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Contract farming configuration: Smallholders' preferences for contract design attributes

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ABSTRACT

While Contract Farming (CF) can enhance smallholders' income in developing countries, empirical research on the motivation of smallholders to participate in CF is scarce. This paper explores farmer preferences for particular contract design attributes. We combined analytical hierarchy process and discrete choice experiments to investigate the importance of contract design attributes. On the basis of data collected among potato farmers in Ethiopia, we found that input market uncertainty is more important than output market uncertainty in smallholders' decision to participate. Farmers tend to minimize their risk by opting for the buyer firm above the state and NGOs as providers of seed, inputs, and technical assistance. The results imply that the success of a CF scheme depends on the willingness of the firm to incorporate the preferred contract design attributes. Institutional intervention in the input market could induce agribusiness firms to offer attractive contracts for smallholders.

Introduction

Participation in global markets calls for greater integration in agrifood value chains to respond to the quality and safety requirements of international customers. Contract Farming (CF) has been claimed to have a positive impact on local economies by improving the welfare of rural households (Barrett et al., 2012; Bellemare, 2010; Bijman, 2008; Grosh, 1994; Reardon et al., 2009; Singh, 2002). However, CF also remains a much debated institutional arrangement (Key and Runsten, 1999; Little and Watts, 1994; Oya, 2012; Singh, 2002). Discussions on CF mainly revolve around recurrent issues, such as the role of private-led CF schemes in addressing market failures (Grosh, 1994) and in reducing the risk of agribusiness firms with regard to production, land expropriation, and labor (Herath and Weersink, 2009), and emerging issues, such as agri-food globalization, private standards, and land grabbing (Oya, 2012). Analyses of CF often use a political economy perspective, an institutional economics perspective, or a combination of both.

In the political economy view, CF is seen from the lens of unequal power relations, conflict, and labor related issues (Little, 1994; Wilson, 1986). The main concern is that CF can lead farmers into problems such as loss of autonomy, increased production risk, and indebtedness (Little and Watts, 1994; Porter and PhillipsHoward, 1997; Rehber, 1998; Singh, 2002).

Conversely, the institutional economics view emphasizes the role of CF in addressing market failures (e.g., Barrett, 2008; Grosh, 1994; Key and Runsten, 1999; Kirsten and Sartorius, 2002; Minten et al., 2009; Sartorius and Kirsten, 2007). More specifically, this literature focuses on the micro-functioning of CF schemes, dealing with transaction costs resulting from uncertainty, risk, market imperfections, and coordination failures.

Empirical studies in developing countries provide varied analyses about participation and welfare effect of CF. Several authors found that participation improves farmers' income (e.g., Barrett et al., 2012; Bellemare, 2012; Warning and Key, 2002), although the extent to which participation contributes to the welfare of smallholders continues to be a methodological question (Barrett et al., 2012). Evidence is mixed, however, concerning inclusion. While Warning and Key (2002), in Senegal Miyata et al. (2009) and Wang et al. (2011), in China, found no evidence of exclusion of smallholders from participation, others, such as Singh (2002), in India, Guo et al. (2005), in China, and Key and Runsten (1999), in Latin America, reported the opposite. The literature also documents several problems affecting CF performance: high default rate, biased terms, delayed payments, cheating, and lack of compensation for crop failure (Guo et al., 2005; Singh, 2002). Furthermore, Barrett et al. (2012) reported cases of high participation turnover due to lack of commitment to honor agreements by either party.

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A general conclusion from the literature is that CF improves income. Even those who are critical of CF schemes generally agree that participation improves household income (Little, 1994; Singh, 2002). Indeed, farmers will only participate in CF if there is an expected gain in doing so (Bellemare, 2012). Likewise, firms will choose CF when the expected benefits from contracting exceed those of the alternatives, such as buying on a spot market or producing on proprietary farms.

One question the existing literature does not address is about farmers' preferences for particular contract terms and provisions. While the main motivation of smallholders to enter into CF is the resolution of market failure, a closer look at participation decisions may disclose how different contract provisions are evaluated. Eventually, smallholders' contract acceptance can be improved by better aligning contract terms and provisions with farmers' preferences (Minten et al., 2009).

We argue that contract terms and conditions, hereafter called contract design attributes, can affect farmers' decisions to participate in CF by varyingly affecting their expected level of utility from participation. In theory, contracting parties choose a contract design that provides little incentive to opportunism. However, in practice, contracts are biased toward agribusiness firms and often expose smallholders to ex post risk (Singh, 2002), because firms choose contract design attributes that will offer them the highest payoffs without considering farmers' expected utility level (Barrett et al., 2012). Masakure and Henson (2005) noted that contracts involving smallholders are rarely governed by explicit performance and risk-sharing incentives. Hence, the likelihood that a contract design is attractive to smallholders remains uncertain. For the firm, this could lead to high transaction and coordination costs due to possible side-selling, default, and underinvestment (Delpierre, 2009; Miyata et al., 2009).

In reviewing the CF literature, we noted several gaps. First, although many authors discussed the importance of contract design attributes, surprisingly little attention has been paid to measure the relative importance of these attributes directly from farmers' perspective. Our study builds on Masakure and Henson (2005), who explicitly focused on ex ante aspects of smallholder' motivation toward CF. While these authors asked farmers about their motivation to enter into CF, our study goes a step further by using an experimental approach to elicit their preferences on contract design attributes. For example, while the authors reported oral contracts as the preferred contract form by the buyer firm, they did not investigate whether this option was also preferred by the farmers. Second, there is a general assumption in the literature that farmers are risk averse, and that their motivation to participate in CF is primarily to manage output price risks (e.g., Chavas and Holt, 1996; Michelson et al., 2011). Subsequently, agribusiness firms tend to design contracts with pre-fixed price, quantity, and quality specifications. However, contract design is a complex process involving many trade-offs (Bogetoft and Olesen, 2002), and farmers may have different risk preferences for the different markets in which they operate. Third, previous studies on CF heavily focused on the income and broader welfare effects, as well on individual-specific characteristics, as key determinants for participation. Yet, the effect of different contract design attributes on smallholders' contract choice has not been investigated.

The main objective of the present study is to explore the relative importance of different contract design attributes that could differentially affect the motivation of smallholders to participate in CF. Better information on farmers' preferences can be used by agribusiness firms to design better contracts as well as by policy makers in developing an enabling institutional environment.

Our study fits the framework developed by Barrett et al. (2012), where participation decision is conceptualized as a sequence of four stages: firm choice of procurement location; firm contract offer; smallholder contract acceptance; and firm and smallholders' decisions to honor the contract. In this framework, the fourth stage (contract compliance) is the outcome of the preceding stages, which reflect the attractiveness of the contract offer and the likelihood of the offer being accepted by farmers. Hence, our study is, in effect, an attempt to understand the preferences of farmers toward a contract offer ex ante, and can be considered as a first order condition for causality studies such as Bellemare (2012) and Barrett et al. (2012).

To achieve our objective, we combined a literature review to define contract design attributes, an analytical hierarchy process (AHP) method to identify the most important contract design attributes, and a discrete choice experiment (DCE) to elicit individual preferences. Choice-based approaches are relatively new to the CF literature.

The remainder of the paper is organized as follows. "Literature review and conceptual framework" provides a literature review and the conceptual framework. "Method" presents the method, followed by "Econometric results and discussion", where we present the empirical results and discussion. "Conclusion" provides the conclusion.

Literature review and conceptual framework

The objectives of this literature review are to explore the factors leading to CF, understand agricultural contract functions and concepts, and identify contract design attributes that could motivate smallholders to participate in CF. We do not aim to provide a full literature review of the determinants and the effects of CF; readers are advised to read the overview by Little and Watts (1994), Kirsten and Sartorius (2002), and Bijman (2008) or, more recently, Barrett et al. (2012).

Market imperfections and transaction costs – antecedents for participation in CF

Contracting between farmers and their buying firms can be conceptualized as a specific form of governance structure. According to Transaction Cost Economics (TCE), governance structures are institutional arrangements that have evolved (or have been chosen) in order to prevent or reduce transaction costs (Williamson, 1979). Although the TCE literature usually emphasizes asset specificity as the main source of transaction cost, in agricultural transactions uncertainty is the most common determinant of governance structure (Masten, 2000). Agricultural transactions involve high uncertainty because products are perishable and harvested seasonally. When farm products are delivered to the processing industry, transactions involve high coordination costs because of aligning production, harvesting, collection, and processing. In developing countries, which are often characterized by high market failures, smallholders are exposed to additional risk and uncertainty (Delgado, 1999; Key and Runsten, 1999; Poole et al., 1998; Poulton et al., 2010). Production risks are not only resulting from uncontrollable factors such as weather conditions, the quantity and quality of output is also affected by the environmental uncertainty related to failing input markets (e.g., unavailability of fertilizers at crucial moments in the growth cycle of the plant). In addition, farmers face price uncertainty due to high fluctuations in demand, and technological uncertainty due to insufficient assistance for using new crop varieties or inputs (Smale et al., 1994). By entering in a CF scheme, smallholders have the opportunity to engage in the production of a remunerative crop, a production that otherwise would entail high uncertainties that present prohibitive risks.

From the perspective of the agribusiness firm, CF can be an attractive governance structure as it allows to reduce the transac-