

Contract Farming: What's In It for Smallholder Farmers in Developing Countries?

Marc F. Bellemare

JEL Classification Codes: L23, L24, O13, O14, Q12

As every self-respecting economics major knows by the time he graduates, whether a country benefits from international trade depends in theory on whether that country specializes in its comparative advantage—for example, whether it can specialize in the production of goods or services for which it has a lower opportunity cost. The production of agricultural goods being the comparative advantage of most developing countries, it follows—again, in theory—that those countries should specialize in agriculture.

But what does it mean to specialize in agriculture? For many developing countries, whose agricultural sectors are characterized by relatively primitive production technologies, specializing in agriculture necessarily means modernizing their agricultural sector, a move away from a situation wherein many smallholder farmers each produce several crops, primarily for their subsistence and using a relatively primitive technology, toward a situation where few larger producers each produce one or two crops for the market using modern technology. It also means moving from a situation where the many transactions required to bring agricultural commodities from producers to consumers take place on spot markets to a situation where those same transactions take place within more vertically integrated value chains. In other words, modernization implies that fewer transactions are necessary to bring a commodity from the same producer to the same consumer.

Consequently, policy makers in developing countries and in international organizations have come to see contract farming and agricultural value chains as key areas of policy intervention. But in order for developing countries to tap into their comparative advantage by modernizing

their agricultural sector, it will be necessary for smallholder farmers to actually want to participate in contract farming. So what are the reasons why those smallholders might want to participate in contract farming? And in light of recent evidence, do those reasons actually drive participation in contract farming?

“What's In It for Me?”

Grosh (1994) was the first to lay out the reasons why, in principle, smallholder farmers in developing countries might want to give up the apparent freedom of producing crops for themselves and their families or for selling at market in favor of producing crops—often different ones—for others within the context of highly regimented contracts.

Potential Advantages to Contracting

1. **Risk and Uncertainty:** Producing crops outside of a contract farming arrangement and for sale at market often means that a farmer is unsure of the price he will receive once he gets to market. This is especially so in developing countries, where such price risk and uncertainty is often more important than in developed countries, which can cause serious welfare losses (Bellemare, Barrett, and Just, 2013). In contract farming arrangements, however, it is often the case that the agreement between the grower and the processor specifies a price at which the crop produced under contract will be purchased by the processor from the grower, which eliminates price risk. In Bellemare (2012), for example, contracts almost always specified a fixed price to be paid by the processor to the grower.

2. Imperfect Factor Markets: Economic underdevelopment is often the result of fragmented or missing markets. For example, because of credit rationing due to imperfect information (Stiglitz and Weiss, 1981), a smallholder farmer may not be able to secure a loan which would allow him to make the required investments to adopt a new production technology. In contract farming arrangements, however, it is often the case that the processor advances inputs which would otherwise be difficult or impossible for the grower to obtain, and the contracted crop is used as collateral. In Bellemare (2012), for example, seeds, pesticides, and fertilizer were often provided by the processor to the grower, and the contracted crop was used as collateral.

3. Extension Services: The public provision of extension services is often lacking in developing countries and, as part of contract farming agreements, processors often provide their own private extension services. Those private extension services are often more trusted by farmers than are public extension services. Bellemare (2010) found that yields are positively and significantly related to the number of such private extension visits to the grower by a technical assistant working for the processor.

Potential Disadvantages to Contracting

Yet, contrary to what many economists and policy makers often seem to believe, contract farming arrangements are not a panacea. For one, contract farming is not easy to set in motion in places where it did not emerge organically. Moreover, contract farming is difficult to “make work,” as it often brings its share of problems and is thus unsustainable because one or both parties end up dissatisfied. Contract farming can give rise to the following issues:

1. Monopsony: It is often the case that the crop grown by smallholder

farmers in the context of a contract farming agreement is a crop for which there is little to no local demand. In West Africa, for example, cotton is often produced within agricultural value chains that are entirely owned by the state, who is the sole cotton buyer in the country (Elabed et al., 2013). In such relationships, where there is practically no market for the contract crop outside of the contract, the processor often abuses its monopsony power by renegeing on the terms of the contract, by underpaying growers, by delaying payment, and so on. In an edited volume with the evocative title of *Living under Contract*, Little and Watts (1994) present several cases where contract farming failed to fulfill its promises.

2. Contract Rigidity: Because of the specific quality requirements of consumers and the sanitary requirements of regulators in export markets, contract farming arrangements in developing countries are often much more rigid than production outside for one’s own consumption or for sale at market. Inputs have to be applied in specific quantities and proportions, specific tasks have to be performed at specific times, and specific techniques or implements have to be used. This often comes at great cost to smallholder farmers who are used to being their own bosses and producing according to their own schedules. More commonly, the opportunity cost of following a rigid production contract is the production of staples for one’s subsistence.

3. Leakage, or Side Selling: This is the flipside of monopsony power. In cases where there is a local market for the crop produced under contract, it is not uncommon for the contracted price to be lower than the local market price come harvest time. In such cases, it might be tempting for growers to sell some of the contracted crop on the local market at a higher price, claiming this as a loss. Whereas the exercise of monopsony power is

opportunistic behavior on the part of the processor, side selling—what Fafchamps (2004) refers to as “leakage”—is opportunistic behavior on the part of the growers. Minten, Randrianarison, and Swinnen (2009) relate an anecdote wherein rampant inflation in Madagascar led to mass leakage among the growers they studied.

As You Sow, So Shall You Reap?

The advantages and disadvantages of contract farming just discussed are true in principle. How does contract farming play out in practice? A collection of empirical country studies and reviews of this literature (Bijman, 2008, and Oya, 2012) offer some insights.

Does contract farming make smallholder farmers better off? The question is not new, at least not when one looks outside of agricultural and applied economics to consider the social sciences as a whole. Goldsmith (1985) reviews a number of case studies of contract farming in Africa, Asia, and Latin America, and finds that in the majority of cases, the income of growers is greater than that of non-growers. Moreover, he finds that participation in contract farming is associated with the adoption of better production technologies. Singh (2002) also compares contract farming arrangements in the Indian state of Punjab, and he also finds that those smallholder farmers who participate in contract farming have higher incomes.

The issue with both studies by Goldsmith (1985) and Singh (2002), however, is that they ignore the fact that it is entirely possible that those smallholders who elect to participate in contract farming may have already been better off than those smallholders who elect not to participating in contract farming prior to their participation. This is known as the selection problem, and not only does it threaten the internal validity of empirical

findings, it is also challenging to address in practice. Warning and Key (2002) were the first to attempt to deal with the self-selection of growers into contract farming in a study of peanut contract farming in Senegal, and they find that participants in contract farming did, indeed, have significantly higher incomes than nonparticipants.

Another common issue in the literature on contract farming is the lack of external validity. That is, researchers tend to focus on a single crop or on a single region, with little to no implications for other crops or regions. Simmons, Winters, and Patrick (2005) were the first to aim for more external validity by looking at three contracted commodities—maize, poultry, and rice—in three different locations in Indonesia, and they find that those households who participated in contract farming as poultry breeders and maize growers had better returns to capital than nonparticipants. Likewise, Miyata, Minot, and Hu (2007) looked at apple and onion contract farming arrangements in China, and found that participation in contract farming was associated with higher incomes.

Minten, Randrianarison, and Swinnen (2009) looked at contract farming over green vegetables in the capital region of Madagascar. The advantage of their study is that, although they looked at income, they also considered other indicators of welfare, namely income variability and the duration of the hungry season, finding that households who participated in contract farming were better off along all those indicators.

Aiming for external validity, Bellemare (2012) studied contract farming over more than 10 contracted crops across six regions of Madagascar. Using field-experimental methods to deal with the selection problem, he found that contract farming appeared to lead to a 10-percent increase in income. Yet even those

field-experimental methods are not immune from criticism, and they do not guarantee the identification of causal effects from contracting farming. There are many other studies of the welfare impacts of contract farming, including Glover and Kusterer (1990), Porter and Phillips-Howard (1997), Ashraf, Giné, and Karlan (2009), Bolwig, Gibbons, and Jones (2009), Maertens and Swinnen (2009), Rao and Qaim (2011), Michelson, Reardon, and Perez (2012), Dedehouanou, Swinnen, and Maertens (2013), Michelson (2013), Narayanan (2014), and Briones (2015).

The bulk of the evidence suggests that participating in contract farming improves the welfare of those who choose to participate (Wang, Wang, and Delgado, 2014). Yet because the identification problem—correlation is not causation—remains as thorny as ever, one has to keep in mind the distinct possibility that publication bias has molded what we know of the welfare impacts of contract farming. Null findings—in this case, findings that show no association between participation in contract farming and welfare—tend not to get published. Findings that tend to go against the dominant view—in this case, findings that would show a negative association between participation in contract farming and welfare—are perhaps even more difficult to publish than findings of no association. Hence, the publication process might lead to a surfeit of findings showing a positive association between participation in contract farming and welfare.

Policy Implications—or Lack Thereof

Whether policy implications can be derived from the foregoing depends on one's willingness to believe the findings in the literature. If one takes the positive findings discussed above at face value—that is, as having both

internal and external validity—then one should logically argue for policies that facilitate the emergence of or support contract farming. Concretely, this could be as simple as a policy wherein a government subsidizes the expansion of a processing firm's contracting activities to areas where (or groups with whom) it does not already contract, or it could be as complex as a legal reform that provides better legal recourse for both parties to a contract farming agreement in order to make contract farming agreements more likely to be sustained or to emerge at all.

If, given the issues discussed above—limited internal validity, external validity, or potential publication bias—one is more skeptical about the findings of the empirical studies discussed above, then there are few if any policy implications. This is especially the case considering that the literature has so far had little to say about the potential benefits of contract farming for those who did not choose to participate. As a consequence, it might be unwise to encourage the participation in contract farming of households who do not already do so. In that case, it is perhaps best to leave growers and processors alone, without trying to nudge one party or the other in any specific direction, and to invest instead in better evidence and replication studies to better inform future policy options.

For More Information

Ashraf, N., X. Giné, and D. Karlan. 2009. "Finding Missing Markets (and a Disturbing Epilogue): Evidence from an Export Crop Adoption and Marketing Intervention in Kenya," *American Journal of Agricultural Economics* 91(4): 973-990.

- Bellemare, M.F. 2010. "Agricultural Extension and Imperfect Supervision in Contract Farming: Evidence from Madagascar," *Agricultural Economics* 41(2010): 507-517.
- Bellemare, M.F. 2012. "As You Sow, So Shall You Reap: The Welfare Impacts of Contract Farming," *World Development* 40(7): 1418-1434.
- Bellemare, M.F., C.B. Barrett, and D.R. Just. 2013. "The Welfare Impacts of Commodity Price Volatility: Evidence from Rural Ethiopia," *American Journal of Agricultural Economics* 95(4): 877-899.
- Bijman, J. 2008. "Contract Farming in Developing Countries," Working Paper, Wageningen University.
- Bolwig, S., P. Gibbon, and S. Jones. 2009. "The Economics of Smallholder Organic Contract Farming in Sub-Saharan Africa," *World Development* 37(6): 1094-1104.
- Briones, R.M. 2015. "Small Farmers in High-Value Chains: Binding or Relaxing Constraints to Inclusive Growth?," *World Development* 72: 43-52.
- Dedehouanou, S.F.A., J.F.M. Swinnen, and M. Maertens. 2013. "Does Contracting Make Farmers Happy? Evidence from Senegal," *Review of Income and Wealth* 59(S1): S138-S160.
- Elabed, G., M.F. Bellemare, M.R. Carter, and C. Guirkinger. 2012. "Managing Basis Risk with Multiscale Index Insurance," *Agricultural Economics* 44(4-5): 419-431.
- Fafchamps, M. 2004. *Market Institutions in Sub-Saharan Africa*, Cambridge, MA: MIT Press.
- Glover, D.J., and K. Kusterer. 1990. *Small Farmers, Big Business: Contract Farming and Rural Development*, St. Martin's Press, New York.
- Goldsmith, A. 1985. "The Private Sector and Rural Development: Can Agribusiness Help the Small Farmer?," *World Development* 13(10/11): 1125-1138.
- Grosh, B. 1994. "Contract Farming in Africa: An Application of the New Institutional Economics," *Journal of African Economies* 3(2): 231-261.
- Little, P.D., and M. Watts. 1994. *Living Under Contract*, Madison, WI: University of Wisconsin Press.
- Michelson, H.C. 2013. "Small Farmers, NGOs, and a Walmart World: Welfare Effects of Supermarkets Operating in Nicaragua," *American Journal of Agricultural Economics* 95(3): 628-649.
- Michelson, H.C., T. Reardon, and F. Perez 2012. "Small Farmers and Big Retail: Trade-Offs of Supplying Supermarkets in Nicaragua," *World Development* 40(2): 342-354.
- Maertens, M., and J.F.M. Swinnen. 2009. "Trade, Standards, and Poverty: Evidence from Senegal," *World Development* 37(1): 161-178.
- Minten, B., L. Randrianarison, and J.F.M. Swinnen. 2009. "Global Retail Chains and Poor Farmers: Evidence from Madagascar," *World Development* 37(11): 1728-1741.
- Miyata, S., N. Minot, and D. Hu. 2007. "Impact of Contract Farming on Income: Linking Small Farmers, Packers, and Supermarkets in China," *World Development* 37(11): 1781-1790.
- Narayanan, S. 2014. "Profits from Participation in High Value Agriculture: Evidence of Heterogeneous Benefits in Contract Farming Schemes in Southern India," *Food Policy* 44: 142-157.
- Oya, C. 2012. "Contract Farming in Sub-Saharan Africa: A Survey of Approaches, Debates, and Issues," *Journal of Agrarian Change* 12(1): 1-33.
- Porter, G., and K. Phillips-Howard. 1997. "Comparing Contracts: An Evaluation of Contract Farming Schemes in Africa," *World Development* 25(2): 227-238.
- Rao, E.J. O., and M. Qaim. 2011. "Supermarkets, Farm Household, Income, and Poverty: Insights from Kenya," *World Development* 39(5): 784-796.
- Simmons, P., P. Winters, and I. Patrick. 2005. "An analysis of contract farming in East Java, Bali, and Lombok, Indonesia," *Agricultural Economics* 33(s3): 513-525.
- Singh, S. 2002. "Contracting Out Solutions: Political Economy of Contract Farming in the Indian Punjab," *World Development* 30(9): 1621-1638.
- Stiglitz, J.E., and A. Weiss. 1981. "Credit Rationing in Markets with Imperfect Information," *American Economic Review* 71(3): 393-410.
- Wang, H.H., Y. Wang, and M.S. Delgado. 2014. "The Transition to Modern Agriculture: Contract Farming in Developing Economies," *American Journal of Agricultural Economics* 96(5): 1257-1271.
- Warning, M., and N. Key 2002. "The Social Performance and Distributional Consequences of Contract Farming: An Equilibrium Analysis of the Arachide de Bouche Program in Senegal," *World Development* 30(2): 255-263.

Marc F. Bellemare (mbellema@umn.edu) is Associate Professor and Director, Center for International Food and Agricultural Policy, Department of Applied Economics, University of Minnesota, Saint Paul, MN.