# GALATASARAY UNIVERSITY
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# RELATIONS BETWEEN PUBLIC EDUCATION EXPENDITURES AND INCOME INEQUALITIES


**Master Thesis**


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**Tables and Figures**

**INTRODUCTION**

Education, being an input in the production processes just as labour and physical capital, determines the purchasing power of what has it. For the political and economic ideas, the human capital is a richness which is transmitted to the future generations which will continue the human and economic development world. Moreover, education is regarded as the most important element which melts the pillars of the institutions economic and legal which make it possible the markets to function well, in the company. In the world, the developed countries, with their high levels of sectors intensive in human capital whose most important component is education, have structures of production with added value of high size. Some authors call this century, as of 1970s, like the century of knowledge. In this manner, education can be accepted like the richness of a company and a determinant of redistribution of this richness in the company. Those which have it profit its benefits, therefore, a determinant of division of the richness in the company.

However the distributive effects of education are dependent on certain economic, cultural, political characteristics and histories of the company which one examines. Moreover, all these characteristics are not easily distinguished one from the other. For example, a decision of the expansion of education in the company requires to take into account its other effects everywhere else. Since they are political decisions and, of more important, since what is in question is one of determinants of the richness and prestige in the company, these processes are always opened with the interventions of the other fields and the different groups (policy, cultural etc). Consequently, the decisions of the distribution of education among the citizens could not be always levelling. The results could, therefore, also miss levelling effects in connection with individuals, of various areas of the countries and different groups from incomes. It thus appeared to us interesting to study the question of education about the individual and national incomes and their distribution in a company.

This is why the "distributor" itself and the manner of the distribution of education are as important to examine as the results of the redistributions of the wellbeing themselves. Consequently, several ways to examine this process involve us to hold account of its suppliers.

By considering that in the current world, the largest supplier of education is, undoubtedly, the State, (OECD, 2004) the following questions arise:

- What is the size of the service provided by the state?
- Who benefits from it?
- How if it provides?
- And, which are the results?

It would be necessary, therefore, to answer these questions well so that one makes an egalitarian redistribution of the public welfare among the citizens.

Moreover, even if the distributive effects of education on the distribution of returned, were well examined in theoretical space, practical space is far from having ambiguous results, other reasons for the empirical insufficiency in the economic literature come from absences of the data especially in the developing countries. The absence of the data prevents the researchers from arriving at truths results.

In the countries in the process of development, the young politicians, as of the liberalization of their countries after 2nd World war, started to progress their systems of education while spending immense budgets which constituted an important part of the GDP of these countries. In spite of these immense budgets allocated with the education of their companies, these countries are today well far from having inequalities of the incomes with bottom. One of most widespread opinion/idées on this subject is than the means of reaching the public services were not available for the poor, the peasants, the girls and sometimes for the minorities politically.

All these facts recently caused new research on the inequalities of the public distributions of the means among the company for those which want to find bonds between the public expenditure of education and the inequalities of the incomes.

This is why make us place, here, with the various aspects of the inequalities In this work, we use not only the microeconomic data but also the macroeconomic data in order to analyze the case of Turkey. One could work the two types of data well as long as they are available. But being given that STI (Statistical Institute of Turkey)

has started to reveal data on the inequalities of the incomes (specifically Gini coefficients of the incomes) we had to use newest (who are after the date of 2002). In all the cases, Turkey can be good example to analyze the evolution of an economy using more and more the human capital by the opening to with dimensions of the opening of the national economy to the rest of the world. Moreover, the fact of the insufficiency of research on this subject on Turkey encourages us to take a step in this field neglected. Consequently, our analysis will go mainly on Turkey.

Work is made up in two principal parts. In the first part, the theories which explain the relations between education and the inequalities of the incomes were examined by making place, initially, at a general sight (1.1 and 1.2) on the importance of education for the economy, and with the dispersion of the public services (1.3) in companies. Then, we study various types of measurements of the distribution of education (1.3.1) among the population. After, approaches of the political economy (1.4), we will study the literature (1.5) on the relations between the public expenditure of education and the inequalities of the incomes in the world.

The second part, as for it, is devoted to the case of Turkey. Initially, we will see the economic and educational situation of Turkey (2.1 and 2.2). Then, we will study the evolution of the individual incomes against the individual levels of education in Turkey (2.3.1). While initially exerting the economic policy approach (2.3.2) on the distribution of the means of public education and then the study of the expenditure of education in 2002 in Turkey (2.3.3), from different measurements from dispersion of education in the Turkish company (2.3.4, 2.3.5, 2.3.6, and 2.3.7), we will arrive at empirical work on the effects of the public expenditure of education on the inequalities of the incomes to Turkey (2.4).

# 1. Education as a Determinant of Individual Incomes and Its Distribution in Society

In this first part of the study, we will examine theoretical explications to education's influences on both individual and overall income levels while showing some main studies about our principal subject : public education spending , does it have remarkable effects on mechanism of income redistribution in the world.

Most assets are tradable across firms or individuals. This tradability in a context of competitive markets provides a powerful justification for aggregating assets into an aggregate

production function. If physical capital, for example, is freely traded across firms in a perfectly competitive environment, then the contribution of physical capital to aggregate output will not be affected by its distribution across firms or individuals. The reason is straightforward: since the marginal product of physical capital is equal for all firms, reducing the capital of one firm and increasing it for another by the same amount will not affect the aggregate output of the economy. If an asset is not traded or is imperfectly traded, however, then the marginal product of the asset across individuals is not generally equalized. In this case, aggregate production depends not only on the total level of the asset but also on its distribution (Lopez et al,1998).That can be a way or a reason for public to interfere in education in a society.

Education is one of the most important factor determining shares of national income in society. For some authors, it is equal to marginal production of the person who owns it and for some also it has a screening feature signifying the capacity of its owner to be employed in the eyes of employer.

In all cases and nearly in all countries, wee see that education is one of the most important determinants of individual incomes in a society. That is why to own it or not to be able to reach it is directly or indirectly related to incomes. In modern world where we use more technological devices to be satisfied or to make production, economies are getting more and more human capital intensive. Industries that require

old type of work forces are shifting outside developed countries, but, at the same time, new technologies are reaching to both developed and developing countries in the world. Globalisation is not only making people reach more products and also make labor forces more mobile all over the world. However, all these make a problem for people to be able to reach to education opportunities in the world.

Alongside increasing importance of education and mobility rising effects of globalisation, the fact that countries have, today, more unequally income distribution make education and accessibility to it a remarkable target in the eyes of both governments and societies. Because, a noticeable number of studies pays attention to both growth and income distribution effects of education in a population.

## 1.1 Education, Income and Economy as a Whole

The vast variability of natural abilities across individuals and the fact that the education children received depends on factors other than their abilities (parents' income, regional location, availability of schools) and is largely determined by nonmarket mechanisms (including government allocation of educational services) imply that education levels are not necessarily highly correlated with abilities. That is, the limited role of the market in allocating education may imply large divergence in the value of the marginal products of education across individuals, beyond differences that could be explained by differences in ability.

Education enriches people's understanding of themselves and the world. It improves the quality of their lives and leads to broad social benefits to individuals and society. Education raises peoples' productivity and creativity and promotes entrepreneurship and technological advances, demonstrated in countries from Malaysia to Bolivia to Ghana (Lopez et al,1998).

On the other hand education makes labour force more mobile among regions, sectors and companies that need skilled labour force. Thus, economy as a whole would be able to make the best allocation of sources among different sectors and different geographic parts by realizing efficient allocation. Moreover, education by rising employment period (time that a person, in whole her life, works) decreases social expenditures, rises individual incomes and thus make public revenues higher (Donoghue,2003).

For Krugman (1991), the most important aspect of the education comes from the fact that importation can be executed by educated labour force that adopts new technology in the rest of the world to existing technology accumulation in country. Hence, country can continue its productivity and create its own technological capacity. Therefore, increases integration of developing countries into the global economy. The economic reforms in developing countries combined with lowered transportation and communication costs could have given developing countries a comparative advantage in industries with an increasing intensity in human capital, although still low intensity relative to developed countries. The move of industries to reforming (liberalising) developing countries have caused the average input of

human capital in production, in both developing and developed countries. Consequently, both groups of countries have experienced an increased demand for skilled workers. Blom reveals that Latin American countries, indeed, have experienced a shift in labour demand favouring highly skilled workers. Author says that the shifts in demand for education might not be accommodated by changes in supply in which case there is need for policy intervention.

Moreover, education and technology are thought of being complementary. Some authors pay attention to this aspect by mentioning raising income inequalities and raising wage differences between skilled and unskilled employees in the West since 30 years (Blom et al,). As computer and communication technology has progressed significantly since 1970s, the available supply of highly skilled labour inadequately meets demand and thus wage differences continue rising. Therefore, for some authors policy action aiming at increasing access to secondary and tertiary levels is desirable as an increased supply would improve prospects for both economic growth (from technology complementary aspect) and reductions in wage inequality (wage compression aspect). Tinberger (1975) talks about a competition between technology and education by implying that technology (which forms demand side to skilled force) increases wage differences while education (which forms demand side) lessens increasing wage differences.

Additionally, human capital level of country is an important and even diagnostic for attraction of foreign direct investment inside the receiver country (Miyamoto, 2003).

Finally, Alesina and Perotti (1996) report that countries with more income inequality are also more likely to suffer from political instability.

In the late 1980s, as dissatisfaction with the neoclassical growth framework, endogenous growth models began to emphasize the accumulation of human capital. In these models, economic growth is explained by endogenously driven technical change, which may be brought about by a variety of factors: learning by doing, spillover effects of human capital formation, production externalities of public expenditure, and quality improvements through the invention of new products. While

these theories have incorporated human capital or education as an important input, empirical evidence is still far from unanimous and conclusive.

However its distribution among people is another remarkable point to stress. Who gets educated matters a great deal. The distribution of education is a complex but little explored issue. That is not only from the point of justice or political economy, but also from economic theories that relate its distribution to economic growth and sharing of national income. For most, education (like physical capital) is of decreasing returns. (Mincer,1958 , Lopez et al,1998 etc.). Human capital is inherently embodied in individuals and to its accumulation is subjected to decreasing marginal returns at the individual level. The aggregate stock of human capital, therefore, would be larger if its accumulation would be widely spread among individuals in society (Galor,2004). That is the reason for that making education more accessible for a larger share of total population would raise human capital accumulation of country and produce a more national production to be shared.

On the other hand, a remarkable number of studies reveal obviously strong relations between familial income, familial human capital (that inherits to the child) and human capital level of child. And from these studies, these relations are not at all easy to be mitigated just only by public education spending. Therefore, it is unlikely that it may turn out to be regressive from a long-term life-cycle perspective to directed educational resources from the rich to the poor in a country. In many developing countries, a positive relationship exists between father's education and returns to schooling, which implies that, *ceteris paribus*, returns to tertiary education are higher to offspring of better-off households. Kremer (1997) finds a correlation of 0,39 between the educational achievements of parent and child.

All these reveal us the importance of education in economy from the point of economic growth, stable political and social structure and justice by **not** excluding its distribution in society as a whole. However all these aspects of the subject are large and have some ambiguous effects on income distribution. That is why we have to consider all aspects together to be able to produce a successful political approach to distribution side.

## 1.2 Education and Inequalities

Given many people view societal inequalities as undesirable and because income inequality may exert negative influences upon the economic and political environments, it is important to better understand how policy makers can affect the distribution of income. A commonly expressed view is that education can play unimportant role in reducing income inequality. Schultz (1963) cites increasing human capital as one way to lower income inequality and increased support for public education might be one way to accomplish this. Some theoretical models also predict that public education lowers income inequality. Saint-Paul and Verdier (1992), Eckstein and Zilcha (1994) and Zhang (1996) also develop models where continued support for public education lowers the level of income inequality over time.

In spite of the fact that the literature emphasizes education as one of the major factors affecting the degree of income inequality, and that policymakers usually justify higher educational spending as a highly effective tool for reducing income inequality, theoretical studies suggest that the relation between education and income inequality is not always clear. For instance, the human capital model of income distribution, stemming from the work of Schultz, Becker and Mincer, implies that the distribution of earnings (or income) is determined by the level and the distribution of schooling across the population. While the model predicts an unambiguously positive association between educational inequality, measured by the variance of schooling, and income inequality, the effects of increased average schooling on income inequality may be either positive or negative, depending on the evolution of rates of return to education.

In the literature on development economics, Knight and Sabot (1983) also emphasize the complicated effect of human capital accumulation on income distribution due to "composition" and "wage compression" effects in an economy. They argue that an expansion of education has two different effects on the earnings distribution. The "composition" effect increases the relative size of the group with more education and tends initially to raise income inequality. On the other hand, the "wage compression" effect decreases the premium on education as the relative supply of educated workers increases, thereby lowering income inequality. Consequently, the effect of increased

education on the dispersion of income is ambiguous.

Teuling and van Rens (2003) say that an increase in average education level (for OECD countries) compresses the distribution of marginal productivity and so should lead to a more equal distribution of labour income.

Earlier works show a close relation between education and income distribution in developing countries. Becker and Chiswick (1966) show that, across regions in the United States, income inequality is positively correlated with inequality in schooling and negatively correlated with the average level schooling. Chiswick (1971) using cross-sectional data from nine countries suggests that earnings inequality increases with educational inequality. Subsequent studies have been based on a slightly larger sample and most of them find that a higher level of schooling reduces income inequalities, while inequality of educational attainment increases it.

According to De Gregorio and Lee (2002), income distribution is related to the population's average schooling and its dispersion. Income inequality increases with education inequality. By contrast, for a given distribution of education, an increase in average schooling has an ambiguous effect on income distribution. In their model, due to the **covariance** (which is in general negative as in many studies evidenced by Psacharopoulos) between the level of schooling and returns to education, an increase in schooling can reduce or increase income inequality. From researches, which is frequent is the fact that returns to education have diminishing returns. Hence, as more people receive education, the return on education will decline, reducing income inequality. However, this comes true after an average level of education of the population up to which it is seen an increasing income inequality with its level.

From well-known education data by Barro and Lee (2001), in all studies we find that in the world, since 1970s the average level of education is significantly increasing while change of educational inequalities gives the results depending on the method applied.

However, it is separated here the effects of better educational resources on student success from wholly distribution of public education spending across population.

Because, according to some researches it is not clear the effects of educational resources on student success. In Hanushek (2003) relation between educational resources (numbers of student per class, education quality etc.) and student success is not so strong. For example, in the USA, since 1960s, public education spending per student has increased about 3% each year, but it can not be seen a development in test score results of students. Moreover, Gundlach (2001) and Woessman (2003) show that class size does not an effect on international test scores. On the other hand, Krueger (1999) and Lavy (1999) find inverse results to ones mentioned. From the survey of OECD (Education at a Glance, 2004), per student education expenditures may not affect much education results as the highest performances acquired in international tests by students at the age of 15 years belong to the countries which do not spend the highest levels par student in OECD.

## 1.3    Inequalities inside Education

Education is often perceived as a powerful equalizer. Expansion of education, it is believed, is an excellent device for wider diffusion of opportunities and economic well-being. Many studies (like Ram,1984, Ram,1990, Knight and Sabot,1983, Psacharopoulos,1977) have, therefore, investigated the relationship between some measure of schooling (and/or schooling inequality) and the degree of income inequality. Although the models and the data sets used differ, most empirical studies have concluded that an increase in mean schooling reduces income inequality, which is convenient especially for developed countries. Similarly, most investigators who searched the effect of *schooling inequality* on income distribution seem to have found evidence of a direct relation between inequality of schooling and inequality of income (Ram, 1990). That is the reason why the expansion of education by public or by families would have different effects on income distribution by several channels in society. Hence, it needs to measure both the average level of education and its inequality.

Even if the partial effect of the level of schooling is equalizing, such effect could be reinforced or offset by changes in **schooling inequality** that are associated with educational inequalities because of the obvious relationship between the average level of schooling and educational inequality.

From recent studies, a very important determinant of well-being is the human capital, alongside already known findings which give attention especially to initial income distribution and to distribution of land (asset distribution).

How is inequality generated? How does inequality evolve over time? Numerous researchers have tried to answer these questions over the years. Initially, economists paid attention to factors that determine income inequality as, for example, in the influential work of Kuznets, who analysed the effects of economic development up on the evolution of the distribution of income. More recent literature addresses the question of how income or wealth distribution affects the growth of income and what the sources of income inequalities are. Deininger and Squire (1998) include land inequality (initial inequality in the asset distribution) along with income inequality to analyse the situation of wealth inequality. However, land inequality may be

insufficient measure of wealth inequality since other variables such as human capital are also important determinants of wealth and growth. Thus, in some models that analyse inequality, economic growth, and wealth, the role played by human capital endowment is very important if not crucial, since the distribution of income is mainly given by the distribution of human capital (Castello and Domenech, 2002). For instance, Glomm and Ravikumar (1992) and Saint-Paul and Verdier (1993) present models in which the sources of inequality are mainly determined by the distribution of human capital.

Becker and Chiswick (1966) show that, across regions in the United States, income inequality is positively correlated with inequality in schooling and negatively correlated with the average level schooling.

Whereas, the interest in these mechanisms at the theoretical level contrasts with the scarcity of empirical results due to the lack of available data on human capital inequality. Some studies use the standard deviation of years of education as the measure of human capital inequality. The problem with the standard deviation, however, is that it is an absolute measure of dispersion; thus it does not control for differences in the mean of the distribution. For a sample including highly different education levels, that may create some difficulties.

### 1.3.1   Different Measures for Education Distribution

Thomas, Wang and Fan (2000) analyse data on educational attainment (in terms of levels completed) for 85 countries over the period for 1960 to 1990. They find that *standard deviations of education rose* for most of the countries, indicating increasing levels of inequality. On the other hand, *Gini coefficients of education*, which they consider a better relative measure, *declined* in most cases, in tandem with rising average levels of schooling. The evidence of the overall patterns from the two types of measures is highly "contradictory", and it may be invidious in any case to seek overall patterns across such a wide range of developed and underdeveloped countries. Different relations may apply at different stages of economic or education development.

Fan et al. (2000) in their work employ an education Gini index to measure inequality in educational attainment by presenting both direct and indirect methods of calculation it for 85 countries from 1960 to 1990. For them, standard deviation of schooling only measures the dispersion of schooling distribution in absolute terms; hence to measure the relative inequality of schooling distribution, developing an indicator for education Gini is necessary. From this research, the authors find a negative relation between average level of schooling and Gini coefficient of education. In other words, the higher the average enrolment, the lower the inequality (in terms of education Gini). In the same study, they investigate some observations like:

- Inequality in education attainment for most of the countries had been declining during the three decades of 1960-1990.
- There is a negative relation between education Gini index and the average years of schooling as said before.
- An educational Kuznets curve exists if the standard deviation of education is used.
- Education inequality is negatively associated with per capita income (GDP) increments in PPP terms, and education attainment in years of schooling is positively associated with per capita GDP increments, after controlling for initial income levels.

Using direct measures of skill in surveys such as IALS is probably preferable. Another way, therefore, to explore over time trends in levels of equality in educational outcomes in different countries is to compare the skills distributions for different age groups in IALS, using either standard deviations, education Gini's or test score ratios (Green et al.,2003). In their study, Green et al. (2003) use Education inequality not to explain income inequality but to reveal its effects on social cohesion in society by employing IALS skill surveys and by comparing the test scores of two different generations. Therefore, they find that there are clear differences in distributions of education both between countries and "ages". In most countries, the distribution of prose literacy skills (as measured by the standard deviation) is more **un**equal for those aged 46–55 compared to those aged 26–35. This may reflect growing equality of educational outcomes in these countries. Overall, the trend in most cases seems to be towards greater equality, but the results are far from

conclusive. As mentioned before, different measures of outcome distribution, including standard deviations, education Gini coefficients and test score ratios can produce different country rankings.

As for the calculation of education Gini, in this study, it is employed Castello and Domenech's one by which the authors find results similar to that of Fan et al.(2000) so that using this new method, the educational inequality is found to have declined from 1960 to 2000 while in that period of time the level of education in countries have risen. In that study, they show that the economies with a higher stock of human capital are also the countries in which education is more evenly distributed. They also find many countries that, in spite of having the same average schooling years, significantly differ in the distribution of education (like India and Indonesia). And which is very noticeable about their study is that they find, finally, there is a surprisingly low correlation between the human capital Gini and the income Gini coefficients. The countries with the lowest and the greatest inequality in the distribution of education do not coincide with those in the distribution of income.

There are different ways of computing the Gini coefficient. Since the Barro and Lee data set provides information on the average schooling years and attainment levels, the human capital Gini coefficient ($G^k$) can be computed as follows:

$$G^h = \frac{1}{2\overline{H}} \sum_{i=0}^{3} \sum_{j=0}^{3} \left| \hat{x}_i - \hat{x}_j \right| n_i n_j \qquad (1)$$

where H are the average schooling years of the population aged 15 years and over, i and j stand for the different levels of education, $n_i$ and $n_j$ are the shares of population with a given level of education, and $\overline{X}_i$ and $\overline{X}_j$ are the cumulative average schooling years of each educational level. Following Barro and Lee (2001), the authors consider four levels of education: no schooling (0), primary (1), secondary (2) and higher education (3). Defining $x_i$ as the average schooling years of each educational level i,

$$\widehat{x}_0 \equiv x_0 = 0, \quad \widehat{x}_1 \equiv x_1, \quad \widehat{x}_2 \equiv x_1 + x_2, \quad \widehat{x}_3 \equiv x_1 + x_2 + x_3. \qquad (2)$$

Expanding expression (1) and using (2), the Gini coefficient can be computed as follows:

$$G^h = n_0 + \frac{n_1 x_2(n_2 + n_3) + n_3 x_3(n_1 + n_2)}{n_1 x_1 + n_2(x_1 + x_2) + n_3(x_1 + x_2 + x_3)}. \qquad (3)$$

**Table 1 Education Gini Coefficients for Some Countries**

| Country | 1970 | 1975 | 1980 | 1985 | 1990 | 1995* |
|---|---|---|---|---|---|---|
| Brazil | 0.413 | 0.367 | 0.373 | 0.369 | 0.314 | 0.260 |
| Chile | 0.279 | 0.275 | 0.267 | 0.263 | 0.266 | 0.270 |
| China | 0.450 | 0.452 | 0.447 | 0.442 | 0.411 | 0.379 |
| Colombia | 0.415 | 0.386 | 0.397 | 0.399 | 0.409 | 0.420 |
| India | 0.370 | 0.394 | 0.363 | 0.393 | 0.422 | 0.452 |
| Korea | 0.439 | 0.382 | 0.351 | 0.296 | 0.242 | 0.189 |
| Mexico | 0.420 | 0.415 | 0.428 | 0.410 | 0.365 | 0.320 |
| Malaysia | 0.445 | 0.439 | 0.426 | 0.413 | 0.398 | 0.383 |
| Peru | 0.428 | 0.424 | 0.392 | 0.391 | 0.379 | 0.367 |
| Philippines | 0.368 | 0.320 | 0.314 | 0.313 | 0.309 | 0.305 |
| Thailand | 0.378 | 0.369 | 0.268 | 0.327 | 0.348 | 0.370 |
| Venezuela | 0.425 | 0.426 | 0.351 | 0.350 | 0.347 | 0.345 |

**Source:** Lopez et al.,1998

## 1.4 Education and Inequality Relation from the Side of Political Economy

The common belief that education eradicates not only poverty but also income inequality in society and hence makes people have a smoother wealth distribution caused LDCs (Less Developed Countries) to invest hugely just as they gained their freedoms after 2$^{nd}$ World War.

However outcomes were not like expected. In contrast, the actual incidence of public spending many times is skewed in favour of more influential population groups. In an important work, Le Grand, 1982, for example, documents this in many areas of public intervention in the UK, such as education, health, housing and transportation, arguing that the middle class and the rich are its primary beneficiaries. **Main reason** to this was not to have been able to succeed in reaching schooling up to the least developed parts of country and/or *up to the poorest population*. Principal receiver of this allocation and of this investment was the richest (mostly the *elite*) parts in population. This bias in the incidence of public spending is even more significant in developing countries. Children from poor households have much less access to schooling at progressively higher levels than children from richer families, and their attribution rates increase with the grade. Consequently, the distribution of public spending on education in the population is far from equal. Table below vividly illustrates the inequalities in the distribution of public spending on education for 21 developing economies. The median incidence of spending on education on the poorest quintiles is about 14 percent (the minimal is 7 percent); for some countries public education spending on the top quintile is three and more times that on the bottom quintile. Moreover, this bias closely mirrors the skewness of income distribution in the sample countries.

**Table 2 Public Spending on Education by Income Quintile in 21 Developing Countries.**

(percent)

| Country | Year | 1st-poorest | 2nd | 3rd | 4th | 5th-richest |
|---|---|---|---|---|---|---|
| Armenia | 1996 | 7 | 17 | 22 | 25 | 29 |
| Côte d'Ivoire | 1995 | 14 | 17 | 17 | 17 | 35 |
| Ecuador | 1998 | 11 | 16 | 21 | 27 | 26 |
| Ghana | 1992 | 16 | 21 | 21 | 21 | 21 |
| Guinea* | 1994 | 9 | 13 | 21 | 30 | 27 |
| Jamaica | 1992 | 18 | 19 | 20 | 21 | 22 |
| Kazakhstan | 1996 | 8 | 16 | 23 | 27 | 26 |
| Kenya | 1992/3 | 17 | 20 | 21 | 22 | 21 |
| Kyrgyz Republic | 1993 | 14 | 17 | 18 | 24 | 27 |
| Madagascar | 1993/4 | 8 | 15 | 14 | 21 | 41 |
| Malawi | 1994/5 | 16 | 19 | 20 | 20 | 25 |
| Morocco | 1998/99 | 12 | 17 | 23 | 24 | 24 |
| Nepal | 1996 | 11 | 12 | 14 | 18 | 46 |
| Nicaragua | 1993 | 9 | 12 | 16 | 24 | 40 |
| Pakistan | 1991 | 14 | 17 | 19 | 21 | 29 |
| Panama | 1997 | 20 | 19 | 20 | 24 | 18 |
| Peru | 1994 | 15 | 19 | 22 | 23 | 22 |
| Romania | 1994 | 24 | 22 | 21 | 19 | 15 |
| South Africa | 1993 | 21 | 19 | 17 | 20 | 23 |
| Tanzania | 1993 | 13 | 16 | 16 | 16 | 38 |
| Vietnam | 1993 | 12 | 16 | 17 | 19 | 35 |

Source: Gradstein, 2003

Fields (1980) reports that income inequalities in several developing countries did not lessen even after increased allocations of public funds to education. Even if education in most countries is freely supplied by the public, that does not imply all poor to be educated or well educated (especially in higher levels). Compulsory education does not achieve all children to be well educated by considering especially the reality that poor ones have to work out or help their parents. Hence poor children work rather than attend school and thus remain poor adults. These adults then need their children to work to help the family budget and this poverty persists through another generation.

### 1.4.1   **Reasons to Unequally Distributed Public Funds**

The basic argument is that, <u>universality</u> of public education notwithstanding, its incidence—

being a matter of political decisions—can be affected by **rent-seeking** efforts. For an undeniable number of researchers, the political economy (by which the distribution of public spending is distributed) is the most important thing that determines distribution of public spending (of education, health etc.). Because of credit markets imperfections, richer households are able to exert more political pressure through rent seeking thus securing themselves a larger share of the pie than poorer ones. To what extent such rent seeking matters as part of the educational resource allocation mechanism is in itself a political decision.

From the table (Gradstein, 2003) above, education resources are not at all equally shared. In the world, people acquiring education and profiting from its benefices were mostly the upper and middle upper classes. As a consequence, inequality in LDCs has not much changed despite enormous resources devoted to it. The feature of education that it raises incomes was acceptable for only the rich parts. That is more common for who gets especially higher levels of education (high schools and university graduates). Taking into account that income level goes parallel with schooling years, inequality –being always in the society – can not be reduced neither in short term nor in long term.

Both distributions of unequal **public** education spending and **private** tutoring expenditures may prevent income distribution from being more just in long term for (next generations).

That is why most authors say that distributional effects of educational expansion depend on both the distribution and the average level of education in society. If, due to credit constraints faced by the poor, they can not benefit from education right (especially if they can not reach the opportunities supplied by public at level of secondary or tertiary educations), education system will be far from being equaliser of income distribution. That is true from the fact that in some LDC, the authors or the governments speak about high illiteracy rates and trying to expand *even primary*

*(basic) education* in countries that is still impossible to reach for some people. In these conditions, to raise supply of public *higher (secondary and tertiary)* educational spending is far from achieving a just/equitable income distribution for most countries. It means that the allocation of public sources that is not equitably distributed across population or more specially across quintiles would, naturally, be far from equitable. Castello and Domenech (2002) in their survey on relations among income distribution, education distribution (education Gini) and economic growth reveal some results such as:

- Education Gini is a more robust indicator of the distribution of education than standard deviation of years of education.
- Educational inequalities (measured by education Gini) in the world are decreasing since 30 years while income distribution is getting more skew. In contrast, de Gregorio and Lee (2003) find that both standard deviation of educational attainment and income inequality increase in the world. The main difference comes from the measurement method of educational inequalities.
- *The economies with a higher stock of human capital are also the countries in which education is more evenly distributed.*
- In fact, the correlation between education Gini and average years of schooling of the society is very high (-0,90)
- Finally, there is a surprisingly *low* correlation between the human capital and the income Gini coefficients.
- Growth rates are higher in countries where initial distribution of education (education Gini in 1960) is lower.

As in their survey authors search especially relations between education distribution and economic growth (not income distribution separately), they find an important result that policies, therefore, conducted to promote growth should not only take into account the level but also the distribution of education, generalising the access to formal education at different stages to a wider section of the population.

In LDCs, education is more unequally distributed and more costly as:
1- Private opportunity costs of education is particularly higher in rural parts than urban one especially for poor children and their families as these children are

made work out of schooling hours. For these types of families, children are accepted as the first workers in their families. Outcome of this is that opportunity cost of child is higher in rural areas than in urban one. (Todaro,2000)

2- Furthermore, the reality that children both go to school and work on fields (that belong to their families in general) makes them perform much less for education (they give less cares to their own education) and thus their parents pay less attention to the education of their children. As a result of this, children living in rural parts acquire an education that is far from being of good quality and all these make these students less equipped by qualifications that higher levels of education require. For example, a child coming from a village would have less qualifications of education that university entrance exams necessitate.

3- Besides, even if primary level of education is free of charge in most countries, secondary and especially tertiary levels significantly cost to the poor families. In India, schools in which school dress and books are supplied freely by an organisation achieved a 15% more graduation rates than ones not giving this facility to students (Banerjee and Duflo, 2004). Miguel and Kremer (2004) also find that the opportunity to give children school uniforms freely (which cost only 6$) raised years of schooling from 4,8 to 5,3 meaning that the poor families were such "indifferent" about letting children continue to education that a donation caused higher levels of education.

In this regard, political economy approaches stress the impact of income distribution on the allocation of public education. That argues that not only the average level of **income** but also its distribution affect the aggregate level and distribution of current education investment, which shapes, in turn, the level and distribution of income in the future (Gradstein et all. 2005). Because, education level is both cause and outcome of income level and its distribution as a whole.

Perotti (1996) reveals that countries with more equal income distribution tend to make "larger" investments in human capital. That is a similar result that Banerjee and Duflo (2004) reached in their survey showing that government expenditures on

education as a fraction of GDP is NOT higher in poor countries: 4,8% in Africa, 4% in Asia, 4,1% in Latin America, 5,6% in Europe and 4,8% in North America. The correlation between the log of government expenditure on education as a fraction of GDP and GDP-per-capita is strong. Perotti not finding an exact explication mentions two probabilities**:**

- Either fertility rates decrease more strongly as long as income inequality lessens in favour of the poor, thus increasing educational spending per student. Here, he mentions trade-off between quality and quantity (fertility) of child. (Avner Ahituv, 2003)

- Or, the more severe income inequality is, the more number of families are faced by credit constraint hence these families would invest less on educating their children (here he speaks about education spending as a whole).

In any case, the author says that as long as income inequality decreases, human capital investments increase.

Some study searches long term and short term effects of income inequality on educational equalities. Galor and Zeira (1993) find that initial income distribution has both short and long term effects on education owing to existence of **imperfect credit market**. Hence, poor families fail to invest in their children and that is a reason of the necessity of public education supply. In their model, everyone is assumed to be identical with regard to both skills that he has and preferences but differ only with respect to initial income level (inherited wealth). In credit market imperfection, the inheritance of each individual determines whether he/she invests in human capital or not. As a consequence, in the next generation, skilled and unskilled labour forces are determined according to their human capital endowments (that depend on their, in fact, initial income endowments). That creates a circle: there are rich dynasties, in which all generations invest in human capital, work as skilled and leave a large bequest. There are poor dynasties, in which people inherit less, work as unskilled and leave less to their children. This fact can be adapted to the political economy implying that publicly supplied education is distributed across population depending on income level (political power) of quintiles in society. People having low levels of initial income would also have low political bargaining power to be able to exert a political press that determines distribution of public education.

On the other hand, income distribution in society determines political bargaining and thus allocation of public education spending and, in turn, the level of education (human capital) designates future income and political bargaining power. According to recent research on the USA, the UK and Italy, more educated individuals tend to join more voluntary associations, show greater interests in politics and take part in more political activities (Green et all, 2003). Moreover, social exclusion takes part where income inequality and/or education inequality are/is high. All these make a circle excluding the poor from economic and politic life, letting them out of educational expansion opportunities, deprived them of new/future economic opportunities and hence making them always poor.

### 1.4.2   Some Determinants of Educational Opportunities

Apart from publicly provided education, the term refers to different socio-economic aspects of people. Because, education starts in family from birth. By being affecting remarkably by family's income and especially cultural level, the education level that child will have is determined under many conditions.

### 1.4.2.1   Private Tutoring on Education and Access to Higher Education in LDCs

Even if we do not know how the quintiles of income in Turkey share public education spending, nevertheless we can have some ideas by looking at the results of university entrance examination -UEE- (OSS in Turkish). From , these are the cities generally in the west of the country implying that qualifications of education are not homogenous between west and east of the country.  Besides, being a central examination, as UEE requires an enormous effort not only as student effort but also as family's income effort (Tansel, 2004) to be able to enter to a university. That is because of the fact that Turkey, in which young population has an important share in total country population, creates a huge number of university candidates, in spite of being insufficient number of university.

That is why families have to spend much for private supplementary tutoring. Private tutoring especially for the purpose of preparing for the competitive university entrance examination is an important, widespread phenomenon in Turkey. Private tutoring centres are commonly referred to as dershane in Turkish. In fact, this situation is very common nowadays in countries where university entrance exams are central. Private tutoring has been a well-spread, large-scale industry in several countries in the world, especially in East Asia. Bray and Kwok (2003) and Bray (1999) give a review of the examples on private tutoring from a wide range of countries ranging from Egypt to Taiwan. The common feature of the educational systems of the countries where the practice of private tutoring is extensive is the existence of competitive entrance examinations to the universities.

For example, in South Korea, Greece, Japan and Turkey high school graduates are required to take a nation-wide university entrance examination in order to be selected into a university. In the developing countries, deficiencies in the educational system such as inadequate number of universities, large class sizes and low public educational expenditures are often cited as the reasons for the high demand for private tutoring. As such private tutoring can be regarded as a market response to the mediocrity in the public school system. Families who want their children to move successfully from high school to university and then to occupational careers spend more time and money on the informal educational activities. Kim and Lee (2001) emphasize that private tutoring is closely related to the economic competence of the families. In this regard, Stevenson and Baker (1992) ask if private tutoring is "…an avenue for the transmission of social advantages from parents to their children in the contest for educational

credentials?". This implies that it could obscure the educational equity and could diverge economic and social advantages in favour of wealthier households.(Tansel,2004)

### 1.4.2.2  Familial Background on Child's Education

All these force us to take into account plural aspects of inequality: educational inequalities produce income inequalities and then in turn, income distribution determines -via political bargaining power- allocation of public education funds. It is

necessary to make efforts to decrease both education and income inequalities in society at the same time. Because, parental income and parental cultural heritage are two very important things having absolutely significant effects on child's future human capital level.

From the point of view of the patterns amongst the advanced states, is the evidence from Shavit and Blossfeld's classic 1983 study, *Persistent Inequality*, which includes the findings from 13 separate country studies, seven of which are western capitalist countries. Each of the studies analyses the impact of social origin (in terms of parental occupation and education) on both years of schooling and survival rates at key educational transition points—for successive cohorts between the early 1900s and 1960 (Green et al, 2003).

Despite the marked expansion of all educational systems under study, in most countries there was little change in socio-economic inequality of educational opportunity. Only Sweden and the Netherlands showed a marked decline in the impact of social origin on educational attainment over the period. This leads us to question how far educational reforms actually impact on education inequality. The data for different countries show no marked increases in equality of opportunity after periods of major reforms designed to increase it (Green et al., 2003). Esping-Andersen comes to similar conclusions from his analysis (Esping-Andersen, 2003). He notes that a range of countries with quite different education systems (including the USA, the UK, Italy and Germany) show the same trends in relation to the strength of social inheritance, and that the countries that deviate (Sweden and the Netherlands) have **little** in common educationally, either in terms of school organisation or public spending on education. Rather than look for 'system effects', he says, one should be looking at the impact of parental culture and early socialisation, which other research shows is crucial for later educational development. He finds only a modest impact on cognitive scores from parental culture for Scandinavian countries. On the other hand, the UK and the USA (where private education, a selective educational system and remarkable income inequalities between families exist) show very strong effects from parental cultural capital.

He also finds that parental cultural capital is a more powerful predictor of students' scores across countries than parental occupation or wealth. The importance of

income and wealth differences is not ruled out, and may still explain part of the social inheritance effect, but it is the inequalities in cultural endowment between parents, he implies, which is most important and which, therefore, should be the main target of reforms, rather than school systems which may make very little difference to cognitive inequalities once early socialisation has had its effects.

The Scandinavian countries not only manage to provide universal childcare, which tends to equalise early childhood socialisation; they also level out family incomes through income equalisation, welfare redistribution and allowing well-paid employment for lone mothers (Green et al,2003). In terms of the money versus culture argument, there is, as Esping-Andersen concedes, a close correlation between parental cultural capital and parental wealth and income and most studies have shown that they are both relevant. As a consequence of the study, Green (2003) claims that families' educational and income situations have remarkable positive effects on child's educational success and endowment.

Apart from these, some studies pay attention to the divergence effects of education deviations in society. The poor who are excluded from society due to the welfare and political discriminations are getting more radical and get out from social and economic life by preventing the communication among groups and by producing *divergence* in society and political instability. Finally, these divergences and conflicts among groups cause less investments both in human capital and in physical capital by decreasing growth rates accepted as the main component of eradicating poverty and of making a new income resources to be shared by whole population.

### 1.4.2.3   Education, Democracy and Median Voter

Economists have for a long time been aware of the dangers of democracy. More recently, economists have studied the flaws of populism [Dornbusch and Edwards (1991)] and voiced the concern that in a democracy there might be an incentive to expropriate capital. Assuming that the political process can be caricatured by a voting process and given the shape of income (or wealth) distribution, this is more likely to happen if the median voter is relatively poorer or has relatively less capital. and if the poor have more political rights. In those cases income redistribution creates adverse

incentives for investment, economic growth and economic stabilisation. Thierry Verdier and G.St Paul (1992) in their studies show that redistribution and democratization of a society do not necessarily have adverse effects where the main channel of redistribution is ***public education.***

Typically from a political economy aspect public education has the two following essential features: first it may be an instrument of intragenerational redistribution and therefore is an issue of redistributive politics. Secondly, it is an activity that creates human capital and therefore promotes long-run growth. In **median voter model**, public education is provided in an egalitarian way. On the one hand, growth and thus national income to be shared is affected by the amount of public education which, through the political process, depends on the shape of the income distribution. On the other hand, the income distribution evolves endogenously through the equalizing effects of public education on the inter-generational transmission of human capital. Hence the dynamics of the economy will involve two state variables: income distribution and average stock of human capital. The main result of the model is that for a given structure of (***wide enough***) political rights, the economy converges towards a steady-state growth path; during this convergence process, income distribution becomes more equal. The intuition is that as the distribution of human capital gets more even through public education, the median voter gets relatively richer, so that his children will benefit less from public education relative to inherited human capital. Therefore the level of public education implied by the political equilibrium tends to decline as long as income distribution evolves to a more equal one.

If there is some minimal wealth level (a franchise) required to be eligible to vote, the median voter will be relatively well-off compared to full democracy. This will imply lower spending, a lower growth rate, and a lower pace of equalization **than** full democracy. If the **decisive voter** is still poorer than the mean, the dynamics are analogous to the above paragraph. If the decisive voter is richer than the mean, two cases are possible. First the initial value of the tax rate is greater than zero and the characteristics of the convergence path are reversed compared to the previous analysis: increased support for public education, an increasing tax rate and an increasing growth rate, as well as convergence towards full equality but that process

takes a longer time than full democracy one.. Furthermore, increased inequality will lower, not increase political support for education. The second possibility is that the franchise is so high that there is **no** spending on public education, income distribution will reproduce itself (income distribution has a unit root and is transmitted thoroughly to future generations) for ever without any tendency for equalization, and the growth rate will be less than under full democracy.

Main idea of this model is that democratization and extensions of political rights in the society will just produce the opposite results namely more redistribution, larger spending on public education and a boost on growth and equalization of income (Verdier and StPaul, 1993).

It is quite possible, however, that this may not hold if poverty is correlated with non-participation in the electoral process. In such a world, increased inequality may well produce less support for education (in our model, it would be associated with reduced political rights in practice), in which case the model predicts that it would have a negative impact.

Gunter Rehme (sans date?) finds also that a rich country that spent more on education would have higher growth and less inequality together. The studies of Banerjee and Duflo (2004) saying that public education expenditures are higher in developed countries (where mostly democracy is better performing) than developing ones emphasize –maybe- this aspect of political economy.

### 1.4.2.4 Average Income Voter or Interest Groups or Imperfect Democracy

If, contrary to the model of "median voter", voting power is not distributed uniformly but increases with wealth, a self-sustaining high inequality trap may arise, whereby educational inequality ensures the persistence of wealth-inequality, which in turn ensures the persistence of political inequality, which in turn guarantees the continuation of educational inequalities (Ferreira, 2001).

If educational opportunities differ for people along the wealth distribution, and the quality of the education available to the poor depends on an endogenously determined redistribution scheme, then a redistribution of power that mirrors an unequal distribution of income may lead to persistent and inefficient levels of inequalities.

Fernandez and Rogerson (1994) form a model for political influence which determines allocation of public funds in society through the welfare level of lobbies. According to Gradstein (IMF, 2004) weak governing institutions allow the rich to be more effective in appropriating a larger share of public education spending thereby preventing inequality reduction showing that the progressiveness of public education spending is related to the strength of governance.

Consequently, the actual incidence of public spending is often skewed in favour of more influential population groups. In an important work, Le Grand (1982) documents this in many areas of public intervention in the United Kingdom, such as education, health, housing, and transportation, arguing that the middle class and the rich are its primary beneficiaries. The more unequal a society's income distribution, the lower will be the bargaining power of the poor compared to the rich, and thus the greater will be the extent of allocations in favour of the rich.

Birdsall (1997), for example, notes that spending on primary education in developing countries is small relative to spending on tertiary education—whose main beneficiaries are the rich. The problem is especially acute in Latin America and Africa, where income inequality in general is notoriously high. Likewise, schools' geographic location may have distributional consequences depending on the relative

concentration of income groups in a particular area. Consequently, *the distribution of public spending* on education in the population is far from equal. For some countries, the incidence of public spending that accrues to the top quintile is three to four times larger than that received by the bottom quintile (World Bank,2001).

Richer individuals, being less **credit constrained**, can spend more on rent seeking and, therefore, have an advantage in appropriating a larger share of public spending. Their ability to do so depends, in turn, on the prevailing governance quality: where quality of governance is higher, there is less room for such appropriation (Gradstein, 2003).

Much theoretical thinking about public education has portrayed its incidence as progressive, assuming in particular that its benefits accrue uniformly to different income groups. On the other hand, it is frequently and recently claimed that the incidence of public spending on education, especially in developing countries, is biased in favour of the rich.

Because, if there is credit constraint in economy and education is subsidised by public spending, the rich excludes the poor from utilisations of public goods and services and forces the government to make public spending in favour of the top quintile. For Fernandez (1994), the most important thing to consider about political economy is that public subsidy to education is not at all shared by whole population but mostly by the rich who can continue to higher levels of education (secondary and tertiary). Even if returns to education are high sufficiently, as the poor have credit constraints, they can not continue to higher levels and most of the public resources allocated to higher education are obtained by the rich.

That is why, public education expenditures are far from being shared equally and thus far from giving equal opportunities to population about accessing to it. Therefore, publicly supplied education –in contrast with old theories- are **unlikely** to make income distribution more equal for future generations. Additionally, more skewed initial income distribution are likely to foster bad governance and bad public funds allocation among quintiles; thus income distribution (by education opportunities which are determined by politically) can perpetuate for long term.

Sylwester (2000) and Fernandez (1994) in their similar models, including opportunity costs of education for poor children (for example to work out or help to family in farm instead of being in school), propose to consider these opportunity costs to public administration while producing politics to attract the poor to education. As the rich have less severe credit constraints to invest in child's education, they would have more opportunities to get education up to higher levels. Moreover, the rich may have intention to make public education more costly/expensive (by rising, for example, university payment) for the poor.

On the other hand, some try to see the relation between groups by looking at historical process of Europe. Galor and Moav (2004) in their studies "Das Human Capital" show that the demise of the 19th century's European class structure reflects a deliberate transformation of society orchestrated *by the capitalists*. The research suggests that the transition from this class structure may be viewed as the outcome of an optimal reaction *by the capitalists* to the increasing importance of human capital in sustaining their profit rates. They argue that the process of capital accumulation gradually intensified the importance of skilled labour in the production process and generated an incentive for investment in human capital. Due to the complementarity between physical and human capital in production, the capitalists were among the prime beneficiaries of the accumulation of human capital by the masses. They therefore had the incentive to support public education that would sustain their profit rates and would improve their economic well-being, although it would ultimately undermine their dynasty's position in the social ladder. The support for public education is unanimous among workers and capitalists, despite the fact that the capitalists may carry the prime financial burden of public schooling. That is, due to the coexistence of credit market imperfections and capital-skill complementarity. Since firms have limited incentive to invest in the general human capital of their workers, in the presence of credit market imperfections (even for each firm or each capitalist), the level of education would be suboptimal unless it would be financed publicly.

General belief that *political reforms* during the 19th century shifted the balance of *power* towards the working class and enabled workers to implement *education*

*reforms* against the will of the capitalists. The authors (Galor and Moav, 2004), do not support this alternative hypothesis. Education reforms took place in autocratic states that did not relinquish political power throughout the 19th century, and major reforms occurred in societies in the midst of the process of democratization well before the stage in which the working class constituted the majority among the voters. All these tend to give support to "interest group idea" against "median voter one" in reality.

These are the reasons for some authors to pay attention to both democracy (representation of the poor) and other supplementary steps in favour of the poor in society while allocating public funds across quintiles. **One-man-one-vote** system is one proposed by some authors. From all these aspects of the subject, surveys also pay attention to initial income distribution of country so that that is initial income distribution determining political economy as a whole.

From these explanations, while Verdier and some authors see public education as a key for better income distribution, for some authors, like Dollar and Kraay (200), Sylwester (2000), Addison (2003), Ferreira (2001), Gradstein (2003), Su (2004) in contrast, public education spending does not smooth out income inequality.

Moreover, an often articulated policy prescription to alleviate poverty is to reach out to the poor through an egalitarian provision of public services, especially in poor countries. While this is a worthy policy goal in terms of equality and long-run growth, there are deeply rooted political reasons for existing provision arrangements to be unfavourable to the poor. *It implies that* the political bias induced by extreme income inequality is one major obstacle in a reform of existing programs, and opposition by influential political interests is to be taken into account in a meaningful debate about the implementation of more egalitarian reforms.

### 1.4.3  **Different Levels of Education in View of the Poor and the Rich**

"Too little is spent on primary education—the category of education of most direct benefit to the poor—while on average public subsidies to secondary education are roughly three times as high as subsidies to primary education, and subsidies to tertiary education are thirty times as high. In consequence, the higher income deciles benefit disproportionately from public spending on education" say Addison and Rahman (2001) in a survey to draw attention to distribution of sources among different levels of education. The riches' wealth enables the affluent to buy favourable policies from politicians. In contrast, the poor lack the resources for lobbying and they face more severe collective action problems. From this point of view, some authors find strong empirical evidence for this interest group model of politics (as opposed to the median voter model which predicts a more redistributive pattern of public spending). Holding everything else constant, a one standard deviation increase in the Gini coefficient would reduce the ratio of primary-school spending to tertiary spending by 0.20 percentage point. In particular, more attention must be given to reducing *income* inequality in order to reduce political constraints on pro-poor public expenditure reform and to reduce educational inequalities.

Too few poor children enter primary school, too many fail to complete their education, and the quality of their schooling is often dismal. Girls, especially rural girls, are especially disadvantaged. Their enrolment rates are lower, and their dropout rates are higher than those of boys. An estimated 855 million adults—nearly one seventh of humanity—are functionally illiterate, and 64 per cent of illiterates are women (World Bank 2001).

Whereas the poor gain from primary education, it is higher income groups that mainly gain from public spending in tertiary education. The reason is straightforward. Attainment and success in tertiary education requires the successful completion of primary and secondary school, but many of the poor fail to complete even four years of primary schooling (the minimum necessary for functional literacy) let alone secondary education. In India, for example, 82 percent of children from the richest 20 percent of households complete grade 8 but only 20 percent of children from the poorest 40 percent of households do so (Addison,2001). Thus the lower the

ratio of public spending in primary education to tertiary education, the higher is the inequality of public spending in education.

In aggregate, developing countries underinvest in primary education despite its benefits for the poor, and its public good characteristics. Government spending in primary education is too low, both absolutely and as share of total public spending (and relative to military spending). In Uganda for instance primary education is still largely funded largely by parents who contribute between 60 and 70 per cent of total spending on schools. (Addison, 2001)

Furthermore, Su (2004) examines the same allocation problem by including to his model an initial human capital endowment level inherited to each individual from his/her parents. Finally he finds that in LDCs, it has to devote more resources to primary education to be able to achieve both efficiency and equality in next generation's income distribution.That contrasts with what LDCs make today by allocating a huge quantity of public funds mostly to tertiary level (beneficial mostly to the rich and middle income levels).

**Table 3 Unit Education Subsidies by level in African Countries**

| Country/year | Monetary unit | Primary | Secondary | Secondary as ratio of primary | Tertiary | Tertiary as ratio of primary |
|---|---|---|---|---|---|---|
| Côte d'Ivoire, 1995 | CFAF | 64,840 | 117,462 | 1.8 | 348,453 | 5.4 |
| Ghana, 1992 | Cedis | 24,824 | 65,275 | 2.6 | 392,707 | 15.8 |
| Guinea, 1994 | GNF | 47,625 | 116,812 | 2.5 | 2,595,705 | 54.5 |
| Kenya, 1992/93 | K Shs. | 1,368 | 3,868 | 2.8 | 42,050 | 30.7 |
| Madagascar, 1994 | FMG | 50,504 | 192,491 | 3.8 | 1,140,000 | 22.6 |
| Malawi, 1994/95 | Kwachas | 220 | 909 | 4.1 | 15,523 | 70.6 |
| South Africa, 1994 | DBSA | 1,124 | 2,055 | 1.8 | 5,657 | 5.0 |
| Tanzania, 1993/94 | T Shs. | 6,600 | 7,500 | 1.1 | – | – |
| Uganda, 1992/93 | U Shs. | 11,667 | 37,352 | 3.2 | 373,525 | 32.0 |

Source: Addison,2001

From the table above, these findings contrast with the model of median voter (by Verdier,1992) saying that growth rates would be higher in countries where income

inequalities are higher and that public education spending would be more even distributed in these countries.

Pineda and Rodriguez (2000) empirically find that investment in human capital is inversely related to the capital share in total output (where the latter proxies for capital owners who are assumed to be the wealthiest in society). They formally sketch models of both the median voter and interest groups and show that while the median voter model cannot explain this negative correlation, such a correlation can be accounted for with a simple model of interest groups and political influence.

In short, efforts to shift public spending towards primary education in order to raise the participation of the poor in national income are likely to meet fierce resistance from the affluent in societies with high income inequality. Pro-poor education policy may **not** be translated into increased pro-poor spending once lobbying by the affluent kicks in. Indeed, parallel action to reduce income inequality and thus the resources available to the affluent to block reform may be necessary to the achievement of successful pro-poor expenditure reform. (for example, a land reform or a more egalitarian tax system - closure of pro-rich exemptions in the tax system-). Hence, democratic transition is likely to be a necessary (although not sufficient) condition for achieving pro-poor growth in many countries.

## 1.5    Public Education's Effect  on  Income Inequalities

If we take into account that public, in almost all countries, is the biggest education supplier, and education is one of the most important determinants of individual income, public education is expected to have remarkable effects on income (and hence on income dispersion).

Kewin Sylwester (2002) in his study searches public education expenditures' effects on income inequalities for 50 countries all over the world. From his results, it appears that countries that devote more resources to public education as a percentage of GDP have lower income inequality in subsequent years although any effects are **slow** to be realized. The results appear to be stronger in OECD countries although there is some evidence, albeit weaker, that public education expenditures slowly lessen income inequality in less developed countries as well. His model is not suitable to apply to Turkey because of not availability of old Gini values for Turkey. As SIS (State Institute of Statistics of Turkey) started to calculate Gini values for provinces in 2003, we can not apply this model to our analysis.

However, Sylwester (2000) develops a model where public education can lower the level of income inequality provided that agents have sufficient resources to forgo income and attend school. If agents are too poor to attend school, then promoting public education can actually cause the distribution of income to become more skewed since the poor are taxed for revenue but do not enjoy the benefits of the public education system.

In addition, Jimenez (1986) argues that many public education expenditures do not benefit the poor at all and, hence, do not lessen income inequality. Fields (1980) also argues that the degree of income inequality did not diminish even as many countries devoted more resources to public education. Finally, Ram (1989) reviews previous theoretical and empirical papers and concludes that there is not strong support that increasing education within the population lowers income inequality.

Given these studies, it is less clear as to whether or not public education expenditures can actually lower the level of income inequality over time.

Another point to emphasize is the importance of education's (educational resources among people and among different education levels) distribution. Becker and Chiswick (1966) show that, across regions in the United States, income inequality is positively correlated with inequality in schooling and negatively correlated with the average level schooling.

Some authors, in that regard, look at political economy that determines public education expenditures' distribution among different income groups according to their wealth level which affects strongly their political bargaining power on government.

From this aspect, Verdier and St Paul (1992) provides a median-voter model the income distribution evolves endogenously through the **equalizing** effects of public education on the inter-generational transmission of human capital. The studies of Banerjee and Duflo (2004) saying that public education expenditures are higher in developed countries (where mostly democracy is better performing and income inequalities are less) than developing ones emphasize –maybe- this aspect of political economy.

However, most authors pay attention to an opposite idea about the public education resources' distribution among groups. In this aspect, we look for the relation -for Turkey- between political power of groups (income Ginis in provinces) and distribution of education expenditures among different education levels (that benefit also different income groups). We find that in Turkey, public education resources are distributed unevenly in provinces so that rising income inequalities promote the secondary level's share in public expenditures (than primary level).

If we leave political economy for now, Knight and Sabot (1983) also emphasize the complicated effect of human capital accumulation on income distribution due to "composition" and "wage compression" in an economy. The "composition" effect increases the relative size of the group with more education and tends initially to raise income inequality. On the other hand, the "wage compression" effect decreases the premium on education as the relative supply of educated workers increases, thereby lowering income inequality. Consequently, the effect of increased education

on the dispersion of income is ambiguous. Teuling and van Rens (2003) say that an increase in average education level (for OECD countries) compresses the distribution of marginal productivity and so should lead to a more equal distribution of labour income.

Park examining wage inequalities by comparing South Core and Brazil looks for wage composition and wage compression effects for both countries. In the study, they find that Brazil which started to the period (of study, 1960) having more unequal income distribution and also less average years of schooling of population has not lived a significant decrease in wage income distribution. Increasing demand to skilled labour force by opening the doors to world economy has joined with insufficient rising in human capital accumulation and hence all these prevented Brazil from decreasing income inequalities over the period (1960-1990). In contrast, South Core which started to the same period with lower income inequalities and higher level of education of population could have kept its income inequalities little while at the same time it raises also education level of its population and on the other hand it shows a quite successful (high growth rates) economic performance. From this aspect, Brazil (owing to its insufficient rising human capital accumulation) did not live a wage compression effect while South Core lived wage compression effect (because of rising educational access to education and its level).

That is why not *only average education level of society but also its distribution* have important results on income inequalities. In this study, we investigate also the distribution of education in Turkey from two different measures (education Gini and standard deviation of education).

For some, that is inequalities of the education distribution that prevent LDCs from having  more income inequalities while recently rising significantly average education level of their populations.

Income distribution is related to the population's average schooling and its distribution. Income inequality increases with education inequality. In contrast, for a given distribution of education, an increase in average schooling has an ambiguous effect on income distribution.

To illustrate this, traditional models of human capital theory suggests the following expression for the level of earnings (Y) of an individual with S years of schooling:

$$\text{Log } Y_S = \log Y_0 + {}^S \sum_{J=1} \log(1+r_j) + u$$

Where $r_j$ is the rate of return to the j-th year of schooling and u reflects other factors that influence earnings independent of education. The function can be approximated by

$$\text{Log } Y_S = \log Y_0 + rS + u.$$

Using "av" with a variable to denote its mean (average), we can write the distribution of earnings as

$$\text{Var}(\log Y_S) = [(av)r]^2 \text{Var}(S) + [(av)S]^2 \text{Var}(r) + 2[(av)r][(av)S] \text{Cov}(r,S) + \text{Var}(u).$$

Hence, an increase in educational inequality (Var(S)) leads unambiguously to greater income inequality, with other variables held constant. If the rate of return (r) and schooling level (S) are independent, an increase in the level of schooling will also lead clearly to a more unequal income distribution. If, however, the covariance between the return to education and the level of education is negative (as evidenced by a number of studies by Psacharopoulos), an increase in schooling can reduce income inequality. In this case, as education expands, income distribution may become more unequal. This may be particularly important in economies with very low levels of education. Hovewer, as more people receive education, the return on ducation will decline, reducing income inequalities. (De Gregorio and Lee,2002).

De Gregorio and Lee (2002) confirm these ideas. They present empirical evidence on how education is related to income distribution in a panel data set covering a broad range of countries for the period between 1960 and 1990. The findings indicate that

educational factors –higher educational attainment and more equal distribution of education- play a significant role in making income distribution more equal. However, a significant proportion of cross-country variation in income inequality remains unexplained in the study.

A recently published study on the effects of public education expenditures on income inequalities is by Todd Behr (2004) in the USA. The study explores the effects of public education expenditures on the distribution of income among people living in the 50 states and the District of Columbia.

The model used in this paper parallels other models, such as the one Sylwester (2002a) developed to evaluate the effects of public education expenditures on the income distribution of fifty different nations and the one De Gregorio and Lee developed (2002) to investigate the education and income inequality relationship by analyzing statistical evidence from a cross-country data set.

The model suggests that the inequality of income stems from the level and distribution of education across the population. The main feature of the study is that it attempts to relate the income distribution within each state to variations in educational levels, age distribution, social, economic, occupational, and industrial opportunities, and population density.

Most studies agree that the effects of public education expenditures are cumulative and do not actually materialize until several years later. It is because of this that education expenditures per student are lagged and summed from five to twenty-five years in the study.For example, the income inequality of the various states in the year 2000 is influenced by public education expenditures during the years 1970–1995, thus the cumulative expenditures during those twenty-five years are expected to exert an impact on state income inequality during the year 2000

The main results of the study are:

- When a state spends more money on public education it eventually decreases its income   inequality.
- A decrease in educational dispersion leads to a decrease in income inequality.
- A decrease in social dispersion leads to a decrease in income inequality.

In short, greater income equality, increased lower incomes, and reduced poverty rates all lead to other non-economic social benefits, such as reduced crime rates and improvements in the quality of life.

## 2. Income and Education Inequalities in Turkey

As it is well known from the income distribution measures published by some authorities, Turkey has comparatively and absolutely high income inequalities. Such a high inequality in a country like Turkey which is politically, geographically and economically in a very fragile environ has some certain threats for the country. That is why decreases in income inequalities are necessarily a thing that needs more special cares and that obliges some authors and authorities to find true and permanent solutions.

However, solutions would have many aspects from politic to economic and from cultural to geographic, thus require more volunteers to exert some cautions and steps. In this part of the memoire, we will examine case of Turkey in the light of theories and ideas in literature that we have already mentioned in the first part of the memoire. We will start by giving some ideas about the situation of national education, education level of the Turkish society and the public budget devoted to supply of education by the state. Then we will take a look at income distribution of the country from different aspects and then we will examine the relations between individual education level and individual income value. We will also examine public effects (for example, student per teacher ratios) on income inequalities. Here it will be make income distribution for each education level in Turkey trying to find how within and between group inequalities have effects on overall income inequalities of the country.

**2.1    Some Numbers from National Education System in Turkey**

According to the Basic Law on National education no 1739, the Turkish national education system consists of two main parts, namely "formal education" and "non formal education". Formal education consists of 4 levels:

- Pre-school education covers the voluntary education of 3-5 age group children who have not reached the age of compulsory primary education.

- Primary education covers the education of children in the 6-14 age group. 8-year primary education is compulsory (since 1997) for all citizens, boys and girls, and is provided free of charge in state schools.

- Secondary education follows primary education and covers general, vocational and technical high schools providing at least 3 years of education.

- Higher education covers all institutions, based on secondary education lasting at least 2 years, and raising high level manpower and academicians for scientific research in various fields. Higher education institutions are universities, faculties, institutes, higher education schools, conservatoires, higher vocational education schools and application and research centres.

Non-formal education covers the educational activities provided in line with, or apart from formal education for those who are currently at a particular stage of their education, who have left their education at any stage, or who have never had the chance to attend school

### 2.1.1   Literacy, Enrollment Rates and Gender Situation

As being seen from the table below, Turkish Education System has, more or less, succeeded in raising the level of schooling of the population since the foundation of Modern Republic of Turkey just after the World War 1.  In spite of inheritance of a great illiterate population and of a life style of the people from Ottoman Empire being far from the modern world, the new strategies of the new republic have gradually created a modern society with a modest level of schooling up to date.

Today, average years of schooling is nearly 5,8 for a whole population. It is for men near 7 years level and is for women about 5 years.

During 80 years (age of the modern Turkish Republic), the country has achieved to educate and make literate a noticeable part of its population, as being seen from the table. However while gender share of males in all illiterate population is declining, that of females is increasing (whereas, female illiteracy ratio is gradually and wholly declining). That contributes also to increase in education inequalities in the country as a whole.

**Table 4: Literacy and Illiteracy Ratios and Genders' Shares**

| Years | Literacy Ratio (%) | Illiteracy ratio (%) | | | Genders' Shares in Total Illiterate Population (%) | |
|---|---|---|---|---|---|---|
| | Of Total Population | Of Total Population | In Women Population | In Men Population | Women | Men |
| **1935** | 19.25 | 80,75 | 90,19 | 70,65 | 57,74 | 42,26 |
| **1940** | 24.55 | 75,45 | 87,08 | 63,80 | 57,78 | 42,22 |
| **1945** | 30.22 | 69,78 | 83,16 | 56,33 | 59,73 | 40,27 |
| **1950** | 32.37 | 67,18 | 80,15 | 54,26 | 59,55 | 40,45 |
| **1955** | 40.87 | 58,83 | 74,14 | 43,94 | 62,13 | 37,87 |
| **1960** | 39.49 | 60,44 | 75,11 | 46,33 | 60,92 | 39,08 |
| **1965** | 48.72 | 51,20 | 67,11 | 35,86 | 64,32 | 35,68 |
| **1970** | 56.21 | 43,79 | 58,20 | 29,69 | 65,72 | 34,28 |
| **1975** | 63.62 | 36,22 | 49,45 | 23,74 | 66,27 | 33,73 |
| **1980** | 67.45 | 32,51 | 45,32 | 20,01 | 68,83 | 31,71 |
| **1985** | 77.29 | 22,51 | 31,77 | 13,45 | 69,77 | 30,23 |
| **1990** | 80.46 | 19,50 | 28,01 | 11,18 | 71,01 | 28,99 |
| **2000** | **86,40** | **13,60** | **21,70** | **5,40** | **79,80** | **20,20** |

**Source:** www.die.gov.tr

Gender ratio (number of females to males in school) in primary school rose from 93,3% in 1990 to 96% in 2003 and in secondary level from 65% to 75%. New and having priority strategies of Turkey are to make especially females literate and send poor families their girls to schools. That is why in future all these disparities between two genders are hoped to be eradicated.

**Table 5: Enrolment Rates (%)**

|  | Primary School | Junior Secondary | Secondary (High) School | Tertiary Level |
|---|---|---|---|---|
| **1950-51** | 69,5 | 4,8 | 5,2 | 1,3 |
| **1960-61** | 81,1 | 15,8 | 13,2 | 3,1 |
| **1970-71** | 99,7 | 30,7 | 20,1 | 5,7 |
| **1980-81** | 97,7 | 40,6 | 28,4 | 6,4 |
| **1986-87** | 101,6 | 52,5 | 33,3 | 11,3 |
| **1990-91** | 101,9 | 60,3 | 38,5 | 15,7 |
| **1991-92** | 102,0 | 60,1 | 41,7 | 16,4 |
| **1992-93** | 99,7 | 63,4 | 44,9 | 18,1 |
| **1993-94** | 97,3 | 65,1 | 47,7 | 22,2 |
| **1994-95** | 104,4 | 65,6 | 53,0 | 22,1 |
| **1995-96** | 103,5 | 65,2 | 55,0 | 22,4 |
| **1996-97** | 100,0 | 64,3 | 54,7 | 23,2 |
| **1997-98\*** | 87,6 | | 53,3 | 25,7 |
| **1998-99** | 92,6 | | 57,6 | 27,4 |
| **1999-00** | 97,6 | | 59,4 | 27,8 |
| **2000-01** | 100,7 | | 64,0 | 28,0 |

●: Eight years primary/compulsory education system has started

**Source:** MEB  Yillik Istatistikleri, MEB

## Enrollment Ratios
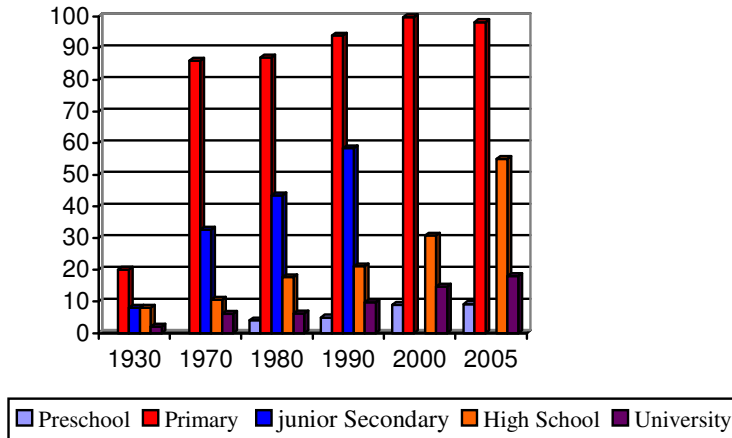


Source: Author's calculation from MEB Annual Reports

According to a study of TUSIAD in 2005, average years of education of working population in Turkey has severely risen from 3,69 in 1985 up to 5,3 in 2000 implying a 2,43% annual rate. Even if the level in 2000 (5,3 years) is accepted as quite insufficient for an OECD member, this annual growth rate of average years of schooling is much higher than that in most of them. This means existence of a convergence between Turkey and OECD as average years of schooling.

**Table 6: Student per Teacher Ratios in Turkey (1960-2000)**

| School Year | Student per Teacher in Primary Schools | Student per Teacher in High Schools |
|---|---|---|
| 1960-61 | 46 | 18 |
| 1966-67 | 43 | 20 |
| 1970-71 | 37 | 22 |
| 1975-76 | 32 | 14 |
| 1980-81 | 26 | 13 |
| 1985-86 | 31 | 12 |
| 1990-91 | 30 | 12 |
| 1991-92 | 29 | 13 |
| 1992-93 | 28 | 14 |
| 1993-94 | 27 | 15 |
| 1994-95 | 28 | 17 |
| 1995-96 | 28 | 17 |
| 1996-97 | 29 | 16 |
| 1997-1998 | 30 | 13 |
| 1998-1999 | 30 | 13 |
| 1999-2000 | 31 | 12 |

**Source:** www.die.gov.tr and some calculations from annual reports of MEB

As being seen from the table above, ratio of student to teacher has a declining series since 1960s years that the country started its planned economy that would continue until the end of 1970s. Applied strategies of1960s have well resulted in decreasing this ratio. However, these strategies were not followed by new economy managers of the country after having started to new and quite liberal economy politics in 1980. Hence during 1980s rising again over 30, the governments of 1990s years have more or less stabilized it around 28-30.

**Table 7: Education's general view, among Regions in Turkey**

| Regions | Average years of schooling | Literacy Rate (%) in 2000 | Literacy in women population (%) | University Graduate/ Total (%) | Enrolment Rate in Primary Level (%) | Enrolment Rate in Secondary Level (%) |
|---|---|---|---|---|---|---|
| Marmara | 5,8 | 92,40 | 88,14 | 9,95 | 115,65 | 41,05 |
| Ic Anadolu | 5,3 | 90,32 | 84,96 | 10,31 | 92,95 | 41,58 |
| Ege | 5,2 | 89,78 | 84,20 | 8,42 | 100,07 | 39,67 |
| Akdeniz | 5,6 | 88,16 | 81,96 | 8,28 | 97,69 | 42,18 |
| Karadeniz | 4,8 | 85,82 | 78,49 | 5,92 | 87,39 | 31,70 |
| Dogu Anadolu | 4,1 | 77,71 | 65,90 | 6,13 | 86,41 | 26,33 |
| Guneydogu A. | 3,5 | 73,22 | 60,16 | 6,16 | 94,12 | 27,32 |
| **Turkey** | 5,8 | 87,30 | 80,62 | 8,01 | 98,01 | 36,92 |

Source: TUSIAD-KOC Universitesi, 2005

According to ratios of University Graduates on Total Population or different illiteracy rates (en particular for female population), regions with the lowest levels of schooling are also these having the lowest levels of income per capita in Turkey as Karadeniz, Dogu Anadolu and Guneydogu Anadolu Regions.

According to the table below, in Turkey, there is a remarkable discrepancy among regions about student number per teacher which can be accepted as educational opportunity. Generally, less developed regions (which are especially in the east part) have higher ratios while ones in the middle and aegean sides have low ratios. On the other hand, cities attracting huge migration are with higher ratios even if they have higher per capita income levels. That is why, while making analysis with student/teacher ratios for different provinces, it has to be careful about that.

Another important difficulty with using the ratio of student/teacher is that in some regions (particularly in the east) even if number of teachers is low (meaning insufficient teacher numbers for young population), as families do not tend to send their children to schools, the number of students is also low.

**Table 8: Student per teacher Ratio in provinces (according to new classifying system)**

| Code | Regions or Provinces | Student/ Teacher Ratio | | |
|------|----------------------|------|------|------|
| | | 1986 | 1991 | 1996 |
| | **TURKEY** | **27,36** | **27,1** | **26,3** |
| TR10 | İstanbul | 34,89 | 34,9 | 36,9 |
| TR21 | Tekirdağ, Edirne, Kırklareli | 17,76 | 18,9 | 20,7 |
| TR22 | Balıkesir, Çanakkale | 18,47 | 18,6 | 18,7 |
| TR31 | İzmir | 22,54 | 23 | 23,3 |
| TR32 | Aydın, Denizli, Muğla | 19,20 | 19,5 | 18,7 |
| TR33 | Manisa, Afyon, Kütahya, Uşak | 23,49 | 22,9 | 22,5 |
| TR41 | Bursa, Eskişehir, Bilecik | 21,78 | 25,1 | 24,8 |
| TR42 | Kocaeli, Sakarya, Düzce, Bolu, Yalova | 26,12 | 26,4 | 25,1 |
| TR51 | Ankara | 27,56 | 24,7 | 22,3 |
| TR52 | Konya, Karaman | 26,95 | 28,3 | 26,8 |
| TR61 | Antalya, Isparta, Burdur | 18,84 | 19,1 | 18,6 |
| TR62 | Adana, Mersin | 28,63 | 29,8 | 29,0 |
| TR63 | Hatay, Kahramanmaraş, Osmaniye | 32,31 | 32,6 | 29,8 |
| TR71 | Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir | 26,33 | 28,1 | 25,4 |
| TR72 | Kayseri, Sivas, Yozgat | 30,52 | 28,2 | 26,3 |
| TR81 | Zonguldak, Karabük, Bartın | 30,83 | 32,7 | 22,4 |
| TR82 | Kastamonu, Çankırı, Sinop | 20,66 | 19,2 | 17,1 |
| TR83 | Samsun, Tokat, Çorum, Amasya | 27,43 | 24,6 | 23,5 |
| TR90 | Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane | 24,10 | 24,6 | 23,8 |
| TRA1 | Erzurum, Erzincan, Bayburt | 30,16 | 27,6 | 24,1 |
| TRA2 | Ağrı, Kars, Iğdır, Ardahan | 38,48 | 35,3 | 33,2 |
| TRB1 | Malatya, Elazığ, Bingöl, Tunceli | 28,91 | 24,9 | 23,1 |
| TRB2 | Van, Muş, Bitlis, Hakkari | 44,16 | 32,9 | 35,5 |
| TRC1 | Gaziantep, Adıyaman, Kilis | 37,75 | 37,2 | 35,7 |
| TRC2 | Şanlıurfa, Diyarbakır | 44,41 | 38,7 | 39,1 |
| TRC3 | Mardin, Batman, Şırnak, Siirt | 45,20 | 34,3 | 38,6 |

**Source:** Author's Calculations

2.1.2 **Public Education Budget**

Taking into account the shares of MEB and University **in consolidated budget**, rising from 13% in 1983 (in which country's new liberal economy politics started to be executed) up to 20% in 1992, that ratio has started to decline systematically just after the known heavy 1994 crises to date. New economy politics of Turkey to be able to sustain its public debts by high interest payments are thought as the main reason to this. During all 1990s (until now), public interest payments in consolidated budget performed an increasing rate by executing payments of public education and health.

**Table 9: Public Education Budget in Turkey**

| | 1 | 2 | 2a | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Years | Consolidated Public Budget (Billiard TL) | GNP (Billiard TL) | (2) ΔGNP % | MEB Budget (Billiard TL) | YOK and University Budget (Billiard TL) | (3+4) Total Public Education Expenses Billiard TL) | (1/2) % | (3/1) % | (3/2) % | (4/1) % | (4/2) % | (5/1) % | (5/2) % |
| 1983 | 2.612. | 13.933 | 4,2 | 259. | 82. | 341. | **18,75** | 9,92 | 1,86 | 3,14 | 0,59 | **13,06** | **2,45** |
| 1984 | 3.784. | 22.168 | 7,1 | 365. | 112. | 477. | **17,07** | 9,65 | 1,65 | 2,96 | 0,51 | **12,61** | **2,15** |
| 1985 | 5.313. | 35.350 | 4,3 | 506. | 167. | 674. | **15,03** | 9,52 | 1,43 | 3,14 | 0,47 | **12,69** | **1,91** |
| 1986 | 8.165. | 51.185 | 6,8 | 718. | 243. | 961. | **15,95** | 8,79 | 1,40 | 2,98 | 0,47 | **11,77** | **1,88** |
| 1987 | 12.698. | 75.019 | 9,8 | 1.189. | 384. | 1.573. | **16,93** | 9,36 | 1,58 | 3,02 | 0,51 | **12,39** | **2,10** |
| 1988 | 21.006. | 129.175 | 1,5 | 2.043. | 603. | 2.646. | **16,26** | 9,73 | 1,58 | 2,87 | 0,47 | **12,60** | **2,05** |
| 1989 | 38.052. | 230.370 | 1,6 | 4.711. | 1.308. | 6.020. | **16,52** | 12,38 | 2,04 | 3,44 | 0,57 | **15,82** | **2,61** |
| 1990 | 67.193. | 397.178 | 9,4 | 9.988. | 2.855. | 12.843. | **16,92** | 14,86 | 2,51 | 4,25 | 0,72 | **19,11** | **3,23** |
| 1991 | 130.263. | 634.393 | 0,3 | 17.533. | 5.340. | 22.873. | **20,53** | 13,46 | 2,76 | 4,10 | 0,84 | **17,56** | **3,61** |
| 1992 | 221.658. | 1.103.605 | 6,4 | 34.524. | 9.876. | 44.400. | **20,08** | 15,58 | 3,13 | 4,46 | 0,89 | **20,03** | **4,02** |
| 1993 | 485.249. | 1.997.323 | 8,1 | 62.725. | 18.438. | 81.163. | **24,29** | 12,93 | 3,14 | 3,80 | 0,92 | **16,73** | **4,06** |
| 1994 | 897.296. | 3.887.903 | **-6,1** | 89.695. | 31.001. | 120.696. | **23,08** | 10,00 | 2,31 | 3,45 | 0,80 | **13,45** | **3,10** |
| 1995 | 1.710.646. | 7.854.887 | 8,0 | 152.612. | 58.189. | 210.801. | **21,78** | 8,92 | 1,94 | 3,40 | 0,74 | **12,32** | **2,68** |
| 1996 | 3.940.162. | 14.978.067 | 7,1 | 308.669. | 127.065. | 435.734. | **26,31** | 7,83 | 2,06 | 3,22 | 0,85 | **11,06** | **2,91** |
| 1997 | 8.050.252 | 29.393.262 | 8,3 | 680.610. | 280.295. | 960.905. | **27,39** | 8,45 | 2,32 | 3,48 | 0,95 | **11,94** | **3,27** |
| 1998 | 15.614.441 | 53.518.332 | 3,9 | 1.435.675 | 497.801 | 1.933.476 | **29,18** | 9,19 | 2,68 | 3,19 | 0,93 | **12,38** | **3,61** |
| 1999 | 28.084.685 | 78.282.967 | **-6,1** | 2.481.260 | 830.848 | 3.312.108 | **35,88** | 8,83 | 3,17 | 2,96 | 1,06 | **11,79** | **4,23** |
| 2000 | 46.705.028 | 125.596.129 | 6,3 | 3.460.792 | 1.256.307 | 4.717.099 | **37,19** | 7,41 | 2,76 | 2,69 | 1,00 | **10,10** | **3,76** |
| 2001 | 80.579.065 | 176.483.963 | **-9,5** | 5.145.076 | 1.875.366 | 7.020.442 | **45,66** | 6,39 | 2,92 | 2,33 | 1,06 | **8,71** | **3,98** |
| 2002 | 115.485.633 | 273.463.168 | 7,8 | 8.043.014 | 3.108.077 | 11.151.091 | **42,23** | 6,96 | 2,94 | 2,69 | 1,14 | **9,66** | **4,08** |

Source: Ergen, H.,2004

On the other hand, their shares **in total GNP** showed two different periods respectively: During 1980s its proportion in GNP is stable about 2,5% and then increasing during the beginning of the years 1990s, alongside increasing weight of public consolidated budget (accepted particularly as populist governments) in GNP, public education expenditures' share increased until the 1994 crises. After the crises, in spite of rising weight of consolidated budget in GNP, education's weight has fallen (like public health expenditures).

Public education expenditures, **as a *share in consolidated Budget***, increased *modestly* **even** by the start of new eight year compulsory education system of Turkey in 1998 which was announced as priority of the State. However, just after this increase in 1998, since 1999, the share fell seriously up to now.

**Table 10: Shares of Public Education Expenditures in GNP and in   Public Budget for**

|  | In GNP (%) | In Public Budget (%) |
|---|---|---|
| 1950-1960 | 1,95 | 11,45 |
| 1961-1980 | 2,94 | 15,14 |
| 1981-1990 | 2,38 | 13,26 |
| 1991-1994 | 3,69 | 16,71 |
| 1995-2001 | 3,48 | 11,16 |

Source: Ergen, 2004

Another remarkable point to emphasize is that over all National Education Budget, share of personnel expenditures (especially wages of teachers) is almost stable about 80%. Almost only sizeable change is Education Investment Expenditures. All these reveal that, for the ministry, the only way to develop education system's situation comes from new investment but not from increase of wealth of teachers. However, as we do not have good data for investments, we could use student per teacher ratio as distribution of public education expenditures.

In a research of Kasnakoglu (1988) for the period of 1977-87, from the fact that decreases in ratio of Consolidated Budget to GNP are reflected directly as decreases in the share of Education Budget to Consolidated Budget. However, increases in the same ratio are not reflected as well. That is why, the author says that all these do not support the belief that education has a priority in Public Budget. From the table

above, this tendency continued also during 1990s, except 1987 and 1992 years. Even in the years of 1991, 1993 and 1996 in which the share of Consolidated Budget in GNP increased significantly, the ratio of Education Budget / GNP did fall. The fact that Turkey is the country allocating the least from its GNP proves this result, too.

**Table 11: Personnel Expenditures as Percentage of Education and Health Expenditures**

| Periods | In Education Expenditures (%) | In Health Expenditures (%) |
|---------|------------------------------|----------------------------|
| 1991-1994 | 80 | 81 |
| 1995-2001 | 75 | 77 |

**Source:**   http://www.bumko.gov.tr.

2.1.3 **Comparison with OECD countries**

As seen below, ratio of Public Education Expenditures to GNP in OECD countries is about 5,3% while in Turkey, it is lower with its value about 2,3 in 1995 and 3,7 in 2000. In another word, all values for Turkey are well below the OECD level, although the young population has a bigger part in whole population of Turkey. The share of National education Ministry's Budget has never reached 5% of GNP. Moreover, sharing of public education budget between different education levels are more equalizer in OECD than in Turkey.

**Table 12: In some OECD countries, shares of education expenditures in GNP**

| OECD | Public and Private Total | | Public | | Primary and Secondary Levels | | Tertiary Level | |
|---|---|---|---|---|---|---|---|---|
| Country | 2000 | 1995 | 2000 | 1995 | 2000 | 1995 | 2000 | 1995 |
| Austuria | 5,7 | 6,3 | 5,4 | 5,9 | 3,9 | 4,2 | 1,2 | 1,3 |
| Canada | 6,4 | 7,0 | 5,2 | 6,2 | 3,6 | 4,3 | 2,6 | 2,3 |
| Czech Republic | 4,6 | 5,4 | 4,2 | 4,9 | 3,1 | 3,8 | 0,9 | 1,0 |
| Finland | 5,6 | 6,3 | 5,5 | 6,3 | 3,5 | 4,0 | 1,7 | 1,9 |
| France | 6,1 | 6,3 | 5,7 | 5,9 | 4,3 | 4,4 | 1,1 | 1,1 |
| Germany | 5,3 | 5,5 | 4,3 | 4,5 | 3,6 | 3,7 | 1,0 | 1,1 |
| Greece | 4,0 | 3,0 | 3,7 | 2,9 | 3,0 | 2,3 | 0,9 | 0,7 |
| Hungary | 5,0 | 5,5 | 4,4 | 4,9 | 3,0 | 3,6 | 1,1 | 1,0 |
| İsland | 6,3 | 5,1 | 5,7 | 4,5 | 4,9 | 3,7 | 0,9 | 0,5 |
| İreland | 4,6 | 5,3 | 4,1 | 4,7 | 3,0 | 3,9 | 1,5 | 1,3 |
| Japan | 4,6 | 4,7 | 3,5 | 3,5 | 2,9 | 3,0 | 1,1 | 1,0 |
| Mexica | 5,5 | 5,6 | 4,7 | 4,6 | 3,8 | 4,0 | 1,1 | 1,1 |
| Norway | 5,9 | 7,1 | 5,8 | 7,0 | 3,7 | 4,2 | 1,3 | 1,7 |
| Poland | 5,2 | 5,5 | 5,2 | 5,5 | 3,7 | 3,6 | 0,8 | 0,9 |
| Portugal | 5,7 | 5,3 | 5,6 | 5,3 | 4,1 | 3,8 | 1,1 | 0,9 |
| Spain | 4,9 | 5,5 | 4,3 | 4,6 | 3,3 | 3,9 | 1,2 | 1,0 |
| Sweden | 6,5 | 6,4 | 6,3 | 6,3 | 4,4 | 4,1 | 1,7 | 1,6 |
| **Turkey** | **4,4** | **2,3** | **3,7** | **2,3** | **2,4** | **1,7** | **1,0** | **0,7** |
| England | 5,3 | 5,5 | 4,5 | 4,6 | 3,8 | 3,9 | 1,0 | 1,2 |
| **OECD Average** | **5,9** | **~** | **5,3** | **~** | **3,6** | **~** | **1,7** | **~** |

**Source**: www.dpt.gov.tr

## 2.2 Income Distribution in Turkey

In this part, it will be examined income distribution in Turkey from several aspects like functional and individual distribution and its comparison with some other countries.

### 2.2.1 General Situation of Income Distribution

The income distribution of Turkey is one of the most skewed one in the world with its value over 40% as GINI as the most commonly accepted measure. In the country, measurements of Gini values were done many times since the year of 1963 which was realized by SPO (State Planning Organization). By the time, the function of measurement of income distribution was carried out at first by SPO and lately by SIS (State Institute of Statistics) like the last one (2003). From table, as it is seen, the first three Gini values are over 50 percent revealing that the country has an income distribution much more skewed compared to the other countries of OECD to which Turkey has joined so as to have a wealthier and comparable economy with other developed ones.

**Table 13 : Income Distribution in Turkey**

| Groups | 1963 SPO 1 | 1968 SPO 2 | 1973 SPO 3 | 1986 TIBA 4 | 1987 SIS 5 | 1994 SIS 6 | 2002 SIS 7 | 2003 SIS 8 |
|---|---|---|---|---|---|---|---|---|
| Least % 20 | 4,5 | 3,0 | 3,5 | 3,9 | 5,2 | 4,9 | 5,1 | 5,3 |
| 2. % 20 | 8,5 | 7,0 | 8,0 | 8,4 | 9,6 | 8,6 | 9,9 | 9,3 |
| 3. % 20 | 11,5 | 10,0 | 12,5 | 12,6 | 14,0 | 12,6 | 14,0 | 14,3 |
| 4. % 20 | 18,5 | 20,0 | 19,5 | 19,2 | 21,2 | 19,0 | 20,6 | 20,7 |
| Most % 20 | 57,0 | 60,0 | 56,0 | 55,9 | 50,0 | 54,0 | 50,8 | 49,8 |
| Gini Values | 0,55 | 0,56 | 0,51 | 0,46 | 0,43 | 0,49 | 0,46 | 0,44 |

**Source:** Yumuşak İ.,G, 2000.

Gini coefficient is the numeric value of proportion of the area staying between Lorenz curve and 45° line to the whole area in the graph of income distribution such that the more this value approaches to 1, the more the income distribution in society is skewed in favour of the riches.

On the whole, in developing countries, distribution of income is worse in urban area in comparison with rural one. That is also true for Turkey with its Gini values for urban and rural area respectively 0,43 and 0,41 in 2003. The main reason to this underlies the differences in structures of production between two areas such that while rural one has agriculture intensive economy, urban one has an industry and/or services intensive. In rural economy, add values produced by farmers do not vary much between them relative to urban economy which produces add values from industry or services. That is why income differentials, particularly average incomes, do not have high values in very rural economy. Besides, in cities, sources of income differ not only in values but also in sorts. Whereas, in spite of having more egalitarian economy, for whole country welfare, the biggest part of the poverty appears in rural area. Turkey is the country with one of the least well equally distributed income (see table below).

**Table 14: Some Countries' Income Distributions**

| Country | Income Gini | Country | Income Gini |
|---|---|---|---|
| Denmark | 0,247 | Australia | 0,352 |
| Japan | 0,249 | Greece | 0,354 |
| Norway | 0,258 | Italy | 0,355 |
| Germany | 0,283 | Israel | 0,355 |
| Bulgaria | 0,319 | England | 0,360 |
| India | 0,325 | **Turkey** | **0,44** |
| France | 0,327 | USA | 0,408 |
| Canada | 0,331 | China | 0,447 |
| Mexico | 0,546 | | |

**Source:** www.dpt.org.tr

The fact that poverty ratio is more for people living in rural part shows that rural area is lack of some facilities that other part of the country owns, from table below. For all categories displaying degree of poverty, that is rural part of the country that has the most severe poverty. According to 2nd row of the table, 28,12% of whole country population lives under poverty line which indicates conditions lacking in needs of nutriment and other important needs. Furthermore, this ratio has a value of 22,30% for urban part, while the rural part has of 37,13% in 2003.

According to the researches done by DIE, in Turkey, these are people living in rural area, having big families and/or having a little level of education who have the risk of being under level of poverty.

**Table 15: Individual poverty rates in Turkey**

| Method | Ratio (%) | | | | | |
|---|---|---|---|---|---|---|
| | Turkey | | Urban | | Rural | |
| | 2002 | 2003 | 2002 | 2003 | 2002 | 2003 |
| Food poverty (minimum alimentation) | 1,35 | 1,29 | 0,92 | 0,74 | 2,01 | 2,15 |
| Poverty (food + non-food) | 26,96 | 28,12 | 21,95 | 22,30 | 34,48 | 37,13 |
| Less than 1$ per person daily | 0,20 | 0,01 | 0,03 | 0,01 | 0,46 | 0,01 |
| Less than 2,15 $ per person daily | 3,04 | 2,39 | 2,37 | 1,54 | 4,06 | 3,71 |
| Less than 4,3 $ per person daily | 30,30 | 23,75 | 24,62 | 18,31 | 38,82 | 32,18 |
| Relative Poverty | 14,74 | 15,51 | 11,33 | 11,26 | 19,86 | 22,08 |

Source: DİE, 2003a

The reason that education level is a determinant of having some category of welfare level in society needs special research on this subject.

### 2.2.2   **Functional Distribution of Income**

Functional income distribution means the sharing of national product among factors of production (labour, rent, profit, natural resources) by whole society. In a country, in his early economic development stage, the biggest part of the national production is supplied from agricultural sector. By industrialisation, the share of labour force in national income expands and nowadays, this share is about 60-70 percent in developed countries. However, in less developed countries this is still 30 percent in total national income. Owing to the fact that a little share of agriculture in whole economy and a high labour force participation rates help us to explain the situation.

During the time, in Turkey, the share of labour income in national economy displayed a fluctuation as in 1968 around 26,3 percent, in 1973 30,4 percent and with a structural transformation of Turkish economy about 1980s, that declines until 20 percent. By liberalisation of the economy since 1980s, it reached 30s%  but as a consequence of 1994 economic crises, having fallen again to 25s%, and  then  it caught again the value of 38,7 percent in total gross domestic product in 2003.

On Turkish economy, a very outstanding features is the decrease of the part of agricultural income over total national income; whereas the proportion of industry did not show an important change. That is the share of rent and of interest which lived an important expansion especially with the beginning of debt problems of the country's public sector which in turn caused the politics of high interest rates. Decreasing of the share of agriculture in Gross Domestic Product has two main influences like: firstly, this rises labour forces to other sectors (industry and services) by increasing immigration within country; secondly, that makes human capital more necessary in other sectors and thus makes returns to human capital higher in country.

**Table 16 : Functional Income Distribution in Turkey**

| Income Sorts | Total | | | | Urban | | Rural | |
|---|---|---|---|---|---|---|---|---|
| | 2002 | | 2003 | | 2003 | | 2003 | |
| | *%* | *%* | *%* | *%* | *%* | *%* | *%* | *%* |
| **Total** | 100 | 100 | 100 | 100 | 100 | **70,6** | 100 | **29,4** |
| **Wage income** | 35,8 | 100 | 38,7 | 100 | 45,3 | 82,7 | 22,7 | 17,3 |
| **Daily Wage** | 2,9 | 100 | 3,1 | 100 | 2,6 | 59,4 | 4,3 | 40,6 |
| **Entrepreneur income** | 34,5 | 100 | 32,0 | 100 | 24,2 | 53,2 | 50,9 | 46,8 |
| Agriculture | 38,2 | 100 | 30,7 | 100 | 5,7 | 9,9 | 59,3 | 90,1 |
| Industry | 9,7 | 100 | 12,4 | 100 | 19,0 | 81,5 | 4,9 | 18,5 |
| Construction | 3,8 | 100 | 4,1 | 100 | 5,9 | 76,9 | 2,0 | 23,1 |
| Commerce | 28,3 | 100 | 32,7 | 100 | 41,2 | 67,1 | 23,0 | 32,9 |
| Services | 20,0 | 100 | 20,1 | 100 | 28,2 | 74,8 | 10,9 | 25,2 |
| **Property Income** | 9,3 | 100 | 6,2 | 100 | 7,3 | 82,9 | 3,6 | 17,1 |
| Real Estate | 44,4 | 100 | 57,7 | 100 | 60,8 | 87,4 | 42,5 | 12,6 |
| Stocks- Bonds | 55,6 | 100 | 42,3 | 100 | 39,2 | 76,8 | 57,5 | 23,2 |
| **Transfers** | 17,5 | 100 | 20,0 | 100 | 20,6 | 72,0 | 18,5 | 27,2 |
| Public | 81,3 | 100 | 87,3 | 100 | 87,3 | 72,7 | 87,3 | 27,3 |
| From Abroad | 5,1 | 100 | 3,0 | 100 | 2,6 | 63,2 | 4,1 | 36,8 |
| Other | 13,6 | 100 | 9,7 | 100 | 10,1 | 75,8 | 8,6 | 24,2 |

Source: DIE, 2003b.

### 2.2.3 **West and East Parts of the Country**

After all, the most striking essential point of the income distribution of Turkey is the huge income discrepancy between west and east parts of the country for which reason is seen a noticeable migration from the poor part (east) to the richer one (west). For example, in 1975, while the wealthiest five cities -as income per capita- (Kocaeli, Istanbul, Izmir, Zonguldak, Mersin) had an annual average of 82% over Turkey average income, the poorest five cities (Agri, Bingol, Adiyaman, Hakkari, Gumushane) had 61% below. In 2000, these are respectively 62% over and 72% below Turkey's average income (Mus, Agri, Sirnak, Bitlis, Ardahan and Kocaeli, Bolu, Yalova, Istanbul, Kirklareli). In both cases, the wealthiest cities are situated in the west of the country and the poorest ones are in the east. As all the former studies of income distribution in Turkey contained the values of Gini *only for whole country* (there were no Gini values for provinces), we can not compare the evolution of the province economies during a certain period. Even so, we have -at least- per capita income values for provinces of the country. Hence, looking at per capita income values of provinces, it is probable to reveal the evolution of income difference between east and west of the country.

From the table above, it can be said that high economic development differences between east and west remain since very long time in Turkey. Because, in the country both in 1975 and in 2000 ,not matter, the most well-off provinces (as income per capita) are located in west and the least well-off are in east.

**Table 17: The wealthiest 5 regions (regions are according to new classifying) in some years**

| Regions | Per capita income in 1975 | Regions | Per capita income in 1987 | Regions | Per capita income in 2000 |
|---|---|---|---|---|---|
| İstanbul | 1170 | İstanbul | 2855 | Kocaeli, Sakarya, Düzce, Bolu, Yalova | 5122 |
| Kocaeli, Sakarya, Düzce, Bolu, Yalova | 897 | Kocaeli, Sakarya, Düzce, Bolu, Yalova | 2828 | İstanbul | 4269 |
| İzmir | 821 | İzmir | 2742 | İzmir | 4198 |
| Zonguldak, Karabük, Bartın | 727 | Bursa, Eskişehir, Bilecik | 2209 | Ankara | 4054 |
| Bursa, Eskişehir, Bilecik | 681 | Ankara | 2167 | Tekirdağ, Edirne, Kırklareli | 3648 |

**Table 18: The poorest 5 regions (regions are according to new classifying) in some years**

| Regions | Per capita income in 1975 | Regions | Per capita income in 1987 | Regions | Per capita income in 2000 |
|---|---|---|---|---|---|
| Mardin, Batman, Şırnak, Siirt | 328 | Kastamonu, Çankırı, Sinop | 918 | Şanlıurfa, Diyarbakır | 1447 |
| Malatya, Elazığ, Bingöl, Tunceli | 324 | Mardin, Batman, Şırnak, Siirt | 790 | Erzurum, Erzincan, Bayburt | 1446 |
| Erzurum, Erzincan, Bayburt | 324 | Erzurum, Erzincan, Bayburt | 740 | Mardin, Batman, Şırnak, Siirt | 1191 |
| Van, Muş, Bitlis, Hakkari | 253 | Van, Muş, Bitlis, Hakkari | 458 | Ağrı, Kars, Iğdır, Ardahan | 984 |
| Ağrı, Kars, Iğdır, Ardahan | 230 | Ağrı, Kars, Iğdır, Ardahan | 401 | Van, Muş, Bitlis, Hakkari | 954 |

**Source :** Author's Calculations from National Accounts

However, according to the study of TUSIAD (2000), the main income differences that are the causes of high Gini values come from not inter regional income discrepancies but from intra regional differences.

**Table 19: Income distribution for Quintiles in Turkey, 2003**

| Class Codes of Regions or Provinces | Total | | 1.%20 | 2.%20 | 3.%20 | 4.%20 | 5.%20 |
|---|---|---|---|---|---|---|---|
| | (Million TL) | % | | | | | |
| Total | 180 304 703 755 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 |
| TR10 | 47 161 094 072 | 26,2 | 25,5 | 24,4 | 24,0 | 24,0 | 28,3 |
| TR21 | 3 946 036 291 | 2,2 | 2,4 | 2,4 | 2,3 | 2,2 | 2,1 |
| TR22 | 4 194 624 889 | 2,3 | 2,5 | 2,6 | 2,5 | 2,5 | 2,1 |
| TR31 | 11 636 129 388 | 6,5 | 6,4 | 6,5 | 6,6 | 6,8 | 6,3 |
| TR32 | 6 942 418 963 | 3,9 | 4,5 | 4,2 | 4,1 | 4,0 | 3,6 |
| TR33 | 6 171 122 390 | 3,4 | 3,3 | 3,6 | 3,6 | 3,7 | 3,2 |
| TR41 | 8 850 543 955 | 4,9 | 4,8 | 4,7 | 4,7 | 4,8 | 5,1 |
| TR42 | 7 307 287 687 | 4,1 | 4,4 | 4,3 | 4,2 | 4,2 | 3,8 |
| TR51 | 14 699 741 970 | 8,2 | 7,2 | 7,6 | 8,2 | 8,5 | 8,2 |
| TR52 | 4 981 137 254 | 2,8 | 2,6 | 2,8 | 2,9 | 3,0 | 2,6 |
| TR61 | 8 374 306 941 | 4,6 | 4,7 | 4,7 | 4,7 | 4,6 | 4,6 |
| TR62 | 8 166 339 721 | 4,5 | 4,3 | 4,6 | 4,6 | 4,6 | 4,5 |
| TR63 | 6 314 871 460 | 3,5 | 3,0 | 3,1 | 3,3 | 3,5 | 3,7 |
| TR71 | 3 600 588 225 | 2,0 | 2,3 | 2,2 | 2,1 | 2,1 | 1,8 |
| TR72 | 4 909 329 883 | 2,7 | 3,1 | 2,9 | 2,7 | 2,5 | 2,8 |
| TR81 | 2 023 665 244 | 1,1 | 1,4 | 1,3 | 1,2 | 1,1 | 1,0 |
| TR82 | 1 719 135 837 | 1,0 | 1,0 | 1,0 | 0,9 | 1,0 | 1,0 |
| TR83 | 5 052 703 016 | 2,8 | 2,5 | 2,8 | 2,9 | 2,9 | 2,8 |
| TR90 | 7 065 020 357 | 3,9 | 4,5 | 4,3 | 4,2 | 4,1 | 3,6 |
| TRA1 | 2 292 377 811 | 1,3 | 1,1 | 1,3 | 1,3 | 1,3 | 1,2 |
| TRA2 | 1 749 916 910 | 1,0 | 1,0 | 1,0 | 1,0 | 1,1 | 0,9 |
| TRB1 | 3 295 605 220 | 1,8 | 2,1 | 2,1 | 2,0 | 2,0 | 1,6 |
| TRB2 | 2 408 178 409 | 1,3 | 1,2 | 1,3 | 1,4 | 1,5 | 1,3 |
| TRC1 | 3 009 221 381 | 1,7 | 2,0 | 2,0 | 1,9 | 1,8 | 1,4 |
| TRC2 | 3 121 808 259 | 1,7 | 1,7 | 1,7 | 1,7 | 1,7 | 1,7 |
| TRC3 | 1 311 498 220 | 0,7 | 0,9 | 0,8 | 0,7 | 0,7 | 0,7 |

Source: DIE, , 2003b

**Table 20 : Gini values in  Regions of  Turkey**

| REGIONS | | Gini Values |
|---|---|---|
| Doğu Karadeniz | (East Karadeniz) | 0,35 |
| Batı Marmara | (West marmara) | 0,36 |
| Güneydoğu Anadolu | (South East Anatolia) | 0,36 |
| Ortadoğu Anadolu | (Middle East Anatolia) | 0,36 |
| Ege | (Aegean Region) | 0,38 |
| Orta Anadolu | (Central Anatolia) | 0,38 |
| Kuzeydoğu Anadolu | (North East Anatolia) | 0,38 |
| Doğu Marmara | (East Marmara) | 0,39 |
| Batı Karadeniz | (West Karadeniz) | 0,39 |
| Akdeniz | (Mediterranean Region ) | 0,41 |
| Batı Anadolu | (West Anatolia) | 0,41 |
| İstanbul | (Istanbul) | 0,43 |

**Source :** DIE,2003b

From the table above showing regions in Turkey, regions having the lowest levels of well-being (that are especially in north east, east and south east parts) own also the lowest levels of Gini while these are the wealthiest parts of the country (Marmara, West Anatolia etc.) that have the highest Gini values. Yet, the fact that some very wealthy regions like Ege and Bati Marmara having modest Gini values break this rule.

**Table 21: Income per capita and Income Inequality,2003**

| Income per capita ($) | Class code | province | 5:1 ratio | Gini Value |
|---|---|---|---|---|
| 1 811 | TRC1 | Gaziantep | 4,95 | 0,31 |
| 3 032 | TR81 | Zonguldak | 5,15 | 0,34 |
| 1 861 | TRB1 | Malatya | 5,36 | 0,33 |
| 3 212 | TR32 | Aydin | 5,56 | 0,35 |
| 1 831 | TR90 | Trabzon | 5,63 | 0,35 |
| 1 191 | TRC3 | Mardin | 5,66 | 0,36 |
| 2 416 | TR71 | Kirikkale | 5,74 | 0,35 |
| 2 983 | TR22 | Balikesir | 5,97 | 0,35 |
| 5 122 | TR42 | Kocaeli | 6,21 | 0,37 |
| 3 648 | TR21 | Tekirdag | 6,26 | 0,37 |
| 1 823 | TR72 | Kayseri | 6,34 | 0,39 |
| 984 | TRA2 | Agri | 6,61 | 0,37 |
| 2 493 | TR33 | Manisa | 6,90 | 0,37 |
| 4 198 | TR31 | Izmir | 6,91 | 0,39 |
| 2 640 | TR61 | Antalya | 6,94 | 0,39 |
| 2 043 | TR82 | Kastamonu | 7,03 | 0,39 |
| 2 242 | TR52 | Konya | 7,21 | 0,38 |
| 1 447 | TRC2 | Sanliurfa | 7,27 | 0,40 |
| 3 384 | TR41 | Bursa | 7,41 | 0,41 |
| 3 213 | TR62 | Adana | 7,45 | 0,40 |
| 954 | TRB2 | Van | 7,74 | 0 ,39 |
| 4 269 | TR10 | Istanbul | 7,84 | 0,43 |
| 1 446 | TRA1 | Erzurum | 7,90 | 0,39 |
| 2 117 | TR83 | Samsun | 7,98 | 0,40 |
| 4 054 | TR51 | Ankara | 8,03 | 0,41 |
| 2 080 | TR63 | Hatay | 8,76 | 0,43 |

Source: Arrranged by author.

As SIS is the only institute carrying out in Turkey and having sufficient opportunities to make it throughout the country, we refer to the surveys of this institution about Turkey. Whereas, as the institute started, unfortunately,to reveal the surveys of income distribution (and other surveys) for "<u>provinces</u>" (which are not at all homogenous economically and which have grand economic, social and cultural discrepancies from each other) in 2002, we do not have sufficient data about income distributions of provinces until 2002. That is why it is used here, as measure of income distribution, these values starting from the date 2002 for the surveys.

**2.3    Education and Income in Turkey**

We will from different sides examine the relations between education levels and incomes in Turkey (education expenditures, education distribution measurement methods etc.).

### 2.3.1  Evolution of Incomes According to Education Levels in Turkey

Here will be analysed evolution of income per education level in Turkey from the data calculated from Income Survey of SIS (2003).

| | 1987 | | | | 1994 | | | |
|---|---|---|---|---|---|---|---|---|
| **Education Level** | **A:** | **B:** | **B/A:** | **C:** | **A:** | **B:** | **B/A:** | **C:** |
| **Illiterate  and No Diploma** | 17,1 | 9,06 | **0,53** | **100** | 16,05 | 5,99 | **0,37** | **100** |
| **Literate but No Diploma** | 7,47 | 6,87 | **0,92** | **173,6** | 6,72 | 4,81 | **0,72** | **193,5** |
| **Primary** | 53,11 | 47,16 | **0,89** | **167,6** | 53,39 | 45,82 | **0,86** | **232,0** |
| **Lower Secondary** | 6,96 | 7,68 | **1,10** | **208,3** | 8,11 | 8,80 | **1,08** | **293,1** |
| **Lower Sec. Vocational** | 0,21 | 0,2 | **0,95** | **179,8** | 0,11 | 0,09 | **0,83** | **224,3** |
| **Upper Secondary** | 7,39 | 10,24 | **1,39** | **261,5** | 8,75 | 14,81 | **1,69** | **457,4** |
| **Upper Sec. Vocational** | 2,53 | 3,52 | **1,39** | **262,6** | 1,98 | 2,66 | **1,34** | **363,1** |
| **Tertiary** | 5,2 | 15,22 | **2,93** | **552,4** | 4,89 | 17,02 | **3,48** | **940,2** |

**Table:** Average income for each education level

**Source :** DIE, Hanehalki Calismasi,1997 ve 1994.

**A    :  *% of Total Population***

**B    :  *% of Total Income***

**B/A :  per person (income earning person)**

**C*:*    Index by No Diploma (Illiterate=100)**

**Note: all values are calculated from income earning population over the age of 15 years old.**

**Table 22 : Average income level for each education level**

| 2003 | | | | |
|---|---|---|---|---|
| **Education Level** | **A: % of Population** | **B: % of Income** | **B/A:  Per income earning person** | **By Index No Diploma (Illiterate=100)** |
| **No Diploma Illiterate** | 8,25 | 2,91 | **0,35** | **100,0** |
| **Literate but No Diploma** | 6,26 | 3,65 | **0,60** | **171,1** |
| **Primary** | 46,65 | 38,37 | **0,82** | **235,0** |
| **Lower Secondary** | 9,51 | 10,32 | **1,09** | **310,0** |
| **Lower Sec. Vocational** | 0,4 | 0,44 | **1,10** | **314,3** |
| **Upper Secondary** | 13,99 | 16,97 | **1,21** | **346,6** |
| **Upper Sec. Vocational** | 3,67 | 4,86 | **1,32** | **378,4** |
| **Tertiary** | 9,05 | 22,56 | **2,49** | **712,2** |

Source: 2003 b.

As seen from tables and graphic that are calculated from the data available on income earning population (age over 15) in Turkey, returns to education (by level) have a noticeable feature. In Turkey, parallel with the findings of Tansel (1994).

First of all, in Turkey, education is an important determinant of personnel income so that its level raises, income increases too. On the other hand, as will be mentioned later, since the second half of 1980s, along with financial and commercial liberalisation of the country's economy, returns to education for each level has changed significantly.

Alongside increasing demand to skilled labour from the end of 1980s, the country has shown significantly increasing level of years of schooling during the last 20 years.

**Table 23: Real changes in incomes per education level between 1987 and 2003 in Turkey**

**Income index by education level (1987=100)**
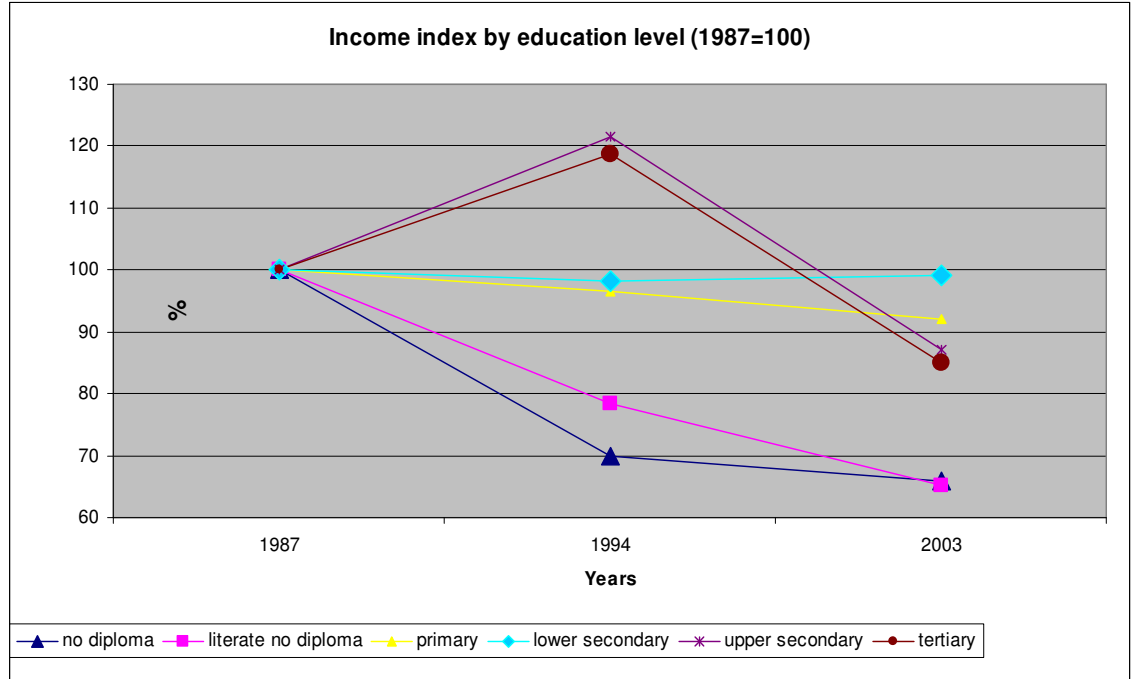


**Source:** Calculated from data of SIS

Turkey, by accepting the "24 January Decisions" on economy on 24 January 1980 that lets economy integrate to world economy with a remarkable liberalisation for that year, started to attract foreign investments (especially financial capital). In 1988 starting to apply convertibility of Turkish Liras and in 1989 by cancelling of some rules preventing financial capital from being exchanged freely, it has evaluated much its economic liberalisation process. Since these steps to the world economy, the country needs skilled labour force that was not easily available at those times. However, then for Turkey, skilled labour meant (in comparison with population's low levels of schooling) both upper secondary and tertiary graduates as the country was far from being a rival in world economy about capital intensive production and most of its population lived in rural part.

Thanks to the liberalisation, especially financial liberalisation, Turkish governments started to get into debt by high interest policy, and that made country to develop its services sectors opposed to agricultural sectors. That is why this new "banking boom" employed most of well qualified labour force. Whereas, as at that time, in turkey, graduates with university diplomas were quite few and telecommunication technology that, today, makes all financial transactions available all over the world

was not so well developed. Hence, in the beginnings of 1990s, Turkey could have found skilled labour, that it needed, from "high school" graduates (not necessarily university graduates) to its growing services sectors.

All these events raised incomes of upper secondary and tertiary diploma owners by also rising income inequalities in the country up to 1994 and maybe that continued for a more time (from available data, we can predict only the period up to 1994). On the other hand, alongside rising terror events in the country, a mass of illiterates immigrating from east to the west by rising supply of unskilled made a severe decreasing in income level of this group. Another reason to this was continually decreasing production of agriculture and, as a result, immigration from villages to cities.

**Table 24: Comparison of incomes for different years and for different education levels**
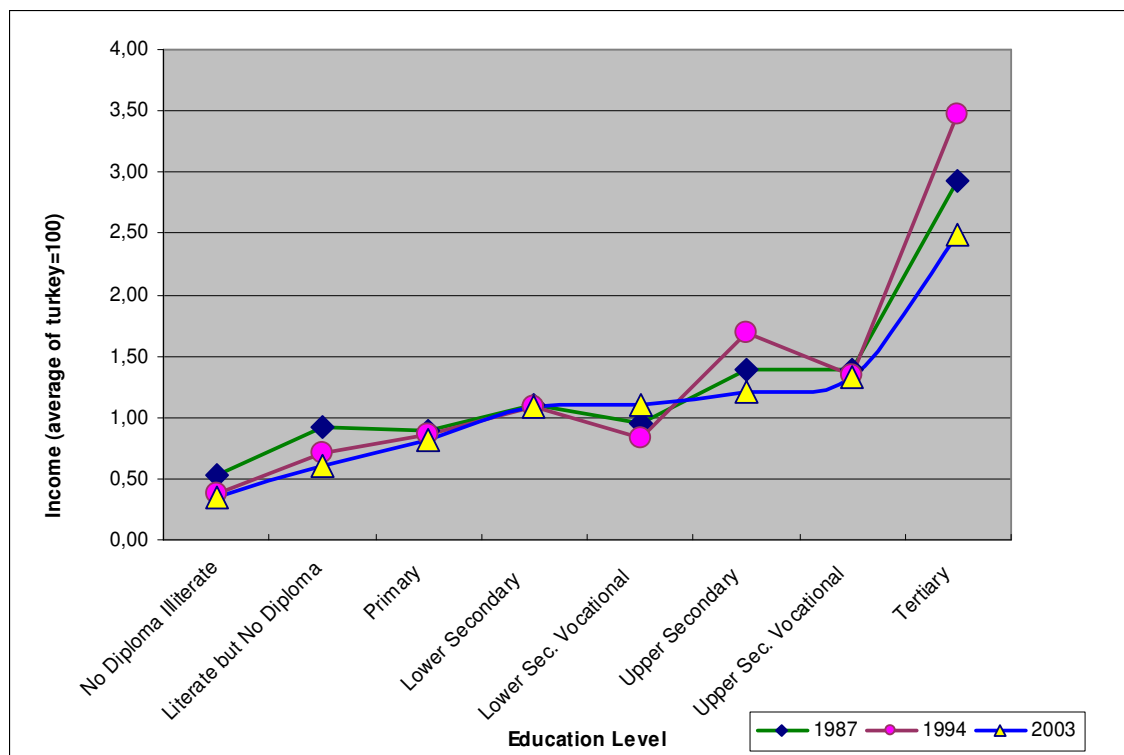


Source: Author's calculations.

If, additionally, we search evolutions of incomes for each level assuming that their values in year of 1987 is 100, we will have more ideas about this evolution. As proof to ideas above on evolution of Turkish economy from 1980s, we see that reel value

of the incomes of population under primary education fell over 30% from 1987 to 1994. In contrast, that of high school and university graduates rose 21% and 19 respectively up to 1994. In the same period, those of middle educated (primary and lower secondary levels) did not make an important changing as reel values.

**Table 25 : Reel Changes in Income for Education Levels**

| Level of Education | 1987 | 1994 | 2003 |
|---|---|---|---|
| No Diploma Illiterate | 100 | 69,8 | 66 |
| Literate without Diploma | 100 | 78,3 | 65,2 |
| Primary | 100 | 96,6 | 92,1 |
| Lower Secondary | 100 | 98,2 | 99,1 |
| Lower Sec. Vocational | 100 | 87,4 | 115,8 |
| Upper Secondary | 100 | 121,6 | 87 |
| Upper Sec. Vocational | 100 | 96,4 | 94,9 |
| Tertiary | 100 | 118,8 | 85 |

**Source :** Calculated from SIS data.

1994 is a well-being year in the eyes of Turkish economy literature as the beginning of permanent crises years of the country. At that time, it is clearly started to understand that high interest policy of the public (to attract "hot money" from abroad as a way of resources to its huge public debt) did collapse. Thanks to the structure of sectors that more or less employed skilled labour, the rising conscious of the importance of education by both public and governments, rising enrolment rates in high schools and in universities and unemployment rates among high school graduates, high school and university graduates' average incomes have severely fallen up to 2003.

Another reason to this was 2001 exchange rate crises of the country which caused ever the worst economy year lived in the history of Turkish Republic. In 2001, unemployment rates started to raise sharply, an important number of university graduates of the country felt their wages fall than they have ever seen. Addition to all these changes in Turkish economy, remarkably rising supply of university graduates has let fall incomes of this group (the same result s seen for those of upper secondary level side).

If we take a look at generally the evolutions of incomes for the period of 1987-1994-2003, we see that nearly almost lower secondary level's average income is (approx 1,09) stable and near to Turkey's average (which is 1,00 here).

However, lower secondary vocational education's average income firstly fell until 1994 but up to 2003 this ratio has quite severely increased. We do not know exact responses to this but we can have suspects about some unpredicted effects of new compulsory education reform which has started in 1997. Because of the fact that the new compulsory education system prevented children (from poor families) to continue to these schools, there may have seen an effect of rising demand side to this human capital group. Whereas, from tables wee see that supply side has also increased for this group.

Moreover, again in Turkey, despite a high decrease in the supply of non-diploma people (illiterate and literate without diploma) from 1994 to 2003, we do not see an increase in their average income. The total population share of these two groups was 24,5% in 1987 and fell to 22,5 up to 1994, and the decreased remarkably until 14,5%. These may imply that either Turkish economy started using more human capital or Turkish economy excludes people with lowest education level (maybe both).

Besides all, maybe the most important aspect is about upper secondary level's and university level's graduates' income evolution. From tables it is clear that, in the country, even if supply of these groups has not increased up to 1994, wee see that the event has reversed until 2003. Total population share of upper secondary and tertiary levels was 15,1% in and 15,5 in 1994 respectively. The same share has sharply risen and reached up to 26% in 2003. Because, the more high school and university graduates were created (up to 2003), the less their average income levels are. That is quite suitable to data for 2003. Up to that year, numbers of upper secondary and tertiary graduates have sharply increased. And hence, their average income has also sharply decreased. As a consequence, income differences between low and high education levels graduates have fallen and thus decreased income inequalities in 2003. When the bottom's (as either education or average income) and the top's

average incomes have diverged from 1987 to 1994, the overall income inequality of the country has sharply increased also. And while the bottom's and the top's average incomes have converged from 1994 to 2003 (income of low education level groups has stayed while that of high education level has sharply decreased as a convergence), overall income distribution has lessened. Gini value, being 0,43 in 1987, raised up to 0,49 in 1994 and then fell again in 2003.

Another reason to the decrease in real income of high school graduates may be from the fact that rising average level of schooling and getting more universities available to the young population have caused more and successful students to continue to their education after a successful high school period. Students going on to universities have left other high school graduates (who are not so successful) out of university.

All these together may imply that if can be made more high school and university graduates, income distribution of the country would decrease also. This result is quite parallel with that of Park, Ross and Sabot (1983) These authors by doing a survey about the evolutions of wages per education level in both South Korea and Brazil found that in South Korea where average education level of population is reasonably high, from 1960s to the ends of 1980s, income differences between high and low education levels decreased and thus overall income inequality of the country has decreased. By contrast, they reveal us that, in Brazil where income inequalities were remarkably high but average education level of the country was low at the beginning of the period, insufficiently rising supply of high school and university graduates could not match the demand to them. Thus in Brazil alongside the wage differences, income inequalities could not be decreased during the period. That is why the authors mention about wage compression effect in South Korea while they can not justify the same effect in Brazil during the same period.

**Table 26 : The Highest Education Level's Incomes in Turkey**

|  |  | A (% of Population) | B (of national income) | B/A |
|---|---|---|---|---|
| **1994** | **Master + Doctorate** | 0,18 | 1,24 | **688,9** |
| **2003** | **Master + Doctorate** | 0,56 | 2,92 | **521,4** |

Source**:** DIE**,** 2003b

From table above, it is clear that Turkey lived a wage compression effect by increasing supply of the highest degree of university graduates.

In short, we may expect that in Turkey, rising access to higher levels of education would decrease marginal incomes of university graduates and maybe so, it could decrease income inequalities. However income distribution does not depend on only relative incomes of the people from different human capital levels. We have to look at the distribution of educational opportunities in society and the income shares of different education levels in national income. Furthermore, we have to look at "within" group income inequalities additionally.

"Within" groups means that by dividing people according to their education level we will look at the situation of income inequalities for "each" education level in itself. Hence there will be found income inequality values for "every" education level of population (like Gini values for every different education level). A survey of Tusiad (2000) showed that in Turkey within group inequalities are much higher than between group inequalities. Raising supply of well educated labour force would decrease "between" group inequalities but "within" group inequalities may not be decreasing at all. And as the overall income inequality of a country is a composition of both "within" and "between" inequalities, we may not foresee the result.

### 2.3.2 **Political Economy Approach for Turkey**

The idea that the higher income deciles benefit disproportionately from public spending on education has to be searched for Turkey. Attainment and success in tertiary education requires the successful completion of primary and secondary school so that children from poor families could continue to tertiary levels. However all these require better public educational spending allocation in favour of the poor such as proportionally more resources should be devoted to primary and secondary levels. On the other hand for Turkey, where secondary level enrolment ratio has just reached 60% and where average years of schooling has not yet reached 6 years, there would have some remarkable difficulties for some to access to even secondary levels. In that case we try to find out relation between income Gini (in 2003) and per student public educational expenditures' dispersion among some education levels.

However as we do not have data on regions' per student public expenditures, instead, we will use teacher numbers per student. As in literature teacher per student is one of the most important determinants of child's success to continue to higher levels of education and in addition as teacher salary payments make up about 80% of public education budget, we can use this ratio.

Here we use per student teacher number in different regions for which we know Income Gini values in 2003. We compare the ratio of teacher number per student in primary level to the ratio of teacher number per student in upper secondary level for each province so that the more unequally income is distributed in a region that is examined, the more higher value this ratio takes. Hence, in regions where income Gini values are less evenly distributed we expect the politically powerful (the *rich*) groups to have influence on distribution of education spending in favour of themselves (that means more on secondary level -the category of education of most direct benefit to the rich and the category which is the most important on to entrance to a university in Turkey-).

**Table 27: Income distribution's effect on allocation of public resources within education pyramid**
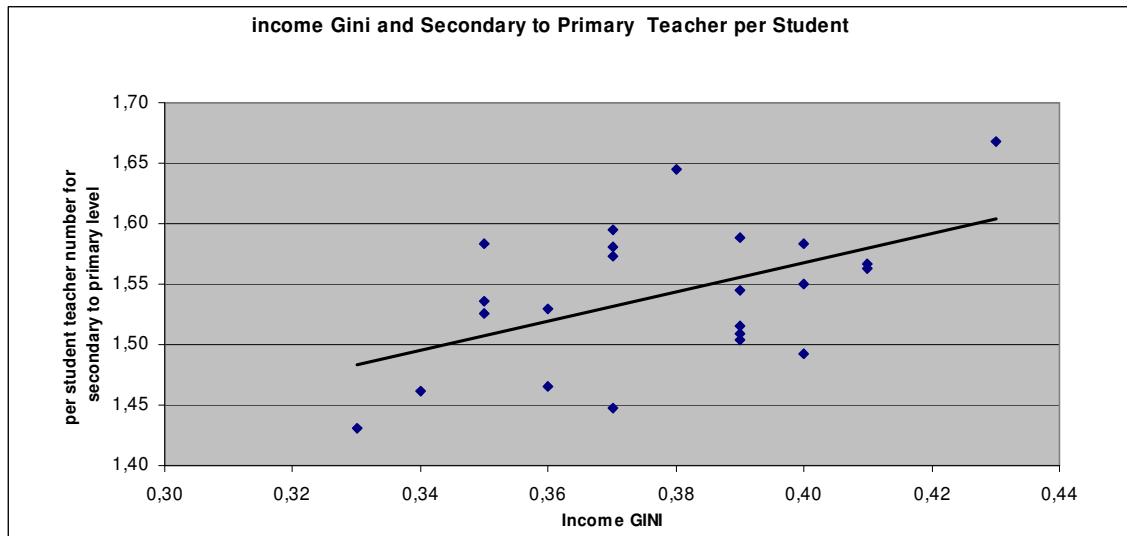


It is obvious from the graphic above that increasing income Gini (income inequalities), in Turkey, tends to increase the ratio of (teacher number per student) secondary to primary levels. This implies that provinces having more unequally distributed incomes also allocate more of its public education expenditures to higher educational levels that are beneficial especially for the rich than to primary level. The results are below:

| | | | |
|---|---|---|---|
| **TPSPRItoSEC =** | **1,140** | **+** | **1,040 x  GINIofincome** |
| **T statistics** | **( 6,07 )** | | **( 2,09 )** |
| R ² = 0,240 | | | F=4,40  ;  P = 0,048 |

where

**TPSPRItoSEC:** Teacher per Student in Primary to in Secondary Levels

**GINIofincome :** Income Gini value of province.

As we have already spoken about, like Addison and Rahman (2001), the fact that to devote more resources to primary education than to secondary and especially to tertiary levels not only lets the poor continue to education but also make the poor children have a better basic education that will, then, let these poor children continue to higher educational levels like the rich do.

From educational expenditures survey of 2002, it is obtained public and private educational expenditures per level like:

**Table 28: Public Education Spending per student in Turkey in 2002**

|  | A | B | A/B |  |
|---|---|---|---|---|
|  | A: Public Spending per student ($) | B : (Public + private) Total spending per person ($) | A/B: % | Indexed A (Primary =100) |
| **Primary level (public)** | **292** | 509 | **57** | 100 |
| **Secondary level (public)** | **585** | 1 242 | **47** | 200 |
| **Secondary level of Vocational Education (public)** | **1 107** | 1 365 | **81** | 379 |
| **Tertiary Level (1)** | **2167** | 3344 | **65** | 742 |
| **Tertiary Level (2)** | **1419** | 2199 | **65** | 486 |

(1): not including Open University students

(2): including open university students

Source : DIE,2003 c

From the table above, while public compensates/subsidies about half of total educational expenditures in Turkey, per student public expenditures are not well equally distributed among levels. If we assume Primary Level public expenditures per student as an index (=100; in 5th column), then we will have other levels' indexed ones. From here, it is obvious that per secondary level student, the government makes 2 times higher expenditures than for primary level student while for secondary level of vocational education it subsidies almost 3,8 times higher. Anyway, per student public education expenditures are much higher in tertiary levels (up to 7,4 times) than all others.

All these show us that between educational levels, like political economy's interest group idea says, *public* education expenditures are not well equally distributed and thus tend to be far from equalising access to educational opportunities for different income quintiles.

### 2.3.3 Survey of Education Expenditures in Turkey, 2002

This survey is the first of all done in this area in Turkey. Because until the year of 2002, the only thing called education expenditure was including solely budgets of Ministry of National Education –MNE- (MEB in Turkish) and of universities and Council of Higher Education -CHE- (YOK in Turkish). The fact making unique the study of Survey of Education Expenditures 2002 is that it contains "all" expenses (by households, institutions, state, ministry etc.) in Turkey in one year of period. SIS (State Institute of Statistics) executes this survey on 29.674 households, 3.864 educational institutions (of the ministry), 75 public and private universities.

**Table 29: 2002 Education Expenditures per level and per Student, 2002**

| *Education Level* | *Expenditures (million TL)* | *Number of Students* | Expenditures per Student (public + private) | |
|---|---|---|---|---|
| | | | <u>In TL</u> | <u>*In $*</u> |
| **Preschool** | 103 879 339 | 320 038 | 324 584 392 | 213 |
| Public | 68 370 599 | 310 279 | 220 352 002 | 145 |
| Private | 35 500 740 | 9 759 | 3 638 563 431 | 2393 |
| **Primary Schools** | 8 100 456 996 | **10 111 890** | 801 082 389 | **527** |
| Public | 7 700 765 755 | 9 946 669 | 774 205 491 | 509 |
| Private | 399 691 241 | 165 221 | 2 419 130 988 | 1591 |
| **High Schools** | 3 070 565 008 | **1 588 800** | 1 932 631 551 | **1271** |
| Public | 2 893 338 163 | 1 532 371 | 1 888 144 687 | 1242 |
| Private | 177 226 846 | 56 429 | 3 140 705 072 | 2066 |
| **Vocational High Schools** | 1 837 185 098 | **884 103** | 2 078 021 563 | **1367** |
| Public | 1 833 369 170 | 883 103 | 2 075 903 165 | 1365 |
| Private | 3 815 927 | 936 | 4 076 845 750 | 2681 |
| **University (1)** | 6 389 446 032 | **1 256 629** | 5 084 592 216 | **3344** |
| **University (2)** | 6 414 280 421 | **1 918 483** | 3 343 412 697 | **2199** |

**Source :** DIE, 2003 c

A very important point to stress is that if we compare returns to education level with their cost structure from the parts 2.3.2 and 2.3.3 we will see some results very important for vocational upper secondary education. From parts 2.3.2 and 2.3.3 wee see that public education expenditures for each upper secondary level student (not vocational one) is about half of that per student being in upper "vocational" level although their average incomes do not have significant differences as seen clearly from the part 2.3.1. According to this comparison, we can say that expenditures

towards vocational education do not return well to the society or towards its graduates. That is why in Turkey, vocational education should be considered from this side.

**Table 30: 2002 Total education expenditures per level**

| Education Level | Ratio (%) |
|---|---|
| Preschool | 0,51 |
| Primary Level | 39,95 |
| Secondary | 24,20 |
| Tertiary | 31,50 |
| Others | 3,6 |
| Total | 100,00 |

Source: DIE, 2003 c

From the table above, it is obvious that the biggest shares go to primary and then tertiary education levels. However, the fact that *many more* number of students in primary education share 39, 95% of total expenditures should be taken also into account so that in primary level, per student expenditure may reach a level of 6, 4 times less than tertiary level.

This implies one of the main inefficiencies of the resource allocation from the point of equality as the most important part forming university population come from high or middle-high income families but not from the bottom population of income distribution. That is why per student expenditures are much more beneficial for students having parents either well-educated or wealthier.

Whereas, even during the period of planned economy that aimed to suppress regional disparities in the country, governmental expenditures on education were quite skewed among regions. From a research of SPO (1979) done in 1972, being one of the financial resources of the educational system, financial aides by municipalities directly to schools were also quite unequal among the provinces as measured by resources per student.

**Table 31: Some Provinces' Expenditures per Student in Turkey in 1972**

| Province | Population | Expenditures by Municipality | Number of students | Expenses per Student |
|---|---|---|---|---|
| Adıyaman | 305.200 | 325,3 | 38.772 | 8,56 |
| Amasya | 309.000 | 946,9 | 45.741 | 20,70 |
| Bilecik | 138.754 | 496,4 | 17.761 | 28,00 |
| Hakkari | 102.927 | 93,0 | 8.977 | 11,10 |
| Ankara | 2.023.031 | 41.882,5 | 307.067 | 136,30 |
| İstanbul | 2.995.191 | 105.252,7 | 364.278 | 288,90 |
| Trabzon | 662.412 | 995,5 | 105.842 | 9,40 |
| Kars | 663.088 | 998,3 | 112.286 | 8,90 |
| Zonguldak | 742.225 | 5.301,5 | 111.760 | 47,47 |
| Çanakkale | 360.317 | 1.005,8 | 47.339 | 21,24 |
| Elazığ | 378.349 | 754,8 | 55.110 | 13,70 |
| Hatay | 596.201 | 1.764,9 | 103.931 | 17,00 |
| İçel | 596.324 | 2.663,7 | 95.578 | 27,25 |

Source: Bircan, 1979

From the table above, the highest financial aid per student goes to the students living in richest parts (west) of the country. For example, Hakkari and Kars two cities being at the least developed parts of the country take also the lowest levels of educational expenditures per student. Contrarily to this, Istanbul, Ankara and Zonguldak having the highest per capita incomes receive the highest levels of financial aid per student from municipalities.

**Table 32: Public Education Expenditures' comparison with Total expenditures in 2002**

| | A | B | A/B |
|---|---|---|---|
| | Public Spending per person ($) | Public + private all spending per person ($) | % |
| **Primary level** | 288 | 527 | 55 |
| **Public** | 292 | 509 | 57 |
| **Private** | 56 | 1 591 | 4 |
| | | | |
| **Secondary level** | 568 | 1 271 | 45 |
| **Public** | 585 | 1 242 | 47 |
| **Private** | 105 | 2 066 | 5 |
| | | | |
| **Secondary level of Vocational Education** | 1 106 | 1 367 | 81 |
| **Public** | 1 107 | 1 365 | 81 |
| **Private** | 98 | 1 681 | 6 |
| | | | |
| **Tertiary Level (1)** | 2167 | 3344 | 65 |
| **Tertiary Level (2)** | 1419 | 2199 | 65 |

Source : DIE, 2003c

### 2.3.4  **Returns to Each Level of Education in Turkey**

Increasing integration of Turkish economy to the world economy since the ends of 1980s has caused structural changes in country's economy especially from the point of incomes according to human capital levels of each person.

As we have investigated above evolutions of incomes, we will here find out how each new education level affects personnel incomes in Turkey. For example, we could find, so, for a person having primary level diploma the increase in his annual income if he decides to continue to lower secondary in Turkey (or from upper secondary to tertiary and so on..).

To do this, we use here the data of SIS (State Institute of Statistics) of 2003 on 107614 people all over the country. From these data, we utilise that of income earning people (the income earning person is a person 15 years of age over who earns an income in cash or in kind or a person working as an unpaid family worker).

Explanatory variables are:

ILKOKULMEZUNU          : primary level graduate
ORTAOKULMEZUNU    : lower secondary level graduate
LISEMEZUNU                 : upper secondary level graduate
UNIVMEZUNU                : university graduate
DENEYIM                       : work experience (=Age-Years spent to education – 7)
SQRDENEYIM                : square of work experience

**DUMMY Variables :**

MEDENIHAL                  : marital status  (**0** for single and **1** for married)
CINSIYET                      : sex              (**0** for women and **1** for men)
As <u>Dependent variable</u>, we use LOG of Annual individual income

With heteroscedasticity controlled regression analysis, we obtain the results like:
(Regression with robust standard errors)

| Number of observations | = 32663 |
|---|---|
| **F** ( 8, 32654) | = 1583.50 |
| **P**rob > F | = 0.0000 |
| **R-squared** | = 0.3279 |
| Root MSE | = 0.83743 |

| | **Coefficient** | **T values** | **P>ltl** |
|---|---|---|---|
| ILKOKULMEZUNU | **0.3670263** | 18.82 | 0.000 |
| ORTAOKULMEZUNU | **0.6645567** | 29.18 | 0.000 |
| LISEMEZUNU | **0.93845** | 47.03 | 0.000 |
| UNIVMEZUNU | **1.54503** | 70.08 | 0.000 |
| DENEYIM | **0.0468442** | 27.05 | 0.000 |
| SQRDENEYIM | **-0.0005492** | -19.62 | 0.000 |
| MEDENIHAL | **0.3215949** | 16.25 | 0.000 |
| CINSIYET | **0.6358705** | 44.89 | 0.000 |
| CONSTANT | **20.00635** | 778.35 | 0.000 |

Note : All values are significant at 95% confidence level.

From results, we can say that in Turkey, education is significantly affecting individual incomes. Additionally, experience is significant and making income rise firstly and after an exact age, it starts to reduce it. All these findings are parallel with other studies about Turkey (for example Sari, 2002).

From here, we calculate marginal revenues for each education level which shows percentage increase in income of the person having an exact diploma if he jumps to just one level higher education.

**Table 33 : Effects of education on individual income in Turkey**

| Education Level | Income level (%) | Increase (%) |
|---|---|---|
| Primary | 44,3 | 44,3 |
| Lower Secondary | 94,3 | 34,6 |
| Upper Secondary | 155,5 | 31,2 |
| Tertiary | 368,8 | 83,4 |

Increasing level of education makes individual incomes also higher. Moreover, the highest marginal increase is foreseen for the jump from upper secondary to tertiary level. Primary level also have a remarkably high marginal returns to education meaning that increasing opportunities for people from quite poor families will make incomes of this group significantly increase. That is an important policy implication to Turkey for eradication of poverty. Besides, this situation implies that in Turkey, even primary level education has not been well spread in society in its national education history. On the other hand that may not be well suitable to today's education system in which nowadays enrolment rate is nearly 100% thanks to compulsory education system that just started in 1997.

On the other hand, like already said, university education is a charming level for its marginal income increase. If we take into account new compulsory education system that made enrolment rates 100% in primary level, we may expect a significant increase in demand for upper secondary and tertiary education, in the future, which will, in turn, require new universities in Turkey.

### 2.3.5 **Education Dispersion and Its Measures for Turkey**

As we have already spoken about two different measurements of educational inequalities, we will here test of them to the case of Turkey. In this study, we employ five different levels of education available for Turkey:

"illiterate, literate without any diploma, primary school, secondary school, tertiary school" with amounts of years of schooling respectively "0, 2, 5, 8, 11, 15" which is more suitable for Turkey. For 81 provinces in Turkey in 2000,

| Education GINI = | 0,807 | - 0,077 x (MEAN) |
|---|---|---|
| T statistics | (23,78) | ( -12,49 ) |
| R ² = 0,7991 | Observations= 81 | F (1,79) = 155,96 |

Education GINI : Dependent variable

MEAN (average years of schooling of each province) : explanatory variable

**Table 34: Relation Between years of education and education Gini coefficients in Turkey**
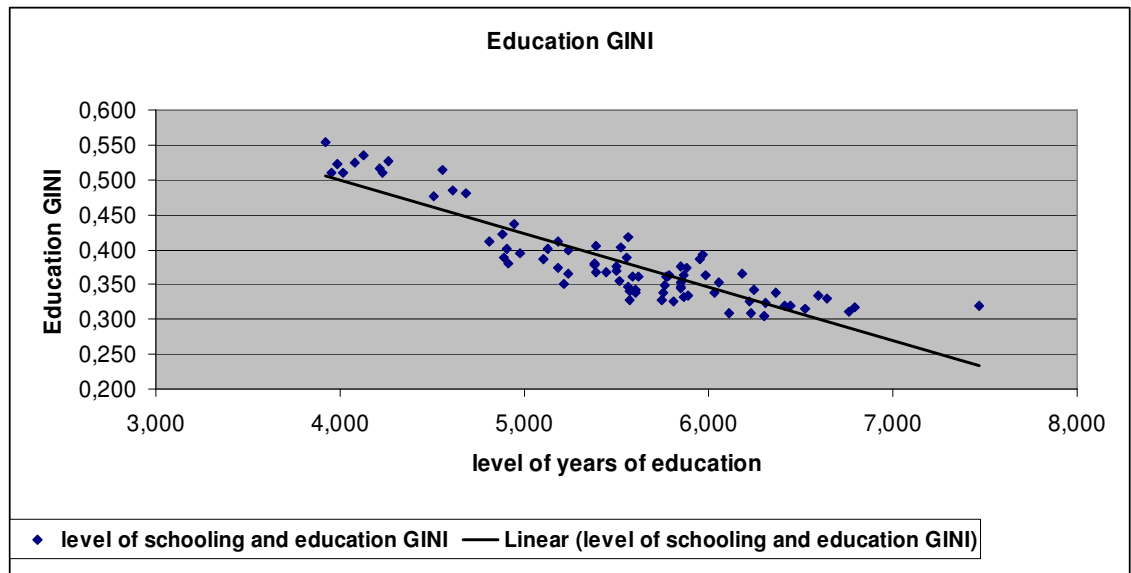


This result is similar to that Castello (2001) obtained as

- For OECD countries, in which mostly developed countries find, attainment level is high while education Gini is low.

- For non-OECD and LDCs, while attainment level is low, education Gini is high.

**Kuznets Effect in Education**

Since the schooling variable (years of schooling (MEAN) ) can take only non-negative values, it is obvious that when the average (MEAN) is zero, inequality (standard deviation of years of schooling (SD) ) must also be definitively zero. That is why the formula has no constant term.

$$(SD)_j = b(MEAN)_j + c(MEAN)_j^2 + u_j.$$

Results for Turkey's 81 provinces in 2000 are:

| **Standard Error =** | **1,408 x** (MEANlevelEducation) | **– 0,126 x** (MEANlevelEducation) $^2$ |
|---|---|---|
| **T statistics** | ( 21,64 ) | ( -10,91 ) |
| $R^2 = 0,9963$ | Observations= **81** | F=1135,83 |

From here, it obvious to have a structure of Kuznets in education in Turkey as signs of the explanatory variables are, respectively, positive and negative. All that means that, in the country, as the average number of years of schooling increases, the standard deviations of schooling first rise, reaching a peak around **5,6** years of schooling, and then decline. If we derive SD (dependent variable) by the level of education (explanatory variable) from first degree, we obtain **5,6** years of schooling around which standard deviation of schooling reaches its maximum value. This result is parallel with that found by other authors like Fan(2000), Ram(2000). Fan (2000) using the standard deviation of education for the year of 1990 as cross country analysis finds a Kuznets Curve that reaches its peak level about 6-7 years.

More importantly, from the regression obtained, it is realised that the increase in schooling inequality is quite large at early stages of educational expansion. For example, when mean schooling increases from 3 to 4 years, the predicted increase in schooling inequality is about 0,526. The increase in inequality from 4 to 5 years is about 0,274 and from 5 to 6 years it is about 0,022.

### 2.3.6 **Gender Effects on Educational Inequalities**

Another important thing to have effects on educational disparities might be gender differences for accessing to educational opportunities in developing countries including Turkey. These come from cultural, religious and economic (agricultur or industry dominant economy, for example) raisons. Moreover Turkey with its no-sex-discriminant education system (from its laws) try to make all children from all religions, societies and sex more or less access to publicly provided education. Hovewer some families, especially the poor have credit constarints and cultural habitudes prevent them to send their girls to schools. This creates also an other education discrimination in society. That is why we display the relation between female illiteracy rate and education dispersion in Turkey for the year 2000. As clear from the figure below, the more female illiteracy rate is high, in that province, the more education inequality we will have. However, even if we have tried standard deviation of education instead of education Gini, we could not obtain significant results.

**Table 35: Female Illiteracy Rate and education Dispersion in Turkey**
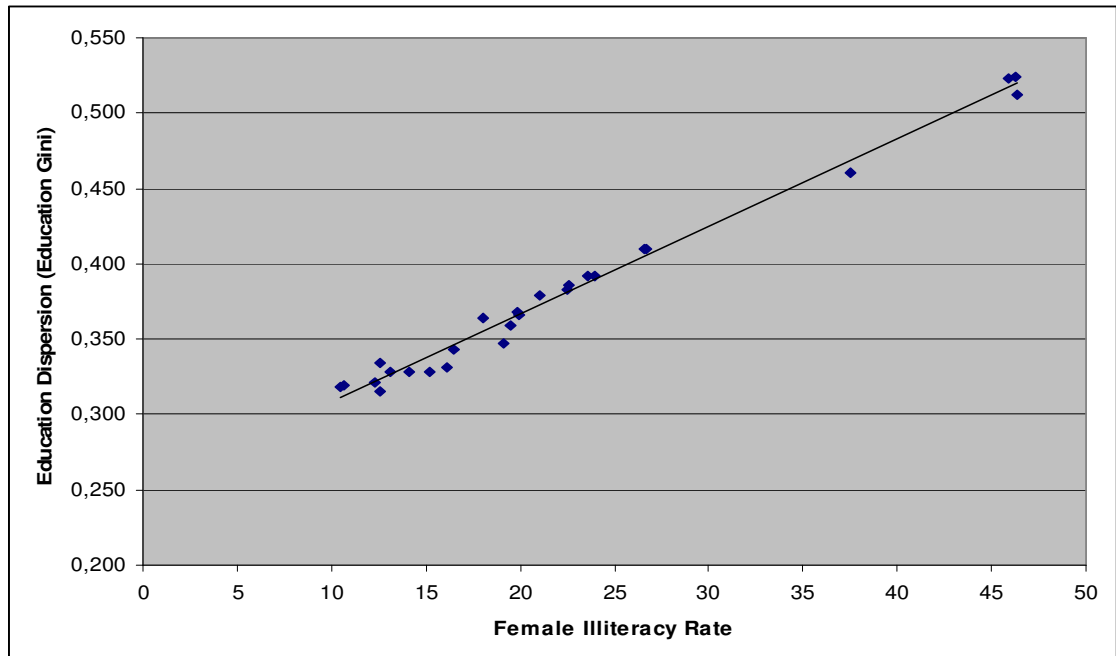
## 2.4    Public Side

In this study, due to data insufficiency on Turkey (particularly the data of Income Gini values) we can use only models that are suitable to our data availability. Moreover, in literature generally authors use budget of national education ministry and that of public universities per student as public education expenditures. In his known study, Todd Behr (2004), on the USA, uses per student public education budget for "each state" as variable in USA for per student public education expenditure.

However we have a lot of difficulties to be able to carry out the same explanatory variables for Turkey. First of all, in Turkey, we can not speak about public education expenditures for "each city" because like many others Turkey has one and central budget of public education and that is planned by Ankara (the capital). That is why we use some different proxies instead of public education expenditures in Turkey.

Secondly, in Turkey, the biggest share of national education budget consists of salary payments to teachers (about 80% of all ministry budget).

Thirdly, as we have already and mostly spoken about, Turkey has just started to search and to expose provinces' Gini values which can be used as references and as variables in econometric analysis. Moreover old Income Gini values are both not very acceptable and include only several values (which are not at all sufficient to analysis statistically) and only for overall one income Gini of Turkey.

Fourthly, the country by accepting new classification of statistical regions (SRE) has changed the structure of classifications of regions and hence it has to transform each variable to new system. Moreover, SIS (State Institute of Statistics of Turkey) declares most values lately and it is really difficult to be able to reach some data values.

### 2.4.1 **Effects of Education on Income Distribution in Turkey**

We applied the model of De Gregorio (2002) in which he searches the relationship among income inequality (as income Gini coefficient), the level and dispersion of education (as measured by, respectively, years of education and standard deviation of years of education), and the level of income. He focuses on the issue of whether countries with higher educational levels and /or less dispersion of education among the population have a more equal or less equal income distribution.

For this, he (and we) uses the following regression:

$$G_{j,t} = a_{0,t} + a_1\sigma^E_{j,t} + a_2E_{j,t} + a_3\log(y)_{j,t} + a_4[\log(y)_{j,t}]^2 + a_DD_j$$

where G is the Gini coefficient, as a measure of income distribution. $\sigma^E$ is the dispersion of educational attainment in the population, as measured the standard deviation of years of education used for educational inequalities. E is the average years of schooling for the population aged 15 and over. y is GDP per capita. D is a set of dummy variables that distinguish certain characteristics and regions to which provinces belong. Here, because of the fact that to be in the west or in the east part of Turkey is a very remarkable pre-determinant for income level, education level, land distribution etc. we use a dummy variable as DOGUdegiskeni. This variable (that is a dummy variable) takes 1 value if the province is in the east (or south east) part of the country, and otherwise 0.

The results of statistics are in the table below.

| | Dependent Variable: income Gini | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **E** | .000068 **(0.43)** | .000028 **(0.17)** | | |
| **$\sigma^E$** | .068770 **(2.57)\*\*** | .0637206 **(2.18)\*\*** | .0652229 **(2.67)\*\*\*** | .043394 **(2,13)\*\*** |
| **log(y)** | .365860 **(2.05)\*\*** | | | |
| **$[\log(y)]^2$** | -.084259 **(-1.98)\*** | | | |
| **DOGUdegiskeni** | -.056939 **(-2.28)\*\*** | -.0268422 **(-1.91)\*** | -.0492502 **(-2.67)\*\*\*** | -.0454998 **(-3.17)\*\*\*** |
| **OgrtmnOGRENCIP** | | | | .0003069 **(3.32)\*\*\*** |
| **OgrtmnOGRENCIA** | | | .0022503 **(2.17)\*\*** | |
| **C**onstant | 2.7956 **(2.19)** | .1351787 **(1.24)** | .0750828 **(0.82)** | .134189 **(1.65)** |

T values are in parentheses.

\*    : Statistically significant at the 10% level.

\*\* : Statistically significant at the 5% level.

\*\*\*: Statistically significant at the 1% level.

From the table above, in the first regression **(regression 1),** average education level is not significant. However, education inequalities are quite significant at 5% confidence level implying that higher education inequalities cause higher income inequalities. That is why the distribution of education among the population is an important thing to take into account while making national economy and education policies. However the result is not statistically significant when we use education Gini (instead of standard deviation of education). On the other hand from income side, in the country, there is a Kuznets effect (inverted U relation between.per capita income and income Gini). Whereas when we put income Gini and per capita income variables on X Y plane, we saw that the relation between two variables is not so strong.

We also calculated second regression **(regression 2)** which excludes income per capita variable. Here, average years of education is not significant statistically, while

again education distribution variable is significantly affecting (in the same direction) income distribution variable (income Gini).

Moreover we use a variable for public education expenditures per student. **OgrtmnOGRENCIA** is an explanatory variable that means the average number of student per teacher in primary level from 1975 to 1996 in Turkey, in third **(regression 3)** by using this variable, we obtain significant results. That is a generally chosen method to use a time lag between public education expenditures made and income Gini. Most studies agree that the effects of public education expenditures are cumulative and do not actually materialize until several years later. Because of this, it is used a time lag here such that **OgrtmnOGRENCIA variable covers the data set between 1975-1996 and income Gini set covers the data set of 2003, it means a 7 years time lag.** And here, it is used student number per teacher as inverse of per student public education expenditures firstly because of not having public education expenditures data *for each province* which we know income Gini values. As income inequality values that we have are only income Gini values of 2003 for each province, we are obliged to use these values and hence we do have to determine special public education spending variables. Again here this variable is positive and statistically significant at 5% level. That means number of students per teacher has a significantly positive effect on income dispersion in Turkey. The more number the public allocates teachers to provinces, the less would be income dispersion.

In addition, we have searched the relation **(regression 4)** between income distribution (income Gini) and **OgrtmnOGRENCIP** variable which shows average value of the number of "population" per teacher in primary education level from 1975 to 1996. Thus, we find a positive and significant relation between income distribution (income Gini) and **OgrtmnOGRENCIP** variable. Thus, if number of population per teacher increases (which is thought as proxy for the inverse of public expenditures per "citizen/person" in each province), income inequalities increase too. That means that rising available sources to primary education would lessen income inequalities in next generations in Turkey.

Another important point to emphasize is that **DOGUdegiskeni** variable is always highly significant and negative implying that the provinces in the east and south east of the country (which are the least developed parts) have less income inequalities than ones in the west.

**Table 36: education Inequality (standard deviation of years of education) and Income Gini Relation**



education dispersion and Income Inequalities in Turkey
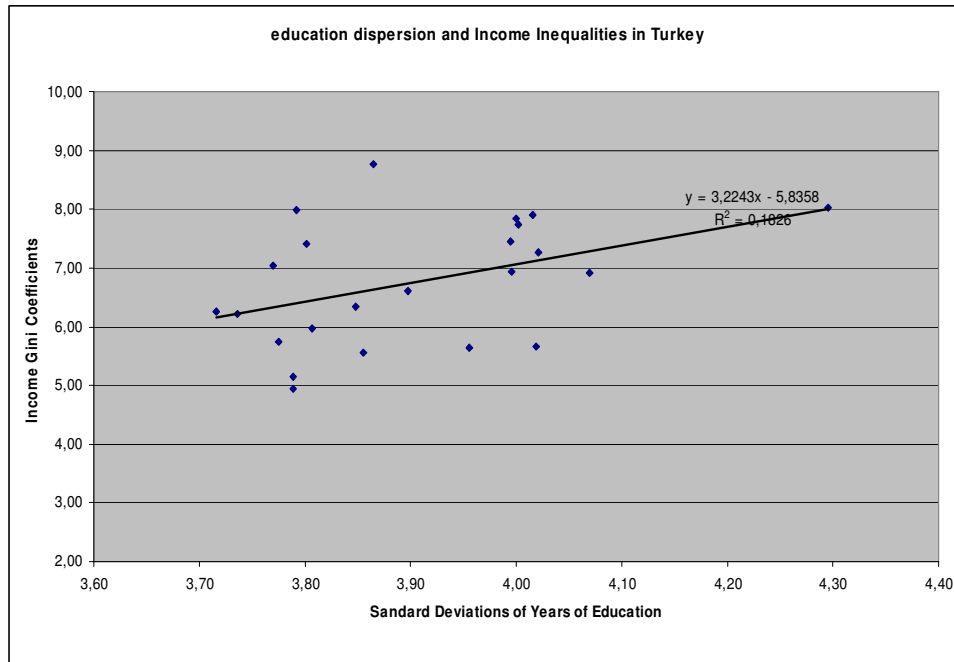
We see from above that standard deviations of years of schooling have effects on income Gini values in Turkey. On the other hand, we can see a quasi-Kuznets effect between years of education (of provinces in Turkey) and their income Gini coefficients. This result is parallel with our findings that show Kuznets effects between years of education and educational dispersion (measured as standard deviation of years of education) in Turkey.

**Table 37 : Education Years and Income Gini Values in Turkey**



Relation b etween years of education and income Gini
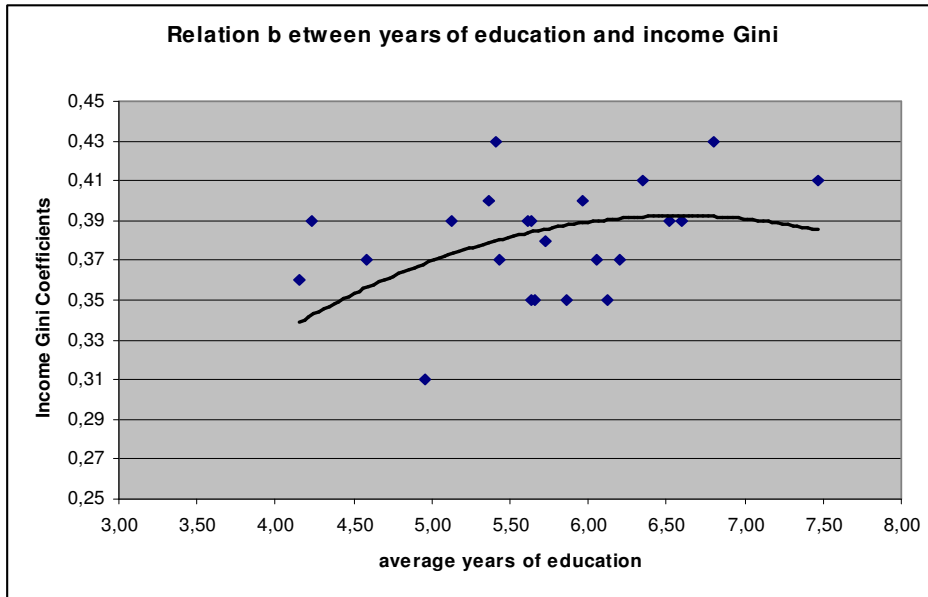
2.4.2 **As an Indicator for high School : Entrance to University and Public Education Expenditures per Student in High Schools in Turkey**

**Table 38Figure : Student per Teacher ratio and its effect on UEE success**
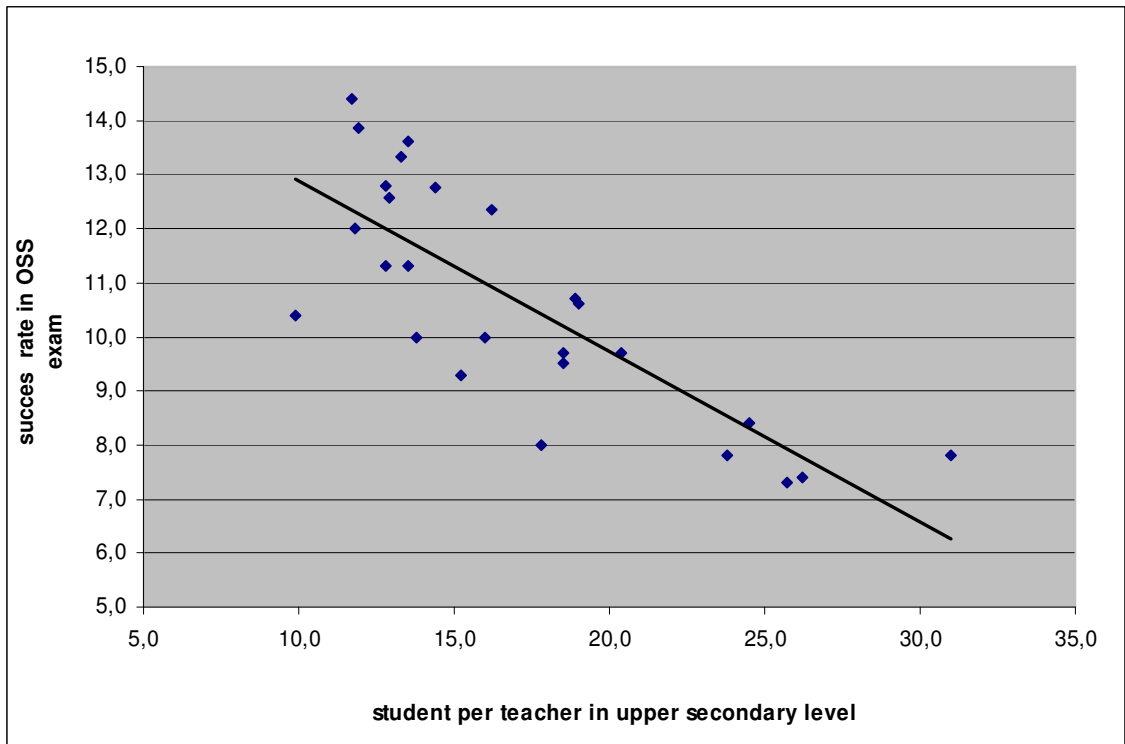
As we see clearly from the graphic above, the more the number of students per teacher is, the less the students' success rate in the examination of university entrance (OSS in Turkish). If we imagine that number of students per teacher is a measurement of resources devoted to each student in upper secondary level in each province, we can say that the more spending is devoted to students, the more chances they would have to enter universities. As the east part of the country has, generally, the highest number of students per teacher, and by contrast the west part has the lowest one (except Istanbul which attracts huge migration from all over the country) we can expect the composition of students in universities to be highly west tended.

Here, success rate of students is the percentage of students entering to university in all numbers of students graduated from high schools in 2004.

### 2.4.3 Groups according to Education Levels and Income Distribution of Groups

In a study, **TUSIAD (2000)** (TIBA in English : Turkish Industrialists' and Businessmen's Association) has found strong relations between education levels and average income in Turkey from the data set of income distribution survey of SIS in **1994**. There, it was searched the relation between average education level of each family's "income earning" members and, again, average annual income of each of these members for each family for the year of **1994** in Turkey. For this reason, they separate education levels to five (5) categories as very low, low, middle, high and very high. These categories, respectively, show primary education and the lowest education group (very low category or up to 5 years education), lower secondary education graduates (low or 8 years education), upper secondary graduates (middle or 11 years), university graduates (high or 15 years) and master/doctorate graduates (very high or 18 years). The survey includes only income earning people who are between 15 and 65 years old.

In their study, TIBA finds that the more average education level a family has, the more average income an income earning person has (or, average income of each member increases with his (average) education level).

Furthermore, the highest income inequalities are found in the group of families from the highest income level (per income earning person). According to TIBA, reasons are numerous like:

Education System, in Turkey, is far from having adequate characteristics to make its citizens be rightly employed. Hence, rising education level (of a person) does not give a guaranty (to be employed) to those educated people. That is why, some families having higher education levels would gain quite insufficient (to its education level) income and/or vice versa. This means that some well educated people consent low income values in Turkey. For TIBA, another reason is the high difference of payments between public and private sectors in the country. Because, in Turkey, a general manager's wage can be 10 times lower in public sector than in private one.

Here, we use the same method so as to be able to compare two series and to have some ideas about evolution of this structure in Turkey from 1994 to 2003. However in our study we use another classification like:

1. Very Low: less than primary education graduation/not having primary level diploma
2. Low: primary and lower secondary graduates
3. Middle : upper secondary graduation
4. High : university graduates and less
5. Very High : master and doctorate graduates

The data come from a survey dataset of SIS on 32366 people all over Turkey.

Here are the econometric results **for the year 2003:**

| | 1.Very Low | 2.Low | 3.Middle | 4.High | 5.Very High |
|---|---|---|---|---|---|
| **Population Share** | 0.104 | 0.610 | 0.232 | 0.050 | 0.0033 |
| **Income Share** | 0.068 | 0.495 | 0.292 | 0.135 | 0.0098 |
| **Relative Mean Income** | 0.658 | 0.812 | 1.256 | 2.656 | 2.972 |
| *Subgroup Values* | | | | | |
| **Gini** | **0.3637** | **0.3758** | **0.4218** | **0.4640** | **0.4655** |
| **MLD** | 0.236 | 0.246 | 0.311 | 0.393 | 0.396 |
| **Theil Index** | 0.226 | 0.275 | 0.335 | 0.403 | 0.406 |
| **CV** | 0.294 | 0.544 | 0.564 | 0.668 | 0.620 |
| **Atkinson (e=0.5)** | 0.108 | 0.120 | 0.148 | 0.179 | 0.181 |
| **Atkinson (e=1.0)** | 0.210 | 0.218 | 0.267 | 0.325 | 0.327 |

| *Within Group Inequality* | | *Between Group Inequality* | |
|---|---|---|---|
| **MLD** | 0.268 | **MLD** | 0.064 |
| **Theil Index** | 0.308 | **Theil Index** | 0.077 |
| **CV** | 0.696 | **CV** | 0.100 |
| **Atkinson (e=0.5)** | 0.136 | **Atkinson (e=0.5)** | 0.030 |
| **Atkinson (e=1.0)** | 0.247 | **Atkinson (e=1.0)** | 0.047 |

We obtained similar results to that of TIBA: In 2003, average income level of a family's members rises with their average education level. Besides and moreover, income inequalities of the groups (for "each" group) increases with education level: university and over university groups (4th and 5th groups) have the highest income inequality values ; while very low and low level of education groups (1st and 2nd groups) have the lowest income inequalities (for every inequality measurement method).

Another point to stress is the structure of income distribution from the point of between and within group inequalities. STATA shows us two components of income distribution values:

From the table above, we can easily realise that the biggest part of income inequalities comes from "within" group inequalities, whereas, "between" inequalities are of little part. This means that the main part/share of whole income inequalities come from inequalities "within" groups versus "between" group inequalities in Turkey. From this result, we can say that to be able to decrease income inequalities in Turkey (by the way of education system), we have to focus mostly on "within" group inequalities. Income inequalities "in each group" are of quite high values.

Beside all these, we have look at the evolution of this structure in Turkish economy by comparing our outcomes with those of Tusiad (2000) for 1994.

First of all, TIBA had found **for 1994**, like us, the same relation between educational level and income inequalities such that income inequalities increase with education level. However, the results of TIBA were including a quite higher income inequality value for the highest education group (5th or Master and Doctorate graduates) with its Gini value of 0,523 in 1994. Whereas, the same ratio of the same group is in 2003 about 0,465: a remarkable decrease. This reveals us a smoother income distribution inside this group since 1994. However, inequality measure values for low, middle and high education groups (2nd, 3rd and 4th groups) did not show a noticeable change since 1994. In contrast, the highest inequality decrease is in the lowest income (or the

lowest education) level group. But, as we have already examined the situation of education groups (in part 2.3.1.) for their income levels, we know that since 1987, average income of the lowest education level group is getting lower against others. In other words, we may have some reasons to believe that in the country, income distribution of the group with the lowest education level is getting smoother while whereas members of these groups are getting poorer relatively. About income distribution pyramid of the country, we observe a smoothing both in highest and in lowest income groups. As for middle education groups (lower and upper secondary education), it is not observed a remarkable change in their income inequalities. This evolution might have been an important cause of the decline in overall income inequalities from 1994 (0,49 as Gini) to 2003 (0,44 as Gini) in Turkey.

## 3. Conclusion

Education is considered as a way of enriching people's conscious about themselves and the world, making people more productive, making institutions have more accurate organization types, creating new technologies and hence letting some countries to up and also increasing the mobility of labour force between regions and determining the richness of both countries and of individual's. All these aspects reveal us the importance of education as a determinant of not only national but also individual welfare among the society.

The common belief that education eradicates not only poverty but also income inequality in society and hence makes people have a smoother wealth distribution caused LDCs (Less Developed Countries) to invest hugely just as they gained their freedoms after 2$^{nd}$ World War.

However outcomes were not like expected. In contrast, the actual incidence of incomes is skewed in favour of more influential population groups today.

Studies trying to find relations between publicly provided education expenditures per capita and income inequalities are far from showing the real and significant results in the world. **First** of all, studies examining these relations are generally searching the relation by not separating countries according to their development levels. Instead they put some geographic regional dummies to this. However as Sylwester (2002) showed in his study that rising education spending's negative effects on income inequalities are much stronger in OECD countries (that are generally developed countries) than in non-OECD countries which might be implying a Kuznets relation between average years of schooling of the society (or human capital level) and income inequalities**. Secondly**, researchers do have to pay attention to the distribution of educational opportunities. An unevenly distributed education in a society prevents the society from having a more equal income distribution**. Thirdly**, the belief that political economy approach reveals us is quite important for education and income inequalities: Children from poor households have much less access to schooling at progressively higher levels than children from richer families, and their attribution rates increase with the grade. Consequently, the distribution of public

spending on education in the population is far from equal. Moreover, Because of credit markets imperfections, richer households are able to exert more political pressure through rent seeking thus securing themselves a larger share of the pie than poorer ones. To what extent such rent seeking matters as part of the educational resource allocation mechanism is, in itself, a political decision. **And Finally**, most studies taking per student public education expenditures might be far from reflecting the real per student expenditure values due to the fact that quite unequally distributed public education opportunities may let some children access more easily to higher education levels than others. All these have to be taken into consideration while making analysis for the effects of education spending on income distribution.

In spite of the fact that the literature emphasizes education as one of the major factors affecting the degree of income inequality, and although policymakers usually justify higher educational spending as a highly effective tool for reducing income inequality, empirical studies suggest that the relation between education and income inequality is not always clear. While the theoretical models, generally, predicts an unambiguously positive association between educational inequality, measured by the variance of schooling, and income inequality, the effects of increased average schooling on income inequality may be either positive or negative, depending on the evolution of rates of return to education (implying the coefficient between returns to education per level and its distribution's effect). Due to the **covariance** (which is in general negative as in many studies evidenced by Psacharopoulos) between the level of schooling and returns to education, an increase in schooling can reduce or increase income inequality. From researches in the literature, which is frequent is the fact that returns to education have diminishing returns. Hence, as more people receive education, the return on education will decline, reducing income inequality. However, this comes true after an average level of education of the population up to which it is seen an increasing income inequality with its level. In that case, we can refer to the thoughts of Knight and Sabot (1983) saying that an expansion of education has two different effects on the earnings distribution. The "composition" effect increases the relative size of the group with more education and tends initially to raise income inequality. On the other hand, the "wage compression" effect decreases the premium on education as the relative supply of educated workers increases, thereby lowering income inequality. Consequently, the effect of increased

education on the dispersion of income is ambiguous. From only this side, scenery is quite realistic.

On the other hand some recent studies show us that income inequalities are not only related to education level of people but also to its distribution in population. That is why since Le Grand's findings, quite number of authors started to be interested in political economy approach about the distribution of educational opportunities that are supplied mostly by the public. The main idea of this view is unevenly distribution of "public" education expenditures within countries.

However, another question to be answered is how the inequality of education will be measured. For some (De Gregorio, 2002) that is the standard deviation of years of education while for some others (mainly as a new measurement technique) that is education Gini which is calculated similarly to Income Gini coefficient. In the world since 1970s, the income inequalities are rising while dispersion of education (that is the measure to education inequalities) in the society is ambiguous. Most studies find that when education Gini is used as measure of education inequalities, in the world the education inequalities have fallen. By contrast, measurement of education inequalities by standard deviation of years of schooling gives the contrary results as rising education inequalities in the world during the same period. In short, even if some studies find significant relations between public education expenditures and income inequalities in societies, values of the relations are generally not very strong and they require rather a long time efforts and policy by public administration to achieve this.

Moreover, from the public source allocation side, studies, in general, find an income distribution smoother effect of rising public education expenditures; however, this effect does not predict a fast convergence and moreover its effect is not so high to be able to eliminate a quite substantial part of income inequalities in countries.

As for the results obtained from data of Turkey, we have some ideas about education and income relation in the country such as:

- In Turkey both income and education inequalities are at high levels comparison with OECD countries.

- Turkey starting at the ends of 1980s to open the doors, quite liberally for that time, to be integrated to the world economy, has firstly (up to the middle of 1990s) lived sharply rising income inequalities. At that period, mostly high school and university graduates have benefited from this increases, as the first opening period rose sharply demand to well educated labour force. High immigration from rural part to urban one has contributed also to this increase as well.

- At the same period, insufficiently rising high level graduates did not match sufficiently the increasing demand to them. That period, so, can be thought of having a wage composition effect.

- Then, during the period from 1994 to 2003, the country has lived a wage compression effect meaning that rising supply of higher education graduates (upper secondary and tertiary) caused a remarkable decrease in the wage prime of this group. Both rising average education level of the population and rising especially high level graduates have caused an overall income distribution to decrease in the country.

- On the other hand, despite sharp decreases in the supply of the least educated labour force (people below primary education level), their average incomes did not fall from 1994 to 2003 implying that Turkish economy, during this period, has raised its demand to well educated labour force. That may be because of the fact that Turkish economy by opening to the world economy has started using human capital more intensively in its production structure. Whereas that estimation should be well analysed from micro aspect. Because, at the same period Turkish economy has lived a strong rise in the share of services sectors and in some other countries also university level's marginal returns are similarly high (for example Brazil).

- Another important result obtained from this study is the existence of political economy approach to public education distribution in society in Turkey so that increasing income Gini (income inequalities) in Turkey, tends to increase the ratio of (teacher number per student) secondary to primary levels. That implies that provinces having more unequally distributed incomes also allocate more of its public education expenditures to higher educational levels

that are beneficial especially for the rich than to primary level. In the literature, that is considered as one of the most important reason to the inequalities in the distribution of public education.

- The same result can be obtained from the education expenditures survey (2002) which shows that in Turkey, public education spending per primary student is nearly 7 times less than that of university level student. This shows us that the poor who can mostly profit from primary level do not get utilities from public education expenditures. Because for the poor group in Turkey, it is difficult and quite costly (credit constraints are quite strong to this group) to send their children to secondary and tertiary education levels. That is why if the public education expenditures rise in favour of university level, that will not be the poor group profiting from this increases and hence income inequalities may even rise in next generations.

- Moreover and a very important point to stress is that if we compare returns to education level with their cost structure (from the parts 2.3.2 and 2.3.3) we will see some results very important for vocational upper secondary education. (From parts 2.3.2 and 2.3.3) wee see that public education expenditures for each upper secondary level student (not vocational one) is about half of that per student being at upper "vocational" level although their average incomes do not have significant differences (as seen clearly from the part 2.3.1). According to this comparison, we can say that expenditures made to vocational education do not return well to the society or to its graduates. That is why in Turkey, vocational education should be considered from this side.

- From the analysis, we obtained that alongside education level, personal income level rises in Turkey but marginal income is of decreasing up to university graduates. Returns to tertiary education are quite higher than all others and that might be a reason to high income inequalities in Turkey. However as we do not have enough data to analyse this, we can make only predictions about it. Future researches should (with new data series) examine this.

- On the other hand, we obtained a Kuznets structure between average years of schooling and standard deviation of years of schooling (which is used as education inequalities here). With rising average years of schooling, Turkey

lives firstly an increase in the education inequalities and then after a certain level (about 5,6 years for Turkey) it starts to decrease.

- Moreover, in Turkey where we have remarkable illiteracy discrepancies between men and women, there is a strong correlation between female illiteracy rate and overall education inequalities.

- A very important result we had is that in Turkey, educational inequalities (measured by standard deviation of years of schooling) have a positive influence on overall income inequalities. It means, the more education inequalities a province has, the more its income inequalities are to be. This finding are parallel with those being in the literature.

- By using the average number of student per teacher in primary level from 1975 to 1996 in Turkey, we obtain significant results which imply that an increase in this ratio would also increase income inequalities in province. This mentions us that so as to be able to make a decrease in income inequalities, educational opportunities (for example, less student number per teacher) should be increased. More public education expenditures would be able to achieve this result.

- For tertiary level of education, another important result is the relation between student number per teacher and University entrance examination success rate, such as: The more the number of students per teacher is in high school, the less the students' success rate in the examination of university entrance (OSS in Turkish) is. This shows us that provinces in the east part of the country have disadvantages to be able to send their children to universities as there, per teacher number of student ratio is higher.

- Another very important result comes from the distribution of incomes for each level of education. Here, we find that average income level of a family's members rises with their average education level. Besides, income inequalities of the groups (for "each" group) increases with education level: university and over university groups have the highest income inequality values ; while very low and low level of education groups have the lowest income inequalities (for every inequality measurement method).

- A point to stress is the structure of income distribution from the point of between and within group inequalities. Biggest part of income inequalities comes from "within" group inequalities, whereas, "between" inequalities are of little part. This means that the main part/share of whole income inequalities come from inequalities "within" groups versus "between" group inequalities in Turkey. From this result, we can say that to be able to decrease income inequalities in Turkey (by the way of education system), we have to focus mostly on "within" group inequalities. Income inequalities "in each group" are of quite high values. About income distribution pyramid of the country, we observe a smoothing both in highest and in lowest income groups. This evolution might have been an important cause of the decline in overall income inequalities from 1994 (0,49 as Gini) to 2003 (0,44 as Gini) in Turkey.

From these results, we can conclude that education is an important determinant of both personal incomes and also income distribution in Turkey. However from the political economy side, we realise clearly that it is not much possible to eradicate income inequalities in society by only rising education opportunities to people. Some show us this reality like: The importance of income and wealth differences among parents (the social inheritance) from different income groups should not be neglected. Because, for some authors, this is the inequalities in cultural endowment between families which has strong effects on child's success during his education. However, this part of the problem can be a specific study to examine because of its quite large field and its rather different data types from ours. For a policy approach, positive discriminations and/or scholarship opportunities to the poor and especially to girls should be thought carefully. Because, even if educational opportunities (provided by the public side) increased, that would not be in favour of the most disadvantageous groups that are already excluded from social opportunities in Turkey. Besides, policymakers have to take into account the benefices of basic (primary) education to the poor to which the poor can access more easily than higher level ones. For most of the lowest income level families, sending to their children to upper secondary and to university levels are nearly impossible.

Going on to political economy approach, income inequalities and educational inequalities together create a circle that supports each other. The more income inequalities there are, the more education inequalities there are too. And the same is also true from the other side: the more we have education inequalities, the more we will have income inequalities. So as to be able to break this circle, public interventions are needed. And more democracy (from theories) tends to give more opportunities to the poor for them to be able to access to public education opportunities. However, like political economy approach predicts, if to join to democratic mechanisms (voting for example) is correlated with individual income level, then, democracy may not have significant effects neither on distribution of incomes nor distribution of public expenditures in society. Moreover, it is not clearly proved in empiric studies and also it has some special difficulties to find true data to measure it.

In the light of these theories and findings on Turkey, we can talk about target to future researches in this field. New studies should have more micro data to be able to analyse relations from the approach of parental cultural differences. Because, just public interventions are far from being a sufficient income equality provider in the world. Furthermore, in the future, with more available data on income inequalities on Turkey, new researches and new data sets would find more and specific relations in this field. Finally, with increasing and deepening integration of Turkish economy to the world economy (especially to European Union) would have direct and indirect influences on returns to education by level in Turkey. Hence, new studies should also focus on this area with more specific data sets on geographic and commercial aspects.

## 4. Glossary

SIS    : State Institute of Statistics of Turkey (DIE in Turkish)

SPO    : State Planning Organization (DPT in Turkish)

UEE    : University Entrance Examination (OSS in Turkish)

MNE    : Ministry of National Education (MEB in Turkish)

TIBA    : Turkish Industrialists' and Businessmen's Association (TUSIAD in Turkish)

CHE    : Council of Higher Education (YOK in Turkish)

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