

THE DISTRIBUTION OF THE TAX BURDEN BY INCOME GROUPS IN GREECE

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This paper summarises the main results of a piece of research into the allocation of the tax burden for different income groups in Greece and on the distributive impact of the Greek tax and transfer payments structure. My intention here is not to get involved into the theoretical discussion of the many and difficult problems of incidence or into the controversial issues of shifting assumptions. This is a major subject which is well known from the works of Professors Prest, Musgrave, Krzyzaniak, Conrad and others.¹ The purpose of the paper is to present an exercise about the allocation of tax burden in Greece and to give some indication of the redistributive effect of the taxes and transfer payments in this country. The main findings of this exercise are shown in Tables 2-4 and Figs 1 and 2.

The Procedure

Three steps were followed for the main estimates : first, the estimation of shifting, second the allocation of tax burden and transfer payments to income groups and third the estimation of redistributive impact of these budget items. In brief the following procedure was used in each step.

1. *Estimation of Shifting.* The procedure here was as follows :

For the indirect consumption taxes and for the contribution to social insurance (accounting for 75 % of total tax revenues) a 100 % forward shifting has been assumed. This assumption seems to be close to reality, since the results of the

See A. Prest, «Statistical Calculations of Tax burdens,» *Economica*, August 1955; A.H. Conrad, «On the Calculation of the Tax Burdens,» *Economica*, November 1955 and A. Prest, «On the Calculation of Tax Burden, a Rejoinder,» *Economica*, August 1956. M. Krzyzaniak and R. Musgrave, «The Shifting of the Corporation Income Tax», The Johns Hopkins Press, 1963; A. Harberger, «The Incidence of the Corporate Income Tax,» *Journal of Political Economy*, Vol. LXX, No 3, June 1962.

much tax burden is falling on income earners by factor shares and how much on the consumers of various commodities.

2. *Allocation of tax burden and transfer payment benefits to income groups* : The next problem was how to switch from «incidence by factor shares and consumption items» to «incidence by income brackets». In fact, this is a problem of selecting and applying proper bases for allocating tax burden and transfer payments by income groups. Table 1 shows the allocation bases used for this purpose.

With a few exceptions, all of the bases of allocation used in the study were taken from Household Surveys. Some important allocation bases, like income distribution has been derived by using data from the above source and from the Greek National Accounts as well.

Although income distribution by income brackets is the most crucial information for our estimates, no official data covering total population could be found. To overcome the difficulty we tried to estimate income distribution from the existing statistical information. From the distribution of consumer expenditure by income bracket taken from Household Surveys we derived the corresponding income distribution by income bracket by applying the family consumption function :

$$\log C = 0,619 + 0,866 \log Y$$

$$(0,1109) \quad (0,0217)$$

To estimate this consumption function we used the time series of private consumption and disposable income from National Accounts, standardized by the total number of families. It should be pointed out that the derived income distribution refers to the national income concept.

The distribution of total consumer expenditure by income brackets (see line 7 in table 1) was used as a base for allocating general consumption tax and contribution to social insurance shifted forward to the consumers. To allocate excises customs and after non-general sales taxes shifted forward we used also the distribution of consumer expenditure for the corresponding taxed good or service (see lines 8-20 in table 1). It should be noted, however, that in the case of some excise taxes, such as crude oil, mazut, gasoline taxes and transport duties, the shifted burden of the tax is falling partly on the consumers of the taxed commodity and partly on total consumption, to the extent that these commodities are used directly for consumption (for example central heating) or as an input for the production in general. Using statistical information as to how much is consumed directly and how much is used as an input we tried to allocate accordingly the tax burden.

The tax burden falling on income earners by factor shares (profits, dividends, wages) was allocated according to the distribution of incomes in question by income brackets (lines 2-6 of table 1).

We cannot set out here the difficulties and problems we faced in choosing

TABLE 1

BASES FOR THE ALLOCATION OF TAX BURDEN AND TRANSFER PAYMENTS BENEFITS
BY INCOME BRACKETS, CALENDAR YEAR 1974.

Allocation Bases	Family Income Brackets in thousand Drs							TOTAL	
	under 22.9	2—363.9	64—93.9	94—139.9	140— 209.9	210— 314.9	315— 499.9		500 and over
1. Total Net Money Income	0.77	6.84	8.35	15.36	18.80	19.80	16.14	13.94	100
2. Agricultural Income	1.84	13.86	12.45	16.97	18.43	16.77	10.86	8.82	100
3. Non-Agricultural Income	0.30	4.37	6.62	14.83	19.00	21.18	18.46	15.17	100
4. Income from Profits	0.59	10.43	13.22	13.38	14.79	11.03	13.41	28.15	100
5. Dividends	0.19	1.79	2.07	4.24	6.90	11.59	19.72	53.30	100
6. Wages and Salaries	0.08	5.11	13.87	20.70	28.22	13.83	13.36	4.83	100
7. Total Consumer Expenditure	1.10	8.36	9.44	16.47	19.13	19.12	14.74	11.64	100
8. Tobacco	1.72	13.32	13.39	20.65	19.84	15.71	9.85	5.51	100
9. Sugar	3.02	15.33	13.42	17.78	17.85	14.10	10.94	5.56	100
10. Alcoholic Beverages	0.13	12.30	12.84	17.61	19.99	16.92	11.45	7.65	100
11. Amusement and entertainment	1.16	2.67	4.53	11.97	16.22	20.79	21.88	21.81	100
12. Fuels	—	10.79	12.48	20.31	21.54	17.10	10.21	6.41	100
13. Auto Purchases	—	0.40	0.79	1.47	3.15	15.45	38.53	40.21	100
14. Auto Services	—	0.92	2.02	7.12	14.55	23.85	26.49	25.05	100
15. Gazolin for Auto operation	—	1.18	2.11	8.11	16.50	27.83	26.01	18.26	100
16. Transport Expenditures	0.85	8.68	10.49	18.96	20.39	19.04	12.94	8.71	100
17. Medicines, etc.	0.73	6.37	8.64	16.15	19.54	20.94	15.62	11.01	100
18. Food (excluding sugar)	1.69	11.54	11.68	19.27	20.02	17.48	11.67	6.65	100
19. Durables	0.49	5.42	7.26	18.70	18.70	20.60	17.31	16.30	100
20. Housing Expenditures	0.66	5.15	8.00	16.33	17.72	20.40	14.96	15.78	100
21. Total Number of Households	8.2	22.7	15.2	18.8	15.5	11.0	6.0	2.6	100
22. Agricultural Households	14.75	31.44	16.44	14.94	11.09	6.85	2.90	1.59	100
23. Non-agricultural households	3.50	16.56	14.29	21.55	18.64	13.99	8.10	3.37	100

Source: a) Household Survey for 1974, National Statistical Service of Greece.

b) Statistics of Taxable Income of Personal Income Tax for 1974.

National Statistical Service of Greece

c) National Accounts of Greece Ministry of Co-ordination.

proper bases for allocating transfer payments.¹ We shall only refer to the main bases used for this purpose. The number of agricultural families was used to allocate pensions, sickness allowances and subsidies to the rural populations, whereas pensions to war veterans were allocated in accordance to the total number of families. Pensions to the urban population were allocated according to the distribution of non-agricultural income. Finally, welfare allowances were allocated among the three lowest income brackets (income below 94 thousand drachmas per year) in an inverse order to their income (i.e. the lower the income bracket the bigger the sum allocated).

3. *Estimating the redistributive impact*: The last step was to estimate the redistributive impact of the Greek tax structure and transfer payments system. We have done this by comparing the state of income distribution before the allocation of tax burden and transfer payment benefits to the state of income distribution after the allocation of these budget items. States of income distributions have been expressed by using the traditional method of Lorenz curves.

The Effective Tax Rates

Table 2 shows the estimated effective tax rates for 1974 expressed, for each income bracket, as a ratio of tax burden to income received. Estimates for later years could not be made because information on income distribution and consumption expenditure by income brackets are not available. Nevertheless, the results of the study must not be far from present reality. There are indications showing that the basic structures (distribution of income and consumption by income brackets), used for estimating allocation of the tax burden are not likely to have changed.

The effective tax rate for the whole tax structure (see line 20 in table 2) has been found regressive for families in low and middle income classes turning to slightly progressive in the upper income groups. To be precise the effective tax rate declines from 32 % in the lowest income group to 26 % in the upper bracket of the middle income class and after that is rising to 28 % for the people with income over half a million Drs. In other words the upper income class is taxed more heavily than the middle class but more lightly than the people with low income. This feature of the effective tax rates is the result of two elements co-existing in the Greek Tax System, a regressive and a progressive element.

Taxes with regressive effective tax rates prevail in the Greek tax structure, accounting for more than 70 % of the total tax revenue. Tobacco tax, contributions to social insurance and general sales taxes (turnover, stamp duty etc.) are the most important regressive elements of the tax structure, both because their effective rate, especially that of tobacco tax, is declining sharply as we move to successively higher income levels and because their weight in total tax revenues is relatively

1. See Tax Foundation Inc. «Tax Burdens and Benefits of Government Expenditures by Income Class, 1961 and 1965», p. 62.

TABLE 2

TAXES AS A PERCENTAGE OF TOTAL INCOME BY INCOME GROUPS
CALENDAR YEAR 1974

	Family Income Brackets in Thousand Drs										TOTAL
	under 23.0- 22.9	23.0- 64.9	65.0- 93.9	94.0- 139.9	140.0- 209.9	210.0- 314.9	315.0- 499.9	500 & Over			
I. INCOME TAXES	11.54	11.37	11.71	12.32	12.30	12.08	12.17	15.83	12.79		
1. Personal Income Tax	1.10	1.60	2.34	3.10	3.40	3.60	3.80	8.12	4.06		
2. Corporate Income Tax	0.26	1.01	1.27	1.55	1.62	1.71	1.83	1.74	1.61		
3. Contributions to Social Insurance	10.18	8.76	8.10	7.67	7.28	6.77	6.54	5.97	7.12		
II. INDIRECT CONSUMPTION TAXES	19.75	17.00	15.47	14.58	13.82	13.09	13.13	11.91	13.82		
4. General Sales Taxes (turnover tax, stamp duties)	8.13	7.00	6.47	6.13	5.82	5.41	5.22	4.77	5.69		
5. Tobacco Tax	3.04	2.67	2.19	1.84	1.44	1.06	0.83	0.54	1.36		
6. Sugar Tax	1.13	0.65	0.47	0.37	0.28	0.20	0.20	0.12	0.29		
7. Alcoholic Beverage Tax	0.35	0.39	0.34	0.25	0.28	0.18	0.15	0.12	0.22		
8. Taxes on luxuries and amusement	0.04	0.09	0.13	0.19	0.21	0.25	0.33	0.38	0.24		
9. Grude Oil and Mazout taxes	0.73	0.73	0.69	0.63	0.56	0.46	0.38	0.31	0.52		
10. Gasoline Tax	0.15	0.28	0.32	0.47	0.65	0.91	1.02	0.83	0.70		
11. Transport duties	0.05	0.11	0.21	0.32	0.42	0.70	1.05	1.06	0.61		
12. State Monopoly of Petroleum, matches etc. 13. Custom Duties and other taxes on imported food	0.63	0.37	0.27	0.21	0.17	0.12	0.09	0.06	0.17		
14. Custom Duties & other taxes on imported motor-vehicles	0.66	0.51	0.43	0.38	0.32	0.26	0.22	0.15	0.30		
15. Customs Duties & other taxes on imported medicines	0.11	0.11	0.10	0.10	0.11	0.19	0.43	0.52	0.23		
16. Customs duties & other taxes on imported durables	0.09	0.09	0.10	0.10	0.10	0.10	0.09	0.07	0.40		
17. Other Customs Duties and indirect taxes	0.26	0.32	0.35	0.37	0.40	0.41	0.43	0.47	0.09		
III. PROPERTY TAXES	4.28	3.68	3.40	3.22	3.06	2.84	2.69	2.51	2.99		
18. Taxes on Property Transactions	0.60	0.87	0.96	1.00	1.10	1.14	1.18	1.29	1.10		
19. Inheritance, gifts & other property taxes	0.53	0.66	0.72	0.75	0.83	0.85	0.89	0.97	0.83		
20. TOTAL TAXES	31.89	29.24	28.14	27.90	27.22	26.31	26.48	29.03	27.71		

high. Other regressive taxes with smaller weights are alcoholic and sugar taxes, state monopolies of petroleum and matches, customs duties on goods and raw materials and other smaller excises and custom taxes. The regressiveness of almost all these taxes is due, mainly, to the fact that almost 100 % of their burden is shifted to goods and services of basic consumption which, according to Household Surveys' data, absorb successively higher proportions of income at the lower income levels.

Progressive taxes are numerous but unimportant. They account for only 30 % of total tax revenue. According to estimates shown in table 2 effective rates of almost all progressive taxes is low and the degree of their progressivity small in spite of the fact that this group includes such significant taxes as personal and corporate income tax (lines 1 and 2), inheritance and gift taxes (line 19) and taxes on luxuries (lines 7, 8, 14, and 16), for most of which legislation provides tax rates with a high degree of progressivity. The most striking case is that of personal income tax. It has been found that the estimated effective rates of this tax, especially for the middle and high income brackets (see line 1 in table 2), are two to three times lower than the statutory tax rate provided by the law. This difference is due, among other reasons, to the extensive evasion from income tax located mainly in the high income levels and to the generous tax incentives to savers, investors and exporters granted with the intention of accelerating growth. It has been estimated that if all these tax privileges and exemptions were abolished and if a way could be found to eliminate tax evasion, the effective rate of personal income tax for the middle and upper income groups could possibly double. The same remarks hold for the corporate income tax. Taxes on luxuries and other similar goods (lines 7, 8, 14, 15 and 16 of Table 2) is an interesting case too. A great variety of goods and services ranging from black caviar, whisky and gin to motor-cars, air-conditioning and electric appliances are taxed heavily, in some cases with such high tax rates as 300 %. It is certain that almost all these goods are largely consumed by high income groups as it is shown by the household surveys' data (see lines 11, 13, 17 and 19 of table 1), but their weight in total consumption expenditure and hence their tax base is small, so that, in spite of the fact that they are taxed severely, their effective tax rate is too low.

The above remarks are enough to show that Public Authorities in Greece have not succeeded in making progressive the overall effective tax rate, although they have equipped the tax structure with a highly progressive income tax (its statutory marginal tax rates range from 3 % for the first 20.000 drs to 60 % for that part of income which is over 3 million) and with many heavy taxes on goods and services consumed mainly by people with high incomes.

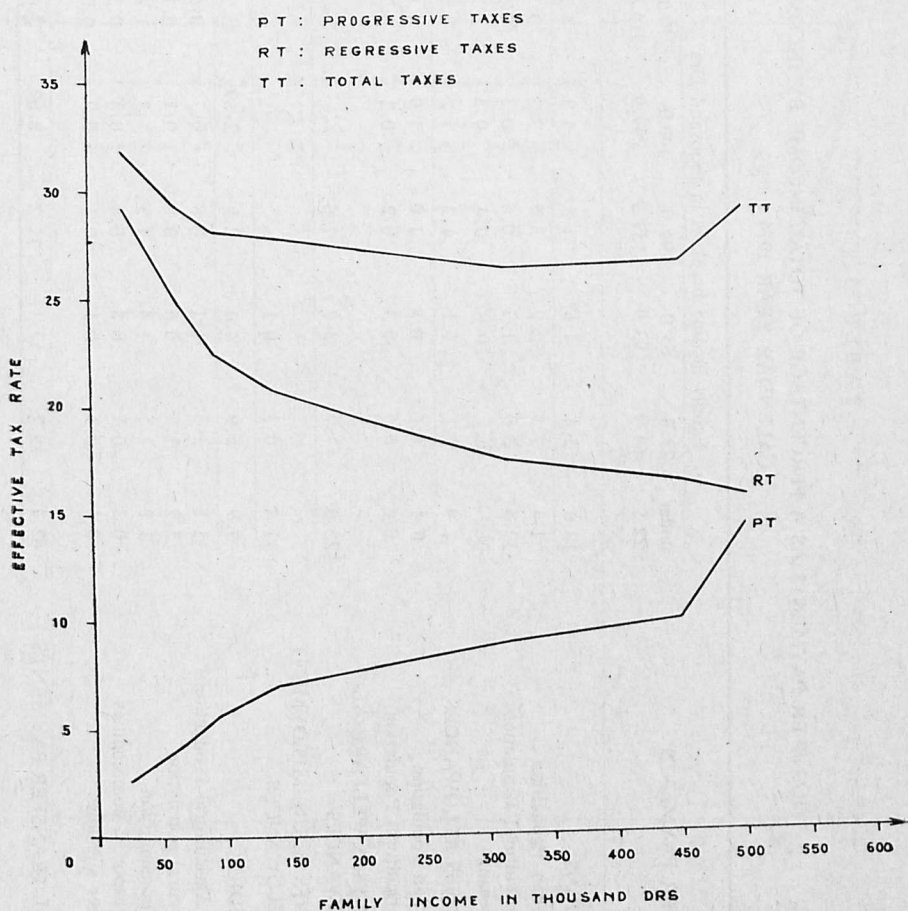
In Chart 1 effective rates of the various taxes have been aggregated into two groups, the regressive and progressive ones. It is clearly shown in the Chart how each group of taxes affects the overall effective tax rate of the Greek tax structure.

The picture is slightly different if we take into account transfer payments, treated here as negative taxes. Table 3 shows transfer payment benefits by income

groups as a percentage of income received. The pattern of total transfer payment benefits (line 6 of table 3) range from 62,4 % of income for families in the under

FIG 1

EFFECTIVE TAX RATES OF THE GREEK TAX STRUCTURE IN 1974



23.000 drs class to 7,5 % in the 500.000 drs and over class. According to the estimates of table 3, a similar pattern is followed by nearly all categories of transfer payments.

TABLE 3

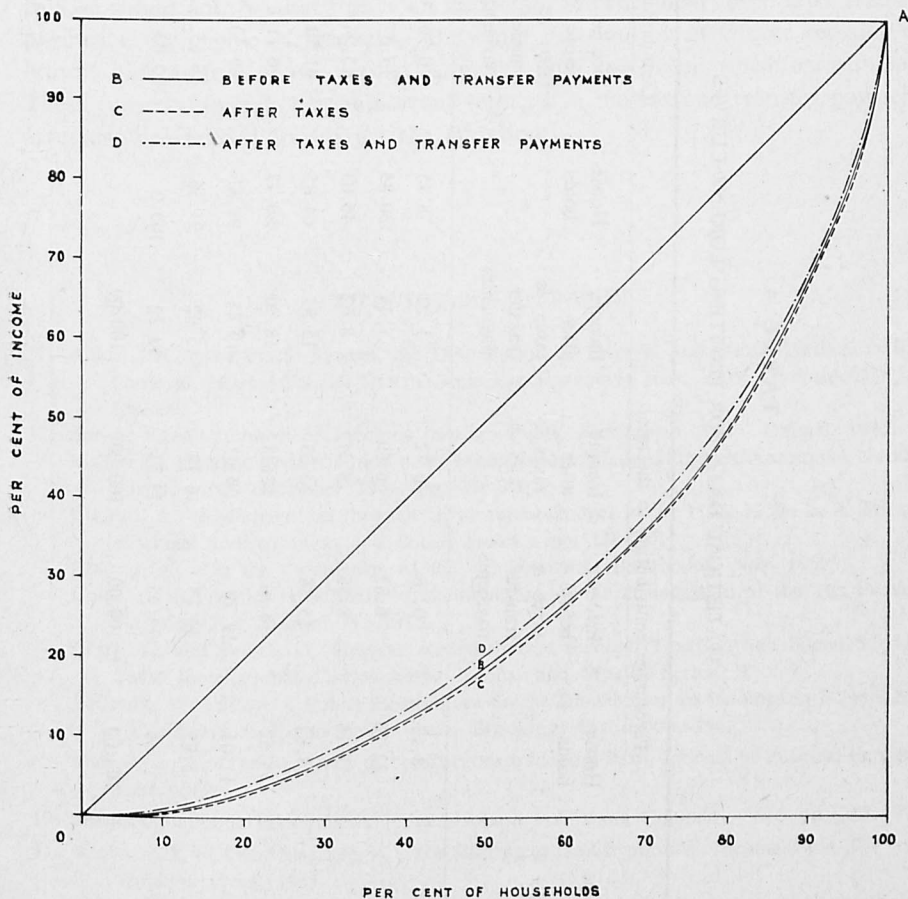
TRANSFER PAYMENTS AS A PERCENTAGE OF TOTAL INCOME BY INCOME GROUPS
CALENDAR YEAR 1974

TRANSFER PAYMENTS	Family income brackets in thousand Drs										TOTAL
	under 22.9	23.0- 64.9	65.0- 93.9	94.0- 139.9	140.0- 209.9	210.0- 314.9	315.0- 499.9	500.0 & over			
1. PENSIONS	18.0	5.4	4.17	4.5	4.3	4.2	4.3	4.04	4.70		
a. Urban Population	1.4	2.3	2.9	3.5	3.7	3.8	4.1	3.9	3.66		
b. Agricultural Population	12.5	3.0	1.2	0.6	0.3	0.2	0.1	0.07	0.65		
c. Veterans	4.1	0.1	0.07	0.4	0.3	0.2	0.1	0.07	0.39		
2. SICKNESS ALLOWANCES	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.30		
a. Urban Population	0.4	0.6	0.8	1.0	1.0	1.0	1.1	1.1	1.05		
b. Agricultural Population	0.6	0.5	0.3	0.2	0.2	0.2	0.1	0.1	0.25		
3. GRANTS & WELFARE AL- LOWANCES	22.0	7.7	3.8	2.6	—	—	—	—	1.38		
4. GRANTS & UNEMPLOYMENT ALLOWANCES	11.5	0.3	0.1	—	—	—	—	—	0.14		
5. SUBSIDIES	9.9	5.9	4.0	2.9	2.59	2.29	2.13	2.31	2.96		
a. to Agricultural Production	1.8	1.5	1.1	0.8	0.7	0.6	0.5	0.4	0.77		
b. to rural population	5.9	1.4	0.6	0.3	0.1	0.1	0.05	0.03	0.31		
c. to consumption	1.8	1.5	1.4	1.3	1.3	1.2	1.1	1.0	1.28		
d. to exported commodities	0.3	0.7	0.8	0.4	0.4	0.3	0.4	0.8	0.50		
e. other subsidies	0.1	0.1	0.1	0.1	0.9	0.09	0.08	0.08	0.097		
6. TOTAL TRANSFER PAYMENTS	62.4	19.7	13.17	11.2	8.09	7.69	7.63	7.55	10.48		

The Redistribuionnl Impact

Lorenz curves in Chart 2 illustrate the state of income distribution in Greece before and after the allocation of tax burden and transfer payments benefits. Estimates of table 4 were used as the basic material for plotting the curves. Lorenz curve B depicts the income distribution before the allocation of the tax burden and

FIG 2
LDRENZ CURVES OF INCOME DISTRIBUTION IN GREECE IN 1974



the transfer payment benefits. Lorenz curve C shows income distribution after the allocation of the tax burden. Finally, Lorenz curve D shows income distribution after the allocation of both tax burden and transfer payment benefits.

TABLE 4
STATISTICAL DATA FOR PLOTTING LORENZ CURVES

Family income brackets (in thousand Drs.)	Percentage contribution to the total				Cumulative percentages			
	House holds	Income before taxes & transfer payments	Income after taxes	Income after taxes & transfer payments	House-holds	Income before taxes & transfer payments	Income after taxes	Income after taxes & transfer payments
under 22.9	8.15	0.76	0.72	1.22	8.15	0.76	0.72	1.22
23 - 63.9	22.70	6.83	6.69	7.45	30.85	7.5	7.41	8.67
64 - 93.9	15.16	8.35	8.31	8.62	46.03	15.94	15.72	17.29
94 - 139.9	18.82	15.36	15.33	15.53	64.85	31.30	31.05	32.82
140 - 209.9	15.52	18.81	18.98	18.50	80.37	50.11	50.03	51.32
210 - 314.9	11.04	19.79	20.07	19.45	91.41	69.90	70.10	70.77
315 - 499.9	5.95	16.15	16.19	15.92	97.36	86.05	86.29	86.69
500 & over	2.64	13.95	13.71	13.32	100.0	100.00	100.00	100.00
TOTAL	100.00	100.00	100.00	100.00				

The main conclusion derived from Fig. 2 is that the Greek tax structure as such accentuates, although not too much, the inequality in the distribution of income; this is made clear by the shifting of Lorenz curve from B to C. As we have said, among the reasons of this adverse distributional impact of the Greek tax structure is the regressive character of the indirect consumption taxes, the extensive evasion in personal income tax and in corporate tax and the generous exceptions and incentives granted with the intention to accelerate growth.

The situation of income distribution changes a little if we bring into the picture transfer payments. Transfer payments reduce slightly the inequality in income distribution in Greece. This is made clear by the shifting of Lorenz curve to D. But we would not say that this is an important improvement; even after transfer payments, the degree of inequality of income distribution in Greece remains relatively high as it is shown by the estimated Gini coefficient which exceeds 0,45. These remarks suggest that important reforms in the tax and transfer payments structure are needed to correct the situation.

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