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Global value chains, large-scale farming, and poverty: Long-term effects in Senegal

Goedele Van den Broeck [a,*], Johan Swinnen [b], Miet Maertens [a]

[a] Division of Bioeconomics, Department of Earth and Environmental Sciences, KU Leuven, Celestijnenlaan 200E, 3001 Heverlee, Belgium
[b] LICOS – Centre for Institutions and Economic Performance, Department of Economics, KU Leuven, Waaistraat 6, 3000 Leuven, Belgium

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ABSTRACT

This paper presents panel data evidence on the impact of expansion of global value chains and large-scale export-oriented farms in developing countries over almost a decade. We estimate the income effects of wage employment on large-scale farms in the horticultural export sector in Senegal, using data from two survey rounds covering a seven-years period of rapid expansion of the sector. We estimate average income effects as well as heterogeneous income effects, using fixed effects and quantile fixed effects regressions. We find that poverty and inequality reduced much faster in the research area than elsewhere in Senegal. Employment in the horticultural export sector is associated with higher household income and the income effect is strongest for the poorest households. Expansion of the horticultural export sector in Senegal has been particularly pro-poor through creating employment that is accessible and creates substantial income gains for the poorest half of the rural population. These pro-poor employment effects contrast with insights in the literature on increased inequality from rural wage employment.

1. Introduction

The expansion and transformation of high-value food export chains, and the implications for rural households in developing countries and emerging markets remain highly debated (Beghin et al., 2015; McCullough et al., 2008; Swinnen, 2007; Van den Broeck and Maertens, 2016). Evidence shows that these value chains take on different forms and affect a large number of rural households. High-value export chains are often dominated by a limited number of export companies, and organized based on contract-farming with local farmers and/or on vertically integrated production on large-scale farms (Maertens et al., 2012). These chains can include thousands of smallholder farmers – e.g. the vegetable export sector in Madagascar (Minten et al., 2009) – and/or ten- or hundred-thousands of estate workers – e.g. the horticultural export sectors in Kenya, Peru and Ethiopia (Humphrey et al., 2004; Schuster and Maertens, 2016; Staelens et al., 2016).

The literature largely points to positive welfare effects for rural households, either through product markets and contract-farming or through labor markets and wage employment (Maertens et al., 2012; Swinnen, 2007). On the other hand, the available evidence suggests that contract-farming in high-value export sectors often excludes the poorest households, while employment is found to be more inclusive. Yet, some studies point to low wages, insecure employment contracts and inferior working conditions; and expect expansion of high-value exports to lead to increased vulnerability of poor households (Barrientos et al., 2011; Tallontire et al., 2005).

Despite a growing number of studies, empirical evidence still has shortcomings. First, most studies use cross-sectional household survey data to analyze productivity, income and poverty effects of the expansion of global value chains. Solving endogeneity problems is difficult with such data and estimates from existing studies are likely biased. Panel data evidence can help to control better for selection bias and better identify causality, and corroborate or fine-tune earlier findings from cross-sectional studies.

* Corresponding author.
E-mail addresses: Goedele.vandenbroeck@kuleuven.be (G. Van den Broeck), jo.swinnen@kuleuven.be (J. Swinnen), Miet.maertens@kuleuven.be (M. Maertens).

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Recent studies use panel data to identify income and welfare effects of smallholder participation in supermarket supply chains and high-value export chains (Andersson et al., 2015; Dedehouanou et al., 2013) and the impact of standards and supply chain modernization on smallholder farms (Van Herck and Swinnen, 2016) but no panel data evidence exists for workers in high-value export chains.

Second, there is no evidence on the long-term welfare effects of the expansion of global value chains. Existing studies mainly analyze short-term effects by analyzing income variation between households participating in global value chains, either as contract-farmers or as workers, and non-participating households. There is no evidence whether positive welfare effects persist over time – a limitation that arises from the lack of longitudinal data. Given that high-value exports from developing countries started to boom in the early 2000s, a need for insights into the long-term effects arises.

In this paper, we address both these shortcomings. We use panel data to estimate the long-term[1] income effects of wage employment in the horticultural export sector in Senegal after more than a decade of investments. We use data from a balanced panel of 255 households and two survey rounds conducted in 2006 and 2013. Investments in horticultural exports in the research area, the Senegal River Delta, started in 2003 and the first exports were realized in 2005. Hence, our two-period panel data covers a 7-year period from the early export years up to a decade after the first investments started. During that period four new horticultural export companies established in the area; and wage employment in the sector expanded to include 42% of households in the area. We present descriptive evidence on the employment, income, poverty and inequality dynamics in the research area. We use a fixed effects regression approach to estimate the average income effect of wage employment in the horticultural export sector and eliminate bias from time-constant unobserved heterogeneity. In addition, we use a fixed effects quantile regression approach to reveal how effects differ along the income distribution[2] and we compare the impact of wage employment in the horticultural export sector with the impact of wage employment in other sectors.

The research area experienced a spectacular reduction in poverty of almost 30 percentage points over the panel period 2006–2013. Our analysis reveals that entry into wage employment in the horticultural export sector is a major source of poverty reduction, increasing household income for the poorest decile of the population with 53%. A comparison with other employment sectors reinforces conclusions on the potential for pro-poor growth from the development of global agri-food value chains and large-scale farming.

2. Global value chains and development: A brief review of the empirical literature[3]

The early literature on global value chains and development focuses on product market effects and investigates the development implications of contract-farming for high-value export markets. Studies from around the world demonstrate positive welfare effects of smallholder participation in high-value contract-farming schemes: e.g. Asfaw et al. (2009) find that contract-farming in the horticultural export sector in Kenya improves farm incomes and productivity; Maertens and Swinnen (2009) point to a doubling of farm incomes and Dedehouanou et al. (2013) to increased subjective well-being for contract-farmers in the vegetable export sector in Senegal; Minten et al. (2009) demonstrate that vegetable contract-farming with a large export company increases farm incomes and reduces the length of the hungry season in Madagascar; Wang et al. (2009) and Miyata et al. (2009) point to positive income effects for smallholder horticultural farmers in China; Carletto et al. (2011) find that smallholder contract-farming in the horticultural export sector in Guatemala results in improved asset accumulation; and Dries and Swinnen (2004) and Dries et al. (2009) show that contract-farming in the dairy sector leads to larger investments, technology transfer and productivity growth on smallholder farms in Eastern and Central European countries. However, studies indicate that smallholder participation in high-value export sectors through contract-farming is decreasing and biased towards more capitalized and larger farms. A shift towards large-scale integrated farming, leading to the exclusion of smallholders, has been documented for example in the horticultural export sector in Kenya (Dolan and Humphrey, 2000; Jaffee and Masakure, 2005) and in Peru (Schuster and Maertens, 2013). A bias towards more capitalized and larger farms has been observed in horticultural export sectors in Kenya (Asfaw et al., 2010), Senegal (Maertens and Swinnen, 2009), Thailand (Kersting and Wollni, 2012), Guatemala (Hernández et al., 2007), and Chile (Handschuch et al., 2013).

More recent literature notes that many high-value export sectors include more rural households as hired laborers than as contract farmers, and points to the importance of labor market effects. Some studies point to positive welfare effects from wage employment in high-value export sectors: e.g. Maertens and Swinnen (2009) and Maertens et al. (2011) document that employment on large-scale horticultural export companies in Senegal creates substantial income gains; Mano et al. (2011) point out that employment in the cut flower export sector in Ethiopia reduces poverty; and Herrmann and Grote (2015) show that large-scale sugarcane farming in Malawi contributes to poverty reduction through employment creation. Other authors are more skeptical and argue, based on observations from various countries and sectors, that the economic impact of employment in high-value export sectors is limited due to inferior working conditions, low wages and insecure employment contracts (e.g. Barrientos et al., 2000; Barron and Rello, 2000; Baumgartner et al., 2015; Patel-Campillo, 2010; Trifkovic, 2014; Ulrich, 2014; Schuster and Maertens, 2016; Staelens et al., 2016). While there is consensus on the importance of employment creation in high-value export chains, viewpoints on the rural development and poverty-reduction potential of such employment is mixed. Yet, evidence is still scarce and mainly comes from cross-sectional studies estimating short-term effects.

The debate on the employment and development implications of global value chains should be put in perspective to the broader literature on rural wage employment. In the development economics literature, off-farm and non-farm wage employment are considered to be crucial for poverty reduction and rural development (Barrett et al., 2001; Lanjouw and Lanjouw, 2001; Haggblade et al., 2010). Wage employment is argued to play an important role in the livelihoods of many farm-households, either to diversify income and reduce or cope with risks, to supplement low-season income, or to finance agricultural inputs and investments (Kijima et al., 2006; Bezu and Barrett, 2012; Adjognon

[1] The term "long-term effects" refers to both the panel period of 7 years and the estimation of effects more than a decade after the initial investments in the horticultural export sector in the study region were made. The term "long term" is also consistent with other publications in development economics using this term to refer to a similar period, such as Carter et al. (2007) and Banerjee et al. (2016).

[2] While the impact evaluation literature has moved beyond the estimation of average welfare effects and heterogeneous effects have been analyzed in studies on the impact of entrepreneurship, contract-farming, standards and cooperative membership (e.g. Fisher and Qaim, 2012; Hansen and Trifkovic, 2014; Verhofstadt and Maertens, 2015; Narayanan, 2014; Ramaswami et al., 2009; Vial and Hanoteau, 2015), evidence on heterogeneous effects is largely lacking in the literature on high-value exports.

[3] For more elaborate reviews on global value chains, standards and development, we refer to Beghin et al. (2015), Swinnen et al. (2015), Swinnen (2016) and Van den Broeck and Maertens (2016).