

# Agricultural Value Chains in Developing Countries: Quo Vadis?

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# Introduction

When I was invited to give this keynote, it did not take me very long to come up with a topic.

After thinking, writing, and talking about agricultural value chains in developing countries—more specifically contract farming—for almost 15 years, I have a number of thoughts on the state of research on the topic.

This keynote is a good opportunity to gather and share those thoughts.

# Introduction

I have recently put some of those thoughts in writing in a review of the literature (Bellemare and Bloem 2018) and, before that, in a *Choices* article (Bellemare 2015), but even that remained somewhat brief.

The second half of my title refers to the question which, according to Biblical apocrypha, Peter asked Jesus while fleeing crucifixion in Rome: “Lord, where are you going?”

# Introduction



**Figure:** Annibale Carracci, *Domine, Quo Vadis?*, c.1601, National Gallery, London.

# Introduction

But rather than asking where the research is going, I will discuss where (I think) it *should* be going over the next few decades.

Beyond my own work on the topic and my editorial work at *Food Policy*, this is my attempt at steering the research agenda in directions which I believe are important, both for social science and for policy.

In doing so, I hope to provide younger researchers with a few things to think about as they develop their own research.

# Definition

Before anything, however, I should define what I mean by contract farming and agricultural value chains.

In its most generic form, *contract farming* is the delegation of the production of an agricultural commodity by a processor—the principal—to a grower—the agent.

Contract farming arrangements are also referred to as grower-processor contracts and outgrower schemes.

## Definition

As such, contract farming is a step away from spot markets and toward vertical integration. It has thus been referred to as a *vertical coordination* mechanism (Bijman 2008).

Because agricultural value chains refer to the chains of transactions (i.e., spot-market transactions, contracts, or vertical integration) involved in getting agricultural commodities from the farm to the consumer, contract farming is the cornerstone of what Tom Reardon refers to as “modern” (i.e., more vertically coordinated, if not vertically integrated) agricultural value chains.

# Why Should We Care?

Why does this matter? Because of the *structural transformation* (Timmer 1988), i.e., the process whereby the agricultural sector of an economy becomes more productive, releasing labor which then goes to contribute to the development of the manufacturing sector, and thus puts that economy on the path to development.

In other words, we should care about this because the development of a modern agricultural sector is thought to lead to economic development, and thus higher standards of living for the world's poorest individuals and households.



# Outline

1. Introduction
2. What We (Don't) Know
3. Mechanisms
4. Spillovers and General Equilibrium Effects
5. External Validity
6. Ships Passing in the Night
7. Conclusion

# What We (Don't) Know

In Bellemare and Bloem (2018), we review the empirical literature on contract farming.

Specifically, we look at all English-language articles in the EconLit database which contain the terms “contract farming,” “outgrower,” or “grower-processor” in their abstract.

This yielded a total of 114 articles, most of which were relevant for our review.

# What We (Don't) Know

Our review focuses on what—if anything—can be said about the impacts of participation in contract farming on the welfare of growers in developing countries.

Sadly, due to serious limitations to the internal validity of most empirical findings (and to a healthy dose of publication bias, as shown by Ton et al. 2018), the answer is “Not much.”

Even those studies that take identification most seriously (e.g., Michelson 2013, Bellemare and Novak 2017) cannot make causal statements.

## What We (Don't) Know

But even if we had access to the gold standard of empirical evidence—a randomized controlled trial (RCT)—we would be unlikely to generate quantities of interest to policy makers.

Indeed, in such an RCT, the researcher would first have to randomly assign growers to treatment (i.e., contract farming) and control (i.e., no contract farming).

Second, she would have to offer growers in the treatment group a randomized (monetary) encouragement in an effort to encourage enough of them to take up the treatment.

# What We (Don't) Know

Suppose the researcher were interested in the effect of participation in contract farming on household income. Such an RCT would allow credibly estimating

1. An intent to treat (ITT) estimate, which would tell us the impact on household income of being assigned to the treatment group, and
2. A local average treatment effect (LATE) estimate, which would tell us the impact on household income of participation in contract farming for those households induced to participate by the monetary encouragement.

## What We (Don't) Know

Neither one of those quantities, however, is likely to be of interest to policy makers! In applications where units select into receiving the treatment, what is primarily of interest is the average treatment effect on the treated (ATT).

Here, the ATT is the effect of participating in contract farming on the income of those households that choose to participate as growers.

Knowing the ITT and the LATE would be of little help in determining what the ATT looks like.

# What We (Don't) Know

Another problem is that the vast majority of empirical studies of the welfare impacts of participation in contract farming narrowly define “welfare” as income or some variant thereof (e.g., crop revenue, farm profits).

But income is only one aspect of welfare, and the evidence on other aspects is limited: Dedehouanou et al. (2013) look at the self-reported happiness of growers, and in Bellemare and Novak (2017) we look at the food security of grower households.

## What We (Don't) Know

Another aspect of household welfare which has gone almost completely ignored is the cost of participating in contract farming.

As anyone who has collected household survey data on agriculture knows, data on production costs are difficult and costly to collect, especially in developing countries. But even imperfect estimates of the costs associated with contract farming would be useful in studying the institution.

Ultimately, it would be useful to characterize the heterogeneous benefits and costs of participation in contract farming, as Suri (2011) did for technology adoption.



# Mechanisms

One of the most useful contributions—if not *the* most useful contribution—to the literature on contract farming is by Grosh (1994), who looks at the institution through the lens of the New Institutional Economics.

In her article, Grosh identifies the market failures that the institution of contract farming can help resolve. This points to a series of questions one can ask from the data in order to go beyond the usual “Does participation in contract farming increase welfare?” question.

# Mechanisms

According to Gresh (1994), contract farming can help resolve issues surrounding

1. Risk and uncertainty,
2. Imperfect factor markets,
3. Monitoring and enforcement, and
4. Extension services and technical advising.

# Mechanisms

Given the wealth of data available on contract farming (and given new empirical methods allowing one to study mechanisms), it is possible to look at whether (and how) the institution helps resolve those market failures.

In other words, it is time to bring economic theory back into an empirical literature which has largely been atheoretical (Wu 2014).

# Mechanisms

For instance, in Bellemare et al. (2018) we ask whether contract farming arrangements can help resolve insurance market failures, and so we look at whether participation in contract farming reduces income variability.

We could have stopped there, but we go one step further and look at the mechanism whereby contract farming reduces income variability. As it turns out, fixed price contracts do that by eliminating the price risk faced by growers.

# Spillovers and General Equilibrium Effects

Few studies look at the spillover and general equilibrium effects of contract farming.

In a recent article, I look at the spillovers a household's participation in contract farming has on the same household's various sources of income, finding that it is associated with a decrease in income from nonagricultural sources (i.e., labor markets, nonfarm enterprises) and with an increase in income from agricultural sources (i.e., livestock and noncontracted crops), which suggests a certain agricultural involution.

# Spillovers and General Equilibrium Effects

Earlier, Minten et al. (2007) and Qaim and Schipmann (2010) looked for the presence of spillover effects on nonparticipating farmers and crops, respectively.

Beyond that, however, there is very little in the way of research on what the consequences of contract farming are for the communities and regions where the institution is found.

At the very least, it would be interesting to know whether the institution creates jobs and leads to the development of agro-industrial activities (e.g., agricultural finance, processing, packaging, etc.)

# External Validity

The empirical literature on contract farming tends to be limited in its external validity.

Indeed, many studies only focus on a handful of commodities, or on a few communities that are relatively close to one another.

## External Validity

The only exceptions I know to this are Bellemare (2012, 2018), Bellemare and Novak (2017), and Bellemare et al. (2017), all of which rely on a household survey conducted in 2008, and which covers 1,200 households across six regions of Madagascar, roughly half of whom grow any of more than a dozen crops under contract.

A no-less-important problem is posed by the fact that empirical studies of contract farming have largely focused on a certain set of countries—entire regions have been practically ignored by the literature.



# External Validity

Figure 1. Heat Map of the Frequency of Studies of Contract Farming by Country.

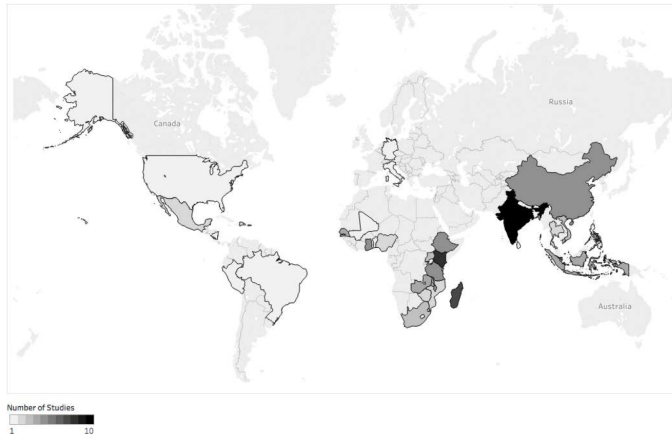


Figure: Heat Map of the Frequency of Studies of Contract Farming by Country.

# Ships Passing in the Night

Curiously, for a literature that lies at the intersection of agribusiness, development economics, and industrial organization, there are few if any linkages to those other fields—they are like ships passing in the night.

To my great shame, I have been working on contract farming since the third essay in my dissertation, but I know almost nothing of the agribusiness literature. Similarly, I know nothing of the organizational and management literatures on supply chains.

My experience working in this literature tells me I am far from alone in knowing all too little about related literatures.

# Ships Passing in the Night

Likewise, although most development economists nowadays marry development with another applied micro fields (i.e., agriculture, health, labor, law and economics, etc.), there is one marriage that has yet to be celebrated.

Indeed, there are precious few studies marrying development economics and industrial organization (IO). Beyond a few exceptions (e.g., Macchiavello and Morjaria 2015, Atkin et al. 2018), there are few studies looking at agricultural markets in developing countries using IO methods.

# Ships Passing in the Night

The first markets to modernize in developing countries tend to be agricultural markets. As those markets modernize, more and better data will become available that will allow using structural methods to study those markets.

Finally, there are few if any studies trying to link the development of contract farming and agricultural value chains and international trade. Here, there is a wealth of data waiting to be analyzed.

## Summary and Concluding Remarks

I have sought to give my thoughts on where the literature on contract farming and agricultural value chains should be going over the next few decades.

Those thoughts are obviously idiosyncratic, yet they point to a number of unanswered research questions whose answers would help us understand the process of economic development and formulate better policies.

It is my hope that the next generation of agricultural and applied economists will seek to answer those questions.