

Measuring Education Inequality in Israel- New Indicators

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Abstract

Inequality in educational outcomes is currently at the heart of public and academic debates throughout the world in general, and in Israel in particular. Educational inequality is a key factor leading to future social and economic inequality. It suppresses social mobility and accelerates the trend of poverty in the future. The consequences of educational inequality are key issues that have many social and economic aspects, and therefore, they highlight the importance of this research.

The current literature measures educational inequality by means of standard deviation and the Gini Coefficient of Educational Quantity. For example, schooling is measured by people's number of school years (Thomas et al., 2002; Tomul, 2011). These factors ignore the causes of educational inequality and its origins, and they are indifferent to the disparities in educational quality.

The **objective of this** research is threefold: to conceptualize an innovative framework for measuring educational inequality, to measure trends in educational inequality over time, and to analyze its underlying origins, based on educational quality indices developed in this work. The research **method** is based on applying the Gini Coefficient and the Theil-Index to the field of education in order to determine the extent of inequality and its origins. In addition, this study develops a conceptualization of inequality based on Logistic-Regression, enabling one to identify the causes of inequality and to analyze its trends throughout the last decade.

A unique data base was specifically developed for this research by the Ministry of Education. This data base includes data on student levels throughout the last decade (2001-2011). Israel constitutes an interesting case study, given its educational achievement distribution, which is characterized by large disparities, in comparison with the OECD countries. The Theil index and Gini coefficient were calculated on the basis of the **research variable**—educational quality (the number of units and the grade of every subject in the high-school matriculation examinations). In addition, a **statistical indicator** was developed, which included **a dependent variable** and **an independent variable**. The **dependent variable** is eligibility to receive a high-school diploma. The **independent variable** is previous achievements (the number of subject units and the score in Mathematics), which is widely used in the current literature, and the background variables of the individual student (gender, ethnicity, country of origin

of the student and parents, parental education, the number of siblings, and the school type).

The findings of the analysis of inequality according to the Theil index and the Gini coefficient indicate that the level of overall inequality has increased throughout the last decade (by 15%) and that its origins can mainly be explained by the inequality between groups (99%). This trend is salient in cross-sectional analysis because of the variables of gender, region, and ethnicity. More specifically, the levels of inequality are higher among males than among females, and there is an increasing trend of inequality in both males and females (the Gini coefficient has increased by 14.6% for males), which indicates a trend of growing inequality. Similarly, it can be seen that from a geographical perspective, inequality in the center of the country and in the Tel Aviv school district is lower, compared with the other districts. Moreover, there is an incremental trend of inequality throughout all the regions (Gini coefficients of the Southern school district have increased by 18.5%) and an analysis by ethnicity indicates a similar trend. The level of inequality among Jews is lower than among the rest of the population. However, there is a growing trend of inequality among Jews, Arabs, and Druze (the Gini education coefficient, for example, has increased by 9.8% and by 19% for Jews and Arabs, respectively). A reasonable explanation might be the demographic changes in the student population, as well as in the education finance policy, which needs further revision.

A prominent finding from the development of the statistical indicator system indicates that the probability for Arab students to reach eligibility for a high-school diploma is significantly lower in comparison with Jews, throughout most of the examined decade (about 30% except for the years 2003, 2005, 2006, and 2011). This trend also continued throughout the decade. A possible explanation might be found in demography, as well as education, since every policy has increased the absolute number and rate of those students who achieve a high-school diploma among the overall Israeli student population, but at the same time, a school finance policy that supports this change has not been adopted.

It has also been found that all other variables, for example, **gender, student's and parent's country of origin, parental education, the number of siblings, the school type and previous achievements** were shown to influence the eligibility for a high-

school diploma in the last decade and this trend has continued throughout the decade. Thus, the probability of eligibility for a high-school diploma for females is 60% higher than for males, for instance. An additional paternal year of schooling raises the probability of eligibility for a high-school diploma by 2%, whereas an additional maternal year of schooling raises it by 3%. Every sibling in the family lowers the probability for Bagrut entitlement by 6%. The probability of eligibility for a high-school diploma for students of the academic school type is 17% higher than for those of any other school type (e.g., vocational schools). Finally, throughout the last decade, our findings indicate that the Mathematics final score for the matriculation examination and the number of units of this subject have a significantly positive effect on the probability for eligibility for a high-school diploma. Regarding this variable, the trend was permanent throughout the decade. Additional units in Mathematics increase the probability of eligibility for a high-school diploma fourfold. Moreover, the addition of one point to the final score in Mathematics raises the probability for eligibility for a high-school diploma by about 6%. A possible explanation might be that Mathematics is one of the obligatory subjects for eligibility for a high-school diploma.

The theoretical and empirical importance of this research lies in its conceptualization, development, and measurement of the factors affecting educational inequality. More specifically, besides being a descriptive research that deals with educational inequality, this research empirically examines the causes, origins, and trends of educational inequality. It clarifies its definitions and explains the limitations inherent in educational inequality research. In addition, it reveals the ways in which it is evaluated throughout the world. From a policy point of view, this research provides policy makers with an important tool that sheds light on social and economic issues that might lead toward reducing educational gaps in society.

Policy recommendations that emanate from this research point out the urgent need to reduce the levels of educational inequality by reviewing the allocation mechanisms and the education finance policy. Furthermore, specific education programs should be developed to fit the needs of those vulnerable population groups that were noted in this research in order to widen equality and reduce inequality. Highly important is pedagogical adaptability that would support the differences and diversity among groups and encourage leading teachers to promote these groups. Reducing educational inequality might lead to a reduction in income inequality, decrease the trend of growing

poverty rates, and break through the cycle of inter-generational poverty. Moreover, a suitable education policy, integrated with an overall social and economic policy, might improve welfare, promote the equality of educational opportunities, improve economic growth rates, and reposition Israel in the competitive global era of the 21st century.