	40.24	59.76	100.00	32.91	67.09	100.00
4. Motor vehicles tax }							45.43	54.57	100.00
5. Electricity duties	—	—	—	—	—	—	38.44	61.56	100.00
6. Entertainment tax	—	100.00	100.00	20.28	79.72	100.00	22.25	77.75	100.00
All State taxes	44.61	55.39	100.00	40.04	59.96	100.00	39.79	60.21	100.00

ratios are presented in Table IX. Table X provides the final picture of sectoral tax burdens (direct, indirect and total) both in aggregate and per capita terms for the three Five-Year Plan periods and Annual Plans period.

TABLE X—ESTIMATES OF TAX BURDEN ON FARM AND NON-FARM SECTORS

	Average for First Plan (1951-52 to 1955-56)	Average for Second Plan (1956-57 to 1960-61)	Average for Third Plan (1961-62 to 1965-66)	Average for Annual Plans (1966-67 to 1968-69)
Farm sector				
Estimates of tax burden in aggregate terms:				
Direct taxes (crore Rs.)	77.12	108.27	137.56	129.38
Indirect taxes (crore Rs.)	178.40	310.87	668.77	1056.74
Total taxes (crore Rs.)	255.52	419.14	806.33	1186.12
Sectoral population (thousands)	26,32,52	28,97,36	32,42,44	35,81,57
Estimates of tax budern in per capita terms:				
Direct taxes (Rs.)	2.93	3.74	4.24	3.61
Indirect taxes (Rs.)	6.78	10.73	20.63	29.50
Total taxes (Rs.)	9.71	14.47	24.87	33.11
Non-farm sector				
Estimates of tax burden in aggregate terms:				
Direct taxes (crore Rs.)	198.46	282.26	556.85	742.93
Indirect taxes (crore Rs.)	209.13	395.20	874.58	1408.68
Total taxes (crore Rs.)	407.59	677.46	1431.43	2151.61
Sectoral population (thousands)	11,39,00	12,65,52	14,06,24	15,64,37
Estimates of tax burden in per capita terms:				
Direct taxes (Rs.)	17.42	22.30	39.60	47.49
Indirect taxes (Rs.)	18.36	31.23	62.19	90.05
Total taxes (Rs.)	35.78	53.53	101.79	137.54

Growth Rates during Plan Periods

Tax burdens on farm and non-farm sectors had significantly increased during the Second and Third Plan periods (Table XI). Though there was some increase even during the Annual Plans period, the rate of increase had considerably slowed down.

TABLE XI—ANNUAL INCREASES IN TAX BURDENS DURING THE PLAN PERIODS

Period	Per capita estimates		Aggregate estimates	
	Amount (Rs.)	Annual percentage increase* (compound)	Amount (Rs.)	Annual percentage increase* (compound)
		Farm sector		
First Plan**	9.71	4.2	255.52	5.7
Second Plan	14.47	9.3	419.14	11.6
Third Plan	24.87	12.9	806.33	15.7
Annual Plans	33.11	4.2	1,186.12	6.9
		Non-farm sector		
First Plan**	35.78	(—)	407.6	1.2
Second Plan	53.53	11.3	677.5	13.8
Third Plan	101.79	14.8	1,431.4	17.7
Annual Plans	137.54	4.8	2,151.6	7.1

* Based on individual year's estimates.
** Only for four years.
(—) Represents a fall.

Tax Burdens in Relation to Sectoral Incomes

These revelations are also confirmed by yet another measure of tax-income relationships. Table XII gives the estimates of tax burdens for farm and non-farm sectors as percentage of sectoral incomes. The farm sector, which was contributing about 5.1 per cent of its income during the First Plan period to the Central and States tax pool, had its contribution raised to 6.7 per cent during the Second Plan period, and to 9.1 per cent during the Third; the corresponding percentage contributions by the non-farm sector were 8.2, 10.9 and 16.0, respectively. However, during the Annual Plans period (1966-67 to 1968-69), while the farm sector's percentage contribution has declined from 9.1 to 7.9, thus reversing the continuously rising trend, that of the non-farm sector continued to rise (from 16 to 18.4 per cent).

Again, the fact that a large proportion of the contribution, both in the farm and non-farm sectors, was from indirect taxes is revealed also by the data presented in Table XII. In the farm sector, the contribution of direct taxes as a percentage of income remained almost stagnant during the first three Plan periods; in the non-farm sector, there was some increase during the Third Plan period. During the Annual Plans period, while there was a significant decline in the contribution from the direct taxes in the farm sector (from 1.6 per cent to 0.9 per cent), that in the non-farm sector remained static (6.2 per cent for the Third Plan

TABLE XII—SECTORAL TAX BURDEN AS PERCENTAGE OF SECTORAL INCOME

(*crore Rs.*)

	Average for First Plan (1951-52 to 1955-56)	Average for Second Plan (1956-57 to 1960-61)	Average for Third Plan (1961-62 to 1965-66)	Average for Annual Plans (1966-67 to 1968-69)
Farm sector				
Income originating in farm sector ..	5020	6288	8853	15045
Total tax burden	255.52	419.14	806.33	1186.12
Direct tax burden	77.12	108.27	137.56	129.38
Indirect tax burden	178.40	310.87	668.77	1056.74
Total tax burden as percentage of income	5.1	6.7	9.1	7.9
Direct tax burden as percentage of income	1.5	1.7	1.6	0.9
Indirect tax burden as percentage of income	3.6	5.0	7.6	7.0
Non-farm sector				
Income originating in non-farm sector ..	4951	6190	8926	11718
Total tax burden	407.59	677.46	1431.43	2151.61
Direct tax burden	198.46	282.26	556.85	742.93
Indirect tax burden	209.13	395.20	874.58	1408.68
Total tax burden as percentage of income	8.2	10.9	16.0	18.4
Direct tax burden as percentage of income	4.0	4.6	6.2	6.3
Indirect tax burden as percentage of income	4.2	6.4	9.8	12.0

and 6.3 per cent for the Annual Plans).[33] On the other hand, the contributions from indirect taxes, both in the farm and non-farm sectors, have shown significant increases during the first three Plan periods. During the following Annual Plans period, however, due to spurt in farm incomes, the contribution of indirect taxes as a proportion of sectoral income showed a decline albeit marginally ; in the non-farm sector, the contribution continued to rise.

33. The reason being that while in the farm sector, there was a sharp rise in the sectoral money income, in the non-farm sector, tax revenues which generally have large impact on the sector were, by and large, stagnant; some of these even declined. The corporate taxation, for instance, declined from Rs. 330.38 crores in 1966-67 to Rs. 310.33 crores in 1967-68; though it again rose to Rs. 322 crores during 1968-69 (R.E.), it still remained below the 1966-67 level. Receipts under import duties declined during this period thus : 1966-67 : Rs. 479.21 crores, 1967-68 : Rs. 408.08 crores and 1968-69 : Rs. 372.94 crores. Growth rates in many of the taxes got slackened during this period. "The rate of growth in revenue collections was 5.8 per cent in 1968-69 as against 2.0 per cent in 1967-68, 11.9 per cent in 1966-67 and 18.3 per cent per annum (average) during the Third Plan period." See "Finances of Government of India : 1969-70," *Reserve Bank of India Bulletin*, Vol. XXIII, No. 4, April, 1969, p. 432.

Elasticity Coefficients

As a part of the preliminary observations, the elasticity coefficients of tax burdens with respect to sectoral incomes have been computed by fitting regression lines. The regression fitted is of the following form :

$Y = aX^b$ where the coefficient b gives the elasticity representing a percentage rate of change in tax Y consequent upon a given change in independent variable X (*i.e.*, sectoral income).

Except for one series, namely, per capita direct tax burden on the farm sector, all the elasticity coefficients are found to be significant at one per cent level of significance (Table XIII). In respect of the per capita direct tax burdens, while the elasticity coefficient worked out to 0.22 in respect of the farm sector, the corresponding elasticity coefficient for the non-farm sector worked out to 1.93. Even in respect of the series which are found to be statistically significant, inter-sectoral differences in elasticity coefficients are observed. For instance, while the elasticity coefficients for total tax burden with respect to sectoral income (aggregate) and for per capita (total) tax burden with respect to per capita sectoral income seem to be 1.40 and 1.47 respectively for the farm sector, the corresponding coefficients for the non-farm sector worked out to 1.96 and 2.49. Further, the fact that indirect taxes have grown significantly in step with the growth in sectoral incomes is revealed also by the elasticity coefficients presented in Table XIII. The elasticity coefficients are consistently higher in respect of the indirect taxes than in respect of direct taxes.

As in respect of relative taxable capacity, we have worked out the relative tax burden in terms of two ratios, which may be denoted as $\bar{b}$ and B thus :

$$\bar{b} = \frac{\bar{b}_b}{\bar{b}_a} = \frac{\text{Per capita tax burden on non-farm sector}}{\text{Per capita tax burden on farm sector}}$$

and

$$B = \frac{B_b}{B_a} = \frac{\text{Aggregate tax burden on non-farm sector}}{\text{Aggregate tax burden on farm sector}}$$

These ratios of relative tax burdens are presented in Table XIV. The results are revealing. During the first decade of planning, the burden on the non-farm sector in terms of aggregate estimates worked out to about 1.6 times the burden on the farm sector. During the subsequent Third Plan and Annual Plans period, this multiple worked out higher at around 1.8. Even in terms of the per capita estimates, the overall trend is almost the same; during the first decade, the per capita tax burden on the non-farm sector worked out to 3.7 times the per capita tax burden on the farm sector, but during the Third Plan, the multiple rose to 4.1 and remained at about that level during the subsequent period. These relative capacity ratios in themselves do not reveal anything, if they are not related to other relevant variables such as the relative taxable capacities.

TABLE XIII—COEFFICIENTS OF ELASTICITY WITH RESPECT TO SECTORAL INCOMES

Tax series	Farm sector				Non-farm sector			
	a	Coefficient of elasticity (b)	t-Value	r^2	a	Coefficient of elasticity (b)	t-Value	r^2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			A. Aggregate tax burden with respect to aggregate sectoral income					
Total tax	(—) 2·7130	1·4009* (0·1220)	11·4802	0·89	(—) 4·6055	1·9586* (0·0491)	39·8501	0·99
Direct tax	0·2030	0·4726* (0·1116)	4·2358	0·53	(—) 3·5780	1·5919* (0·0665)	23·9389	0·97
Indirect tax	(—) 3·6995	1·6268* (0·1353)	12·0213	0·90	(—) 5·8545	2·2202* (0·0560)	39·5077	0·99
			B. Per capita tax burden with respect to per capita sectoral income					
Total tax	(—) 2·2765	1·4661* (0·1815)	8·0799	0·80	(—) 4·9800	2·4860* (0·0818)	30·3896	0·98
Direct tax	0·0244	0·2212* (0·1337)	1·6542	0·15	(—) 3·8298	1·9259* (0·0984)	19·5809	0·96
Indirect tax	(—) 3·0930	1·7618* (0·2125)	8·2898	0·81	(—) 6·3124	2·8864* (0·1077))	26·7940	0·98

* Significant at one per cent level of significance.
Figures in brackets indicate standard errors of elasticity coefficients.

TABLE XIV—RELATIVE TAX BURDEN BASED ON PER CAPITA AND AGGREGATE ESTIMATES (DIRECT, INDIRECT AND TOTAL TAXES)

Period	Total taxes		Direct taxes		Indirect taxes	
	Aggregate estimates $\left(B = \frac{Bb}{Ba}\right)$	Per capita estimates $\left(\bar{b} = \frac{\bar{b}b}{\bar{b}a}\right)$	Aggregate estimates $\left(B = \frac{Bb}{Ba}\right)$	Per capita estimates $\left(\bar{b} = \frac{\bar{b}b}{\bar{b}a}\right)$	Aggregate estimates $\left(B = \frac{Bb}{Ba}\right)$	Per capita estimates $\left(\bar{b} = \frac{\bar{b}b}{\bar{b}a}\right)$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Average for First Plan (1951-52—1955-56) ..	1.60	3.68	2.37	5.95	1.17	2.71
Average for Second Plan (1956-57—1960-61) ..	1.62	3.70	2.61	5.96	1.27	2.91
Average for Third Plan (1961-62—1965-66) ..	1.78	4.09	4.05	9.34	1.31	3.01
Average for Annual Plans (1966-67—1968-69) ..	1.81	4.15	5.74	13.36	1.33	3.05

The Thesis of Under-taxation

If, in a given year, the relative capacity ratio ($\bar{t}$ or T) is greater than the relative burden ratio ($\bar{b}$ or B), it is a situation in which the non-farm sector is under-taxed, or the farm sector is over-taxed. If the relative capacity ratio is less than the relative burden ratio, it is a situation of over-taxation of the non-farm sector, or under-taxation of the farm sector. If both are equal, that is, if $\bar{t} = \bar{b}$ or $T = B$, there is complete inter-sectoral equity in incidence of taxation in so far as such tax incidence is compared with the taxable capacity.

Allowances for 'Progression' in Tax Burden

The measure proposed above assumes the "proportionality" principle regarding the additional tax burden. It makes no allowance for "progressive" rise in the 'rate of tax burden' with every rise in taxable capacity (or income). As a corollary, the sector which possesses higher taxable capacity per capita (or income per capita) has to bear relatively higher "rate of tax burden" so as to achieve "equity" between the two sectors. In this context, there are two issues involved. First, the existence of higher taxable capacity per capita in one sector in relation to the other is itself a case for higher rate of tax burden on the former. Secondly, if the distribution of income (or taxable capacity) is more skewed in one than in the other, the former has to bear essentially a more progressive rate of taxation.

In this regard, the methodological contribution made by Ved Gandhi is to be recognized. Modifying the measure suggested by Frank,[34] Ved Gandhi has proposed a measure thus :[35]

$$b = \frac{t}{Ce_o},$$

where t is tax per capita, C is taxable capacity per capita (or any other tax base), and e_o is the 'desirable' level of progression.

Thus, if progressivity is to be introduced it can be done by taking $e_o > 1$, such as 1.1, 1.2, 1.3, ... Frank's measure had assumed that $e_o = 2$. While extending the above measure for working out the relative taxable capacity, Ved Gandhi has adopted identical 'desirable' levels of progression for both the farm and non-farm sectors.[36]

The Observed Phenomenon

Proceeding on these lines, we have examined the hypothesis of under-taxation of the farm sector (Table XV).

TABLE XV—RELATIVE TAXABLE CAPACITY AND RELATIVE TAX BURDEN RATIOS BASED ON AGGREGATE AND PER CAPITA ESTIMATES

Period	Based on per capita estimates		Based on aggregate estimates	
	Relative capacity* $\left(\bar{t} = \frac{\bar{t}_b}{\bar{t}_a}\right)$	Relative burden $\left(\bar{b} = \frac{\bar{b}_b}{\bar{b}_a}\right)$	Relative capacity* $\left(T = \frac{T_b}{T_a}\right)$	Relative burden $\left(B = \frac{B_b}{B_a}\right)$
First Plan	5.13	3.68	2.20	1.60
Second Plan	4.55	3.70	2.00	1.62
Third Plan	4.42	4.09	1.91	1.78
Annual Plans	2.10	4.15	0.92	1.81

* *Corrected* estimates.

The most significant result that emerges from the juxtaposition of the ratios of relative tax burden against those of relative taxable capacity is that during the first three Plan periods, the relative burden ratio has always been less than the relative capacity ratio, that is, $\bar{b}$ less than $\bar{t}$ and B less than T. During the First Plan period, the relative capacity ratio on the basis of per capita estimates

34. Henry J. Frank, "Measuring State Tax Burdens," *National Tax Journal*, Vol. XII, No. 2, June, 1959, pp. 179-185

35. Ved P. Gandhi: Tax Burden on Indian Agriculture, *op. cit.*, pp. 27-28. Here Y (income) is replaced by C (taxable capacity).

36. Is it necessary (or proper) to apply identical "levels of progression" for both the farm and non-farm sectors? As brought out earlier, there are two factors which lead us to give a higher level of progression to the 'non-farm' sector as compared with the 'farm' sector. First, there is a higher per capita taxable capacity for the non-farm sector. Secondly, there is also evidence to the effect that income (or taxable capacity) is more inequitably distributed in the non-farm sector than in the farm sector.

averaged 5.1, while the relative burden ratio stood at 3.7. This implies that while the non-farm sector possessed taxable capacity about 5.1 times that of the farm sector, tax burden borne by the non-farm sector formed only 3.7 times the tax burden borne by the farm sector. During the Second Plan period, while the relative burden ratio remained at 3.7, the relative capacity ratio declined to 4.6. During the Third Plan period, the capacity ratio showed a marginal decline to 4.4, while the burden ratio increased to 4.1. During the Annual Plans period, however, the capacity ratio registered a sharp decline to 2.1 while the burden ratio remained static at 4.1, thus satisfying the criterion of under-taxation of the farm sector only for this period. In other words, under-taxation of the farm sector is true only for the Annual Plans period. Thus, viewed strictly from the view point of equity, tax burden has to be juxtaposed not against income, but against taxable capacity, and when so done, the thesis of under-taxation of the farm sector does not seem to have been supported by empirical evidence for the first fifteen years of planning.

Allowance for Progression

By its very nature, making allowance for higher levels of progression than $e_o = 1$ to take account of the differences in per capita capacity and its distribution further reinforces results presented above except for the Annual Plans period (Table XVI). For the Annual Plans period, the degree of over-taxation observed in respect of the non-farm sector gets reduced until the value of $e_o = 1.9$. Thereafter, even in respect of the Annual Plans period, $\frac{\bar{t}_b}{\bar{t}_a}$ becomes greater than $\frac{\bar{b}_b}{\bar{b}_a}$, implying that an identical level of progression of $e_o = 2.0$, the possibility of farm sector being under-taxed during that period ceases.

TABLE XVI—RELATIVE TAX BURDEN COMPARED WITH RELATIVE TAXABLE CAPACITY — ALLOWANCE FOR PROGRESSION

Period	Relative tax burden (per capita)	Relative taxable capacity (per capita) with varying degrees of progression						
		$e_o=1$	$e_o=1.5$	$e_o=1.6$	$e_o=1.7$	$e_o=1.8$	$e_o=1.9$	$e_o=2.0$
First Plan	3.68	5.13	11.62	13.69	16.12	18.98	22.35	26.31
Second Plan	3.70	4.55	9.71	11.28	13.14	15.29	17.79	20.70
Third Plan	4.09	4.42	9.29	10.76	12.51	14.51	16.85	19.54
Annual Plans	4.15	2.10	3.04	3.28	3.53	3.80	4.10	4.41

Thus, if taxable capacity is considered as the yardstick, as we think it must, to compare the actual incidence of taxation on the two sectors of the economy, the data depicted in Tables XV and XVI bring out that the non-farm sector did not bear tax burden disproportionate to its taxable capacity, or the burden borne by the farm sector was not inadequate as compared with its taxable capacity. This is true for the first fifteen years of planning. During the next three years, the position got reversed and there emerged a degree of inequity in favour of the farm sector, if again, no allowance is made for "progression." After allowance is made for progression, the inequity in favour of the farm sector disappears at $e_o = 2.0$.

III

COMPARISON OF VARIOUS ESTIMATES OF RELATIVE TAX BURDEN

While many studies have attempted to estimate inter-sectoral tax burdens in India,[37] the more important of the recently made studies based on a systematic analysis of the problem seem to be two, namely, those of Ved Gandhi[38] and Mathew.[39]

On comparing his estimates of relative taxable capacity and relative tax payments in respect of agricultural and non-agricultural sectors during the years 1950-51 to 1961-62, Ved Gandhi comes to the conclusion that "there is a clear indication of inter-sectoral inequity in favour of the *A* sector. The exact extent of the inequity is difficult to state."[40] On the other hand, our estimates show that during the first three Plan periods there was hardly a year in which the relative taxable capacity of the farm sector was higher than its relative tax burden. The reasons for the striking difference between Ved Gandhi's results and our own are to be explained by the methods employed for estimating sectoral tax burdens and taxable capacities. As for the Gandhi's estimation of taxable capacity, we have already made a detailed comment in the previous section.

As for the estimation of tax burdens on the farm and non-farm sectors, there does not appear to be much difference as between Gandhi's and the author's estimates of relative burden of direct taxation. Significant differences are, however, observed with regard to the relative burden of indirect taxation. Table XVII brings out the significance of these differences. As may be observed therefrom, while the relative direct tax burden ratio $\left(B = \frac{B_b}{B_a}\right)$ ranged between 2.57 and 3.70 during the first three Five-Year Plans according to Gandhi's study, our estimates place the ratio between 2.57 and 4.05 for these periods. Hence, these differences seems to be marginal. On the other hand, in respect of indirect taxes, Gandhi's estimates place the relative burden ratio at 1.69 for the First Plan, at 1.35 for the Second Plan, and at 2.36 for the Third Plan as against the author's estimates of 1.17, 1.27 and 1.31 for the respective Plan periods. In other words, Gandhi's estimates give a lower burden of indirect taxation for the farm sector than the burden revealed by the present study. The difference is to be explained by the method adopted for distributing the various indirect tax revenues between farm and non-farm sectors.

Union Excise Duties

As is widely known, these duties have come to occupy a very important position in the total tax revenues of Central and State Governments. For these duties,

37. Other studies are: (*a*) I. S. Gulati: Resource Prospects of the Third Five-Year Plan, Orient Longmans, Bombay, 1960, pp. 60-81 and pp. 128-135; (*b*) A. Mitra, "Tax Burden for Indian Agriculture," *Perspective: An Economic Review*, No. 2, June, 1961, pp. 1-27; (*c*) P. K. Bardhan, "Agriculture Inadequately Taxed," *The Economic Weekly*, Vol. XIII, No. 49, December 9, 1961, pp. 1829-1835; and (*d*) Harold M. Groves and Murugappa C. Madhavan, "Agricultural Taxation and India's Five-Year Plan," *Land Economics*, Vol. 38, No. 1, February, 1962, pp. 56-64.

38. Ved. P. Gandhi: *op. cit.*

39. E. T. Mathew: Agricultural Taxation and Economic Development in India, Asia Publishing House, Bombay, 1968.

40. Ved P. Gandhi: *op. cit.*, p. 63.

TABLE XVII—COMPARISON OF VARIOUS ESTIMATES OF RELATIVE TAX BURDEN

(*crore Rs.*)

Year/Period	Ved Gandhi's estimates						
	Direct taxes			Indirect taxes			All taxes
	Farm sector(1)	Non-farm sector(1)	$B = \frac{Bb}{Ba}$	Farm sector(1)	Non-farm sector(1)	$B = \frac{Bb}{Ba}$	$B = \frac{Bb}{Ba}$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1950-51 ..	56.37	195.30	3.46	129.15	195.98	1.52	2.11
1951-52 ..	60.69	211.52	3.49	139.24	239.06	1.72	2.25
1952-53 ..	66.34	210.18	3.17	142.18	217.31	1.53	2.05
1953-54 ..	81.10	189.60	2.34	141.02	243.60	1.73	1.95
1954-55 ..	83.58	184.90	2.21	151.28	275.09	1.82	1.11
1955-56 ..	92.11	190.17	2.06	162.41	271.54	1.67	1.81
Average for First Plan(2) ..	76.76	197.27	2.57	147.23	249.32	1.69	1.82
1956-57 ..	105.58	233.05	2.21	185.09	314.94	1.70	1.89
1957-58 ..	103.39	260.67	2.52	241.35	407.32	1.69	1.94
1958-59 ..	109.02	273.76	2.51	246.95	439.55	1.78	2.00
1959-60 ..	113.82	309.70	2.72	269.30	511.97	1.90	2.14
1960-61 ..	116.30	329.27	2.83	282.34	592.33	2.10	2.31
Average for Second Plan(2)	109.62	281.29	2.57	245.01	453.22	1.85	2.07
1961-62 ..	114.30	381.20	3.34	298.76	714.18	2.39	2.65
1962-63 ..	140.40	473.01	3.37	361.82	852.67	2.36	2.64
1963-64 ..	139.90	580.44	4.15	446.86	1,032.36	2.31	2.75
1964-65 ..	141.40	631.70	4.47	477.36	1,118.36	2.34	2.83
1965-66 ..	—	—	—	—	—	—	—
Average for Third Plan(3) ..	139.00	514.09	3.70	396.20	929.39	2.36	2.73
Average for Annual Plans(4)	—	—	—	—	—	—	—
	Mathew's estimates (5)						
1958-59 ..	113.46	212.61	1.87	310.99	362.16	1.16	1.35

(*Contd.*)

TABLE XVII—COMPARISON OF VARIOUS ESTIMATES OF RELATIVE TAX BURDEN (*Concld.*)

(*crore Rs.*)

Year/Period	Author's estimates						
	Direct taxes			Indirect taxes			All taxes
	Farm sector(1)	Non-farm sector(1)	$B = \frac{Bb}{Ba}$	Farm sector(1)	Non-farm sector(1)	$B = \frac{Bb}{Ba}$	$B = \frac{Bb}{Ba}$
(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1950-51 ..	—	—	—	—	—	—	—
1951-52 ..	60.70	211.51	3.48	175.21	203.03	1.16	1.78
1952-53 ..	67.36	209.16	3.11	158.96	184.57	1.16	1.74
1953-54 ..	81.10	189.60	2.34	169.27	198.85	1.17	1.55
1954-55 ..	83.63	185.09	2.21	187.32	221.50	1.18	1.50
1955-56 ..	92.82	196.96	2.12	201.25	237.69	1.18	1.48
Average for First Plan(2) ..	77.12	198.46	2.57	178.40	209.13	1.17	1.60
1956-57 ..	98.59	236.74	2.40	231.13	294.66	1.27	1.61
1957-58 ..	103.35	260.53	2.52	288.52	365.54	1.27	1.60
1958-59 ..	108.79	273.99	2.52	301.72	383.84	1.27	1.60
1959-60 ..	113.72	309.82	2.72	341.80	434.07	1.27	1.63
1960-61 ..	116.89	330.24	2.83	391.17	497.90	1.27	1.63
Average for Second Plan(2)	108.27	282.26	2.61	310.87	395.20	1.27	1.62
1961-62 ..	115.47	380.03	3.29	446.57	581.27	1.30	1.71
1962-63 ..	141.88	471.53	3.32	535.67	698.34	1.30	1.73
1963-64 ..	146.48	605.30	4.13	676.72	885.54	1.31	1.81
1964 65 ..	145.71	661.34	4.54	772.22	1,013.37	1.31	1.82
1965-66 ..	138.26	666.06	4.82	912.69	1,194.37	1.31	1.77
Average for Third Plan(3) ..	137.56	556.85	4.05	668.77	874.58	1.31	1.78
Average for Annula Plans(4)	129.38	742.93	5.74	1,056.74	1,408.68	1.33	1.81

Note : (1) Ved Gandhi designates these sectors as *A* and *N* sectors.
(2) Averages for Plan periods are not given in Gandhi's study; hence these averages are derived for comparison purposes.
(3) Ved Gandhi's study was upto 1964-65; hence his Third Plan average is for four years only.
(4) Our estimates for individual years beyond 1965-66 are not reproduced here.
(5) Mathew's estimates are for only one year 1958-59.

Source : (1) Ved P. Gandhi: Tax Burden on Indian Agriculture, *op. cit.*, p. 53.
(2) E.T. Mathew: Agricultural Taxation and Economic Development in India, Asia Publishing House, Bombay, 1968, pp. 45 and 70.

Gandhi made the assumption that "the excise duty on the following commodities only will be shared by the *A* sector : kerosene, sugar, matches, tobacco, coffee, tea, cotton cloth, footwear, soap, woollen fabrics, and miscellaneous commodities. The rest of the commodities can safely be said to be consumed by the *N* sector."[41] A close review of the items of commodities on which excise duties have been imposed will show that this assumption is surely inadmissible. Such commodities duties of which were fully assigned to the non-farm sector in Gandhi's study were many in number and also important from the view-point of revenue. As may be observed from Table XVIII, the number of such items increased from 5 in 1950-51 to 15 in 1955-56, to 19 in 1957-58, to 36 in 1960-61 and to 40 in 1965-66. In terms of revenue, such commodities earned about 10 per cent of excise revenue in 1950-51, but by 1955-56 the proportion had gone up to 29 per cent and by 1957-58 upto 33 per cent; it further increased to 46 per cent in 1960-61 and 60 per cent in 1965-66. Some of these commodities are consumer durables such as electric bulbs and tubes, electric fans, and motor vehicles, but the majority of them were either industrial raw materials, or intermediate products or machinery and equipment. Among them the important ones are petroleum products (such as refined diesel oil and vaporising oil, motor spirit, furnace oil, etc.), vegetable products, chemicals (such as paints and varnishes, plastic materials and synthetic resins, patent and proprietary medicines, synthetic organic dyestuffs, caustic soda, soda ash, etc.), iron and steel, non-ferrous metals (aluminium, copper, etc.), jute textiles, tyres and tubes, cement, rubber products, paper, electric motors and electric wires and cables and electric batteries. Gandhi's study took the position that excise duty on none of these items concerned the farm sector. In other words, while duties imposed on some consumer goods are shared between farm and non-farm sectors, those on raw materials and intermediate and producers' goods are entirely borne by the non-farm sector. This is despite the fact which Gandhi himself has highlighted, that is, "the consistent growth of income and population in recent years has shifted the demand curves for almost all commodities upward to the right"[42] and thus created scarcity conditions for raw materials and producers' goods. It is, therefore, inconceivable that the excise duties imposed on these raw materials and producer goods are not shifted onward to the consumers of consumer goods. The studies by the Taxation Enquiry Commission and the Ministry of Finance have rightly assumed that "the incidence of all indirect taxes fully rests on final purchases of consumption goods and services."[43] These studies for the three references years, namely, 1953-54, 1958-59 and 1963-64, have made a detailed enquiry into the incidence of indirect taxation in respect of the rural and urban sectors on the basis of National Sample Survey reports on consumer expenditure.

Import Duties

In respect of import duties, Gandhi assumed that 20 per cent of the import duty is borne by the farm sector and 80 per cent by the non-farm sector. He has justified this by the following observation: "The facts that the government has curbed the consumption of imported luxury consumer articles and that the popu-

41. *op. cit.*, pp. 76-77.
42. *op. cit.*, p. 41.
43. Incidence of Indirect Taxation: 1958-59, *op. cit.*, p. 19. Similar observations may also be seen in the Report of the Taxation Enquiry Commission: 1953-54, Vol. I, *op. cit.*, p. 51 and in the Incidence of Indirect Taxation: 1963-64, *op. cit.*, pp. 15-17.

lation of the *A* sector consumes a relatively small amount of non-farm articles lead us to the conclusion that the *A* sector is not paying a significant proportion of import duty receipts."[44] It is observed from the list of import duties, that a major part of the duties are earned from non-luxury consumer goods, intermediate goods and capital goods. Again, the studies referred to above have made a commoditywise distribution based on "the quantity or value of cash purchase as revealed by the National Sample Survey data."[45] The NSS gives such data even for manufactured goods. This is surely a more agreeable method of allocation than the arbitrary method adopted by Gandhi's study.

It is because of these differences in the methods employed in distributing two important indirect taxes that our results differ from those of Gandhi. The nature of these differences is already brought out in Table XVII and highlighted earlier. When we compare Gandhi's and our results with those of Mathew, we seem to get a definite confirmation of the justification of what we have done. Mathew has worked out the incidence of taxation for the farm and non-farm sectors only for one year, namely, 1968-69. His data are also placed alongside Gandhi's results in Table XVII. It may be observed therefrom that his esti-

TABLE XVIII—REVENUE FROM UNION EXCISE DUTIES

	1950-51	1955-56	1957-58	1960-61	1965-66
A. Commodities, duties of which were only distributed between farm and non-farm sectors in Gandhi's study					
(*i*) Number*	8	11	11†	11†	11†
(*ii*) Amount of revenue** (lakh Rs.)	61.03	103.51	184.24	225.44	358.48
(*iii*) Amount as percentage of total revenue	90	71	67	54	40
B. Commodities, duties of which were fully assigned to non-farm sector					
(*i*) Number	5	15	19	36	40
(*ii*) Amount of revenue (lakh Rs.)	6.51	41.74	89.38	190.91	539.44
(*iii*) Amount as percentage of total revenue	10	29	33	46	60
Total					
(*i*) Number	13	26	30	47	51
(*ii*) Amount of total revenue** (lakh Rs.)	67.54 (100)	145.25 (100)	273.62 (100)	416.32 (100)	897.92 (100)

Note : * Commodities are: kerosene, sugar, matches, tobacco, coffee, tea, cotton cloth, footwear, soap, woollen fabrics, and miscellaneous. Miscellaneous items are considered as a single commodity here.

† In the classifications for 1960-61 and 1965-66, 'footwear' is included under miscellaneous items. For comparison purposes, however, it is taken as a separate item in these years also.

** Amount of revenue is inclusive of additional excise duties on sugar, textiles and tobacco.

Source : Reserve Bank of India: (*i*) Report on Currency and Finance: 1960-61, Bombay, 1961, Statement 58; (*ii*) Report on Currency and Finance: 1967-68, Bombay, 1968, Statement 56, p. 592.

44. Ved P. Gandhi: *op. cit.*, p. 76.

45. Incidence of Indirect Taxation: 1958-59, *op. cit.*, p. 22. The next study, Incidence of Indirect Taxation, 1963-64, states thus: "It was noted that about 70 per cent of the import duty was from items which comprised intermediate and capital goods of which duty amounting to about 50 per cent of the total yield was distributed among the various expenditure groups on the basis of the NSS proportions revealed for cash expenditures on manufactured items and the balance accounting for 20 per cent of the total yield was allocated according to proportions spent on cash purchases." *ibid.*, p. 17.

mate of relative burden of indirect taxation on the two sectors fairly corresponds to the one revealed by our study. That is, for 1958-59, according to Mathew's study, the relative burden ratio for indirect taxes $\left(B = \frac{B_b}{B_a}\right)$ worked out to 1.16 while according to our estimates the ratio worked out to 1.27. Against these, Gandhi's estimates place the ratio at 1.78. These ratios imply that of the total indirect taxes during 1958-59, while 46 per cent according to Mathew and 44 per cent according to our study was borne by the farm sector, only 36 per cent according to Gandhi was borne by the farm sector. The correspondence between our results and those of Mathew is significant though his estimates are only for one year, because Mathew has also employed the same National Sample Survey data on consumer expenditure for allocating the indirect taxes between the farm and non-farm sectors.

CONCLUSIONS

Based on certain realistic assumptions in respect of direct taxes and relying on the results of certain studies by the Taxation Enquiry Commission and the Tax Research Unit of Union Ministry of Finance on indirect taxes, formal incidence of overall taxation for the farm and non-farm sectors has been estimated for all the eighteen years from 1951-52 to 1968-69. The time rates of growth in direct, indirect and total tax burdens have been worked out separately for the farm and non-farm sectors by fitting the semi-log type of regression lines. Elasticity coefficients of sectoral tax burdens with respect to sectoral incomes have also been computed by fitting the exponential form of regression equations. The substantive part of the analysis is centred around juxtaposition of the ratios of relative tax burdens (B or $\bar{b}$) with the ratios of relative taxable capacity (T or $\bar{t}$). The broad conclusions are summarised here.

The estimates of absolute tax burdens show wide inter-sectoral differences. While the per capita tax burden on the farm sector ranged between Rs. 9 and Rs. 35 during the eighteen-year period, that on the non-farm sector ranged between Rs. 38 and Rs. 143. As proportions of sectoral incomes, while the contribution of the farm sector ranged between 5 per cent and 10 per cent, that of the non-farm sector varied between 9 per cent and 19 per cent during the period under study. While the compound growth rates in total tax burden were almost equal for the farm and non-farm sectors, the compound growth rate in direct tax burden was higher for the non-farm sector than for the farm sector. Again, while almost all elasticity coefficients of tax burdens with respect to sectoral incomes are found to be statistically significant for both the farm and non-farm sectors, in respect of direct taxes, the coefficients are found to be higher for the non-farm sector than for the farm sector. The most significant conclusion that emerges from the substantive analysis is that during the first three Plan periods, the relative tax burden ratio has always been less than the relative taxable capacity ratio, that is, $\bar{b}$ less than $\bar{t}$ and B less than T. This implies that if the relative taxable capacity is considered as the yardstick to compare the relative incidence of taxation, the burden borne by the farm sector does not appear to be inadequate as compared with its relative taxable capacity. The only exception to this is the Annual Plans period for which the thesis of under-taxation of the farm sector is found to be valid.