



# Labour Market Effects of Large-Scale Agricultural Investment: Conceptual Considerations and Estimated Employment Effects

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**Summary.** — Large-scale agricultural investments (LSAIs) in general and their socio-economic implications in particular have been heavily debated in recent years. While some claim that LSAIs are an important catalyst for development in neglected rural areas, others caution that they pose a risk to rural communities' livelihoods. The extent to which LSAIs provide benefits for local communities is hence still contested. This paper sets out to conceptually understand what effects the establishment of a large-scale farm has on the rural labor market in low- and middle-income countries. In addition, we empirically address the question of whether large-scale farming as recorded in the Land Matrix creates or destroys employment. We develop a transition matrix to identify several scenarios based on key determinants of the *direct* employment creation potential of LSAIs, namely the former land use, the crop type and the production model. We empirically assess the actual importance of these scenarios and the employment creation to be expected from this sample of LSAIs based on labor intensities. We further look into the *net* employment effects for land formerly used by smallholder farmers. Our analysis shows that LSAIs massively crowd out smallholder farmers, which is only partially mitigated through the cultivation of labor intensive crops and the application of contract farming schemes. This holds true for all regions targeted by LSAIs, although regional differences are found in terms of magnitude. The paper concludes that these effects tend to be large on the local scale (i.e., in the immediate surroundings of the investment site) but small in relation to total national employment in agriculture. However, *indirect* employment creation related to LSAIs, which is discussed but not empirically addressed in this paper, needs to be taken into account to have the full picture.

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## 1. INTRODUCTION

The demand for land suitable for agricultural production is growing globally (Lambin & Meyfroidt, 2011). A major driver is the increased demand for food and energy of growing populations worldwide (Scheidel & Sorman, 2012). In this context the expansion of large-scale commercial farming is seen as a potential solution<sup>1</sup> to satisfy this demand (Deininger, 2013). In the last decade investors have been increasingly acquiring land in developing countries for huge farming operations (Nolte, Chamberlain, & Giger, 2016). The media have coined this phenomenon “land grabbing”; a more neutral term is “large-scale agricultural investments” (LSAIs). The term “LSAI”<sup>2</sup> is also more precise since it excludes cases of speculation and only considers land acquisitions that result in an operational farm.

Such investments, in general, and the socio-economic implications of these investments, in particular, have been heavily debated in recent years (Ali, Deininger, & Harris, 2017; Baumgartner, von Braun, Adebaw, & Müller, 2015; Collier & Venables, 2012; Cotula, 2013; German, Schoneveld, & Mwangi, 2013; Herrmann, 2017; Kleemann & Thiele, 2015; Messerli, Giger, Dwyer, Breu, & Eckert, 2014). The implications such investments have for target countries' agricultural sectors and, more specifically, for rural employment are still contested. The creation of jobs is one of the most important and common pledges investors make to local communities and governments when acquiring land; although, the actual realization of this commitment is often debated: while some see potential for employment creation (Baumgartner *et al.*, 2015; Kleemann & Thiele, 2015), others fear that the most

vulnerable parts of society will lose their means of existence (Li, 2011). Obviously, whether and to what extent these investments turn out to benefit host countries critically hinges on the potential for employment creation, particularly for those who lose their land without compensation. Although past experiences with large farms have been largely negative, recent changes in the context conditions have given reason to believe that large farms may have a future (Deininger & Byerlee, 2012) and may actually contribute to increased welfare and poverty reduction due to employment creation (Deininger & Xia, 2016; Herrmann, 2017; Van den Broeck, Swinnen, & Maertens, 2017).

Moreover, generating employment is a key component of economic and social development and, thus, of poverty alleviation (World Bank, 2012) — an issue ranked high on most

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national development agendas. However, development processes typically go hand in hand with declining shares of agricultural sectors' gross domestic product (GDP) contributions and decreasing employment in agricultural sectors (Chenery & Syrquin, 1975; Foster & Rosenzweig, 2007; Kuznets, 1957; Üngör, 2013). In other words, the shift from agriculture-based economies toward industrialized or service-oriented economies seems to be a necessary precondition for development. In many poor countries, the agricultural sector continues to be the backbone of the economy and employs a large share of the population. Development processes often focus on urban areas and leave rural populations behind (Headey, Bezemer, & Hazell, 2010). Against this logic, large-scale farms in rural areas could hence shoulder the burden of creating agricultural wage employment, for instance, by (i) satisfying labor demand by directly employing former land users and (ii) stimulating the local economy and creating employment opportunities outside the agricultural sector through sectoral linkages. Moreover, establishing a large-scale farm might have further implications for the local economy, such as lower food prices and greater access to new technologies, to name but a few. Depending on the extent to which these effects materialize, they could alleviate poverty (Irz, Lin, Thirtle, & Wiggins, 2001; Maertens & Swinnen, 2009).

This paper seeks to conceptually understand the effects the establishment of a large-scale farm has on the rural labor market in low- and middle-income countries. Moreover, it addresses the question of whether large-scale farming creates or destroys employment when compared with the previous activity carried out on the land in question (e.g., smallholder farming). To do this, we provide relevant background information on rural labor markets in general and the labor productivities and intensities in the agricultural sector in particular in Section 2. In Section 3 we elaborate on the direct labor market effects that occur once a large-scale farm is set up. For these direct effects, we identify and discuss three key determinants which are decisive for the employment creation potential of LSAs: (i) the former land-use type, (ii) the crop cultivated, and (iii) the production model applied. Based on these determinants, we develop different scenarios and illustrate them in a transition matrix. In Section 4 we present the data for our empirical application. In Section 5 we empirically assess the employment creation in three steps: First, we assess small-scale and large-scale labor intensities based on data from the Land Matrix Global Observatory<sup>3</sup> and the FAO smallholder data portrait. Second, we assess which scenarios are actually occurring in reality and derive implications for the labor market. Third, we estimate the net employment effect for LSAs on former smallholder land in selected countries. In Section 6 we elaborate on further indirect effects and discuss the validity and limitations of our findings, before concluding in Section 7.

## 2. RURAL LABOR MARKETS AND LABOR PRODUCTIVITY

### (a) Rural labor markets

In rural areas of low- and middle-income countries, agriculture is the main source of employment and income (Rosenzweig, 1988). In 2010, 24% of the workforce in low- and middle-income countries was employed in agriculture, while agriculture's contribution to GDP was at 10% (World Bank, 2016). In those countries heavily targeted by foreign agricultural investments, the share of workers in the agricul-

tural sector is even higher — for instance, 73% in Ethiopia and 72% in Uganda in 2013 (World Bank, 2016).<sup>4</sup>

Over two-thirds of farming activities are performed by self-employed individuals (Gindling & Newhouse, 2014); wage and salary employees are mainly found in the processing industry. Agricultural wage employment opportunities exist predominantly only for casual and seasonal workers, which can be explained by the seasonality of agricultural production. For most crops, there are clear seasonal peaks (e.g., toward harvest times) during which times labor demand is high (Nolte & Subakanya, 2016; Rosenzweig, 1988). In addition to being limited in terms of quantity, those temporary jobs are also limited with regard to quality. Major differences between regular and irregular wage employment can be found in the working conditions, social protection, and entitlements and benefits for workers (International Labour Organisation (ILO), 2003).

Labor supply in rural areas is considered to be infinite. Even in areas where new labor opportunities open up, the supply remains high due to people migrating into these areas (Taylor & Martin, 2001). A major constraint in rural areas is that the workforce typically lacks the training to perform high-skill tasks (Collier & Dercon, 2014).

Jobs created by LSAs are often earmarked for wage workers. In some cases self-employment opportunities are provided through contract farming. A smallholder farmer's decision on whether to switch from self- to wage employment is mainly driven by the social opportunity costs of the self-employed (shadow wages). Smallholders will only decide to enter wage employment or release family members to work on a large-scale farm if the drop in profits is compensated by the wage earned on the large-scale farm. More precisely, wages paid on large-scale farms have to be equal to or exceed the marginal revenue product of smallholder farmers (Barrett, Sherlund, & Adesina, 2007).

Another aspect of wage employment created on large-scale farms is that it contributes to the formalization of the agricultural sector, from self-employed smallholder farming to wage employment. This in turn increases the fiscal revenue of an economy since larger holdings are more likely to be formally registered and hence taxable compared to smallholders (Irz et al., 2001); this is despite the fact that investors in agriculture enjoy considerable tax benefits in many countries (Cotula, Vermeulen, Leonard, & Keeley, 2009).

### (b) Agricultural labor productivity and labor intensity

As countries develop, their agricultural sectors lose importance. This can be illustrated by comparing the share of people employed in agriculture and the sector's contribution to GDP in low- and middle-income countries over time. During 2000–10, the share of the workforce engaged in agriculture almost halved from 45% to 24%. Within the same period the agricultural sector's contribution to GDP only decreased by 23% (from 13% to 10%) (World Bank, 2016). The sharp drop in agricultural employment compared with the more modest decrease in agriculture's GDP contribution clearly points to increased labor productivity. In other words, less labor input is required to produce the same level of output. Labor productivity measures employment efficiency and is defined as output per unit of labor input during a period of time.

Generally speaking, (agricultural) labor productivity varies largely across countries. In 2015 the agriculture value added per worker (in constant 2010 USD) in Norway was more than four hundred times higher (USD 98,950) than that in Burundi (USD 231) (World Bank, 2016). These differences in agricultural productivity can be explained by a variety of factors: First, poli-

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