## CENTRE OF PLANNING AND ECONOMIC RESEARCH

# No 49

# Private Education Expenditure in a "Free Education" Country: The Case of Greece

by

C. KANELLOPOULOS G. PSACHAROPOULOS

November 1995

Costas Kanellopoulos Research Fellow Centre of Planning and Economic Research

George Psacharopoulos Senior Human Resources Adviser World Bank



Private Education Expenditure in a "Free Education" Country: The Case of Greece

### Copyright 1995

by the Centre of Planning and Economic Research 22, Hippokratous Street, 106 80 Athens, Greece

Opinions or value judgements expressed in this paper are those of the authors and do not necessarily represent those of the Centre of Planning and Economic Research.

### CENTRE OF PLANNING AND ECONOMIC RESEARCH

The Centre of Planning and Economic Research (KEPE) was established as a research unit, under the title "Centre of Economic Research", in 1959. Its primary aims were the scientific study of the problems of the Greek economy, encouragement of economic research and cooperation with other scientific institutions.

In 1964, the Centre acquired its present name and organizational structure, with the following additional objectives: (a) The preparation of short, medium and long-term development plans, including plans for regional and territorial development and also public investment plans, in accordance with guidelines laid down by the Government. (b) The analysis of current developments in the Greek economy along with appropriate short-term and medium-term forecasts; also, the formulation of proposals for appropriate stabilization and development measures. (c) The further education of young economists, particularly in the fields of planning and economic development.

The Centre has been and is very active in all of the above fields, and carries out systematic basic research in the problems of the Greek economy, formulates draft development plans, analyses and forecasts short-term and medium-term developments, grants scholarships for post-graduate studies in economics and planning and organizes lectures and seminars.

In the context of these activities KEPE produces series of publications under the title of "Studies" and "Statistical Series" which are the result of research by its staff as well as "Reports" which in the majority of cases are the outcome of collective work by working parties set up for the elaboration of development programmes. "Discussion Papers" by invited speakers or by KEPE staff are also published.

The Centre is in continuous contact with similar scientific institutions abroad and exchanges publications, views and information on current economic topics and methods of economic research, thus further contributing to the advancement of the science of economics in the country. .

### DISCUSSION PAPER SERIES

.

This series of Discussion Papers is designed to speed up the dissemination of research work prepared by the staff of KEPE and by its external collaborators with a view to subsequent publication. Timely comment and criticism for its improvement is appreciated.



# CONTENTS

Page

1.	Introduction	13
н.	The Survey	15
ш.	The Private Education Expenditure	16
IV.	Who Spends on Education?	21
VI.	Conclusion	24
APPEN	NDIX OF TABLES	29
REFER	ENCES	33



### ABSTRACT

This paper uses data from the 1988 Family Expenditure Survey to estimate and analyze the private expenditure on education in Greece. Such expenditure amounts to 111,624 million drs. per year or 2.1 percent of total household expenditure. The aggregate expenditure of households is roughly half of what the state is spending on education. The dominant type of expenditure is for foreign languages and private cram schools (*frontisteria*). There are sharp differences in private expenditure on education depending on the location of the household (spending in Athens is two and one-half times that of small towns and villages), the household's total expenditure, as well as the occupation and educational level of the head of the household. The findings are discussed in the context of the equity and efficiency of current education provision and financing policies.

![](_page_11_Picture_0.jpeg)

### I. INTRODUCTION

Greece, like many other countries, has a policy that most educational services are provided by the state, where attendance and textbooks are free at state-owned educational institutions at all levels, regardless of the students' financial resources. The state guarantees a public school place to all children up to the end of the secondary school cycle, although in some urban areas, attendance may alternate between morning and afternoon classes. For entrance to higher education, however, the candidate has to succeed in a very competitive national examinations system. Each year the number of participants to university entrance examinations far exceeds the number of available slots (see Lambropoulos and Psacharopoulos, 1992, Table B-1). Unlike primary and secondary education, which is delivered by both public and private schools, Article 16 of the country's Constitution mandates that higher education in Greece be provided only by the state and private universities are prohibited.<sup>1</sup>

These regulations, in conjunction with the drastic socioeconomic changes of recent decades, have led to an impasse. On the one hand, the rapid rise in real household incomes, urbanization, and employment growth in the public sector have led to increased demand for secondary and higher education. On the other hand, the growth in demand for entry to higher education has been unmet by the state educational system. Thus many of those who fail the university entrance examinations attend private preparatory cram schools known as *frontisteria* or take private tutoring and repeat the exam year after year. It is not uncommon for secondary school graduates to participate in university entrance examinations two and three times until they succeed or give up. The limited availability of domestic university places has forced many prospective students to seek study abroad. Moreover, because of this long prevailing university slot shortage, and because studying in certain advanced industrialized countries is considered prestigious and promising for economic and social advancement, many secondary school students give priority to preparing themselves for such studies by studying foreign languages and taking other requisite courses in anticipation of failing to enter a Greek university.<sup>2</sup>

<sup>&</sup>lt;sup>1</sup>. For a survey of the evolution and present state of the Greek educational system, see Kanellopoulos (1996).

<sup>&</sup>lt;sup>2</sup>. In the academic year 1985-86, 34,267 Greek students were enrolled abroad. This is equivalent to 20.4 percent of the domestic university students (Psacharopoulos 1992, Table II).

In this context it is not very surprising that, as everyone living in Greece understands, many families incur considerable private expenditures for the education of their offspring, even if the latter attend public schools. Such expenditure, which might be a substitute or complement to public education expenditure, is mainly for private schools at the primary and secondary level, private tuition and *frontisteria* in preparation for the very competitive university entrance examinations, and tuition fees and related expenses for those studying in a foreign university.

In this paper we use official household data to document what families spend privately for education, and to compare education expenditure to other magnitudes in the Greek economy. Moreover, our findings shed some light regarding the equity and efficiency of the existing pattern of education financing.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup>. For the efficiency and equity effects of public education financing see Hansen and Weisbrod (1969), Pechman (1970), and Conlink (1977) for the United States, and World Bank (1986) and Jimenez (1987) for developing countries.

### II. THE SURVEY

The data used in this paper come from the 1988 Family Expenditure Survey conducted by the National Statistical Service between November 1987 and October 1988 throughout the entire country. The survey's main purpose was to provide information on the household expenditure structure for revising the retail price index.<sup>1</sup> In this context the survey was designed to be representative of all households and, thus, reliable regarding the measurement of household expenditure. The total number of households surveyed was 6,489 covering over 20,000 individuals, including children. Private household education expenditure was classified into eight categories (private school tuition, tuition for technical education, private coaching lessons, cram schools, language, music, books and paper).<sup>2</sup> The survey also raised information on various regional, demographic and socioeconomic household characteristics, which allowed us to analyze the household educational expenses.

<sup>&</sup>lt;sup>1</sup>. For an analytical description of the survey's design, coverage and response rate, see National Statistical Service of Greece (1990).

<sup>&</sup>lt;sup>2</sup>. Note, however, that the survey did not include a question that would enable us to single out household expenses for studies abroad. Thus the estimates presented here are lower bounds of the true household expenditure for education.

### III. THE PRIVATE EDUCATION EXPENDITURE

Table 1 presents the average household expenditure on education by category and compares it to total household expenditure for the whole sample, and among those households that reported non-zero education expenditure (called Spender). It turns out that in 1988, each household spent on average 2,870 drs. per month on private education, which represents 2.08 percent of the total household expenditure.<sup>1</sup> Extrapolating the above statistic to the country as a whole yields 111,621 million drs. for 1988,<sup>2</sup> which is compared to 241,968 million drs. of public expenditure on education for the same year (see Greek Government 1988, p.75). Thus, private spending on education is almost half (46.1 percent) that of government spending. The largest component of this expenditure is for foreign languages (869 drs./month per household or, equivalently, 38,833 million drs. per year for the country as a whole), while expenses on school fees, private lessons and *frontisteria* are almost similar at around 350 drs./month.

Another dimension of educational expenditure is to confine the analysis to those households who participate in such expenses. Such households devote on average 8,662 drs./month to education services, which is equivalent to 4.67 percent of their total expenditure. To put it in perspective, this amount of money is equivalent to 18.5 percent of the minimum monthly wage at the time, as determined by the General Collective Bargaining Agreement, or equivalent to 14.3 percent of the average female take-home pay as derived from the same data set. In households with positive school fees expenditure, they devote 5.2 percent of their income to this service, or 12,334 drs./month. In the case of foreign languages buyers, the corresponding figures are 2.32 percent and 4,476 drs./month.

<sup>&</sup>lt;sup>1</sup>. According to the previous Family Expenditure Survey conducted in 1982, the share of household expenditure on education was 1.39 percent of the total expenditure, while during the period 1982-88, the average household expenditure on education in real terms shows a remarkable rate of growth (5.8 percent annually).

<sup>&</sup>lt;sup>2</sup>. For 1988 on average, 142 drs. = US\$1.00.

### TABLE 1

<b>-</b>				
	Average Housel Expenditure (	nold Education drs./month)	Education E Percenta Household	xpenditure as ge of Total Expenditure
Expenditure Type	All Households	Spenders	All Households	Spenders
School Fees	369	12334	0.27	5.19
Technical Schools	221	5228	0.16	2.67
Frontisteria	335	7200	0.25	3.90
Private Lessons	321	8067	0.23	3.48
Foreign Languages	869	4476	0.63	2.32
Music	223	3335	0.16	1.48
Books	147	2789	0.11	1.33
Paper	201	5087	0.15	2.10
Total Education Expenditure	2867	8662	2.08	14.67

### Average Education Expenditure by Type

Even though it is not easy to compare these percentages with those of other countries, it turns out that the share of money Greek households pay for educational fees is one of the highest among countries in the European Union for which similar statistics exist (see Table 2).

Table A-1 presents the composition of total education expenditure by selected socioeconomic characteristics.<sup>1</sup> It is worth noting that such expenditure increases sharply as total expenditure (implying income) rises. While spenders belonging to the lowest 20 percent of sample's total expenditure distribution display an average education expenditure

<sup>&</sup>lt;sup>1</sup>. The table reports averages only for cells based on 10 or more observations.

of 2,923 drs./month, those belonging to the upper 20 percent of this distribution spend on the average 13,602 drs./month. As total expenditure reflects ability to pay, this variation indicates unequal opportunity to education, existing in a country with free education provision.

### TABLE 2

		Private	Sector	Public	Sector
Country	All Households	Manual Workers in Industry or Services	Non- manual Workers in Industry or Services	Manual Workers in Industry or Services	Non- manual Workers in Industry or Services
Denmark	0.32	0.25	0.38	and the state of t	-
Greece	1.58	1.36	2.14	1.35	2.23
France	0.45	0.35	0.60	0.42	0.52
Ireland	1.22	0.58	1.73		· · ·
Luxembourg	0.97	0.78	1.22		
Netherlands	0.41	0.51	0.49	0.55	0.48

# Expenditure on Education as a Percentage of Total Household Expenditure, 1988

Source: Eurostat 1992, Table 2-4.

Private school fees, which are clearly for services that substitute those offered at public schools, are much higher in Athens than other areas. Moreover, almost 6 out of 10 households paying for private schools are located in Athens, while in many other regions private schooling is nonexistent. Those who spend for private schooling appear to be well educated employees and couples with two children. Technical education fees on average cost households less than half of that for general education and are more evenly spread

across regions. Such expenditure seems to be concentrated among households with a lesseducated household head.

Not surprisingly, expenditure on cram schools (*frontisteria*) is observed across all characteristics reported in Table A-1 and is rather insensitive to the household's total expenditure. Households with secondary school students or graduates are very likely to undertake such expenditure. Private tutoring appears to be slightly more expensive than *frontisteria* and more closely related to the household's total expenditure and the household head's educational level. The share of private tutoring in total household education expenditure is 11.2 percent, and for the whole country it amounts to 12,488 million drs. As a result of this kind of education expenditure a new term has entered the modern Greek vocabulary: *parapaedeia* (or, parallel education) to describe these educational activities. The essence of this term being that such activities are outside the formal educational system, rather complementary to it, not regulated by the state nor reported or taxed. Other private education services, because of their nature, might evade taxes as well. The public belief in Greece, documented here, is that *parapaedeia* is thriving.

As noted above, total expenses devoted to languages dominate the other types of education expenditure. They are however the most commonly met across all groups. The same pattern follow expenses for music education. Expenses on languages and music are mainly complements to the formal educational system. These expenditures usually signal a lack of such courses in the public system, even though the situation is improving rapidly in recent years with the appointment of foreign language teachers at primary public schools. Finally, expenses on books and paper, even though school textbooks are offered free to public school students, are, to a certain extent, unavoidable and their value is relatively small (2,789 and 5,087 drs./month per spending family).

A prima facie explanation of the variations in education expenditure by category seems to be the above-mentioned features of the educational system. Foreign languages, until recently, were not taught at all at primary public schools, while at public secondary schools such teaching has been rather inefficient. The same more or less has occurred with teaching music. Thus pupils and parents turn to private institutions in order to obtain these services.

A Tobit model was fitted to estimate the income elasticity of demand for education. The Tobit model was chosen because many households had zero expenditure on education. Total household expenditure was used instead of income in order to obtain a more reliable estimate given the possibility of income underreporting, especially among farmers. Table 3 shows the maximum likelihood estimates of the education consumption function, and the income elasticity based on it. Thus, education expenditure in Greece can be considered a luxury good. In a similar exercise for Japan, the elasticity was found to be equal to 2.35 (see Hashimoto and Heath, 1995; for other estimates of the income elasticity of demand for education see Jimenez, 1987, Table 7.2).

### TABLE 3

### Tobit Model

Variable	Coefficient	Mean	Elasticity
Constant Term	-17331.7	1.0	
Total Household Expenditure	.066 (30.86)	137,900	3.18
Log-likelihood	-25521		
N	6,473		

Notes: Mean dependent variable is 2,860. Number in parenthesis is t-ratio. Elasticity = 0.066 (137,900/2,860).

### IV. WHO SPENDS ON EDUCATION?

Since only one-third of households spend on education, Table A-2 contrasts the characteristics of those who report positive expenditure on education and those that do not. column 1 shows the percentage distribution of the sample by household-head characteristic, whereas column 2 shows the distribution of spenders. Column 3 shows the probability of a household being a spender for each background characteristics, and column 4 the spending incidence (column 2/column 1). The incidence and probability of education spending varies considerably by socioeconomic group.<sup>1</sup>

Education expenditure is a rather urban phenomenon. While the Greater Athens area represents 35.6 percent of all households, its share of education spenders is 41.1 percent. On the other hand, while households living in rural areas (less than 10,000 inhabitants) represent 35.3 percent of the sample, spenders account for 26.4 percent. Interestingly, the differences of the incidence of education expenses between the nine regions of the country are not as wide as between urban and rural areas. In all regions at least one out of four households reports education spending. Occupation and education of the household head turn out to be significant determinants of whether a household spends on education. The higher the head's educational level, the greater the education spending propensity. Occupational position of the household head is closely related to the concentration and incidence of education expenses. Employers are more prone to spend on education than employees or the self-employed.

The composition of the household also appears to be a significant determinant of whether it spends on education. While households with at least three children under the age of 16 represent 3.2 percent of the population, they account for 6.9 percent of the spenders. Almost 3 out of 4 (72.3 percent) of these declare education spending. A similar pattern appears for couples with two children under 16 and for one-parent households with young children. The willingness to pay for education is not confined only to wealthy households. The general rule, enhanced by the nature of university entrance exams (memorization, one textbook), is for university candidates to attend *frontisterio* or receive private tutoring. Related to this is the variation of education spending according to the age of the household head. Almost 40 percent of households with young heads are spenders (indicating mainly individuals still within the educational system). Then their participation in education spending declines to 27.5 percent for households with heads aged 25-34, to reach its peak (62.6

<sup>&</sup>lt;sup>1</sup>. All variables included in Table A-2 are statistically significant determinants whether households are spenders or not, according to the F test.

percent) at the next age group, reflecting the education expenses for their children. Even though households where the head works in the public sector show a relatively higher education expenditure incidence, this difference does not seem very pronounced.

It is worth noting that the probability of spending on education increases along the household's expenditure level. For households belonging to the bottom 20 percent expenditure distribution only the 6.5 percent spend on education. On the other hand, for the upper 20 percent of the expenditure distribution, 55.8 percent appear to devote financial resources to education. Such remarkable differences are incompatible with the concept of equal opportunity to education (for poor and rich), which the existing "free education" policy is supposed to provide.

Table 4 presents the results of a multivariate model to assess the strength of several factors associated with a household spending privately for education. In order to restrict the sample as much as possible to those households having school-age children, the selection criteria included only those heads who were married and aged 55 years or less. Because "Spender" is a 0-1 limited dependent variable, a logit model was fitted. The model expresses the probability (*P*) of a household spending privately on education, as a function of various characteristics (*X*), such as the head's age, his/her gender, the number of children, household income and years of schooling,

$$P = \frac{1}{1+e^{-\sum \beta_i X_i}}$$

The reported coefficients in the last column of Table 4 are partial derivatives indicating the change in the probability of a household being a spender relative to a unit change in one of the independent variables,

$$\frac{\partial P}{\partial X_i} = \beta_i P (1 - P)$$

where P refers to the dependent variable-probability of the event,  $\beta$  to the logit coefficient and X is the string of independent variables used in the regression. For example, every extra year of schooling that a household head has increases the probability by 2.2 percent that the household will spend privately for education, around the mean sample probability of 51.4 percent.

### TABLE 4

# Logit Model on the Probability of a Household Spending Privately on Education

Variable	Logit Coefficient	Variable Mean	Partial Derivative (percentage points)
Household Size	0.406	3.84	10.1
Children less than 6	-0.922	0.39	-23.0
Children 6-13	0.781	0.68	19.4
Years of Schooling	0.089	9.15	2.2
Household Income (10,000 drs.)	0.023	16.2	0.72
Male	-0.929	0.96	-23.2
Constant	-2.003	1.00	
Pseudo-R <sup>2</sup>	0.732		
N	3,122		
Mean dependent	51.4 (percent)		

<u>Note</u>: All logit coefficients are statistically significant at the 1 percent probability level or better.

### VI. CONCLUSION

Why do Greek households spend so much on privately educating their children? There are two reasons:

- i. because rewards in society are very strongly related to the level of educational attainment of the individual, and
- ii. because state resources do not permit many Greek families to get the amount and type of education they want.

Table 5 presents the mean earnings of household heads by level of education. There is a clear stratification in the sense that the more education one has, the higher the level of income. Prospective students and their families look at this reward structure and aspire for their children to attain the highest educational level possible. Moreover, the more educated are more likely to enter well paid jobs in the broad public sector (Kanellopoulos, 1994).

### Table 5

	Mean Labor Income				
Educational Level	Males	Females			
Primary Incomplete	60,472	42,124			
Primary Completed	70,609	49,811			
Secondary Level	81,451	60,819			
Higher Level	108,599	80,865			
Overall	81,616	60,482			

#### The Reward Structure by Level of Education (drs./month)

Source: Based on the 1988 Household Expenditure Survey.

The so-called "social demand" for education in Greece has risen beyond what the state could possibly finance out of public revenue (see Psacharopoulos, 1990). Because of the constitutional provision of free higher education, quantitative restrictions have been placed whereby in many cases only one out of 10 candidates enters a proper full-cycle university. (See Papas and Psacharopoulos, 1987.)

Even though there is free provision of education at all levels, the household expenditure pattern on education services shows that there still exists remarkable inequality in access to education. It is very doubtful whether the limited higher-level places are rationed to the brightest candidates. The willingness to pay, as shown by the level and structure of private education expenses, seems to matter. A movement towards accountability, scholarships and loans would improve equity and efficiency of the education system.

The previous analysis has shown that there is remarkable willingness of households to pay for the education of their children and that an excess demand for higher education has existed in recent decades. However, this excess demand cannot be satisfied domestically and supply has been "imported". About 10 percent of Greeks holding higher education degrees come from abroad; this approaches 30 percent for doctors and engineers (Kanellopoulos, 1996). The state monopoly of providing higher education has prevented other potential actors from responding to the prevailing excess demand. Article 16 of the Constitution could be abolished so that more educational resources are likely to remain in Greece.<sup>1</sup> This will release state resources that could otherwise be used for fellowships to poor households.

<sup>&</sup>lt;sup>1</sup>. For other privatization efforts in Europe, see Psacharopoulos (1992).

![](_page_25_Picture_0.jpeg)

APPENDIX OF TABLES

TABLE A-1

Mean Education Expenditure by Type

		of the local division							
Household Characteristic	Overall	School Fees	<b>Technical</b> Education	Fronti- steria	Private Tutoring	Foreign Language	Music Lessons	Books	Paper
Locality									
Athens	11546	18621	8744	8493	8571	5315	3878	2841	8645
Other Urban	7756	7587	4555	7428	8572	4243	2988	3063	3489
Rural	5292	742	1841	5599	6713	3160	2234	2206	3353
Region									
East Mainland	10776	17874	7692	7959	7898	5179	3691	2720	7509
Central Macedonia	6268	3603	3345	6671	5652	3793	2564	3308	3081
Peloponnese	6851		2012	8319	5951	3498	3757	2257	3697
Thessaly	7105		3808	6824	10285	3271	2483	3198	2762
Eastern Macedonia	6485			6792	3795	3833	2031	1539	5217
Crete	7624		9073	5791	9287	4766	3614	2395	1787
Epirus	5545		1436	3975	16519	3689	2296	1058	1039
Thrace	7140	1710	5618	4398		4034	1956	3186	3945
Aegian Islands	7296		595	5138	8665	2629	3512	3789	5528
Education								8	
Higher	14883	18992	4472	10216	12213	6813	3914	3482	11064
Higher Incomplete	8366	14713		8280	3200	4752	2954	3415	5036
Secondary	9648	14654	6483	7587	8540	4530	3440	2634	5726
Lower Secondary	8704	8190	8363	9053	8297	4426	3833	2279	6866
Primary	5955	3748	3471	5823	6274	3480	2473	2514	3565
Primary Incomplete	5182	1526	6707	5657	4095	3231	1926	2182	1966

Household Characteristic	Overall	School Fees	Technical Education	Fronti- steria	Private Tutoring	Foreign Language	Music Lessons	Books	Paper
Family Composition									
1 Member <65	5217		5289	2326		4338	3008	1980	2726
1 Member >65									
Couple Alone	5427	P	4364	3917	6625	5863	3268	4170	2320
Couple with 1 Child	6973	10906	1068	4312	5010	3874	3939	3423	3502
Couple with 2 Children	8331	12905	1759	4695	5416	4509	3091	2532	5812
Couple with 3 + Children	7503	13802	1554	6024	6021	4232	3921	2678	3386
1 Parent with Children	8106	15008		3963	6761	3623	2829	4695	2013
Couple or 1 Parent with Children under & over 16 or only over 16	11136	13762	8487	8499	10212	5305	3788	2708	4222
Other	7885	8443	4825	7854	8574	3770	2859	2838	6341
Occupation									
Professional	13077	16267	3394	8240	12076	6258	3781	3601	7941
Managerial	17515	21937		10892	13423	6597	5508	2820	14834
Clerical	10200	15565	3646	9414	9977	4561	3501	2802	7740
Sales Worker	10238	16861	7312	6075	7174	4710	3145	2420	6686
Services	6731	12218	9979	4952	5585	3387	2676	3182	5802
Farmers	5175	753	3050	5651	4453	2737	3467	1730	4346
Crafts	6323	4965	3614	6563	6565	3805	2611	2626	3925
Non active	8947	14484	7808	7975	8528	5143	3377	2442	1383

Household Characteristic	Overall	School Fees	Technical Education	Fronti- steria	Private Tutoring	Foreign Language	Music Lessons	Books	Paper
Employment Status									
Employee	8605	11990	5147	7680	9305	4196	3346	2950	5036
Self-employed (not in agr.)	8638	16243	4417	5885	7108	4694	2600	2895	6311
Self-employed (in agriculture)	4783	802	2975	7339	4419	2258	2667	1737	4806
Employers	12809		3829	11625	7557	6454	4309	2883	9725
Not in Labor Market	8902	14484	7483	7975	8528	5091	3377	2442	1551
Sector of Employment									
Public	9283	12332	2134	7873	10863	4370	3386	3309	6410
Private	8205	12038	4474	6666	6717	4383	3336	2581	5155
Age									
Under 25	5651		8318	3078	1744	4540	4573	2411	1841
25-34	5132	5099	2152	3734	8275	3075	2463	4167	6991
35-44	7989	12878	2673	5501	8409	3989	3179	2622	5356
45-54	10814	13203	8161	8224	8760	5265	3556	2949	3991
55-64	9846	20299	6674	7696	6500	5059	4106	2053	5757
65 +	5278		1980	5953	5710	3588	4048	1797	1509
Household Total Expenditure	(drs.)								
Less than 54445	2923		3382	3519		2542			1457
54445-114419	4579	2556	4273	5026	3586	3243	2323	2112	2121
14419-202060	7355	8108	4355	7567	6054	4185	2922	2507	5220
202060+	13602	17835	6691	8669	11204	5643	4058	3270	7571
Overall Mean	8662	12334	5210	7200	8067	4476	3336	2789	5087

### TABLE A-2

Household Characteristic	All Households (percent) (1)	Spenders (percent) (2)	Education Expenditure Incidence (percent probability) (3)	Relative Education Expenditure Incidence (4)
<b>Locality</b> Athens Other Urban	35.6 29.0	41.1 32.4	38.2 37.0	1.15 1.12
Rural Areas	35.3	26.4	24.7	0.75
Region East Mainland & Islands Central & Western Macedonia Peloponnese & West. Mainland Thessaly Eastern Macedonia Crete Epirus Thrace	42.2 17.4 11.2 6.7 4.1 5.0 4.3 3.5 3.8	48.8 19.0 8.9 5.5 3.1 4.0 3.9 3.5 3.1	36.5 36.1 26.4 27.3 31.2 26.8 30.4 34.2 27.4	1.16 1.09 0.79 0.82 0.76 0.80 0.91 1.00 0.81
Aegian Islands		e la line		
Occupation Professional Managerial Clerical Sales Workers Services Farmers Crafts Non Active	7.5 1.7 6.5 6.9 6.4 12.5 22.5 36.0	12.3 3.0 9.8 10.7 7.9 9.5 29.6 17.1	54.4 57.5 49.8 51.5 40.7 25.3 43.6 15.8	1.64 1.76 1.51 1.55 1.23 0.76 1.31 0.47
Employment Status Employee Self-employed (not in agric.) Self-employed (in agric.) Employer Not in the Labor Force	34.5 13.7 11.3 4.2 36.3	48.2 18.6 8.3 7.4 17.5	46.2 45.0 24.2 58.8 15.9	1.40 1.36 0.73 1.76 0.48
Sector of Employment Public Private	24.8 75.2	29.5 70.5	51.1 40.3	1.19 0.94
<b>Education</b> Higher Level Secondary Primary Primary Incomplete	12.0 20.2 50.5 17.4	17.5 26.9 49.6 6.0	48.6 44.2 30.8 11.3	1.46 1.33 0.98 0.34

### Education Expenditure by Selected Household Characteristics

Household Characteristic	All Households (percent) (1)	Spenders (percent) (2)	Education Expenditure Incidence (percent probability) (3)	Relative Education Expenditure Incidence (4)
Age 24 or less 25-34 35-44 45-54 55-64 65 +	2.4 13.7 18.7 19.9 21.3 23.9	2.9 11.4 35.4 31.3 15.2 3.7	39.7 27.5 62.6 52.0 23.7 5.2	1.21 0.83 1.89 1.57 0.71 0.15
Household Composition 1 member <65 1 member >65 Couple without Children Couple + 1 Child Couple + 2 Children Couple + 3 Children One Parent with Children Couple or 1 Parent with Children under & over or only over 16 Other	6.5 6.0 20.4 7.8 13.5 3.2 1.4 22.8 18.4	3.2 0.0 3.0 9.0 27.4 6.9 2.9 28.3 19.2	16.2 0.5 4.8 37.8 67.3 72.3 67.7 41.1 34.6	0.49 0.00 0.15 1.15 2.00 2.20 2.10 1.20 1.00
Household Expenditure (drs.) Less than 54445 54445-114419 114419-202060 202060 +	20.0 30.0 30.0 20.0	3.9 22.9 39.7 33.7	6.47 2.50 43.8 55.8	0.19 0.75 1.32 1.68
Total N	100.0 6489	100.0 2148	33.1	1.00

![](_page_33_Picture_0.jpeg)

#### REFERENCES

Conlink, J. (1977), "A Further Look at the Hansen-Weisbrod-Pechman Debate", <u>Journal</u> of Human Resources, 12:147-63.

Eurostat (1992), Family Budgets, Comparative Tables 1988.

- Hansen, W.L. and B.A. Weisbrod (1969), "The Distribution of Costs and Benefits of Higher Education: The Case of California", <u>Journal of Human Resources</u>, 4:176-91.
- Hashimoto, K. and J.A. Heath (1995), "Income Elasticities of Educational Expenditure by Income Class: The Case of Japanese Households", <u>Economics of Education Review</u>, 14, No 1: 63-71.

Greek Government, Government Budget, 1988, National Printing Office.

- Jimenez, E. (1987), <u>Pricing Policy in the Social Sectors</u>. The Johns Hopkins University Press.
- Kanellopoulos, C. (1994), <u>Public-Private Wage Differentials in Greece</u>, Discussion Paper No 36, Center of Planning and Economic Research, Athens.
- Kanellopoulos, C. (1996) (forthcoming), "Recent Developments in Greek Education", International Journal of Educational Development.
- Lambropoulos, H. and G. Psacharopoulos (1992), "Education Expansion and Earnings Differentials in Greece", <u>Comparative Education Review</u>, 36:52-70.

National Statistical Service of Greece (1990), Family Expenditure Survey 1987-1988.

- Papas, G. and G. Psacharopoulos (1987), "The Transition from School to the University under Restricted Entry", <u>Higher Education</u>, 16: 481-501.
- Pechman, J. (1970), "The Distributional Effects of Public Policy Higher Education in California", <u>Journal of Human Resources</u>, 5:361-70.
- Psacharopoulos, G. (1992), "Education and the Professions in Greece in the Light of 1992", <u>European Journal of Education</u>, 25, No 1: 61-74.
- Psacharopoulos, G. (1992), "The Privatization of Education in Europe" (Essay Review), <u>Comparative Education Review</u>, 36, No 1 (February): 119-26.

World Bank (1986), The Financing of Education in Developing Countries, Washington, D.C.

![](_page_35_Picture_0.jpeg)

#### IN THE SAME SERIES

- No 1 G. Alogoskoufis, <u>Competitiveness, Wage Rate Adjustment and Macroeconomic</u> <u>Policy in Greece</u>. Athens, 1990 (in Greek).
- No 2 L. Athanassiou, <u>Adjustments to the Gini Coefficient for Measuring Economic</u> <u>Inequality</u>. Athens, 1990.
- No 3 J. Dutta and H. Polemarchakis, <u>Credit Constraints and Investment Finance:</u> <u>Evidence from Greece</u>. Athens, 1990.
- No 4 C. Kanellopoulos, <u>The Underground Economy in Greece: What Official Data Show</u>. Athens (in Greek 1990 - in English 1992).
- No 5 N. Antonakis and D. Karavidas, <u>Defense Expenditure and Growth in LDCs The</u> <u>Case of Greece, 1950-1985</u>. Athens, 1990.
- No 6 J. Geanakoplos and H. Polemarchakis, <u>Observability and Constrained Optima</u>. Athens, 1992.
- No 7 L. Athanassiou, <u>Distribution Output Prices and Expenditure</u>. Athens, 1992.
- No 8 N. Christodoulakis, <u>Certain Macroeconomic Consequences of the European</u> Integration. Athens, 1992 (in Greek).
- No 9 V. Rapanos, <u>Technological Progress</u>, <u>Income Distribution and Unemployment in the</u> <u>less Developed Countries</u>. Athens, 1992.
- No 10 V. Rapanos, Joint Production and Taxation. Athens, 1992.
- No 11 D. Maroulis, <u>Economic Analysis of the Macroeconomic Policy of Greece during the</u> <u>Period 1960-1990</u>. Athens, 1992 (in Greek).
- No 12 C. Kanellopoulos, Incomes and Poverty of the Greek Elderly. Athens, 1992.
- No 13 G. Agapitos and P. Koutsouvelis, <u>The VAT Harmonization within EEC: Single Market</u> and its Impacts on Greece's Private Consumption and Vat Revenue. Athens, 1992.
- No 14 C. Carabatsou-Pachaki, <u>Elaboration Principles/Evaluation Criteria for Programmes</u>. Athens, 1992 (in Greek).
- No 15 C. Carabatsou-Pachaki, <u>Reforming Common Agricultural Policy and Prospects for</u> <u>Greece</u>. Athens, 1992 (in Greek).

- No 16 P. Paraskevaides, <u>Effective Protection</u>, <u>Domestic Resource Cost and Capital</u> <u>Structure of the Cattle Breeding Industry</u>. Athens, 1992 (in Greek).
- No 17 Cl. Efstratoglou, <u>Export Trading Companies: International Experience and the Case</u> of Greece. Athens, 1992 (in Greek).
- No 18 C. Carabatsou-Pachaki, Rural Problems and Policy in Greece. Athens, 1993.
- No 19 St. Balfoussias, <u>Ordering Equilibria by Output or Technology in a Non-linear Pricing</u> <u>Context</u>. Athens, 1993.
- No 20 St. Balfoussias, <u>Demand for Electric Energy in the Presence of a two-block Declining</u> <u>Price Schedule</u>. Athens, 1993.
- No 21 P. Paraskevaides, Regional Typology of Farms. Athens, 1993 (in Greek).
- No 22 P. Paraskevaides, <u>Evaluation of Regional Development Plans in the East Macedonia-</u> <u>Thrace's and Crete's Agricultural Sector</u>. Athens, 1993 (in Greek).
- No 23 C. Eberwein and Tr. Kollintzas, <u>A Dynamic Model of Bargaining in a Unionized Firm</u> with Irreversible Investment. Athens, 1993.
- No 24 P. Paraskevaides, <u>Income Inequalities and Regional Distribution of the Labour Force</u> Age Group 20-29. Athens, 1993 (in Greek).
- No 25 A. Gana, Th. Zervou and A. Kotsi, <u>Poverty in the Regions of Greece in the late 80's</u>. Athens, 1993 (in Greek).
- No 26 Z. Georganta, <u>The Effect of a Free Market Price Mechanism on Total Factor</u> <u>Productivity: The Case of the Agricultural Crop Industry in Greece</u>. Athens, 1993.
- No 27 H. Dellas, <u>Recessions and Ability Discrimination</u>. Athens, 1993.
- No 28 Z. Georganta, <u>Accession in the EC and its Effect on Total Factor Productivity</u> <u>Growth of Greek Agriculture</u>. Athens, 1993.
- No 29 H. Dellas, <u>Stabilization Policy and Long Term Growth: Are they Related</u>? Athens, 1993.
- No 30 Z. Georganta, <u>Technical (In)Efficiency in the U.S. Manufacturing Sector, 1977-1982</u>. Athens, 1993.
- No 31 P. Paraskevaidis, <u>The Economic Function of Agricultural Cooperative Firms</u>. Athens, 1993 (in Greek).

- No 32 Z. Georganta, <u>Measurement Errors and the Indirect Effects of R & D on Productivity</u> <u>Growth: The U.S. Manufacturing Sector</u>. Athens, 1993.
- No 33 C. Carabatsou-Pachaki, <u>The Quality Strategy: A Viable Alternative for Small</u> <u>Mediterranean Agricultures</u>. Athens, 1994.
- No 34 E. Petrakis and A. Xepapadeas, <u>Environmental Consciousness and Moral Hazard in</u> <u>International Agreements to Protect the Environment</u>. Athens, 1994.
- No 35 Z. Georganta, K. Kotsis and Emm. Kounaris, <u>Measurement of Total Factor</u> <u>Productivity in the Manufacturing Sector of Greece 1980-1991</u>. Athens, 1994.
- No 36 C. Kanellopoulos, Public-Private Wage Differentials in Greece. Athens, 1994.
- No 37 C. Vergopoulos, Public Debt and its Effects. Athens, 1994 (in Greek).
- No 38 M. Panopoulou, <u>Greek Merchant Navy, Technological Change and Domestic</u> <u>Shipbuilding Industry from 1850 to 1914</u>. Athens, 1995.
- No 39 V. Rapanos, <u>Technical Change in a Model with Fair Wages and Unemployment</u>. Athens, 1995.
- No 40 V. Rapanos, <u>The Effects of Environmental Taxes on Income Distribution</u>. Athens, 1995.
- No 41 St. Balfoussias, <u>Cost and Productivity in Electricity Generation in Greece</u>. Athens, 1995.
- No 42 V. Rapanos, <u>Trade Unions and the Incidence of the Corporation Income Tax</u>. Athens, 1995.
- No 43 V. Rapanos, <u>Economies of Scale and the Incidence of the Minimun Wage in the less</u> <u>Developed Countries</u>. Athens, 1995.
- No 44 P. Mourdoukoutas, Japanese Investment in Greece. Athens, 1995 (in Greek).
- No 45 St. Thomadakis, and V. Droucopoulos, <u>Dynamic Effects in Greek Manufacturing:</u> <u>The Changing Shares of SMEs, 1983-1990</u>. Athens, 1995.
- No 46 N. Christodoulakis, and S. Kalyvitis, <u>Likely Effects of CSF 1994-1999 on the Greek</u> <u>Economy: An ex ante Assessment Using an Annual Four-Sector Macroeconometric</u> <u>Model</u>. Athnes, 1995.
- No 47 S. Makrydakis, E. Tzavalis, A. Balfoussias, <u>Policy Regime Changes and the Long-</u> <u>Run Sustainability of Fiscal Policy: An Application to Greece</u>. Athens, 1995.

No 48 G. Couretas, L. Zarangas, <u>A Cointegration Analysis of the Official and Parallel</u> <u>Foreign Exchange Market for Dollars in Greece</u>. Athens, 1995.