



# Do development projects crowd-out private sector activities? Evidence from contract farming participation in Northern Ghana<sup>☆</sup>



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## ABSTRACT

Contract farming (CF) is attractive as a possible private sector-led strategy for improving market coordination and smallholder farmers' welfare. At the same time, governmental and non-governmental development projects aimed at improving farmers' welfare continue to be organized. It is not uncommon for CF activities and development projects to take place in the same communities. Yet so far there is no evidence on how development projects affect CF activities. We examine factors affecting entry in and exit from different maize CF schemes in Northern Ghana, and focus specifically on the role of development projects. We find that the presence of agricultural development projects in the community is associated with lower scheme entry, but this not the case for non-agricultural projects. CF exit is more strongly associated with maize projects, but not significantly with non-maize or non-agricultural projects. Thus, our findings do not support concerns of a general moral hazard problem arising from the presence of any development project, but indicate possible negative associations of more closely related agricultural or maize projects with maize CF participation.

## 1. Introduction

Contract farming (CF) has attracted considerable attention over the past decades. A number of studies show that CF can increase agricultural productivity, profitability, farmers' income, and reduce food insecurity (e.g. Maertens and Swinnen, 2009; Bellemare, 2012; Wang et al., 2014; Bellemare and Novak, 2016). These successful examples raise hope that this could be a private sector-led strategy for inclusive and sustainable economic growth and poverty reduction in less developed countries.

Aside from support to private sector actors, governmental (GO) and non-governmental (NGO) agencies continue organizing development projects that engage directly with communities, households and individuals in an attempt to improve their welfare. Yet, there are increasing concerns over the possible negative impact of such projects on private sector activities. Evidence of private sector crowding out in developing countries was mainly shown for the case of provision of GO fertilizer subsidies (e.g. Xu et al., 2009; Ricker-Gilbert et al., 2011;

Jayne et al., 2013). It mostly received attention in settings with large-scale GO programs, but less so for smaller-scale projects.

In this study, we use data from the Upper-West Region in Northern Ghana to shed light on the correlation between the presence of development projects and smallholder farmers' participation in maize CF schemes. This is a very poor and remote region, which provides a justification for it being a target area of many GO and NGO development projects. At the same time, aggregators or integrative firms have set up interlinked transactions through CF schemes that can be considered as a private sector response to the existing market failures.

We make two main contributions to the current CF literature. First, to our knowledge, this is the first study examining the particular topic of development projects crowding out private-sector driven CF schemes. The possible impact of development projects on private sector activities is a pertinent issue. When they deliver complementary services, development interventions can improve the effectiveness of the private sector or enhance the capacity of smallholders to interact with

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the private sector (Barrett et al., 2012). However, when the inputs and services they offer are similar to those that the private sector aims to provide, there is a risk of crowding out of the private sector (Ricker-Gilbert et al., 2011). Moreover, development projects may lower motivation for private sector engagement among participants, threatening loan repayment, CF scheme profitability and sustainability.

Second, we analyze farmers' entry and exit decisions in CF schemes over time. Most empirical studies analyze the drivers of CF participation in a static, binary regression model (Wang et al., 2014). Yet, CF schemes face considerable dynamism, with frequent entry and exit by both farmers as well as the contracting firms (Barrett et al., 2012). Farmers are typically exposed to CF schemes at different times. Hence, the use of static models based on data from one specific time period can give biased estimates of who enters or exits CF schemes, especially when there are relatively high turnover rates in CF participation.

Frequent entry and exit of smallholder farmers in CF can be problematic for the sustainability of CF schemes, especially if firms face fixed entry and exit costs, for example due to screening and farmer training at scheme entry or farmers' default at scheme exit. Moreover, profitability of scheme participation can increase over time due to increased familiarity with specific inputs and new agricultural practices (Boselie et al., 2003). High CF participant turnover and shorter scheme participation durations can significantly reduce overall scheme profitability, hence lowering profitability for participating farmers and further reducing CF participation (e.g. Brambilla and Porto, 2011).

We focus on maize CF in three districts in the Upper-West Region of Ghana. We find that maize CF participation increased over the past 7 years, and in 2015 (at the time of the survey) up to 46% of maize farming households had ever participated in CF. However, only half of them still participate in CF. Our results indicate a negative correlation between CF participation and the presence of development projects, and that this is likely related to a similar focus on improving livelihoods through agriculture or maize production rather than a widely differing focus offered by non-agricultural development projects. The presence of agricultural projects in the community is correlated with lower entry in CF, whereas there is no correlation between non-agricultural projects and CF participation. Exit from CF is higher in the presence of maize-focused projects, but not of non-maize agricultural projects.

The rest of the article is organized as follows. In the following section, we discuss the literature concerning farmers' motivation to participate in CF schemes and possible interaction effects of public and private sector interventions. In the third section, we describe the study background. Then we discuss the empirical estimation methods. Descriptive results and regression results are shown in respectively the fifth and sixth section. We conclude by discussing the implications and limitations of the findings for policy making and future research.

## 2. Farmers' motivations to engage in CF and the impact of development projects

Many smallholder farmers in developing countries operate in an environment of missing, failing or imperfect markets for inputs and outputs, credit and risk (de Janvry et al., 1991). Interventions that address market failures and help improve smallholder market participation hold substantial promise to reduce poverty (de Janvry et al., 1991; Barrett, 2008). During the past decades, numerous GO and NGO projects tried to increase smallholders' productivity and encourage market access. Various project interventions aimed at increasing technology adoption through provision of extension services, subsidized farm inputs, or facilitating farmers' access to credit (e.g. Fan et al., 2008; Ricker-Gilbert et al., 2011). Others focused on improved access to market information, for example through information and communication technology (e.g. Aker, 2011; Fafchamps and Minten, 2012), or facilitated linkages between input suppliers and rural markets (Kelly et al., 2003).

At the same time, the private sector has developed strategies to operate in imperfect markets, for example through CF (Key and Runsten, 1999;

Swinnen and Maertens, 2007). Contracts can reduce market failures for smallholder farmers by provision of inputs, credit, or by reducing marketing risks. Likewise, contracting firms mitigate market failures by generating a guaranteed supply of produce with specific characteristics. CF arrangements can also reduce transaction costs for both the participating farmers as well as the organizing firm (Key and Runsten, 1999).

CF is portrayed as a win-win strategy for both buyers and sellers, yet there is a relatively high rate of failure in CF (Brambilla and Porto, 2011; Barrett et al., 2012; Minot and Sawyer, 2016). CF schemes typically face a range of coordination and enforcement problems, often related to information asymmetries and incentive incompatibility between the buyer and the farmer (also referred to as a moral hazard problem) which can explain frequently-observed problems such as contract breach, input diversion, and side-selling (Key and Runsten, 1999). In the subsections below we discuss farmers' motivation for CF participation and the potential impact pathways of development projects on CF participation.

### 2.1. Farmers' motivation to participate in CF

There is a rich theoretical and empirical literature explaining farmers' CF participation. Reardon et al. (2009) distinguish between determinants of a farmer's capacity to participate in CF on the one hand, and determinants related to farmer's incentives on the other hand. Not only socio-economic characteristics of the farmer are therefore important, but which characteristics matter and how also depends on contract design attributes and the institutional arrangements between farmers and traders (Schipmann and Qaim, 2011; Abebe et al., 2013).

First, farmers require a certain capacity to participate in CF. This can relate to specific farm assets, such as labor, land or non-land assets, but it could also be the access to credit, inputs or extension services in cases where they are not included in the contracts (Key and Runsten, 1999; Reardon et al., 2009). Farmers may also need to be accessible by road or other public infrastructure, or in some cases they can only enter a contract through participation in cooperatives (Reardon et al., 2009; Wang et al., 2014).

Second, farmers need an incentive to participate in CF. Commonly encountered motivations to enter CF are a price premium for the product, a reduction in the relative cost and risk of production, and a guaranteed market outlet (Masakure and Henson, 2005; Reardon et al., 2009; Maertens and Vande Velde, 2017). In the presence of imperfect input or credit markets, farmers may also consider participation in CF when the firm supplies inputs, even if the firm possibly overcharges for these inputs (Key and Runsten, 1999; Abebe et al., 2013). A guaranteed output market is also an incentive to participate in CF, even if the firm offers lower price for farmers' produce. Finally, knowledge acquisition and technical assistance may also be a motivation for farmers' CF participation (Masakure and Henson, 2005; Abebe et al., 2013). The incentive to participate or exit is very much dependent on the knowledge and availability of alternative options for the farmers.

The current CF literature rarely distinguishes between CF entry and exit (an exception is Michelson (2017)). Yet, similar to drivers of adoption and disadoption of agricultural technologies, drivers of CF entry and exit are likely to differ. CF entry can come with fixed costs (both from the firms' as from the farmers' perspective) in terms of farm investments or learning costs, and the decision is mainly based on expectations of benefits, costs and ex-ante risks from CF participation. The decisions on continued participation, or CF exit, are informed by farmers' actual/realized benefits and costs. Risk, uncertainty and heterogeneity of profits may discourage CF entry, but are also likely reasons for frequent exits from these CF schemes (Barrett et al., 2012). In some cases, the product or available technologies or inputs promoted through CF may simply not be profitable enough to compensate for high transaction and operating costs, or yields and profits may be adversely affected by exogenous shocks. This can discourage CF participation or make it impossible for farmers and buyers to abide by the contract and continue CF operations (Swinnen and Vandeplass, 2011; Barrett et al.,

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