



# Agricultural commercialization and nutrition revisited: Empirical evidence from three African countries



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## ABSTRACT

The transition from subsistence to commercial agriculture is key for economic growth. But what are the consequences for nutritional outcomes? The evidence to date has been scant and inconclusive. This study contributes to the debate by revisiting two prevailing wisdoms: (a) market participation by African smallholders remains low; and (b) the impact of commercialization on nutritional outcomes is generally positive. Using nationally representative data from three African countries, the analysis reveals high levels of commercialization by even the poorest and smallest landholders, with rates of market participation as high as 90%. Female farmers participate less, but tend to sell larger shares of their production, conditional on participation. Second, we find little evidence of a positive relationship between commercialization and nutritional status. As countries and international agencies prioritize the importance of nutrition-sensitive agriculture, better understanding of the transmission channels between crop choices and nutritional outcomes should remain a research priority.

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## 1. Introduction

According to conventional wisdom, the transition from subsistence (or semi-subsistence) to commercial agriculture represents a key ingredient for the economic development of low-income countries. By exploiting comparative advantages, agricultural commercialization enhances trade and efficiency, leading to economic growth and welfare improvement at the national level. This is further expected to initiate a virtuous cycle which raises household income, thus improving consumption, food security and nutritional outcomes inside rural households.

Yet, this mainstream, beneficial view of agricultural commercialization has also been challenged several times since the 1970s, with a large body of literature in the 1970s and the first half of the 1980s<sup>1</sup> emphasizing the adverse effects on households' welfare and nutrition, especially on the poorest groups of the rural population and the most vulnerable individuals within the household who are often considered unable to reap the benefits of increased

market orientation.<sup>2</sup> The concerns related especially to their food security and nutritional outcomes.<sup>3</sup> While many of these studies displayed a pronounced degree of ideology,<sup>4</sup> they also highlighted the need to better understand the underlying linkages between crop production, commercialization, income, consumption and nutrition at the household level.

Against this background, the International Food Policy Research Institute (IFPRI) revisited the issue,<sup>5</sup> using a more scientific and systematic approach which consisted of three components: (i) the development of a conceptual framework articulating the linkages

<sup>2</sup> For a quick overview of the several areas of debate of agricultural commercialization over time, see for example Maxwell and Fernando (1989) or the more recent Wiggins et al. (2011).

<sup>3</sup> Wiggins et al. (2011) mention that this may be somewhat overblown, since in most cases small farmers tend to prioritize growing their main staple food.

<sup>4</sup> Agricultural commercialization was often presented as the result of colonialist-type rural policies, favoring "cash crops" mainly for export reasons with minimal advantages for the rural population. This line of argument was favored by researchers supporting the so-called "food-first" view. For a more detailed review of this line of argument against cash cropping and related sources, see Maxwell and Fernando (1989), Appendix A.

<sup>5</sup> Other relevant research projects were also carried out in this period by the Department of Agricultural Economics of the Michigan State University. See for instance, Lev (1981).

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<sup>1</sup> See for instance Hernandez et al. (1974), Lappe (1977), as well as Dewey (1981).

between commercialization and nutrition; (ii) a better research design to compare commercialized and non-commercialized households; and (iii) the use of a cross-country comparative approach based on six different but comparable country micro-level analyses<sup>6</sup> carried out using a common research design. The IFPRI studies also mitigated the traditional assumption of a dichotomy – and hence a necessary competition – between cash and staple crops, which had deeply influenced the way agricultural commercialization had been conceived and measured in most of the previous literature.<sup>7</sup>

Unlike many of the previous studies, the majority of IFPRI country studies found generally a positive, though small, impact of agricultural commercialization on the nutritional status of rural households, where the positive relationship was assumed to operate primarily through the linkages between household income, household caloric intake, and child caloric intake. Nevertheless, as the authors of the studies acknowledged, several limitations remained: “Econometrically, a common practice is to estimate a set of reduced form equations with an extended list of exogenous explanatory variables that affect any of the structural relations. This approach is not followed in this book, in part because of data limitations (von Braun and Kennedy, 1994; Ch. 2, p. 24).”

Since then, there has been little new empirical evidence<sup>8</sup> on the links between agricultural commercialization and nutrition,<sup>9</sup> despite the implementation of numerous expensive projects to promote market-oriented crops, based on the assumption of a beneficial nutritional effect.

In the spirit of the other papers in this volume, this study revisits two prevailing wisdoms. First, participation in market activities by smallholders is low. Second, the impact of commercialization on nutritional outcomes is generally positive. In doing so, the paper reconsiders the quantification and characterization of agricultural commercialization and provides new, systematic evidence on its relationship with nutritional outcomes in three Sub-Saharan countries. In particular, it uses recent panel surveys from Malawi, Tanzania and Uganda conducted under the Living Standards Measurement Study-Integrated Surveys on Agriculture (LSMS-ISA) program. Unlike in most previous studies, these surveys are nationally representative, which enables a more systematic comparison across different settings and also allows one to better control for a number of the endogeneity issues that arise in estimating the impact of commercialization on nutritional outcomes. The study further aims to capture the heterogeneity implicit in the commercialization choices of different smallholder households. For example, Duflo and Udry (2004) suggest that income from different crops as well as income from different plot owners may serve distinct purposes within the household and thus have different impacts. Using individual-level crop data, we are able to differentiate the impact of commercialization based on the gender of the farmers and the type of crop mix grown and sold, which are both assumed to affect the relationship between commercialization and nutritional outcomes.

The paper is organized as follows. Sections 2 and 3 provide a brief overview of the literature and a short description of the data, respectively. Section 4 profiles commercialization in the three countries by constructing an index of commercialization at the

household and crop levels. Section 5 descriptively explores the relationship between agricultural commercialization and nutritional outcomes. Then the section presents an econometric strategy and the main findings. Finally, conclusions are presented in Section 6.

## 2. Agricultural commercialization and nutrition: a brief literature review

The empirical literature on the nutritional outcomes of agricultural commercialization can be grouped into three strands: (i) a wide and heterogeneous set of research projects carried out before the launch of the IFPRI agenda; (ii) the IFPRI work between 1986 and 1994; (iii) a few studies devoted to the topic starting from the early 1990s.

A review of the first wave of studies fails to settle the debate on the linkages between agricultural commercialization and nutrition. As shown in Table 1 (which reports the literature review carried out in von Braun and Kennedy, 1986<sup>10</sup>), results are confusing and ambiguous, with the same crop having opposite effects both between and within countries. Studies in this period usually lacked a proper conceptual framework, adopting instead a “black-box” approach which did not articulate the underlying channels leading to various outcomes. The main approach was a comparison of nutritional outcomes between cash crop adopters and non-adopters. The evidence was often anecdotal and based on country case studies, making it impossible to compare results both across and within countries. In most studies, the definition and measurement of commercialization was subjective (based on the adoption or non-adoption of a given list of cash crops).

Subsequently, the IFPRI studies also developed a conceptual framework to articulate the complex set of linkages between the process of agricultural commercialization and the nutritional and health status at the household level. In particular, they examined how agricultural commercialization affected each of the four key steps between national food production and individual nutritional outcomes, identified by Pinstrup-Andersen in the early 1980s,<sup>11</sup> i.e. “national/community food availability”, the “ability and desire of households to obtain food”, “intra-household food distribution” and “health and sanitary factors”.

First, the decision to adopt a market-oriented production system is expected to influence the degree of food availability at the national, community and household levels. Factors such as competition among limited resources (such as land, labor and capital), the amount of food imports and aid, the degree of diversity of available foods and the presence of seasonal and irregular fluctuations may be influenced by a rise in market orientation in smallholder farmers. Through this channel they may impact national or regional food availability, which, by affecting food prices, may have relevant nutritional implications. However, national food sufficiency can be a poor indicator of household nutritional status, as “food may be plentiful but the poor may still be unable to access it”.<sup>12</sup> Thus, at the household level, it is important to look at the ability of each household to effectively obtain food.<sup>13</sup> This ability varies depending

<sup>6</sup> Previous literature was limited in its scope by the available data, since information had been mainly available in aggregate form.

<sup>7</sup> See in particular the empirical results provided in von Braun and Kennedy (1986).

<sup>8</sup> The IFPRI research agenda on agricultural commercialization and nutrition stretched from the mid-1980s to the mid-1990s.

<sup>9</sup> The study by Wood et al. (2013) is a notable exception. Others (Carletto et al., 1999, 2010, 2011) focused more on the determinants of the commercialization process and its impact on poverty, as opposed to food security and nutrition.

<sup>10</sup> A wider literature review on studies conducted before the mid-1980s was carried out six years later by Randolph (1992). It showed similar results.

<sup>11</sup> See in particular Pinstrup-Andersen (1983).

<sup>12</sup> von Braun and Kennedy (1986).

<sup>13</sup> In this paper, we use different anthropometric measures of children under five years of age to compute measures of stunting, wasting and underweight as well as associated Z-scores capturing deviations of sample children from a reference population.

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