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The Political Economy of Smallholder Incorporation and Land Acquisition

Alfredo R. Rosete
University of Massachusetts Amherst

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**THE POLITICAL ECONOMY OF SMALLHOLDER
INCORPORATION AND LAND ACQUISITION**

A Dissertation Presented

by

ALFREDO R. ROSETE

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

September 2016

Department of Economics

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by

ALFREDO R. ROSETE

Approved as to style and content by:

James K. Boyce, Co-chair

Ceren Soylu, Co-chair

Mwangi wa Githinji, Member

Richard Chu, Member

Michael Ash, Department Chair
Department of Economics

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ABSTRACT

THE POLITICAL ECONOMY OF SMALLHOLDER INCORPORATION AND LAND ACQUISITION

SEPTEMBER 2016

ALFREDO R. ROSETE

B.S., B.A., LOYOLA UNIVERSITY CHICAGO

M.S., LOYOLA UNIVERSITY CHICAGO

Ph.D., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor James K. Boyce and Professor Ceren Soylu

Of late, development institutions and economists have argued that one way to accomplish the modernisation, and thus, poverty alleviation in the rural sector is through smallholder incorporation- partnerships between agribusiness firms and smallholders in order to cultivate high valued export crops. Smallholders in developing countries often face numerous challenges that result in low incomes, and limited opportunities. As a result of these challenges, smallholders in developing countries continue to cultivate subsistence crops, or, use less technologically intensive techniques. Thus, many are unable to maximize the use of their holdings. Agribusiness firms may provide the material inputs, infrastructure, and transport needed for smallholders to overcome these challenges, and thus, expand their income earning capacities.

However, case studies by development scholars, and civil society organizations have identified instances where agribusiness partnerships result in low incomes and even the

effective dispossession of smallholders. Further, empirical studies find that agribusiness firms tend to target countries that have little regard for local land rights. What explains these outcomes? How does the process of contracting between smallholders and agribusiness firms result in smallholders ceding rights to their land? Under what conditions do investors prefer to locate in countries with little regard for smallholder land? The three essays of this dissertation seek to answer these questions.

The first essay uses a field investigation among Agrarian Reform Beneficiaries (ARBs) in the Davao Region of the Philippines to identify factors that compel smallholders to accept partnerships where they effectively cede control over land to investors. The second essay formalizes the contracting process between smallholders and investors in a game-theoretic model where contracts are defined by a degree of control over land. The third essay employs a game-theoretic model to identify conditions under which investors would prefer environments that offer little protections for local land rights.

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CHAPTER 1

INTRODUCTION

Agrarian issues have received a good deal of treatment in the economics of development, and one of the most prescient problems is that of modernising agriculture so as to raise the income, welfare, and opportunities for those who live and work on the rural sectors of developing nations. Of late, development institutions (see e.g. Mondiale, 2008) and economists (see e.g. Reardon and Barrett, 2000; Cook and Chaddad, 2000) have argued that one way to accomplish the modernisation, and thus, poverty alleviation in the rural sector is for smallholders to partner with agribusiness firms in order to cultivate high valued export crops.

There are two reasons why such partnerships can help in achieving rural development. In a macroeconomic sense, such partnerships can create agglomeration advantages and integrate the agricultural sector to other sectors in the economy. Cultivating export crops entails physical inputs such as machinery for land conversion, and construction materials for processing plants. Further, these crops often have to follow stringent quality standards, creating the need for specific fertilizers and pesticides. Finally, export crops need transport and shipping to arrive in their destination markets. When smallholders partner with agribusiness investors, sectors such as shipping, construction, and chemical manufacturing can provide such auxiliary services, and thus, form linkages with the rural sector. Partnerships with agribusiness firms can also bring microeconomic benefits. Smallholders in developing countries often face numerous challenges that result in low incomes, and limited opportunities. One such challenge is constraints in the wealth of smallholders. While, often, smallholders

either own or have use-rights to land, they may not have the ability to collateralize their holdings due to existing property rights institutions (De Soto et al., 2003). Further, these wealth constraints may be compounded by the existence of monopolistic credit markets that prevent them from accessing sufficient funds for fertilizer, irrigation, and other material inputs (Besley, 1994). Another such challenge is their ability to access markets. The lack of transport technology, refrigeration, or even farm-to-market roads hinder smallholders from accessing markets where they may gain better prices for their crops (see e.g. Hallam, 2011; Shami, 2012). As a result of these challenges, smallholders in developing countries continue to cultivate subsistence crops, or, use less technologically intensive techniques. Thus, many are unable to maximize the use of their holdings. Agribusiness firms may provide the material inputs, infrastructure, and transport needed for smallholders to overcome these challenges, and thus, expand their income earning capacities.

This dissertation focuses on the supposed microeconomic benefits of agribusiness partnerships, or what I term *smallholder incorporation*. Of late, case studies by development scholars (White et al., 2012), and civil society organizations (see e.g. Colchester et al., 2011; IBON, 2013) have identified instances where agribusiness partnerships result in low incomes and even the effective dispossession of smallholders. Further, a series of articles by Deininger (2011), Deininger (2013), and Arezki et al. (2013) find that agribusiness firms tend to target countries that have little regard for local land rights. What explains these outcomes? How does the process of contracting between smallholders and agribusiness firms result in smallholders ceding rights to their land? Under what conditions do investors prefer to locate in countries with little regard for smallholder land? The three essays of this dissertation seek to answer these questions.

The first essay uses a field investigation among Agrarian Reform beneficiaries (ARBs) in the Davao Region of the Philippines to identify factors that compel small-

holders to accept partnerships where they effectively cede control over land to investors. The second essay formalizes the contracting process between smallholders and investors in a game-theoretic model where contracts are defined by a degree of control over land. The third essay employs a game-theoretic model to identify conditions under which investors would prefer environments that offer little protections for local land rights.

These essays make three contributions to the literature on smallholder incorporation and land acquisition. First, I conduct a comparative study of smallholder incorporation among Agrarian Reform Beneficiaries (ARBs) in the Philippines. There have been other studies from the Philippines focusing on the new class configurations that occur in communities that have undergone agrarian reform (see e.g. Adam, 2013). My study identifies factors of bargaining which lead to differential outcomes of incorporation in terms of their income and well-being. A second contribution that I make is a model of contracting that conceptualizes ownership structure as a continuum rather than a discrete category. By doing so, I am able to show how effective dispossession of smallholders can occur even under a consensual partnership. Finally, I use a game theoretic model which situates the observed behaviors of agribusiness firms within the literature of location choice by investors, situating the problem of land acquisitions within the microeconomics of international investment. This essay also demonstrates how power -given by ability to dispossess- can become a factor in attracting investments.

CHAPTER 2

PROPERTY, POSSESSION, INCORPORATION: AGRIBUSINESS VENTURE AGREEMENTS IN THE PHILIPPINES

2.1 Introduction

Of late, incorporating smallholder land through partnerships with agribusiness firms that cultivate export crops has received some attention among scholars, policy-makers and non-government organizations (NGOs). Some see such partnerships as a means of raising smallholder incomes, and achieving rural development (see, e.g. Mondiale, 2008; Robertson and Pinstруп-Andersen, 2010; Cramb and Curry, 2012). This is because agribusiness firms can introduce new technologies, provide capital inputs, and link smallholders to markets for their crops. Others have not shown the same enthusiasm. The literature reports cases of smallholders losing the ability to use their holdings and receiving only poverty-level remuneration (Hall, 2011; Colchester et al., 2011).

Many observers attribute the adverse outcomes of smallholder incorporation to governance institutions that are complicit to coercive activity (see e.g. Borras Jr et al., 2010). Few have discussed how even consensual transactions can deprive smallholders of the ability to determine who can use their lands and how (see e.g. Wilson, 1986). This essay examines factors that influence smallholders' decisions in choosing the structure of their partnerships with agribusiness firms. I argue that the very economic problems which agribusiness partnerships are meant to alleviate may themselves force smallholders to accept contracts where they lose rights to their land. I do this by first showing how one can disentangle property rights and control over an asset, and

that the choice of a structure of incorporation (or business model) is an exchange of control over land. Thus, it is possible for investors to effectively dispossess smallholders despite their possession of formal property rights. I will then illustrate this dynamic using a field investigation among agrarian reform beneficiaries (ARB's) in the Davao region of the Philippines.

This paper aims to make two contributions to the literature on agribusiness incorporation. First, I introduce a framework for analyzing agribusiness contracts by understanding what provisions deprive smallholders of effective control over their lands. Second, I conduct a comparative study of agribusiness projects with ARBs in the Philippines to analyze the political and economic conditions that give rise to different contractual types. To my knowledge, past studies of agribusiness partnerships among this population have drawn conclusions from singular cases, or have used several cases to illustrate resulting political-economic transformations without examining reasons for the variations in contract types. This paper uses multiple case studies to illustrate how debt, the risk of losing land, and lack of information on alternative contract types inform a smallholder's decisions in choosing a contract. These similar factors have been shown to influence smallholders' choices in various international contexts (see e.g. Cramb and Curry, 2012; Jiwan, 2013).

The essay is arranged as follows. **Section 4.2** discusses current issues that arise from smallholder incorporation, drawing from economic theory and the literature on agrarian political economy. **Section 4.3** discusses the issue of property rights and contracting in economic theory. I outline a framework for disentangling possession or control from property rights using insights from legal theory and institutional economics. I then apply it to a typical taxonomy of business models or "structures of Incorporation". **Section 2.4** introduces smallholder incorporation in the specific context of post-land-reform policies in the Philippines, and discusses the field work. **Section 2.5** presents the results of the field investigation. I begin by summarizing

the historical experiences of different ARB groups that I interviewed, focusing on economic and socio-political challenges they faced in making their contract choices. I then discuss what these conditions mean for the resulting degree of control over their holdings specified in their contracts, and what these contracts meant for their income and well-being. The final section discusses policy implications of these findings.

2.2 Smallholder Incorporation

Economic literature considers two broad channels through which agribusiness incorporation can yield benefits for smallholders. The first are macroeconomic channels directed toward rural development (Cook and Chaddad, 2000). Agribusiness incorporation can establish linkages between farm and non-farm sectors through the cultivation of non-traditional crops. In a setting where subsistence crops are widely cultivated, links to other sectors may be weak or absent. Often, agribusiness firms cultivate crops for export rather than food or subsistence. To ensure that these crops are marketable, it is necessary to coordinate transport, refrigeration, processing mills and other upstream market links. Further links can also come through input markets such as fertilizers, machinery, and construction for building necessary infrastructure on land. In this way, agribusiness investment can generate agglomeration advantages with complementary industries, especially where agribusiness clusters form. Finally, agribusiness investment can also allow a country to benefit from inflows of foreign direct investment (FDI) (Reardon and Barrett, 2000).

The second channel by which agribusiness incorporation can bring improvements for smallholders is in improving opportunities for smallholders to use their lands as a viable source of income. Smallholders face challenges in both access to inputs, and access to markets for their crops. Both of these can restrict their income generating opportunities. Monopolistic creditors who can charge high interest rates often dominate rural credit markets. If such creditors are the only source of credit to purchase inputs

for cultivation, smallholders face higher costs of investing in their holdings (see e.g. Hoff and Stiglitz, 1990; Besley, 1994; Ghosh and Ray, 2016). The lack of infrastructure such as roads (Shami, 2012), high transport costs, and lack of necessary technologies such as refrigeration (Barrett et al., 2012) create difficulties for smallholders in accessing markets, leading to spoilage and crop damage. As a result smallholders may have to depend on monopsonistic or oligopsonistic buyers who have the means to bring their crops to market. Agribusiness investment can relieve these constraints through providing capital for inputs and/ or outlets for smallholder produce. Agribusiness partnerships that provide smallholders with capital relieve investment constraints for smallholders. Further, partnerships guaranteeing access to transport or buying crops can reduce the risks associated with marketing (Wang et al., 2014).

Considering the possibilities of agribusiness partnerships for rural development and poverty reduction, policy-makers and state actors in the global south have taken measures to attract and legitimize such ventures through development plans and guidelines (German et al., 2016). In some cases, governments have facilitated the process of agribusiness incorporation by identifying appropriate sites for agribusiness investors and negotiating with smallholders (Colchester et al., 2011). Identifying appropriate sites and smallholders who have the ability to cultivate crops can alleviate some uncertainty by enhancing the quality of information that investors have regarding the potential profitability of their partnerships.

Some scholars point out, however, that actions of states may result in adverse outcomes from smallholder incorporation. Some case studies suggest that states sometimes adjust environmental and labor standards in order to make the prospect of locating in their country more lucrative (Jiwan, 2013). Agribusiness investment may also appeal to local government actors that have influence over smallholder communities through historic and kinship ties. These actors may use their influence over communities to convince or coerce them into incorporation (Lavers, 2012). Trends in

land acquisitions further corroborate case studies of agribusiness firms taking advantage of weak protections for smallholders (Borras Jr and Franco, 2013). Empirical studies by Deininger (2011), Deininger (2013), and Arezki et al. (2013) yield evidence that agribusiness investors are attracted to countries that have weak protections for local land rights.

While the actions of states may play a significant role in determining the outcomes of agribusiness incorporation, these are not sufficient to explain adverse outcomes. Social and economic circumstances may force smallholders into contracts where they are completely dispossessed of their lands even without the actions of the state. To understand how this can occur one needs to consider two configurations of property rights. The first are property rights *ex ante* that form the foundations for contracting by providing a supposedly secure basis for the exchange of assets. The second is the configuration of property rights *ex post*- the resulting configuration of rights and privileges which determine each partner's control over land.

2.3 Property, Possession and Structures of Incorporation

Well-defined property rights are among the bases for partners to contract. Secure property rights can minimize the risks of losing an asset that is used in production, or, the risks of losing crops (Ghatak and Besley, 2010; Auerbach and Azariadis, 2015). Insecurity can also create frictions through the credit channel, by reducing the collateral value of an asset and preventing the asset holder from gaining access to credit (Besley et al., 2012). When property rights are secure, partners to a contract can ensure that their investments are safe. Secure, well-defined property rights do not mean, however, that an asset holder will have control once the contract is in force. Contracts also reassign certain abilities to each partner which can determine who effectively controls land.

In economic literature, partners to a contract choose a structure of incorporation or business model, to overcome information asymmetries in the allocation of inputs such as labor and capital (Das, 1999), asymmetric bargaining power (Schmitz, 2013a) and other uncertainties introduced by laws, culture and norms (see, e.g. Che and Facchini, 2009). The firm structure is sometimes modelled as a structure of compensation where the investor decides to offer either a share of profits, a purchasing price for the product, or a fixed payment. Others model an ownership structure as the ability of one partner to take control of the firm and its assets (Grossman and Hart, 1986; Antràs, 2014). In the context of agribusiness, some have pointed out how structures of incorporation can displace decision making rights from farmer/ smallholder to processors or investors (Key and Runsten, 1999; Reardon et al., 2000). Among possible rights exchanged in a contract are the ability to exclude others from the use of land, and the ability to determine how the land is used. Such an allocation of rights constitutes a level of control that is different from the *ex-ante* property rights that allowed contracting to take place. For example, a smallholder may have been able to decide what crops are cultivated on her holding before entering a partnership. However, a contract may stipulate that she can only cultivate one crop, thus, reassigning the ability to decide how the land is used. These decision-making rights in turn may affect the income and benefits that smallholders can obtain from a partnership (Cotula and Leonard, 2010).

One can disentangle control and property rights by recognizing that property rights are a set of abilities that someone has over an object or an asset (Cole, 2002; Glackin, 2014; Hodgson, 2015). In smallholder incorporation, a list of rights or abilities over land that are exchanged in a contract are listed as follows:

- *Determine User-* The ability to determine who can work on the land, or who is able to till and harvest. This may extend to who can be employed under the partnership.

- *Withdraw* -Determine the duration of the partnership, or having the option to withdraw land.
- *Determine Use*- Determine what is planted, or being able to determine whether crops will be changed.
- *Determine Methods*-Determine how crops are cultivated including types of fertilizer and materials used.

Table 2.1 shows the differences among three broad contract types which are widely used in smallholder incorporation (Cooke et al., 2012; Cramb and Curry, 2012) in terms of *Remuneration*, and *Control* (De la Cruz, 2012). Remuneration refers to the income or sources of income that each partner gets from the transaction. Control refers to the abilities that a contract confers to each partner. We can think of lease and growership contracts as two extremes. Under a lease contract, the smallholder forfeits all control over her land, and most production decisions. In the growership contract, the investor acts as a buyer of the smallholder's crops, while the smallholder makes most of the decisions on how to cultivate, what methods to use, and whom to employ. However, the investor can use monitoring mechanisms such as checking the state of crops, restricting the types of fertilizers used, and consulting with smallholders to ensure crop delivery. In between these two extremes are what I broadly call joint ventures. The decision rights that are traded in such intermediary contracts differ considerably. Some joint ventures are framed as management contracts where the investor advises and monitors cultivation. Others are arranged so that the investor builds necessary infrastructure, and then transfers these to smallholders for a share of the profits. In this case, the division of control is temporal. During the building period, the investor may have all the decision-making power. After that, he may act as a consultant to a growership.

Table 2.1: **Different contract types and the allocation of abilities.** Arrows are meant to show that Joint ventures are an intermediary form of contract. Italics are meant to indicate an ability shared by each partner. Entries under control show who holds each ability. Either the Smallholder, Investor, Jointly held to some degree.

Structure of Incorporation	Remuneration			Control		
	Smallholder	Investor	User	Use	Methods	Withdrawal
Lease	Wage	Profits	Joint	Investor	Investor	Investor
↑ Joint Venture ↓	Profit-share	Profit-Share	Joint	Joint	Joint	Joint
Growership	Profits from selling to Investor	Export Profits	Smallholder	Joint	Joint	Joint

The distribution of rights affects the benefits that smallholders get from the partnership. For example, if an agribusiness firm can control what fertilizers are used which may introduce additional expenses for smallholders. This can occur grower-ship arrangements or in joint ventures as part of a quality control mechanism. In some cases, smallholders may retain the ability to work on their lands, giving them another source of income. Smallholder communities may also delineate certain parcels of land to raise food crops or build housing.

What factors contribute to how partners bargain over the allocation of rights and a firm structure? The first of these would be economic factors- whether a smallholder has access to credit, whether they are able to transport their crops to markets, or whether they are able to afford fertilizers and materials for building infrastructure. The second set are socio-political forces such as the laws governing contract regulations, organizations of smallholders, and the degree to which smallholders can give free, prior, and informed consent (FPIC) regarding the differences and advantages of investment contracts (German et al., 2013). The ability of smallholders to obtain proper information regarding contracts, and to refuse these contracts, depends on power-relations between smallholders, governments, and investors. An investor who has developed connections with state actors, for example, can influence how governing bodies weigh their interests against the interests of smallholders (Nolte and Voegt-Kleschin, 2014). The experiences of ARBs in the Philippines illustrate how these factors influence how contracts are formed to generate incomes and the distribution of control rights over land.

2.4 Land Reform and Agribusiness Incorporation in the Philippines

The Comprehensive Agrarian Reform Program (CARP) of the Philippines was passed in 1987 after a protest in which thirteen peasant farmers were killed in a mo-

bilization for land reform now known as the *Mendiola Massacre*. The stated objectives of land reform have not changed since its beginnings: To achieve "a more equitable distribution of land" founded on "the right of farmers and regular farmworkers, to own directly or collectively the lands they till, or, in the case of other farmworkers, to receive a just share of the fruits thereof"(Republic of The Philippines, 2009, Chapter 1, Section 2.).

Under CARP, once a person becomes an ARB and receives a Certificate of Landownership Award (CLOA), he/she has to pay an annual amortization for the land within a given time window. There is not a precise formula for payments, but the price takes into account the land's real estate value (proximity to roads, water, etc), and the value of standing crops, as well as the avowed valuation of the former landowner Republic of The Philippines (2009, Chapter 6, Section 17). An ARB is entitled to use the holdings, change its use, and appropriate the gains from its use. However, in keeping with the intent of the law, the ARB cannot sell the awarded holding for a period of ten years after receiving the CLOA. The implementation of CARP began in 1988 and expired in 2012 after several renewals. Today there is a debate in the Philippine Congress of whether land reform should continue, or whether CARP can be left as it is with over 80% of its intended area of redistribution accomplished (IBON, 2013).

Soon after the implementation of CARP, it was observed that smallholders were entering into leasing and growership contracts with agribusiness investors. Recognizing their potential benefits, the Philippine government sought to encourage these arrangements, attempting to put in place regulations that would ensure ARB welfare under such contracts (Department of Agrarian Reform, 2006). These arrangements were termed Agribusiness Venture Agreements (AVAs). The official definition of an AVA is an "entrepreneurial collaboration between ARBs and private investors to implement an agribusiness venture on lands distributed under CARP"(Department of Agrarian Reform, 1996). Through these agreements, ARBs can access upstream mar-

kets, gain access to capital, and use farming technology¹. The Department of Agrarian Reform (DAR) can monitor AVAs, since local government units keep files of CLOAs, and, at least in principle, the contracts that ARBs and agribusiness entities sign.

In a 2010 report released by the Philippines' Inter-Agency Committee (a collection of government agencies that also includes the National Economic Development Authority, NEDA) AVAs cover approximately 1.2 million hectares (cited by IBON, 2013). The large disparity between this figure, and DAR's official list of 50,103 hectares was acknowledged when I spoke to the DAR authorities. When I had quoted the DAR's figure, one of them quipped: "*Parang dito lang yata, ganyan na kadami*" ("Maybe in this Province alone, there's already that many"). They said they were still catching up with listing all AVAs. If the quoted figure of 1.2 million hectares is correct, then, AVAs cover 29.64% of all CARP lands as of 2009 and 12.41% of total agricultural land.²

The optimism of agrarian reform officials regarding the development potential of AVAs, however, was not widely shared by land reform advocates. In recent years, scholars have compiled cases of AVAs resulting in adverse outcomes for ARBs. Some examples are found in the work of Borras (2007), Menguita-Feranil (2013), and Adam (2013) who show how ARBs in certain areas of the country are compelled to accept contracts which leave them with neither control over land or income from its use. These reports point to the dangers inherent in AVAs. CARP redistributes land but does not address the existing social conditions that render owner-cultivator-ship difficult for ARBs. Conditions such as poverty and lack of farm-to-market roads leave ARBs vulnerable to rural creditors, fertilizer merchants, and produce buyers.

¹The full set of justifications can be found in the Administrative Order 09-06 from the Department of Agrarian Reform

² CARP accomplishments at 2009 were at 4,049,016.71 has. and the country's total agricultural land is at 9.671 million has.

Agribusiness investors are able to take advantage of such situations to lock ARBs into highly unfavorable contracts that can last for decades.

This is not to say that AVAs do not have their share of success. The DAR has compiled several cases where AVAs have resulted in ARBs being able to escape poverty, buy homes, and even diversify into businesses outside of agriculture. The cited factors that contribute to favorable contracts are numerous. These include organizing among ARBs, and being able to access credit (Department of Agrarian Reform, 2006). How such factors influence the process of contracting, and which of these had greater weight in the decision-making processes of ARBs, was the focus in my field work.

Though ARBs do not constitute all smallholders in the Philippines, in general, they have several advantages as beneficiaries of the agrarian reform program. First, their Certificates of Land Ownership Award (CLOA) are filed with the Department of Agrarian Reform. Second, the DAR, in theory, is supposed to monitor their well-being, and how they use the holdings they have been awarded. Finally, there are municipal and provincial agrarian reform offices in which the ARBs can ask for assistance in contract disputes. In these respects, the ARBs have the advantage of some institutional backing that other smallholders do not. Yet, despite these institutional advantages, ARBs have had divergent experiences in their agribusiness deals. If so, the difficulties they face may also apply to agribusiness incorporation throughout the country.

2.4.1 The Field Work

In 2015, I conducted field work in the Davao Region of the Philippines, covering seven groups of ARBs located in three different locales, and two different provinces.³ I targeted ARBs who have entered into AVAs involved in the cultivation of Cavendish bananas. Cavendish bananas are one of the chief export crops of the Philippines

³See Figure 2.1 for a map.

worth \$884 million annually, or 14% of the country's total agricultural exports. The Philippines is 3rd largest exporter of Cavendish bananas after India and China. The total land area devoted to Cavendish banana cultivation in the country is 82,202 ha. The Davao region cultivates 46,681 of these (56.78%). In the DAR's official tally, AVAs that are devoted to the cultivation of Cavendish bananas account for 8,717 ha. Thus, the listed AVAs account for 18.7 % of land area devoted to Cavendish banana cultivation in the region, and 10.6% of land area devoted to Cavendish banana cultivation in the Philippines⁴.

By choosing one crop, I control for differences in prices, farming techniques, and necessary technologies. Comparing Cavendish banana farms to another crop such as maize (often grown for ethanol) would be difficult, since the fixed costs of cultivating Cavendish bananas are different. Before a farmer cultivates Cavendish bananas, she must first dig a system of hills and canals. Each hill needs several propping poles made from metal or bamboo to ensure that the trees do not fall once they bear fruit. Planting is done in such a way that each tree yields fruit every 13 weeks. After ten months, the first of the trees bear fruit, and farmers can harvest these. If done properly, a hectare may have up to 1,000 trees. A farmer can harvest the equivalent of 143 boxes of *class A* Cavendish bananas every week, fetching a bi-weekly gross income of as high as 27,000 pesos (\$ 587).⁵

Growers, however, have several expenses. First, Cavendish bananas are chemical- and fertilizer-intensive. Fertilizers can cost up to 990 pesos per 50 kg sack. Under typical growing methods, a hectare of banana uses up to 3 sacks of fertilizer every 20 days. The farmer must also treat the trees by applying chemicals to guard against

⁴These figures were taken from estimates of the Philippines' Bureau of Agricultural Statistics, www.bas.gov.ph

⁵*Class A* Cavendish Bananas have a length of between 7.5-12 inches (19.05cm-30.48cm), with a girth of around 2 inches (5.08cm). The calculation of the 27,000 pesos is based on the price that an independent grower can obtain had she not entered an exclusive growership contract

Figure 2.1: The Field Site



fungi and other pests that may prevent the crop from meeting export standards. A typical grower pays for chemicals delivered through aerial-spraying on a bi-weekly basis. The farmer must also buy twine for propping up the banana plants, and plastic bags to wrap new bunches and protect them against insects. Finally, the farmer must also supply or pay for labor. Typically, the total bi-weekly cost of cultivating bananas is 9,646 pesos (\$ 210) per hectare.⁶ Thus, the net income from a hectare of cavendish bananas is about 17,354 pesos (\$ 377).

I asked each ARB group for a list of their members with addresses, went house to house, and also visited places that were frequented by ARBs.⁷ Three of the ARB groups decided to host me in their offices to conduct interviews there. I interviewed 71 individual ARBs and held focus groups with four of the seven groups I interviewed.⁸ Focus group sizes varied. In the municipality of Santo Tomas, Davao Del Norte, I interviewed members of five ARB groups in total. All were workers for the Marsman-Drysdale Enterprises Plantation Incorporated (MEPI), a company founded by a Dutch venture capitalist (Marsman), sold to an American (Drysdale), and is now co-owned by Filipino backers. In 1998, the MEPI plantation in Santo Tomas was distributed to its 1,109 workers. Two of these groups currently have growership contracts with Sumitomo Fruit Company (SUMIFRU). These are the Marsman Agrarian Reform Beneficiaries Cooperative (MARBCO) and the Marsman Individual Farmers Agrarian Reform Beneficiaries Cooperative (MIFARBCO). The landholdings of the

⁶I gathered these cost figures by going to the three agricultural supply stores for prices of twine, fertilizer, chemicals, and plastic bags. I checked my figures with farm managers from three of the seven groups I interviewed. I then interviewed independent aerial spray providers, and noted how much each group I interviewed payed for tis item. Finally, I also checked my figures with pay receipts provided by one of the growers I interviewed.

⁷By ARB groups, I mean a collection of Agrarian Reform Beneficiaries who have some organizational identity or common experience. Six out of the seven I interviewed are actually legally recognized organizations.

⁸Some groups had difficulty getting their members to participate in focus group discussions. When it was not possible to conduct a focus group, I held key informant interviews with the designated chairs of each group.

remaining three groups are leased to MEPI. These groups are Davao Marsman Agrarian Reform Beneficiaries Multi Purpose Cooperative (DAMARB-MPC), the Santo Tomas Individual Farmers Agrarian Reform Beneficiaries Cooperative (SIFARBCO), and the Santo Tomas Agrarian Reform Beneficiaries Cooperative (STARBENCO).

In Tagum City, I interviewed ARBs from the Hijo Employees Agrarian Reform Beneficiaries Cooperative (HEARBCO 2). The ARBs were employees of a banana plantation which was owned by the Hijo group of companies. Before their current AVA, HEARBCO 2 had an exclusive growership arrangement with Lapanday Foods. After Typhoon Pablo in 2012, the cooperative could not sustain the growership contract. In 2014, they finalized an agreement with the Tagum Resources Agri Industries Incorporated (TRAIN), a subsidiary of the Hijo resources corporation owned by the Ayala family.

In the Pantukan district of Compostela Valley, I interviewed ARBs who had been hacienda workers under the Nuere family who owned more than 32 ha. of coconut trees. These ARBs received between 0.6 and 2.5 hectares each from the farm. They were not organized. In 2002, a local company called Pantukan Agribusiness Development Corporation (PADCOR) leased the lands from the ARBs. The venture failed, and in 2009, the investor sold the lease to Musahammat farms, a Middle Eastern company.

These AVAs are on the two ends of the spectrum of contracts: lease and growership arrangements. I chose to focus on these because of their prevalence among the officially listed AVAs which cultivate cavendish bananas. Of these 61 AVAs, 29 out of 61 (45.9%) are under a lease contract, while 28 out of 61 (48%) are under growership arrangement.⁹

⁹The figures here are based on a list of AVAs which I obtained from the DAR.

Table 2.2 gives a summary of the individual interviewees in my sample from each group. The ARBs in the sample are a largely old, male population, with the average age for each group being more than 56 years old except for HEARBCO 2 in Tagum city. The average household size for each group is over four members. Most of those interviewed in each group own their house with an average experience of more than 26 years in cultivating Cavendish bananas. The exception to this is the ARBs in the Pantukan district of Compostela Valley, only one of whom owns their dwelling and lot, while none have experience with cultivating Cavendish bananas.

From Table 2.2, one can see no immediate relationship between the level of education that most members of each group obtained, and the types of contracts that they enter. Intuitively, one may think that having a higher level of education will allow ARB members to deliberate in a more informed manner about the types of contracts available, and the consequences these may have for their well-being. While there is no doubt a possible bias in my small sample, a clear relationship between contractual type and education is absent. Many of the eight interviewees from MARBCO have not finished High School, and many of those from MIFARBCO have only graduated High School. By contrast, most of the ARBs from, HEARBCO 2 have finished college. One may attribute this result to the fact that the sample is not completely random within groups. The respondents may have self-selected to interview. However, as I shall show, group level characteristics played a significant role in the types of contracts that the ARBs obtained.

2.5 Findings

Table 2.3 gives a historical summary of the AVAs. Three of the seven ARB groups have had only one AVA partner. These are the Lessor groups in Santo Tomas, Davao Del Norte: DAMARB-MPC, SIFARBCO, and STARBENCO. These ARBs have had their lands leased to the Marsman-Drysdale Estate Plantations Incorporated (MEPI)

Table 2.2: **The Sample Description-** Education in terms of Mode and noted as follows: ELMU-Eeementary Undergraduate,ELG-Eeementary Graduate, HSU-High School Undergraduate, HSG-High School Graduate, CLU-College Undergraduate,CGR-College Graduate.

Location	Group	Total	Number in Sample (71 Total)	Number Female In Sample	Average Age	Education (Mode)	Household Size	Owens Dwelling and Lot	Yrs of Exp With Cavendish
Growers	Santo Tomas	45	8	1	57.5	HSU	6.87	7	34.25
	MARB								
	MIFARB	88	6	2	56.33	HSG	6.7	5	32.25
Lease (Group)	DAMARB	520	7	1	57.71	CLU	4.29	6	30
	SIFARB	137	15	3	57.27	HSU	4.4	13	28
	STARB	104	6	1	61.67	ELMU	5.33	6	26
Tagum	HEARB	368	20	3	53.85	CGR	4.45	20	31.25
Lease (Ind)	Pantukan	13 up	9	3	64	ELMU	5.22	1	0

since they have been ARBs. By contrast, the other ARB groups have had two AVA partners. The grower cooperatives transitioned from selling to MEPI to selling to Sumitomo Fruit (SUMIFRU). HEARBCO 2 transitioned from a growership contract with Lapanday fruits to a lease agreement with TRAIN. Finally, the ARBs from Pantukan, Compostela Valley, used to have a lease arrangement with PADCOR, and now lease their holdings to Musahamat farms. It is worth noting that three out of the five lessor ARB groups currently have a contractual dispute with their AVA partners. These disputes are in various stages of the legal process, but all are efforts by the ARBs to withdraw or renegotiate lease agreements. Finally, of the seven ARB groups, four are currently leased to the pre-agrarian reform land owners.

2.5.1 Factors of Contracting

To obtain information about the historical and political factors that contributed to the formation of the AVAs among the different groups, I conducted focus group discussions with four out of five lessor groups, and key informant interviews with the chairs and board members of each grower cooperative, and one other lessor group. A summary of these historical and political conditions is given by Table 2.4.

The first column states whether or not the ARBs were organized into some union, cooperative, or association at the time of bargaining. Presumably, groups that bargain have more power vis-a-vis an investor since groups can pool resources to hire lawyers, appeal to authorities in city centers, and mobilize for interventions in municipal agrarian reform offices. However, this may also result in unfavorable outcomes if influential persons in the groups side with the investor. The next three columns state whether the groups had access to advocacy from non-government organizations, or from the DAR itself, and whether the groups had avenues to deliberate with their members during the time of contracting. Advocacy includes education on AVAs and legal assistance. Being able to access pro-land reform civic organizations can help

Table 2.3: **Description of AVAs:** Gr= Grower, Lr=Lessor, FW=Farmworker

Location	Group	Total Land Area (ha)	Individual Plots (ha)	Year of Current CLOA	Former Owners	YEAR of Curr AVA	AVA Partner	Tenure Transition	Previous AVA	AVA Dispute
Santo Tomas	MARB	47.52	1.02	2004	MEPI	2007	SUMIFRU	Gr to Gr	MEPI	N
	MIFARB	89.76	1.02	2004	MEPI	2007	SUMIFRU	Gr to Gr	MEPI	N
	DAMARB	799.564	1.04	2002	MEPI	2002	MEPI	FW to FW+Lr	None	N
	SIFARB		1.04	2002	MEPI	2002	MEPI	FW to Lr	None	Y
	STARB		1.04	2002	MEPI	2002	MEPI	FW to Lr	None	Y
Tagum	HEARB	294.325	0.8	1997	HIJO	2014	TRAIN	Gr to FW+Lr	Lapanday	N
PAN	Indiv ARBs	32.5(up)	2.5(6) .6(3)	1992	Nuere & Sons Piansay	2009	Musahamat	Lr to Lr	PADCOR	Y

Table 2.4: **Organizational Characteristics at the time of AVA Bargaining:** Y=This was available to the ARB group, N=This was not available

	Org at Time of Bargaining						
	AVA	AVA Education	Membership Consultation	Legal Counsel	Organization Debt	AVA Bargaining	
Group							
MARB	Y	Y	Y	Y	Y	Y	Y
MIFARB	Y	Y	Y	Y	Y	Y	Y
Lease (Group)							
DAMARB	Y	Y	Y	N	N	N	N
SIFARB	Y	N	N	N	N	N	N
STARB	Y	N	N	N	N	N	N
HEARB	Y	Y	Y	Y	Y	Y	Y
Lease (Ind.) Pan Indiv ARBs	N	N	N	N	N	N	Y

the ARBs ensure that the resulting contracts are in line with the stated objectives of CARP: improving the lives of the ARBs, and ensuring they maintain control over their holdings. Membership consultation is important to ensure that a handful of influential persons did not drive the contracting process. The next column states whether members of the group were allowed to make a decision on their current AVA at all. The absence of this ability would imply that the current AVAs were arrived at without Free, Prior, and Informed Consent of individual ARBs.

The final column is organizational debt. Though this could be designated as an economic circumstance, it is listed here among political conditions because it may be the case that the ARB groups faced tensions between the interests of the organization, or, the interests of individual members. A cooperative of growers, for example, might have members that have earned, saved, and prospered, while others may not. Often, cooperatives take out loans to ensure that their members have access to inputs, and to maintain the infrastructure for cultivating bananas. If the cooperative goes bankrupt, members who have done well may not need the cooperative's help, but those who did not may want to enter lease arrangements for a steady income. I shall now discuss the historical specifics of each group.

Santo Tomas: Santo Tomas calls itself a banana town. Among the large fruit exporters that have plantations in Santo Tomas are Lapanday Foods, DOLE, and MEPI- an American owned agribusiness firm. When CARP began its implementation in 1988, the Marsman Estate's more than 1,400 hectares in Santo Tomas, Davao Del Norte were given a ten-year grace period. The plantation had been in place since 1969, when the Marsman group of companies decided to set their sights on banana cultivation. In 1998, the plantation was set for redistribution. According to focus groups and key-informant interviews, MEPI pushed for lease contracts using forms of bribery, coercion, and deception. How the ARBs responded to Marsman's tactics,

and the resources available to them affected the types of contracts currently governing their holdings.

Santo Tomas- The Growers: MARBCO and MIFARBCO were once one organization called the Marsman Estate Agrarian Reform Beneficiaries Association Incorporated (MEARBAI). They had split before each began to contract with SUMIFRU over the management of the cooperative's over 136 hectares of land. Key informant interviews point to three reasons why the split occurred. The first is that MIFARBCO's members wanted manage their plots individually, while the cooperative manages a packing plant, sales, quality checks, legal assistance and obtaining inputs. They claim that this model was better since the area that each ARB would monitor would be limited to a hectare, and they can make individual improvements on their holdings. The second is that, initially, MEARBAI chose a business model where its members shared profits equally. MIFARBCO's members claimed that this resulted in a classic free-rider problem: some ARBs did not handle their tasks properly, while those who worked hard felt that they did not get the appropriate remuneration for their labor. Finally, some members of MIFARBCO cited corruption in MEARBAI's leadership. However, I have not been able to obtain any evidence to support this accusation.

Regardless, MIFARBCO's split from MEARBAI, and MEARBAI's metamorphosis into MARBCO did not seem to make a difference in the types of contracts they agreed upon with SUMIFRU. They both receive the same income per box of class A bananas, and they have almost identical provisions on their obligations and rights. The only difference is that MARBCO is able to sell its *class B* bananas to independent buyers, while MIFARBCO sells solely to SUMIFRU¹⁰.

¹⁰Class B bananas fall short of the measurements of class A bananas, but were whole, had no bruises or scales (cork-like aberrations on the skin), and were generally deemed to be fit for consumption. These are often sold in local supermarkets. One of MARBCO's buyers is 7-11.

In 1998, MEARBAI members already had contacts with pro-agrarian reform NGOs. These provided them legal assistance and education on different types of AVAs. The education they received included seminars on management, marketing, and best practices in cultivation. They also partook in a *lakbay-aral* or educational field visits where they learned about the experiences of growers and other types of agribusiness arrangements. Through updating and sending a variety of members to other farms, MEARBAI was able to convince its members to insist on a growership.

Both groups approached SUMIFRU independently. At this time, they already had three years of experience as growers and legal contacts from asserting their claims as ARBs. They felt that MEPI was deliberately paying them low prices for their bananas, but they had to find an alternative buyer who would offer better prices, and who was willing to pay MEPI for the remaining amortization payments of 293,733 pesos per hectare. SUMIFRU was such a buyer, and in 2007, they began a growership agreement after deliberating with their members. The consensus was that if they could get better prices, they should switch partners. Today, officials of both coops say that their debts are almost paid off, and they are ready to become sellers to the highest bidder by 2017 when their contracts with SUMIFRU end.

Santo Tomas-The Lessors: The members of the three lessor groups from Santo Tomas Davao Del Norte all belonged to an organization called the Davao Marsman Agrarian Reform Beneficiary Association Incorporated (DAMARBAI). When the Marsman estate was redistributed in 1998, DAMARBAI was seen as an association controlled by MEPI management, as opposed to MEARBAI, which was organized by outside NGOs. There were different accounts about DAMARBAI's actions in 1998. My focus group discussion with current members of DAMARB-MPC suggest that the lease contract was a product of assessing the risks and costs of a growership, and their estimation of the strength of the existing union of MEPI farm workers. The rationale was that cultivating bananas was far too expensive. The costs of fertilizers, maintain-

ing the infrastructure, paying for labor, and building and maintaining a packing house were too high. They did not have any capital, and they would already have to pay for the amortization of the land. On top of this, MEPI would have been their buyer. If they crossed MEPI by taking full ownership of their awarded holdings, then, MEPI would take measures to ensure that they were not successful. On the other hand, under a leasing arrangement, they would not have to pay for amortization and inputs, and MEPI would have to honor the collective bargaining agreements they had from the farm workers' union named the Davao Marsman labor Union (DAMLU). This cost-benefit calculation is encapsulated in their name for the contract: "*Walang personalan. Trabaho lang*" (Nothing personal. It's just work.)

In contrast to their fellow farmworkers in MEARBAI, I was told by focus groups with SIFARBCO and key informant interviews with STARBENCO that the members of DAMARBAI had not gone to see other farms under different agribusiness arrangements. Instead, much of the education they received towed the line that growership was risky, and that they would be saddled with high-levels of debt. Further, the lawyers whom they consulted were MEPI contacts. Eventually, the ARBs got their certificates in 2002, and a debt-free leasing arrangement where they were secure in their livelihoods. Unfortunately, this would not last.

In 2004 some of DAMARBAI's members decided to break ranks. MEPI had kept their lease payments at the lowest level for two years, citing bad harvests.¹¹ Some 100 ARBs decided that they wanted to opt for a growership option. They occupied their lots and picketed the municipal agrarian reform office. This was the birth of the Santo Tomas Agrarian Reform Beneficiary Association Incorporated (STARBAI). STARBAI's members were temporarily retrenched and reinstated in 2008. In 2010, another land occupation broke out and MEPI decided to retrench all 241 workers

¹¹Table 2.5 summarizes the emphBeneficiary Trust Fund or the lease payment to the lessors in Santo Tomas. It follows a step function, that rises with the number of boxes sold.

belonging to STARBAI. MEPI was able to do this since the lease arrangement gives them the right to hire and fire workers. Thus, while the ARBs legally own the land, the lease arrangement makes them employees of MEPI. Further, MEPI can hire and fire at will, which de facto excluded the offspring of STARBAI's members from working on their parents' holdings. The municipality of Santo Tomas deployed the police against the members of STARBAI. At least one person was killed during the dispersal.

Table 2.5: **The Beneficiary Trust Fund** peso values are based on 40 pesos/\$

Annual Yield (Boxes)	Incentive/ Box (\$)	Incentive/ Box (Pesos)
≤ 4200	.071	2.8
4201-4300	.076	3.04
4301-4400	.081	3.24
4401-4500	.086	3.44
4501-4600	.091	3.64
4601-4700	.096	3.84
4701-4800	.101	4.04
4801-4900	.106	4.24
4901-5000 (or greater)	.111	4.44

It was not clear from focus group discussions why STARBAI split into SIFARBCO and STARBENCO. Accusations of capitulating to MEPI and closeness to DAMARB-MPC go both ways ¹². What is clear however is that both groups would like to withdraw their holdings from the leasing arrangement, and cultivate these as growers. They have already taken their case to the authorities with the help of several land reform advocates. As of this writing, SIFARBCO and STARBENCO are waiting on the Presidential Agrarian Reform Council (PARC) to adjudicate their case. Reports from their lawyers indicate that the PARC has adjudicated in their favor. The only signature they need as of the time of this writing is that of the sitting president's,

¹²After the events of 2004, DAMARBAI had changed its name to Davao Marsman Agrarian Reform Beneficiaries Development Cooperative (DAMARB-MPC), and eventually changed to their current name.

Benigno S. Aquino III. The current DAR secretary is scheduled to convene a meeting of the PARC and it is possible that this meeting will result in a decision regarding these cases against MEPI.

Tagum City-HEARBCO 2: HEARBCO 2 contracted with TRAIN in 2014, after a typhoon hit their plantations, destroying much of their crops. While typhoon Pablo was certainly a necessary cause for HEARBCO 2's switch from a grower to lessor, it is certainly not sufficient. Prior to the typhoon hitting Mindanao, Lapanday Foods and HEARBCO 2 already had a contentious partnership.

HEARBCO 2 did not contract directly with Lapanday. Lapanday became HEARBCO 2's buyer when Hijo sold their growership agreement. According to a focus group discussion with members of HEARBCO 2, Lapanday made several demands that forced HEARBCO 2 to go into debt. One example of this was building infrastructure such as irrigation pipes on the farm which the members of HEARBCO 2 had not agreed upon, but Lapanday insisted was necessary. Lapanday then counted this as part of the ARBs' debt and deducted these from the payments to the ARBs. Another example is imposing the use of certain fertilizers that only Lapanday sold as a form of quality control. These actions by Lapanday brought HEARBCO 2, along with other cooperatives that sprung from Hijo employees, to the attention of land reform advocates. Thus, by the time they broke with Lapanday, HEARBCO 2 had legal assistance and contacts with numerous NGOs.

When typhoon Pablo hit, HEARBCO 2 was already 52 million pesos (\$ 1,130,434) in debt. The typhoon destroyed many of the trees in HEARBCO 2's farm. In a focus group discussion, I asked for an estimate of how many trees were destroyed. They laughed and responded "*Naku, dili na namin gi-isip, kay nagtu-aw kami diha!*" ("Come on, we couldn't count because we were crying!"). This destruction was sure to increase their debts with Lapanday.

Instead of allowing Lapanday to step in, HEARBCO 2's board approached TRAIN. HEARBCO 2 saw a lease arrangement with a familiar partner as a way of overcoming their debts and difficulties. One of the officials even narrated the dialogue she had with one of the Ayala family members managing TRAIN. She told them "*Ser, lupa niyo ito. Dati niyo kaming trabahante. Naghihirap na kami.*" ("Sir, this was your land, and we were your workers. We are already having a hard time"). TRAIN decided to pay Lapanday for HEARBCO 2's debts conditional on a lease agreement that would span 60 years. According to one of the board members, they were hesitant to take the lease agreement for such a long time, and many of their members did not trust the new partnership. However, once they presented the reality of the debt figures, the members acquiesced. The lease agreement was drafted by HEARBCO 2's legal counsel, and went into effect in 2014.

While the lease agreement with TRAIN stands for the next 60 years, HEARBCO 2 maintains some level of control over the AVA. HEARBCO 2 is responsible for hiring and firing workers on the field and the packing houses, which gives them the ability to determine the users of land. They are also responsible for operations, having themselves been growers in the past. Thus, HEARBCO 2's deal with TRAIN is a Lease arrangement where they maintain some sticks in the bundle, giving them some degree of control. It should be noted, however, that these abilities are not spelled out in their contract with TRAIN.

Pantukan-Individual ARBs: The Pantukan ARBs were the only ARB group in my sample that was neither organized when they first entered an AVA, nor officially listed by the DAR. They were once tenants and farmworkers for a coconut farm. After the land was distributed, the ARBs became individual coconut growers. From their experience, coconut was a highly lucrative crop. They expected that they would be able to sell a kilo of copra, the dried meat or kernel used to make coconut oil, for twenty pesos. However, they found that this was not the case. All the ARBs were

selling to one buyer, who now exercised monopsony power over the ARBs. The ARBs were now selling a kilo of copra for 10 pesos a kilo.

Philippine Coconut authority estimates that, per hectare, a farmer can get a yield of 1230 kgs of copra per hectare. At this price, the gross revenue from their holdings would have been 12,300 pesos per hectare or 30,750 in total for the 2.5 hectares allocated to each ARB. Taking out the average cost of cultivation for 2.5 has. at 9,703.5, estimated by the coconut authority, the net revenue from cultivating coconuts would have been 21,046.5. The total payments to the Land Bank for amortization and land taxes would have been about 8,946.19.¹³ This leaves the ARB with a total annual income of 12,100.31, or a bi-weekly income of 456 pesos (\$10)¹⁴. This low level of income did not allow the ARBs to meet their basic consumption needs, and many were in danger of being evicted from their holdings.

In 2002, the Pantukan Agricultural Development Corporation (PADCOR) approached the ARBs individually with an offer to develop their lands into a banana plantation in exchange for a leasing arrangement. Each of the ARBs saw this as an opportunity to pay off their amortization. Further, the promise of a steady lease payment, and the framing of the employment provisions, made the lease contract seem like a lucrative proposition. In a focus group discussion, they said that "*Pwede kami mag -rekomenda og isang anak, o kami mismo mag trabaho*" ("We can recommend 1 child or we ourselves can work"). PADCOR eventually sold the lease to Musahamat in 2009. Musahamat approached the ARBs with a very similar contract to PADCOR. They signed the contracts because of a five-year advance on the lease payments. However, the promise of work did not materialize. Numerous reasons were given to me during the focus group discussions, but one was remembered by all of the participants. Some of the ARBs' children work in nearby plantations that have unions organized

¹³Figure taken from ARB receipts

¹⁴This is about 5 pesos less than the daily minimum wage of a worker in Metro Manila

by the *Kilusang Mayo Uno (KMU)*. They were told that Musahamat did not want KMU to influence other workers since it may disrupt production¹⁵.

Today, the ARBs have formed an association, and would like to gain legal status so that they can withdraw their holdings from the lease. They have formed connections with both (KMU) and the *Kilusang Magbubukid ng Pilipinas (KMP)* in the hope of gaining support in advocacy¹⁶.

2.5.2 Comparing Histories

All these ARB groups, apart from those in Pantukan, were organized into some sort of ARB association prior to the formation of their AVA. The ARBs of Pantukan only made connections to pro-land reform organizations after their lease contract was already in place. However, being organized or having connections with pro reform forces by itself does not guarantee an AVA that allows ARBs to control their holdings. In the case of the Santo Tomas Lessors, their organization at the inception of the lease agreement with MEPI did not seem to conduct education regarding AVAs in any serious manner. They merely reinforced the merits of a lease contract. NGO and legal connections helped MIFARBCO, MARBCO and HEARBCO 2. While the lessor groups of MEPI had legal consultation, they did not have communication with pro-land reform forces. Finally, the Pantukan ARBs did not have legal consultation.

Group and individual debts, especially the amortization payment for the land, were a factor in favoring lease contracts as opposed to growership contracts. The ARBs' perception of the level of debt that they would incur under alternative arrangements made the lease agreement look lucrative. In the case of the Santo Tomas lessors, their possible debt payments were magnified by the DAMARBAI leadership. The prospects of incurring greater debt made HEARBCO 2's ARBs enter a leasing

¹⁵Kilusang Mayo Uno- May 1st Movement

¹⁶Kilusang Magbubukid ng Pilipinas- Peasant Movement of the Philippines

arrangement so that they could continue to make amortization payments and keep their lands. The Pantukan ARBs individually had debts, but this mattered less than the financial gains to be made under a lease arrangement with employment.

The extent of membership consultation is quite ambiguous. DAMARBAI's consultation, according to focus groups, were more of an exercise in convincing members of the merits of a lease contract. The Pantukan ARBs did not have an organization, but discussed lease prices among their neighbors. However, they had not bargained collectively. Finally, HEARBCO 2, MIFARBCO, and MARBCO had clear channels of communication with their board members. At least in the formation of their contracts, they were able to provide education, present their case to their respective groups, and deliberate. Finally, MIFARBCO, MARBCO, and HEARBCO 2 had the opportunity to bargain with prospective partners regarding the AVA contracts. The lessor ARBs from Santo Tomas have different accounts of the bargaining process. The members of the current DAMARB-MPC say they remember their board members bargaining with MEPI. The members of SIFARBCO and STARBENCO say they did not. The likely answer is that some negotiation happened, but the negotiators did not represent the interests of the ARBs effectively because of the trivial education and membership consultation.

Table 2.6 summarizes the contracts of the different ARB groups along with some costs, benefits, and obligations. The lessor ARBs in Santo Tomas receive what is called a *Beneficiary Trust Fund (BTF)* instead of a lease. This is computed as a step function giving an amount of pesos depending on how many boxes are produced by the AVA¹⁷. The lease payments to HEARBCO 2 and Pantukan ARBs is a fixed yearly amount with deductions for their amortization payments. The Pantukan ARBs receive a lease of about 22,000 pesos a year. This amount increases by 5% every five

¹⁷This computation is summarized in Table 2.5

years. HEARBCO 2's lease amounts to around 17,000 pesos a year after they have paid for debts and amortization payments. Under the lease contracts, the ARBs do not share in the costs of production. By contrast, the grower ARBs share in the costs of production, risk of their bananas being rejected, and possible natural calamities, as with HEARBCO 2's experience. Investors in growership also often have the ability to take over the farms should there be crop failure.

2.5.3 Control

Table 2.7 presents the sticks in the bundle of property rights available to each ARB group. The columns in the table are the same as the "sticks-in-the-bundle" from Table 2.1. None of the contracts stipulate any room for ARBs to change the use of their holdings away from banana production. Under growership contracts, the ARBs can negotiate their per box prices, and determine who can use and work on the land. Being able to negotiate the per box price has actually served both groups well in the past. In the beginning of contracting with SUMIFRU, the per box price for Class A bananas (at least 7.5 inches in length) used to be \$2.90. The coops eventually bargained up the price of class A boxes to \$4.10 by presenting information from farms growing for DOLE. In addition, the coop, MIFARBCO was able to gain the right to look for other buyers of Class B bananas.

In contrast to the growership contracts, the lease contracts do not give ARBs the formal right to bargain for better lease payments, or determine who gets to work on their holdings. However, avenues exist for these groups to negotiate better leases, or greater remuneration. In the case of the DAMARB-MPC members, they have been able to negotiate wage increases and other benefits. Their contracts formally stipulate that MEPI will respect any collective bargaining agreements made through the farm workers' union of which, as employees of the plantation, the DAMARB-MPC ARBs are members. However, this ability is conditional. Until 2010, the members of

Table 2.6: Contracts offered to groups of ARBs

Location	Group	Contract Type	Length (Years)	Remuneration	Cost Share	ARB Production Risks	Investor Responsibilities	ARB sells Class B, Rejects	Pre-Termination	Other Plants Allowed
Growers	Santo Tomas	MARB	10	Per box	Infra, Inputs, Labor, Improvements	Rejected Bxs, Full take over	Quality Control Packing Materials	Y	Investor	N
	MIFARB	Grower	10	Per box	Infra, Inputs, Labor, Improvements	Rejected Bxs, Full take over	Quality Control Packing Materials	N	Investor	N
Lease (Group)	DAMARB	Lease	30	BTF+Emp	None	None	All Production	N	Investor	N
		Lease	30	BTF	None	None	All Production	N	Investor	N
	STARB	Lease	30	BTF	None	None	All Production	N	Investor	N
		Lease	60	Lease+Emp	None	None	All Production	N	Investor	N
Tagum	HEARB	Lease	25	Lease	None	All Production	N	Investor	N	
Lease (Ind.)	Pantukan	Indiv ARBs	Lease	Lease	None	All Production	N	Investor	N	N

Table 2.7: **The-Sticks-In-the-Bundle** under each group’s contract. Y=The group has this ability, N=The group does not have this ability, C= The group has this ability conditionally.

	GROUP	Det. Land Use	Det. Rem.	Withdraw	Det. Methods	Det. User
Growership	MARB	N	Y	C	C	Y
	MIFARB	N	Y	C	C	Y
Lease (Group)	DAMARB	N	C	N	N	N
	SIFARB	N	C	N	N	N
	STARB	N	C	N	N	N
	HEARB	N	C	N	N	Y
Lease (Ind.)	PAN	N	N	N	N	N

SIFARBCO and STARBENCO were also members of DAMARB-MPC. They wanted to withdraw their holdings from the lease contract. To do this, they occupied their lands and refused to let the company harvest the standing crop. Since MEPI determines who can work on the ARBs' holdings, all the participants of the mass action were terminated. These were 241 ARBs in total, or 31% of DAMARB-MPC's original membership.

The ARBs from the Pantukan district also do not have the right to determine who works on the plantation that leases their holdings. Of my sample, all of the ARBs reported having at least one child who worked as casual laborers on other banana plantations in the district. While these ARBs have no experience in banana farming, they were hoping that their children would be able to get jobs in the plantation leasing their lands. I received numerous accounts of why Musahammat farms did not want to hire from the ARB families. One reason is under-qualification, despite the fact that many of the families had members who were working in other banana plantations. The other reason is that the country's largest trade federation has organized in the surrounding areas. Thus, hiring those that have worked in other banana plantations would be allowing the trade union in the farm. Regardless of the reasons, the inability of the ARBs to determine who uses land has deprived them of the ability to use their holdings and appropriate the gains of cultivation.

The ARBs under growership arrangements have maintained a modicum of possession over their holdings. They can determine who can work on their holdings, and thus, are entitled to the gains from cultivation. They are also given a chance to withdraw from contracts and renegotiate the price of their output. However, these abilities are limited. Withdrawing is conditional upon whether they can pay SUMIFRU for its initial investments for the land amortization owed to MEPI totalling 293,733 pesos per hectare. These costs were initially paid by SUMIFRU to MEPI when the ARBs of MARBCO and MIFARBCO withdrew their growership contract

from MEPI. Regardless, the ARBs under growership contracts can look for another buyer and withdraw, as long as they have the funds to do so. When I interviewed the current Coop chairs of both MARBCO and MIFARBCO, they said that the ARBs would like to leave the contract with SUMIFRU since other banana buyers are now locating in Santo Tomas. However, they are willing to continue the remaining two years of their current contract since it is only a short time before the contract expires and their debts are paid.

In contrast, ARBs in lease contracts have not preserved possession over their holdings. They have no control over who gets to work on their land, the use of the land, and the methods of farming. While they may be able to change the level of remuneration they receive, this can only be done insofar as they remain workers in the plantations on their land. The experience of SIFARBCO, STARBENCO and the ARBs of Pantukan show that these ARBs remain vulnerable to the threat of exclusion from the use of their holdings.

2.5.4 Income

What effect does the allocation of control have on the income of the ARBs? Table 2.8 gives information on ARB incomes. Total Income aggregates all income sources for each individual ARB except for remittance income. This includes income from the AVAs, other plots of land, pension payments, income from having a store, from driving motorcycles, carpentry, and other activities. I excluded remittance income since the individual ARBs were reluctant to give figures for remittances. Some gave the reason that they don't want to make a mistake in their computations. Others simply found the question intrusive. Instead, I noted whether or not they received some form of remittance from relatives overseas. AVA income is the income that they get from the AVA alone, such as profits from selling bananas grown on holdings they received from CARP, lease payments, and wages from their AVAs.

Table 2.8: **Income Information:** The numbers given are bi-weekly figures in *Philippine Pesos*. AVA Income as a % of Total Income is reported for the *median* interviewee. "Remittance" and "Other" sources not reported in pesos, but as a percentage of the sample who reported that these are part of their income.

	Location	Group	Total Income (Median Reported)	AVA Income (Median)	AVA (% of Total)	Non-Ag (% of Total)	Remittance (% of Sample)	Other Income Earner (% of Sample)
Growership	Santo Tomas	MARBCO	9300	8050	71.00%	5.00%	0%	37.5%
		MIFARBCO	11800	10250	100.00%	0%	0%	16%
Lease (Group)		DAMARB-MPC	4934.16	645.83	17.00%	39.00%	0	14.29%
		SIFARBCO	3304.6	554.6	14.58%	82.60%	0	60%
		STARBENCO	2807.38	554.6	24.14%	62.00%	16.7%	100%
	Tagum	HEARBCO 2	4608.69	4608.69	100.00%	0%	10%	25%
Lease (Ind.)	Pantukan	Indiv ARBs	3249.90	1399.9	25.86%	68.76%	11%	44%

One of the justifications for AVAs is so that ARBs can use their holdings to generate a viable agricultural livelihood (Department of Agrarian Reform, 1996). To indicate how important the AVA income is to an individual in each group, I show here AVA income as a percentage of overall income. I also note non-agricultural income as a percentage of total income to show the extent to which ARBs within different contractual arrangements are able to depend on agriculture for livelihood. Finally, I note how many interviewees depend on other family members for some support such as buying them food and other daily expenses.

The median bi-weekly income of MARBCO members is 9,300 pesos (\$202) while it is 11,800 pesos (\$256) for MIFARBCO members¹⁸. On the other hand, the best-off lessor ARBs, in terms of total income, are those of HEARBCO 2 and DAMARB-MPC. The median income of the DAMARB-MPC ARBs is 4934 pesos (\$107) while it is 4609 pesos (\$ 100) for HEARBCO 2. However, the median interviewee from DAMARB-MPC draws only 17% of total income from the AVA. Much of the income is drawn from other activities. This is because many of the interviewees from DAMARB-MPC are retirees who own small stores or have pensions. In contrast, the ARBs of the groups who are not able to gain employment from the AVAs on their holdings are worse off. The median interviewee from SIFARBCO earns a bi-weekly income of 3304 pesos (\$71), while that of STARBENCO earns 2807 pesos (\$61). The median interviewee from the group of Pantukan ARBs earns 3250 pesos (\$70). The gap between the total income of the median HEARBCO 2 interviewee and that of SIFARBCO then is 1305 pesos (\$28). It is also notable that SIFARBCO, STARBENCO and the Pantukan ARBs get most of their income from non agricultural sources. Further, a greater proportion of the interviewees from these groups depend on other family members for income. Many of the able-bodied ARBs from these three groups have taken jobs

¹⁸The peso-dollar exchange rate at the time of the survey was about 46 pesos to one dollar.

in the farms of other growers or have found non agricultural employment such as carpentry, smithing, and driving tricycles ¹⁹.

2.5.5 Other Measures of Well-Being

Income is only one dimension of welfare. Table 2.9 presents data collected on indicators of family welfare, conditions of the household, savings, and ownership of key assets. Of the key assets, I chose the ownership of a motorcycle and a mobile. The motorcycle is a common vehicle in these areas where the roads are often unpaved. It allows people to travel across narrow roads and bridges. Owning a mobile phone has become essential in communication whether for deliveries, town meetings, and making appointments at government offices.

Table 2.9: **Selected Assets, Childhood Education, and Facilities in dwelling** possessed or achieved by ARBs

	Location	Group	Child Stop School due to Finance	Running Water in House	Toilet Access	Electricity	Motorcycle	Mobile	Savings
Growership	Santo Tomas	MARB	0%	87.5%	100%	100%	75%	100%	50%
		MIFARB	17%	100%	100%	100%	100%	100%	66.7%
Lease (Group)		DAMARB	14.29%	100%	100%	100%	43%	100%	14.29%
		SIFARB	73.33%	100%	100%	100%	27%	100%	0%
		STARB	67%	100%	100%	100%	67%	100%	0%
	Tagum	HEARB	55%	90%	100%	100%	100%	100%	25%
Lease (Ind.)	Pantukan	Indiv ARBs	55%	0%	100%	100%	56%	100%	0%

¹⁹Tricycles are passenger vehicles which consist of a motorcycle harnessed with a very colorful sidecar.

Ownership or access to a mobile phone, in-house electricity, and toilets are available to all the ARBs. Those who have growership contracts, however, have less of an incidence of children who discontinued schooling due to financial reasons. The incidence of children discontinuing schooling due to financial reasons is particularly high for the lesser ARBs who cannot work on their lands, and the ARBs of HEARBCO 2 who suffered losses due to typhoon Pablo. It should be noted, however, that in HEARBCO 2's case, this was not due to their contract with TRAIN but because of their growership with Lapanday.

Running water in-house is not available to the ARBs in Pantukan, but this is mostly because of the infrastructure development in the municipality. All of them, however, have access to water wells on their lots. The incidence of motorcycle ownership is also higher among members of grower coops, except for HEARBCO 2's members where all who were surveyed had motorcycles. Finally, growers also have a higher incidence of respondents who reported savings.

2.6 Discussion and Policy Implications

The histories of the different ARB groups resulted in different contracts. The contracts in turn affect their well-being today in terms of their income, and their ability to obtain valuable assets and education for their children. In this section, I discuss criteria under which we can assess the effects of these contracts on the ARBs' livelihood. I then outline some possible policy implications.

2.6.1 Normative Analysis

There are two ways we can conduct a normative analysis on AVAs. The first is to take into account possible counterfactual scenarios for each ARB grouping. For the Santo Tomas ARBs, we can directly compare the lease and growership contracts, since these were the alternatives that were available to the ARBs at the time of contracting.

The HEARBCO 2 ARBs were facing a choice between continuing as growers, perhaps with another company, or, with taking the lease option from TRAIN. Finally, the Pantukan ARBs faced the choice of entering an AVA or not.

With respect to the Santo Tomas ARBs, the lease AVAs have certainly been detrimental to the ARBs of DAMARB-MPC, SIFARBCO and STARBENCO. If the ARBs had chosen to only accept growership contracts, their fortunes would be different today. Some may still have contracted with MEPI, but competition from SUMIFRU and other buyers would have made it difficult for MEPI to exploit monopsony power over the ARBs. Certainly, the absence of NGO advising, legal counsel, and strong ARB organizing had a role to play in the divergent outcomes between the leasing and grower ARBs. Further, DAMARBAI's push to convince the ARBs that they had a better chance as lessors created uncertainty about the growership contracts. As one SIFARBCO member puts it: "*Walang hiya yang DAMARABAI, nanloko lang. Naku, kung alam lang namin sana.*" ("Damn that DAMARBAI, all they did was lie. If we only knew.")

Some lease contracts, however, are better than others. Assuming that the Pantukan ARBs' prices remain as they were when they harvested the last of their coconut crop, then the ARBs improved their income positions by taking the AVA. The lease contract of the HEARBCO 2 members allowed them to avoid further debt, and they have been able to make a living with the lease payments and wages. One counterfactual scenario for the ARBs of HEARBCO 2 would have been a similar growership contract to that of MIFARBCO and MARBCO under SUMIFRU. In my focus group discussions with coop members, SUMIFRU had offered the same deal, with the same conditions, but, perhaps for a longer period since the debts of HEARBCO 2 were larger. Had they gotten this deal under SUMIFRU, they may have had to take out more debts to cover the damage done to their farms, provide fertilizer and other inputs, and would have had to pay SUMIFRU for their aerial spraying. It is difficult

to say whether a SUMIFRU-HEARBCO 2 partnership would have resulted in better outcomes, or outcomes equivalent to that of MARBCO and MIFARBCO.

The other way to conduct a normative analysis is to ask whether these AVAs meet certain ends. These can be taken from the official justifications of the state for encouraging such arrangements. The first is to make smallholder farming economically viable for the farmer. The second is to ensure beneficiary possession and control of the land. Last is to introduce facilities and technological improvements that could increase ARB incomes²⁰. Under these criteria, the contracts of MARBCO and MIFARBCO have certainly succeeded. The one issue that they have is that there is no visible way to observe outside options so they can bargain for better prices.

Under these criteria, AVAs have failed the Pantukan ARBs, the members of SIFARBCO and the members of STARBENCO. While the median income of the sample exceeds poverty incomes, the ARBs in my sample obtained income largely from activities outside their holdings²¹. Thus, the improvements that were introduced on the ARBs' holdings do little to facilitate their livelihoods. Moreover, these ARBs cannot utilize their land, let alone gain any control of it. One of the questions that I had asked all interviewees was whether there was any value to owning land. One of the Pantukan ARBs answered this question as follows: "*Wala, mamatay na kami*" ("None, we'll be dead before then."). Though this answer does not reflect the consensus among the ARBs I interviewed, it follows from the present situation that some of them face. The lands awarded to them yield neither improvements in income, or a viable livelihood. Moreover, their struggle to assert land ownership has been drawn out to the point

²⁰These objectives are stated in the Administrative Order 09-06 under the Department of Agrarian Reform. In the time I was in the Philippines, this administrative order was translated into a law to regulate AVAs called House Bill 5161. It has not yet passed.

²¹By *poverty income*, I am using the World Bank standard of \$1.90/day, which, in bi-weekly terms would come to 1,223.6 pesos (World Bank and IMF, 2015).

that, due to their age, some ARBs do not foresee themselves as reaping the rewards of land ownership in their lifetimes.

While the Lease AVAs have been kinder to ARBs in HEARBCO 2 and DAMARB-MPC, it has only been kind insofar as these ARBs have continued their employment in the AVA. The stipulations of the contracts, however, do not give ARBs the right to be employed on their landholdings. These decisions are made by MEPI and TRAIN. However, stipulations that help ARBs gain some control over employment exist in each of these situations. DAMARB-MPC, and HEARBCO, under the current management structure are responsible for personnel issues including hiring and termination. Again, however, it is questionable whether these rights are secure, since they are not written into their contracts.

2.6.2 Policy implications

Steps have to be taken to avoid contractual arrangements that deprive ARBs of control over their lands. The DAR explicitly discourages the formation of lease arrangements, calling these a “last resort” (Presidential Agrarian Reform Committee, 1997). Such policies, without addressing the underlying economic considerations that motivate lease arrangements, are insufficient. As in the case of HEARBCO 2, even growership arrangements can be written to pass costs to ARBs, preventing their success and driving them to financial hardship. Policy makers should not see AVAs as a means to address the challenges which ARBs face. They should instead tackle these problems first so that agribusiness partnerships become a viable option for ARBs.

In the context of a post-CARP rural economy, familiar measures such as guaranteeing affordable credit, insurance, and building farm-to-market roads would reduce the anticipated costs of cultivating bananas. Such policies reduce the incentives for smallholders to accept contracts where they lose effective control over land. CARP, however, also introduces the burden of amortization payments to ARBs. My findings

suggest that amortization payments are one of the reasons that ARBs take contracts where they cede control over their holdings. The state has to formulate an alternative method of compensation to former landowners that does not pass this burden to ARBs. Further, the pricing of land must not include the former owner's subjective valuation since this leaves room for manipulation by landed elites. Of late, some land reform advocates have already called for making land distribution free²². This would certainly be a welcome development, but it needs to address the difficulties of current ARBs who bear the debt burden.

Agrarian reform authorities must also give institutional support to ARBs. One way to do this is to provide pro bono legal assistance and consultation. This service is particularly important for ARBs who find themselves in unfair contracts, and who would like to renegotiate their terms of incorporation. Second, they can regularly convene key representatives of agrarian reform groups who they can consult on cooperative formation, contracting, and best practices that they may suggest to ARBs. By doing so, ARBs can obtain more information on alternative contracts, profit levels, costs, and possible methods of financing farm operations. This would help ARBs who are deciding on alternative contractual arrangements and would like to see what their peers have been able to achieve.

Another possible intervention is a method of streamlining contract renegotiations. Currently, what I have gathered from focus groups and key informants is that the procedure for renegotiating contracts has several layers. First, the municipal agrarian reform office (MARO) must recommend a case to the PARC. Once the PARC approves the merit of a case, it sends a fact-finding mission. This fact-finding mission then makes recommendations to the PARC which, then, all members of the committee

²²The new proposal by a coalition of progressive parties called the *Makabayan* (Pro-people) bloc is called the Genuine Agrarian Reform Bill. This has not yet passed, but proposes free land distribution as one of its main objectives.

must sign. For SIFARBCO and STARBENCO, it is a process that has taken several years. With such a lengthy process, ARBs would incur costs in both legal fees, and the opportunity cost of foregone income from possible contractual improvements. Streamlining the process may ensure that ARBs can exercise the credible threat of evicting their agribusiness partners so that they have control over their holdings. The criteria for adjudicating contracts is already given by CARP- land ownership has to create viable livelihoods for ARBs, and they should maintain control and autonomy over their holdings.

Finally, the DAR and its local government counterparts should partner with pro agrarian reform forces who are actively involved in organizing rural communities. Such forces could assist in organizing ARB cooperatives, monitor existing partnerships, and assist in delivering grievances regarding contracts. Authorities in the Philippines, however, have a history of exhibiting hostility against such forces²³. Thus, before the DAR can engage pro-reform forces, there needs to be a commitment within the Philippine state to ensure the welfare of ARBs and the democratic rights of civil society organizations. To this direction, there is some optimism since the newly appointed secretary of agrarian reform, Rafael Mariano, is a long-time peasant advocate and former chairman of the Peasant Movement of the Philippines (KMP)²⁴. To what extent he can deliver pro-ARB measures despite a landlord dominated legislature remains to be seen.

These proposals are in line with interventions that enable ARBs to organize and bargain for better contracts, reduce costs of marketing crops for smallholders, and measures that ease access to technologies (Reardon et al., 2009). In theory, AVAs

²³One such case is the killing of a peasant leader in Compostela Valley: <http://bulatlat.com/main/2015/04/30/peasant-leader-killed-in-compostela-valley/>

²⁴KMP stands for the Filipino name: *Kilusang Magbubukid ng Pilipinas*. The press has lauded Mariano's appointment in articles such as the following: <http://www.rappler.com/newsbreak/in-depth/140006-agrarian-reform-rafael-mariano-profile>

and other modes of agribusiness incorporation has the potential to benefit ARBs and other smallholders. The fact that many of them are not implies that more needs to be done to make this potential a reality.

CHAPTER 3

CONTRACTING CONTROL

3.1 Introduction

Lately, there has been considerable interest among scholars and policy makers in partnerships between smallholders and agribusiness. On the one hand, some see these partnerships as a means of improving livelihoods by introducing new technologies, access to seeds and credit, and international trade networks (Cotula, 2012; Mondiale, 2008). On the other hand, others have cautioned of the potential of such arrangements to effectively dispossess smallholder communities, causing them to lose access to their landholdings and livelihoods (Menguita-Feranil, 2013; German et al., 2016).

To mitigate the possible adverse effects of smallholder incorporation, two institutional recommendations surface from recent literature (Deininger, 2011; Cotula and Leonard, 2010; Deininger, 2013). The first of these is land titling to secure smallholder communities from expropriation by both state actors, and non-state entities. The second recommendation is that of ensuring that smallholders have an understanding of contracts, and are able to enter these with free, prior, and informed consent. Land titling has received much attention in the development literature. The idea behind this policy recommendation is that insecure property rights may generate inefficiencies, since uncertainty would reduce investment or, divert resources toward protecting property (Ghatak and Besley, 2010; Auerbach and Azariadis, 2015). However, scholars (see e.g. Lavers, 2012; White et al., 2012) and civil society groups (see e.g. Colchester et al., 2011) have reported that even with formally recognized rights to land,

contracting with agribusiness firms result in smallholders losing effective control or possession over their holdings.

In a field study in the Philippines (see Chapter 2), I encountered agribusiness arrangements that deprived land owners of rights to land. In 2015, I studied agribusiness contracts among agrarian reform beneficiaries (ARBs) in the Philippines. These farms were devoted to the cultivation of Cavendish bananas- the type of bananas that are most commonly sold in stores here in the United States, Japan, China and Europe. Most of the smallholder groups that I studied, had leased their lands to agribusiness firms. These leases run between thirty and sixty years, and the agribusiness firms determine who can cultivate the land as wage workers. Among my forty-one interviewees in the Municipality of Santo Tomas, Davao Del Norte, twenty-one currently have no access to their land (1.02 hectares each) since they have been terminated from their plantation jobs after contesting their wages and benefits. Today, they earn bi-weekly incomes of about \$61. While this figure is around twice the official poverty income of \$1.90/ day, it falls well short of the bi-weekly income of \$100 or more that other lessor ARBs in the region earn that have not been excluded from using their holdings as farm laborers.

There is evidence that lease contracts are prevalent among agrarian reform beneficiaries in the Philippines. Among lands that have been awarded by the agrarian reform program, the Department of Agrarian Reform (DAR) has documented about 47,990 ha. in total that are under some form of contract with agribusiness firms. Of these, 28,573 ha. or roughly 59.5% are under lease arrangements.¹ The remainder are under *growership* contracts where investors merely purchase crops from landowners

¹This is likely an underestimate. In fact, one of the sites in my field work was not documented by the DAR. Further, the DAR's documented number of agribusiness deals cover only a small portion of agribusiness arrangements with ARBs which the Philippines' National Economic Development Authority (NEDA) has estimated at 1.2 million hectares or about 28% of the country's total arable land (Reported by Philippine Inter-agency Committee).

who decide on employment, inputs and methods of cultivation, and varying *joint-venture* agreements where each party to the contract is given some control over land-use, and profits are shared. There some evidence that lease arrangements prevail among agribusiness arrangements internationally (Anseeuw et al., 2012). Why is it that, despite the formal recognition of property rights, landowners enter into long-term contracts where they effectively lose control over their holdings? Even when the property-rights of landowners remain intact, agribusiness firms can write contracts that deprive landowners of certain abilities over their holdings, and sometimes, completely deprive them of control. This, in turn, may adversely affect the level of remuneration that smallholders obtain from the partnership.

In recent institutional and legal literature, property rights are conceptualized as a *bundle of sticks* or a set of abilities that an owner can exercise over her asset (Cole, 2002; Glackin, 2014). A typical list would include: the rights to use the asset, to appropriate the gains from use of the asset, to change the use of the asset, and to alienate it via collateral and sale. The right to use land would involve planting crops, working on the land, and inhabiting it. The right to appropriate gains from land may include determining who can benefit from the what is cultivated and determining the shares of profits from crops. The right to change land use may include changing what is cultivated and who is cultivating. Finally, the right to alienate means being able to use land as collateral for loans or to put it up for sale. By definition, having property rights over land means being granted a subset or all of these four "sticks in a bundle" by law (Hodgson, 2015). Being granted these rights, however, does not mean that one has *possession* or *control* over the asset. For example, a landlord may give a tenant use rights to land and even allow him to change the crops planted. Through a sharecropping contract, the tenant may have some right to appropriate its gains. However, if the landlord maintains the right to alienate his land, he may sell it to a developer and dispossess the tenant. Under such an arrangement, the tenant has

some sticks in the bundle, but the landlord's ability to sell the land can overcome whatever entitlements the tenant had.

The ability to control or possess land is a matter of having the appropriate bundle of sticks that will allow a person to exclude others from determining its use. In a lease contract, for example, withdrawal from the contract by the smallholder could be made difficult with costly legal procedures and compensation for an investor's investments. It can also be the case that an investor introduces options to renew the contract, de facto making withdrawal an impossibility². Purchasing or growership contracts may introduce stringent control measures such as limiting buyers for smallholder crops, and limiting the sources of fertilizer and credit. While these do not preclude smallholders from withdrawing their holdings, such measures may result in difficulties for smallholders in excluding current partners from cultivation. Such contract provisions assign certain sticks in the bundle to the investor, giving him the ability to determine how land is used and who can obtain a greater share of profits from cultivation. This assignment does not necessarily result in the investor having complete control over land. However, the resulting assignment of rights may make it easier for the investor to determine how land is used, and also convey some ability to prevent the smallholder from withdrawing her holding from the partnership. This is a partial re-assignment of control.

In this essay, I present a formal model to give an explanation of how investors can wrest degrees of control from landowners. The subject of land relations and land contracting has often been treated within the principal-agent framework where the landowner, as principal, designs a contract that maximizes his profits, and gets the agent (often, a peasant farmer) to work for him. However, partnerships between smallholders and investors differ considerably in this model. Instead, we have an investor

²This is common among lease contracts in the Philippines as observed in my own field work as well as by other scholars(e.g. Borras, 2007; Department of Agrarian Reform, 2006).

and a smallholder who decide whether or not to enter into a partnership for cultivation. The smallholder has land, while the investor has some expertise in acquiring technology, trade networks, and is able to introduce new sources of inputs for the smallholder. Neither is a pure principal, nor a pure agent.

The exchange of assets and expertise in the context of a partnership has been often been treated within the context of firm integration. One way to model firm integration is to explicitly model compensation mechanisms under different contract types such as leasing, joint venture, and purchasing contracts. The literature highlights certain determinants in the choice of contract type such as institutions (Karabay, 2010; Cui, 2011), costs (Svejnar and Smith, 1984; Asiedu and Esfahani, 2001), risks (Das, 1999), and even property rights restrictions (Che and Facchini, 2009). While these shed light when certain contractual arrangements are used, the issue of control is not treated explicitly. The partners have to agree to the contracts, but there is no conceptualization of how control rights are assigned within the contracts themselves apart from the level of investment each player allocates.

Another way to model firm integration is to assign rights based on productivity and bargaining power, determining which partner can exclude the other from the use of the asset. This framework was pioneered by Grossman and Hart (1986), and more recently adopted by Schmitz (2013a), Schmitz (2013b), and Antràs (2014). The problem often treated in this literature is the choice of the ownership structure which maximizes profits for two partners when they decide to merge. This ownership structure is decided before either party invests in the project. Once it is chosen, the partners (say a smallholder, S and an investor, I) decide on their levels of investment, and the total surplus is determined via a Nash bargaining process. The partners can choose between ownership structures where one of them completely owns the firm, or the firm is owned jointly. If I owns the firm, then his reservation payoff is the value of his in-

vestment, scaled by a parameter that reflects *relation-specificity* or, the disadvantage that he may have in production from withdrawing from the partnership.

My innovation to this framework is to relax the assumption that the choice of a firm structure is a discrete choice of ownership. Rather, I introduce a parameter κ that I decides to offer S in order to induce him to put up the land for the agribusiness project and invest in it. This parameter is a scalar weight on S 's disagreement payoff. It is meant as a measure of S *degree of control* over land. That is, one can think of κ as an index for the degree to which S possesses the various of sticks-in-the-bundle of property rights stipulated by a contract written by I . We can think of variations of κ as variations in the type of contract. When $\kappa = 1$, then, this resembles a grower or *contract-farming* arrangement where S can make all production and land-use decisions, and even look for new buyers. Lease contracts would be given by $\kappa \rightarrow 0$ where S can make very few, if any, decisions on the use of land and cannot withdraw from the partnership.

As in the literature on firm integration, there are three determinants of the level of control which I take to be exogenous. The first two are costs and productivity differences. The third determinant is bargaining power, which I use here in two ways. The first is the bargaining institutions that govern *the partnership*. S and I know their relative bargaining power once a contract is in place. The second way that I use bargaining power is the ability of either party to make a unilateral offer of control. Whoever has this ability will be able to choose the level of control that defines the contract. In this model, property rights are presumed to be secure, *ex-ante*, and thus, contracts are entered voluntarily³.

The paper is arranged as follows: **Section 3.2** introduces the model's main functions, the sequence of the game, and the resulting levels of investment and profit which

³The insight that institutions can be differentiated between bargaining and property rights institutions was first gleaned by Acemoglu and Johnson (2005).

informs I 's choice of κ . I examine two cases for offers of κ . In **Section 3.3**, I derive values of κ that I can feasibly offer under a limited set of parameter values which S accepts. Further, I show how the institutional characteristics affect I 's offer of control to S . In **Section 3.4**, I derive S 's offer of control to I and show the relationship between this offer, and the quality of institutions. I conduct a limited comparison of these outcomes using two frameworks in **Section 3.5**. The first of these compares the outcomes in terms of the degree of control that S is able to maintain over their holdings, and in terms of the total payoffs that S and I receives. Finally, I discuss the results of the model, its policy implications, and limitations in **Section 3.6**. The proofs of the results are presented in **Appendix A**.

3.2 The Model

There are two players, I , who can invest in cultivation, and S who owns land, without which neither player can produce. I needs to gain access to S 's land through a partnership where each party invests in cultivation. The value of S 's investment $q_S(x) = q_S x_S$, where x_S is the smallholder's input of effort in production, and q_S is a productivity constant. At *autarky*, or when S chooses to cultivate on her own, the cost of investment for S is given by $c_A(x) = c_A \frac{x_S^2}{2}$.⁴ The value of I 's investment is $q_I(x) = q_I x_I$, and he can obtain x_I at a cost $c_I(x) = c_I \frac{x_I^2}{2}$. If S contracts with I , the costs to investing are reduced to $c_S(x) = c_S \frac{x_S^2}{2}$, where $c_A > c_S$. This resembles policy pronouncements which claim that smallholders who partner with outside investors can gain through cost reductions in farm inputs. Producing together, the total product is $q(x) = q_I x_I + q_S x_S$. We can think of the combined product of S and I as follows: both S and I can produce a crop by combining land, fertilizer, labor, and access to trade networks. However, S , for example may have an advantage in obtaining labor, but

⁴The cost function conveys that investments in $x_i, i \in \{S, I\}$ entail unobservables such as disutility for either partner, along with prices.

I may have an advantage in finding buyers. Each partner adds these advantages to total output. In keeping with justifications for encouraging agribusiness partnerships, I assume that $q_I \geq q_S$, so that the investor's inputs add more to total product than the smallholder's. Finally, I assume that $q_S, q_I, c_A, c_S, c_S > 1$ to simplify the range of cases⁵.

In deciding whether or not to enter a partnership with I , the payoffs to a partnership would have to yield at least the level of profits to A that she would be able to obtain had she cultivated her land on her own. Should she cultivate on her own, then, S would have to decide on how much to invest on her land by solving the following optimization problem:

$$\max_{x_S} \Pi_S(x) = q_S x_S - c_A \frac{x_S^2}{2}$$

Solving this problem yields the following result:

Lemma 1. *The payoff to S at autarky is given by*

$$\Pi_S(x_S^A) = \frac{q_S^2}{2c_A}$$

The payoff given by Lemma 4 is S 's *participation constraint*. Below this level, S will not accept a partnership with I .

If the investments of each party are perfectly observable, then, they simply collaborate to maximize the total surplus by solving the following problem:

$$\max_{(x_I, x_S)} \Pi^{FB}(x) = q_I x_I + q_S x_S - c_I \frac{x_I^2}{2} - c_S \frac{x_S^2}{2}$$

⁵We can think of the costs to smallholders in a broad sense to include costs incurred due to weaknesses in property rights institutions. These include investing in protection against expropriation (e.g. Grossman and Kim, 1995), or lack of access to credit (Besley et al., 2012) which may reduce the payoffs to the smallholder in autarky.

Lemma 2. *The first best levels of investment are given by:*

$$x_I^{FB} = \frac{q_I}{c_I}, \text{ and } x_S^{FB} = \frac{q_S}{c_S}$$

The following corollary shows that the S 's first-best level of investment is greater than what she could afford had she chosen to cultivate her land-holding:

Corollary 1. $x_S^{FB} > x_S^A$

Corollary 8 follows from the fact that $c_A > c_S$. The partnership, in the first-best case introduces *cost-reductions* for S , thus increasing her level of investment in cultivation.

Since the investments of both parties involve investments of effort, they are not perfectly observable, and the partners have to bargain over the division of the total surplus. However, bargaining in this setting is governed by institutional factors that either party cannot influence once they have been set⁶. These institutional factors are defined by $\tau \in [0, 1]$, where τ is the relative bargaining power of S , given by laws and institutions. We can think of τ as the relative ease by which S can appeal to authorities for a favorable division of gains in the partnership, and/or the existence of organizations that can empower smallholders to demand greater levels of remuneration. In either case, I assume that τ is set and cannot change within the horizon of contracting treated in the present paper.

The ability of either party is limited in influencing the shares of surplus that they can obtain in a partnership. However, I can write a contract which can limit S 's level of control over her landholding. Thus, I 's contract is given by $\kappa \in [0, 1]$. By control, here I mean the ability to withdraw from the partnership should either party find the division of gains and relative effort levels unsatisfactory. If $\kappa = 0$, this means

⁶It may certainly be the case that either party has tried to influence this in the past. However, that is a separate problem from the one currently treated in this paper

that S cannot credibly withdraw her land from the contract, and thus, I effectively determines the use of the land. If $\kappa = 1$, S can credibly withdraw her holding from the contract. Intermediate values of κ can be interpreted as being able to withdraw land holding from the partnership with some degree of difficulty on the part of S .

This interpretation of control lends itself to a natural specification within the framework of bargaining. Since κ designates S 's ability to withdraw her landholding from the partnership, κ , then, strengthens S 's *bargaining position*. A higher level of κ means that S is more able to withdraw her landholding in case of a disagreement. Thus, the disagreement or *threat* payoffs to S and I respectively are given as follows:

- $D_S = \kappa q_S(x_S)$ for S
- $D_I = (1 - \kappa)q_I(x_I)$ for I

I 's offer of the degree of control, then, determines the bargaining position of S in the context of their partnership. The timing of the game is given thus:

1. I offers S a contract with a certain level of κ .
2. S decides to accept or reject I 's offer.
3. If the offer is accepted, S and I choose their levels of investment.
4. I and S bargain over the division of the total surplus $q(x) = q_I x_I + q_S x_S$.

I will solve this game via *backward induction*. That is, I will first obtain the solution to the Nash bargaining problem. This will determine the benefits for each partner, which in turn determines their level of investment. Together, the results of the bargain and the cost of investment will determine the payoffs or profit to S and I which result from the partnership. Finally, I will choose his offer of κ to maximize his profits.

3.2.1 Investment Levels and Profits

At the last stage, I and S will bargain over their shares of the total surplus given the level of institutional quality τ . This problem is stated as follows:

$$\max_{R_S} \pi^N = (q(x) - R_S - D_I)^{(1-\tau)} (R_S - D_S)^\tau$$

Lemma 3. *The resulting levels of remuneration to each player is given by:*

- $R_S = (\kappa(1 - \tau) + \tau)q_S x_S + \tau \kappa x_I$
- $R_I = (1 - \tau \kappa)q_I x_I + (1 - (\kappa(1 - \tau) + \tau))x_S$

These levels of remuneration have two components. The first terms, $((\kappa(1 - \tau) + \tau)q_S x_S$, for S , and $(1 - \tau \kappa)q_I x_I$, for I) shows the payoff that each player gets from her own investment. The second terms ($\tau \kappa x_I$ for S , and $(1 - (\kappa(1 - \tau) + \tau))x_S$, for I) reflect the benefit that each gets from the other player's investments. For what follows, let $Q_S = q_S(\kappa(1 - \tau) + \tau)$, $Q_I = q_I(1 - \kappa\tau)$, $Q_{S1} = q_S(1 - (\kappa(1 - \tau) + \tau))$, $Q_{I1} = q_I \kappa \tau$. The choice of investment for S and I , respectively, is given by the following optimization problems:

$$\Pi_S = Q_S x_S + Q_{I1} x_I - c_S \frac{x_S^2}{2} \tag{3.1}$$

and,

$$\Pi_I = Q_I x_S + Q_{S1} x_I - c_I \frac{x_I^2}{2} \tag{3.2}$$

Note that the profits of S and I increase with the other partner's investments, implying that each has an incentive to ensure that the other partner invests a higher level of $x_i, i \in \{S, I\}$.

Proposition 1. *The equilibrium choice of investments will be given by:*

$$x_S^N = \frac{Q_S}{c_S}, \text{ and } x_I^N = \frac{Q_I}{c_I}$$

We can show further that,

Corollary 2.

$$x_S^N < x_S^{FB} \text{ and } x_I^N < x_I^{FB}$$

This is a standard result in agency problems. Since the investments of S and I are not perfectly observable by the other partner, the rewards from the partnership depend on the levels of control chosen, and the institutional quality confronting each player. The profits to S and I from this partnership, given these levels of investment, are given by:

$$\Pi_S(x_S^N) = \frac{Q_S^2}{2c_S} + Q_{I1} \frac{Q_I}{c_I} \quad (3.3)$$

and

$$\Pi_I(x_I^N) = \frac{Q_I^2}{2c_I} + Q_{S1} \frac{Q_S}{c_S} \quad (3.4)$$

Anticipating these levels of profit from the partnership, whoever has the ability to make unilateral offers of κ faces two incentives in ceding or wresting control. The first terms in both equations (3.3), and (4.4) are the benefits that each player gets from their own investment. The second terms in these equations are the benefit that each gets from their partners' investments.

3.3 The Investor's Offer of Control

In general, there is a tension in I 's choice of κ . On the one hand, κ would reduce I 's payoff since it increases S 's bargaining position, thus, raising the necessary level of remuneration to get S to allow I to access her land. On the other hand, I also benefits from S 's investment which would increase in κ . This tension is reflected in the following result:

Corollary 3.

$$\frac{dQ_S}{d\kappa} > 0, \frac{dQ_I}{d\kappa} < 0, \frac{dQ_{S1}}{d\kappa} < 0, \text{ and } \frac{dQ_{I1}}{d\kappa} > 0$$

The preceding result suggests that κ reduces I 's investment in the project, and his ability to capture some level of S 's investment. However, it also increases S 's investment, thus demonstrating the tension inherent in his choice of κ . Thus, I must balance the costs and benefits that accrue to him through his choice of control. This problem is summarized in the following optimization.

$$\begin{aligned} \max_{\kappa} \Pi_I(x_I^N) &= \frac{Q_I^2}{2c_I} + Q_{S1} \frac{Q_S}{c_S} \\ \text{s.t. } \Pi_S(x_S^N) &\geq \Pi_S(x_S^A) \end{aligned} \quad (3.5)$$

Equation (4.5) is the *participation constraint*, reflecting that I 's choice of κ must result in a contract that will at least yield the same level of profits as S would get had she cultivated her land-holding using her own resources. The payoff at autarky differs from S 's disagreement payoff (D_S) since the disagreement payoff applies only when S decides to partner with I . Within the context of the partnership, S faces lower costs to her investment as opposed to the costs she faces at autarky. The next result suggests that an offer of $\kappa^* \in [0, 1]$, acceptable to S depends on the relative costs to each partner's investment, the value of their investment, the cost reductions introduced by the partnership, and the institutional quality.

Proposition 2. *Whenever $\tau \in (\frac{1}{2}, \frac{2}{3})$, $c_A > \frac{2c_S}{\tau^2}$ and $c_S \in (c_I \frac{q_S^2(1-\tau)^2}{2q_I^2\tau^2}, c_I \frac{q_S^2(1-\tau)}{q_I^2\tau})$, then, S accepts I 's offer of $\kappa^* \in (0, 1)$ where,*

$$\kappa^{I*} = \frac{c_I q_S^2 (1 - \tau) - q_I^2 c_S \tau}{2c_I q_S^2 (1 - \tau)^2 - q_I^2 c_S \tau^2} \quad (3.6)$$

Proposition 2 shows a possible set of parameter values wherein it is feasible for I to offer a level of $\kappa \in (0, 1)$, or, an intermediary level of control. The conditions of this Proposition suggest that, (1) institutions have to favor S but yield some power to I ($\tau \in (\frac{1}{2}, \frac{2}{3})$), (2) that the cost reductions to S 's investments have to be large enough

($c_A > \frac{2c_S}{\tau^2}$), and (3) the cost of S 's investment are less than a critical proportion of the costs of I 's investment ($c_S < c_I \frac{q_S^2(1-\tau)}{q_I^2\tau}$). Other sets of parameter values may result in intermediary values of κ^{I*} , but this case is of interest since it ensures that, the resulting level of κ^{I*} maximizes I 's profits, and that S 's participation constraint does not bind. further, this case is also of interest since it ensures that S 's profits are concave in κ .⁷

3.3.1 Investor's Case: Institutional Quality and Control

Intuitively, we expect that the quality of institutions would affect the levels of control for S . The greater the bargaining power of S , the more she is able to demand a better level of remuneration within the context of a partnership with I . However, I 's offer of κ needs to ensure that he is entering a profitable partnership. If institutions favor S , I may use κ to increase his bargaining position, thus ensuring a favorable return. Further, recall that the partnership lowers the costs of S 's investments. Thus, S might be willing to concede ownership of her land if the cost reductions make entering the partnership a more palatable alternative.

One can see the ambiguous effect of τ on I 's decision in the profit function of I . Just as the profit equations suggest a tension in I 's choice of κ , there is also a tension in how the institutional quality affects I 's profits. On the one hand, a higher level of τ reduces I 's share of the total surplus. However, it also raises S 's incentive to invest, thus, increasing I 's payoffs⁸. Equation (3.6) shows reflects this since there is a non-linear relationship between I 's offer of κ^* , and S 's level of bargaining power τ . In this section, I explore the relationship between institutional quality and the chosen levels of control.

⁷See Appendix of Proofs

⁸ $\frac{dQ_S}{d\tau} = q_S(1 - \kappa) > 0$, $\frac{dQ_I}{d\tau} = -\kappa\tau < 0$, $\frac{dQ_{S1}}{d\tau} = -q_S(1 - \kappa) < 0$

The level of κ^{I^*} given by Proposition 2 yields a degree of control that is acceptable to S , and is the result of a I 's profit maximization. The following result suggests that, indeed, an increasing level of τ , within these parameter values reduces I 's offer of κ^{I^*} .

Corollary 4. *Whenever $\tau \in (\frac{1}{2}, \frac{2}{3})$, and $c_S < c_I \frac{q_S^2(1-\tau)^2}{2q_I^2\tau^2}$, then*

$$\frac{d\kappa^{I^*}}{d\tau} < 0$$

Under the parameter values that allow I to offer κ^* , there are three factors that favor S . The first of these is that the institutions are favorable to S , and thus, allow her to bargain for a better division of the surplus. Secondly, S also gets a large enough reduction in costs to justify entering a partnership with I . Finally, the cost of S 's investments are below a critical proportion of I 's costs. Under these parameter values, then, I uses κ to enhance his bargaining position, and thus, raise his resulting profits.

It is also of interest to examine the case where institutions do not favor S *at all*, or $\tau = 0$. Intuitively, under such conditions, I can take advantage of his bargaining power to wrest control over the asset of S . However, recall once again that I benefits from S 's investment. If $\tau = 0$ and $\kappa = 0$, S has no incentive to invest in the partnership. Further, if S has no bargaining power, she may decide to forego the partnership if the payoffs cannot at least match the levels of profit that she could obtain with her own resources. The following result suggests that I will offer an equal level of control in the case that S has no bargaining power.

Proposition 3. *When $\tau = 0$, I chooses $\kappa^{I0} = \frac{1}{2}$, which S accepts*

Proposition 3 suggests that I 's incentive to wrest control over S 's land-holding is muted by his interest in ensuring that S invests in the partnership. In order to get S to do so, I uses κ to induce S to invest in the partnership.

So far, the results obtained show that the relationship between S 's bargaining power and I 's offers of control are ambiguous. On the one hand, when institutions favor S , and when S 's costs are lower in the partnership, I uses κ to extract a higher level of profits from the partnership. However, when institutions are completely in favor of I , he offers a level of κ that gives equal control over S 's landholding so that S has an incentive to invest. The ambiguity of this relationship is evident in the following results on an institutional environment that gives S all the bargaining power. The first of these suggest that even in the case where S has all the bargaining power, I may wrest complete control over S 's landholding contingent on the cost reductions introduced in the partnership.

Proposition 4. *When $\tau = 1$ and $c_A \geq 2c_S$, S will accept an offer of $\kappa^{I1} = 0$.*

The reason for this result is that when the institutional environment is in completely in favor of S , I 's profits are decreasing. Thus, I would prefer to wrest complete control over land so as to ensure higher levels of profit. Moreover, S already benefits from the cost reductions introduced by the partnership with I . Thus, she may be willing to forego control over her landholding, since the cost reductions make a partnership without control over land more viable than cultivating her holding on her own.

When the cost reductions introduced by the partnership are small, however, I needs to offer a level of control to S so that S can capture additional gains of the surplus. This is because an offer of $\kappa = 0$ would not be lucrative from S 's point-of-view, and thus, would push her to reject I 's offer of κ . This intuition is summarized in the following result:

Proposition 5. *When $\tau = 1$ and $c_A \in \left[c_S \left(\frac{8q_S}{(4q_S + c_S^2 q_I^2)} \right), 2c_S \right)$, S will accept I 's offer of*

$$\kappa^{I1*} = \frac{1}{2} \left(1 - \frac{1}{c_S q_I} \sqrt{\frac{2c_A c_S^2 q_I^2 - 8q_S(2c_S - c_A)}{2c_A}} \right)$$

. where $\kappa^{I1*} \in (0, 1)$.

This result suggests that if the cost reductions introduced by the partnership are small, I will have to offer some level of control to S that makes the partnership more lucrative. This level of control, however would be in favor of I , since I has to enhance his bargaining position to make the partnership lucrative.

The results from this section show that the relationship between the control over land and bargaining power is not straight-forward. I can use offers of κ to enhance his bargaining position, and induce S to invest in the partnership. This creates a condition in which I tries to wrest control over S 's landholding if the institutional environment favors S in terms of bargaining power. The ability of I to wrest control over S 's landholding, however, is limited by the cost reductions that the partnership introduces. If these cost reductions are small, I 's ability to wrest control over S 's holdings are limited to intermediary values of κ .

3.4 The Smallholder's Offer of Control

S has an interest in entering a partnership with I for two reasons. First, a partnership with I brings cost reductions that would enhance her ability to invest in cultivation. Secondly, S may benefit from gaining some of the surplus coming from I 's investments. In general however, Corllary 10 and equation (3.3) taken together suggest that S faces the same tension in conceding levels of control over her landholdings. On the one hand, conceding some control to I gives I an incentive to invest in the partnership. However, ceding control to I may result in lowering S 's capacity to capture these gains.

If S is able to make a unilateral offer of κ , she will solve the following problem:

$$\begin{aligned} \max_{\kappa} \Pi_S(x_S^N) &= \frac{Q_S^2}{2c_S} + Q_I \frac{Q_I}{c_S} \\ \text{s.t } \Pi_S(x_S^N) &\geq \Pi_S(x_S^A) \end{aligned} \quad (3.7)$$

$$\text{and } \Pi_I(x_I^N) \geq 0 \quad (3.8)$$

Equation (4.7) is S 's participation constraint which insures that S 's choice of κ ensures that her payoff from the partnership will at least be as good as her payoff from cultivating her holding on her own. Equation (3.8) is I 's participation constraint which will ensure that S 's offer of κ will result in a payoff that is at least zero, which I would get if he does not enter the partnership.

In general, S 's ability to make an offer of κ depends on the exogenous parameter values of costs and institutional quality. The following result suggests that when the level of institutional quality and costs preclude I from making a feasible offer of κ , S can make an offer of κ .

Proposition 6. *When $\tau > \frac{3}{4}$, $c_A > \frac{2c_S}{\tau^2}$, and $c_S \in \left(c_I \frac{q_S^2(1-\tau)^2}{q_I^2\tau^2}, c_I \frac{q_S^2(1-\tau)}{3q_I^2\tau} \right)$ then, I will accept an offer of κ^{S^*} made by S where $\kappa^{S^*} \in (0, 1)$, and*

$$\kappa^{S^*} = \frac{-2(c_I q_S^2(1-\tau) + c_S q_I^2 \tau)}{c_I q_S^2(1-\tau)^2 - 2c_S q_I^2 \tau^2} \quad (3.9)$$

Proposition 6 gives a level of κ that S can offer under the following conditions: (1) both S and I 's payoffs are convex in κ , thus, S would be optimizing. (2) The participation constraint of I is not binding under these conditions⁹. (3) The required range of τ is outside the range where I can make a feasible offer of κ under similar conditions. This shows that within a range of parameter values, S can initiate a partnership when I is unable to do so. As with the case of I , the range of parameter values limit S 's ability to initiate a partnership by offering levels of control over her

⁹See Appendix of Proofs.

holdings. The institutions that govern the share of profits plays an important limiting role, and we can examine its relationship to S 's offers of control.

3.4.1 Smallholder Case: Institutional quality and control

As we have seen in the results concerning I 's offer of κ , it does not immediately follow that S will get a favorable level of control when the institutional quality governing the partnership favors S . The same holds true for S when she has the opportunity to make an offer of κ .

Corollary 5. *Whenever When $\tau > \frac{3}{4}$, and $c_S \in \left(c_I \frac{q_S^2(1-\tau)^2}{q_I^2\tau^2}, c_I \frac{q_S^2(1-\tau)}{3q_I^2\tau} \right)$,*

$$\frac{d\kappa^{S*}}{d\tau} < 0$$

The reason for this result is that under the conditions required by Proposition 6, the institutional quality already favors S . Thus, in order to get I to enter a partnership, it is necessary for S to cede a certain level of control over her holdings to I . By doing so, S gains from the reductions of costs in cultivation and from capturing some of I 's investments. Outside the levels of τ and costs given in Proposition 6, it is possible that offers of κ may rise with τ .

Similar to the case wher I can make unilateral offers of κ , low levels of τ do not necessarily imply low levels of κ . Examining the situation where $\tau = 0$ shows that when S has the power to make unilateral offers of control, she has will not cede any control to I :

Proposition 7. *Whenever $\tau = 0$, S offers $\kappa^{S0} = 1$.*

This result says that if the institutions governing the share of profits from the partnership give S no power, S will not cede any control to I , given the opportunity to make unilateral offers of κ . This is because if $\tau = 0$, the gains from cost reductions disappear, and S 's gains from the partnership come only through being able to capture

some of the surplus from I 's and her own investment. Thus, she does not cede control since control over her holdings will increase her disagreement payoff *vis-a-vis* I .

The opposite of this case is when the institutions governing the share of profits within the partnership are completely in favor of S . In this case, S would be able to capture all the surplus from the partnership above I 's and her own disagreement payoffs. If so, I may not have an incentive to invest, unless given a sufficient level of control. The following result confirms this intuition:

Proposition 8. *Whenever $\tau = 1$, S will offer $\kappa^{S1} = \frac{1}{2}$, whenever $\frac{(c_A - 2c_S)}{2c_S c_A} > 0$ or if $c_A \geq \frac{4c_S q_S^2}{(3c_S^2 q_I^2 - 2q_S^2)}$. Otherwise, S will not make an offer.*

Thus, S will cede equal control over her holdings in order to get I to agree to a partnership. In this case, the benefits to S would come through both cost reductions, and a share of the total surplus. However, this offer is contingent on whether or not the cost reductions introduced by a partnership are large enough. Otherwise, it may not be feasible for S to enter into a partnership with I .

When either player is able to make unilateral offers of control, they face the task of having to balance giving incentives so that their prospective partners agree to jointly cultivate, and wresting control in order to wrest a greater level of payoffs. These two objectives may mean that either offers a level of κ to compensate for unfavorable institutional qualities, and cost constraints. The preceding results suggest that it is not always the case that favorable institutions imply greater control. Further, the ability to make unilateral offers may imply more advantageous outcomes for one partner, *vis-a-vis* the other. How we can judge these outcomes is the subject of the next section.

3.5 Comparison of Levels of Control

There are three reasons why either player would cede or wrest a certain level of control over the landholding of S . For both players, offering a level of control in-

centivizes the other player to invest in cultivation. For I , offering a level of control also allows him to gain access to the holding of S , from which he could derive profits. S on the other hand, can cede some level of control in order to take advantage of cost reductions that the partnership brings. Finally, ceding control to a partner may overcome constraints brought about by the institutional characteristics defined by τ . Scholars who have written on land acquisition, for instance, have made claims of *adverse incorporation* based on a loss of control (e.g. De la Cruz, 2012; Wilson, 1986). Losing control over land may mean losing a food source, a community, or a home. In this framework, control is mainly a bargaining chip: the player who has more control over land has a better bargaining position. The results in this paper preclude these possibilities since offers of κ have to satisfy each players' participation constraint. However, if control is an important dimension by which to assess contractual arrangements, we can make this comparison by comparing (1) the resulting levels of control, and (2) the resulting levels of payoffs. In this section, I will limit the comparisons only for the cases that $\tau = 1$, and $\tau = 0$. This is because the levels of κ found in Propositions (2), and (6) are possible under different levels of τ . However, by comparing offers of κ under $\tau = 1$, and $\tau = 0$, the institutional environment that governs the share of profits is fixed, and thus, we can understand how each player fares under a partnership based on which player is in a position to make an offer of κ .

Corollary 6. *In the cases where $\tau = 0$, and $\tau = 1$, S 's levels of control are always better for S when S is in a position to make an offer.*

The preceding result suggests that if, indeed, there is an interest in maintaining S 's control over her holding, then she must be able to make unilateral offers of κ , and this should not be left to I . However, the ability of S to ensure that she has full control over her land is conditional on a restricted set of parameter values, especially within the context of a contract with I . Otherwise, no contracts will take place, or, I

will be able to wrest control of S 's holdings if he is in a position to make unilateral offers.

Arguably, however, the importance of maintaining control over land is secondary to ensuring that the partnership generates gains for both S and I . The results of this paper preclude any possibility that offers of κ generate payoffs where either player is worse-off as a result of entering a partnership. All of the results suggest that offers of κ at least satisfy a participation constraint. However, comparing the resulting payoffs in the extreme cases of $\tau = 0$ or $\tau = 1$ gives a partial answer to the question: if the institutions that govern bargaining *within* the contract are completely in favor of one partner, does the ability to make a unilateral payoff yield advantages? The following result yields an answer:

Corollary 7. *Comparing the resulting payoffs, we obtain that*

1. *Whenever $\tau = 1$, S is indifferent as to whether she or I can make unilateral offers of κ . However, I can always do better when he is able to make a unilateral offer of κ .*
2. *When $\tau = 0$, entering a partnership is always better for both. However, S 's payoffs are higher when she can make a unilateral offer of κ , and I 's payoffs are higher when he is able to make unilateral a unilateral offer of κ .*

Corollaries 7 and 6 suggest that if ensuring that S maintains some control over her holdings is of paramount concern, then, she should always be given the ability to make unilateral offers of κ . However, having this ability does not guarantee that the partnership will make either player better off. In fact, under certain conditions, S does no better under a partnership than she would had she cultivated her holdings on her own. Thus, ensuring that S maintains control over her holdings does not imply that she is made better off in doing so in terms of the level of payoffs she can achieve.

Alternatively, a standard way of comparing outcomes is to use a utilitarian social welfare function. That is, we compare the total utility of the S and I under the different arrangements using:

$$\Sigma = \Pi_S(x_S^N)|_{\kappa=\kappa^{ij}} + \Pi_I(x_I^N)|_{\kappa=\kappa^{ij}} \quad (3.10)$$

where $i \in \{S, I\}, j \in \{0, 1\}$. Equation (3.10) yields a normative criteria: does giving player I or S the ability to make unilateral offers of κ enhance total payoffs? The *first-best case* where S and I can observe their partner's investments, gives the greatest level of total payoffs. However, under the condition that neither partner can observe the other's investments, the resulting outcomes in investment would be less than the first-best. The utilitarian rule yields a way of assessing who should get the ability to make unilateral offers of control based on the payoffs which resulting from the levels of investment from the partnership. The following suggests that the answer is conditional on τ .

Proposition 9. *Under the utilitarian choice rule, when $\tau = 1$, Σ is greater when I has is able to make unilateral offers of κ . When $\tau = 0$, Σ is greater when S is able to make unilateral offers of κ .*

The utilitarian criteria suggests that whenever the institutions which govern the share of surplus from the partnership give no power to S , then total utility is maximized when S has the power to make unilateral offers of κ . When the institutions give all the power to S , total utility is maximized when I can unilaterally make offers of κ . However, we should note that under the latter, S 's gains from the partnership, at best, come only through the cost reductions that the partnership brings. Otherwise, S is no better off under a partnership.

3.6 Conclusions and Discussion

This paper models the choice of ownership structure as a degree of control over land- the asset without which no cultivation can occur. Past models of ownership structure or control have modeled this choice in discrete terms: separately treating complete ownership of one party over a firm or the assets involved in production. My main innovation is that I have made this choice a matter of degree using the parameter $\kappa \in [0, 1]$. This degree of control mirrors recent literature in institutional economics and legal studies which argue that property rights are a set of abilities over an asset. Thus, the degree of control (or *possession*) that a person has over an asset such as land, within the context of a partnership, depends on what abilities in the set of property rights an agent yields. This continuous framework is a departure from previous models of firm integration that treat ownership structures as discrete types.

I examined how the level of control is determined through unilateral offers made by an investor to a landowner. When this is the case, the institutional environment favors the investor in the sense that his offer is final. Thus, the investor may have all the bargaining power in determining levels of κ , even if he may have no bargaining power once the contract is in place. I show that the degree of control depends on the costs to each partner of investing in cultivation and the distribution of relative bargaining power implied by the institutional environment that govern the partnership. The model's results suggest that institutional factors, interpreted as the distribution of bargaining power, are not sufficient to ensure that landowners can maintain control over their holdings. In fact, an institutional environment which completely favors S may result in S losing control over her holdings if the costs of cultivation to S are so high so as to make the cost reductions introduced in the partnership a lucrative proposition. This suggests that policy-makers should be mindful of both economic factors such as the costs to cultivation, and institutional factors in ensuring that

smallholders that contract with investors are able to maintain a degree of control over their holdings.

Similar results hold for the case where S is able to make unilateral offers of κ with two significant differences. First, under some restricted levels of cost, S would be able to offer a level of κ when τ is too large for I to do so. Further, when S has the power to make unilateral offers of κ , she always maintains some degree of control over her holding. This implies that policy advocates who assert that S should always maintain control over her holdings should make interventions that allow S to make unilateral offers of κ . However, this may not enhance the payoffs to S , and may not be *Pareto-preferred* under situations where the institutions governing the partnership favor S .

These results, however, should not be taken to mean that institutions governing partnerships should be in favor of investors rather than smallholders. Being able to ensure that smallholders maintain some degree of control over their holdings is a matter of finding the right balance of costs to investments, bargaining power, and given these factors assigning the rights to make offers of control. Indeed, we can think of the right to make offers of κ as a type of *event power*- being able to affect the bargaining position of one's partner (Bartlett, 2006)¹⁰. As the results suggest, the assignment of power is ambiguous, and depend on the exogenous parameter values.

The current paper has limitations that I wish to address in later work. The first of these is that the investments modeled in this paper are specific to each partner, and thus, cannot be captured by either in case of a disagreement in bargaining. Often, however, cultivation involves investments in *physical capital* which stays on the landholding of S , and thus enhances the bargaining position or threat payoffs

¹⁰Perhaps, another interpretation would be that S offers κ , and thus, giving I a degree of *granted event power*- the ability to make a certain set of significant decisions in the future that may affect the payoffs to S in the future.

of each partner. A model accounting for both physical capital, and capital that is unobservable to each player would then be a natural next step in treating the problem of partnerships in cultivation.

A second limitation of the model is that it does not account for situations wherein state-actors may be part of the bargaining process. In the current paper, there are two instruments that can be used to affect the outcomes. The first is assigning the right to make unilateral offers of κ and assigning the distribution of τ . Though these partially model the policy framework that the players face in deciding the terms of the partnership, they are exogenously given and do not respond to the decisions of the investor and landowner. Often, however, policy-makers play a role in the outcomes of an agribusiness investment deal. How they may anticipate or respond to the actions of S and I would certainly be an interesting related problem to treat in the future.

Finally, this paper does not address how S and I can arrive at equilibrium levels of κ through a bilateral bargaining procedure. The present paper treats their offers of κ separately, implying that the contract can be defined by S or I alone, but neither can make counter-offers. Modelling a bilateral bargaining procedure defining levels of control would be another task for the future.¹¹

¹¹One way such a bilateral process is done is what has been called a *random-offers protocol* (see, e.g. ??) where one party can make a unilateral offer with some probability α , while the other can make a unilateral offer with probability $(1 - \alpha)$.

CHAPTER 4

EXPROPRIATION AND THE LOCATION OF FARMLAND INVESTMENT: A THEORETICAL INVESTIGATION INTO THE LAND RUSH

4.1 Introduction

Of late, land acquisitions have drawn the attention of scholars (see e.g. White et al., 2012; Franco et al., 2012), and think tanks (see e.g. Anseeuw et al., 2012; Colchester et al., 2011). Between 2007 and 2008, a rise in media reports of land acquisitions accompanied a dramatic rise in food prices (Anseeuw et al., 2012). While scholars from political science (Hall, 2011), and development (Adam, 2013) have compiled case studies of land acquisitions, Deininger (2011), Deininger (2013), and Arezki et al. (2013) used data from multiple countries to examine which factors determine the likelihood of a country attracting more agricultural or farmland investments¹. They find two consistently strong determinants: The *availability of suitable land for cultivation*, and *weak land-governance institutions*, understood as the degree to which a country upholds local land rights. The first of these is intuitive. Suitable land is necessary for the cultivation of crops. The second one however, presents a puzzle. On the one hand, a state that is willing to disregard smallholder rights may more easily coerce land occupants into abandoning their holdings or accepting some form of agribusiness partnership from which they derive little benefit. This would cheapen

¹The authors include other controls such as trade ties, colonial relations, and the yield gap- the difference between current levels of productivity, and productivity given the application of capital and technology. These and institutional factors were tested as determinants of how many agribusiness projects located in a country.

the cost for the investor. On the other hand, by taking advantage of these cost reductions, investors might forego benefits from greater security of property rights, as well as greater returns due to more productive public investments, or other advantages associated with stronger land-governance institutions.

This essay is an attempt to understand why this phenomenon emerges from the recent *land rush*, in the context of investment for the cultivation of crops. Given the observation that investors target countries with weak land-governance institutions, what can one learn about the characteristics of the investment projects, and the characteristics of the target countries? Under what conditions do weak land-governance institutions dominate the decision of an investor to locate? This essay provides a possible answer to these questions, focusing on an investor's choice of location based on his interaction with a smallholder. I present a game-theoretic model in which the investor can choose to expropriate a current land occupant should she refuse him access to her holdings. By treating these issues theoretically, I provide reasons and conditions that can help to explain empirically observed trends in recent land acquisitions.

4.1.1 Land Acquisitions and Land Governance

An investor's decision to locate is often a matter of balancing *centripetal* and *centrifugal* forces (Dembour, 2008). Centripetal forces draw investors into a country. Such factors include public goods (Pieretti and Zanaj, 2011), agglomeration advantages (Haaland and Wooton, 1999; Konrad and Kovenock, 2009), and fiscal incentives such as subsidies (Fumagalli, 2003). In land acquisitions, the existence public goods such as roads and ports that ensure the delivery of crops can generate large productivity advantages for the investor. Similarly, an investor may find agglomeration advantages where there are related industries such as the existence of fertilizer suppliers, transport businesses, and processing and milling facilities. While outright subsidies do not necessarily feature in land acquisitions, other modes of government assistance may

be available to investors such as the identification of suitable land, and subsidies to smallholders who allow agribusiness to access their holdings (Menguita-Feranil, 2013). Centrifugal forces are forces that deter investors from locating in a country. Among these are taxes (Pieretti and Zanaj, 2011; Herger et al., 2014), competitors (Bjorvatn and Eckel, 2006), and other costs associated with production such as the strength of bargaining power for labor (Davies and Vadlamannati, 2013).

Weak land-governance institutions, understood as the low degree to which local land rights are upheld in a country (Arezki et al., 2013), act as a centripetal force when the cost of obtaining use-rights to land refers to more than its nominal market price. An investor may find weak land governance institutions attractive when these make it easier for him to appropriate land cheaply because he can use the threat of expropriation against a smallholder. This cost-reduction generates greater profits for an investor, which may explain his preference for environments with weak land governance². Indeed, many cases of recent land acquisitions suggest that investors are able to take advantage of weak property rights institutions in obtaining land from small farmers and indigenous communities³.

According to the findings of Anseeuw et al. (2012), the regions most targeted by land deals are in East Africa and Southeast-Asia. East Africa covers about 30 million hectares worth of land deals, and Southeast Asia covers about 15 million.⁴ Ethiopia alone accounts for about 10% of all the land deals in East Africa, while the Philippines covers about one-third of the land deals in Southeast Asia. These land deals are often directed toward the cultivation of biofuels and cash crops (Lavers, 2012;

²Glaeser et al. (2003), Sonin (2003) theorize similar behaviors for wealthy actors who may prefer weak property rights institutions.

³Some may point out that weak land governance institutions may signal volatility of returns to investment since investors might also suffer expropriation once they locate in a country. The data, however, does not support this reasoning. Investor protections are not significant determinants of investment location (Arezki et al., 2013).

⁴The total stock of land deals worldwide is about 149 million hectares.

Borras Jr et al., 2010). Rural inhabitants in both countries have had experience with both coercive and consensual land deals leading to *adverse incorporation*, whereby smallholders exchange use-rights to land for little to no compensation, employment, or access to land (see e.g. Cramb and Curry, 2012; Borras Jr and Franco, 2013).

In the case of Ethiopia, for example, poor systems of titling in certain highland regions create conditions under which groups inhabiting and using land cannot prove their ownership or use-rights. Groups that use communal lands are easily coerced by local governments to consent to lease agreements with investors resulting in the loss of usufruct rights for much of the community (Lavers, 2012). In the Philippines, beneficiaries of the country's agrarian reform program are required to pay a supposedly fair price of the land they receive, as computed by the Land Bank of the Philippines. This is much like a mortgage payment, and it is expected that beneficiaries complete these payments after ten years. Missing three years of payments can result in default, after which, the Land Bank can evict the beneficiary. Often, these payments are significantly higher than what cash-strapped, ex-landless laborers can afford. Thus, several beneficiaries in the southern island of Mindanao have consented to deals with oil-palm and cash crop investors (Menguita-Feranil, 2013)⁵. Several authors have compiled case studies and reports of similar expropriatory activities happening elsewhere (see e.g. White et al., 2012; Cramb and Curry, 2012; Borras Jr and Franco, 2013). These examples, combined with the finding that investors tend to locate in countries with poor property rights regimes, yield evidence that investors may be taking advantage of weak land governance institutions to cheapen the cost of gaining land-use rights.

Why states allow weak land governance institutions to persist is a matter that I do not treat in this paper. However, it is worth noting some reasons that weak land

⁵These deals are often leases that last for decades. In some cases, they can last for more than thirty years (Department of Agrarian Reform, 2006).

governance institutions may persist. First, it is possible that the trends so far observed in land acquisitions are responses to existing institutional frameworks which have not had time to improve or develop. Promoting institutional reforms is an objective of those who have collected case studies of land acquisitions. Second, maintaining weak land governance institutions may serve the interests of local elites who may themselves facilitate land acquisitions⁶. Thus, politically powerful elites may choose to maintain these institutions if they stand to benefit from land acquisitions or other extractive activities (Lawson-Remer, 2014). Finally, states may see land acquisitions as a conduit for rural development which can benefit a larger portion of the population (Cook and Chaddad, 2000). Thus, governments may be making the calculation that weak land governance for smallholders and minority communities will benefit the population at large in the long-run.

The rest of the essay proceeds as follows. The next section presents a model in which an investor decides to locate in a country chosen from a set of countries N . The cost of location depends on the result of a possible contest with a current landowner. The model exhibits elements of contest success discussed by Hirshleifer (1989), Skaperdas (1996), and Van Long (2013). The structure of the decision process is otherwise analogous to that in the models discussed above on investment location, extended to $n \geq 2$ countries. I will then conclude by discussing the implications of my results, and possible extensions. The results are proven in **Appendix B**

4.2 The Model

Consider an Investor I making the decision to acquire land in a country $i \in N = \{1 \dots n\}$, where N is the set of indices denoting the options of the investor. If he

⁶Putzel (1992), for instance, argues that the formation of land reform laws in the Philippines was the product of inter-elite negotiations explicitly excluding peasant organizations from the conversation. Many of the congress members in the Philippines were from landed families

acquires land in some country i , I produces a level of revenue $q_{Ii} > 0$, where $q_{Ii} \in \mathbb{R}^+$, which represents what the investor expects to gain from producing crops in country i depending on upstream market conditions, advantages in supply, and the availability of infrastructure in i ⁷. In order to acquire land in any of the i countries in N , I needs to gain the consent of a landowner S_i , who currently uses her land to produce a level of revenue q_{Si} ⁸. I assume that $0 < q_{Si} < q_{Ii}$, which reflects the conventional justification that farmland investment is supposed to generate more productive uses for smallholder land⁹.

To persuade S_i to grant I use-rights to land, I offers S_i a level of remuneration R_i . If S_i refuses to allow I to use land, I can choose to expropriate her. In order to expropriate the landowner, I , invests in expropriation effort e_{Ii} , while S_i invests effort in defense, e_{Si} . The contest is costly to both players, and this cost is determined by the institutional characteristics of country i . Specifically, the per-unit cost to I 's expropriation effort is given by a parameter $0 \leq \tau_i \leq 1$, which is a measure of the strength of land institutions that protect the ownership of S_i . The cost to S_i , on the other hand is given by $(1 - \tau_i)$. Better institutional environments reduce the burden of defense for the landowner in i while increasing the burden of expropriation on I ¹⁰. Should I win the contest, he gets to implement his project while the landowner gets 0. The opposite holds true in the case that the landowner wins. Success in defense

⁷If an investor is an exporter who delivers crops to one country where the price of his crops are set, then the revenue from locating in country i is $q_{Ii} = \rho\psi_{Ii}$ where ρ is the price of the crops, and ψ_{Ii} is the quantity that he can produce in country i given the various conditions in i .

⁸Alternatively, we could think of these as a *group of smallholders* who bargain together.

⁹see e.g. Colchester et al. (2011), and Borras Jr et al. (2010). We can relax this assumption, in which case, it is possible the ability to expropriate may be I 's sole source of profits. However, this would complicate matters since there would be no reason for states to attract I .

¹⁰One may also use an alternative specification where landowners have a country-specific cost borne by both the landowner (e.g. c_{Si}) and the investor, (say, c_{Ii}). In this case, worse institutional environments would mean higher costs. However, this framework does not enjoy the intuitive quality that the institutional environment, while a possible bane for the landowner, can act as a boon for the investor.

and expropriation, respectively, are given by the following functions:

$$p_{S_i}(e_{S_i}, e_{I_i}) = \begin{cases} \frac{e_{S_i}}{e_{S_i} + e_{I_i}} & \text{if } (e_{S_i}, e_{I_i}) \geq (0, 0) \\ \frac{1}{2} & \text{if } (e_{S_i}, e_{I_i}) = (0, 0) \end{cases}$$

For S_i , and,

$$p_{I_i}(e_{S_i}, e_{I_i}) = \begin{cases} \frac{e_{I_i}}{e_{S_i} + e_{I_i}} & \text{if } (e_{S_i}, e_{I_i}) \geq (0, 0) \\ \frac{1}{2} & \text{if } (e_{S_i}, e_{I_i}) = (0, 0) \end{cases}$$

Notice that $p_{I_i}(e_{S_i}, e_{I_i}) = 1 - p_{S_i}(e_{S_i}, e_{I_i})$. Further, each of these functions increase in each player's effort, and decrease in the opposing party's effort level. Thus, we can think of these functions as success probabilities, or, a proportion of a parcel of land that can be won through the contest¹¹. The game is summarized by the following sequence:

1. I chooses to invest in one of countries $i \in N$
2. Once I decides on a country, I must offer S_i a level of remuneration R_i .
3. S_i can then choose to either accept or reject R_i .
4. If the offer is rejected, I and S_i , enter a contest. I chooses how much to invest in expropriation e_{I_i} , while S_i decides to invest in defense effort e_{S_i} .
5. If I is successful in expropriation, he will be able to reap profits from producing q_{I_i} . On the other hand, if I is unsuccessful, he gets 0, while S_i is able to produce q_{S_i} .

I solve this game via backward induction. I first demonstrate the results from expropriation. This will serve as the fallback position for the landowner in country i . I then deduce the level of profits that the investor can expect in each country $i \in N$, given

¹¹The functional form fits the general ratio-form of a *contest success function (CSF)* with a mass effect parameter of 1. This suggests that there is diminishing returns to effort exerted on expropriation or defense (Hirshleifer, 1989).

that country's land governance characteristics defined by τ_i . Finally, I examine under what conditions the investor will target the country with the lowest level of τ_i .

4.2.1 Expropriation and Adverse Incorporation

In deciding their respective levels of effort in defense and expropriation, S and I solve the following optimization problems simultaneously:

$$\max_{e_{S_i}} p_{S_i}(e_{S_i}, e_{I_i}) q_{S_i} - (1 - \tau_i) e_{S_i} \quad (4.1)$$

for S_i , and

$$\max_{e_{I_i}} p_{I_i}(e_{S_i}, e_{I_i}) q_{I_i} - \tau_i e_{I_i} \quad (4.2)$$

The optimization implies the following results for the effort levels:

Lemma 4. *The optimization problem characterized by equations (4.1), and (4.2) yield the following equilibrium level of efforts, and success.*

- $e_{S_i}^* = q_{I_i} \tau_i \left(\frac{q_{S_i}}{\nu_i}\right)^2$, with $p_{S_i}(e_{S_i}^*, e_{I_i}^*) = \frac{q_{S_i} \tau_i}{\nu_i}$
- $e_{I_i}^* = q_{S_i} (1 - \tau_i) \left(\frac{q_{I_i}}{\nu_i}\right)^2$, with $p_{I_i}(e_{S_i}^*, e_{I_i}^*) = \frac{q_{I_i} (1 - \tau_i)}{\nu_i}$

Where $\nu_i = q_{S_i} \tau_i + q_{I_i} (1 - \tau_i)$.

These levels of effort are equivalent to a proportion of the rewards that the opponent of each player expects from engaging in expropriation. We can also make the following observation:

Lemma 5. *The following hold for the success probabilities:*

1. $\frac{dp_{S_i}(e_{S_i}^*, e_{I_i}^*)}{d\tau_i} > 0$
2. $\frac{dp_{I_i}(e_{S_i}^*, e_{I_i}^*)}{d\tau_i} < 0$

Corollary 8. *The expected payoffs from the expropriation round are*

- $\pi_{S_i}^r = q_{S_i} \left(\frac{q_{S_i} \tau_i}{\nu_i} \right)^2$ for S_i .
- $\pi_{I_i}^r = q_{I_i} \left(\frac{q_{I_i} (1 - \tau_i)}{\nu_i} \right)^2$ for I in i .

Corollary 9. $(e_{S_i}^*, e_{I_i}^*) = (0, 0)$ is not an equilibrium.

The preceding corollary says that I always has an incentive to expropriate S_i . It is easy to show that $\pi_{S_i}^r < q_{S_i}$ ¹². The possibility of expropriation lowers the rewards for the landowners. Since I needs to offer a level of remuneration R_i , he chooses R_i to satisfy the following:

$$R_i \geq \pi_{S_i}^r \tag{4.3}$$

Since there is no reason for I to offer a higher level of remuneration to S_i than she would get if she rejects the deal, we can assume that (4.3) holds with equality. This shows that the capacity of I to expropriate S_i compels S_i to accept a level of remuneration that is lower than what she could produce on her own. Even if S_i voluntarily agrees to allow I to use her assets (in this case, land) for a productive activity, she does so under an arrangement which may leave her no better or even worse-off than she would have been otherwise. In effect, the investor's ability to expropriate the landowner, due to the existing institutional environment in the country allows him to reduce the costs of location. The credible threat of expropriation, thus, allows the investor to exercise a form of *event power* over the landowner by changing the landowner's fallback position, and thus lowering her payoffs (Bartlett, 2006).

4.2.2 Profits, and the Choice of Location

Given the derivations above, the resulting profits for I when he locates to i is given by the following equation:

¹²This is because $p_{S_i}(e_{S_i}^*, e_{I_i}^*) < 1$, and $\pi_{S_i}^r = q_{S_i} p_{S_i}^2(e_{S_i}^*, e_{I_i}^*)$.

$$\pi_{Ii} = q_{Ii} - q_{Si} \left(\frac{q_{Si}\tau_i}{\nu_i} \right)^2$$

It is straightforward to show that the following holds:

Lemma 6.

$$\frac{d\pi_{Ii}}{d\tau} < 0$$

The preceding Lemma states that the profits of the investor decrease with τ . This result implies that, all else equal, the investor will choose the country where the institutional protections for the landowners are poor. However, in keeping with the literature on investment location, differences in productive advantages such as road networks, existing infrastructure, and prices of labor can be stronger determinants of I 's location decision, rather than the costs associated with obtaining land. Thus, I should weigh differences in q_{Ii} against the differences in costs associated with τ_i and q_{Si} . It is necessary, then, to examine under what conditions can the ease of expropriation overcome other disadvantages that a country $i \in N$ may have against other candidates in N .

In general, I chooses his location depending on where profits are greater. The condition, then, for I to choose a country $i \in N$ is given by the following criteria:

$$q_{Ii} - q_{Si} \left(\frac{q_{Si}\tau_k}{\nu_i} \right)^2 > q_{Ik} - q_{Sk} \left(\frac{q_{Sk}\tau_k}{\nu_k} \right)^2 \quad (4.4)$$

For every $k \neq i, k \in N$. Equation (4.4) is a simple profit maximizing criteria. That is, I chooses location i over k if his profits in i are higher than in k . Now, define $\tau_m = \min\{\tau_i | i \in N\}$. Given the observation that poor land governance, interpreted in the model as τ_i , is a major driver in attracting farmland investment, it is necessary to examine the conditions under which I chooses to locate in m due to the advantages brought about by τ_m . We know that if I chooses m among the countries in the set N ,

then, equation (4.4) has to hold for m and every country in the set N . If this is so, then, if I locates in m despite the existence of countries where he could possibly gain greater levels of revenue, this means that the reduction in costs due to the governance institutions in m have to outweigh the benefits of added revenue anywhere else in the set of possible locations N . Proposition 1, then suggests a possible conclusion regarding the characteristics of the target countries in N given the behavior of an investor I .

Proposition 10. *If I locates in m For all $j \in N, j \neq m$ such that $q_{Ij} \geq q_{Im}$, there exists a k for which $q_{Ik} \geq q_{Im}$, and*

$$q_{Ij} - q_{Im} < q_{Sk}$$

Proposition 10 suggests that among the countries in N , I will locate in the country where land governance institutions have the least regard for local land rights only if the revenue differences between that country and any other country where the investor can gain a higher level of revenue are small. The size of this difference is bounded above by the revenue that some landowner (or group of smallholders) can produce on their own in one of the countries where the investor can gain a higher level of revenue. The intuition behind this result is that the ability to expropriate should overcome any possible advantages in revenue that other countries in the set N may offer. In choosing a location, the investor weighs the differences in revenue against the differences in costs. In order for expropriation to be a relevant metric, it has to be the case that the cost reduction from locating in a country with weak protections for local landholders is greater than the opportunity cost of foregoing a higher level of revenue. Otherwise, I would not locate in m .

One must make a distinction between equation (4.4) and Proposition 10. The former states that I will choose country m among the countries in set N if he can

gain a higher level of revenue in m than any other country in the choice set. This condition applies to *each individual country*, but it does not yield any information about the set of targeted countries *as a whole*, or, the intended investments which make countries in N appropriate targets. Proposition 10 yields a threshold which bounds the differences between revenue in a country m and all other countries i where the levels of revenue are possibly higher than in m . In other words, the differences in q_{Ii} are *small enough* so that the ease of expropriation becomes a relevant metric by which I makes his choice of location.

In the context of the recent land rush, many investment projects are targeted toward producing food for the investor's country of origin, or bio-fuel and flex-crops for export (Hallam, 2011; Robertson and Pinstrup-Andersen, 2010). Thus, the expected gains from the cultivation and sale of these crops may have a high degree of homogeneity. Under such circumstances cost considerations would dominate the choice of location since the level of q_{Ii} depends on factors outside country i as well, such as the price of crops. That is, if $q_{Ii} = \rho\psi_{Ii}$ where ρ is the price of the crops in the export location, and ψ_{Ii} is the quantity that he can produce in country i given the various conditions in i , then, it has to be the case that $\psi_{Ij} - \psi_{Im} < q_{Sk}/\rho$, for any country where $\psi_{Ij} \geq \psi_{Im}$. $\psi_{Ij} - \psi_{Im}$ can be small when the countries targeted have little by way of infrastructure and agglomeration advantages. Thus, the characteristics of the target countries in terms of generating revenue may be very similar, making the ability to expropriate an important determinant in the choice of location.

This result may also explain why Arezki et al. (2013) find that the *yield gap* does not have a consistent effect on the choice of location. The yield gap is the difference between the land's current level of productivity, given agro-climactic conditions, and the level it could achieve with the use of better capital, fertilizer, machinery, etc. This would affect the choice of location if investors seek to take advantage of existing activities by introducing capital, technology, and expertise. In other words, these

are differences in q_{Ij} and q_{Sj} . Without expropriation, the game suggests that the investor should pay a landowner the full value of her own cultivation q_{Sj} . If q_{Ij} is high enough, it may justify the cost of offering $S_j, R_j = q_{Sj}$. However, with the opportunity to expropriate landowners in another country m , the investor may find that the opportunity cost of a higher level of revenue in country j could be offset by lowering the payments to smallholders in m . Thus, the yield gap may not have an effect on the choice of location because a place with a low yield gap, but with excellent institutions may mean lower profits for I than a place with a low yield gap but worse institutions.

The qualitative results from this section suggests that the trends in recent land acquisitions are consistent with investors acquiring land for the cultivation of crops of similar value. This would be the case for land acquisitions directed toward export markets, or, food markets in the investor's home country. The investor's behavior suggests that countries within the set of locations choices are similar enough so that investors take advantage of cost reductions from their ability to expropriate. However, once the investor locates to a country i , he may be subject to the same protections as the landowner there. The next subsection addresses this issue.

4.2.3 Investor Insecurity

Weak land governance institutions can deter investments if the investor anticipates the possibility of losing q_{Ii} once he locates in i . Such an institutional deficiency, can discourage, rather than encourage investments. We can think of property rights volatility for I as reductions in q_{Ii} . In this case, I will have to weigh the anticipated risks of locating in i against the benefits of reduced costs due to the ease of expropriation.

To model this problem, consider the possibility that once I obtains use-rights to S_i 's land, then he anticipates that some other player in i designated as A_i will attempt

to expropriate him. Let ϕ_i be the degree of investor protections in i where $\tau_i \leq \phi_i < 1 \forall i \in N$. I define the bounds for ϕ_i so that I anticipates that he will have some institutional guarantees, at least equivalent to that of landowners in country i . The cost to I , then, of protecting his investment in i at any given period is $(1 - \phi_i)$. Should A_i succeed in expropriating I , she produces $q_{A_i} \in [q_{S_i}, q_{I_i}]$. I make this assumption due to the following intuition: I 's investments may add value to the productivity of land. However, this value may not include upstream markets which were available to I . Thus, if A_i expropriates I successfully, then, she may be able to benefit from whatever fixed costs that I put in place, but, she may not be able to take advantage of upstream markets to which I may have had access.

The levels of success in expropriation and defense by A_i and I respectively are given by the following functions, similar to the contest between I and S_i :

$$p_{A_i}(e_{A_i}, e_{I_i}) = \begin{cases} \frac{e_{A_i}}{e_{A_i} + e_{I_i}} & \text{if } (e_{A_i}, e_{I_i}) \geq (0, 0) \\ \frac{1}{2} & \text{if } e_{A_i} = e_{I_i} = 0 \end{cases}$$

For A_i , and,

$$p_{I_i}(e_{A_i}, e_{I_i}) = \begin{cases} \frac{e_{I_i}}{e_{A_i} + e_{I_i}} & \text{if } (e_{A_i}, e_{I_i}) \geq (0, 0) \\ \frac{1}{2} & \text{if } e_{A_i} = e_{I_i} = 0 \end{cases}$$

For I . A similar process of optimization as defined previously leads to the following results:

Lemma 7. *When I faces a certain level of property rights volatility in country i , ϕ_i , his revenue, $q_{\phi_i I_i}$ is given by:*

$$q_{I\phi_i} = q_{I_i} \left(\frac{q_{I_i} \phi_i}{v_i} \right)^2 \quad (4.5)$$

Where $v_i = q_{I_i} \phi_i + q_{A_i} (1 - \phi_i)$.

As with the case of the landowner's payoffs, we can deduce that $\frac{dq_{\phi_i I_i}}{d\phi_i} > 0$ ¹³. The expected profits of I from locating in i is given as:

$$\pi_{I\phi_i} = q_{I\phi_i} - q_{S_i} \left(\frac{q_{S_i} \tau_i}{\nu_{\phi_i}} \right)^2$$

Where $\nu_{\phi_i} = q_{S_i} \tau_i + q_{I\phi_i} (1 - \tau_i)$. The general condition for I to choose m which $\tau_m = \min\{\tau_i | i \in N\}$ over any $i \in N$ is given, then, by:

$$q_{I\phi_m} - q_{S_m} \left(\frac{q_{S_m} \tau_m}{\nu_{\phi_m}} \right)^2 > q_{I\phi_i} - q_{S_i} \left(\frac{q_{S_i} \tau_i}{\nu_{\phi_i}} \right)^2 \quad (4.6)$$

One can see that the results from the previous section continue to hold, with some qualitative differences due to institutional protections for I (ϕ_i), and the expected payoffs of A_i (q_{A_i}).

A case of particular interest is when $q_{A_i} = q_{I_i}$, and $q_{I_i} = q_I \forall i \in N$. This case can be understood as follows: the investor anticipates that he will be able to take advantage of the same productivity in all counties in the set of options N . However, his expected payoffs from locating in country i fall due to poor investor protections given by ϕ_i . So, I faces the risk of losing his investments to A_i , who, I anticipates, would undergo expropriation to gain the full value q_I . There are a variety of contexts where such a calculation is relevant. For example, it may be the case that I anticipates the possibility of confiscation due to nationalistic laws which prevent him from owning land. Or, he might anticipate the election of a government in i that is hostile to foreign investors. Given this context, (4.5) becomes $q_I \phi_i^2$, since $\nu_i = q_I$. Assume that $\forall i \in N, q_{I_i} \phi_i^2 > q_{S_i} \left(\frac{q_{S_i} \tau_i}{\nu_{\phi_i}} \right)^2$, so that profits are positive in any country i in the set N . We can rewrite (4.6) as:

¹³Specifically, $\frac{dq_{\phi_i I_i}}{d\phi_i} = 2\phi_i q_{A_i} \left(\frac{q_{I_i}}{\nu} \right)^3$

$$\phi_m - \phi_k > \frac{1}{q_I(\phi_m + \phi_k)} \left(q_{Sm} \left(\frac{q_{Sm}\tau_m}{\nu_{\phi_m}} \right)^2 - q_{Sk} \left(\frac{q_{Sk}\tau_k}{\nu_{\phi_k}} \right)^2 \right) \quad (4.7)$$

Which is the general condition for I to choose m , for which $\tau_m = \min\{\tau_i | i \in N\}$. The next result is analogous to Proposition 10, and is proven using equation (4.7).

Corollary 10. *Let m denote the country for which $\tau_m = \min\{\tau_i | i \in N\}$. If $q_{Ai} = q_{Ii}$, and $q_{Ii} = q_I \forall i \in N$, then I chooses m over all $i \in N, i \neq m$ if and only if for every $i \in N$, equation (4.7) holds, and, for every $j \in N$ such that $\phi_j > \phi_m$, there exists a $\beta < 1$ such that $\phi_j - \phi_m < \beta$*

Corollary 10 states that when I anticipates some level of expropriation, given that the only advantages he may anticipate in any country i are due to investor protections, then, I chooses a country with the weakest local land governance τ_m , if he believes that any other country's advantage in offering investor protections are small. This corollary illustrates a limit to the volatility that investors are willing to take when making their choice of location. Countries with insecure property rights for local landowners and smallholders may be attractive, to the extent that the investor can expect some relative institutional stability. This is why they may target countries with poor land governance institutions, but with governments that can guarantee, with some certainty, that their investments are safe. Corollary 10 may also explain why certain countries which exhibit high property rights insecurity are not the targets for land acquisition. It may be because the level of insecurity in countries where there are high-intensity conflicts are too pronounced, so as to make the cost advantage of acquiring land negligible. This result is consistent with (Arezki et al., 2013) who find that investor protections are not a significant determinant of farmland investment. What my result suggests is that this may be due to the fact that the group of countries that investors target may be similar enough so that such considerations are irrelevant to the choice of location. The results imply that I will not choose countries which

cannot guarantee a certain level of investor protections. However, he may choose relatively weaker investor protections if the reductions in the cost of location outweigh the relative gains due to investor protection.

The previous results are based on the assumption that there are differences in the institutional environment for I and S_i . However, there may be reasons to think that investors account for τ_i as their own risk factor as well. In the empirical exercises that explored the land rush, the institutional factors in some of the databases were generated by surveying businessmen and bankers (Arezki et al., 2013)¹⁴. These institutional factors include things such as the number of land disputes and the adjudications resulting in land transfers. Thus, investors may not necessarily expect that they will face a different institutional environment in a country i from S_i . Under what conditions, then, would investors choose to locate in countries with poor property rights governance, if they anticipate the same level of vulnerability as current land-owners in i ? The next two results suggest a partial answer to the question, where investors anticipate gains from producing q_I in all countries, and differences in the level of revenue are due solely to differences in τ_i .

Corollary 11. *Let m denote the country for which $\tau_m = \min\{\tau_i | i \in N\}$. If $q_{Ai} = q_{Ii}$, and $q_{Ii} = q_I \forall i \in N$, then I chooses m over all $i \in N, i \neq m$ if and only if for every $i \in N$, equation (4.7) holds, and, for every $i \in N$ there exists a $\beta_\tau < 1$ such that $\tau_i - \tau_m < \beta_\tau$*

These last corollaries are proved in the same fashion as Proposition 10. These results suggest that when I expects to face the same institutional environment as S_i , he may still choose to locate in the country where the institutional quality is the lowest, if, the range of τ_i is small enough to ensure that he gains from the ease of location. Thus, there is a degree of *institutional proximity* among the set of countries

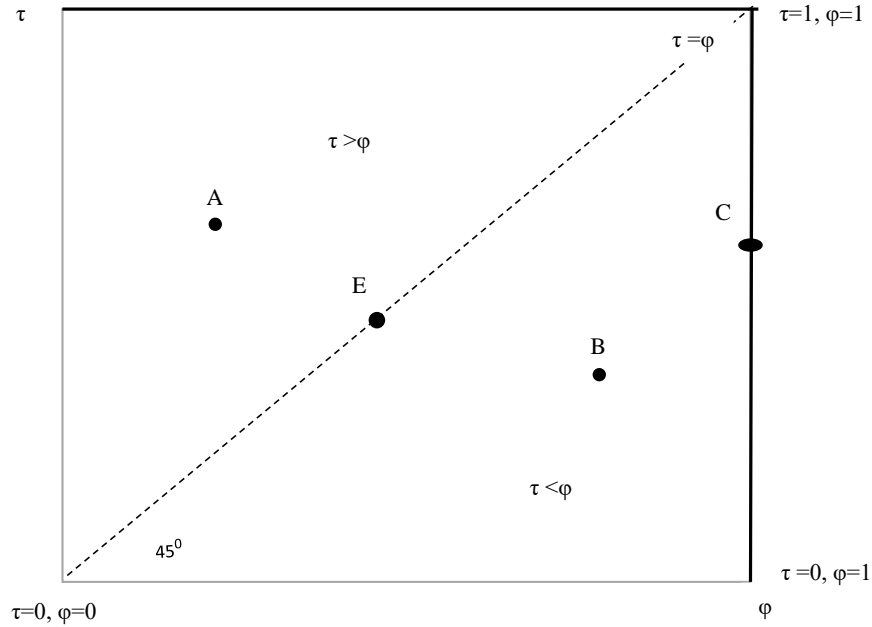
¹⁴The paper also includes a thorough online appendix which describes the data.

N that justifies choosing the country with the poorest property rights governance. Corollary 4 addresses the traditional view that property rights volatility may dampen incentives to invest. Volatility in property rights subjects investment to risks that can lower their expected returns. However, if I decides to invest in m , then, the characteristics of land governance among the countries in the set N , measured by τ are similar enough.

To better understand these results, one can classify target countries in terms of the degree to which they protect investors and smallholders. Figure 4.1 presents this classification in $\tau - \psi$ space. On the lower-left-most point is where neither investors and smallholders are protected ($\tau = 0, \psi = 0$). On the opposite end on the top-right-most point is where both smallholders and investors are equally well protected with ($\tau = 1, \psi = 1$). Along the dotted 45° line where point E is located, is the region where smallholders and investors receive equal protections ($\tau = \psi$). Countries located below this line such as point B are countries that are *pro-investor* since $\tau < \psi$, and above the dotted line where point A lies are what we can call relatively *pro-poor* regimes since $\tau > \psi$.

Proposition 10 pertains to the case where the set of target countries are located in the bold line at the far-right of Figure 4.1. Along this line, investors will choose the country where τ is lowest based on the levels of expected revenue. In the regions where B and A are located, Corollary 10 gives a partial answer: when the differences in expected revenue are due merely to differences in ψ , then I will locate in the country where τ is the smallest only when the levels of ψ are close enough. Corollary 11 suggests that when the target countries are all located on the dotted line, and if the differences in revenue are due solely to τ , then, I chooses the country with the lowest level of τ if the levels of τ across all the target countries are similar enough. If the choice set is $N = \{A, E, B\}$, and if $q_A = q_E = q_B$, then, when I locates in B ,

Figure 4.1: A possible taxonomy of target countries according to the extent that they protect smallholder land-rights (τ) and investor land-rights (ψ)



this means that the levels of ψ or institutional protections for I are similar enough among the three countries.

4.3 Implications and Conclusion

Empirical investigations into the determinants of recent land acquisitions find that the quality land governance, interpreted as the degree to which local land rights are respected, has a negative and significant impact on the likelihood of farmland investment locating in a given country. This finding is counter-intuitive, considering the literature on property rights and the location of investment. The literature on property rights suggests that poor property rights regimes may introduce disincentives to invest, due to reductions in the anticipated benefits. The literature on investment location shows that investors do not necessarily choose countries where institutional weaknesses allow them to gain cost advantages. Rather, investors choose countries that offer productivity and supply chain advantages.

Despite these findings from past literature, however, numerous case studies have elucidated the role of expropriatory activity in land-acquisitions for farmland investments. In this essay, I have shown that under some circumstances, the ability to expropriate can explain why investors may favor countries with poor land-governance. The benefits of choosing a country with poor land governance allows an investor to gain access to land at a lower cost. Expropriation, or its threat, compels local landowners to accept levels of remuneration that are worse than what they could have achieved, given the resources at their disposal. Scholars have dubbed this result *adverse incorporation*. Adverse incorporation tends to occur when land deals arise without free, prior, and informed consent, or when land institutions leave room for expropriatory activity. There have been numerous studies on the link between foreign investment and repression. Harms et al. (2002), Busse (2004), and Busse et al. (2011) find that the link is negative. Greater democratic rights are linked with higher levels of FDI. On the other hand Sorens and Ruger (2012) find a positive link between FDI and repression, but one that is statistically insignificant. In the context of the land rush, investors may not be engaging in violent activities *per se*. As the cases that I cited in Ethiopia and the Philippines show, these methods of obtaining land involve taking advantage of land governance institutions that make smallholder rights insecure. Put another way, the costs in expropriation contests may be very low for I and very high for S_{Ii} . In the model, expropriation need not occur. Only its credible threat is necessary for landowners to accept levels of remuneration that leave them no better-off, or even worse-off, than they would have been otherwise.

The results of the paper demonstrate that the empirical findings from the literature on farmland investment may reflect growing demand for certain crops, rather than a secular trend in agricultural investment. Investors will favor countries where expropriation cheapens the cost of location, only if their expected revenues in the set of countries they are targeting are close enough to merit a decision based on cost

reductions. This implication should give some reason for optimism. There is a limit to how much a country's willingness to disregard land-rights can attract investors. These limits are set by other factors that can contribute to increases in an investor's expected revenue. Thus, the findings from the literature on investment location are relevant and complimentary to the findings of this model. There are many ways to attract investment, and these need not involve taking advantage of institutional weaknesses. However, these other means of attracting investment may entail spending on public goods such as roads and ports. If a country faces tight budget constraints, attracting investment by any means necessary can be quite appealing. The problem of how a government ought to make these decisions, and how it sets a country's institutional characteristics is one of interest. Such an exercise may prove to be an interesting and difficult problem in the context of land acquisitions. This is because land acquisitions, in the context of farmland investment, may be a question not only of payments, but of types of arrangements that current land-users would face after the acquisition. They may end up working under the investor, or even growing crops for him. Thus, governments may face the problem of setting both the institutional environment for acquisition, and bargaining after the acquisition takes place.

This paper also points out that policy makers should be cautious about farmland investments. If these investments seek to take advantage of weak property rights institutions, then they may not be able to generate the productivity gains that are often used to justify their attraction. If the objective of attracting farmland investments is to increase agricultural productivity and raise the welfare of rural smallholders, then states should ensure, at the very least, that there is a suitable environment for smallholders to bargain with investors. This may entail a rigorous strengthening of existing informal and formal land institutions in order to ensure the welfare of all parties which have a stake in the acquisition of land. States may also monitor whether jobs and infrastructure, often promised in a land deal, actually materialize within

a reasonable amount of time. The problem, however, is that states may depend on these deals to raise revenue, and that attracting investment *per se* can become the objective rather than ensuring its positive spillovers in job creation and infrastructure development. In this case, states may fail to monitor investments and may consent or turn a blind eye to expropriatory activity. Once again, a definite answer to this would entail explicitly modelling the state as a player in the game, with its own set of motivations and strategies.

CHAPTER 5

CONCLUSION

This dissertation identifies factors that explain certain outcomes arising from smallholder incorporation and land-acquisition. My field work among ARBs in the Davao Region demonstrates the need for both economic and institutional reforms. Besides providing affordable credit, crop insurance, and infrastructural investments, I argued that states should make institutional reforms. These include providing legal assistance and consultation to ARBs, consulting with ARB representatives, and partnering with pro-reform organizations. These measures would not only help ARBs in deciding and bargaining better contracts, but also, provides a ready avenue for advocacy should contentions regarding AVA contracts arise.

The second essay departs from the use of discrete control structures in contracting and conceptualizes control as a matter of degree. By doing so, I show how a variety of contractual outcomes, including contracts where smallholders effectively lose control, can arise even from consensual transactions. These outcomes are determined by the costs of inputs, and the bargaining power that the partners have in defining the degree of control resulting from the contract. I show that under certain conditions, the smallholder would accept a contract where she completely cedes control of her land, and she is left no better off than what she could have achieved without the investor. My model also shows how targetting the cost constraints that smallholders face can reduce the scope for investors to offer contracts where they can wrest control of land from smallholders. Finally, I also show how giving smallholders the ability to

decide on the level of control in a contract can ensure that they can maintain some level of control over their holdings, even when costs of inputs are high.

The third essay situates observed trends from land acquisitions within the tradition of location choice in international investment. I also introduce power-given by the ability to expropriate- as a possible motivation for investors. My results suggest that investor behaviors in land acquisitions signal that the countries they target fall within a limited range of institutional and economic differences. They either expect similar levels of revenue, or, they expect similar levels of institutional protections for their investments. My model also further reinforces a well-known result in the literature on property rights- weak protections for property rights can result in smallholders doing no-better or even worse-off as a result of expropriatory activity. This result is corroborated by numerous case studies in land acquisition. Taken together, these findings suggest that attracting agribusiness investment may harm the interests of smallholders, contrary to the optimistic assessments by economists and development institutions. However, these outcomes are only conditional, and countries have other means of attracting investment so that investors would not have an incentive to take advantage of the ability to undertake expropriatory actions. These may include productive public investments that generate greater income for both investors and smallholders.

In addition to these contributions, a logical next step would be to explore how states set the contracting environment for incorporation. In this dissertation, I have taken this environment as exogenous to the process. However, if states find it desirable to attract agribusiness investment, then their decision process may not be independent of the outcomes from contracting between investors and smallholders. What incentives do states face? What factors do states weigh in setting the bargaining environment? How do they weigh different avenues to attract investment? These are the questions that I would like to pursue in future research.

APPENDIX A

PROOFS OF RESULTS FROM CHAPTER 3

PROOF of Lemma 4: Taking the *first-order conditions*,

$$\frac{d\Pi_S^A}{dx_S} = q_S - c_A x_S = 0$$

Which yields

$$x_S^A = \frac{q_S}{c_A}$$

plugging this into $\Pi_S^A(x)$ gives the result. \triangle

PROOF of Lemma 5: The first order conditions are:

$$\frac{d\Pi^{FB}}{dx_I} = q_I - c_I x_I = 0$$

$$\frac{d\Pi^{FB}}{dx_S} = q_S - c_S x_S = 0$$

The results follow from this. \triangle

PROOF of Lemma 6: Solving the maximization problem yields: $-(1-\tau)(q(x) - R_S - D_I)^{-\tau} (R_S - D_S)^\tau + \tau(R_S - D_S)^{(\tau-1)} (q(x) - R_S - D_I)^{(1-\tau)} = 0$ which can be rearranged to obtain:

$$R_S = D_S + \tau(q(x) - D_I - D_S)$$

Consequently, the payoff to I from bargaining is:

$$R_I = D_I + (1 - \tau)(q(x) - D_I - D_S)$$

Using the definitions for $q(x)$, D_I , and D_S , we can obtain the following:

- $R_S = \kappa q_S(x_S) + \tau((q_I x_I + q_S x_S) - (1 - \kappa)q_I x_I - \kappa q_S x_S)$
- $R_I = (1 - \kappa)q_I(x_I) + (1 - \tau)((q_I x_I + q_S x_S) - (1 - \kappa)q_I x_I - \kappa q_S x_S)$

Rearranging these yield the results. \triangle

PROOF of Proposition 10: Using equations (4.1), and (4.2) the first order conditions for S and I respectively are given by:

$$\frac{d\Pi_S}{dx_S} = Q_S - c_S x_S = 0$$

and

$$\frac{d\Pi_I}{dx_I} = Q_I - c_I x_I = 0$$

These, in turn, yield the result. \triangle

PROOF of Corollary 9: $\kappa(1 - \tau) + \tau = (1 - \kappa)(1 - \tau) < 1$, and $1 - \kappa\tau < 1$, $\kappa\tau < 1$, and $0 < (1 - (\kappa(1 - \tau) + \tau)) < 1$. So,

$$Q_S < q_S, \text{ and } Q_I < q_I$$

\triangle

PROOF of Corollary 10: $\frac{dQ_S}{d\kappa} = q_S(1 - \tau)$, $\frac{dQ_I}{d\kappa} = -q_I\tau$, $\frac{dQ_{S1}}{d\kappa} = -q_S(1 - \tau)$, $\frac{dQ_{I1}}{d\kappa} = q_I\tau$ \triangle

PROOF of Proposition 2: For what follows, Let $T_1 = q_I^2\tau$, $T_2 = q_S^2(1 - \tau)$, $T_3 = q_S^2(1 - \tau)^2$, $T_4 = q_I^2\tau^2$. This Proof has several steps:

1. I chooses κ^* : We can rearrange equation (4.4) as

$$\Pi_I(x_I^N) = \frac{1}{2c_S c_I} (k_I + d_I \kappa + a_I \kappa^2) \quad (\text{A.1})$$

Where $k_I = q_I^2 + 2c_I\tau(1 - \tau)$, $d_I = -2c_S T_1 + 2c_I T_2$, and $a_I = c_S T_4 - 2c_I T_3$

Since $\Pi_I(x_I^N)$ is a quadratic, to ensure that I is maximizing profits, it has to be

the case that $a_I < 0$. This is true given that $c_S < 2c_I \frac{q_S^2(1-\tau)^2}{q_I^2\tau^2}$. Differentiating equation (A.1), we get

$$\frac{d\Pi_I(x_I^N)}{d\kappa} = b_I + 2a_I\kappa = 0$$

which yields:

$$\kappa^* = \frac{-d_I}{2a_I}$$

Plugging in the values for d_I , and a_I gives the result.

2. $\kappa^* \in (0, 1)$ for some value of c_S : For $\kappa^* > 0$ it has to be the case that $d_I > 0$ and $a_I < 0$. This is true whenever $c_S < c_I \frac{q_S^2(1-\tau)}{q_I^2\tau}$ and $c_S < 2c_I \frac{q_S^2(1-\tau)^2}{q_I^2\tau^2}$, respectively. $\kappa > 1$ when $2a_I > -d_I$ or

$$c_I q_S^2(1-\tau) - q_I^2 c_S \tau < 2c_I q_S^2(1-\tau)^2 - q_I^2 c_S \tau^2$$

only if $c_S < c_I \frac{q_S^2\tau}{q_I^2(2\tau-1)}$. This is possible only if $\tau > \frac{1}{2}$.

3. S accepts the offer: Similar to I , we can write $\Pi_S(x_S^N) - \Pi_S(x_S^A)$ as

$$k_S + d_S \kappa^* + a_S \kappa^{*2} \tag{A.2}$$

Where $k_S = \frac{q_S^2(c_A\tau^2 - 2c_S)}{2c_S c_A}$, $d_S = 2(c_I T_2 + c_S T_1)$, and $a_S = c_I T_3 - 2c_S T_4$. To ensure that $\Pi_S(x_S^N) - \Pi_S(x_S^A) \geq 0$, meaning S accepts the offer of κ^* , it has to be the case that:

$$\Pi_S(x_S^N) = k_S + \frac{1}{2c_S c_I} \left(d_S \left(\frac{-d_I}{2a_I} \right) + a_S \left(\frac{-d_I}{2a_I} \right)^2 \right) \geq 0$$

Note that since $c_S > c_I \frac{T_3}{T_4}$, $a_S < 0$, which means that S 's profit function is a concave quadratic in κ . Rearranging yields:

$$\left(\frac{-d_I}{2a_I} \right) \left(\frac{2d_S a_I - a_S d_I}{2a_I} \right) \geq -2c_S c_I k_S \tag{A.3}$$

Note that $d_S > d_I$. By the bounds on c_S , $a_S < a_I$, since $2c_S T_4 - c_I T_3 < 2c_I - c_S T_4$ when $c_S < c_I \frac{T_3}{T_4}$. Both these facts imply that:

$$\frac{2d_S}{d_I} > \frac{a_S}{a_I}$$

and thus

$$2d_S a_I - a_S d_I > 0$$

so that the left-hand side of equation (A.3) is positive. By the assumption on c_A , the right-hand side of equation (A.3) is negative. This implies that the participation constraint does not bind. Thus, S accepts κ^*

4. Finally, we prove that the condition for $a_S < 0$, $a_I < 0$, $d_I > 0$ are consistent given $\tau \in (\frac{1}{2}, \frac{2}{3})$ since $c_I \frac{q_S^2(1-\tau)}{2q_I^2\tau}$ is the least upper bound for c_S : From the previous steps, c_S is bounded above by:

- $B_1 = c_I \frac{q_S^2(1-\tau)^2}{2q_I^2\tau^2}$
- $B_2 = 2c_I \frac{q_S^2(1-\tau)^2}{q_I^2\tau^2}$
- $B_3 = c_I \frac{q_S^2(1-\tau)}{q_I^2\tau}$
- $B_4 = c_I \frac{q_S^2\tau}{q_I^2(2\tau-1)}$

Certainly, $c_I \frac{q_S^2(1-\tau)^2}{2q_I^2\tau^2} < 2c_I \frac{q_S^2(1-\tau)^2}{q_I^2\tau^2}$. $\tau < \frac{2}{3}$ implies that $\frac{\tau}{(2\tau-1)} > 2$ and $\frac{q_S^2(1-\tau)^2}{2q_I^2\tau^2} < \frac{q_S^2(1-\tau)}{q_I^2\tau}$. Finally, $\frac{(1-\tau)^2}{\tau} < 1$ for $\tau > \frac{1}{2}$. Thus, $B_1 < B_3$, and $B_3 < B_2 < B_4$. Thus, for all $c_S \in \left(c_I \frac{q_S^2(1-\tau)^2}{2q_I^2\tau^2}, c_I \frac{q_S^2(1-\tau)}{q_I^2\tau} \right)$, $\kappa^* \in (0, 1)$ is an acceptable offer for S . Δ

PROOF of Corollary 4: Notice that,

- $\frac{dT_1}{d\tau} = q_I^2$
- $\frac{dT_2}{d\tau} = -q_S^2$
- $\frac{dT_3}{d\tau} = -2q_S^2(1-\tau)$

- $\frac{dT_1}{d\tau} = 2q_I^2\tau$

Implying that $\frac{\partial d_I}{\partial \tau} = -c_I q_S^2 - c_S q_I^2 < 0$ $\frac{\partial a_I}{\partial \tau} = -4c_I q_S^2(1 - \tau) - 2c_S q_I^2 < 0$. Thus

$$\frac{d\kappa}{d\tau} = \frac{-1}{2a_I^2} \left(\frac{\partial d_I}{\partial \tau} a_I - d_I \frac{\partial a_I}{\partial \tau} \right)$$

The term in brackets is positive, yielding the result. \triangle

PROOF of Proposition 3: When $\tau = 0$, $k_I = q_I^2 c_S$, $d_I = 2q_S^2 c_I$, and $a_I = -2q_S^2 c_I$. This shows that I is solving a maximization problem so that we can use equation (3.6), obtaining $\kappa^* = \frac{1}{2}$. Since $\tau = 0$, $k_S = \frac{-q_S^2}{c_A}$, $d_S = 2q_S^2 c_I$, $a_S = q_S^2 c_I$. The payoff to S , can be written as:

$$\Pi_S(x_S^N) = \frac{q_S^2 c_I}{4} + q_S^2 c_I - \frac{q_S^2}{c_A}$$

or

$$\Pi_S(x_S^N) = q_S^2 \left(\frac{5c_I}{4} - \frac{1}{c_A} \right) \geq 0$$

since $c_A, c_I > 1$. \triangle

PROOF of Proposition 4: When $\tau = 1$, $k_I = q_I^2 c_S$, $d_I = -2q_I^2 c_S$, and $a_I = q_I^2 c_S$. Thus, we can write equation (A.1) as:

$$\Pi_I(x_I^N) = q_I^2 c_S (1 - \kappa)^2$$

This function is greatest at $\kappa^* = 0$ When $\tau = 1$, $k_S = \frac{q_S^2(c_A - 2c_S)}{2c_S c_A}$, $d_S = 2c_S q_I^2$, and $a_S = -2c_S q_I^2$, and the payoffs to S will be

$$\Pi_S(x_S^N) = \frac{q_S^2(c_A - 2c_S)}{2c_S c_A} \geq 0$$

And thus, S accepts. \triangle

PROOF of Proposition 5: First, algebraic manipulation shows that $c_S\left(\frac{8q_S}{(4q_S+c_S^2q_I^2)}\right) < 2c_S$ when $2c_S^2q_I^2 > 0$. If I offers $\kappa = 0$, S 's payoff is negative. Thus, the offer of κ needs to satisfy:

$$k_S + d_S\kappa + a_S\kappa^2 = 0$$

. Using the quadratic equation, and the values of a_S, d_S, k_S , with $\tau = 1$, we get:

$$\kappa = \frac{1}{2} \left(1 \pm \frac{1}{c_S q_I} \sqrt{\frac{2c_A c_S^2 q_I^2 - 8q_S(2c_S - c_A)}{2c_A}} \right)$$

This is real-valued when the discriminat is positive or if $2c_A c_S^2 q_I^2 \geq 8q_S(2c_S - c_A)$ or if $c_A \geq c_S\left(\frac{8q_S}{(4q_S+1c_S^2q_I^2)}\right)$ Let,

$$\kappa^+ = \frac{1}{2} \left(1 + \frac{1}{c_S q_I} \sqrt{\frac{2c_A c_S^2 q_I^2 - 8q_S(2c_S - c_A)}{2c_A}} \right)$$

and

$$\kappa^- = \frac{1}{2} \left(1 \pm \frac{1}{c_S q_I} \sqrt{\frac{2c_A c_S^2 q_I^2 - 8q_S(2c_S - c_A)}{2c_A}} \right)$$

Clearly, since the discriminat is at least 0, $\kappa^+ > 0$. Manipulation $\kappa^+ \leq 1$ if $c_A \geq c_S \in \left(c_S\left(\frac{16q_S}{(8q_S+2c_S^2q_I^2)}\right), 16q_S c_S\right)$ Simple manipulation shows that $\kappa^- > 0$ since $-8q_S(2c_S - c_A) < 0 < 1$. Further, $\kappa^- \leq 1$ for $c_A > c_S\left(\frac{4q_S}{(2q_S+c_S^2q_I^2)}\right)$. Finally, algebraic manipulation shows that $c_S\left(\frac{4q_S}{(2q_S+c_S^2q_I^2)}\right) < c_S\left(\frac{8q_S}{(4q_S+c_S^2q_I^2)}\right)$. Finally, $\kappa^+ > \kappa^-$ since both are positive, real-valued numbers. Since I 's payoff is maximized at $\kappa = 0$, he chooses κ^- . \triangle

PROOF of Proposition 6: This proof will proceed in several steps. For what follows, we use $T_1 = q_I^2\tau$, $T_2 = q_S^2(1 - \tau)$, $T_3 = q_S^2(1 - \tau)^2$.

1. S is maximizing profits: For S 's problem to be a maximization, $a_S < 0$. This is true whenever $c_S \geq \frac{T_3}{2T_4}$ will choose κ to maximize his profits, thus solving

$$k_S + d_S\kappa^* + a_S\kappa^{*2} \tag{A.4}$$

The assumption that $c_A > \frac{2c_S}{\tau^2}$ ensures that $k_S > 0$. Optimizing on equation (A.4), we obtain:

$$\kappa^{S*} = \frac{-d_S}{2a_S}$$

$\kappa^{S*} > 0$ when $c_S > c_I \frac{T_3}{2T_4}$. $\kappa^{S*} < 1$ when $c_S > -c_I \frac{T_3+T_2}{T_1-T_4}$. Since $c_S > 0$, $\kappa^{S*} < 1$.

2. S 's participation constraint does not bind given this choice of κ^{S*} since $k_S > 0$: This is true since

$$\Pi_S(x_S^N) = k_S + d_S \left(\frac{-d_S}{2a_S} \right) + a_S \left(\frac{-d_S}{2a_S} \right)^2 \geq 0$$

Which can be simplified as

$$k_S \geq 0$$

Which is always true by assumption.

3. I will accept this level of κ^{S*} when $c_S > c_I \frac{T_3}{T_4}$: The offer of κ^{S*} will have to satisfy:

$$\Pi_I(x_I^N) = k_I + d_I \left(\frac{-d_S}{2a_S} \right) + a_I \left(\frac{-d_S}{2a_S} \right)^2 \geq 0$$

Rearranging this, we get:

$$k_I + \left(\frac{-d_S}{2a_S} \right) \left(\frac{2d_I a_S - a_I d_S}{2a_S} \right)$$

$k_I > 0$. Thus, if the second term is positive, the participation constraint does not bind. This is true whenever

$$\frac{2d_I}{d_S} > \frac{a_I}{a_S}$$

This is true whenever $c_S < \frac{T_2}{3T_1}$, and $c_S > c_I \frac{T_3}{T_4}$ which guarantees that $2d_I > d_S$, and $a_I < a_S$.

Finally, this choice of κ^{S^*} is consistent with I 's payoff being concave in κ if $c_S < 2c_I \frac{T_3}{T_4}$.

4. $c_S \in (c_I \frac{q_S^2(1-\tau)^2}{q_I^2\tau^2}, \frac{q_S^2(1-\tau)}{3q_I^2\tau})$ and $\tau > \frac{3}{4}$ satisfy the bounds implied by the preceding steps. The preceding steps imply the following bounds:

- $c_S \geq \frac{T_3}{2T_4} = B_1^S$
- $c_S < \frac{T_2}{3T_1} = B_2^S$
- $c_S > c_I \frac{T_3}{T_4} = B_3^S$
- $c_S < 2c_I \frac{T_3}{T_4} = B_4^S$

It is evident that $B_1^S < B_3^S < B_4^S$. Since $\tau > \frac{3}{4}$, algebraic manipulation shows that $B_4^S > B_2^S$ whenever $\tau > \frac{3}{5}$. Finally, $B_2^S > B_3^S$ when $\tau > \frac{3}{4}$. This shows that the assumptions on τ and c_S yield consistent bounds. \triangle

PROOF of Corollary 5: First, note that

- $\frac{\partial d_S}{\partial \tau} = 2(-2c_I q_S^2 + c_S q_I^2) < 0$ since, $\tau > \frac{3}{4}$ which implies that $c_S < c_I \frac{q_S^2(1-\tau)}{3q_I^2\tau} < 2c_I \frac{q_S^2(1-\tau)^2}{q_I^2\tau^2} < 2c_I \frac{q_S^2}{q_I^2}$
- $\frac{\partial a_S}{\partial \tau} = -2c_I T_2 - 2q_I^2\tau < 0$

Thus,

$$\frac{d\kappa^{S^*}}{d\tau} = \left(\frac{-1}{4a_S^2} \right) \left(\frac{\partial d_S}{\partial \tau} a_S - d_S \frac{\partial a_S}{\partial \tau} \right) < 0$$

Since, under the assumptions, $a_S < 0$ and $d_S > 0$. \triangle

PROOF of Proposition 7: When $\tau = 0$, $a_S = c_I q_S^2$, $d_S = 2c_I q_S^2$, and $k_S = \frac{-q_S^2}{c_A}$.

This implies that S 's payoffs can be written as:

$$c_I q_S^2 (\kappa^2 + 2\kappa) - \frac{q_S^2}{c_A}$$

which is an increasing function for all values of $\kappa \in [0, 1]$. Thus, S chooses $\kappa = 1$. Further this implies that S 's payoff is:

$$q_S^2(3c_I - \frac{1}{c_A}) > 0$$

This offer is acceptable to I since his payoff will be $q_I^2 c_S > 0 \triangle$.

PROOF of Proposition 8: When $\tau = 1$, $a_S = -2c_I q_S^2$, $d_S = 2c_S q_I^2$, $k_S = \frac{q_S^2(c_A - 2c_S)}{2c_S c_A}$. Since $a_S < 0$, S is optimizing so $\kappa^{S*} = \frac{1}{2}$. Thus, the payoff to S is:

$$\frac{3c_S q_I^2}{4} + k_S \geq 0$$

when $k_S > 0$ or if $c_A \geq \frac{4c_S q_S^2}{(3c_S^2 q_I^2 - 2q_S^2)}$. Otherwise, the participation constraint is binding and we can use the quadratic formula which yields:

$$\kappa = 1 \pm \sqrt{2 - \frac{q_S^2(2c_S - c_A)}{2q_I^2 c_S c_I c_A}}$$

This is feasible when $4q_I^2 c_S c_I c_A > q_S^2(2c_S - c_A)$ which is true since $c_S, c_I, c_A > 1$. Now, consider

$$\kappa^- = 1 - \sqrt{2 - \frac{q_S^2(2c_S - c_A)}{2q_I^2 c_S c_I c_A}}$$

$\kappa^- > 0$ only if $c_A < \frac{2c_S}{c_S c_I q_I^2 + q_S^2}$ which cannot be true since $c_A > c_S$. Consider

$$\kappa^+ = 1 + \sqrt{2 - \frac{q_S^2(2c_S - c_A)}{2q_I^2 c_S c_I c_A}}$$

. Since $\kappa^+ > 1$, no offers will be made since the upper bound of κ is 1. \triangle

PROOF of Corollary 6: This follows from comparing corresponding cases. When $\tau = 0$, I offers $\kappa^{I0} = \frac{1}{2} < 1 = \kappa^{S0}$ which is what S would offer. When $\tau = 1$, There are two possibilities. Either S 's participation constraint is binding, or, it is not.

The case where S participation constraint is given by κ^{I1^*} and κ^{S1^*} . It is clear that $\kappa^{I1^*} < \kappa^{S1^*} = 1$, within a limited range of parameter values. Finally, whenever if the participation constraint does not bind, $0 = \kappa^{I1} < \kappa^{S1} = \frac{1}{2}$. Δ

PROOF of Corollary 7: Note that when $\tau = 1$:

$$\Pi_S(x_S^N) = 2c_S q_I^2 \kappa - 2c_S q_I^2 \kappa^2 + \frac{q_S^2 (c_A - 2c_S)}{2c_S c_A}$$

while

$$\Pi_I(x_I^N) = q_I^2 c_S (1 - \kappa)^2$$

There are two possibilities for S 's offer. First, when $\kappa^{S1} = \frac{1}{2}$,

$$\Pi_S(x_S^N)|_{\kappa=\kappa^{S1}} = \frac{q_S^2 (c_A - 2c_S)}{2c_S c_A}$$

and

$$\Pi_I(x_I^N)|_{\kappa=\kappa^{S1}} = \frac{q_I^2 c_S}{4}$$

When I can make unilateral offers, $\kappa^{I1} = 0$, so

$$\Pi_S(x_S^N)|_{\kappa=\kappa^{I1}} = \frac{q_S^2 (c_A - 2c_S)}{2c_S c_A}$$

and

$$\Pi_I(x_I^N)|_{\kappa=\kappa^{I1}} = q_I^2 c_S$$

Certainly: $\Pi_S(x_S^N)|_{\kappa=\kappa^{I1}} = \Pi_S(x_S^N)|_{\kappa=\kappa^{S1}}$ while $\Pi_I(x_I^N)|_{\kappa=\kappa^{I1}} > \Pi_I(x_I^N)|_{\kappa=\kappa^{S1}}$. The other possibility is that S does not offer, or that I offers κ to satisfy S 's participation

constraint. Under these offers, S 's payoffs are the same. However, I gets a positive level of payoffs if he can make a unilateral offer since $\kappa^{I1*} < 1$. When $\tau = 0$

$$\Pi_S(x_S^N) = 2c_S q_I^2 \kappa + c_S q_I^2 \kappa^2 - \frac{q_S^2}{c_A}$$

and

$$\Pi_I(x_I^N) = 2q_S^2 c_I \kappa - 2q_S^2 c_I \kappa^2 + q_I^2 c_S$$

If S makes a unilateral offer, $\kappa^{S0} = 1$

$$\Pi_S(x_S^N)|_{\kappa=\kappa^{S0}} = q_S^2 \left(3c_I - \frac{1}{c_A} \right)$$

and

$$\Pi_I(x_I^N)|_{\kappa=\kappa^{S0}} = q_I^2 c_S$$

Whereas, if I makes a unilateral offer, $\kappa^{I0} = 1$, yielding

$$\Pi_S(x_S^N)|_{\kappa=\kappa^{I0}} = q_S^2 \left(\frac{5}{4} c_I - \frac{1}{c_A} \right)$$

and

$$\Pi_I(x_I^N)|_{\kappa=\kappa^{I0}} = q_I^2 c_S + \frac{q_S^2 c_I}{2}$$

The result follows by comparing corresponding cases. \triangle

PROOF of Proposition 9:

$$\Pi_S(x_S^N)|_{\kappa=\kappa^{S1}} + \Pi_I(x_I^N)|_{\kappa=\kappa^{S1}} < \Pi_S(x_S^N)|_{\kappa=\kappa^{I1}} + \Pi_I(x_I^N)|_{\kappa=\kappa^{I1}}$$

and Notice:

$$\Pi_S(x_S^N)|_{\kappa=\kappa^{S0}} + \Pi_I(x_I^N)|_{\kappa=\kappa^{S0}} = q_S^2 \left(3c_I - \frac{1}{c_A} \right) + q_I^2 c_S$$

while

$$\Pi_S(x_S^N)|_{\kappa=\kappa^{I0}} + \Pi_I(x_I^N)|_{\kappa=\kappa^{I0}} = q_S^2 \left(\frac{7}{4} c_I - \frac{1}{c_A} \right) + q_I^2 c_S$$

so that

$$\Pi_S(x_S^N)|_{\kappa=\kappa^{S0}} + \Pi_I(x_I^N)|_{\kappa=\kappa^{S0}} > \Pi_S(x_S^N)|_{\kappa=\kappa^{I0}} + \Pi_I(x_I^N)|_{\kappa=\kappa^{I0}}$$

Finally, we can if $c_A - 2c_S$, and S does not offer a deal, I can make an offer where S has some control, and gets his participation constraint, while I obtains a profit. Δ

APPENDIX B

PROOFS OF RESULTS FROM CHAPTER 4

PROOF of Lemma 4: The first order conditions implied by equations (4.1), and (4.2) are:

$$\frac{e_{Ii}}{(e_{S_i} + e_{Ii})^2} q_{S_i} = (1 - \tau_i)$$

and,

$$\frac{e_{S_i}}{(e_{S_i} + e_{Ii})^2} q_{Ii} = \tau_i$$

This implies that $e_{Ii} = e_{S_i} \frac{q_{Ii}(1-\tau_i)}{q_{S_i}\tau_i}$. Using either first order condition, we can get the following equations:

$$e_{S_i} = q_{Ii}\tau_i \left(\frac{q_{S_i}}{\tau_i q_{S_i} + (1 - \tau_i)q_{Ii}} \right)^2$$

and

$$e_{Ii} = q_{S_i}(1 - \tau_i) \left(\frac{q_{Ii}}{\tau_i q_{S_i} + (1 - \tau_i)q_{Ii}} \right)^2$$

These implies the stated results. I obtain the equilibrium levels of success by plugging these in to the functions $p_{S_i}(e_{S_i}, e_{Ii})$, and $p_{Ii}(e_{S_i}, e_{Ii})$. Δ

PROOF of Lemma 5: First, we note that $\frac{d\nu_i}{d\tau_i} = -\tau_i(q_{Ii} - q_{S_i}) < 0$. Now,

$$\frac{dp_{S_i}(e_{S_i}^*, e_{I_i}^*)}{d\tau_i} = \frac{q_{S_i}\nu_i - \frac{d\nu_i}{d\tau_i} q_{S_i}\tau_i}{\nu_i^2} > 0$$

and

$$\frac{dp_{I_i}(e_{S_i}^*, e_{I_i}^*)}{d\tau_i} = \frac{-q_{I_i}\nu_i - \frac{d\nu_i}{d\tau_i} q_{I_i}(1 - \tau_i)}{\nu_i^2} = \frac{-q_{I_i}(1 + \tau_i(1 - \tau_i) - q_{I_i}q_{S_i}\tau_i(1 - \tau_i))}{\nu_i^2} < 0$$

Δ

Note that the proof for Lemma 7 is similar, and to the proof for these two previous lemmas, and is therefore omitted.

PROOF of COROLLARY 8: substituting the equilibrium levels of $e_{S_i}^*, p_{S_i}(e_{S_i}^*, e_{I_i}^*), e_{I_i}^*, p_{I_i}(e_{S_i}^*, e_{I_i}^*)$ from LEMMA 4 into equations (4.1), and (4.2), we get S_i 's payoff from rejecting I 's offer:

$$\pi_{S_i}^r(e_{S_i}^*, e_{I_i}^*) = \left(\frac{q_{S_i} \tau_i}{\nu_i} \right) q_{S_i} - \tau_i \left(q_{I_i} \tau_i \left(\frac{q_{S_i}}{\nu_i} \right)^2 \right)$$

and I 's payoff

$$\pi_{I_i}^r(e_{S_i}^*, e_{I_i}^*) = \left(\frac{q_{I_i}(1 - \tau_i)}{\nu_i} \right) q_{I_i} - (1 - \tau_i) \left(q_{S_i}(1 - \tau_i) \left(\frac{q_{I_i}}{\nu_i} \right)^2 \right)$$

Simplifying these equations gives the result. Δ

PROOF for COROLLARY 9: Suppose not. Then, $(e_{S_i}^*, e_{I_i}^*) = 0$. Let S_i deviate and choose $e_{S_i}^* > 0$. Then, she receives the full value of q_{S_i} while I receives $0 < \pi_{I_i}^r$. So, I 's best response is to choose $e_{I_i} > 0$. Similarly, the best response of S_i to I choosing $e_{I_i} > 0$ is to choose $e_{S_i} > 0$. This yields the payoffs from Corollary 8. Δ

PROOF of Lemma 6: $\frac{d\pi_{I_i}}{d\tau} = -2q_{S_i} \frac{dp_{S_i}(e_{S_i}^*, e_{I_i}^*)}{d\tau_i} p_{I_i}(e_{S_i}^*, e_{I_i}^*) < 0$, following Lemma 5. Δ

PROOF of Proposition 10: Suppose I locates in m . It has to be the case that equation (4.4) holds. Now consider every country $j \in N$ with $q_{I_j} > q_{I_m}$. Equation (4.4) implies that:

$$q_{I_j} - q_{I_m} < q_{S_j} \left(\frac{q_{S_j} \tau_j}{\nu_j} \right)^2 - q_{S_m} \left(\frac{q_{S_m} \tau_m}{\nu_m} \right)^2$$

Consider the set $J = \{j \in N | q_{I_j} > q_{I_m}\}$ We can arrange the elements of J so that the set $\{1, \dots, p\}$ corresponds to the indices of J where the elements of J are arranged

as follows: $\{q_{I1} \leq q_{I2} \leq \dots \leq q_{IP}\}$ Let $B_j = q_{Sj} \left(\frac{q_{Sj}\tau_j}{\nu_j} \right)^2 - q_{Sm} \left(\frac{q_{Sm}\tau_m}{\nu_m} \right)^2$. Then, we have:

$$\begin{aligned}
q_{I1} - q_{Im} &< B_1 && \text{(B.1)} \\
q_{I2} - q_{Im} &< B_2 \\
&\dots \\
q_{IP-1} - q_{Im} &< B_{P-1} \\
q_{IP} - q_{Im} &< B_P
\end{aligned}$$

Let $B_{max} = \max_{j \in J} B_j$. Certainly: $q_{IP} - q_{Im} < B_P < B_{max}$. Since $q_{I1} - q_{Im} \leq \dots \leq q_{IP} - q_{Im} < B_P \leq B_{max}$, and by definition $B_{max} < q_{Sk}$ for some $k \in J$. The proofs for Corollaries 9, and 11 are similar. However, we note that

$$\frac{1}{q_I(\phi_m + \phi_h)} \left(q_{Sm} \left(\frac{q_{Sm}\tau_m}{\nu_{\phi_m}} \right)^2 - q_{Sh} \left(\frac{q_{Sh}\tau_h}{\nu_{\phi_h}} \right)^2 \right) < 1$$

by the assumption that $\forall i \in N, q_{Ii}\phi_i^2 > q_{Si} \left(\frac{q_{Si}\tau_i}{\nu_{\phi_i}} \right)^2$, which ensures the profitability of locating in any country $i \in N$. This implies that $q_I(\phi_m + \phi_h) > q_{Sm} \left(\frac{q_{Sm}\tau_m}{\nu_{\phi_m}} \right)^2$, and $q_I(\tau_m + \tau_h) > q_{Sh} \left(\frac{q_{Sh}\tau_h}{\nu_{\phi_h}} \right)^2$. For Corollary 11, by definition of τ_m , the inequality holds for all $i \in N$. \triangle

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