Determinants of earnings in the public and private sector in Greek labour market: The case of tertiary technological and secondary education graduates

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ABSTRACT

Internationally, there is a considerable interest on issues of wages in the public and private sector of an economy. This paper attempts to estimate the determinants of earnings of tertiary technological and secondary education graduates, working in the public and private sector of the Greek economy. The study uses earnings data from a stratified sample throughout the entire country in order to estimate earning functions both for the total economy as well as by sector. The overall results show that years of schooling, experience, marital status, sector of employment and interactive factors like years of schooling with sector of employment and gender with sector of employment have a statistically significant effect on earnings. In particular, in the public sector years of schooling, experience, marital status and interactive factors like gender with sub-sector of employment and experience with sub-sector of employment have all a strong effect on earnings. In the private sector, years of schooling, experience, marital status, size of firm and interactive factors like years of schooling with size of firm and experience with size of firm are the main determinants of earnings.

Keywords: Earnings, Human Capital, Education, Experience, Gender, Sector of Employment

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1. INTRODUCTION

With the expansion of hired labour since the 18th century, the level, the determinants, and the structure of wages as well as the earnings differential by gender, race, colour and sector of employment obtained a specific weight for economic theory [Turgot and Quesnay, A. Smith, D. Ricardo, K. Marx, J. Mill, v. Thunen, Wicksteed and Walras, J. Clark, A. Pigou, M. Dobb, J. Hicks: see Petrinioti, X. (1989), pp. 233-274]. Lately, the underlying theoretical background for these issues is to be found in *Human Capital Theory, Labor Market Segmentation Theory* and *Gender Discrimination Theory*. [see Tachibanaki (1998), ch. 2]. Human Capital theory emphasizes the effects of education, training, and work experience on individual labour productivity and holds that schooling and experience directly augments individual productivity [Schultz (1961, 1968), Mincer (1974), Becker (1975)]. Segmentation theory subdivides the labour market into primary and secondary sectors, with jobs in the two sectors totally different in terms of pay, security, advancement opportunities and working conditions [Cain (1976)]. Gender discrimination theory seeks to identify non-labour market factors to account for the persistence of wage differentials [Anker (1997)].

In the last three decades, many empirical studies have examined factors determining the earnings of workers and earnings differentials by race, ethnic, gender and sector of employment. These groups have become a matter of considerable research and public policy interest. Special attention was given to the comparability of earnings of workers in public and private sector. The private sector is treated as competitive and the public sector as non-competitive. In the literature, a sector is competitive when the employer cannot violate the principle that the value of the marginal product equals the wage rate. On the contrary, the non-competitive sector may, to some extent, violate this principle. Scarffe (1970), finds a slight advantage in the pay of federal workers over workers in comparable occupations in the private sector. Gunderson (1979), estimates that the pure wage advantage associated with public sector employment was as 6.2 per cent for males and 8.6 per cent for females. Quinn (1979), observes an ..."overcompensation of federal employees relative to their private sector equals, if we define equals in terms of measurable productivity related and geographic dimensions". Psacharopoulos (1983), investigated empirically and interpreted and public versus private pay differential by education in six countries (United Kingdom, Greece, Portugal, Brazil, Colombia, and Malaysia) using individual data. He, characteristically, notes..."perhaps the major conclusion is that the data do not support a public sector

salary dominance in the market for highly qualified labour. On the contrary, it is more reasonable to assume that it is the private sector that sets the correct wage signal which is tacitly transmitted to the public sector". Ramirez and Segundo (1995) claims that ..."on average, Spanish workers in the public sector are paid substantially higher wages than those in the private sector". Additionaly, Ryoo, Nam and Carnoy (1993) found that wages of workers in the big businesses tend to be higher and somewhat more equal between the various levels of education than in smaller businesses.

In Greece, the empirical studies concerning wages are limited in number. Pavlopoulos (1975) presented an overview of major determinants of wage differentials in Greece. Psacharopoulos and Kazamias (1985), have concluded that earnings increase steadily as the level of education gets higher. They, also, claim, that the highest earnings correspond to Public Utilities. Finally, Petraki Kottis (1987) studied some of the factors that affect the earnings differentials in manufacturing in Greece.

Greece is a European country for which evidence on the comparison between public and private sector pay is rather scanty. Exceptions are the studies by Psacharopoulos (1982), Kioulafas (1987), Lambropoulos and Psacharopoulos (1992), Kioulafas, Donatos and Michailidis (1991), and Kanellopoulos (1994). Kioulafas, Donatos and Michailidis (1991), point out that ... «the public sector pays higher wages than the private sector and also offers higher returns with respect to education and experience». They, also, note that in recent years the average wage of public sector employees in Greece exceeded the average wage in the private sector by about 20-25 per cent The best remunerated workers with the same qualifications were the ones in public firms. This is attributed to their monopoly structure, according to Kanellopoulos (1994). We note that wages and other remunarations and benefits of most public employees (permanent status, hierarchical ascent, wage increases with no reference to productivity schemes, etc.) are largely determined by institutional rules and monopolistic pressures of trade unions to higher level than those formed on the basis of demand and supply analysis in open labour markets.

The main theme of this study is to track down and estimate the major determinants of public and private sectors earnings of Secondary Education (SE) graduates, as well as those of Tertiary Technological Education (TTE) graduates. The paper is organized as follows: Section 2 outlines the empirical methodology to be followed. Section 3 presents the data, while section 4 presents the empirical analysis and results. Finally section 5 outlines the major conclusions.

2. METHODOLOGY AND MODELS

Human capital theory is fundamentally a supply-side theory and earnings are not supposed to be affected by the requirements of the job. In fact, job level and related variables are usually supposed to be subsumed in the age-earnings profile. Primarily, we are interested in estimating the age-earnings function by level of education (SE, TTE) and economic sector (public, private):

$$W_i = a + b \cdot Age_i + c \cdot Age_i^2 + u_i, \tag{1}$$

where W_i is the gross (nominal) earnings of the individual i from hired labour,

Age_i (personal variable) is the age of the individual i,

a is a constant,

b and c are regression coefficients and

u is the disturbance term.

Human capita theory also recognizes years of education and work experience as important variables promoting productivity and enhancing investment ["years of labour market experience represent cumulated investments in job training and job mobility", Mincer (1976, p. 148)]. The basic Mincerian function is

$$LnW_i = a + b \cdot S_i + c_1 \cdot EX_i + c_2 \cdot EX_i^2 + u_i, \tag{2}$$

where

LnW_i = the natural logarithm of annual gross earnings rate of the individual I,

S_i (personal variable) = the years of education of individual i,

EX_i (personal variable) – the actual work experience of the individual i (in years),

EX_i^2 accounts for the concavity of the earnings-experience profiles,

a is a constant,

b is a regression coefficient, [it can be interpreted as the average private rate of return to one additional year of education (according to the Becker-Mincer interpretation)],

c is a regression coefficient, and

u_i is the disturbance term.

A logarithmic wage function provides a better fit than a linear wage function as demonstrated by Polacheck and Heckman (1974).

Our choice is to estimate somewhat more complex earning functions by incorporating in the model additional variables, as well as some of their interactions:

- *For all workers*

$$LnW_i = a + b \cdot S_i + c_1 \cdot EX_i + c_2 \cdot EX_i^2 + d_1 \cdot SEX_i + d_2 \cdot MARST_i + d_3 \cdot SEMPL_i + f_1 \cdot S_i * EX_i + f_2 \cdot S_i * SEX_i + f_3 \cdot S_i * SEMPL_i + g_1 \cdot SEX_i * MARST_i + g_2 \cdot SEX_i * SEMPL_i + g_3 \cdot SEX_i * EX_i + h \cdot EX_i * SEMPL_i + u_i \quad (3)$$

- *For workers in the public sector*

$$LnW_i = a + b \cdot S_i + c_1 \cdot EX_i + c_2 \cdot EX_i^2 + d_1 \cdot SEX_i + d_2 \cdot MARST_i + d_3 \cdot Z_i + f_1 \cdot S_i * EX_i + f_2 \cdot S_i * SEX_i + f_3 \cdot S_i * Z_i + g_1 \cdot SEX_i * MARST_i + g_2 \cdot SEX_i * Z_i + g_3 \cdot SEX_i * EX_i + h_1 \cdot EX_i * Z_i + u_i \quad (4)$$

- *For workers in the private sector*

$$LnW_i = a + b \cdot S_i + c_1 \cdot EX_i + c_2 \cdot EX_i^3 + d_1 \cdot SEX_i + d_2 \cdot MARST_i + d_3 \cdot FIRMSIZE_i + d_4 \cdot REGION_i + f_1 \cdot S_i * EX_i + f_2 \cdot S_i * SEX_i + f_3 \cdot S_i * FIRMSIZE_i + f_3 \cdot S_i * REGION_i + g_1 \cdot SEX_i * MARST_i + g_2 \cdot SEX_i * REGION_i + g_3 \cdot SEX_1 \,\&\, FIRMSIZE_i + g_3 \cdot SEX_i * EX_i + h_1 \cdot EX_i * FIRMSIZE_i + h_2 \cdot EX_i * REGION_i + u_i \quad (5)$$

where:

SEX (personal variable) – dummy variable representing gender: 1 = male, 0 = female

MARST (personal variable) = dummy variable representing marital status:

1 = married, 0 = single

SEMPL (labour market variable) = dummy variable representing sector of employment:

1 = public sector, 0 = private sector

Z (labour market variable) = dummy variable representing sector of employment:

1 = Sub-sector: Central Government, 0 = Public Utilities

FIRMSIZE (labour market characteristic) = dummy variable representing the size of the private firm: 1= the firm ≥ 100 employees, 0 = the firm < 100 employees

REGION (labour market characteristic) = dummy variable representing the private firm location : 1 = region of Attica, 0 = rest of Greece.

It is worthwhile to investigate further whether the variables,

$S * EX$ = years of schooling and actual experience,

$S * SEX$ = years of schooling and gender,

$S * SEMPL$ = years of schooling and sector of employment,

$SEX_i * EX$ – gender and experience,

$SEX * MARST$ = gender and marital status,

$SEX * SEMPL$ = gender and sector of employment,

$S * Z$ = years of schooling and public subsector of employment,

$SEX * Z$ = gender and public subsector of employment,

$S * REGION$ = years of schooling and region,

$S * FIRMSIZE$ = years of schooling and size of the firm,

$SEX * REGION$ – gender and region,

$SEX * FIRMSIZE$ – gender and size of the firm,

$EX * SEMPL$ = experience and sector of employment,

$EX * Z$ – experience and public subsector of employment,

$EX * FIRMSIZE$ = experience and size of the firm,

$EX * REGION$ = experience and region (: firm location),

exert an interactive impact on wages.

Since the public sector generally follows uniform nominal wages countrywide and does not allow any regional adjustment, this variable was not included in the wage equations.

3. SOURCES AND DATA

The aim of the survey is to collect annual earnings from the hired labour. The gross earnings data were collected from a survey based on questionnaires. These questionnaires were collected from Tertiary Technological Education (TTE) and Secondary Education (SE) graduates, who have not any additional education and work full time in the private or public sector of the Greek economy. The productivity bonuses

are included in the annual earnings. Earnings from overtime and additional education/training are not. The TTE and SE graduates who have their own work are excluded based on the fact that it is difficult to discern the part of income that comes from their job from that arising from other factors which are used in the production process. Also, part time employees are not included.

The public sector includes employees in public administration, civil services, social services, state-controlled banks and firms, local and region authorities. In the private sector, employees in manufacturing, firms, and private banks are included.

We applied a cross sectional econometric analysis for the year of 1997. The population is comprised of two sub-populations I and II. Sub-population I includes the TTE graduates and Sub-population II includes SE graduates who work as full time employees in the private or public sector of the Greek economy. According to the labour force survey for 1997, the size of the two populations is $N_I = 82.063$ individuals and $N_{II} = 686.147$ individuals respectively [Source: National Statistical Services of Greece (NSSG)].

Based on the structure and the categorisation of the two sub-populations, they are diverted in six sub-groups (strata) according to the sector of production (primary, secondary, tertiary) and the sector of employment (public, private). The stratified sampling not only gives increased punctuality, but also provides the respective estimations for each strata [see Zairis (1991)]. We determine the minimum size of the sample which is taken from each stratum according to the formula

$$n_{oh} = \frac{Z^2_{\alpha/2} \cdot S^2_h}{d_0^2 + \dfrac{Z^2_{\alpha/2} \cdot S^2_h}{N_h}} \tag{6}$$

where, Z is the statistic of the standard normal distribution, α is the level of significance [if $\alpha = 0.01$ (probability 99%) then $Z_{0,005} = 2.58$ from statistical tables]. S^2_h is the real variance of h stratum (it is substituted from pilot estimation) and N_h is the size of h stratum. The random sample which is extracted from each stratum of the two sub-populations has been determined so that the estimation of mean, $\overline{Y}_h$, has maximum sampling error

$$d_0 = |\overline{y}_h - \overline{Y}_h| = Z_{\alpha/2} \cdot S.E.(\overline{y}_h) = 200.000 \; drs \tag{7}$$

where $\overline{Y}_h$ and y_h are the average value of h stratum and sample respectively. The $\overline{Y}_h$ in practice is substituted with the value which

arises from the pilot survey. The following Table (Table 1) shows more analytically the structure of the total population and the sample.

Table 1
Structure of the population and the sample

Educational Level	Public Sector	Private Sector	Country Total
Population Size			
Secondary Education Graduates	270,004	416,143	686,147
Tertiary Technological Ed/tion Gra/tes	42,341	39,722	82,063
All	312,345	455,865	768,210
Sample Size			
Secondary Education Graduates	526	741	1,267
Tertiary Technological Ed/tion Gra/tes	469	590	1,059
All	995	1,331	2,326

Source: Population, from NSSG (1997). Sample from Tsamadias (2000)

The sample means and percentages of selected descriptive statistics are presented in Table 2.

Table 2
Sample Means and Percentages of Selected Descriptive Statistics

Variable	Full Sample	Public Sector	Private Sector
Annual Earnings	4,562,297	4,976,901	4,252,356
Ln Annual Earnings	15.27	15.37	15.19
Years of Education	13.82	13.89	13.77
Actual Work Experience	11.81	14.42	9.86
TTE graduates (%)	45.5	47.1	44.3
SE graduates (%)	54.5	52.9	55.7
Married (%)	68.6	77.5	62.0
Males (%)	57.5	52.3	61.4
Females (%)	42.5	47.7	38.6

Source: Authors' calculation

4. EMPIRICAL ANALYSIS AND RESULTS

4.1. *Analysis by Sample Means*

(a) The mean earnings and coefficient of variation, within our sample, by level of education and sector of employment are presented in Table 3.

Table 3
Mean and Coefficient of Variation of Annual Earnings by Level of Education and Sector of Employment [Drs/1997]

Educat. Level	All Employees		
	N	Mean	*C.V.*(%)
SE	1,267	4,248,995	38.07
TTE	1,059	4,937,136	38.04
Overall	2,326	4,562,297	38.88
	Public Sector		
SE	526	4,626,776	35.89
TTE	469	5,369,578	33.69
Overall	995	4,976,901	33.58
	Private Sector		
SE	741	3,980,862	38.48
TTE	590	4,593,381	40.53
Overall	1,331	4,252,356	40.28

Source: Author's calculation

The findings are summarised as follows: The wages of workers who have secondary and tertiary technological education, and are employed in the public sector of the economy are higher 17.04% (16.90% with tertiary technological education and 16.23% with secondary education respectively) than for those who work in the private sector.

(b) Table 4, presents mean earnings and the coefficient of variation, within our sample, by level of education and sub-sector of employment in the public sector.

Table 4

Mean and Coefficient of Variation of Annual Earnings by Level of Education and Sub-sector of Public Sector [Drs/1997]

Sub-Sectors of Public Sector	TTE and SE Graduates		
	N	Mean	*C.V.*(%)
Central Government	413	4,316,089	23.61
Public Utilities	582	5,445,828	37.17
Overall	995	4,976,901	35.58
	TTE Graduates		
Central Government	165	4,568,675	25.92
Public Utilities	304	5,804,279	33.40
Overall	469	5,369,578	33.69
	SE Graduates		
Central Government	248	4,148,037	20.59
Public Utilities	278	5,053,853	40.49
Overall	526	4,626,776	35.89

Source: Authors' estimation.

The main conclusions are that the wages of workers, with secondary and tertiary technological education, in public enterprises are higher by 26.18% (27.05% with tertiary technological education and 21.84% with secondary education respectively) than for those who work in the administration and local authorities.

(c) Table 5 presents mean earnings and the coefficient of variation, within our sample, by level of education, size of private firms and region of installation.

Table 5

Mean and Coefficient of Variation of Annual Earnings by Level of Education, Size of Private Firms and Region of Installation [Drs/1997]

S.o.F R.o.I	TTE and SE Graduates		
	N	Mean	*C.V.*(%)
< 100 empl/es	581	3,821,556	39.11
≥ 100 empl/es	750	4,586,083	39.15
Region of Attika	749	4,382,890	40.44
Rest of Greece	582	4,084,366	39.64
Overall	1,331	4,252,356	40.28

(*Table 5 Contd.*)

		TTE Graduates	
< 100 empl/es	264	4,205,909	39.87
≥ 100 empl/es	326	4,907,161	39.65
Region of Attika	357	4,713,376	40.28
Rest of Greece	233	4,409,524	40.65
Overall	590	4,593,381	40.53
		SE Graduates	
< 100 empl/es	317	3,501,465	35.37
≥ 100 empl/es	424	4,339,216	37.58
Region of Attika	392	4,081,912	39.02
Rest of Greece	349	3,867,284	37.62
Overall	741	3,980,826	38.48

Source: Authors' estimation S.o.F: Size of private firms. R.o.I: Firm location

The findings are summarised as follows:

(1) The wages of workers, with secondary and tertiary technological education, in the private firms of big size are higher about 20.00% (16.67% with tertiary technological education and 23.93% secondary education respectively) than for those who work in small size private firm. The results are in accord with the findings of Ryoo, Nam and Carnoy (1993).

(2) The wages of workers, with secondary and tertiary technological education, in private firms of the region of Attica are higher by 7.31% (6.89% with tertiary technological education and 5.55% with secondary education respectively) than for those who work in the rest of Greece.

4.2 *Econometric Analysis*

In this section, we present the estimated models proposed in the beginning of the study. The OLS method is used with the standard statistical criteria as well as economic theory, to judge the performance of the models and to infer their economic meaning.

(a) Table 6 presents the results of regression analysis of the age-earnings function (1) for the public and private sectors and the two levels of education.

The results show that the age variable enters with linear and quadratic terms which are statistically significant ($\alpha = 0, 01$), with expected signs, while the impact is stronger for TTE than for SE graduates. These findings are consistent with the human capital theory.

Table 6
Results of Regression Analysis of Age-Earnings Function [Model (1)]

Independent Variables	Dependent Variable W			
	Public Sector		Private Sector	
	W_{TTE}	W_{SE}	W_{TTE}	W_{SE}
Constant	-3,589.91	-901.86	-3,624.17	-1,433.22
	(-2.153)	(-0.803)	(-2.854)	(-2.221)
	**	N.S	***	**
Age	347.790	217.494	339.766	219.743
	(4.266)	(3.906)	(4.823)	(6.136)
	***	***	***	***
Age^2	-2.948	-1.868	-2.612	-1.699
	(-3.038)	(-2.790)	(-2.779)	(-3.576)
	***	***	***	***
R^2	0.214	0.132	0.319	0.312
AdjR^2	0.211	0.129	0.316	0.310
F	63.582	39.702	137.178	167.269
Signif.	***	***	***	***
Sample Size (N)	469	526	590	741

Notes: 1. ***, ** and NS denote statistical significance at the 1%, 5% level and no-significance respectively

2. Numbers in parentheses show the t-statistic values

(b) We now turn to the Mincerian function (2). The experience-squared term has been introduced to catch the observed parabolic decline of earnings with age. The semi-logarithmic specification derives from the human capital theory, where the coefficient of the years of education variable (: S) is the private rate of return to education (: Mincer, 1974).

Table 7 presents the detailed results of fitting the basic Mincerian function (2) within economic sectors under consideration.

Table 7
Results of Regression Analysis of Basic Mincerian Function by Economic Sector [Model (2)]

Independent Variables	Dependent Variable *LnW*	
	Public Sector	Private Sector
Constant	14.447	14.065
	(237.565)	(241.145)
	***	***
S	0.0386	0.0542
	(9.884)	(13.884)
	***	***
EX	0.032	0.054
	(8.437)	(15.884)
	***	***
EX^2	–0.00028	–0.00089
	(–2.501)	(–8.516)
	**	***
R^2	0.382	0.408
Adj.R^2	0.381	0.406
F	204.394	304.632
Signif.	***	***
Sample Size (*N*)	995	1,331

Notes: 1. *** and ** denote statistical significance at the 1%, 5% level respectively
2. Numbers in parentheses show the *t*-statistic values

The findings are summarised as follows: In terms of overall explanation (R^2), the human capital model fits better to the private sector of the economy than to the public sector. This is in accordance to our expectations given the competitive behaviour of the private sector in contrast to the public sector's. It, therefore, seems that the private sector pays somewhat more attention to the productive potential of the employee. Education has positive and statistically significant ($\alpha = 0.01$) linear impact on earnings for both public and private employees (human capital theory). The impact is stronger for private

than for public sector employees. Labour market's actual experience has statistically significant ($\alpha = 0.01$) linear and quadratic impact on earnings for both public and private employees with expected signs (human capital theory). The impact is stronger for private than for public sector employees. An additional year of experience increases earnings by 3.2% in the public and by 5.4% in the private sector. This, of course, can be again interpreted as a higher recognition of a productive characteristic by the sector where productivity matters more. The overall private average rate of return to education is higher in the private sector of the economy [private sector: $r_{priv} = 5.42\%$, public sector : $r_{pub} = 3.86\%$]. This result is parallel to Psacharopoulos findings (*ibid*, 1983).

(c) Table 8 summarizes the results of our regression analysis of the wage-determination function (3).

Table 8
Results of Regression Analysis of Model (3)

Independent Variables	Dependent Variable *LnW*		
	Coeff.	*t*-stat.	*p*-val.
Constant	14.0250	167.930	0.000
S	0.05299	9.164	0.000
EX	0.03877	6.812	0.000
EX^2	−0.00050	−6.418	0.000
SEX	0.13600	1.677	0.094
MARST	0.08945	4.612	0.000
SEMPL	0.30500	3.600	0.000
S * *EX*	−0.00003	−0.085	0.932
S * *SEX*	−0.00078	−0.142	0.887
S * *SEMPL*	−0.01445	−2.488	0.013
SEX * *MARST*	0.00645	0.255	0.799
SEX * *SEMPL*	−0.05917	−2.552	0.011
SEX * *EX*	0.00093	0.647	0.517
EX * *SEMPL*	−0.00197	−1.344	0.179
$R^2 = 0.471$	Adj.$R^2 = 0.468$	$F = 158.251$, $p = 0.000$	
Sample size $N = 2.326$			

According to the findings, the years of schooling, experience, gender, marital status and the sector of employment have all a positive and statistically significant impact ($p < 0.001$) on wages which means that marriage (and probably children) increase pay in both sectors. Employees with more years of education or experience are certainly better off, especially when they are married, no matter the sector in which they are employed. This is true both for men and women. However, gender and sector of employment do matter, individually, in the sense that, ceteris paribus, it appears that men have a better remuneration, and the same is true for those working in the private sector of the economy. A reservation exists with the gender since its coefficient is relatively high although statistically insignificant at the margin. This is attributed to the enforcement of the equal-pay legislation which was passed through and became law in 1991. The interactive effect of education and sector of employment is negative and has a statistically significant impact ($p < 0.001$) on wages. The sign indicates that education pays better in the private sector.

The interactive term of gender and sector of employment has a negative and statistically significant effect ($p < 0.001$) on wages as we move from females to males, and from the private sector to the public sector simultaneously. Turning to gender and level of education, we see that the interactive effect coefficient is not statistically significant, i.e. both factors together do not exert any effect on wages. This implies that a better educational background does not reduce job discrimination to which females may be subjected (: a fact not supported by our results).

Finally, Table 8 shows that there is not interactive effect between education and experience. Although, individually, the two factors contribute to wage increases, their combined effect is neutral. This is an interesting but unexpected result. It says either that highly educated employees (of high experience) do not benefit more than their counterparts of less education, or that highly experienced employees (of high education level) do not benefit more than their counterparts of less experience. To put it in other words, since the sign and the significance of the relevant coefficient determines whether we have a case of filtering or not [see Psacharopoulos and Tsamadias (1991)], our results show neither convergence nor divergence of earnings of TTE and SE graduates.

(d) The results from the public sector wage model (4) are presented in Table 9.

Table 9
Results of Regression Analysis of Model (4)

Independent Variables	Dependent Variable LnW		
	Coeff.	t-stat.	p-val.
Constant	14.270	119.182	0.000
S	0.04822	5.820	0.000
EX	0.03800	5.125	0.000
EX^2	−0.0002199	−2.109	0.000
SEX	0.08657	0.813	0.416
$MARST$	0.09490	3.838	0.000
Z	0.152	1.460	0.145
$S * EX$	−0.000646	−1.405	0.160
$S * SEX$	−0.000949	−0.134	0.894
$S * Z$	−0.01094	−1.534	0.125
$SEX * MARST$	0.000153	0.044	0.965
$SEX * Z$	−0.09645	−3.343	0.001
$SEX * EX$	0.003576	1.850	0.065
$EX * Z$	−0.008932	−4.726	0.000
$R^2 = 0.521$	Adj.$R^2 = 0.514$	$F = 81.989$, $p = 0.000$	
Sample Size $N = 995$			

In general, they are similar to the previous model for the whole economy and are not commented further. However, two points should be made here with respect to marital status and the Z variable (: the two subsectors of the public sector). The marital status coefficient is here larger than in the whole economy. This is in accordance with our expectations, since, in Greece, married public employees receive a considerable increase in their basic wages by law. The second point is that it appears that there is not discrimination in wages between the subsectors of the overall government employees, since Z is not statistically significant. This is always true when Z appears alone. However, the division of the whole sector in two subsectors does matter when it is combined in interactive terms with gender and experience.

(c) The results from wage model (5) are presented in Table 10.

Table 10
Results of Regression Analysis of Model (5)

Independent Variables	Dependent Variable *LnW*		
	Coeff.	*t*-stat.	*p*-val.
Constant	13.937	104.639	0.000
S	0.05053	5.505	0.000
EX	0.04233	5.260	0.000
EX^2	−0.0007844	−7.632	0.000
SEX	0.145	1.286	0.199
MARST	0.05938	2.249	0.025
FIRMSIZE	0.243	2.271	0.023
REGION	−0.07495	−0.701	0.483
S * *EX*	0.0002841	0.574	0.566
S * *SEX*	−0.001305	−0.172	0.864
S * FIRMSIZE	−0.01569	−2.135	0.033
S * REGION	0.01309	1.778	0.076
SEX * MARST	0.01758	0.532	0.595
SEX * FIRMSIZE	0.04618	1.560	0.119
SEX * REGION	0.004741	0.159	0.874
EX * *SEX*	−0.002774	−1.292	0.197
EX * FIRMSIZE	0.007211	3.866	0.000
EX * REGION	−0.001885	−1.009	0.313
$R^2 = 0.511$	Adj.$R^2 = 0.505$	$F = 80.861$, $p = 0.000$	
Sample Size $N = 1{,}331$			

The overall results show:

(a) The measure of goodness-of-fit (adjusted R^2) is satisfactory for our cross-section data.

(b) The value of the *F*-statistic ($p < 0.001$) suggests a statistically significant relationship between the dependent and all independent variables together.

Our main interest in this section is with the new variables of firm size and region. No discrimination exists in wages between employees of Attica and the rest of Greece. This is true both when region is

considered alone and with other factors making interaction effects. On the contrary, the size of the firm leads to wage discrimination since its coefficient is statistically significant. Our results show that large firms do pay more, when this variable is by itself. This is what we would expect a priori. Furthermore, the effect of the interaction between firmsize and gender is not statistically significant, but an interactive effect is present when the size of the firm is combined with years of schooling and experience. The last comment ascertains what is commonly believed in Greece, i.e. big firms are primarily interested in experience but not so much in years of schooling when they have to judge on both criteria to employ their personnel (: the $S*$ Firmsize coefficient is negative and the $Ex*$ Firmsize coefficient is positive).

5. CONCLUDING REMARKS

Although there exists lately an interest of researchers in potential interactive effects of various factors in wage determination, there is still a scarcity of studies on this issue, especially in the Greek literature where economists concentrate their attention mainly to individual factors.

This study has combined the two approaches using certain key factors which affect wages as well as selective interactive terms.

The basic conclusions from our analysis are:

(a) Wages of employees with secondary and tertiary technological education are higher (1) in the public sector of the economy, (2) in public utilities (rather than in central government), (3) in large firms, and (4) when they are married (especially in the public sector, due to Law enforcement).

(b) The private sector of the economy seems to pay more attention to the productive potentialities of the employee.

(c) In general, the standard human capital variables of education and experience play an important role in determining wages for both public and private employees, although the effect is stronger for the private workers. Considering education alone, there seems to be a recognition of the higher productivity of the educated employees on behalf of the private sector.

(d) The interactive effect of education and experience does not show either convergence or divergence in wages of TTE and SE graduates.

(e) Gender and marital status exert an influence on wages since males have a better remunaration, the second being clearly stronger. The same applies to married employees. The interactive effect of gender

and sector of employment shows that wages are influenced positively as we move from females to males and from the private to the public sector. Also, the gender and the level of education interactive term shows no reduction in job discrimination between men and women. However, there is no discrimination between the two subsectors of the public sector when all employees are considered together. The opposite is true when the two subsectors are combined in interactive terms with gender (: and experience).

(f) Employees in the private sector are paid equally well in Attica and the rest of Greece, while they receive better earnings in large firms (: with no discrimination between males and females). Finally, experience is the major factor considered by big firms in shaping wages rather than years of schooling.

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