Abstract for "Distributional Change, Pro-poor Growth and Convergence: An Application to Non-income Dimensions"

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There are broadly two approaches to define growth as pro-poor: the weak approach considers whether growth led to a decline in poverty and the strong approach considers whether growth led to distributional changes in favor of the poor (Ravallion 2004). The strong approach is classified into relative and absolute notions. The former defines growth as pro-poor when incomes of the poor grow proportionally more than incomes of the non-poor. The latter defines growth as pro-poor when growth leads to a reduction in the absolute differences in incomes of the poor and the non-poor. This analysis has been extended to the case of non-anonymous growth (Grimm, 2006) and to the case of non-income growth (Grosse et al., 2008).

In this paper we propose an alternative graphical approach to the analysis of pro-poor growth and suggest new measures of pro-poor growth. We focus our attention on non-income dimensions of welfare and show that our approach, which can be anonymous as well as non-anonymous, allows us not only to derive indices of the inequality of growth rates and of pro-poorness, but also to check whether the growth process led to beta/sigma convergence.

The Gini index of relative inequality can be expressed as a vector product of population shares and corresponding income shares by using a G-matrix (Silber, 1989). Using the G-matrix formulation, Silber (1995) derived alternative indices to measure distributional changes based on growth rates in individual income. We propose to apply the income weighted index to measure distributional changes in non-income indicators (e.g. education). This "income-weighted measure" compares distributions of individual educational levels at times t and t+1, by plotting educational shares at time t on the horizontal axis and corresponding shares at time t+1 on the vertical axis. If we rank both sets of individual shares (at t and t+1) by increasing ratios, we obtain a distributional change curve whose slope is non-decreasing and which measures the degree of inequality in individual growth rates in education.

A second possibility is to rank both sets of individual education shares by increasing income. The shape of the curve indicates whether growth in the education has been in favor/against the income-poor. If the curve is mostly below the diagonal we can say that growth rates in education have been as a whole higher among rich individuals, suggesting divergence in education rates among income classes (Nissanov and Silber, 2009). On the other hand, if the curve is mostly above the diagonal it would imply that these growth rates have been as a whole higher among income-poor, suggesting convergence in education rates among income classes.

A third possibility is to rank individual shares in education in t on the horizontal axis and in t+1 on the vertical axis, by increasing value of the education variable at time t; in which case we are able to test whether growth in education has been in favor/against education-deprived poor. This is the unconditional concentration curve for education. If it lies below the diagonal, it indicates that growth rates in education have diverged¡Xthey are generally higher among individuals with high education and lower

among the less educated; if it lies above the diagonal, it indicates convergence in education rates¡Xwith higher rates among individuals with lower levels of education.

In all three cases we also derive indices of distributional changes, first by multiplying a row vector of educational shares at t by the G-matrix and then by multiplying the result by a column vector of educational shares at t+1. In these multiplications we rank the shares in the row and column vector by a decreasing ratio, to obtain a measure of the inequality of the individual growth rates in education. When we rank both vectors by decreasing individual income at time t, we obtain a measure of the pro-poorness (in terms of income) of the growth rates in education. Finally if we rank both vectors by decreasing educational levels at time t, we obtain a measure of the ¡§pro-low level of education¡¨ of these growth rates in education. If the index is negative, we can conclude that there was beta-convergence in the individual growth rates of education.

The three distributional curves above were defined non-anonymously; we assumed that we knew which educational level each individual i had at t and t+1. In other words we assumed that longitudinal data for at least two periods were available. However we do a similar anonymous analysis, by assuming that i refers to a given centile of the distribution of educational levels at times t and t+1. The first distributional change curve then measures inequality in the growth rates (in education) of the various centiles of the distributions. The second curve checks whether these growth rates in education of the various centiles were in favor of the poor. Finally the third curve indicates whether growth rates were in favor of the "low educational centiles" in which case one could conclude that there was sigma-convergence of the educational levels.

An empirical illustration based on Demographic Health Surveys (DHS) as well as on panel data illustrates the usefulness of the proposed approach.

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