



Looking at Pro-Poor Growth from an Agricultural Perspective

STEPHAN KLASEN and MALTE REIMERS*

University of Goettingen, Germany

Summary. — Pro-poor growth has been identified as one of the most promising pathways to accelerate poverty reduction in developing countries. The diagnostic pro-poor growth toolbox has so far focused on the income dimension as well as key non-income achievements in education and health. This article contributes to the literature by expanding the toolbox with several new measures that take into account the extraordinary importance of agricultural productivity for poverty reduction in developing countries. We distinguish between land productivity and labor productivity and find that the poor identified by low incomes, poor education outcomes, low land productivity and low labor productivity overlap only to a small degree, suggesting that analyses of pro-poor growth from these different perspectives are complementary. The toolbox is then applied to three comparable household surveys from Rwanda (EICV data for the years 1999–2001, 2005–06, and 2010–11), a country that has experienced impressive economic growth since the genocide in the mid-1990s and that has undertaken considerable efforts to increase agricultural productivity and improve the population's access to social services over the first decade of the 2000s. Our application shows that the enormous progress made in the income, education, and health dimension of well-being has been pro-poor according to most definitions of the concept. The new tools reveal that the land productivity-poor experienced pro-poor growth in the relative (and absolute) sense while the labor productivity-poor increased their labor productivity relatively (but not absolutely) faster than the labor productivity-rich even though the former dispose of considerably lower education levels. © 2016 Elsevier Ltd. All rights reserved.

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1. INTRODUCTION

Given that the eradication of poverty worldwide continues to be one of the most important challenges for humanity, much research effort has over the last decades been dedicated to the question how this ambitious goal may be achieved. As a result, the idea of growth that is particularly poverty-reducing, or “pro-poor” growth (PPG), emerged in the late 1990s/early 2000s as a way to accelerate poverty reduction (e.g., Grimm, Klasen, & McKay, 2007; Klasen, 2004, 2008). Since then, this concept has received a great deal of attention, and its focus on how the poor are benefitting from growth is seen as central to poverty reduction efforts (e.g., Besley & Cord, 2007; Klasen, 2004; Ravallion, 2001; United Nations, 2000; World Bank, 2000a, 2000b). The literature on pro-poor growth has developed various instruments providing researchers with the possibility to evaluate from an *ex-post* perspective the extent to which the poor benefited from recent developments in a country (these instruments are regularly referred to as the “pro-poor growth toolbox”). Most notably, Ravallion and Chen (2003) introduced the growth incidence curve (GIC) as a central tool to measure pro-poor growth where percentiles of households are lined up by income on the *x*-axis and then the growth rate of each percentile is mapped on the *y*-axis. Grosse, Hartgen, and Klasen (2008) and Klasen (2008) introduced the concept of the non-income growth incidence curve (NIGIC) and showed that the pro-poor growth toolbox can be extended to non-income dimensions of poverty such as education or health. Using the GIC/NIGIC one can then assess whether, according to the definitions proposed in Grosse *et al.* (2008) and Klasen (2008) conditioning on income or the non-income dimension in question, growth was pro-poor or not. A related approach was also pursued by Ali and Son (2007) who developed the opportunity curve (OC) which is likewise focused on non-income dimensions of poverty and plots the level of access to certain social services against the cumulative share of the population ranked by income.

However, all of the above-mentioned tools focus too far on income and non-income dimensions of well-being. One reasonable way to further extend the concept is to examine how pro-poor agricultural productivity improvements have been. Given the extraordinary importance of agricultural productivity improvements for poverty reduction worldwide (e.g., Christiaensen, Demery, & Kuhl, 2011; De Janvry & Sadoulet, 2010; Valdés & Foster, 2010; World Bank, 2007), we suggest here to define the “poor” not only in terms of income, education, or health, but also in terms of agricultural productivity. Such an approach can be readily implemented in the PPG-toolbox by slightly modifying some of the existing tools. The resulting new instruments can be called “productivity growth incidence curve” (PGIC) and “productivity opportunity curve” (POC) and allow us to look at pro-poor growth from a complementary, agricultural productivity-based perspective. When doing so, it is important to recognize that the land and the labor productivity-poor are not automatically

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referring to the same households. Instead, these two sub-groups can exhibit quite different characteristics and distinguishing between both groups in the analysis may hence provide us with interesting new insights in its own right.

To illustrate the potential of this extended toolbox, we then apply it to three waves of the nationally-representative EICV household survey from Rwanda (years 1999–2001, 2005–06, and 2010–11). Rwanda was chosen for our empirical application for four reasons. First, the Rwandan economy has since the genocide in 1994 gone through an impressive development and Rwanda belongs currently to the most rapidly growing countries in Sub-Saharan Africa (average annual growth rate of *per capita* income during 2000–10 of 4.67% compared to an SSA average of 2.65% (WDI, 2012)). Second, the Rwandan government has over the last decade undertaken considerable efforts to increase the population's access to social services which is one of the reasons why Rwanda has—despite the very challenging situation after the genocide—achieved the vast majority of the Millennium Development Goals by the year 2015 (UNDP, 2014). Third, Rwanda has the highest population density in Sub-Saharan Africa (approx. 431 inhabitants per square kilometer compared to an average of SSA countries of approx. 36 inhabitants per sq. km.) and its population keeps on growing rapidly at a rate of nearly 3% annually. Fourth, Rwanda remains a heavily rural and agriculturally based economy with more than 80% of the population living in rural areas and more than 75% of the workforce being employed in the agricultural sector (all numbers from WDI, 2012). The combination of high population density, high population growth, and a largely agrarian economy forces the Rwandan government to find ways to increase the productivity of the agricultural sector to ensure food security as land is an increasingly scarce factor which cannot be expanded much anymore. Rwanda has in fact engaged in a variety of policies to improve agricultural productivity; therefore it is interesting to study which households actually experienced such productivity growth and what were its correlates.

The results of our analysis indicate that Rwanda has in recent years achieved impressive progress in both, income and non-income dimensions of poverty. The observed progress was in many cases even pro-poor according to the most demanding definitions of this term (e.g., for adult literacy, access to improved sanitation and incidence of illness/injuries in the last 14 days). The new agricultural productivity-based tools, namely the monetary and crop-specific PGICs, first show that the overlap between income-poor, education-poor, and agricultural land/labor productivity-poor is relatively small so that studying pro-poor growth from these perspectives is indeed complementary. They also reveal that the labor productivity-poor were able to increase their productivity levels relatively (but not absolutely) faster than the productivity-rich. Using the POCs (Type 1) it is further found that the labor productivity-poor exhibit in all three surveys lower education levels than the labor productivity-rich. Yet, as part of the recent expansion of education in Rwanda the absolute gap in education between these two groups has decreased slightly over the last years. Lastly, the POCs (Type 2) reveal considerably lower labor and land productivity levels for human capital-poor households in Rwanda.

The article proceeds as follows. Section 2 gives a brief overview on different concepts of pro-poor growth and the measurement tools suggested so far. Section 3 discusses the policy relevance and limitations of the existing toolbox. In addition, it introduces the new instruments which enable us to look at pro-poor growth from an agricultural perspective. In Section 4 it is explained why it is important to look at

the land and labor productivity-poor separately. Section 5 describes the EICV household data which are used for the empirical application. The results of our pro-poor analysis are then discussed separately for the existing PPG-toolbox (Section 6) and the new agricultural productivity-based tools (Section 7). Lastly, Section 8 summarizes the main results of our analysis and discusses potential limitations and policy implications.

2. DEFINITION AND MEASUREMENT OF PRO-POOR GROWTH

Based on the empirical finding that both lower initial inequality as well as reductions in inequality are key drivers of poverty reduction (e.g., Bourguignon, 2004; Ravallion, 2001), the idea of pro-poor growth has emerged in the late 1990s/early 2000s as one of the key instruments to achieve sustainable poverty reduction (Klasen, 2004; Ravallion, 2001; United Nations, 2000; World Bank, 2000a, 2000b). Yet despite numerous contributions to the debate, there is until today no consensus definition of what precisely is meant by pro-poor growth (e.g., Duclos & Wodon, 2004; Hanmer & Booth, 2001; Kakwani & Pernia, 2000; Klasen, 2004; McCulloch & Baulch, 1999; Ravallion & Chen, 2003; Ravallion & Datt, 2002; Son, 2004; White & Anderson, 2001), with different groups of researchers/policy makers emphasizing different aspects (Duclos & Wodon, 2004; OECD, 2006).

In this article, we follow Grosse *et al.* (2008) and Klasen (2008), and distinguish between a weak-absolute, a relative, and a strong-absolute definition of pro-poor growth. According to the weak-absolute definition, every growth spell where the poor benefited to any extent (i.e., their aggregated growth rate was larger than zero) must be called pro-poor. The idea behind this notion is that to achieve poverty reduction (at least when applying an absolute concept of poverty) it is not important how the income growth of the poor is compared to the one of the non-poor, but only that their incomes increased at all. However, one obvious downside of the weak-absolute definition is that it calls, somewhat counterintuitively, a growth spell pro-poor even when the poor benefited significantly less from it than the non-poor. The relative definition addresses this shortcoming and argues that growth episodes are only pro-poor if the poor's income grew relatively faster than the one of the non-poor (i.e., the growth rate of the poor was larger). Hence, growth rates must be biased in favor of the poor implying that relative inequality between the poor and the non-poor will fall. The strong-absolute definition goes even a step further since it requires the *absolute* income gains of the poor to be larger than those of the non-poor. Some researchers describe such growth as “biased in a dramatic fashion in favor of the poor” (Klasen, 2008, p. 421) or even “super pro-poor” (Kakwani, Khandker, & Son, 2004, p. 4). As shown empirically by White and Anderson (2001) the criteria of the strong-absolute definition of pro-poor growth are only rarely satisfied in reality. However, this is particularly true if the analysis is focused on the monetary dimension. When analyzing progress in non-monetary dimensions of poverty, it is not completely unusual to observe PPG according to all three definitions since many of the indicators are bounded above, i.e., they have a predefined maximum value (e.g., number of vaccinations, share of the population having access to certain services, years of schooling) which makes the occurrence of pro-poor growth according to the relative and the strong-absolute definition more feasible, particularly when better-off groups are already close to the upper bound.

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