

# **On the Inequality Effects of Fiscal Policy**

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Increasing concern with income distribution effects rather than growth effects of government activities has prompted numerous incidence analysis of government tax and expenditure behavior. In this paper, the extent of government contributions to changes in income inequality is analyzed for the Iranian economy. Some major findings of this research is that income distribution in urban areas was more unequal than in rural areas. Taxes had negative redistributive effects although these negative effects were higher in urban than rural areas.

In addition, government expenditures were found to reduce inequality as the lower income households received a greater share of the benefits than their share of total income. However, fiscal policy was not strong enough to reduce post-fiscal urban/rural income disparities, despite the fact that it had minor positive effects towards reducing inequality.

## **1. Introduction**

In the past few decades economists have been using the rate of growth of Gross National Product (GNP), as well as GNP per capita, as a measure of improvement in a society. However, by themselves these measures fail to explain how the benefits of long-term economic growth are distributed among different segments of the population. Recent experience in many developing countries as well as a better theoretical understanding of the relationship between income distribution and the development process contradict the view that economic growth by itself can solve or even ease the problem of income inequality within any

reasonable time period.<sup>1</sup>

Since higher economic growth may not generate a socially desirable distribution of income, public sector intervention is called for to redistribute private sector income and wealth.<sup>2</sup> The role of the public sector's budgetary policy in altering income distribution has long been the subject of historical and theoretical inquiry. This study deals primarily with the role of the government's fiscal policy in the distribution of income, and its impact on the degree of income inequality, and Iran's economy has been selected for this case study.

## 2. Measuring Inequality

In order to evaluate the degree of inequality in different periods and different income classes for urban and rural areas, a comparison of Lorenz curves of disposable income distribution (as well as post-fiscal distributions) is necessary. By having Lorenz curves and estimating the "concentration ratios" or "Gini index", it is possible to measure whether the income distribution is more or less equal between different periods. All graphs and charts are relegated to the end of the article.

Further, the "net incidence" (defined as total changes in the distribution of household income brought about by government intervention) during the different periods will be measured in order to

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1. Dudley Seers, "The Meaning of Development," in *The Political Economy of Development and Underdevelopment*, edited by Charles K. Wilber, Random House, New York, 1973, pp. 6-7.

2. Bernard Herber, *Modern Public Finance*, (Richard Irwin, Inc. 1973), page 335.

find out whether "inequality" increased or decreased.<sup>3</sup> It should be pointed out that this study will concentrate on "interclass" and "intersectoral" equity of pre- and post-fiscal burden distribution. Bear in mind that the "Household Expenditure Survey" is of particular importance as the basic source of information for the study of income distribution which covers a large sample of the population.<sup>4</sup>

### **3. Patterns of Pre-Fiscal and Income Distribution**

In order to identify the specific policy options that can be used to change the composition and direction of the pattern of the distribution of income (post-fiscal analysis) in urban and rural areas, the distributive direction of the present pattern (pre-fiscal analysis) must first be evaluated. Therefore, the estimation of private incomes (the pattern of the distribution of incomes) in the absence of both government expenditures and taxes will be analyzed. Then, having established the methodology for allocating different tax incidence and government expenditure benefits in different income classes, the distributional pattern of income (namely post-fiscal incidence analysis) will be

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3. The term, net incidence, means the final resting of the tax burden and government benefits. For example, the incidence of a progressive tax or a regressive benefit would be favorable to the poor and a regressive tax or a progressive benefit would be favorable to the rich.

4. Household income and expenditure surveys are commonly known as household budget studies. In many household budget surveys, the chief emphasis is placed on consumption patterns, particularly where the principle objective is the provision of basic materials for consumer price statistics, including weights for computation of price indices.

estimated in later sections.

Estimated figures for relative income shares in the distribution of income<sup>5</sup> before entering taxes and government expenditures into the picture and the Gini concentration ratios based on data on household expenditure originating from Iran's Central Bank (Bank Markazi Iran, BMI) and the Statistical Center of Iran (SCI) are presented in Tables 1 and 2. It appears that the concentration of income as quantified by income shares of different groups and the Gini coefficients show increasing inequality throughout this period, that is, there have been substantial changes in the distribution of income in urban and rural areas.<sup>6</sup> These estimated figures also indicate that the overall trend of the change in the distribution of income is the same for both urban and rural areas.

Table 1  
Income Share of Different Groups Along Gini  
Concentration Ratios in Urban Areas

Year	Share of bottom 40 (%)	Share of middle 40 (%)	Share of top 20 (%)	Share of top 10 (%)	Concentration Ratio
74/75	19	40	41	28	0.3114
77/78	15	31	54	41	0.4925
79/80	12	31	57	35	0.5432

5. The term income includes total money income as well as income in kind, where income in kind is defined as the value of goods home-produced and consumed by households, and the value of goods and services received free.

6. This means a redistribution of income from the low income groups to high income groups occurred. This, in turn, increased the gap throughout the years in favor of higher income classes.

Table 2  
Income Share of Different Groups Along Gini  
Concentration Ratios in Rural Areas

Year	Share of bottom 40 (%)	Share of middle 40 (%)	Share of top 20 (%)	Share of top 10 (%)	Concentration Ratio
74/75	23	41	36	21	0.2667
77/78	18	39	43	29	0.3986
79/80	13	38	49	32	0.4662

The existing pattern of the estimated percentage shares of total income for four different groups of households may be interpreted as a reflection of structural changes in the distribution of income during these periods. Although the changes in the patterns of income distribution between rural and urban areas were similar, the income distribution in urban households was more unequal than rural households. This is consistent with the assumption that in developing countries the rural population is more homogeneous in its characteristics than the urban population.

There are various factors which affect inequality. The following reasons demonstrate why sharp changes occurred in the distribution of income over time:

1. The extreme concentration of wealth among an elite group of high-income recipients in urban areas, an urban proletariat of unemployed, and a rural class on a flat or falling trajectory of income and wealth all increased inequality.

2. The income of educated households (especially those with

university education) grew at a faster rate than the less educated.<sup>7</sup> Since households in the bottom income deciles usually have less educated members, this may also cause an increase in income inequality over time.

3. The capital-intensive method of industrialization may be said to be another reason for increasing inequality especially in urban areas because this method of industrialization brings high salaries and profits for a small group of skilled (educated) labor and owners of physical assets.<sup>8</sup> Furthermore, insufficient support of small producers created greater inequality in urban areas and the country over time.

4. Different attitudes toward risk may be another factor which contributed to the increase in inequality of income in rural areas. Small farmers, because of restricted access to resources, are likely to be less able to bear risk than large farmers and are unwilling to do so.

5. Economies of scale is another reason why large farmers tend to benefit from innovation, causing a further widening in the inequality in the distribution of income.

6. The uneven distribution of economic activities and associated regional disparities of income may have caused a deterioration in the distributional pattern.

7. The extreme rates of inflation during the 1970s shifted real

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7. Presumably better education brings higher returns to human capital, which mostly benefits the middle and especially higher income groups in urban and rural areas.

8. In general, heavy emphasis on capital-intensive technology causes the demand for labor to be skewed toward skilled labor. Further, since the modern sector is typically urban-based, rapid growth of modern capital-intensive technology causes lack of productive employment for urban traditional sectors such as textiles, footwear, etc. which are basically based on small-scale labor-intensive commodities.

income from the lower income groups to the higher income groups (due to the fact that it has been observed that the marginal propensity to consume (MPC) of lower income groups is higher than the MPC of higher income groups), thus, a redistribution of wealth in favor of the higher income class took place during this period.

8. The distribution of assets was a prime determinant of both the level and trend in the country's income distribution. An examination of the pattern of credit and other forms of government assistance by Looney illustrated that these programs tended to benefit the richer rural groups more relative to the poorer ones.<sup>9</sup>

9. The migration of population from the low-income rural areas to high-income urban areas was another source of inequality.<sup>10</sup> These migrants (uneducated, untrained the unproductive segment of the labor force) were usually absorbed in the lower end of the income brackets which itself increased the degree of inequality among urban households.

#### **4. Measurement of the Tax Burden and Expenditure Benefits**

In order to estimate the budget incidence, the effects of different variables such as taxes and expenditures will be examined for different income classes and then, the simultaneous effects of these variables in

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9. R.E. Looney, *Economic Origins of the Iranian Revolution*, (New York: Pergamon Press, Inc., 1982), page 141.

10. The difference in the quality of life and job opportunities between urban and rural areas, the increase in demand for unskilled labor following the government's industrialization policy and the neglect of agriculture were the main factors causing a steady flow of migration to urban areas.

determining the total effect in each income class will be analyzed.<sup>11</sup> This means the burden and benefit sides of the fiscal equation will be combined to arrive at the distribution of net benefit or burden. The net "effective rate"<sup>12</sup> for any particular bracket may be negative or positive, depending on whether burdens outweigh benefits or vice-versa.

## **5. Distributional Effects of Taxes and Public Expenditures**

The distributions for each of the government expenditures and revenues as well as the overall distributional effects of government taxes and expenditures are analyzed and compared with their pre-fiscal incidence analysis in this section. First, the individual distributional effects of taxes are examined.

In general, the systematic impact of different tax incidence on the

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11. The standard assumptions which were used for measuring the incidence of tax burdens and expenditure benefits and the distribution of them by income classes are summarized in Table A in the appendix.

12. The ratios which relate taxes (expenditures) paid (received) to income received provides the most interesting part of the evidence, commonly referred to as "effective rate of the tax" or "effective rate of expenditure", and these ratios show whether the tax (expenditure) structure is proportional, progressive, or regressive. In this research, the concern is differences between effective rates at different levels of income rather than with the average level of effective rates. While the latter reflects the total level of income and tax payments (or expenditure received), the former depends upon their distribution only.



state of distribution, i.e. the estimated Gini coefficients after introducing different taxes into the analysis were compared with its pre-incidence case and are presented in Tables 3 and 4.

Table 3  
Estimated Gini Concentration Ratios for Before  
and After Tax Income Inequality (urban areas)

Taxes	concentration		concentration		concentration	
	ratio (74/75)		ratio (77/78)		ratio (79/80)	
	B.T	A.T	B.T	A.T	B.T	A.T
individual income tax	0.3114	0.3104	0.4925	0.4952	0.5432	0.5443
Corporate tax	0.3114	0.3121	0.4925	0.4981	0.5432	0.5463
property tax	0.3114	0.3086	0.4925	0.4936	0.5432	0.5431
Excise tax	0.3114	0.3099	0.4925	0.4952	0.5432	0.5446
Import tax	0.3114	0.3138	0.4925	0.5023	0.5432	0.5452
Overall tax	--	0.3233	--	0.5076	--	0.5544

Note: B.T. and A.T. are before and after tax respectively.

Table 4  
 Estimated Gini Concentration Ratios for Before  
 and After Income Inequality (rural areas)

Taxes	concentration		concentration		concentration	
	ratio (74/75)		ratio (77/78)		ratio (79/80)	
	B.T	A.T	B.T	A.T	B.T	A.T
Individual						
income tax	0.2667	0.2664	0.3986	0.3992	0.4662	0.4671
Corporate						
tax	0.2667	0.2663	0.3986	0.4024	0.4662	0.4712
Excise						
tax	0.2667	0.3691	0.3986	0.3997	0.4662	0.4662
Import						
tax	0.2667	0.2676	0.3986	0.4023	0.4662	0.4694
Overall tax	--	0.2689	--	0.4088	--	0.4782

Note: B.T. and A.T. are before and after tax respectively.

During the period of investigation, whatever evidence is provided by the available and estimated data tends to indicate that the direction of the effects of taxes were the same for both urban and rural areas. Overall, taxes have negative redistributive effects in the case of Iran, although these negative effects were greater in urban than in rural areas. In general, the implication of the findings indicates that taxes had increased the gap between rich and poor, a gap which has generally widened through the years.

There exist many explanations for such a pattern. Looking at the nature of the tax system carefully, along with the government's motivation, illustrates the nature of this pattern.

1. One reason for the increasing level of inequality was the existence of a weak tax system in Iran. Since the government could finance a high percentage of its expenditures by oil revenues, it has not tried to apply a more progressive tax system so that individuals in the higher income tax bracket would pay a greater share of the tax burden.

2. The overwhelming proportion of the government's revenue (excluding oil) comes from import, excise, and other indirect taxes. The burden of these taxes is shifted largely to low-income groups (since the MPC of lower classes is higher than that of the upper income class), with the result that the distribution of wealth (income) is made less equal by the tax system.

3. Many corporations escaping tax payments either by declaring less profits or staged losses or by not filing tax declarations at all try to keep down the total corporate profit taxes, therefore, causing a considerable reduction in total tax revenues in the economy as a whole.

4. Tax exemptions for the big corporations in order to protect domestic products with foreign corporations brought about a large profit for upper income groups and increased the gap even more over time.

Next we look at the nature of the distributional effects of expenditures. The estimated Gini concentration ratios of post-government expenditures is used to compare the dispersion in initial and final distributions within and across years and are presented in Tables 5 and 6. The estimated figures indicate that in general there is a positive correlation between government expenditures on a particular item and a reduction in the degree of inequality. The greater the size of government expenditure on a given item, the greater its effect in reducing inequality. But by looking at the difference between the pre- and post-expenditure concentration values of different items, it becomes obvious that one dollar of government expenditure on different items has different redistributive effects. In other words, the weight of the impact of different expenditures on income redistribution was not the same.

Table 5  
 Estimated Gini Concentration Ratios for Before and  
 After Government Expenditure Income Inequality  
 (urban areas)

Expendi- tures	concentration ratio (74/75)		concentration ratio (77/78)		concentration ratio (79/80)	
	B.E	A.E	B.E	A.E	B.E	A.E
	Education	0.3114	0.2995	0.4925	0.4690	0.5432
Health	0.3114	0.3034	0.4925	0.4887	0.5432	0.5395
Social						
Welfare	0.3114	0.3099	0.4925	0.4935	0.5432	0.5396
Interest						
Payments	0.3114	0.3075	0.4925	0.4927	0.5432	0.5223
Urban &						
Rural Dev.	0.3114	0.3060	0.4925	0.4892	0.5432	0.5412
General						
affairs	0.3114	0.2841	0.4925	0.4692	0.5432	0.5254
Overall value	--	0.2783	--	0.4502	--	0.4135
Overall excluding		0.2992	--	0.4692	--	0.4284

Note: B.E. and A.E. are before and after Exp. respectively.

Table 6  
 Estimated Gini Concentration Ratios for Before and  
 After Government Expenditure Income Inequality  
 (rural areas)

Expendi- tures	concentration ratio (74/75)		concentration ratio (77/78)		concentration ratio (79/80)	
	B.E	A.E	B.E	A.E	B.E	A.E
	Education	0.2667	0.2654	0.3986	0.3944	0.4662
Health	0.2667	0.2662	0.3986	0.3870	0.4662	0.4536
Social						
Welfare	0.2667	0.2658	0.3986	0.3967	0.4662	0.4640
Agriculture	0.2667	0.2561	0.3986	0.3980	0.4662	0.4563
Urban & rural Dev.	0.2667	0.2647	0.3986	0.3964	0.4662	0.4625
General affairs	0.2667	0.2502	0.3986	0.3553	0.4662	0.4274
Overall val	--	0.2370	--	0.3363	--	0.3996
Overall excluding G.E.	--	0.2507	--	0.3715	--	0.4357

Note: B.E. and A.E. refer to before and after Exp. respectively.

In general, with the same amount of total government expenditures, the government could play a more important role for a better redistribution of income by switching some expenditures from one component to another. For example, shifting some expenditures from general affairs to education could have a better redistributive effect in urban areas, and by the same token transferring some of them to health or agriculture could reduce the degree of inequality even more in rural

areas.<sup>13</sup>

What is the magnitude of the aggregate distributional effect? The general conclusion is that the government's fiscal policy in the past decade was not strong enough to reduce the post-fiscal urban-rural income disparity, despite the fact that it had positive effects towards reducing inequalities with respect to its pre-fiscal incidence analysis in each period. The following reasons may shed some light on the existing pattern of post-fiscal urban-rural disparity in the last decade.

1. Government investment expenditures put a lot of emphasis on urban areas. Most of these expenditures took place in modern service activities, construction and industries which required capital-intensive and skill-intensive technology. These investments occurred at the expense of the agricultural sector, which relatively speaking, was ignored. Therefore, the result was a stagnation in agriculture and a widening gap between urban and rural areas.

2. The level of productivity of labor was considerably lower in agriculture than in industry and services and as the time passed the position of agriculture has worsened.<sup>14</sup> The result of this pattern was a deterioration in the urban/rural gap.

3. Income distribution between urban and rural areas was adversely affected by the process of import substitution itself.

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13. Generally speaking, in absolute terms, most of the government programs in different periods contributed to richer households more than to the poorer households. But in relative terms expenditures in different types of services reduced inequality as the lower income households received a greater share of benefits from government expenditures than their share of total income.

14. H. Katouzian, *The Political Economy of Modern Iran*, (New York University Press, 1981), page 261.

Apparently, as the government began to implement the import-substitution strategy, the intersectoral distribution of income between urban and rural areas began to widen at an alarming rate.<sup>15</sup>

4. And finally, the deterioration of agriculture's terms of trade was a major cause of the increased urban/rural income disparity.<sup>16</sup>

### 6. Comparisons of the Pre- and Post-fiscal Incidence of Income Distribution:

The Gini coefficient ratios for urban and rural areas for pre- and post-budget incidence analysis are estimated and presented in Tables 7 and 8.

Table 7

The value of Gini coefficient for pre- and post-budget incidence for urban areas

year	pre-budget incidence	post-budget incidence	post-budget excluding G.E.
74/75	0.3114	0.2882	0.3119
77/78	0.4925	0.4584	0.4801
79/80	0.5432	0.4202	0.4359

15. R.E. Looney, *Economic Origins of the Iranian Revolution*, (New York: Pergamon Press, Inc., 1982), page 33.

16. According to statistics from BMI during the period of analysis, the quantity of agricultural goods necessary for exchange with a fixed amount of non-agricultural products increased continuously.

Table 8  
The value of Gini coefficient for pre- and post-budget  
incidence for rural areas

year	pre-budget incidence	post-budget incidence	post-budget excluding G.E.
74/75	0.2667	0.2340	0.2516
77/78	0.3986	0.3404	0.3790
79/80	0.4662	0.3856	0.4454

These tables show that the Gini coefficients of post-budget incidence are smaller than their corresponding values of pre-budget incidence both in urban and rural areas for all periods. On the whole, the results indicated that the fiscal system has had some, albeit little, redistributive impact in favor of the lower income classes.<sup>17</sup>

Although it should be mentioned that among all expenditures the weight of inequality level was more than all other expenditures taken together in the case of both urban and rural areas. This important conclusion illustrates the fact that the redistributive impact of government fiscal policy excluding general affairs was quite minimal for both areas.

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17. The Lorenz curves of before and after budget incidence in urban and rural areas for all periods were examined. The shape of Lorenz curves and their positions are consistent with the Gini coefficients for all periods.



## 7. Concluding Remarks

The pre- and post-fiscal incidence were investigated in this paper. Attempts were made to measure the degree of income inequality by estimating the Lorenz curves and Gini coefficients and by comparing the pre- and post-fiscal Gini concentration values, to evaluate the impact of government's budgetary policy on the distributional pattern. The study concludes that the overall trend in the change in the distribution of income is similar in urban and rural areas. However, the income distribution for urban households was more unequal than rural households. Disparity in the distribution of income (pre-fiscal analysis) increased over time in both urban and rural areas. Furthermore, the overall distributional trend shows that urban income increased faster than rural income, which resulted in an increase in the overall gap between urban and rural areas which, in turn, increased the inequality in the aggregate income distribution.

Although the disparity of post-fiscal distribution is less than pre-fiscal distribution in each year (i.e., the Lorenz curves are closer to the perfect equality line), the dispersion in the distribution of post-budget incidence also increased over the period in both areas.

A further interesting conclusion of this study is that there is a positive correlation between the amount of government expenditures on a particular item and a reduction in the level of inequality. The greater the amount of government expenditures on a given item, the greater the reduction in the level of inequality. In addition, it is found that the weight of the impact of expenditures on income redistribution was not the same. In other words, one unit of government expenditure in different items had different redistributive effects.

Finally, with the same amount of total government expenditures, the government could play a more effective role for a better redistribution of income by switching some expenditures from one component to

another. Accordingly, during the period of analysis, education potentially has the largest effect in the level of reducing inequality in urban areas and health potentially had the greatest effect in rural areas.

## Appendix

Table A  
Incidence Assumptions

Category	Final Resting
1. Individual income tax	1/2 on urban household income & 1/2 on urban & rural Consumption Exp.
2. Corporation profit tax	Household expenditures
3. Property tax	Urban household expenditures. on housing
Other direct taxex	Household expenditures
5. Excise tax	Household expenditures on taxed products
6. Other indirect taxes	Household expenditures on taxed products
7. Import tax	Household expenditures
<u>Expenditures:</u>	
1. Education:	
(a) Primary	Number of primary school students of urban & rural households
(b) Secondary & Higher	Number of urban and rural household (students)
2. Health:	
(a) Public health & medical services	Number of urban and rural households
(b) Rural health & Medical services	(# of rural household) or

Table A (continued)

Category	Final Resting
-Eradication of Malaria	#of rural household's rooms
-Rural health corps	# of rural households
3. Social welfare:	
(a) Transfer to pension funds	Income of urban Gov. employees
(b) Miscellaneous transfers	# of Gov. employees
(c) Rural social insurance	# of rural households
(d) Grants to public institutions	Lowest 50% of households according to number of unemployed persons in each bracket
(e) Coordination of cooperative activities	#of rural households
(f) General services	# of urban & rural households
4. Agriculture	1/2 on # of household and 1/2 on households income (rural)
5. Interest and payments	Urban household income
6. Urban & rural development:	
(a) Urban development	# of urban households
(b) Rural development	# of rural households
& General expenditure	1/2 on # of household and 1/2 on household income

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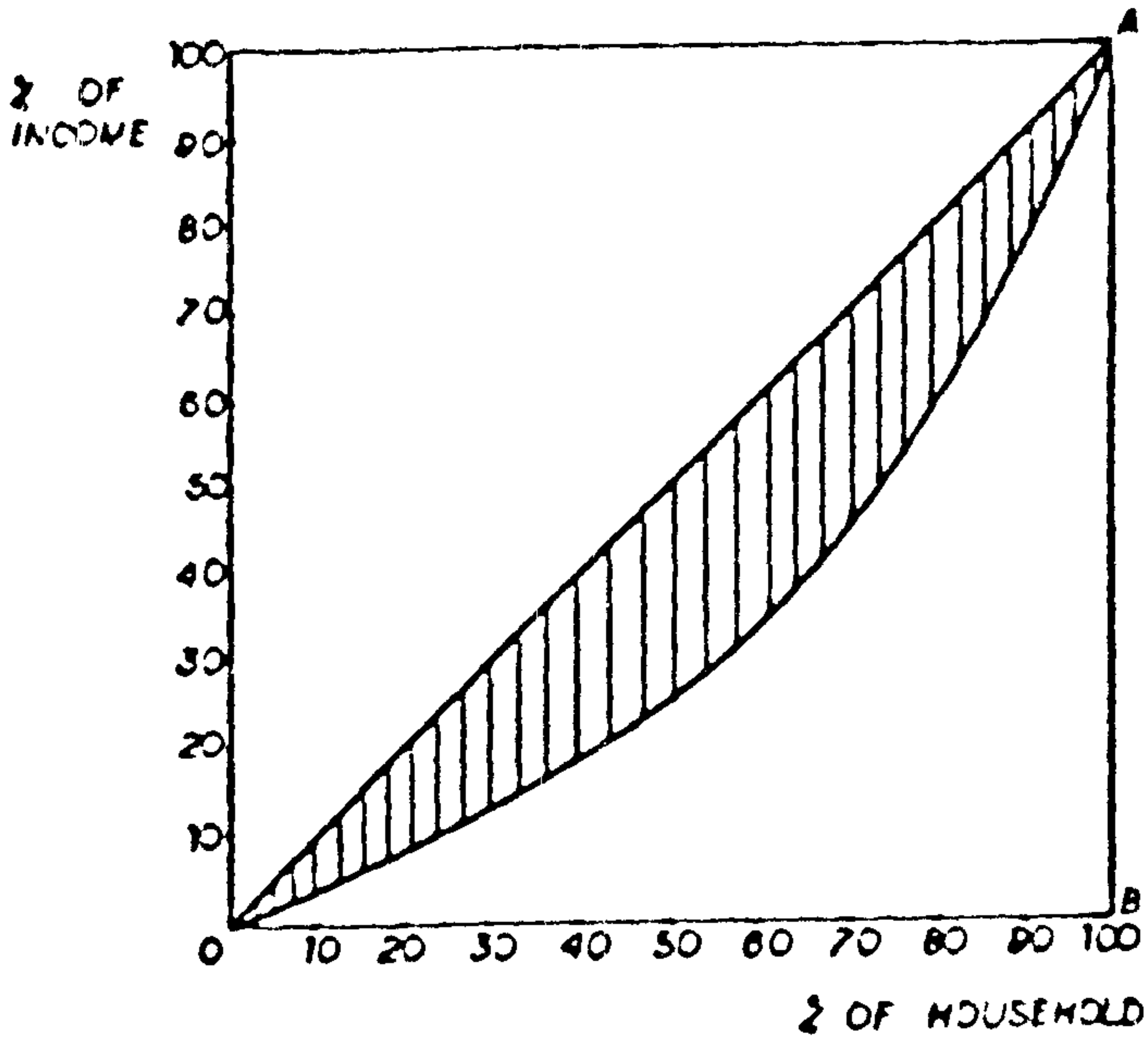


Fig. 2. The Lorenz curve of income inequality

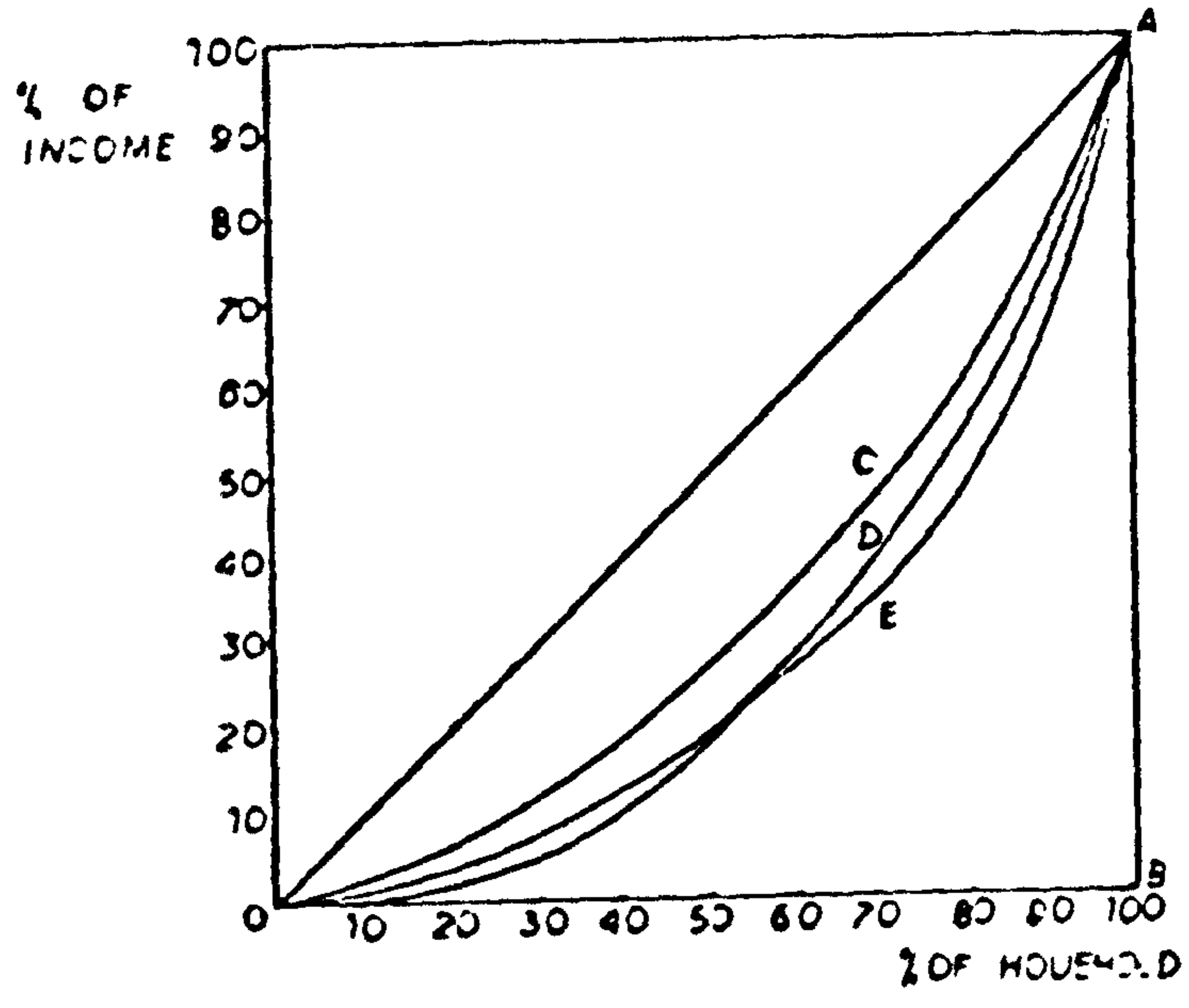
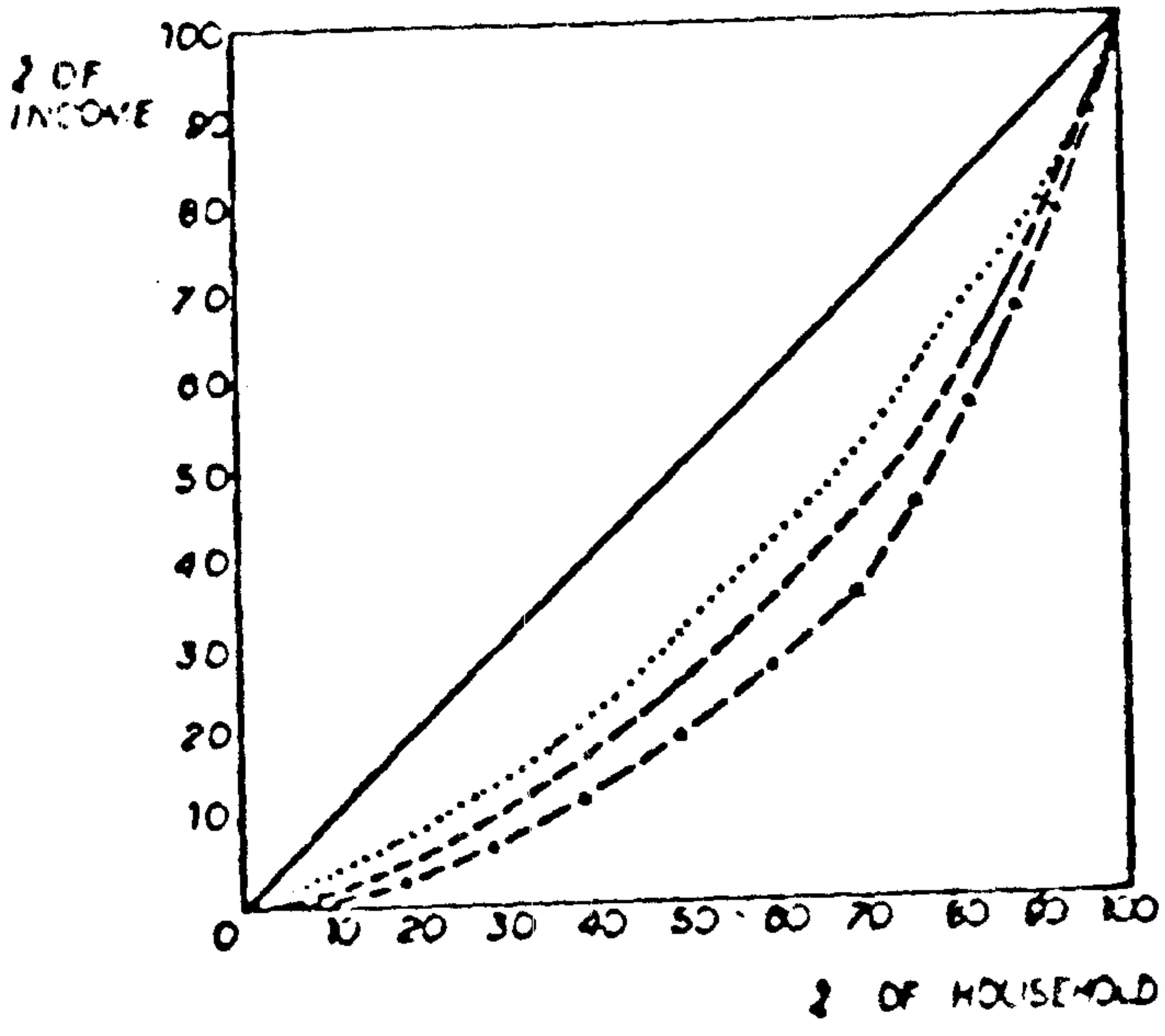
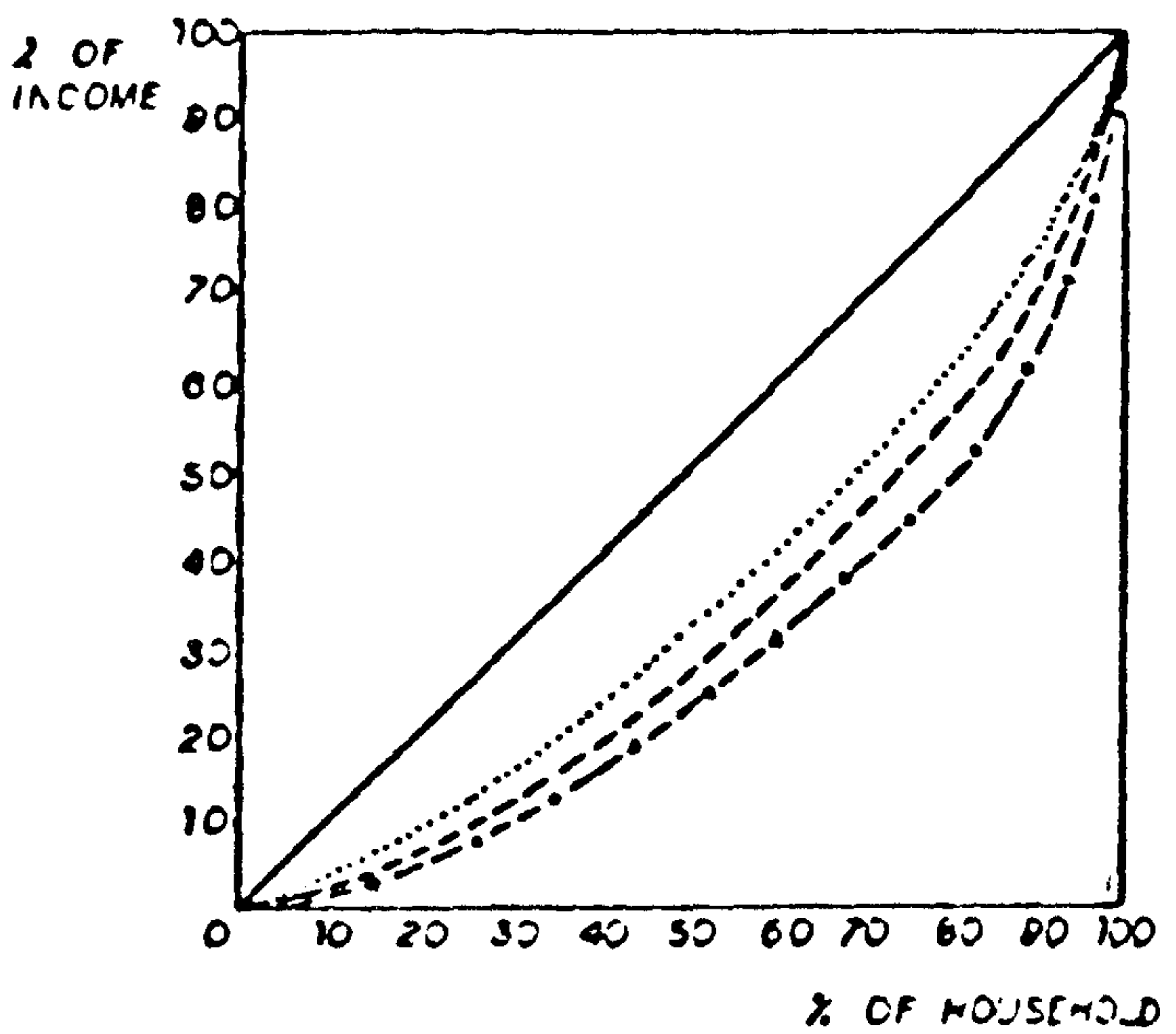


Fig. 1. The Lorenz curve of income inequality



- /..... 1978/75
- - - - - 1977/78
- . - . - 1979/80

Fig. 4. Distribution of Income of Rural Areas in Different Periods



- /..... 1974/75
- - - - - 1977/78
- . - . - 1975/80

Fig. 3. Distribution of Income of Urban Areas in Different Periods

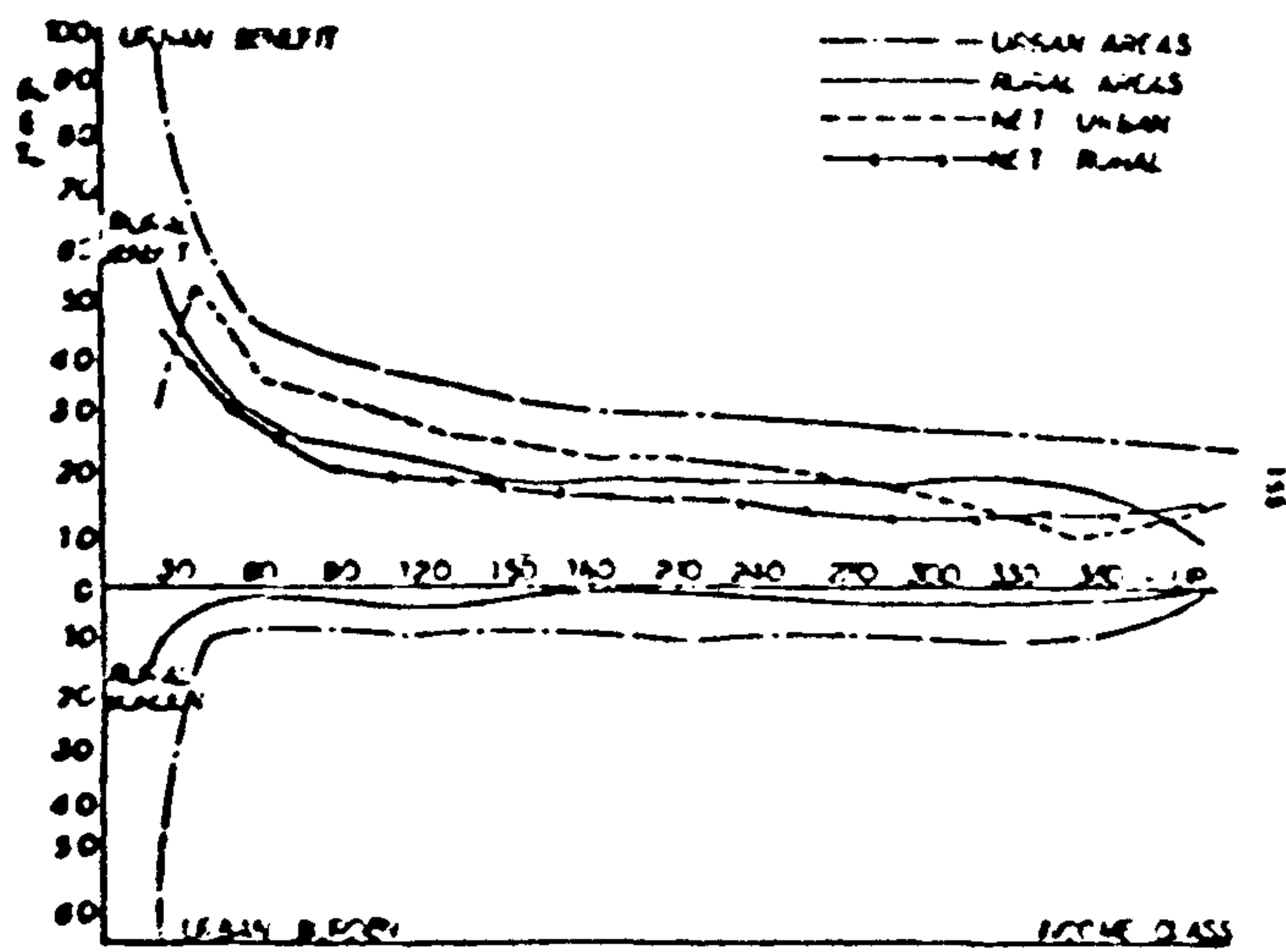


Fig. 5. The Distribution of Budget Incidence Between Urban and Rural Areas (1974/75)

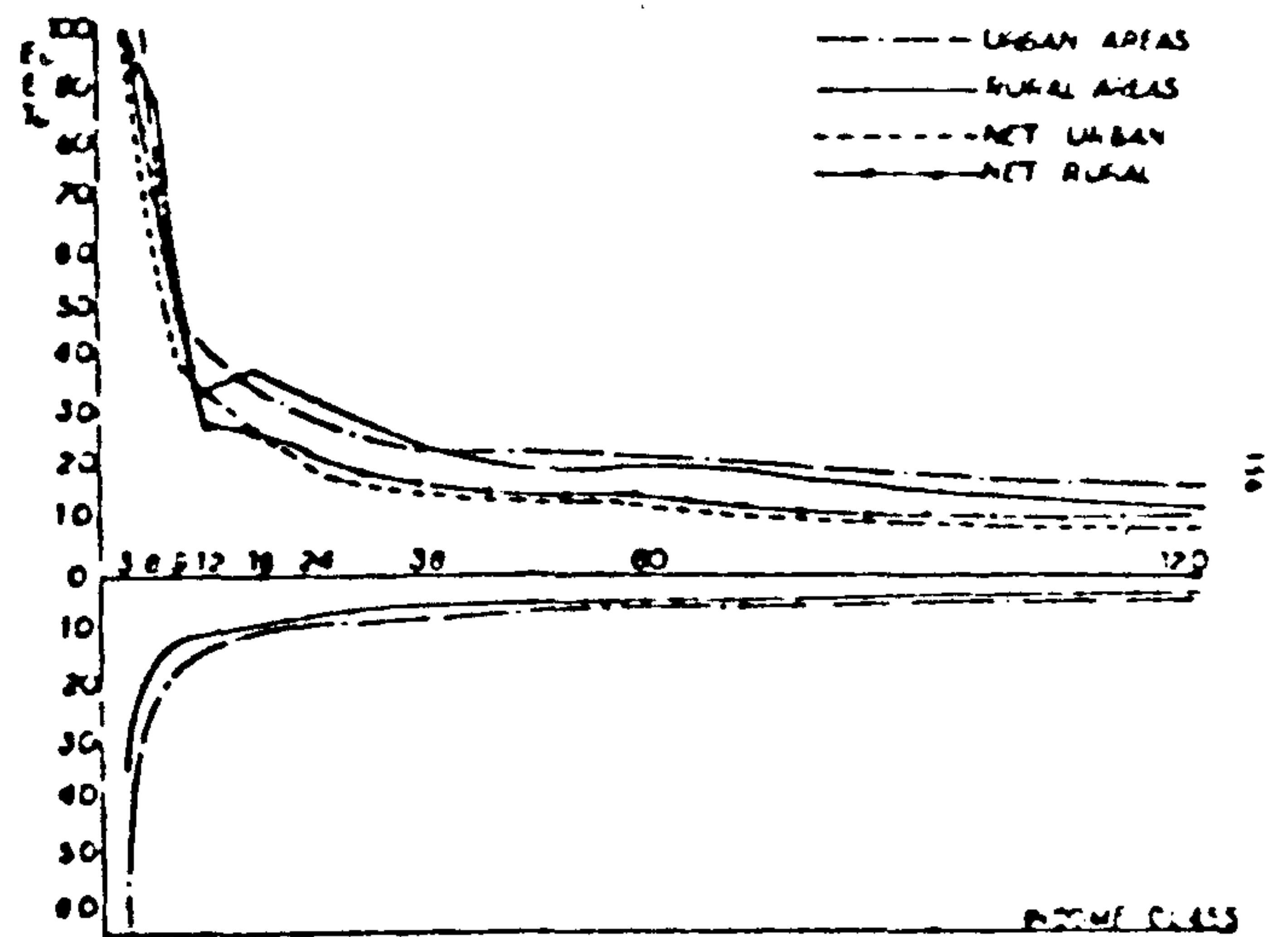


Fig. 6. The Distribution of Budget Incidence Between Urban and Rural Areas (1977/78)

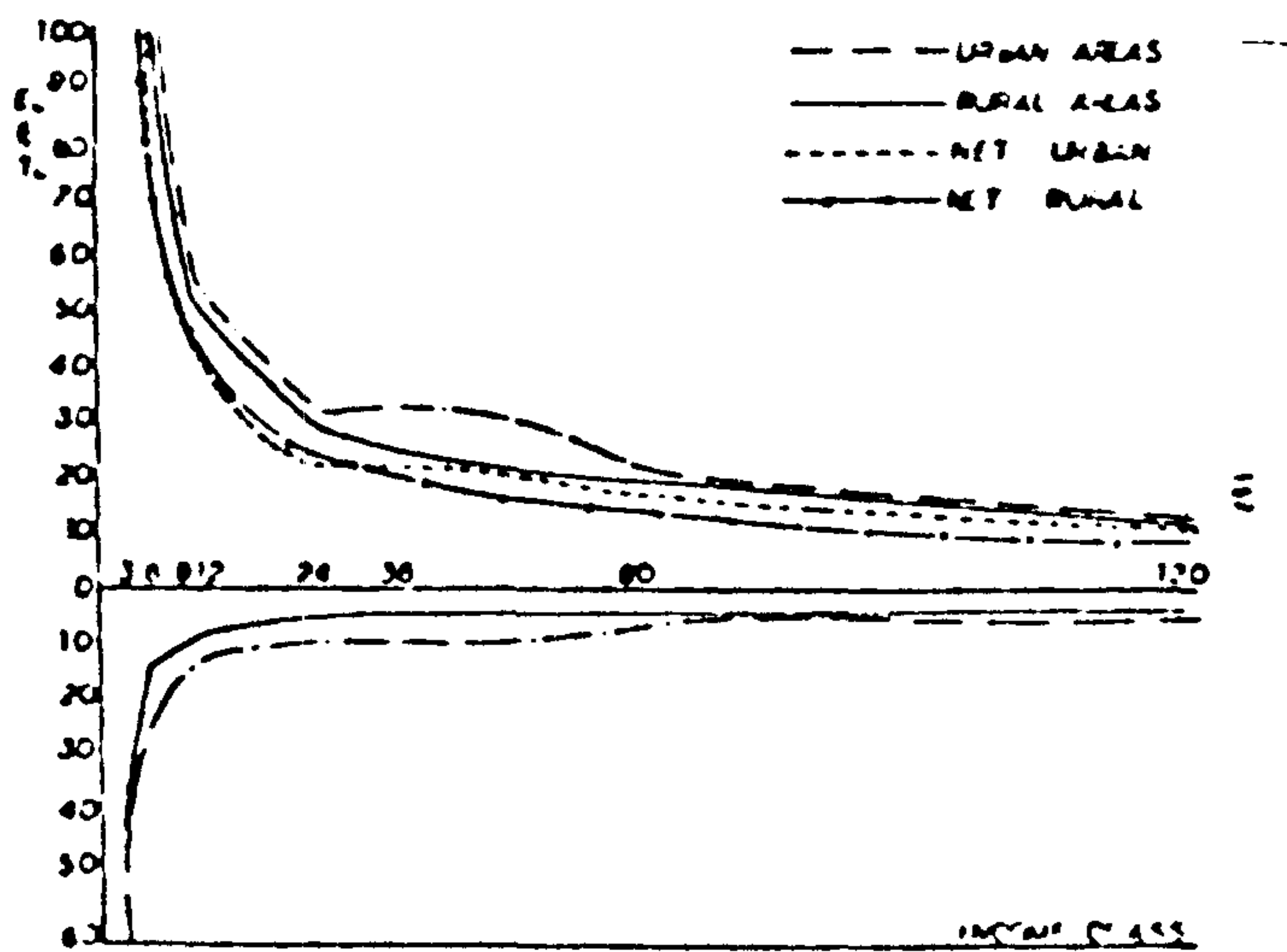
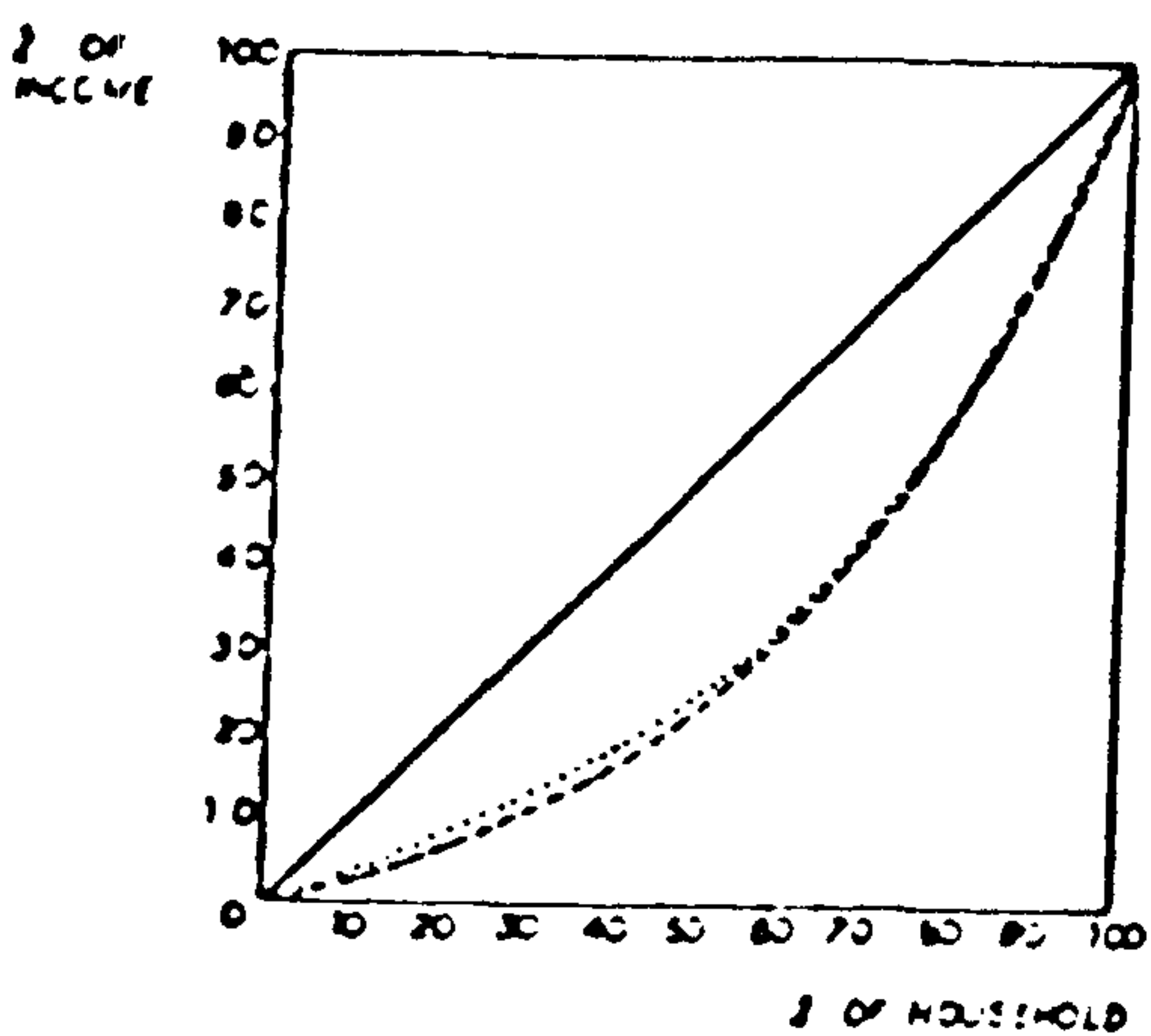
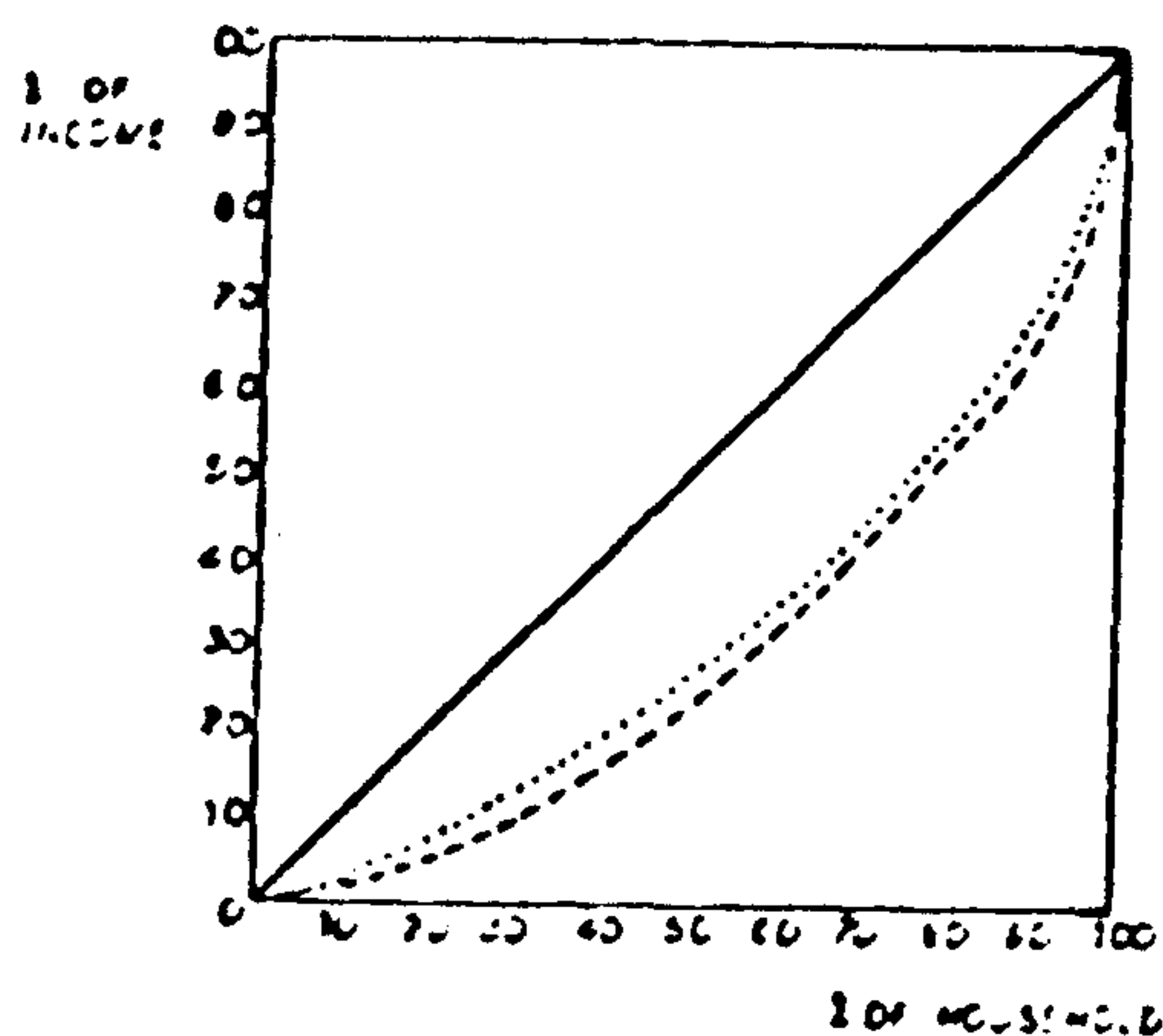


Fig. 7. The Distribution of Budget Incidence Between Urban and Rural Areas (1976/77)



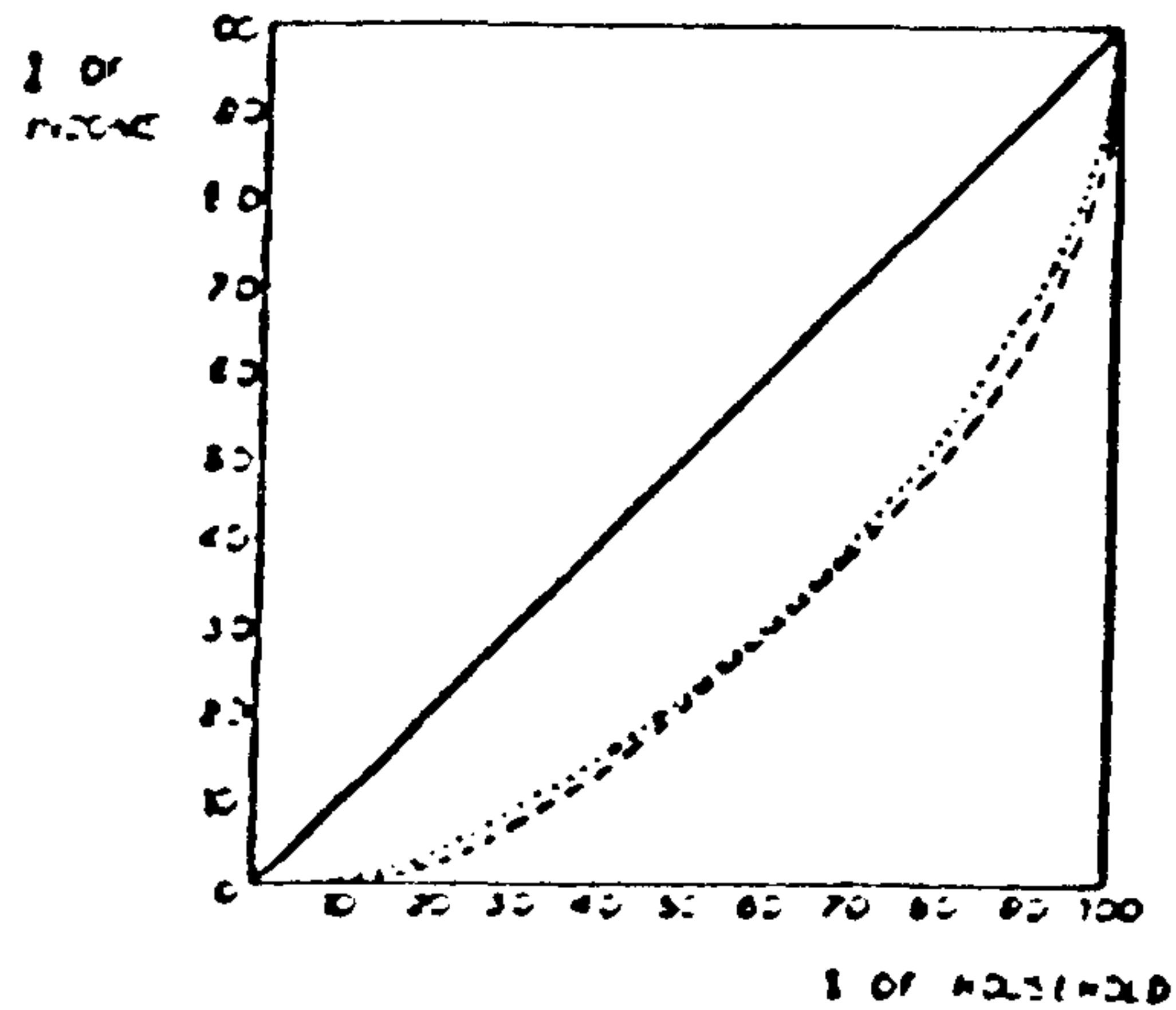
----- Pre-Budget Incidence  
 ..... Post-Budget Incidence

FIG. 8. Pre-and Post-Budget Incidence  
 Lorenz curve; Bihar area (1974/75)



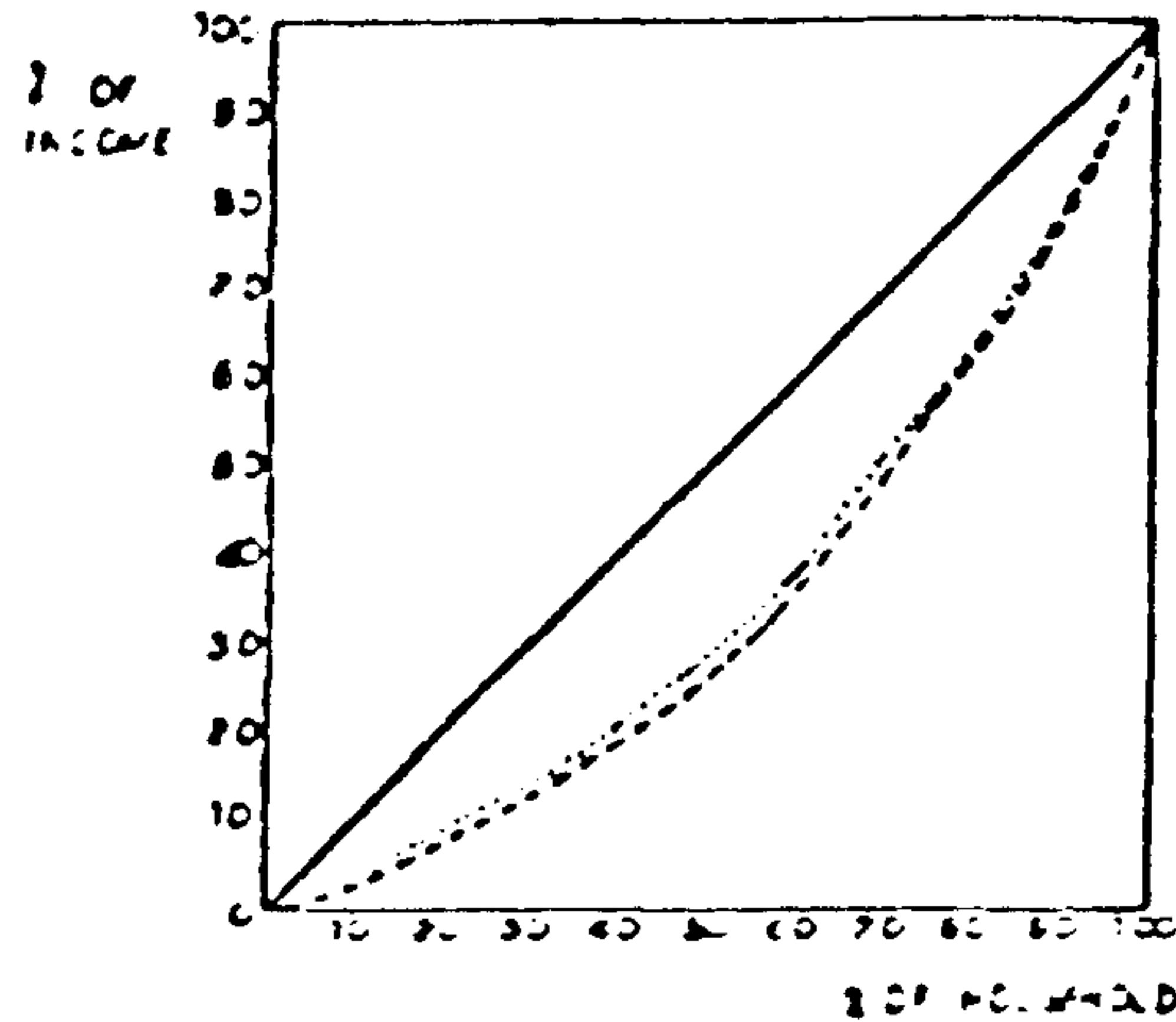
----- Pre-Budget Incidence  
 ..... Post-Budget Incidence

FIG. 9. Pre-and Post-Budget Incidence  
 Lorenz curve; Bihar area (1977/78)



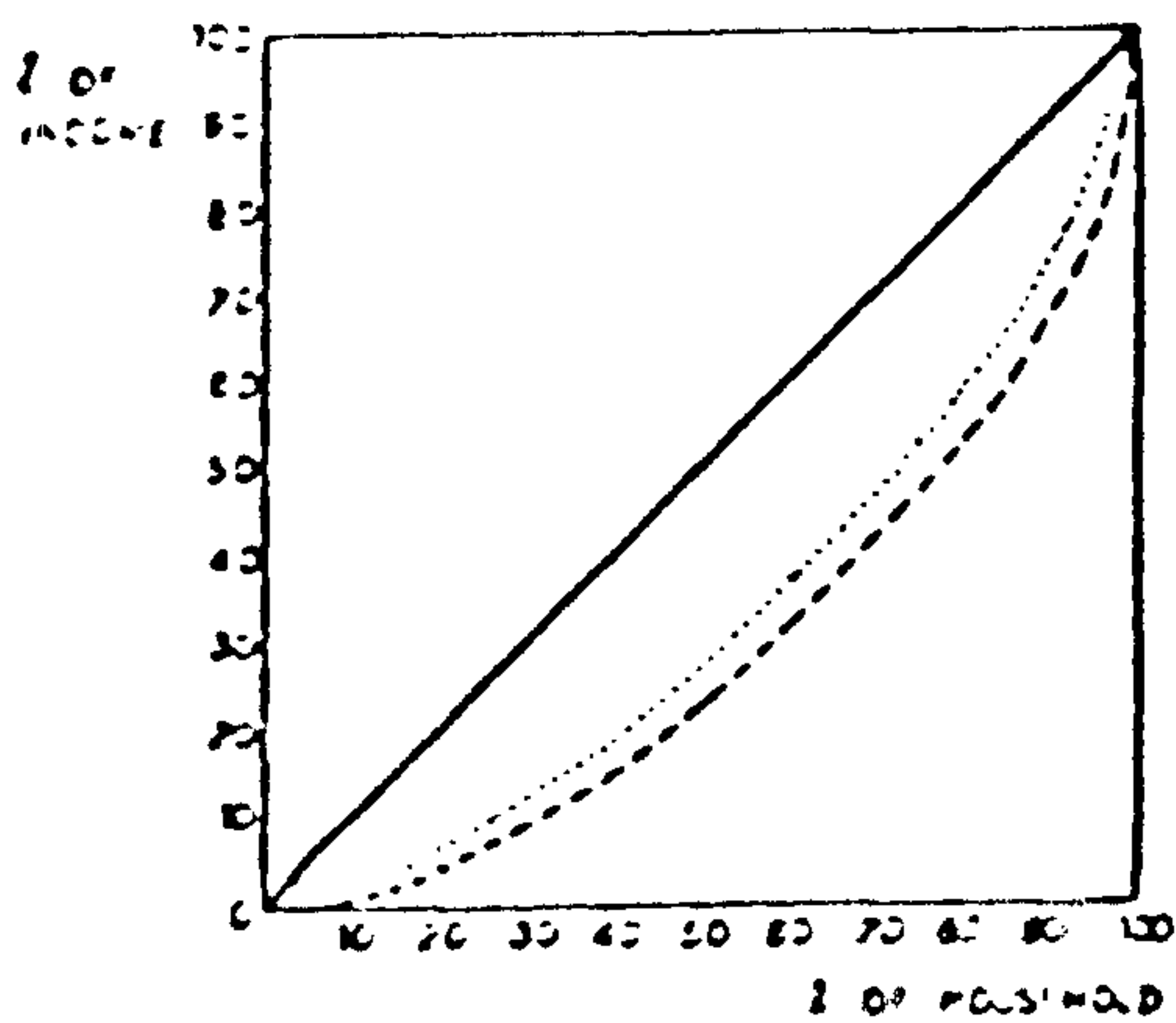
----- Pre-Budget Incidence  
 ..... Post-Budget Incidence

FIG. 10. Pre-and Post-Budget Incidence  
 Lorenz curve; Bihar area (1976/77)



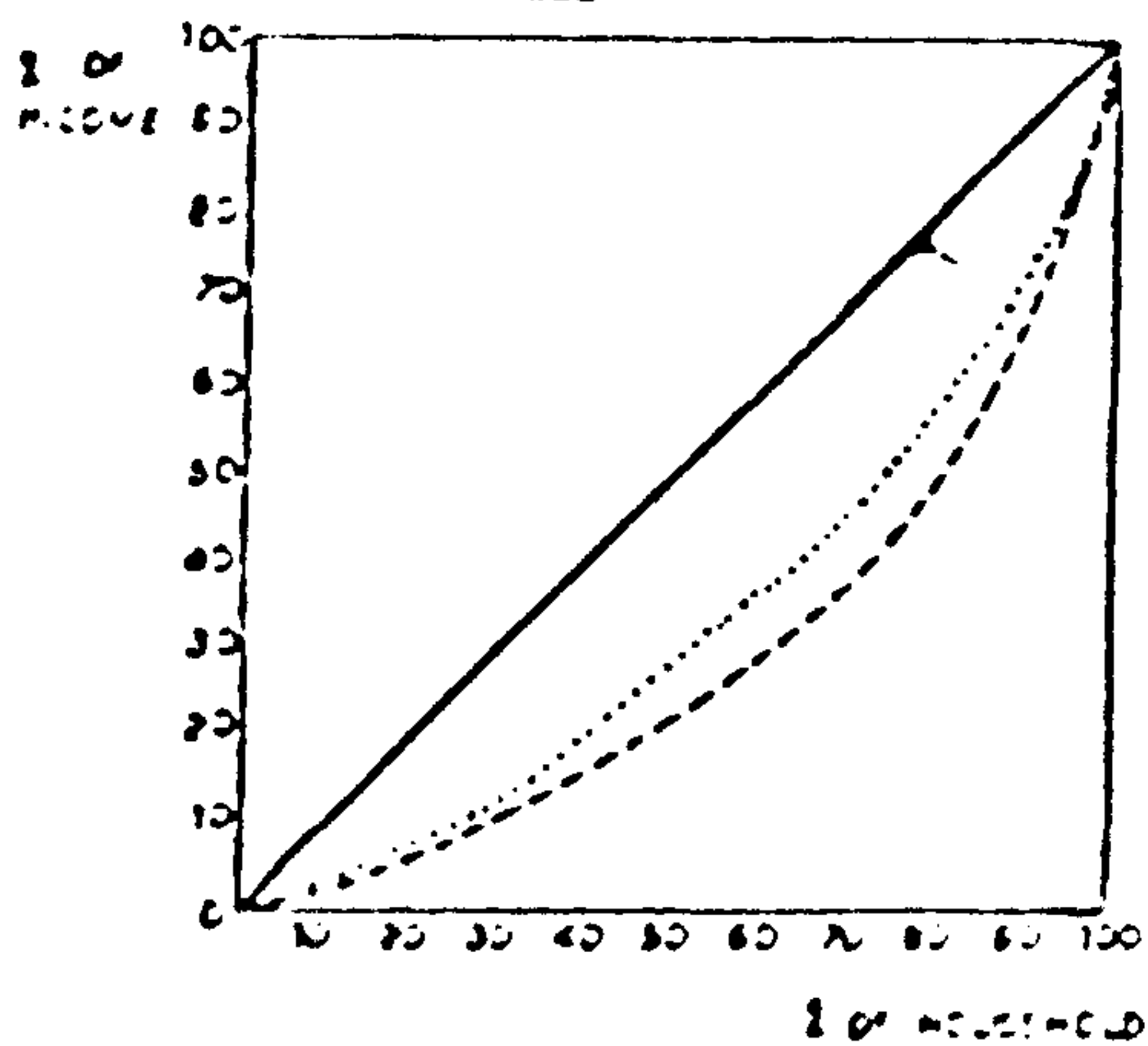
----- Pre-Budget Incidence  
 ..... Post-Budget Incidence

FIG. 11. Pre-and Post-Budget Incidence  
 Lorenz curve; Bihar area (1974/75)



----- Pre-Budget Incidence  
 ..... Post-Budget Incidence

FIG. 12. Pre-and Post-Budget Incidence  
 Lorenz curve; Bihar area (1977/78)



----- Pre-Budget Incidence  
 ..... Post-Budget Incidence

FIG. 13. Pre-and Post-Budget Incidence  
 Lorenz curve; Bihar area (1976/77)