

Identifying the Principal Factors Affecting the Selection of Higher Education Economical Studies in Greece

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Abstract

This paper presents a study of the factors affecting the selections of university departments for undergraduate studies made by high school graduates in Greece; crucial decisions affecting both the vocational career of the individuals as well as the labor market at national level. It is therefore important for the economic development of a country to understand how people come early to decisions that have a significant effect in their career. The factors under consideration have been identified by the high school candidates for university introductory exams in Greece. A methodology is introduced based on correspondence analysis for estimating the importance of the factors affecting a certain outcome and a structured questionnaire has been designed for this purpose, covering several socioeconomic factors

which were considered as important by the students in their decision making procedure. The methodology is then used to estimate the impact of 18 factors influencing the order of preference of 318 male and 454 female high school students in their final selection of economical university departments. The paper also reveals whether there is any differentiation or harmonization among groups of students, such as between the two genders, with respect to these factors.

Keywords: Higher education, Economical studies, Economic development, Correspondence analysis, Comparative evaluation

1. Introduction

Selecting a department for undergraduate studies is a significant decision that has a substantial and long lasting impact on both the personal career of an individual and the labor market of a country. It is also important from the point of view of policy making of the ministries of education and labor, as well as of the economic growth of a country, to understand how people make early choices that have a major impact on their careers. To this purpose a structured questionnaire was developed that has been completed by 772 university students. The questions covered various factors, mainly socio-economic ones, which have been considered to play an important role for the decision of the students. The questionnaire was based on more than 20 years of experience of one of the authors with high school candidates to introductory exams for Greek universities. The methodology used is based on correspondence analysis (Lebart et al 2002), in order to analyze the collected information of the respondents.

Two pieces of the applied methodology are presented briefly aiming to study the issue at hand: a) the questions designed for the study are presented; and b) a methodology is discussed for estimating the impact of factors influencing the selection of university departments made by the students and for finding out if there is any differentiation or harmonization in the factors' importance across groups of subjects, such as across gender.

2. Literature Review

Several prior studies employing a variety of different factors, have examined the criteria used by students in accounting discipline when selecting their career. Other studies have examined the impact of factors influencing the selection of university departments made by business students in respect with their past choices of undergraduate studies as high school candidates for university introductory exams.

In the accounting literature, several career-choice studies have been conducted to identify factors influencing individuals in choosing accounting as a career (Ashworth, 1969; Carpenter and Strawser, 1970; Evans, 1974; Thielens, 1974; Triandis et al., 1988; Gul et al., 1989; Horowitz and Riley, 1990; Triandis et al., 1990; Markus and Kitayama, 1991; Bundy and Norris, 1992; Felton et al., 1994; Auyeung and Sands, 1997; Lowe and Simons, 1997; Saemann and Crooker, 1999).

Firstly, Ginzberg (1951) identified three categories of occupational-choice dimensions and groups these as values: concomitant value, extrinsic value and intrinsic value. O' Connor and Kinnane (1961) used six factors for the analysis of preference questionnaires: independence-variety, work conditions and associates, social-artistic, security and material aspects, prestige, and heuristics and creativity. Paolillo and Estes (1982) reported that the majority of engineers and physicians decided on their career path prior to leaving high school, while the majority of attorneys decided after having attended two years in a college. According to their findings, most of the accounting professionals also made their decision in the second year of college or before.

Cohen and Hanno (1993) examined business students' selection of majors in the US and

reported differences in rationales and intentions between accounting and non-accounting business majors. Kamran et al. (1997) examined in their study the influence of intrinsic factors, financial and job-related factors plus other factors such as parent and peer influence and work experience. They also examined the students' perceived benefit-cost ratio to being a chartered accountant and whether accounting students choose to pursue a chartered accountancy career or a non-accounting career.

Dynan and Rouse (1997), Lewis and Norris (1997) and Jensen and Owen (2000) have identified the importance of interest and perceptions of the profession as factors determining the selection of an economic major. Albrecht and Sack (2001) have also commented on finance as an attractive alternative to accounting. Gammie et al. (2003) examined gender differences across several performance measures both prior to and after entering into accounting and finance higher education studies. No gender differences were found in any of the final year modules, and this was also evident in the coursework and examination performance analysis. Worthington and Higgs (2003) examined in their study the role of student characteristics, personality and perceptions of the banking and finance professions in determining the selection of an undergraduate finance major. Among the examined student characteristics were gender, secondary school studies in accounting, business and economics, degree grade average and frequency of attendance.

The motivation behind the present study is a conviction in the need for both understanding and estimating the impact of the factors, mainly the socioeconomic ones, which influence the decision selections of potential accounting and finance students.

3. Factors for Selecting University Departments

The factors (criteria) that were considered to be central for the choices of university departments made by high school students were based solely on the ad hoc experience of one of the authors who has been preparing students for university entry exams for over 20 years. To the best of the authors' knowledge this is the first study of this kind where both the factors/questionnaires and the subjects asked are solely based on the experience and relation of a teacher with his/her students over the years. Hopefully other studies on this important topic can benefit from this experience and the applied methodology and results.

As the factors are based on implicit knowledge – and not, for example, on other past studies on this topic – they are presented without further analysis based on existing literature. Although this entails the danger of either “reinventing the wheel” or of making empirical study errors, it is believed that there is value in simply presenting the implicit knowledge on the subject matter gained from years of experience from which other researchers can also potentially benefit as well. The factors, with their code name used preceding them, are presented in Table 1. The students were asked the following question: “On a scale from 1 to 5, to what extent has each of the following factors influenced your choice of university department?” Among the 772 students questioned, there were 318 boys and 454 girls.

Table 1. Examined factors and corresponding code names

Code name	Factor
E11_1	Family influence
E11_2	School/teachers influence
E11_3	Social environment influence regarding the general area of studies
E11_4	Mass media
E11_5	Employment prospects, as perceived
E11_6	Interest/like in subject of studies
E11_7	Father's profession
E11_8	Mother's profession
E11_9	Distance between university and family's residence
E11_10	City where the department is situated
E11_11	High-school friends' influence
E11_12	Family's financial status
E11_13	Entertainment in student life, as perceived and expected
E11_14	Independence from parents, as expected
E11_15	Special talents
E11_16	Studies that are considered/perceived as important today and in the future
E11_17	Social recognition of the university department degree
E11_18	Psychological repercussions on the family due to the great distance between university and family residence

4. Estimating the Importance of Factors

The main focus was on a comparative evaluation of the factors that influence two or more “subject groups”, such as the choice of male and female high school students. To this purpose a methodology was developed for finding and estimating the importance of factors for a certain outcome – in this case how the 18 factors shown above influence the university department choices. The methodology consists of the following steps, which are described as they are performed for the particular case of comparing male and female students (but can be clearly generalized in a straight forward way for comparisons across other subject groups):

1. Firstly two tables were created with the answers of the subjects to the 18 factors/questions (on the 1-5 scale): one is a 318×18 table for the 318 male students, while the other is a table 454×18 for the 454 female students.

2. As the correspondence analysis was performed in the last step it was required that all factors/questions are measured on the same scale. If the factors were initially evaluated on different scales, they must be transformed into scales of equal number of ranks. This was achieved out with the use of the DIAS software (Moschidis, 2003). In this specific case all answers to the 18 factors/questions above were reduced to a 3-point evaluation scale (“no”, “quite”, “very” regarding the importance of each of the 18 factors). With the new scale each point (1, 2, 3, 4, 5) of the 5-point scale was transformed into a percentage triad (Moschidis, 2003). In particular, point 1 is transformed in the percentage triad (90, 7, 3) meaning that there is a probability of 90% for 1, 7% for 2, and 3% for 3. Table 2 presents the percentage triads finally used for each point of the 1-5 initial scale.

Table 2. Percentage table in triads

Points on a 5-point scale	Percentage on a triad scale			Total
1	90	7	3	100
2	70	20	10	100
3	17	67	17	100
4	10	20	70	100
5	3	7	90	100

Based on this scale transformation, Table 2 can be transformed into Tables 3 (male students) and 4 (female students) by simply having one row per factor and each factor measured in a 3-point “percentage” scale (Moschidis, O. 2006).

Table 3. Male students' evaluation table

Factor	A1	A2	A3
E11_1	15585	8330	7715
E11_2	20299	6820	4465
E11_3	14553	8729	8360
E11_4	19177	6495	5912
E11_5	3808	5831	21909
E11_6	4883	6240	20433
E11_7	22016	4759	4765
E11_8	25638	3620	2254
E11_9	19317	5838	6411
E11_10	11520	7062	13004
E11_11	22108	5815	3647
E11_12	19370	6555	5661
E11_13	13358	8257	10013
E11_14	17855	6455	7264
E11_15	12383	7611	11622
E11_16	5472	6634	19464
E11_17	9441	8604	13595
E11_18	23425	4981	3144

The meaning of the numbers in the cells is as follows: number 6495 on the 4th row and the second column gives the number of the total points that the boys gave to the characterization “quite” in the question: “to what extent have the mass media influenced your choice of department?” (E11_4), since code A1 on the first line means that the reference is to male students (A) answering “no” (1), code A2 shows male students answering “quite” (2) and code A3 male students answering “very” (3). A similar table has been formed for the female students (Table 4).

Table 4. Female students' evaluation table

Factor	K1	K2	K3
E11_1	19316	12472	13382
E11_2	25902	11435	7811
E11_3	19287	12176	13685
E11_4	26845	9787	8468
E11_5	4120	7289	33593
E11_6	6153	10368	28565
E11_7	32431	5990	6591
E11_8	35407	5461	4132
E11_9	27057	8231	9774
E11_10	14345	10383	20378
E11_11	32191	7647	5208
E11_12	26688	9597	8813
E11_13	18718	12065	14373
E11_14	24330	9544	11214
E11_15	20288	11789	13075
E11_16	6952	10123	28005
E11_17	11049	12511	21610
E11_18	32087	8010	4965

K shows that we refer to females and the indices 1, 2, and 3 point to the answers “no”, “quite”, and “very” respectively

3. Then a single table is created by merging the two tables for the two subject groups (males and females in this case) created above. This leads to Table 5.

Table 5. Final table of comparative evaluation (male - female)

Factor	A1	A2	A3	K1	K2	K3
E11_1	15585	8330	7715	19316	12472	13382
E11_2	20299	6820	4465	25902	11435	7811
E11_3	14553	8729	8360	19287	12176	13685
E11_4	19177	6495	5912	26845	9787	8468
E11_5	3808	5831	21909	4120	7289	33593
E11_6	4883	6240	20433	6153	10368	28565
E11_7	22016	4759	4765	32431	5990	6591
E11_8	25638	3620	2254	35407	5461	4132
E11_9	19317	5838	6411	27057	8231	9774
E11_10	11520	7062	13004	14345	10383	20378
E11_11	22108	5815	3647	32191	7647	5208
E11_12	19370	6555	5661	26688	9597	8813
E11_13	13358	8257	10013	18718	12065	14373
E11_14	17855	6455	7264	24330	9544	11214
E11_15	12383	7611	11622	20288	11789	13075
E11_16	5472	6634	19464	6952	10123	28005
E11_17	9441	8604	13595	11049	12511	21610
E11_18	23425	4981	3144	32087	8010	4965

4. The final table created (table 5, Zardas, G., Moschidis,2011) has been analyzed using standard correspondence analysis (Lebart et al., 2002).

5. Results

The analysis of Table 3 leads to the following histogram of characteristic roots (Table 6).

Table 6. Characteristic roots histogram

Factorial axis	% of variance explained	Total % of variance explained
1	94.59	94.59
2	4.80	99.38
3	0.48	99.86
4	0.14	100

The interpretation percentage (94.59%) of the first factorial axis is very large. This means that the first factorial axis actually interprets almost the entirety of the phenomenon and is supplemented by the second axis which interprets another 4.8%. The indicators of interpretation CTR (contribution) and COR (correlation) produced:

(1) The contribution CTR point to a factorial axis which showed the inertia percentage of the point that the axis absorbs

(2) The correlation COR point A to a factorial axis which was equal to the square of the cosine of the angle formed by the vector OA with the factorial axis, where O was the beginning of the axis.

The COR and CTR of the 18 factors/questions considered on the four principal axes (first four factorial axes) are presented in Table 7. In the creation of the first factorial axis the following factors contributed the most: employment prospects (E11_5 - CTR=227), the subject of studies (E11_6 - CTR=160), studies with a present and a future (E11_16 - CTR=142) and mother's profession (E11_8 - CTR=103).

Table 7. COR (contribution) and CTR (correlation) coordinates of subjects

Factor	#F1	COR	CTR	#F2	COR	CTR	#F3	COR	CTR	#F4	COR	CTR
E11_1	-8	2	0	-147	926	114	40	70	87	-5	0	0
E11_2	-309	899	25	-94	82	46	28	7	44	28	7	0
E11_3	21	21	0	-144	941	109	17	13	15	-25	28	0
E11_4	-275	990	20	-26	8	3	-11	1	6	5	0	0
E11_5	916	958	227	187	40	188	30	1	50	-26	0	0
E11_6	768	990	160	62	6	20	-28	1	40	36	2	0
E11_7	-445	909	53	137	86	100	-21	1	21	-19	1	0
E11_8	-619	927	103	170	70	155	18	0	17	12	0	0
E11_9	-254	961	17	50	37	13	1	0	0	-8	0	0
E11_10	313	991	26	-11	1	0	26	6	37	-5	0	0
E11_11	-484	986	63	49	10	12	-16	1	12	-22	1	0
E11_12	-274	993	20	-22	6	2	2	0	0	-4	0	0
E11_13	83	317	1	-121	660	77	-19	16	18	-9	3	0
E11_14	-156	996	6	-6	1	0	6	1	2	-2	0	0
E11_15	78	255	1	-86	303	39	-104	441	573	17	13	0
E11_16	724	993	142	55	5	16	-15	0	11	13	0	0
E11_17	420	925	47	-116	69	71	29	4	45	-13	0	0
E11_18	-511	986	70	56	11	16	9	0	4	18	1	0

When the 18 considered factors on the principal factorial axis are projected, the importance of each factor for the university department selection of the students (male and female) is clearly visible. This projection is pictured in Figure 1 (presented as output of the used software package MAD). Each of the 18 factors is depicted so that the more left the factor is shown, the less its importance is.

preparation (mental and educational) for entering the university. Moreover, the examination of the effects of additional, different than the examined ones, would maybe reveal new statistically significant effects.

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