



# The Impact of Growth in Small Commercial Farm Productivity on Rural Poverty Reduction

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**Summary.** — Our core thesis is that in both low- and middle-income countries, rapid growth in agricultural production and income among small commercial farmers is the dominant means of reducing rural poverty. This effect is generated from increased expenditures from smaller commercial farmers on the poor, labor-intensive, non-tradable, rural non-farm sector, thereby increasing incomes for the rural non-farm population and reducing poverty levels.

We illustrate the relationship between small commercial farmers, rural non-farm households, large commercial farmers, and urban households in three contrasting situations. First, we analyze Punjab, Pakistan, a middle-income province with a large urban sector, dominance of small commercial farms in the local economy and significant land area managed by large commercial farms. Second, we analyze Sindh, Pakistan, a middle-income province with a large urban population and dominated in rural areas by large feudal holdings, but with a significant small commercial farm component. Third, we analyze data from Ethiopia, a low-income country with a relatively small urban sector and dominated by small commercial farms.

In the two middle-income provinces of Pakistan, the role that agriculture plays in income determination is much less than the urban sector, but it maintains a dominant role in rural poverty determination. In Ethiopia, the low-income country, agricultural growth is a dominant variable both in income growth and poverty reduction—accounting for 73% of employment growth in the fast agricultural growth case. Large-scale commercial farms show little impact of agricultural growth on poverty reduction as compared to areas dominated by small commercial farms, partly because of their small proportion of total agricultural output, and partly due to weak consumption based multipliers.

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## 1. INTRODUCTION

Our core thesis is that in both low- and middle-income countries, rapid growth in agricultural production and income among small commercial farmers is the dominant means of reducing rural poverty. This effect is generated from increased expenditures from smaller commercial farmers on the poor, labor-intensive, non-tradable, rural non-farm sector, thereby increasing incomes for the rural non-farm population and reducing poverty levels. This mechanism explains findings of cross-sectional studies and is consistent with a strong correlation between agricultural growth and poverty reduction.

We define small commercial farmers as households producing sufficient agricultural output to be above the poverty line, but not sufficient to sustain a lifestyle fashioned after those in urban areas. They are not poor, meaning that they earn incomes that are above their country's poverty line, and they sell a large proportion of their agricultural output. Rural non-farm households are those owning or farming on an insufficient land size to rise above the poverty line. Because of their inability to produce sufficient agricultural output to be above the poverty line, let alone sell even small proportions of their agricultural output to nearby markets, they produce primarily labor-intensive non-tradable goods and services, such as house improvements and personal and commercial services.

In this paper, we analyze three different geographic, climatic, political, and cultural situations to show how the extent of poverty reduction may differ according to the agricultural growth rate and the relative size of the three rural population sectors and the urban population sector. We conduct two analyses for provinces in Pakistan, a middle-income country

with a large urban sector. The Punjab province is dominated by small commercial farmers, but hosts a substantial large-scale farm sector as well. The other province, Sindh, is dominated by a large-scale, feudal farming sector but also has a substantial small commercial farm sector. In the third analysis, Ethiopia, we contrast the first two analyses by evaluating a low-income country with a small urban sector and farming dominated by small commercial farms.

Our empirical effort has two components. First, we use large-scale household surveys to provide descriptive data on the share of households and land in the three rural household population sectors. We have chosen survey sources that are notable for their professionalism: for Ethiopia, the Central Statistical Agency (CSA), and for Pakistan, the Pakistan Bureau of Statistics Household Income and Economic Survey. The three geographic areas provide substantial variability in the proportions of the three rural and one urban income class.

Second, we use a simplified growth accounting framework to analyze the effect of various assumptions about agriculture growth rates and the proportions of each population sector in each geography on poverty reduction. The basic sources of

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data for that effort are the descriptive studies stated above, and several coefficients drawn entirely from secondary sources, such as from Bell, Hazell, and Slade (1982) and Rao (1975). Those data are scarce and force reliance on logic to fill the gaps. We illustrate sensitivity to one of those assumptions and provide the basis for a wide range of sensitivity tests.

## 2. LITERATURE REVIEW

There is substantial literature counter to our position that rapid agricultural production growth by small commercial farmers is an effective driver of poverty reduction. Much of this literature was prompted by widespread observation in the 1970s that the Green Revolution was not reducing poverty (Glaeser, 1987; Griffin, 1972, 1974, 1989; Griffin & Ghose 1979; Griffin, Khan, & Ickowitz, 2002; Junankar, 1975; Pearse, 1980, specific to India; Niazi, 2004, and Cleaver, 1972, specific to Pakistan; Christiansen, Demery, & Kuhl, 2006 review the academic debate on the role of agriculture in poverty reduction).

Griffin and Ghose's World Development paper (1979) is a careful, data-rich analysis that covers the bulk of the issues from the literature on the Green Revolution. The purpose of our references in this paper is not to provide an overview of this literature but to focus on the major areas of disagreement or complementary with our paper. Griffin is explicit that "there is no evidence that agricultural growth reduces poverty." He compares poverty rates and agricultural growth rates for numerous countries over a five-year period in the late 1960s with a five-year period during the early 1970s, noting a relationship in areas of large production increase such as the Punjab of India.

Griffin's detailed statistical analysis rules out fluctuations in production and differences in population density as explanations for the lack of poverty reduction, leading to his conclusion that the issue lies with high land concentration in the hands of more prosperous farmers. He details how Punjab India's political and institutional systems funnel resources disproportionately to them, and makes a strong case for land reform policies that provide land, even very small plots, to the poorest rural people.

Our analysis questions those positions. Griffin notes that land reforms generally distribute to those already owning enough land to avoid poverty. Our paper, in its analysis of large feudal holdings, is in agreement that only through expropriation of large-scale feudal farms can a major impact be made on poverty reduction. However, in our large-scale farm analysis, we show that land distribution to large-scale farm workers or tenants, most of whom are in poverty, not only lifts them out of poverty but lifts many with even fewer land holdings out as well.

Surprisingly, we find that none of the current literature divides "small-scale farms" into those earning incomes or producing an agricultural output that would be above their country's poverty line and those below. In all literature, average farm size is calculated as all farmed land, excluding large commercial outliers, divided by the number of landholding households—typically producing a number that is quite small and not representative of farms that produce the bulk of output. Griffin implicitly assumes no transfer mechanism from higher-income farmers to those below the poverty line. This distinction, however, is the core of our paper.

More recent literature (since 2000) examines the potential role of smallholder agriculture in reducing poverty in a more favorable light (Bravo-Ortega & Lederman, 2005; Fan,

Joanna, Michiel, & Alex, 2013; Hazell 2013; Hazell, Poulton, Wiggins, & Dorward, 2007; Lipton, 2006). Lipton (2006) and Hazell *et al.* (2007) make a strong case for promoting small farms to drive economic growth and poverty reduction. See also Loayza & Raddatz, 2010.

Fan *et al.* (2013) define three smallholder classes: (1) subsistence farmers *without* profit potential who face both hard and soft constraints; (2) subsistence farmers *with* profit potential who face only soft constraints; and (3) commercialized smallholder farmers. Soft constraints include limited access to markets and information, financial capital, infrastructure, and smallholder-friendly technologies; whereas hard constraints include constraints that are generally far outside of farmers' control, such as high population density, low quality soil, low rainfall, high temperatures, and remote inaccessible location.

There is substantial literature that supports our position about the mechanisms by which small commercial farmers transfer income to lift other rural population sectors out of poverty. Johnston and Mellor (1961) and Mellor (1966) argue that agricultural development focused on small- and medium-sized farms would generate rapid, equitable, geographically dispersed growth owing to agriculture's substantial labor-intensive linkages with the non-farm economy. Bell *et al.* (1982) made the earliest and still most substantial data-based contribution to this literature, showing how smallholders spend substantial portions of increased income (about half of increased incomes) on employment-intensive, non-tradable goods and services produced by the rural non-farm sector. Hazell and Ramasamy (1991) showed similar relationships for south India in the context of rapid agricultural growth, and Hazell and Roell (1983) did likewise for a comparative analysis of Malaysia and Nigeria. A lengthy overview by Delgado, Hopkins, and Kelly (1998) consolidated strong evidence of these indirect income-transfer mechanisms.

Haggblade, Hammer, and Hazell (1991) provide a technical analysis of the preferred methodology for analyzing these relationships, which our methodology follows. Balla (2004) shows the importance of the rural non-farm sector and documents the lack of data on this population sector. In more recent studies, Haggblade, Hazell, and Dorosh (2007), Haggblade *et al.* (2007), and Haggblade, Hazell, and Reardon (2010) highlight in much greater depth the role of the rural non-farm economy for poverty reduction and growth in Africa and Asia. Malik (2008) relates this to the situation in Pakistan.

Current literature does not define an optimal farm size to maximize growth and reduce poverty. However, Mellor (1992) and Dorosh and Mellor (2014) argue that it is necessary to focus on medium-sized farms—defined as farms large enough to adopt new technologies and produce surpluses for markets, yet small and numerous enough to have expenditure patterns that drive a vibrant, rural non-farm economic sector. Our paper defines rural household classes more precisely and quantifies the relationships.

While a smaller proportion of the literature, some analysis in recent years has also discussed allocating resources into large-scale farms as a means of accelerating agricultural production because smallholder farmers are not efficient means of increasing agricultural production. This literature is contrary to much of the recent literature (Hazell, 2013; Lipton, 2006).

The World Development paper by Collier and Dercon (2014) provides a comprehensive overview of the arguments for large-scale farms, extended further by the exposition in Deininger and Byerlee (2011). In contrast to the Griffin-type analysis and all of the forgoing studies, Collier and Dercon

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