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EDUCATION AND INCOME INEQUALITY IN TURKEY: DOES SCHOOLING MATTER?

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Abstract

The paper examines the link between educational variables and income inequality in Turkey. First, I evaluate the impact of educational level, then I move on to assess educational inequality and finally I consider educational spending by public and private sectors. I argue that due to the limited public spending on primary and secondary education and growing private spending, the spread between socio-economic groups will not be decreased significantly.

Keywords: inequality of income, education, public spending

1 Introduction

Inequality and economic vulnerability have once again started to gain importance in policy debates, since rising inequality and social exclusion have in recent years become perceptible in many countries¹. Although there is still controversy about whether income inequality is necessary for growth, there are several arguments as to how excessive inequality can hamper economic development. From a Keynesian perspective, income inequality can be judged harmful for growth because it reduces aggregate demand, output and prospects for sustained growth. Others look at the implications of poverty for worker productivity, as it affects the nutritional level and access to health care of the working poor.

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¹ For more detailed accounts of inequality across countries, see Cornia and Kiiski (2001).

Over the long run, worker productivity diminishes, dimming prospects for a country's sustainable growth. Persson and Tabellini (1994) point out that in a society with a widening income gap, the need for redistribution becomes crucial for the health care, education and welfare of its population at large². Moreover, in a highly unequal society, there are economic costs of enforcing law and order to protect the market system, property rights and political stability.

Within these factors, income inequality, demographic factors and especially education have been seen as of primary interest. Either through its effects on earnings or skills, or its function in transmitting intergenerational disparities, education continues to be a pertinent aspect for studying inequality. Turkey is no exception with its high education premium and wide gap between the levels of schooling among the top and bottom quintiles. Although overall inequality as measured by the Gini coefficient in Turkey has been on the decline since the 1960s, the nonetheless high levels of inequality give rise to concern about there actually being more people living in deprivation despite the positive growth rates and macroeconomic stability.

In this paper, I argue that the reduction in inequality in Turkey is partly due to higher education attainments. However, the dispersal of education among the income groups is rather high and in recent years there has been a growing gap between the educational expenditures of rich and poor households. Since the private and social returns to primary and secondary schooling turn out to be quite high in Turkey, more spending in these areas could improve the education and earning disparities. However, as I discuss, government expenditure on education is diminishing and becoming more biased towards tertiary education, which in turn decreases the chances of poor households utilizing these services.

One of the elements that have been widely examined in the context of household income distribution is that of the initial conditions people receive when they are born. As stated by Bowles and Gintis (2002), the inheritance of inequality is a prevalent phenomenon and it is often very difficult to distinguish the returns to innate abilities and family backgrounds³. People differ with respect to their family backgrounds; some are raised in richer families that have necessary resources to invest in their children's education while others are born into poorer families with only limited means. Second, since the education premium is high in most countries⁴, the education system plays an important role. If high-quality education were freely available to all children, family background would play a less significant role in determining the incomes. On the other hand, if educational opportunities are limited by individuals' economic or social background, education can in fact exacerbate the differences in initial conditions rather than reduce them. Once there are essential constraints to educational opportunities the public becomes an important player in preventing the further escalation of inequalities. This is mostly done through educational expenditures and subsidies⁵.

² Redistribution is economically costly, for such measures inevitably result in taxing investment and growth promoting activities.

³ Bowles and Gintis (2002) discuss the intergenerational transmission of inequality in the case of U.S.

⁴ The education premium can simply be defined as the excess wage that is received by acquiring a higher educational status.

⁵ The redistributive effects of government spending on education and other social programs have been a very controversial area; however, investments on earlier education are usually seen as beneficial by all sides.

In the literature there are contending views about the role education plays in determining inequality. The first set of studies takes the average number of school years into account when assessing the role of education in inequality. In Partridge, Partridge and Rickman (1998), there is a direct association between higher years of average education and lower inequality in the USA at the level of county, and they claim that the higher the average level of education in a county, the more equal the distribution is. Mohan and Sabot (1988) point out that educational expansion will decrease income inequality because the labor supply of highly skilled workers will go up, which puts a pressure on the wage differentials. On the other hand, in Sylvester (2002), countries with more average years of education also display higher levels of income inequality.

Besides the level of education, the access and availability of education across groups might bring an influence to bear on the incomes of these groups. Studies looking at the relationship between income inequality and education inequality go back to Becker and Chiswick (1966). They claim that in the US, income and schooling inequality are positively related. However, in a later analysis, Chiswick (1974) concludes that education inequality does not have a statistically significant effect on the Gini coefficient. From a theoretical perspective higher education inequality is generally taken as an indicator of higher income inequality since the former tends to widen the earnings gap⁶. Gregorio and Lee (2002) argue that indeed higher educational inequality leads to higher income inequality in their cross country study. However, according to these authors schooling variables explain only a fraction of the cross country income distributions. Ram (1990) evaluates both the schooling level and schooling inequality across countries and claims that neither of these factors have a significant impact on income dispersal.

Finally there are papers evaluating the impact of education expenditure as a factor of income inequality. Sylvester (2002) shows that countries with greater public expenditure on education have lower income inequality in his cross country analysis, which covers fifty countries from all around the world. Nevertheless, he draws attention to the fact that education expenditure has a miniscule effect on Gini coefficients and this might be even more pronounced if one were to take overall government spending into consideration. Doessel and Valadkhani (1998), examining the years 1967–1993 in Iran, found that total government expenditure tended to reduce income inequality, while education expenditure had no significant effect. . Although not relying on empirical tests, Restuccia and Urruita (2004) assert that public spending on early education is much more effective in decreasing intergenerational inequalities. Early schooling allows poor children to build up the necessary human capital, which cannot be addressed by public expenditure on tertiary education. Zhang (1996) develops a model in which public spending on education decreases income inequality over time and promotes growth by enhancing the stock of human capital. Nonetheless, Jimenez (1996) illustrates that the poor by and large do not benefit from governmental spending on education, especially when these expenses are directed to higher education. Public expenditure on schooling harms the poor most if they have only limited (or no) access to public education yet finance public spending on education via taxes.

⁶ For the theoretical overview on the relationship between earnings and education, see, Chinhui et al. 1993.

This paper aims first of all to study the effect of education on income inequality in Turkey in a qualitative way. For this purpose, the average levels of schooling and schooling distribution for income quintiles will be investigated. Until recently, the decomposition of inequality was a relatively unexplored field in Turkey, with the exception of the spatial dimension. Duygan and Guner (2006) model fertility and education decisions to see the impact on persistence of inequality. Dayioglu and Tunalı (2004) study gender differences in education and earnings. Although they do not consider the total returns, Dayioglu and Kasnakoglu (1997) examine the returns on education by gender. Utilizing the 1994 survey they conclude that females have higher private returns for every educational category than males. Tansel (1994), employing the 1987 Household Income and Consumption Expenditures Survey (HICES), computes the private rate of return on education in urban areas. She finds that the primary and secondary returns on education for males are lower than for females. And overall, the higher the education level is, the higher the returns are. To our knowledge the only other study that investigates the social returns of education in Turkey is by Turkmen (2002). According to this paper, the social return of primary education has declined from 1987 to 1994 while the return on secondary schooling has remained stable. Nevertheless, none of these studies explicitly analyze the effect of educational variables or look deeper into public and private spending on education.

Secondly, the paper argues that educational impediments are not decreased by the Turkish government and hence the intergenerational transmission of inequality is still a substantial drawback for the country's development prospects. This is partly due to the declining share of education in total Turkish government spending over the last decade, and partly the higher share obtained by the wealthier segments through tertiary education. The richest socio-economic groups manage to compensate for the decrease in public spending on education by paying for education out of their own pocket; however, this option is not available for the poorer groups. The spending on primary and secondary education by households became significant, adding to the initial differences between the children from the poor and the rich households in the last decade. During the same period, the government changed its distribution of spending in favor of tertiary education, which further restricts the opportunities at hand for the poor.

In the next section, I will give a succinct picture of the state of inequality and its decomposition with respect to educational factors. In the last part, I will provide an empirical account of the private and social returns on education in Turkey. Then, I assess the government policies and provide policy recommendations. The final section concludes.

2 Income Inequality and Education in Turkey

2.1 Overview of Inequality

Income inequality in Turkey as measured by the Gini coefficient has been declining for the last four decades. However, given the quality of the earlier data the figures belonging to those years should be taken with a grain of salt. By 1994, seven different income distribution studies had been conducted in Turkey. In these surveys, different methodologies, sampling sizes and sampling methods were used. Since 1994, the State Sta-

tistical Institute has been trying to standardize the surveys and to obtain results that are more comparable. The decrease in Gini is also reported in Gursel (2000). Table 1 shows the Gini coefficients and the share of income quintiles for 1963-2005. For the period of 1963-1987, the figures are taken from Kasnakoglu (1997). The data for 1994-2005 are obtained from the Household Income and Consumption Expenditures Surveys conducted by Turkish Statistical Institute.

Table 1 Income Inequality in Turkey per quintile: 1963-2005

| Year | Quintiles | | | | | Gini Coefficient |
|------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
| | 1 st | 2 nd | 3 rd | 4 th | 5 th | |
| 1963 | 4.5 | 8.5 | 11.5 | 18.5 | 57.0 | 0.55 |
| 1968 | 3.0 | 7.0 | 10.0 | 20.0 | 60.0 | 0.56 |
| 1973 | 3.5 | 8.0 | 12.5 | 19.5 | 56.5 | 0.51 |
| 1978 | 2.9 | 7.4 | 13.0 | 22.1 | 54.7 | 0.51 |
| 1983 | 2.7 | 7.0 | 12.6 | 21.9 | 55.8 | 0.52 |
| 1986 | 3.9 | 8.4 | 12.6 | 19.2 | 55.9 | 0.50 |
| 1987 | 5.2 | 9.6 | 14.1 | 21.2 | 49.9 | 0.43 |
| 1994 | 4.9 | 8.6 | 12.6 | 19.0 | 54.9 | 0.49 |
| 2002 | 5.3 | 9.8 | 14.0 | 20.8 | 50.1 | 0.44 |
| 2003 | 6.0 | 10.4 | 14.5 | 20.9 | 48.3 | 0.42 |
| 2004 | 6.0 | 10.7 | 15.2 | 21.9 | 46.2 | 0.40 |
| 2005 | 6.1 | 11.1 | 15.8 | 22.6 | 44.4 | 0.40 |

Source: Kasnakoglu (1997), TUIK (various years)

As can be clearly seen from Table 1, both the Gini coefficients and the share of income quintiles indicate a decrease in income inequality in Turkey for the time period with the exception of 1994. The income represents the total annual household income, and has not been adjusted for the number of households for each quintile group. The share of income accruing to the poorest quintile was 4.5% in 1963 and 3% in 1968 while it rose to 6% in 2004 and 6.1% in 2005. The increase in the incomes of the lowest quintile was accompanied by a decline in the share of the richest quintile. These figures were 57% in 1963 and 60% in 1968 while they went down to 46.2% in 2004 and 44.4% in 2005. The Gini coefficient also has receded to 0.4 in 2005 from 0.55 in 1963.

The differences between the income groups become more profound when deciles are considered, however⁷. The richest 10% of the households earned 22.5 times more than the bottom decile in Turkey in 1994. Although the ratio of incomes decreased to around 13 times in 2005, the dispersion is startling. Also, the 9th decile's share of income went up between 1994 and 2005 from 14.4% to 15.8%. The growth in the bottom decile's income is a mere 0.4 while the decline in the top decile is 11.8 points. This means that the middle groups received more material resources. A final exercise of income distribution

⁷ The choice of looking at quintile or decile distribution is completely arbitrary but in the literature it is usually the quintile income shares that are inspected.

tells us that the annual average per-capita incomes of the richest 1% of households was 250 times more than the poorest 1% in 2002.⁸

Despite the improvements in income distribution, Turkey is still a relatively unequal country compared to OECD countries and most of the developing economies. When Gini coefficients are examined across developing countries it is immediately apparent that only two regions, Latin America and Sub-Saharan Africa, have a more unequal income distribution than Turkey. All of the OECD countries with the exception of Mexico have lower Gini coefficients. When the country is compared to developed areas, it becomes clear that Turkey's income skewness arises from the higher shares the richest quintile receives. For example, during the 2000s, in developed countries, the wealthiest quintile got less than 40% of the per capita income while this was 50% in Turkey for the year 2002⁹. In Turkey, the middle-income group (2nd and 3rd quintiles) gets a lower share, 34.8%, as compared with 41.8% in developed countries. The income share of the bottom 40% is quite close, at 18.4% in developed countries versus 15.1% in Turkey.

2.2 Factors behind Inequality

There are numerous reasons why income is unequally distributed. From a micro-economic point of view, changes in income distribution can be derived from changes in labor force participation decisions, in demographic characteristics, and in the returns to those characteristics. Nevertheless I abstract from most of these developments and solely focus on the role education plays. Certainly, there are numerous determinants of income inequality in Turkey but as I discussed in the introductory part, education is gaining more importance and this is the reason why it is emphasized here. Also, despite the growing importance of education in the examination of income inequality, not many studies have looked deeply at education and this paper might provide additional and interesting insights. For this purpose, I analyze first the income shares of the educational groups. Table 2 provides the results.

Table 2 Income Shares by Education Level (in % of total income earned)

| | Illiterate | Literate but No Diploma | Primary School | Secondary School | High School | University |
|-------|-------------------|--------------------------------|-----------------------|-------------------------|--------------------|-------------------|
| 1987. | 9.06 | 6.87 | 47.16 | 7.69 | 10.24 | 15.02 |
| 1994. | 5.99 | 4.81 | 45.82 | 8.80 | 14.81 | 17.02 |
| 2002. | 2.91 | 3.59 | 42.89 | 9.59 | 13.15 | 18.25 |
| 2003. | 2.58 | 3.09 | 38.92 | 10.59 | 16.57 | 19.56 |
| 2004. | 2.75 | 2.75 | 39.66 | 9.89 | 16.00 | 20.77 |
| 2005. | 2.82 | 2.87 | 42.42 | 10.13 | 15.46 | 17.76 |

Source: TUIK (various years) and State Planning Organization (2001)

⁸ This figure is taken from Duygan and Guner (2006).

⁹ For a comparison see World Development Report and T UIK.

Table 2 indicates that over the years the share of income accruing to primary school graduates has decreased from 47.16% to 38.92% in 2003 and then has risen a little to 42.42% in 2005. Secondary school graduates received 7.69% of total income in 1987 while their share had gone up to 10.13% in 2005. People with university degrees have seen a steady increase in their income share from 15% in 1987 to almost 21% in 2004. The biggest decline over the period was for the illiterate group and following it, the literate but without a diploma. 2005 turned out to be a peculiar year since the income shares of more educated people showed a decrease and both primary and secondary school graduates got a bigger share of the total income. However, if one considers the size of these groups and looks at the average earnings, then it could be seen that over the years the average earnings of university graduates have increased from 3.4 times that of people with primary school degrees in 1987 to 4.5 times in 2005. This points to the fact that higher education levels pay higher in terms of income. Although the table does not reveal a causal relationship between income and education, it illustrates the fact that income and education are highly correlated in Turkey. Tansel (2004) shows that for an illiterate male urban wage earner, the hourly real earnings were 435 TL in 2002 while they were 1627 for a university graduate. The ratio between illiterate and university graduate was accentuated for females: the former earned 272 TL while the latter received 1274 TL¹⁰. This is especially important for intergenerational transmission of inequalities since an initial low education will be accompanied by low levels of income, which in turn will generate the same dynamics in the long run if there are no structural changes to the position of the household members.

One of the suggestions in the literature is about the years of schooling, and generally it has been claimed that more schooling years on average brings more equality. These results usually apply to within-country developments¹¹. When the overall educational developments in Turkey are analysed, it can be seen that the average years of schooling have gone up considerably over the last four decades. According to Table 3 below, the average schooling years for the whole country have increased from 2.7 years in the 1960s to 5.3 years in the 2000s. Turkey, with these aggregate figures, lies slightly above the developing countries but it seems that there is a strong convergence. In comparison to developed countries, Turkey has a lot of catching up to do. The average schooling in the developed sample is 9.8 years for 2000s. Nonetheless, the gap between Turkey's and developed countries' years of schooling decreased from 4.96 to 4.47 years.

The rising level of average schooling is reflected in the declining number of workers with a lower level of education in the labor force. As shown in Table 2, this also means a bigger share of income for higher educational groups. In the year 1987, the share of primary school graduates in the labor force was 52 % while the share of university graduates was less than 5%. In 2005, these ratios changed to 44% and 11.5% respectively. The Turkish labor force became more educated as the number of schooling years on average went up.

¹⁰ For more explanation see Tansel (2004).

¹¹ In a cross country study Sylvester (2002) found that countries with higher levels of average number of schooling years also display higher levels of income inequality.

Table 3 Average Years of Schooling

| Years | Schooling | | |
|-------|-----------|----------------------|---------------------|
| | Turkey | Developing Countries | Developed Countries |
| 1960s | 2.10 | 2.05 | 7.06 |
| 1970s | 2.71 | 2.67 | 7.56 |
| 1980s | 3.50 | 3.57 | 8.86 |
| 1990s | 4.70 | 4.50 | 9.41 |
| 2000s | 5.29 | 5.13 | 9.76 |

Source: Barro-Lee Data Set

Next, I examine the distribution of schooling among different income quintiles. The access and availability of education across different socio-economic groups can alter the earnings dispersion significantly. For this reason, it would be useful to analyze the between-group educational difference; however, since I have not had access to the raw data for all the survey years, I have been unable to calculate the education Gini or standard deviation of educational achievements by households. A closer look at the distribution of education among the income quintiles will give us hints about whether education is accessible to all socio-economic groups equally, and if not, the extent of the differences between them. Table 4 summarizes the findings of the education characteristics of various income quintiles.

Table 4 Educational Attainment of the Richest and the Poorest Quintile in %

| | 1987 | | 1994 | | 2005 | |
|------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Poorest 20% | Richest 20% | Poorest 20% | Richest 20% | Poorest 20% | Richest 20% |
| Below Primary | 34.50 | 6.01 | 32.50 | 6.12 | 31.22 | 4.89 |
| Primary | 53.01 | 39.03 | 54.93 | 37.88 | 56.24 | 34.76 |
| Secondary | 8.24 | 9.89 | 7.99 | 9.21 | 8.11 | 8.52 |
| High | 3.50 | 26.71 | 3.87 | 25.63 | 3.93 | 24.10 |
| University | 0.75 | 18.36 | 0.71 | 21.16 | 0.50 | 27.73 |
| Total Population in Quintile | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Author's calculation based on HICES (1987, 1994, 2005).

Table 4 presents the educational levels for different income quintiles. It clearly illustrates that there is a wide gap between the educational levels of the poorest and richest socio-economic groups in Turkey. For example in 1987, 53% of the lowest income quintile had a primary school leaving certificate while this ratio was less than 40% for the richest quintile. Only 0.75% of households with a university degree belonged to the lowest quintile in the same year. These ratios got even higher over the years as the share of hou-

holds with primary school completion, which is in the poorest segment, rose over 56% whereas the ratio of university graduates in the same category declined to 0.5%. Within the richest portion, households with university educations started to have a share of almost 28% in 2005. The numbers suggest that higher educational levels are associated with higher incomes.

All the analyses in this section suggest that income shares are significantly affected by education in Turkey. Both the schooling levels and the distribution of education contribute to the income differences. The socio-economic group with higher education on average as well as relative to the whole sample receives a higher income. Therefore, education policy can be one of the tools used in order to decrease the income dispersal and boost the economic status of the poor. Before I evaluate the educational policy in Turkey I would like to discuss the private and social returns on education in the following part of the paper.

3 Returns on Education and Education Expenditure

3.1 Returns on Education

The rate of return from schooling is an important decision factor for an individual to make educational choices and for governments to make educational policy decisions. Besides, the rates of return in developing and developed countries significantly differ from each other for various educational categories¹², hence policies that should be pursued are also varied. Simply, the private return on schooling can be understood as the discount rate that equalizes the present value of the private costs and benefits generated by an increase in the schooling of a representative individual¹³. The social return on schooling can be defined as the discount rate that equalizes the present value of social costs and the benefits of increased schooling. Rate of return on schooling is independent of the type of the school, and this rate tries to capture the benefits that an individual derives by higher educational attainment in relation to the expenses incurred by the public and private sectors. To assess the efficiency of public policy the social rate of return becomes vital.

The formal education system in Turkey is divided into three categories; primary school, high school, and university. Until 1997, there was also middle school category, which was merged with primary schools at that year; as a result the compulsory education increased to eight years. In 2001 the government passed a law raising compulsory education from eight to twelve years covering high school; however, it is not being yet being enforced. Formally, university education is open to anybody with a high school degree and sufficient scores from the national entrance examination. The centralized test is seen as an equalizing factor but a recent survey in Hatakenaka (2006) of students taking the college entrance exam has shown that students from high-income families, with more educated parents, and from larger cities are more likely to be placed in higher education¹⁴.

¹² Psacharopoulos (1994) presents the rate of returns across countries and shows the differences between developed and developing countries.

¹³ The definition is taken from Ciccone et al. (2004).

¹⁴ See Hatakenaka (2006).

Chiswick (1997) outlined a method based on the earnings function to analyze the rates of return on education. In his model, it is assumed that the earnings of a worker with an education level of i , denoted by E_i , are identical to the annual earnings that he/she would have received with a year less of education, plus the cost of investing in one extra year of schooling, C_i , multiplied by the rate of return on that investment, r_i , or;

$$E_i = E_{i-1} + r_i C_i = E_{i-1} \left(1 + \frac{r_i C_i}{E_{i-1}}\right) = E_{i-1} (1 + r_i K_i) \quad (1)$$

$$E_i = \prod_{t=1}^i (1 + r_t K_t) \quad (2)$$

In the above equation, K_t denotes the cost of investing in education level t relative to a full year's potential earnings if investments were not made in that level of schooling. Taking the natural logarithm of both sides gives us;

$$\ln(E_i) = \ln(E_0) + \sum_{t=1}^i \ln(1 + r_t K_t) \quad (3)$$

$$\ln(E_i) = \ln(E_0) + (rK)I \quad (4)$$

The last equation is derived by assuming that the rates of return on additional years of education and the cost of it do not vary with years of education. This is equivalent to the Mincerian earnings function¹⁵. In the original Mincer model, the earnings are determined by years of schooling as well as experience. I will further assume that r_t and K_t differ across educational categories. This will enable us to calculate the returns on various education levels. The categories are primary school, secondary school, and university completion. In Turkey, eight years are necessary to finish primary school, while secondary school education demands an additional 3 years and finally for a university degree an individual needs on average 4 years more.

When I incorporate the educational categories and use equation (4), I get the extended earnings function specified by Lachler¹⁶. Below, r denotes the discount rate, K , the cost of investment and I , the number of years required to move from one schooling category to the next.

$$\begin{aligned} \ln(E_i) &= \ln(E_0) + (r_1 K_1)I_1 + (r_2 K_2)(I_1 + I_2) + (r_3 K_3)(I_1 + I_2 + I_3) \\ \ln(E_i) &= b_0 + b_1 D_1 + b_2 D_2 + b_3 D_3 \end{aligned} \quad (5)$$

¹⁵ Mincer's earnings model captures both the wage function and the rate of return on schooling which can be compared with the interest rate to determine optimality of human capital investments.

¹⁶ Lachler (1998) uses four categories to calculate the private and social returns on education investment for Mexico; primary complete, secondary complete, preparatory complete, and university and above.

By estimating equation (5) I get the earnings coefficients for each educational category. Finally the rates of return for each category can be estimated as follows;

$$K_i^p = \frac{E_{i-1} + C_i^p}{E_{i-1}} \quad (6)$$

$$K_i^s = \frac{E_{i-1} + C_i^s}{E_{i-1}} \quad (7)$$

I = years required to move to the next schooling category

i = educational category

C^p = private costs

C^s = social costs

Equation (6) gives us the private return on education and the return is the rate that makes the marginal benefit from acquiring an additional year of education equal to earnings foregone by an additional year of education plus the private costs. The social return captures the costs of education that are not borne by individuals but paid by the public sector¹⁷. According to the above formula, the rates of private and social return for Turkey in 1987, 1994, and 2005 are calculated. The results are presented in Table 6 and Table 7.

Table 5 Private Returns on Education in %

| | 1987 | 1994 | 2005 |
|------------|-------|-------|-------|
| Primary | 22.50 | 25.90 | 19.21 |
| Secondary | 16.70 | 27.10 | 22.65 |
| University | 27.60 | 26.50 | 28.43 |

Source: Author's own calculations based on the 1987, 1994 and 2005 surveys. The cost data are derived from State Planning Institute and Ministry of Education.

As can be seen from Table 5, the private return on primary schooling has increased from 22.5% in 1987 to 25.9% in 1994. But this figure declined to 19.2% in 2005. The private return on university education was quite steady across the period with a slight increase from 27.6% in 1985 to 28.4% in 2005. Another interesting finding is that in 2005, the return on primary education and secondary education converged considerably. Our results confirm Tansel's finding for 1987 and 2005, but in 1994, secondary had a higher private return rate than university education.

¹⁷ Both the private and social returns are computed based on the time an individual needs on paper to move from one educational level to the next, and in practice these numbers might be different.

Table 6 Social Returns to Education in %

| | 1987 | 1994 | 2005 |
|------------|-------|-------|-------|
| Primary | 13.50 | 12.20 | 11.44 |
| Secondary | 12.70 | 19.90 | 17.65 |
| University | 11.60 | 19.00 | 18.32 |

Source: Author's own calculations based on the 1987, 1994 and 2005 surveys. The cost data are derived from State Planning Institute and Ministry of Education.

Now, I move forward to analyze the social returns for the same period. Table 6 shows that the social returns on primary education steadily went down from 13.5% in 1985 to 11.4% in 2005. There was also a little decrease in the social return on university education from 19% in 1994 to 18.3% in 2005. For secondary schooling, the rate of return initially increased to almost 20% in 1994 and then diminished to 17.7% in 2005. My results confirm the findings in Turkmen for 1987 but the rates vary significantly for 1994, which might be due to the different categorization. Nevertheless, the direction of change is same in both studies.

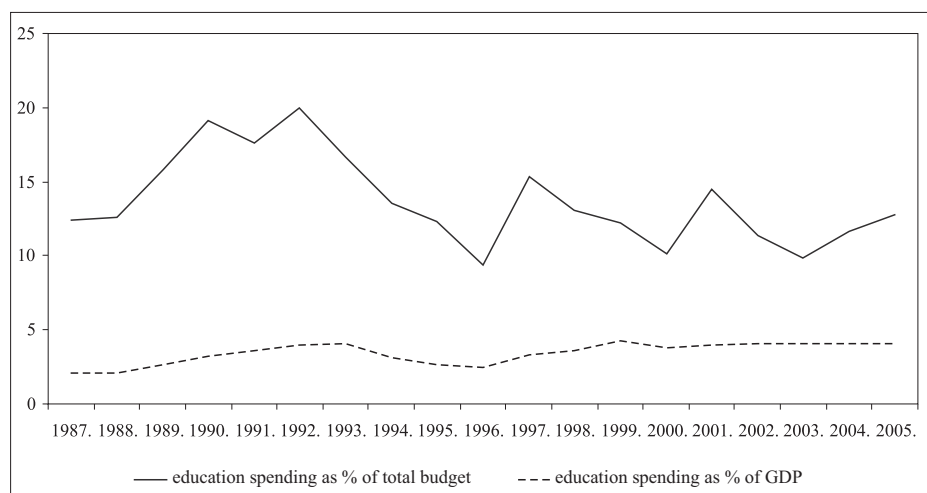
One thing that arises from both tables is that tertiary education in Turkey has both high private and social returns. Compared to the rest of the world, Turkey is an outlier since the social rates of primary education are lower than what in the other developing countries. For example, the most recent estimates show that the social rate of returns on primary education is 18.8% in middle income countries, 21.3% in low income countries and 13.4% in high income countries¹⁸. Moving to the returns on tertiary education, we can see that Turkey again has much higher returns. This is also true for private returns. Generally, the developing countries have higher returns on all educational categories and there is a greater gap between the private and social benefits of higher education. Turkey, despite its relatively higher returns, follows the same path. This is because the labor force is not exhausted by highly educated workers in developing countries and hence there is greater education premium.

3.2 Education Expenditures

Turkish government spending on education as a percentage of GDP is significantly behind any of the OECD countries and it has been stagnant for a long time. Figure 1 displays the education spending as percentage of the total budget and percentage of GDP from 1987 to 2005. Education spending peaked in 1992 when it amounted to the 20% of the government budget. From then onwards, there have been ups and downs but on average 11-12% of the total budget has used for educational investments. This number has been on average 14%. In relation to GDP, educational expenditures increased slightly in 1998 but remained the same thereafter. Over this period, the average education spending as fraction of GDP has been 4%, which is substantially lower than the developed coun-

¹⁸ The data are obtained from Psacharopoulos and Patrinos (2002).

Figure 1 Education Spending in %: 1987-2005



Source: Author's own calculations based on data derived from State Planning Organization.

Table 7 Public Expenditure on Primary, Secondary and Tertiary Education per student (% of p.c. GDP)

| Education | 1985 | 1994 | 2003 |
|-----------|------|------|------|
| Primary | 9 | 13 | 12 |
| Secondary | 6 | 9 | 15 |
| Tertiary | 38 | 51 | 45 |

Source: World Bank, Education Statistics (various years)

tries and most of the developing countries. The OECD average is around 5.3% of GDP for the same years.

In the following section, I will try to investigate the spending patterns of public and private expenditure. My claim is that the government is restricting its spending on primary and secondary education while keeping high levels of relative spending on tertiary education. Moreover, the shares of public and private spending in the different categories are deteriorating and becoming more favorable to richer segments. For the purpose of my study, besides the total spending on education, the sub-categories also matter. There are very limited data on how much the Turkish government is investing in primary, secondary and tertiary education per student as a percentage of per capita GDP. Table 7 presents the data.

Table 7 indicates that there was an initial rise in the share tertiary education got from 1985 to 1994. And even with the slight decrease in 2003, higher education per spending per pupil was threefold that of secondary education and almost fourfold that of primary

education over the whole period. Since it has been shown that there are very high social returns to primary and secondary education in Turkey, more investment in these areas could prove beneficial.

Besides the public expenditures, the private expenditures on different categories of schooling have also altered over the years in Turkey. According to the World Bank data, the share of private expenditures on primary and secondary schooling as a share of total education expenditures increased from 6% in 1995 to 10.4% in 2002. The same figure for tertiary education was 3% in 1995 and went up to 9.9% in 2002. Mirroring public spending patterns, the bulk of private educational investments are also directed towards higher education. Moreover, the richest households spent 26 times more on each child for education than the poorer households in 2006. Although, this might not be so problematic at the individual level, at the societal level the uneven private spending and the insufficiency of public funds to compensate for the poor will engender further inequalities.

4 Conclusion

The paper has tried to assess the links between education and inequality in Turkey. Income inequality, despite the recent diminution, is a sizeable problem in Turkey and education opportunities and access to schooling are highly associated with income dispersal. To uncover the effects of schooling on inequality I evaluated the average years of schooling, distribution of education across income groups and spending on education. Additionally, the private and public spending on education is examined.

The higher social and private returns to tertiary education indicate that more spending in this category could bring higher earnings. Nonetheless, as I conclude from the data, in the Turkish context, the private returns to higher education are relatively greater than their social returns. More importantly, a secondary school certificate offers very similar rates of return. Therefore, spending on secondary education will contribute to the earnings of this category both individually and socially. Besides, Schultz (1988) has argued that positive externalities from education are highest at the primary and the secondary level and progressively decline at tertiary level. The individuals receive a larger share of social benefits in terms of wages in the case of higher education while primary and secondary education has positive spillovers. Equally importantly is the access to education.

As mentioned earlier, the lowest income quintile in Turkey has the lowest level of schooling as well. This might indicate a bias in the spending patterns if the rich are making disproportionate use of the tertiary education services and poor are lagging behind. Also, it should be noted that education is a cumulative process; hence if there are not enough resources provided to poor households for primary and secondary education, their admission to universities will become less likely if not impossible. Also, the poor in Turkey have a disproportionately lower education, hence more resources channeled to these schools and students would contribute to a decline in dispersal of incomes. The transmission of inequality is more probable when primary and secondary schooling is restricted. Higher education is not an option without prior appropriate schooling; hence if public resources are not utilized to provide these services to the poor, they will not be able to get tertiary education even if it is fully free of charge.

In Turkey, the education premium is quite high and households with greater levels of schooling manage to earn significantly higher incomes. This in turn contributes to their willingness to invest in their children's education. Thus, intergenerational inequalities will be reproduced if educational opportunities are not expanded and made available to the poor. Moreover, there are still considerable private and social returns on primary and secondary schools in Turkey; hence, funding these types of education will be beneficial both individually and socially. I argue that Turkish government is not investing sufficiently into education. The overall level of expenditure on education lags behind that of the OECD countries. Also, Turkey is spending relatively higher amounts on tertiary education while expenditures on primary and secondary education are significantly below the OECD averages. This has limited public spending on primary and secondary education and growing private spending increases the spread between various income groups.

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