

The Role of Age and Gender in Education Expansion. Within- and Between-group Specific Trends in Education (In)equality

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“... an overall trend of education expansion, accompanied by a reduction of inequality in the distribution of education has taken place ..., however, ... huge differences across countries still persist.” (Sauer & Zagler, 2014) Diverseness in the distributional outcomes of education expansion result from the extent to which policies are able to enlarge the group of people who participate in education. This is done by improving the educational opportunities of women as well as of people from disadvantaged socio-economic backgrounds. In both respects, providing for enhanced schooling prospects of the youth secures educational outcomes of future generations. Consequently, differential education expansion trajectories result from differential magnitudes of human capital accumulation and equalization among the youth as well as between men and women.

In order to examine comparative distributional implications of education expansion, I decompose overall education inequality into age, gender and within-group components. Using a matrix algebra approach, Silber (1989) shows how to decompose the Gini index into three components, a within- and a between-group component, and a residual term. I adapt his method so that it can be applied to aggregate education data instead of individual income data. Doing so enables me to separate inequalities which are due to inequality across age groups as well as between males and females from disparities within these groups. Moreover, I provide an intuitive interpretation of the residual term which relates to the degree of within-group inequality.

Using the IIASA/VID dataset of populations by age, sex and level of education, I calculate education Gini coefficients for 171 countries over the time span from 1970 to 2010 in 5-year intervals and decompose the overall degree of educational inequality into five components as follows,

$$I_G^E = I_{age}^E + I_{age/sex}^E + I_{sex}^E + I_{within}^E + I_{residual}^E \quad (1)$$

where I_{age}^E captures the contribution of gender-specific differentials within age-groups while $I_{age/sex}^E$ compares the educational attainment of different sexes and cohorts. I_{sex}^E is the component of the education Gini which is due to differentials between males and females of the identical age groups. The extent of inequality within population subgroups, in turn, is given by I_{within}^E . Finally, $I_{residual}^E$ is the residual component. I analyze the relative relevance of these components for inequality reduction and investigate the distributional outcomes of education expansion. In addition, I test for the robustness of my results by using the Theil Index which is - in contrast to the Gini coefficient - additively decomposable.

Investigating the trends of education inequality between as well as within population subgroups sheds light into the distributional implications of different education expansion trajectories. The analyzed components exhibit differential roles across regions and vary over time as societies become educated. In general, as long as specific groups within societies are the first to benefit from improvements, inequality will first rise but decrease as larger parts of the population take part in education; and remain constant until the next impulse for advancements. This is especially true for divides between age groups, which increase as younger generations become higher educated and decrease as these cohorts age. However, I find evidence on gender specific developments which indicate that education expansion processes have predominantly started among young males before including females. Yet, closing the gap between sexes of equal age groups has significantly contributed to the declining trend of overall education inequality throughout the observed sample period. Indeed, young women are already higher educated than their male counterparts in some middle and highly educated countries. Inequality in the distribution of education within population subgroups accounts for a large part in overall education inequality. Thus, even its relevance is decreasing over time, the ethnic background or the social and economic status of people continues to determine the educational prospects of people. Beyond that, the larger the polarization within groups, the less meaningful are group comparisons, resulting in an underestimation of between-group inequality. Cross-regional variations in the roles of divides between sexes as well as within population groups indicate that differential institutions are a relevant factor in shaping social inequalities.

Not only can the new indicators of between- and within-group inequality in educational attainment provide novel insights into comparative education expansion trajectories around the globe, but also into the particular experiences of South Asian countries, as well as the related macro-economic consequences and broader societal effects. For example, the age component measures the extent of education expansion and can be used to examine the consequences for economic growth. Relating my measures of gender inequality in educational attainment to democratization, female labor force participation or fertility can contribute to the understanding of the role of women in development processes. Moreover, they can be used to analyze whether closing education gender gaps have contributed to narrowing gender wage gaps at the aggregate level.

References

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