



## Rate of Return to and Price of Higher Education in Turkey: A Case Study of Law Faculty

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### Abstract

The fact that higher education service provides important benefits for individuals and society has resulted in excess demand. This is directly related to a simple economic law suggesting that the demand for goods or services of which price is zero or low will increase until its marginal benefit approximates zero or very close to zero. However, it seems that demand and supply of education is difficult to determine based on the demand-supply and price equilibrium included in economic theory. Investment decision depends on the reciprocal influence of three components; anticipated earnings, cost of the investment and the current interest rate. The higher education having the characteristics of an investment is influenced by these three components. In the study, the price of higher education, with the reciprocal influence, and individual demand of higher education are analyzed within the framework of the sample of Law Faculty. In the conclusion part, it is suggested that the price of higher education is significantly below 1 and this increases the demand of higher education.

### Keywords

Demand of higher education  
Price of higher education  
Returns to higher education  
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### Introduction

Today, increase in life standard and schooling rate, inadequacy of low grade education in meeting the needs of social and economic life which is becoming more and complicated due to the scientific and technical developments and providing higher education almost free are increasing the demand of higher education continuously. The fact that least developed and developing countries perceive higher education as a means to increase the number of qualified labor power and they have started to have a desire to develop has increased the demand of higher education.

According to the literature, the individual demand of higher education is influenced by direct and indirect costs; net, lifelong returns created by additional human capital provided by higher education; forgone earnings (opportunity cost); education prices; and amount of the expenses for educational materials and tools (Psacharopoulos & Woodhall, 1986: 112; Duchesne & Nonneman, 1998: 212; Yang, 2001: 3; Berger & Kotsal, 2002: 101). In the studies, some results indicating society derives more benefit (return) compared to individuals from primary and secondary education and individuals derive more compared to society from higher education are obtained (Woodhall, 1987; Hicks, 199; Blau, 1996; Card & Krueger, 1996; Rozada & Menendez, 2002). Rate of return values are important factors which both increase the demand of higher education and make calculation of higher education price possible (Aslan, 2002).

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Purpose of this study is to estimate the price and rate of return to higher education through the rate of return technique. The study consists of four parts including introduction and conclusion. In the second part, private benefit and cost data in higher education are calculated. The private rate of return is calculated with the data using internal rate of return technique. The price which also determines individual demand of higher education is calculated based on private rate of return and interest rate. 2005 data was used in calculations. The income flow is measured by the calculation of gross and net salaries received by high school and university graduates employed in the public sector. The income is calculated by means of the salary figures of the State Personnel Law No 657. The income flow of high school and university graduates was formed assuming that the government officers obtained no extra income other than their salaries. The data for a lawyer's income was obtained by means of the income account of a university graduate. In the private costs account, direct private cost was calculated based on Law Faculty utilizing four years' education period, indirect costs and waived salaries according to the State Personnel Law. In conclusion part, within the frame of the data from calculations, it is suggested that the price of higher education is below 1 and this increases the demand of higher education.

### Methodology

The price of four years' education in Turkey is calculated through 2005 data. First private benefits and costs and then rate of return was calculated. The earnings premia was measured by the calculation of net salaries which would be received by high school (The net salary 528,04 TL) and university graduates (The net salary 873,56 TL) employed in the public sector.

The income is calculated by means of the salary figures of the State Personnel Law No 657 and it was assumed that the government officers obtained no extra income other than their salaries. The earning premium of high school and university graduates was formed and for the return account of university graduate personnel, the earnings data of a lawyer was obtained.

Costs were calculated using 2005 data. Based on four year education's private costs and using foregone earnings according to State Personnel Law, indirect costs were calculated. Faculty Law is the basis for direct private costs.

Internal rate of return was calculated using earnings and cost data. Earnings (Akalin, 1980):

$$\left( \sum_{t=18}^{56} E_p \text{ high school graduate} \right) = \text{The net salary of a high school graduate} \times 12 \text{ months} \times 38 \text{ years}$$

$$\left( \sum_{t=22}^{60} E_p \text{ lawyer} \right) = \text{The net salary of lawyer} \times 12 \text{ months} \times 38 \text{ years}$$

The price of higher education was calculated using private rate of return of higher education (r) and return rate of investment (i) (Ataç, 1978):

$$IRR = r$$

$$0 = \sum_{t=22}^{60} \text{private return}^t / (1+r)^t - \text{private cost}$$

In the calculation, return rate of investment was calculated within the scope of the interest rate implemented to long term bonds (16%) by the Central Bank.

## Practice

In this part, income and costs have been calculated including minimum private incomes; direct and indirect costs. The price of higher education was obtained using data from the calculations.

### *Income Data*

The income figures of The State Personnel Law numbered 657 pertaining salaries have been utilized to obtain income data. The net and gross salaries of high school and university graduate personnel in January, 2005 were taken as the basis to obtain private income figures. The net salary was taken as the basis to obtain private income flow of the personnel. Average working period was considered to be 38 years: Average of working periods of a high school and university graduate personnel who was employed in public sector as of 01.01.2005 pursuant to the 4759 numbered Law enacted on 23.5.2002 was taken.

Private income figures were obtained subtracting taxes and other deductions from annual amounts paid to high school and university graduates from the figures of State Personnel Law pertaining to salaries.

The annual figures were obtained multiplying net salaries paid to personnel with 12 and the private income amount was obtained multiplying that of with 38. The income of a university graduate was calculated based on lawyer staff (Table 1).

a. The net salary of a high school graduate in January, 2005 is TL 528,04. Thus, the private earning is (Ep High school graduate);

$$\begin{aligned} \left( \sum_{t=18}^{56} \text{Ep High school graduate} \right) &= \text{The net salary of a high school graduate} \times 12 \text{ months} \times 38 \\ \text{years} & \\ &= \text{TL } 528,04 \times 12 \text{ months} \times 38 \text{ years} \\ &= \text{TL } 240.786,24. \end{aligned}$$

b. The net salary of a lawyer in January, 2005 is TL 873, 56. Thus, the private earning is (Ep Lawyer);

$$\begin{aligned} \left( \sum_{t=22}^{60} \text{Ep Lawyer} \right) &= \text{The net salary of lawyer} \times 12 \text{ months (one year)} \times 38 \text{ years} \\ &= \text{TL } 873,56 \times 12 \text{ months} \times 38 \text{ years} \\ &= \text{TL } 398.343,36. \end{aligned}$$

**Table 1.** Private Incomes (2005-2042 years)

Years	The net salary of a lawyer	The net salary of a high school graduate	Earning remium
2005 (1)	10.482,72	6.336,48	4.146,24
2006 (2)	20.965,44	12.672,96	8.292,48
2007 (3)	31.448,16	19.009,44	12.438,72
2008 (4)	41.930,88	25.345,92	16.584,96
2009 (5)	52.413,6	31.682,4	20.731,2
2010 (6)	62.896,32	38.018,88	24.877,44
2011 (7)	73.379,04	44.355,36	29.023,68
2012 (8)	83.861,76	50.691,84	33.169,92
2013 (9)	94.344,8	57.028,32	37.316,48
2014 (10)	104.827,2	63.364,8	41.462,4
2015 (11)	115.309,92	69.701,28	45.608,64
2016 (12)	125.792,64	76.037,76	49.754,88
2017 (13)	136.275,36	82.374,24	53.901,12
2018 (14)	146.758,08	88.710,72	58.047,36
2019 (15)	157.240,8	95.047,2	62.193,6
2020 (16)	167.723,52	101.383,68	66.339,84
2021 (17)	178.206,24	107.720,16	70.486,08
2022 (18)	188.688,96	114.056,64	74.632,32
2023 (19)	199.171,68	120.393,12	78.778,56
2024 (20)	209.654,4	126.729,6	82.924,8
2025 (21)	220.137,12	133.066,08	87.071,04
2026 (22)	230.619,84	139.402,56	91.217,28
2027 (23)	241.102,56	145.739,04	95.363,52
2028 (24)	251.585,28	152.075,52	99.509,76
2029 (25)	262.068	158.412	103.656
2030 (26)	272.550,72	164.748,48	107.802,24
2031 (27)	283.033,44	171.084,96	111.948,48
2032 (28)	293.516,16	177.421,44	116.094,72
2033 (29)	303.998,88	183.757,92	120.240,96
2034 (30)	314.481,6	190.094,4	124.387,2
2035 (31)	324.964,32	196.430,88	128.533,44
2036 (32)	335.447,04	202.767,36	132.679,68
2037 (33)	345.929,76	209.103,84	136.825,92
2038 (34)	356.412,48	215.440,32	140.972,16
2039 (35)	366.895,2	221.776,8	145.118,4
2040 (36)	377.377,92	228.113,28	149.264,64
2041 (37)	387.860,64	234.449,76	153.410,88
2042 (38)	398.343,36	240.786,24	157.557,12

**Cost Data (C)**

Direct and indirect private costs were calculated under this heading and it was assumed that the salaries did not change in four years. Differently from return calculations, the four years' period was taken as a basis in cost calculations.

**Direct Private Costs (DPC)**

Direct private costs data was calculated basing on law faculty. In the previous studies (Qiheng & Delin, 2004; Psacharopoulos, & Patrinos, 2004; Psacharopoulos & Papakonstantinou, 2005) scholarship/loan amount made available by Yurt-Kur (2005) to students was taken as a basis in calculation of direct private costs. However, in this study, differently from other studies (Tek, 1987; Adıyaman, 2004; Kesik, 2005; TED, 2005; Türkmen, 2009), direct private cost of a student was calculated considering also the data pertaining expenses made by families for preparation to external examinations, textbooks taught at faculty law, equipment and materials for the lessons, tuition fees, expenditures related to accommodation, food and transportation. By multiplying the totals from the calculations by 4, the direct private cost was obtained.

The expenses made by the families for preparation to the examination come to an end when the candidate gets into a higher education program. Thus, the expenses for ÖSS were added to direct private expenses for once. Other expenses were calculated assuming a student graduates in four years. Accordingly, direct private cost is (DPC) TL 11.532 TL (Table 2).

**Table 2.** Private Expenses

Private Expenses	Total Expenditure (TL)
Preparation for ÖSS*	3.096
Clothing ..... TL 400 x 4 years	1.600
Book ..... TL 548 x 4 years	2.192
Accommodation (Yurt-Kur)..... TL 270 x 4 years	1.080
Food ..... TL 240 x 4 years	960
Transportation ..... TL 408 x 4 years	1.632
Contribution ..... TL 243 x 4 years	972
<b>Total</b>	<b>11.532</b>

**Kaynak:** TED (2005). *Türkiye’de üniversiteye giriş sistemi araştırması ve çözüm önerileri*. Ankara: TED Yayınları.

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### **Indirect Private Costs (IPC)**

The student who prefers to study at a university rather than work would generate an earning and pay taxes to the state if one worked. In the calculation of indirect private cost (IPC), the minimum salary amount for high school graduates provided by the 2005 dated State Personnel Law was considered to be waived income in parallel with the studies done before and the minimum salary was assumed to remain the same in 4 years. The annual cost amount was obtained by multiplying the salary which a high school graduate earns after taxes and deductions by 12 and then multiplying that of by 4, the wanted amount was obtained. Thus, the indirect private cost is (IPC);

$$\left( \sum_{t=18}^{22} \text{IPC} \right) = \text{TL } 528,04 \times 12 \text{ months} \times 4 \text{ years}$$

$$= \text{TL } 25.345,92$$

### **Total Costs (TC)**

The total costs were calculated by using the results of direct and indirect private costs which sum up to total costs. Total private cost (TPC) consists of direct (DC, Table 2) and indirect private cost (IPC). In direct private cost (DPC) calculation, the minimum salary paid to high school graduates and the minimum private cost, assuming the student stays at the state dormitory, were taken as the basis. Indirect private cost was considered to be fixed and direct private cost was calculated according to the law faculty. Within this scope, the total private cost of a student studying at law faculty was calculated using direct and indirect private data and utilizing the formulation below:

$$\sum_{t=18}^{22} \text{TPC} = \sum_{t=18}^{22} \text{DC} + \sum_{t=18}^{22} \text{IPC}$$

$$= \text{TL } 11.532 + \text{TL } 25.345,92$$

$$= \text{TL } 36.877,92$$

**Internal Rate of Return (IRR)**

Internal rate of return is the discount rate which equalizes costs to earning (return) and is calculated using the formulation below (Cohn, 1979: 97; Sheehan, 1973: 13).

$$IRR = r$$

$$0 = \sum_{t=22}^{60} \text{private return}^t / (1+r)^t - \text{private cost}$$

The  $r$ ,  $return$  and  $C$  indicate rate of return, earning difference and cost, respectively. Because the equations which were used to calculate internal rate of return hold  $n=1,2,3,4,\dots,38$ , they are equations of the 38<sup>th</sup> degree. Their solutions and also examining the roots of the equations are difficult because they have the root 38 mathematically. Thus, a special process was applied in the solution of IRR. By definition, the cost benefit difference is approximated zero to obtain  $r$  by giving different values to  $r$ . Interpolation is applied to obtain the real rate which approximates to zero (Akalın, 1980: 132; Akgüç, 2002: 56). The Excel software was utilized to apply interpolation operations.

There are private returns and total private costs in the calculation of private rate of return (IRR) (Cohn, 1979: 98; Sheehan, 1973: 14). Private rate of return values were obtained using the formulation below.

$$IRR = r$$

$$0 = \sum_{t=22}^{60} \text{private return}^t / (1+r)^t - \text{private cost}$$

Here, total private cost is TL 36.877,92 and social rate is assumed ( $r$ ) 40%. Accordingly, private rate of return was calculated by applying interpolation within the scope of the returns and costs which a lawyer in public sector will gain until the age of retirement (Table 3).

**Table 3.** Private Internal Rate of Returns (%)

Years	Private Returns (TL)	r=%30	CV 1 (TL)	r=%35	CV 2 (TL)	r=%40	CV 3 (TL)	r=%45	CV 4 (TL)
1	4146,24	0,7692308	3189,41538	0,7407407	3071,2889	0,7142857	2961,6	0,6896552	2859,4759
2	8292,48	0,591716	4906,7929	0,5486968	4550,0576	0,5102041	4230,8571	0,4756243	3944,1046
3	12438,72	0,4551661	5661,68411	0,4064421	5055,6196	0,3644315	4533,0612	0,3280167	4080,1082
4	16584,96	0,3501278	5806,8555	0,3010682	4993,2045	0,2603082	4317,2012	0,2262184	3751,8237
5	20731,2	0,2693291	5583,51491	0,2230135	4623,3375	0,1859344	3854,6439	0,1560127	3234,3308
6	24877,44	0,2071762	5154,01376	0,1651952	4109,6333	0,1328103	3303,9805	0,107595	2676,6875
7	29023,68	0,1593663	4625,39696	0,1223668	3551,535	0,0948645	2753,3171	0,0742034	2153,6566
8	33169,92	0,1225895	4066,28304	0,0906421	3006,5905	0,0677604	2247,6058	0,0511748	1697,4634
9	37316,48	0,0942996	3518,92896	0,0671423	2505,5135	0,0484003	1806,1273	0,035293	1317,0087
10	41462,4	0,0725382	3007,6058	0,049735	2062,1334	0,0345716	1433,422	0,02434	1009,1934
11	45608,64	0,0557986	2544,89722	0,0368408	1680,2568	0,024694	1126,2602	0,0167862	765,59502
12	49754,88	0,042922	2135,57808	0,0272894	1357,7833	0,0176386	877,60534	0,0115767	575,99625
13	53901,12	0,0330169	1779,6484	0,0202144	1089,5792	0,012599	679,09937	0,0079839	430,34203
14	58047,36	0,0253976	1474,26495	0,0149736	869,17998	0,0089993	522,38413	0,0055061	319,61742
15	62193,6	0,0195366	1215,05353	0,0110916	689,82538	0,0064281	399,78377	0,0037973	236,17051
16	66339,84	0,0150282	996,966999	0,008216	545,04721	0,0045915	304,59716	0,0026189	173,73463
17	70486,08	0,0115601	814,828797	0,0060859	428,97234	0,0032796	231,16749	0,0018061	127,30555
18	74632,32	0,0088924	663,661464	0,0045081	336,4489	0,0023426	174,83255	0,0012456	92,961453
19	78778,56	0,0068403	538,870419	0,0033393	263,06704	0,0016733	131,81819	0,000859	67,673088
20	82924,8	0,0052618	436,332323	0,0024736	205,1205	0,0011952	99,111425	0,0005924	49,127469
21	87071,04	0,0040475	352,422261	0,0018323	159,53817	0,0008537	74,333569	0,0004086	35,575064
22	91217,28	0,0031135	284,003287	0,0013572	123,80387	0,0006098	55,623759	0,0002818	25,702837
23	95363,52	0,002395	228,394252	0,0010054	95,875049	0,0004356	41,537222	0,0001943	18,531826
24	99509,76	0,0018423	183,32649	0,0007447	74,106318	0,0003111	30,95942	0,000134	13,336247
25	103656	0,0014172	146,896226	0,0005516	57,180801	0,0002222	23,035283	9,24E-05	9,5806371
26	107802,24	0,0010901	117,516981	0,0004086	44,050395	0,0001587	17,111925	6,37E-05	6,8716294
27	111948,48	0,0008386	93,8745113	0,0003027	33,884919	0,0001134	12,692911	4,40E-05	4,9213261
28	116094,72	0,000645	74,88565	0,0002242	26,029567	8,10E-05	9,4021564	3,03E-05	3,5197223
29	120240,96	0,0004962	59,6616442	0,0001661	19,969774	5,79E-05	6,9556769	2,09E-05	2,5140874
30	124387,2	0,0003817	47,4761095	0,000123	15,302509	4,13E-05	5,1396627	1,44E-05	1,7936414
31	128533,44	0,0002936	37,7374204	9,11E-05	11,713031	2,95E-05	3,7935606	9,95E-06	1,2782272
32	132679,68	0,0002259	29,9651973	6,75E-05	8,9562008	2,11E-05	2,7970954	6,86E-06	0,9099727
33	136825,92	0,0001737	23,770469	5,00E-05	6,8415423	1,51E-05	2,0603604	4,73E-06	0,6471788
34	140972,16	0,0001336	18,8390664	3,70E-05	5,2213791	1,08E-05	1,5162826	3,26E-06	0,4598554
35	145118,4	0,0001028	14,9178127	2,74E-05	3,9814437	7,68E-06	1,1149137	2,25E-06	0,3264693
36	149264,64	7,91E-05	11,8031046	2,03E-05	3,033481	5,49E-06	0,8191202	1,55E-06	0,2315842
37	153410,88	6,08E-05	9,3315143	1,51E-05	2,3094402	3,92E-06	0,6013383	1,07E-06	0,1641497
38	157557,12	4,68E-05	7,3720903	1,12E-05	1,7569315	2,80E-06	0,4411362	7,38E-07	0,1162663
			<b>59.862,78759</b>		<b>45.687,749</b>		<b>36.278,411</b>		<b>29.688,857</b>

In \*CV (Current Value) calculations, the flow of the net benefits through time was converted to current value terms considering time value of money.

IRR private = r

r = %35

= -36.877,92 + 45.687,75

= + 8.809,83

r = 45%

= -36.877,92 + 29.689,09

= (-)

Difference ... 15.998,9 (45.687,75- 29.688,85)

r = 35%+[(+8.809,83 x 10%) / 15.998,9]

r = 0,35+0,0550

r = 0,4050

r = 40,5%

### *Price of Higher Education*

One of the mainstays of the ideas which explain the mechanism of economic system is that gaining income and maximizing it are the key elements of which determine the behaviors of individuals and enterprises. Possible future returns are one of the important factors which determine the investment decision of individuals and enterprises. Individual encounters three cases within the scope of rate of return ( $r$ ) and interest rate ( $i$ ) when it comes to higher education which has the characteristics of investment (Becker, 1967: 2-12; Uluatam, 1987: 145; Unay, 2001:80-81):

1. If the interest rate is equal to return rate ( $i = r$ ), there is no need for investment as the money deposited in a bank will produce the same profit.
2. If the return rate is higher than the interest rate ( $r > i$ ), it will be profitable to invest. For this reason the conditions are said to be appropriate for investment.
3. If the return rate is lower than the interest rate ( $r < i$ ), the investment will not attract profits. For this reason the resources should be utilized in other ways.

According to this, if  $r > i$  in higher education, the demand will increase. In the case of  $i = r$  there will be no demand increase. If  $r < i$ , the demand will decrease.

G.Becker (1967:2-12) tries to explain the price of higher education and uses private rate of return of education ( $r$ ) and opportunity cost of investment ( $i$ ) concepts. The author assumes that people believe they will gain more return in higher education compared to the other education levels and considers supply curve is always fixed for analysis convenience.

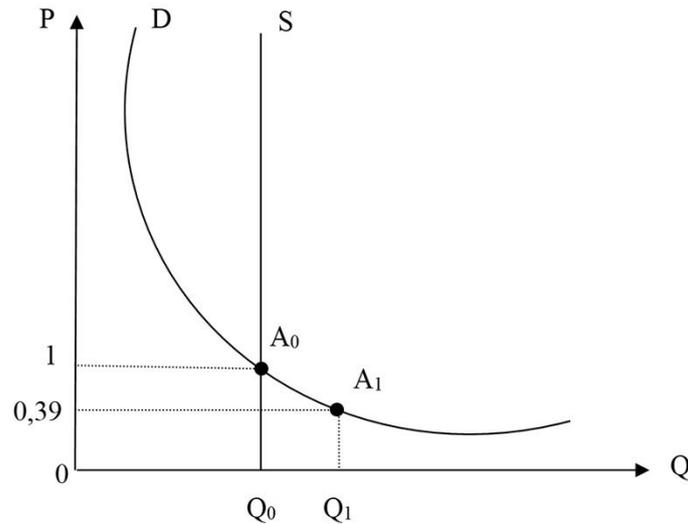
Accordingly, if individuals demand more human capital when supply is fixed, demand curve will shift to the right. However, if there are free seats in classrooms -that is unutilized capacity- and buildings which can be rented as a school, higher education supply curve could have positive slope. In this case, the more demand of higher education, the more service available (Aslan, 2002: 227).

Amount of education and implicit price of semi public good of higher education take place in In horizontal axis and vertical axis, respectively. The demand curve of semi-public good of higher education is formed considering the assumption of "all other things being equal" which is applied in the other demand curve. The said assumptions are primarily family incomes and preferences as well as prices of other goods and especially rates of individual borrowing, social and economic status, foregone earnings and available interest.

In the study, by utilizing theoretical explanations, price of higher education was calculated within the scope of higher education rate of return data and rate of return of investment as of 2005 for an individual registered at law faculty ( $i$ ). The interest rate (16%) applied to long-term bonds by the Central Bank in 2005 was taken as the basis in the calculation. The price of higher education for a student registered at law faculty was calculated through  $P=i/r$  formulation (Akalin, 1980):

$$\begin{aligned} P &= i/r \\ &= 16/41 \\ &= 0,39. \end{aligned}$$

As can be seen, the price is significantly below 1 ( $0,39 < 1$ ). The Prices could be shown on the graphic within the scope of the data explained theoretically above.



**Figure 1.** Price of Law Faculty in Turkey

The price ( $P=0,39$ ) is below 1 for a law faculty student. The fact that the price is below 1 increases demand of higher education. Increase in demand of higher education depends on especially rate of return and magnitude of cost values. The fact that private rate of return is approximately 41% increases the individual demand of higher education.

The fact that most of the expenses are met from public resources; private costs are low and private rate of return is high result in the price is below 1 as a consequence of the mentioned. Demand increases according to what extent the price is below 1. At the point that demand and supply reach the balance, the equilibrium price ( $P=1$ ) occurs either through the fact that investment rate is equal to rate of return ( $i=r$ ) or all costs of higher education are met by the one who benefits it (Akalin, 1980).

### Conclusion

The findings indicating that private returns are higher than social returns in higher education manifests that it has the characteristics of rather a private good. However, higher education is considered to be a public good and most of its expenses are met from public resources. This decreases "all other things being equal" the private education costs of individuals, consequently increases private returns and creates increase in demand.

The fact that the private rate of return is 41% from the calculations in the study suggests the said explicitly. This result causes law faculties to be demanded. According to a research by YÖK in 1997, 41% of cumulative total of students preferred to study law. According to 2005 data of ÖSYM, law faculties were preferred dominantly and approximately 17% of the students stated that they aimed to study law according to a survey done by TED (2005) in the same year.

It is apparent that the said rate will be higher than 41% if the other components such as providing reputation and providing the opportunity of higher consumption rates which cannot be calculated through economical parameters. Considering salary supplements, social benefits and higher prices in private sector, it can be suggested that private rate of return will increase and thus it is several points higher than it is.

Considering non-monetary benefits, it is evident that private rate of return will be higher in any case. This finding manifests the reason for excess demand of higher education. In other words, increase in demand is resulted by the fact that private rate of return is high and private costs are low. Another reason is that you assumed that the typical individual's expenditures are at minimum level is that higher education is provided free by the state because it is considered to be public good. This practice results in that individuals demand more higher education which is very costly.

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