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Income Poverty has been Halved in the Developing World, Even When Accounting for Relative Poverty

At the Millennium Summit in 2000, 189 countries committed to a set of ambitious social objectives known as the Millennium Development Goals. The first and maybe the most prominent of these goals was to halve extreme income poverty by 2015, taking 1990 as the reference year. An individual is considered extremely poor if her income is lower than \$1.9 per day in 2011 Purchasing Power Parity (Ferreira et al., 2016), an absolute poverty threshold capturing the minimal resources necessary to satisfy her basic physical needs. By 2015, this goal had been reached by a large margin, mostly due to the strong growth experienced in many developing countries (World Bank, 2018).

Unfortunately, the developing world experienced an increase in within-country inequality over the same period (Bourguignon, 2015; Milanovic, 2016; Anand and Segal, 2008; Ravallion, 2014). This increase in within-country inequality generated more social exclusion because larger income disparities make it more difficult for an individual left behind to engage in the everyday life of her society (Townsend, 1979; Ravallion, 2008). The fraction of individuals who earn less than half the income standard in their society – the typical relative poverty threshold – has increased over the period 1990-2015 in a large part of the developing world. Therefore, for a large number of developing countries there is a disagreement on the direction of income poverty change between absolute measures and relative measures.

This increase in relative poverty casts some doubt on the success achieved against poverty because many policy makers are committed to help the poor satisfy their basic physical needs and, simultaneously, to prevent them from social exclusion. This commitment has been stated for instance by the World Bank (2015). Such policy makers must evaluate the evolution of income poverty using overall poverty measures, i.e. indicators capturing both absolute and relative poverty. Importantly, overall poverty comparisons depend on a normative weight that captures the priority assigned to the absolutely poor. This priority measures how much more (or less) overall poverty is reduced when an additional unit of income is given to an absolutely poor individual rather than to an individual who is only relatively poor. When absolute and relative measures disagree on the direction of poverty change, the direction of overall poverty change depends on the arbitrarily chosen priority parameter. This significantly limits the usefulness of overall poverty measures.

In order to partially overcome this limitation, we impose the following normative assumption: an individual who is absolutely poor must be considered more poor than an individual who is only relatively poor, regardless of the income standard in their respective societies. We view this assumption as rather mild since this normative stance is largely shared: it is reflected in the

answers to a questionnaire experiment conducted all over the world by Corazzini et al. (2011) and has also been expressed in the poverty measurement literature (Atkinson and Bourguignon, 2001; Decerf, 2017). Moreover, Decerf (2018) provides an axiomatic result showing that overall poverty measures should satisfy this assumption.

We consider a family of overall poverty measures that satisfy this assumption. This family is parametrized by the priority assigned to the absolutely poor. The two extreme values of this parameter attribute zero and infinite priority to the absolutely poor, respectively. We provide results characterizing the theoretical conditions under which the change for all measures in that family have the same sign.

Our normative assumption makes it possible to obtain overall poverty comparisons that do not depend on the priority parameter even when absolute and relative measures disagree. This assumption is violated by relative measures. Now, our overall measure boils down to an absolute measure when infinite priority is given to the absolutely poor, but it does not boil down to a relative measure when zero priority is given to the absolutely poor. Here is an example revealing the role of our assumption. Consider an income distribution for which the absolute threshold is smaller than the relative threshold. Assume that this distribution has only one poor individual, whose income is smaller than the absolute threshold. This individual is absolutely poor. Consider a second distribution that is obtained from the first distribution by a particular form of unequal growth: the income of all individuals increases, the income of the poor individual increases above the absolute threshold, but her income increases at a slower pace than the income standard. The poor individual is only relatively poor in the second distribution. The second distribution has a larger income standard than the first distribution, hence a larger relative threshold. Importantly, the income of the poor individual is now further below from the relative threshold because her income increased at a smaller pace than the income standard. Therefore, relative poverty is larger in the second distribution. Now, overall poverty is unambiguously larger in the first distribution because our normative assumption implies that the only poor individual is more poor in the first distribution, where she is absolutely poor.

Using World Bank data, we characterize the evolution of overall poverty for the developing world over 1990-2015 (the reference period for the first Millennium Development Goal). We restrict our sample to low and middle income countries. Estimating overall poverty requires selecting both an absolute and a relative line. For instance, one of our specification uses the extreme poverty line and the Societal poverty line of the World Bank (2018). Our results show that all measures in our family have declined by at least 50% when applied to the developing world over 1990-2015. In other words, overall poverty has been halved, regardless of the exact value selected for the priority parameter. This result is robust to alternative specifications of the absolute and relative poverty lines and to the exclusion of major countries such as China or India. This result holds for a significant fraction of countries. Our findings confirm and

strengthen positive evaluations of the success achieved on the first Millennium Development Goal.