



Farmers' preferences for supermarket contracts in Kenya



Dennis O. Ochieng^{a,*}, Prakashan C. Veetil^b, Matin Qaim^a

^a Department of Agricultural Economics and Rural Development, Georg-August-University of Goettingen, Platz der Goettinger Sieben 5, 37073 Goettingen, Germany

^b International Rice Research Institute (IRRI), National Agricultural Science Complex, DPS Marg, New Delhi 110012, India

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ABSTRACT

With the modernization of global agri-food systems, the role of contract farming increases. This also involves smallholder farmers in developing countries. While previous studies have looked at economic impacts of contract schemes on smallholder farmers, little is known about farmers' preferences for contracting in general, and for specific contract design attributes in particular. Better understanding farmers' preferences and constraints is important to make smallholder contract schemes more viable and beneficial. This article builds on a choice experiment to analyze farmers' preferences and preference heterogeneity for contracts in Kenya. In the study region, supermarkets use contracts to source fresh vegetables directly from preferred suppliers. However, farmer dropout rates are high. Mixed logit models are estimated to examine farmers' attitudes towards critical contract design attributes. Having to deliver their harvest to urban supermarkets is costly; hence farmers require a significant output price premium. Farmers also dislike delayed payments that are commonplace in contract schemes. The most problematic contract attribute is related to unpredictable product rejection rates, substantially adding to farmers' risk. Designing contracts with lower transaction costs, more transparent quality grading, and fairer risk-sharing arrangements could enhance smallholder participation in supermarket procurement channels.

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1. Introduction

With the modernization of global agri-food systems, the role of contract farming increases (Wang et al., 2014; Otsuka et al., 2016). This also involves farmers in developing countries. Export or processing companies often source agricultural products through out-grower schemes, in order to ensure consistent and high-quality supply (Barrett et al., 2012; Dedehouanou et al., 2013; Rosch and Ortega, 2014; Bellemare and Novak, in press). Also in domestic supply chains in developing countries, the role of contracting increases. Rising urban middle classes have higher preferences for food quality and convenience. As a result, modern supermarkets are gaining market shares in retailing (Reardon and Timmer, 2014; Rischke et al., 2015). Especially for fresh and perishable products, supermarkets often do not rely on traditional wholesale markets but procure directly from farmers through contracts (Rao and Qaim, 2011; Michelson et al., 2012; Trebbin, 2014).

Contract farming arrangements in general, and supermarket contracts in particular, can provide new marketing opportunities

for smallholder farmers in developing countries. Contracted smallholders may benefit from higher and more stable prices, as well as better access to inputs, technology, and information (Berdegue et al., 2005; Sartorius and Kirsten, 2007; Blandon et al., 2009a; Barrett et al., 2012; Reardon and Timmer, 2014). Indeed, recent studies showed that supermarket contracts have contributed to higher farm productivity and household welfare in some smallholder situations (Minten et al., 2009; Rao and Qaim, 2011; Rao et al., 2012; Michelson, 2013; Chege et al., 2015). However, studies also showed that smallholders are sometimes unable to participate in supermarket channels (Hernández et al., 2007; Neven et al., 2009), or they drop out of contracts for reasons that are not always entirely clear (Andersson et al., 2015). To some extent, the inability to participate can be explained by lack of human and financial capital. But unfavorable contract design may also play an important role (Schipmann and Qaim, 2011; Otsuka et al., 2016). Better adjusting contract design to the particular needs and constraints could help to make contract farming more viable for smallholders.

Relatively little is known about how variations in contract design affect smallholder participation and socioeconomic impacts. This is difficult to analyze with purely observational data, because variations in contract design rarely occur in the same

* Corresponding author.

E-mail address: Dochien@gwdg.de (D.O. Ochieng).

setting. A few recent studies used randomized field experiments to analyze effects of changing contract design in existing schemes (Saenger et al., 2013, 2014). Field experiments are costly, so implementing a larger number of experimental treatments – which would be required to evaluate changes in multiple contract design attributes – is hardly possible.

Choice experiments are less costly to implement than field experiments and have been used in recent studies to analyze smallholder preferences for contracts and particular contract terms and provisions. These studies evaluated preferences for hypothetical contract attributes related to output price and quality levels, the need for upfront investments, and the provision of training, credit, and inputs through the contracting company, among others (Bandon et al., 2009b; Schipmann and Qaim, 2011; Bellemare, 2012; Abebe et al., 2013). None of these studies looked at supermarket contracts, which often differ from those of export or processing companies. For instance, due to higher food quality and food safety standards in export markets, contracts in the export sector often involve strict regulations on the type of production technology to use (Okello and Swinton, 2007; Asfaw et al., 2010; Maertens et al., 2012). As part of the contracts, export and processing companies sometimes also provide credit, inputs, and extension services to farmers. In those cases, farmers are usually not allowed to side-sell their harvest to other buyers (Rosch and Ortega, 2014). Contracts with domestic supermarkets are often less stringent on production technology. Inputs and credit are rarely provided, so that side-selling is usually not prohibited (Hernández et al., 2007; Minten et al., 2009; Rao and Qaim, 2011). These differences may affect farmers' willingness and ability to participate in contract schemes.

We add to the literature by analyzing farmers' preferences for supermarket contracts in Kenya, using data from a choice experiment. We specifically look at a sample of smallholder vegetable producers that was surveyed over many years. Some of these farmers supply vegetables to supermarkets under contract while others sell their vegetables in traditional spot markets. Some farmers in the sample also had a supermarket contract in the past, but decided to switch back to supplying traditional markets. We hypothesize that the low rates of contract participation may be related to certain contract terms and provisions that are difficult to meet or simply disliked by farmers. This is tested by examining farmers' marketing choices with hypothetical variations in contract design. We also analyze the relative importance of different contract attributes by computing farmers' willingness to accept for each attribute level. Mixed logit models are estimated to account for preference heterogeneity. Choice experiments, like other approaches used to elicit stated preferences, are often associated with hypothetical bias (Hensher et al., 2005). Building on a sample of farmers with actual contract experience and using variations from existing contracts increases the level of realism in our experiment and may therefore help to reduce such bias.

The remainder of this article is organized as follows: the next section provides background on supermarket contracts in the Kenyan vegetable sector. Then the sample of farmers, the choice experiment, and the estimation procedures are described, before the results are presented and discussed. The last section concludes.

2. Supermarket contracts in Kenya

Kenya ranks second after South Africa in terms of growth and expansion of supermarkets in Sub-Saharan Africa (Planet Retail, 2016). Supermarkets account for about 10% of total food retailing in Kenya with a growing trend. In Nairobi and other big cities, the supermarket share is already much higher (Chege et al., 2015). As in other developing countries (Reardon and Timmer,

2014), modern supermarkets in Kenya started their business in major cities but more recently opened stores in smaller towns as well (Rischke et al., 2015). The most widespread supermarket chains in Kenya include Nakumatt, Uchumi, Tuskys, Naivas, and Ukwala, all of which are Kenyan owned. The spread of foreign-owned supermarket chains in Kenya has been limited up till now (Planet Retail, 2016).

Supermarket stores in smaller towns so far primarily sell processed foodstuffs. Many of the stores in bigger cities also have a large fresh food section, where a variety of fruits and vegetables is sold. Urban consumers often associate fruits and vegetables bought in modern supermarkets with higher quality, food safety, and freshness than products bought in traditional markets. On average, fresh products are also more expensive in supermarkets than in traditional markets. Supermarkets tend to place much emphasis on consistent supply and good outward appearance of fresh fruits and vegetables. As traditional wholesale markets are not sufficiently reliable in this respect, many of the fresh products are procured directly from farmers through contractual arrangements (Neven et al., 2009). Typically, farmers have to deliver their harvest directly to the supermarket stores. The produce has to be cleaned by farmers before delivery; leafy vegetables also have to be sorted and bundled ready for supermarket shelves (Rao and Qaim, 2013). Supermarket procurement officers occasionally visit contracted farmers to inspect production and post-harvest handling activities.

This study focuses on farmers in Kiambu County, Central Kenya, not far from the capital city of Nairobi. These farmers have a long tradition of growing vegetables, notably green leafy ones (kale, etc.) for the domestic market. Some of the farmers have marketing contracts with supermarkets in Nairobi whereas others sell the same type of vegetables in traditional markets, mostly to traders at the farm gate or in the village. Contracts only refer to the sales of vegetables and do not involve any provision of credit or inputs. Contracts stipulate the quantity of vegetables that a farmer has to deliver to a particular supermarket store on specified dates (Rao and Qaim, 2011). Farmers who are unable to deliver as scheduled are subsequently struck off the list of preferred suppliers and lose their contract.

Beyond the quantities agreed, contracted farmers can sell their vegetables in traditional markets. However, as farmers in Kiambu are small-scale producers, they rarely have significant excess quantities. In other words, contracted farmers sell most of their vegetables to supermarkets (Chege et al., 2015). Sometimes, they even collect vegetables from neighboring farms in order to meet the agreed quantities. The average quantity of vegetables sold per transaction is relatively small and does not differ much between supermarket and traditional marketing channels. However, in supermarket channels the frequency of transactions tends to be higher and deliveries have to be made on specified dates. Payments for vegetables delivered to supermarkets are delayed by one or two weeks. In traditional markets, farmers can sell whenever they want, and buyers pay immediately.

The prices for vegetables sold to supermarkets are higher and more stable than those typically obtained in traditional markets, which is why supermarket contracts are attractive for farmers (Rao and Qaim, 2011). In principle, any farmer can get a contract when he/she is able to supply certain quantities on a regular basis and deliver to the supermarket stores in Nairobi. Meeting these conditions is easier for farmers with advanced irrigation equipment and good access to public or private transportation (Rao et al., 2012). Most of the contracts are made between supermarkets and individual farmers, but in some cases farmer groups are also contracted. Collective action can help farmers to coordinate their supplies and reduce transportation and transaction costs.

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