

Co-operatives and competition in local coffee markets: The case of Chiapas, Mexico

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Introduction

Coffee producers, local coffee markets and co-operatives

Every year more than 6 million tons of coffee is produced in different parts of the world, mainly in developing countries in Africa, Asia and Latin America. Because there is little scope for economies of scale in coffee production, most of the producers are smallholders (Oxfam 2001). Coffee is a typical tropical cash crop, about three quarters of it is exported, mostly to industrialized countries (ICO 2009). Due to inelastic supply and demand, the international coffee prices are highly fluctuating. Furthermore, a stronger increase in supply than demand has resulted in a general downward trend (Lewin et al. 2004).

The small scale coffee farmers do not export the coffee themselves. Generally it is bought in the rural markets by local intermediaries who in turn sell the coffee to exporters, mostly multinational companies. Factors such as isolation and asymmetric information make these local markets prone to market failure, including market power among purchasers. An alternative for the coffee farmers is to organise themselves in coffee co-operatives and market their coffee jointly. But there are many difficulties along this path: The poor and often uneducated farmers must acquire knowledge about how to run an organisation, and how to manage the complicated affairs of coffee processing and exports. For a newly established, unknown co-operative it is also extremely hard to get access to the international coffee market. The wish from many consumers to help disadvantaged producers overcome these problems has led to the establishing of solidarity based labelling schemes. Increasingly, many coffee co-operatives are certified to organic and Fairtrade standards, which may facilitate market access and provide them with higher and more stable prices from the importers, but which in return requires them to fulfil a range of criteria concerning both production and administration.

The characteristics of local coffee markets and the existence of Fairtrade and organically certified coffee co-operatives is the setting for this thesis. This setting provides the possibility to investigate questions related to market structures in rural areas, the role of co-operatives and how they are affected by the Fairtrade criteria for certification.

Coffee market background

History of coffee

The coffee plant is originally from Ethiopia. It is a bush that gets white, fragrant flowers which turn into red, sometimes yellow berries. Supposedly the Ethiopians ate the sweet tasting berries and chewed the kernel inside, which contains the today wide famous stimulating substance caffeine. One assumes that Ethiopians took the plant to Yemen, where, among others, it was produced by Arab monks who needed it in order to stay awake for the midnight prayer. Coffee drinking was soon popular all over the Arab Empire, and in the 16th century it found its way to Europe through the Turkish. In 1721 the first coffee beans were brought to Brazil via the French colony Martinique (Pendergrast 1999).

The coffee plant requires stringent climatic conditions such as average annual temperatures between 17 and 25 degrees Celsius and a minimum of 1200-1500 millimetres of rainfall each year, conditions that are only found within the tropics (Talbot 2004 p. 31). In many places in Latin America the climatic and geographical conditions are highly suitable for coffee production, and soon this became the continent where most of the production in the world took place. The plant was and still is cultivated on nearly the entire Latin American continent, including the Caribbean Islands.

At the turning of the 19th century, the world experienced the first coffee crisis. Because of overproduction, coffee prices decreased by 44% in 5 years (Gonzalez Cid 2004). What triggered this price fall was what Talbot calls the 'tree crop price cycle' (Talbot 2004), a phenomenon to be repeated several times over the twentieth century. It takes three to five years from the planting of a coffee tree until harvesting of the berries can start, and the optimal yield is reached when the tree is five to six years old. Because it is difficult to increase production in the short term the supply elasticity of coffee with respect to price is low. The price elasticity of demand is also low: coffee consumption tends to drop only when prices increase significantly (Daviron and Ponte 2005). A tree crop cycle is typically triggered by unexpected frosts or diseases that destroy large amounts of coffee. This has often happened in Brasil, the world's largest producer, and it causes a supply shock, which leads to a price increase. When the coffee prices are high, more farmers will plant new coffee trees. But the response on the supply side is usually higher than necessary, and some years later, when the new trees have matured, there will be oversupply and coffee prices will drop. Many coffee farmers will then replace their trees with other crops, supply will drop, and prices increase again. Higher prices will then lead to oversupply, and so the cycle continues.

Already after the first significant price drop in the early 1900s, producers began to pressure their states to take action against these fluctuations. Coffee was very important for Third World producer countries and it is still their second biggest revenue source, after petrol (Talbot 2004 p.44). Also consumer countries saw the need to regulate supply in order to stabilise prices, both for economic reasons and as part of a political strategy to inhibit the rise of communism in poor, coffee producing countries (Talbot 2004). In 1962 the first International Coffee Agreement (ICA) was signed. This was a regulatory system that lasted until 1989. During this period quotas distributed to producer members of the International Coffee Organisation (ICO) were relaxed or tightened in order to keep coffee prices stable. Although there were several problems with this system it was successful in raising and stabilizing coffee prices (Daviron and Ponte 2005 p. 87, Talbot 2004). One of the main reasons for the demise of the regulation in 1989 was that it was leading to overproduction, and the producer countries found it increasingly difficult to agree on the quota distributions. Another factor undermining the system was the development of a non-quota market in countries that were not part of the agreement, and that re-exported to consumer countries that had signed it (Talbot 2004).

Coffee in Chiapas

The coffee plant was introduced to Mexico, then a Spanish colony, about 200 years ago. Since 1810 it has been cultivated commercially in the country. At first the beans were sold only for national consumption, but with growing demand in Europe and the United States, exported volumes increased (Gonzalez Cid 2004). In Chiapas, the most southern state in Mexico, coffee production started to take off during the era of President Porfirio Díaz¹. Immigrants, particularly Germans, played an important role in the introduction of coffee to the region, as they invested capital, brought in technology and controlled the trade and exportation (Renard 2006). Plantations were established mainly on virgin land, at first in Soconusco, the Southern region of Chiapas. Coffee cultivation is relatively labour intensive. The branches of the bushes must be pruned, plants need to be fertilised and frequent weeding is necessary. In particular the harvest requires a lot of labour, as the berries do not all ripen at the same time and need to be picked in several rounds. Lack of labour in the area was a problem for the coffee plantation owners in Soconusco, and the solution was to bring in indigenous people from the Highlands, Los Altos, through a system of enrolment (“enganche”). They were promised work and transported to the plantations. By the time they arrived they had indebted themselves and had no option but to work for several years (Martinez-Torres 2006). With the agrarian reforms starting in 1939, many of these workers took over the plantations and divided the land between them, forming so-called ejidos, a system with common land shared among members of the communities. In Los Altos, coffee was introduced by workers returning from Soconusco with coffee seedlings. But because there were few coffee buyers in the area, production only started to take off in the seventies. Later coffee production became common also in the Northern (Norte) and jungle (Selva) region.

According to Renard (2006), the dynamics of the coffee sector in Mexico changed radically in the sixties and seventies due to the creation of the Mexican Coffee Institute (Inmecafé) in 1959. During the era of the International Coffee Agreement (ICA) coffee boards and quasi governmental organizations regulated to some extent coffee production and sales within each producer country. In Mexico this was the responsibility of Inmecafé who, apart from buying a large part of the coffee production in Mexico, was in charge of agronomical investigations, technical assistance and the organisation of the small scale coffee producers to whom they provided credit (Nolasco 1985 p. 230). In order to better reach the producers special coffee organisations, the so-called UEPCs,² were created. At the most, 56% of the producers were organised in these organisations (Giovannucci and Juarez 2006). The remaining producers sold their coffee to the local intermediaries.

With the debt crisis of the 1980s, the Mexican government could no longer afford the expensive program initiated by Inmecafé, and without finance the majority of these organisations disappeared. When the ICA was not renewed in 1989 Inmecafé was dismantled. Since then the Mexican domestic coffee market has been unregulated by public authorities.

¹ From 1884 to 1911

² Unidades Económicas de Producción y Comercialización.

Two parallel markets

The existence of the UEPCs and other co-operatives meant that there were two parallel markets in rural Chiapas: a conventional market and a co-operative market. At the conventional market the intermediaries, the so-called 'coyotes', bought coffee from independent producers and sold it to processors and exporters, often passing through other intermediaries first. With the dismantling of the ICA and Inmecafé, a process of market concentration started at the level of exporters (Solís 2000). Multinational companies took over larger and larger shares of the market, while national exporters were closed down. Part of the reason for this was the coffee crisis of the early 1990s, when prices went very low and exporters ran into financial difficulties. Increasingly the 'coyotes' started to work not for themselves, but for the multinational companies (ibid). Over the years the number of multinational companies was also reduced, which meant a still higher level of market concentration. The same trend was observed in other coffee producing countries (Talbot 2004). This led to the market structure often observed today, with market power at several levels: the multinational companies have market power over the intermediaries, who, because of contracts, cannot decide to sell to who they want. The intermediaries in turn have market power in front of the coffee producers, who live in isolated areas and have few other sales options.

In the seventies and eighties the main actors in the co-operative market were the UEPC coffee co-operatives who sold their coffee to Inmecafé. But although the UEPCs had an important economic function, few of them were authentic, democratic organisations with active participation of the members. According to Parra and Moguel (1998) verticality and bureaucratism were obstacles for the participation of the beneficiaries, and corruption was not uncommon during this period. This is probably the reason why most of them disappeared together with Inmecafé and the ICA. However, during the Inmecafé era there existed co-operatives that were strong and independent. They formed their own credit unions, aiming to liberate themselves from the state (Renard 1996). When Inmecafé was closed the cooperatives' saw that their earnings from selling to the private purchasers were much lower than what they had achieved in the Inmecafé era. Some joined forces and started looking for possibilities to export directly, but with little resources it was difficult for them to market the coffee and provide members with training in quality coffee production. Their exporting project was therefore abandoned (Renard 1996). However, an alternative to exporting conventional coffee appeared in 1989: the Fairtrade labelling scheme, in addition to the already existing organic scheme.

Fairtrade is a label that enables consumers to show solidarity with disadvantaged producers, and be sure that they receive an acceptable deal in terms of price and working conditions. There are different certification schemes that make similar claims, but in this thesis focus is on the Fairtrade labelling system which started in 1989 and which is run by the Fairtrade Labelling Organisation International (FLO), with headquarters in Bonn, Germany. The world's first Fairtrade certified co-operative was Oaxaca based UCIRI, who, under the leadership of the Dutch priest Franz Van der Hof founded the system together with the Max Havelaar Foundation in the Netherlands. As the system expanded to most of Europe and the

US, the name of the label changed from Max Havelaar to Fairtrade, and the umbrella organisation, the Fairtrade Labelling Organisation International (FLO) was founded. The system makes it possible for any commercial company to purchase products from certified producers in the South and put a 'Fairtrade' label on it for consumers to recognise. Only coffee farmers organised in co-operatives can become certified, and they are expected to fulfil certain requirements. They should consist of generally small scale producers, be able to export their coffee, provide members with economic and social benefits, and be democratic, transparent organizations run by the producers themselves. There are also environmental criteria on the use of chemical inputs, and social criteria on the use of hired labour.

As with Fairtrade, organic coffee is sold with a label that consumers can recognise, but the requirements to become certified are only concerned with cultivation methods. Organic producers are to avoid damage to the environment and any contamination of the product from chemical input. Since no chemical fertilisers, herbicides or pesticides may be used organic coffee production involves intensive use of labour, mainly for manual weeding, and for making organic compost for fertilising. Additionally, in hilly areas it is necessary to construct terraces and barriers to avoid soil erosion. Organic coffee always grows under the shade of other trees, which helps maintain favourable temperature and humidity, provides leaf litter to replenish the soil and supports beneficial insects that keep potential pests under control (Martinez-Torres 2006 p.19). Several studies have found that, in comparison with conventional coffee production, especially sun grown, organic coffee cultivation has considerable beneficial effects on the environment in terms of higher biodiversity conservation, less soil degradation and pollution, and more carbon capturing (Gobbi 2000, Lyngbæk 2001, Perez Grovas 2000, Bray et al. 2002).

There are several organic certifying bodies operating in Mexico, but the majority of the coffee co-operatives use the Mexican organisation Certimex. The certifying bodies do not only set requirements concerned with environment and health. They also promote cultivation methods that have as a main effect to improve the quality of the coffee. The quality aspect is important, considering that few consumers will buy a product and pay a premium only because of its environmental or social values (Bray et al 2002). Promoting quality enhancing methods is thus meant to ensure that there will not only be production, but also sales. Additionally, the superior quality brings about an increased coffee price offer, which, as found in a study from Central America, can be even more important than the organic and Fairtrade premium (Kilian et al. 2006).

Producer organisations or co-operatives become certified once an inspector from the certification organisation has made a first visit and found that the requirements are fulfilled. After this, a control visit is made every year or every second year³. The co-operatives cover the costs for certification. If they manage to find importers for their labelled coffee, they will receive a premium per pound⁴ and, in the case of Fairtrade, a guaranteed minimum price of 121 US cent/lb.

³ Up until 2005 the control visits from FLO were rather irregular, afterwards the policy has been that there should be one visit every year

⁴ For Fairtrade coffee the premium is 10 cents/lb, for organic it varies between 10 and 20 cents/lb.

Throughout the 1990s these two labelling systems made it possible for an increasing number of co-operatives in Mexico to reach the international market. It turned out that these market niches had a substantial growth potential. At the end of 2006 there were 241 Fairtrade certified coffee producer organisations in Africa, Asia and Latin America. Speciality coffee, meaning coffee that is distinct superior to common coffee beverages offered, has over the last decade grown at approximately 20 per cent per annum, and it is estimated that 2 per cent of global coffee sales are certified to one or another sustainable standard (Potts 2007). This has led to a considerable growth in the number of co-operatives in Chiapas that are either Fairtrade, organically certified or both.

The initiative to become certified usually comes from the co-operative itself, which might have heard about the certification scheme from another co-operative in the region. This could explain why Mexico, the country of origin for Fairtrade, today has the most FLO registered co-operatives in the world. In 2006 there were 38 Fairtrade certified coffee co-operatives in Mexico, with more than 20 000 members (FLO 2006). Mexico has also seen an exceptional growth in organic cultivation during the last ten years, with an increase from 20 000 ha in 1996 to 147 000 ha in 2005 (Gomez Cruz et al. 2005). This means that today approximately 20% of the coffee area in Mexico is certified organic. Half of the organically certified land in Mexico belongs to members of coffee co-operatives, and the other half are plantations. Chiapas is Mexico's most important producer of organic coffee, with more than half of the organic coffee land situated here (Gomez Cruz et al. 2005). This growth in organic coffee production is of course linked to the growing demand for speciality coffee, and for organic coffee in particular. In addition, during the last few years, and particularly after the Zapatista resurrection in 1994, the Mexican government has increased its support to organisations in Chiapas, and has encouraged organic production by covering the certification costs.

Research questions

This thesis investigates the local coffee market from several angles: The first paper looks at the conventional, non labelled local coffee purchasing market and investigates theoretically implications of a market structure with imperfect competition at two stages: among exporters and among local middlemen. In the second paper the co-operative is introduced to this setting of non perfect local purchasing markets. The aim is to find out what effect the presence of Fairtrade and organic co-operatives has on local prices offered to non members. The third paper takes a closer look at the co-operative as an entity, and investigates the internal structure of Fairtrade certified co-operatives, in particular the relation between democracy and economic success.

1. Exporters, middlemen and coffee farmers: A simple model of strategic pricing behaviour

Local purchasing markets in Chiapas are typically characterised by market power on two levels: at the hands of the middlemen, who buy coffee from the farmers, and at the hands of the exporter, to whom the middlemen sell the coffee. Inspired by this rather complex market

setting, this paper provides a description of the profit maximising strategies of monopsonist middlemen operating in different, geographically separated markets, and a monopsonist exporter. Depending on transport costs, middlemen will either compete or remain in autarky: when transport costs are high relative to the price they are offered by the exporter, they restrain from competition, for lower transport costs they enter into duopsony competition. The competitive situation among middlemen in turn influences the profits of the exporter. Autarky generally reduces the amount purchased by the middlemen, and thereby reduces the profits of the exporter. But when local transport costs are high relative to the international price, the exporter may have an incentive to offer a low price to induce autarky instead of competition, and thereby avoid transportation costs inflating the price in the supply chain. The model demonstrates that there may be discontinuities in prices with respect to local transportation costs. The analysis shows the relatively complex relationship between prices at the different levels and local transportation costs. An interesting finding is that a reduction in transportation costs (below a certain critical level) leads to a price increase to farmers and a price reduction to middlemen.

2. The pro-competitive effect of coffee co-operatives in Chiapas, Mexico

The question I ask in this paper is whether or not coffee co-operatives in Chiapas have a pro-competitive effect on the private intermediaries in the markets where these two types of purchasers coexist. Interview based field research in Chiapas indicates that there are entry barriers to coffee purchasing, and that since private purchasers do not always compete with each other they are able to underpay the producers who are often isolated, uninformed about price developments and in the need for credit. The field research also gives some evidence that when there is a co-operative in an area, in many cases it makes the local intermediaries behave more competitively.

The pro-competitive effect can be explained by a theoretical model. It is assumed that there are certain costs related to co-operative membership, hence different producers have different levels of net benefits from membership. The costs imply that those who enter the co-operative are the ones who receive the most benefits from it. This has consequences for how the co-operative affects a market dominated by private purchasers in imperfect competition. The price offered by the private intermediary determines how many producers find it worthwhile to enter the co-operative. The lower the private purchaser price, the more producers will find it more beneficial for them to become members of the co-operative. This means that although there are certain costs involved in co-operative membership, as long as the co-operative is an option to the non members its presence tends to increase the coffee price also to the non members. The extent of the pro-competitive effect depends on the costs and benefits of co-operative membership.

A statistical analysis is carried out with coffee price data from Chiapas at municipality level. Different OLS regressions are run in order to see if municipalities with more organic or Fairtrade co-operatives have a higher price level compared to municipalities with less co-

operatives. The study gives support to the hypothesis that co-operatives have a pro-competitive effect in terms of higher price offers to non co-operative members.

3. Democracy and economic success

The Fairtrade certified coffee co-operatives are required to have democratic structures in their organisations. Democracy may enhance empowerment of marginalised small scale coffee producers, but the effect on the economic performance is not necessarily positive.

A case study among Fairtrade co-operatives in Chiapas confirms the findings from previous studies. On the positive side, democracy is important for the control of leadership. In developing countries where corruption is widespread this is particularly important. Also, democracy means that members have more influence on the decisions taken, which may lead to better management and more legitimised projects which are easier to implement. On the negative side, democracy may be time consuming and expensive and thereby reduce economic performance.

In order to see how the two aspects, democracy and economic performance, are correlated, an econometric analysis is performed with data from the Fairtrade Labelling Organisation. The data base consists of evaluations of Latin American coffee co-operatives made between 2001 and 2005. Regression analyses, both OLS and fixed effects, are performed using both prices offered by co-operatives relative to local prices, and a general variable for economic success, which includes a range of different measures. The results support the hypothesis that democracy and economic success in the co-operatives are positively correlated.

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Exporters, middlemen, and coffee farmers: A simple model of strategic pricing

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Abstract

Agricultural markets in developing countries are typically characterized by a concentration of buyer power. Inspired by field work on local coffee markets in Chiapas, Mexico, we analyze how market power on two levels, both at the hands of middlemen who buy coffee from the farmers, and at the hands of an exporter, to whom the middlemen sell the coffee, affects the equilibrium prices in the vertical supply chain. In particular, we demonstrate that the exporter, as a first mover, may have an incentive to strategically set the price offered to middlemen in order to affect the upstream market structure. In particular, we demonstrate that when local transportation costs are low relative to the international price, the exporter offers a high price in order to stimulate competition between the middlemen. In contrast, when local transportation costs are relatively high, the exporter strategically offers a lower price in order to prevent upstream competition. We show that there is a rather complex relationship between equilibrium prices and local transportation costs, characterized by a discontinuity, and by opposing price movements to farmers and middlemen.

JEL classifications: L11, L12, L13, L66, O13, O18

Keywords: Coffee markets; market power; strategic pricing; vertical supply chain; middlemen

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1 Introduction

Local coffee markets in developing countries are typically characterized by a high level of concentration of traders (Talbot 2004, Daviron and Ponte 2005). The concentration is at two levels: Upstream, where small scale coffee farmers deal with a limited number of middlemen, and downstream, where the middlemen are linked to one particular exporter (Nolasco 1985, Solís 2000, Talbot 2004).

The ambition of our paper is to study the pricing strategies of the exporter in its relation with the middlemen, and how these strategies in turn affect the price that coffee farmers receive. In particular, we are concerned with how the quality of the local infrastructure, as captured by the transportation cost, affects price setting in the vertical structure. An underlying premise is that the exporter does not directly deal with the coffee farmers. Instead, purchases take place via middlemen who rely on the exporters for access to capital. Moreover, the exporter cannot control the price setting of the middlemen directly. The only way for the exporter to influence the transactions upstream is through its price offer to the middlemen.

Our analysis is related to the literature on vertical restraints (for an overview, see Rey and Vergé, 2005). The starting point in that literature is the problem of double marginalization (Spengler, 1950). When both producer and retailer enjoys monopoly power, they both add a markup to their costs, and this leads to an excessively high price. The literature shows that vertical integration could solve this problem, allowing the integrated company to make higher profits by lowering the price, which would of course also be beneficial to consumers. Alternatively, joint profits can be maximized by the producer imposing a price ceiling, or by writing a two-part tariff with the retailer, charging a wholesale price equal to the marginal cost, and then shifting profit by using a franchise fee.

Our paper deals not with seller power, but buyer power. The problem of double marginalization in our study is therefore not an excessively *high* price to *consumer*, but an excessively *low* price to *producers*. Moreover, we analyze how a linear price contract can be used strategically by the leading firm (the exporter) to extract rents from lower level firms (the middlemen). We thus abstract from access to more complex, non-linear contracts, for instance because of difficulties in making such contracts legally binding. On the other hand, we add complexity by analyzing ways in which the leading firm can use the linear price to affect the upstream market structure to its advan-

tage. This has some similarity with Rey and Stiglitz (1995). In this study the authors focus on how use of exclusive territories can dampen competition and thus increase profits. The modelling framework is however rather different from ours. In particular, Rey and Stiglitz consider competition on the higher and lower level of the vertical supply chain, whereas we abstract from downstream competition. Moreover, they abstract from the geographical dimension, looking at an integrated market. In our paper, the upstream markets are separated by transportation costs. Transportation costs are also taken into account in the work by Merel et al (2009). Their article shows how competition between middlemen affects purchasing price in a spatial model, where producers are located uniformly on a line. The authors focus on the complex effect of transportation costs on the equilibrium price. The export price is taken as given, and hence there is no strategic pricing in their model, which clearly sets it apart from our contribution.

We demonstrate that under some conditions, it is in the exporter's best interest to stimulate competition between the middle men by offering a high purchasing price, while under other conditions, it is better to prevent such competition by offering a low purchasing price. Key variables determining the exporter's choice are the local transportation costs, and the international coffee price. More precisely, we demonstrate that when the international price is low relative to local transportation costs, the exporter chooses a low price in order to cut costs, even if this means a low supply of coffee. When the international price is high relative to local transportation costs, on the other hand, it chooses high price in order to ensure a higher supply of coffee.

The paper is organized as follows. We first present the model, starting by defining the payoffs to middlemen and exporters for a given market structure. We then, in Section 3, analyze the pricing strategies of the exporter, and show how the international price affects equilibrium price markups in the vertical chain. Section 4 concludes.

2 Model

Consider a coffee producing area consisting of two rural regions, A and B . There are three types of agents in this region; exporters, local purchasers, and small-scale coffee farmers. The small scale farmers sell their coffee to the local coffee purchasers, who we shall refer to as middlemen, who then transport the coffee to an exporter in an urban centre. We simplify by assuming

that farmers cannot transport the coffee themselves to the urban centers, perhaps because of prohibitively high transportation costs. There is one coffee purchasing middleman in each region, purchaser a and b , respectively. The middlemen may buy coffee from the neighboring region, in which case a per unit transportation cost d applies. There is a single exporter in the area, to whom both middlemen sell their coffee. Figure 1 illustrates the market structure. The arrows leading from coffee farmers in one region to the middleman in the other region are dashed, since such sales do not necessarily take place.

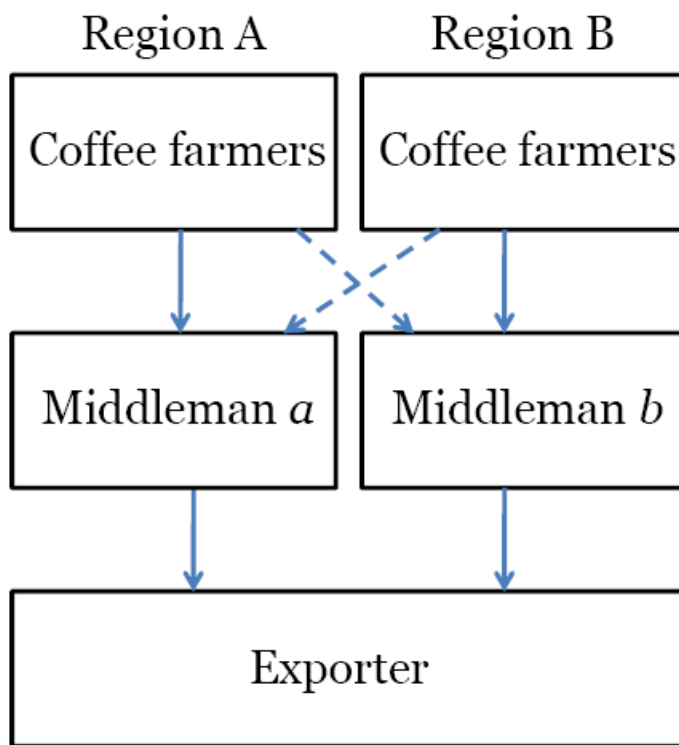


Figure 1: Market structure

There is monopsony power on two levels in this market: The exporter exercises monopsony power in its relation with the middlemen, while the middlemen exercise monopsony power in their relation with the coffee farmers. Being numerous, the farmers are price takers in the local market. The

middlemen offer a price given by the farmers' reservation price, w , which in turn is determined by the quantity supplied q . The marginal cost of harvesting coffee is assumed to be increasing in the quantity supplied. Hence $w(q)$ is increasing in q . For simplicity, let $w(q) = q$.

This market structure resembles the one observed in the local coffee purchasing market in Chiapas. In this region there has lately been an increased tendency of market concentration among exporting companies, and it is estimated that 85% of the coffee is exported through the four largest multinational companies (Bellino 2002). This concentration implies that in some areas, particularly the more isolated ones, all the coffee purchasing middlemen sell to just one multinational exporter who provides them with a low interest loan used for coffee purchases. The exporter informs them about international coffee prices, and the middlemen adjust the price they pay the producers to the price they know that they will receive from the exporter. Furthermore, interviews with producers and middlemen, conducted by one of the authors, suggest that the middlemen generally buy coffee from the same villages, and very often from the same producers every year.¹

The assumption of an upward sloping supply curve might perhaps seem implausible for the short term, since it takes two to four years from a coffee tree is planted until berries can be harvested. However, when prices get to a very low level, many farmers, and especially those who have to hire workers to harvest, cut down on plantation maintenance activities such as fertilizing and weeding, and this decreases the yields (Solís 2000). When prices are very low, some will not even harvest their coffee, but will instead look for work elsewhere. On the other hand, when the prices are higher, the farmers can put more effort into cultivation and harvesting, taking several rounds and picking everything down to the last berry.

The sequence of moves is as follows. First, the exporter offers the middlemen a price p per unit of coffee. The middlemen take this price as given, which is reasonable, since there are many more middlemen than exporters. Second, the middlemen offer the farmers a price w for their coffee. Depending on the price offer from the exporter, the middlemen may find it in their interest to source coffee not only from their own region, but also from the neighboring region. The farmers take the price offer as given, which again is reasonable, since there are typically few middlemen in a region. Third, sales are realized: The middlemen buy coffee at a price w , and the associ-

¹Interviews conducted by Milford in Chiapas in 2007.

ated quantity q , and then sell this coffee to the exporter at a price p , and the exporter then sells the coffee to the world market at the given world market price P . Following the logic of backward induction, we start by analyzing the pricing behavior of the middlemen.

2.1 Middlemen

If transportation costs are sufficiently high, each middleman fully controls purchases in his local market. His monopsony profits are given by:

$$\pi_a^m = \pi_b^m = (p - w_i) q_i, \quad i = a, b \quad (1)$$

Since $w_i = q_i$ we find the profit maximizing price and quantity as:

$$w^m = q^m = \frac{P}{2}, \quad (2)$$

and equilibrium profits for each middleman in this scenario as:

$$\pi^m = \frac{1}{4} p^2. \quad (3)$$

If transportation costs are sufficiently low, there is price competition between the middlemen, with the intensity of competition dampened by the per unit transport cost d . The two middlemen bid the price up until they reach the point where they are indifferent between catering only to local supply, or paying the transport costs and thereby capturing the entire market in the area, that is all the coffee in markets A and B . In a Nash-Bertrand equilibrium, the purchasing price in both regions must be the same, and given by w . The equilibrium is defined by the following equation:

$$(p - w)w = (p - w)w + (p - d - w)w, \quad (4)$$

where the left hand side gives profits from the middleman's own region, and the right hand side gives profits from selling to both regions, and thereby capturing the entire market, by offering a price $w + \varepsilon$. In equilibrium, it cannot be possible for one middleman to capture the neighboring market. Hence, competition between the two pushes prices up to the point where they are indifferent between purchasing only from farmers in their own region, and also buying from those in the neighboring region. From (4), the equilibrium purchasing price can be found as:

$$w^d = q^d = p - d. \quad (5)$$

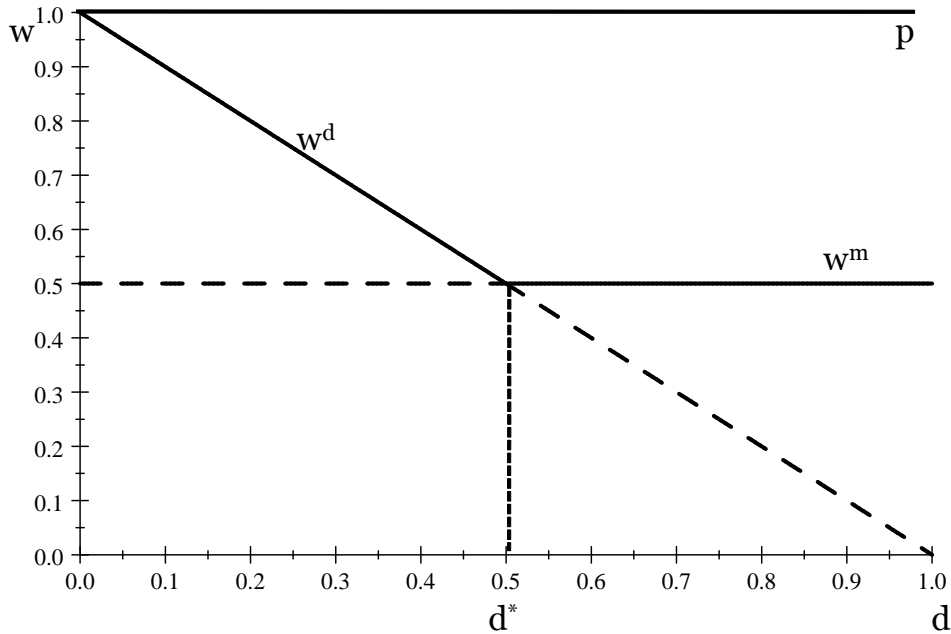
Note that in equilibrium, there is no interregional trade. We observe that w^d increases in p and falls in d : A higher price offer p from the exporter makes it more tempting to capture the entire market, and thus intensifies competition, leading to a higher price offer w to the farmers. Higher transportation costs d reduces the competitive pressure between the two middlemen, and allows them to reduce the purchasing price w . Indeed, if $d = 0$ the two regional markets are fully integrated, and the middlemen are left with no market power. Bertrand competition in this case leads to $w = p$. Given w^d , each middleman makes a duopsony profit given by:

$$\pi^d = d(p - d). \quad (6)$$

The price w^d applies as long as $w^d \geq w^m$. For $w^d < w^m$, competition is not a binding constraint on the middlemen's price offer to the farmers. This is true when local transportation costs are sufficiently high relative to the price offer that the middlemen receive from the exporter. The critical transport costs can be found as:

$$w^m = w^d \Leftrightarrow d = p/2 \equiv d^* \quad (7)$$

Figure 2 illustrates the middlemen's price offer w to the farmers as a function of local transportation costs d , for a given price offer from the exporter ($p = 1$). The equilibrium price offer of the middlemen is given by the solid part of the w^m and w^d lines.



Middlemen's purchasing price

2.2 Exporter

We now turn to the choice of the first mover, the exporter. The exporters profits (in its dealing with each middleman) can then be expressed as:

$$\Pi = (P - p) q_i. \quad (8)$$

where P is the international price. The exporter knows that the middlemen's price offer to the farmers is given by either w^d (for $d < d^*$) or w^m (for $d \geq d^*$). It also knows that the associated quantities purchased from the farmers by each middleman is q^d or q^m , respectively. Moreover, the exporter realizes that since d^* is a function of p , it can influence whether the middlemen offers the high-price, high-quantity contract (w^d, q^d) to the farmers, or the low-price, low-quantity contract (w^m, q^m) . In the following we analyze the optimal pricing strategy for the exporter. Assume first that $d \geq d^*$ so that there is upstream autarky, implying that each middleman buys a quantity $q^m = p/2$. Using this information in (8) and maximizing with respect

to p , the optimal price offered to the middlemen is:

$$p^m = \frac{P}{2}, \quad (9)$$

implying that the equilibrium quantity purchased is

$$q^m = \frac{P}{4}. \quad (10)$$

The exporter's profits in this case is thus:

$$\Pi^m = \frac{1}{8}P^2. \quad (11)$$

We can also calculate a middleman's profit in this case by using (9) in (3) as:

$$\pi^m = \frac{1}{16}P^2 \quad (12)$$

Turning to the case of $d < d^*$, i.e., when the middlemen compete, we know that in this case the quantity supplied by each middleman is $q^d = p - d$, given by (5). Using this information, and maximizing with respect to p , we find the exporter's optimal purchasing price as:

$$p^d = \frac{P + d}{2}. \quad (13)$$

Observe that a higher transportation cost d leads to a higher price offer p^d from the exporter. The reason is that a higher d leads to a lower price from middleman to farmer, and therefore a lower quantity purchased. In order to stimulate supply, the exporter raises its price. Indeed, the duopsony price paid to the middlemen is necessarily higher than the monopsony price ($p^d > p^m$) for any $d > 0$, with $p^d = p^m$ for $d = 0$. The quantity purchased under upstream duopsony is given by:

$$q^d = \frac{P - d}{2}, \quad (14)$$

resulting in an equilibrium profit for the exporter (in dealing with each middleman) given by:

$$\Pi^d = \frac{1}{4}(P - d)^2. \quad (15)$$

Note that in case of upstream duopsony, the exporter's profits are falling in the level of transportation costs, since what it pays the middlemen goes up, and quantity supplied by the middlemen goes down. Using (13) in (3), a middleman's profits in this case are:

$$\pi^d = \frac{1}{2}d(P - d) \quad (16)$$

Figure 3 illustrates the optimal pricing decisions in the form of a game tree.

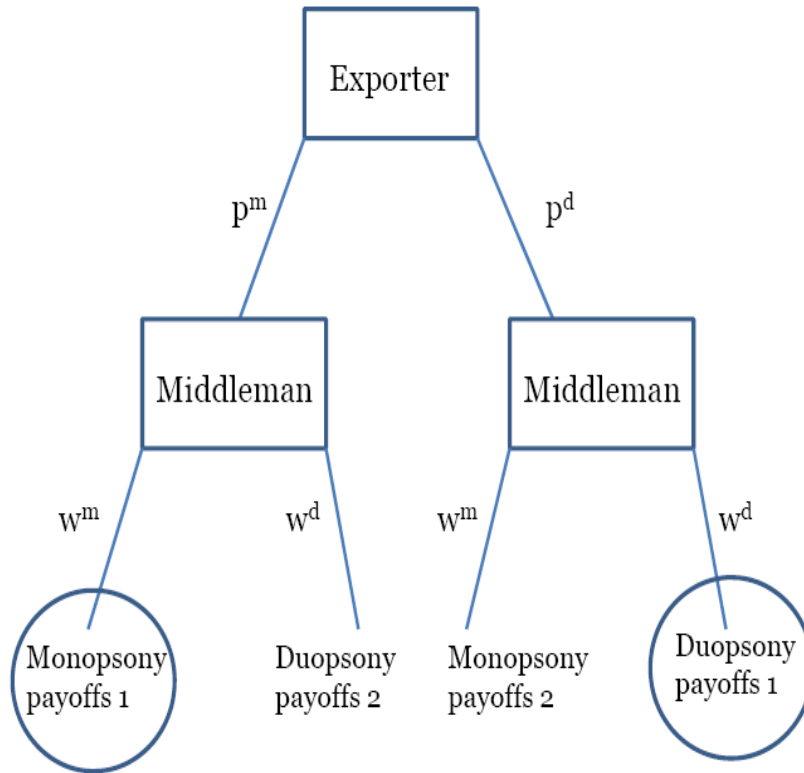


Figure 2: Game tree

Note that only "monopsony payoffs 1" and "duopsony payoffs 1" are relevant equilibria: If the exporter observes that, based on the transportation costs, a given price offer p to the middlemen would lead to duopsony competi-

tion defining the price offered by them to the farmers, i.e., w^d , then we know the exporter will choose p^d . Hence, "Monopsony payoffs 2" cannot apply. Similarly, if the exporter observes that a given price p results in monopsony defining the upstream purchasing price, i.e., w^m , then the exporter's optimal choice is p^m . Hence, "duopsony 2" cannot apply.

Table 1 summarizes the equilibrium prices and profits for the three types of agents under the two types of market structures at the middleman level, monopsony (given by "monopsony payoffs 1 in Figure 3) or duopsony (given by "duopsony payoffs 1" in Figure 3).

Table 1: Overview over prices and profits

Middlemen monopsony	Middlemen duopsony
Price middleman : $p^m = \frac{1}{2}P$	Price middleman: $p^d = \frac{P+d}{2}$
Price farmer: $w^m = \frac{1}{4}P$	Price farmer: $w^d = \frac{P-d}{2}$
Profit exporter: $\Pi^m = \frac{1}{8}P^2$	Profit exporter: $\Pi^d = \frac{1}{4}(P-d)^2$
Profit middleman: $\pi^m = \frac{1}{16}P^2$	Profit middleman: $\pi^d = \frac{1}{2}d(P-d)$

2.3 Analysis: Strategic pricing by exporter

We have seen that the middlemen's incentive to compete is affected by the purchasing price offered by the exporter. Hence, the exporter may affect the upstream market structure by setting either a high price to induce competition, or a low price to prevent competition. When is the exporter willing and able to affect the market structure by such strategic pricing? To answer this question, we have to define the parameter space for which the middlemen's choice of market structure is actually affected by whether the exporter offers the low price p^m or the higher price p^d .

First of all, recall that there is duopsony in the upstream market as long as $d < d^* = p/2$. Observe that d^* is a function of p , the price offered by the exporter. If the exporter offers $p^d = (P+d)/2$, this implies that competition takes place for $d < p^d/2$. Using (13) the critical level of transportation costs below which there is competition can be expressed as:

$$d = P/3 \equiv d_2. \tag{17}$$

Similarly, if the exporter were to offer the lower price $p^m = P/2$, there is autarky for $d > p^m/2$. Using (9) the critical level of transportation costs

above which there is no competition can be expressed as:

$$d = P/4 \equiv d_1. \quad (18)$$

Hence, in the interval $d \in [d_1, d_2]$ the upstream equilibrium is affected by the pricing choice of the exporter: Offering the middlemen the higher price p^d results in competition, offering the lower price p^m results in monopsony.

We can identify the critical level of trade costs, as a function of the international price P , for which the exporter is indifferent between offering the higher price p^d or the lower price p^m from the condition $\Pi^m = \Pi^d$, which using (11) and (15) can be expressed as:

$$d^{**} = \frac{P}{\sqrt{2} + 2} = 0.29289P \quad (19)$$

We observe that $d_1 < d^{**} < d_2$. For $d \in (d_1, d^{**})$, the exporter strategically chooses the higher price offer p^d , whereas for $d \in (d^{**}, d_2)$, it strategically chooses the lower price p^m . Hence, we can conclude that:

Proposition 1 *When local transportation costs are low relative to the international price, i.e., for $d \in (d_1, d^{**})$, the exporter strategically sets a high price in order to promote upstream competition. When local transportation costs are high relative to the international price, i.e., for $d \in (d^{**}, d_2)$, the exporter strategically sets a low price in order to avoid upstream competition.*

The intuition for this result is that when transportation costs are high relative to the international price, i.e., for $d \in (d^{**}, d_2)$, the exporter wishes to avoid these costs. It does so by offering the lower monopoly price p^m , causing monopsony pricing by the middlemen, w^m . The cost to the exporter, of course, is that supply goes down, but when the international price is low, that matters less. In contrast, when transportation costs are low relative to the international price, i.e., for $d \in (d_1, d^{**})$, the exporter offers the higher price p^d , resulting in upstream duopsony pricing, w^m . The higher price it pays to the middlemen can be defended since the world market price is also high.

Figure 3 illustrates the equilibrium price paid by exporter to middlemen and the price middlemen pay to farmers as a function of transportation costs d , for a given international price ($P = 1$).

There are several interesting observations to make. First:

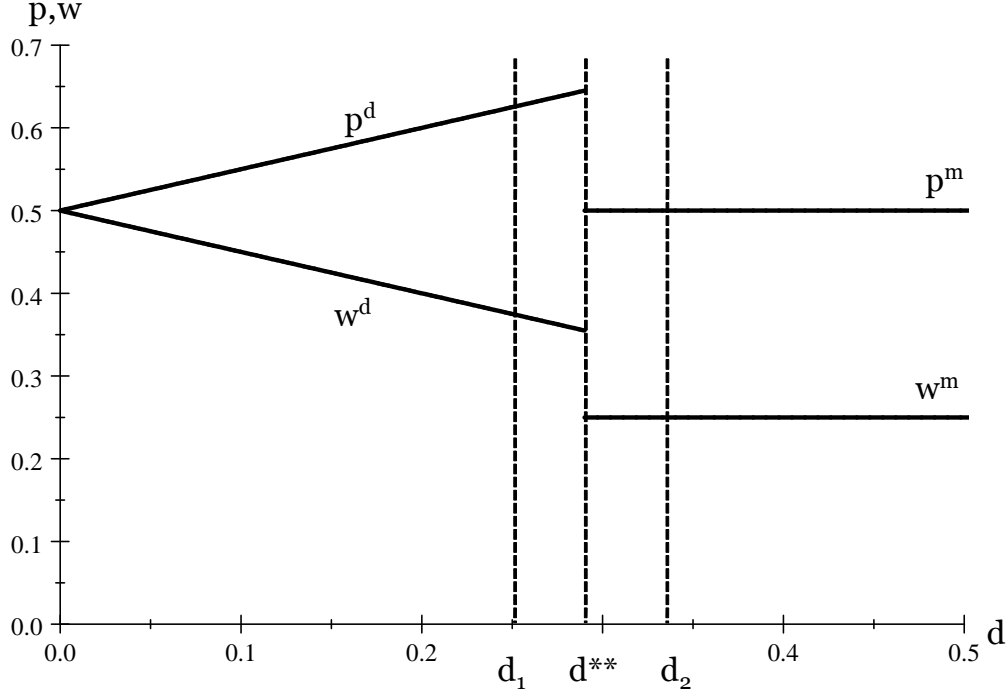


Figure 3: Transportation costs and equilibrium purchasing prices

Proposition 2 *There is a discontinuity in the prices at a critical level of transportation cost, d^{**} .*

For $d > d_2$, there is upstream monopsony, and prices do not depend on transportation cost: The exporter offers half of the international price to the middlemen ($p^m = P/2$) and the middlemen offer half of the price that the exporter gives them to the farmers ($w^m = p/2$). This resembles the double marginalization result in the literature on vertical restraints. A reduction in transportation costs at d_2 leads to a discrete increase in purchasing prices on both levels. The exporter strategically chooses a high price so as to induce competition between the middlemen, which translates into a higher price to the farmers, which in turn leads to higher supplies of coffee. As argued above, this is the optimal strategy for the exporter since transportation costs relative to the international price are relatively low. Second:

Proposition 3 *A drop in transportation costs for $d < d_2$ leads to opposite*

price movements upstream and downstream.

For the middlemen, lower transportation costs intensify competition, leading to an increase in their price offer to the farmers. Hence, w^d increases as d falls. Intensified competition upstream allows the exporter downstream to offer the middlemen a lower price while still maintaining a satisfactory supply of coffee. Indeed, as discussed above and illustrated also in Figure 2, for $d = 0$ middlemen profits are zero, and the farmers receive a price which is half the international price. Farmers' incomes therefore rise with a fall in transportation costs, with a discrete increase taking place at the critical trade cost d_2 .

3 Concluding remarks

The supply chain of coffee from producer to consumer is typically complex, involving agents with market power at different levels of the chain. The present paper has analyzed a setting with market power at two levels, upstream where middlemen purchase coffee from producers and downstream where the exporter purchases from the middlemen. We have demonstrated that the exporter in this setting may have interest in behaving strategically in its price setting. The exporter's profit depends on whether the middlemen compete or not. This in turn depends on local transportation costs and the price middlemen receive from the exporter. When local transportation costs are relatively high, the exporter may have an incentive to offer a low price to the middlemen in order to avoid competition and thereby avoid transportation costs inflating the price in the supply chain. When local transportation costs are relatively low, on the other hand, the exporter may have an incentive to offer a higher price to the middlemen in order to promote competition, and thereby secure larger supplies of coffee.

Interestingly, we have shown that purchasing prices are discontinuous in the local transportation costs. Moreover, for low transportation costs, a further reduction in these costs leads to opposite price movements for farmers and middlemen. In particular, while the price offered to the middlemen declines, the price they have to pay to the farmers increases. These opposing price movements reflect the weaker market power of the middlemen as transportation costs fall.

Our paper is based on a very simplistic view of the relationships in the vertical supply chain. In particular, the parties deal only in one product,

and use only linear pricing contracts. This modelling strategy has allowed us to focus on the issue of strategic pricing with maximum clarity. However, we know from the literature that rural markets in developing countries are often characterized by different types of interlinkages between purchasers and sellers (see for example Basu, 1984 and Platteau and Abraham, 1987). Moreover, more complex contracts, such as non linear contracts, would be a method for the exporters to extract rents from middlemen. We leave these interesting extensions for future research.

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The pro-competitive effect of coffee co-operatives in Chiapas, Mexico

by

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Abstract

Imperfect competition among purchasers of coffee is a common problem for small scale producers. Theoretically, producer-owned marketing co-operatives can reduce the market power of private purchasers and restore competition. Non-members as well as members of the co-operatives will then receive higher prices. In the present paper I carry out a theoretical and an empirical investigation into the effect of Fairtrade and organically certified co-operatives on local coffee prices in Chiapas, Mexico. Using both qualitative and quantitative methods, I present evidence that is consistent with the hypothesis of a pro-competitive effect of co-operatives.

JEL classifications: L11, L13, O13, O15, O17, Q11, Q13, Q17, Q57

Keywords: agricultural co-operatives, market failure, price determination, Chiapas, Fairtrade, organic, coffee.

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1. Introduction

Imperfect competition in agricultural markets is a widespread problem, particularly in developing countries (Lopez and You 1992, Key and Runsten 1999, Osborne 2005, Markelova et al 2009). Monopsonistic pricing has negative consequences for poor, smallholder producers. It has been claimed that agricultural co-operatives in developing countries may reduce the market power of purchasers, and thereby move prices closer to a competitive level (Deininger 1995). The purpose of this study is to investigate if the Fairtrade and organically certified co-operatives in Chiapas, Mexico have this effect. This will be done through theoretical modelling, qualitative evidence from field work and statistical analysis.

Agricultural co-operatives are farmer-owned organisations, democratically organised on the one member one vote principle. The farmers sell their produce through a co-operative and the profits from processing and resale are shared between them, usually according to quantities delivered. Co-operatives can be seen as vertically integrated firms, where the small units (the farmers) own the large unit (the processing firm) (Tennbakk 1996, Bergman 1997). Because co-operatives have a different organisational structure and perhaps different objectives than private firms, it can be expected that market interaction involving co-operatives will yield different outcomes than interaction among private firms. In particular, the entry of a marketing co-operative in a local market dominated by a limited number of private purchasers may have a stronger pro-competitive effect than the entry of another private purchaser.

The structure of agricultural purchasing markets makes them prone to market failure. Farmers' investments in sunk assets represent exit barriers and cause product supply to be inelastic. Combined with high transport costs and buyer concentration in local product markets, this creates favourable conditions for the exercise of monopsony power (Sexton and Lavoie 2001). Agricultural co-operatives have often been formed as a response to this type of market failure (Rhodes 1983, Fulton 2004, Le Vay 1983, Hansmann 1996). According to Taylor (1971), who bases his analysis on the theories of Enke (1945), it is most beneficial for the co-operative and its members to offer prices that are at the competitive level. Co-operatives may then have a *competitive yardstick effect*, a term coined by Nourse in 1944. He claimed that co-operatives can, solely by virtue of their presence in the market, force private purchasers into behaving more competitively (Nourse 1944). This means that co-operatives will not only have an impact on their members, but they will also improve prices received by non-members. Up until the present, most studies of the 'yardstick hypothesis' are based on theoretical modelling (Helmberger 1964, Cotterill 1987, Sexton 1990, Tennbakk 1996). An empirical study of the market for food manufacturing in the US finds support for the 'yardstick hypothesis' (Petraglia and Rogers 1994), but there are very few studies of the potentially pro-competitive effect of co-operatives in developing countries. Over the last 100 years, the market power of middlemen has declined in the industrialised countries, which today has modern antitrust policies (Hansmann 1996). But the situation is different in developing countries, where market failure is said to be one of the most important reasons why group formation takes place (Thorp et al. 2005). Farmers in these markets typically do not have easy access to markets and information, and therefore to a large extent depend on

middlemen. Agricultural co-operatives can therefore reasonably be expected to have a pro-competitive effect.

Co-operatives have often been promoted in developing countries, but in many cases they have ended up as failures, neither leading to economic development nor political empowerment of the poor (Attwood and Baviskar 1988). The reason for failure has often been lack of real participation by members in these often externally initiated co-operatives (Hyden 1988). However, a type of co-operative that has been successful in many developing countries, are the ones that are part of sustainable labelling schemes, such as Fairtrade and organic (Renard 1996, Ruerd 2008). A theoretical study by Hayes (2006) on the impact of Fairtrade concludes that it strengthens competition for labour and eliminates monopsony rents, an effect similar to the ‘yardstick effect’ of co-operatives.

This paper looks at the local markets for coffee purchasing in Chiapas, Mexico. The first part of the paper is a qualitative study of the situation in the coffee markets in Chiapas. This study provides an insight into how the coffee purchasers operate and the competition enhancing effect that some stakeholders claim that the co-operatives have. Results from a small survey among representatives from organic co-operatives in Chiapas are also presented. This is followed by a theoretical modelling of the ‘yardstick hypothesis’. The last part is a statistical analysis of data on coffee prices at municipality level in Chiapas and presence of Fairtrade and organically labelled co-operatives. All three studies indicate that the presence of co-operatives often, but not always, have a positive effect on coffee prices paid to non-members.

2. The pro-competitive effect of co-operatives in Chiapas: Qualitative evidence

Coffee in Chiapas: Background

Coffee is one of the world’s most traded commodities. It is also a tropical commodity, which is produced in the South and generally consumed in the North. Because there are no economies of scale in the initial production and processing stage, coffee is still mainly produced by smallholder farmers. This is also characteristic of other tropical commodities such as cocoa, while plantations are more common in the tea sector since it has economies of scale at the initial stage of processing (Talbot 2002). Whether smallholder producers are organised in co-operatives or not often depends on political or social aspects related to historic events. In some countries such as Vietnam, the second largest coffee producer in the world, there are hardly any coffee co-operatives, while in countries like Mexico, Nicaragua and Colombia they are widespread. According to Fox (1996), social capital is an important factor for the establishing of organisations and civil society, and the conditions in Mexico have been favourable for civil-society building, partly because of external allies.

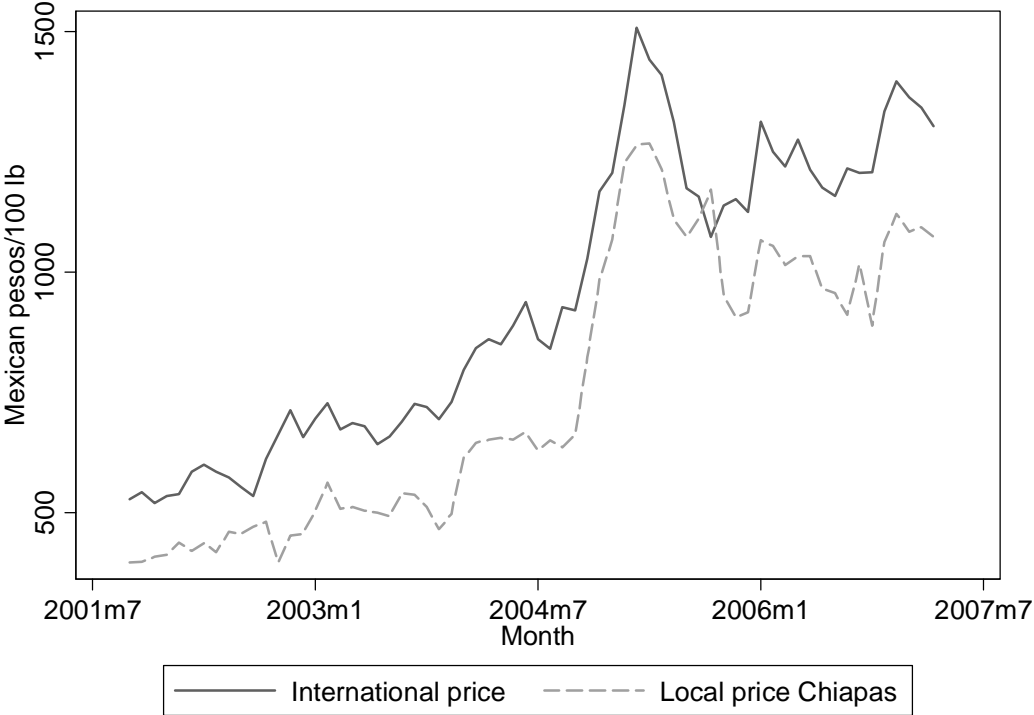
In Mexico 99% of coffee producers are small scale farmers with less than 10 ha (Giovannucci and Juarez 2006). Chiapas is the main coffee producing state. In Chiapas in 2005 coffee was produced on more than 240 000 ha, which is approximately 35% of the total coffee land area in Mexico (SAGARPA 2005). Coffee production takes place in 74% of the

municipalities by 174 690 coffee producers (SAGARPA 2005), which is 4% of the total population in Chiapas (INEGI 2007). Chiapas is also one of the poorest states in Mexico, and 85% of the coffee producers have less than 2 ha, which is barely enough for making a living (Barrera et al. 2004). Furthermore there are few employment opportunities in rural areas (Lopez 2007). Many small scale coffee producers receive financial support from government run programmes such as Oportunidades and Procampo. One of the problems for coffee producers is the strong fluctuations in international coffee prices, which destabilise their household income. Since 2001 another government program has been implemented, the stabilisation fund (Fondo de Estabilización). The purpose of this fund is to stabilise coffee prices by collecting money from coffee farmers in years where coffee prices are high, and repay them a premium when the prices are low.

Coffee prices in Chiapas 2001-2007

The graph below shows the development of coffee prices at the farm gate in Chiapas and at the international coffee stock markets in the period 2001-2007. At the beginning of the period, in 2001, prices were at a record low. In Chiapas the average price was 400 pesos per quintal (57.5 kg) dried parchment, or approximately 50 US cents per kilo. From 2002 there is a recovery from the crisis, with a particularly strong price increase in 2004. In 2005, the coffee price in Chiapas has almost tripled compared to 2001. This price level seems to maintain itself over the next two years. On average, over the whole period, the local prices are approximately 80% of the international prices. The variation in prices in the period 2001-2007 is illustrated in the graph below.

Graph 1: World market and Chiapas farm gate coffee prices



Note: ICO (International coffee Organisation) indicator price for Other Mild Arabica Group (Mexican pesos per 45.36 kilo (100 lb) green coffee), and average coffee prices paid to non co-operative members in Chiapas (Mexican pesos per 57,5 kilo (1 quintal) dried parchment coffee)².

Source: ICO (2007) and SPC (2007) (for further description see section 4)

The table below shows the monthly averages across municipalities and at the international level, for the period 2001-2007, and the average difference between the two price levels.

Table 1: Summary statistics average per month world market and Chiapas farm gate coffee prices, in Mexican pesos per quintal

Variable description	Obs	Mean	Std Dev	Min	Max
Average price at municipality level in period 2001-2007	66	749	285	397	1265
Average international price for Arabica coffee 2001-2007	66	940	301	520	1508
Average difference between local price and international price	66	-191	65	-318	88

Source: ICO (2007) and SPC (2007) (for further description see section 4)

Coffee co-operatives and labelling systems in Chiapas

The history of coffee co-operatives in Chiapas goes back to the era of the International Coffee Agreement (ICA), when the governmental institution Inmecafé (Instituto Mexicano del Café) was buying coffee in Mexico in order to regulate supply (Nolasco 1985 p. 230). At the time small scale farmers sold their coffee to private purchasers, or intermediaries, who often were also owners of large coffee plantations. Inmecafé realised that although they were offering better prices than the intermediaries, the farmers could not sell their coffee to them as long as they depended on the credit that they received from the intermediaries. Inmecafé therefore started a campaign to organise farmers into a special type of co-operatives called UEPCs (Uniones Económicas de Producción de Café). These organisations received economic support from Inmecafé, and offered the farmers prepayment for their harvest, thus making them independent from the intermediaries. In the early 80s, Inmecafé controlled more than two thirds of the Mexican producers, organised in more than 3228 UEPCs (Renard 1996 p. 267). According to Nolasco, ‘the purchasing price established by the institute was soon converted into a minimum in many regions, and the private purchasers had to augment their purchasing prices in order to obtain more coffee’³ (Nolasco 1985 p.233, my translation). This indicates that the UEPC co-operatives had a ‘competitive yardstick effect’.

When the ICA was dismantled in 1989 Inmecafé was closed, and coffee co-operatives had no one to sell their coffee to other than the multinational companies who soon after moved into the market. Without finance, and in many cases without a strong commitment among the members (Parra and Moguel 1998), most of the organisations disappeared. But in

² 1 quintal dried parchment coffee=100 lb green coffee

³ ‘El precio de compra establecido por el Instituto pronto se convirtió en el mínimo en muchas regiones, y los compradores privados tuvieron que aumentar sus precios de adquisición para obtener más grano.’

the early 1990s a new opportunity for reaching the export market materialised: through the fair trade and the organic labelling system.

The world's first Fairtrade certified co-operative was UCIRI, based in Oaxaca, Mexico, who established the labelling system in 1988. In 2006 there were 38 Fairtrade certified coffee co-operatives in Mexico, with more than 20 000 members (FLO 2006). The main criteria for Fairtrade certification are that the majority of members are small producers, that the organisation is democratic and transparent, able to export coffee and environmentally concerned. Co-operatives that sell Fairtrade labelled coffee are paid the Fairtrade minimum price, which is 121 US cents/lb, or 2.78 USD/kilo. In addition there is a premium of 10 US cents/lb⁴.

In 2006 all the Mexican Fairtrade co-operatives were also organically certified. But there are many organic co-operatives that are not Fairtrade certified. In Mexico there has been an exceptional growth in organic cultivation the last ten years. Chiapas is Mexico's most important producer of organic coffee, with more than half of the organic coffee land situated here (Gomez Cruz et al 2005). Coffee sold as organically certified generates a premium of between 10 and 20 US cents/lb. In Chiapas in 2007 there were 174 organic coffee co-operatives (SNIDRUS 2007). There are also an unknown number of co-operatives in Chiapas that are not certified, but to my knowledge none of these are exporting coffee directly today.

The majority of coffee producers in Chiapas are not members of co-operatives despite their generally better price offers. The field study shows that the majority of the Fairtrade co-operatives are open to new members who agree to follow requirements for organic production and participate in co-operative meetings. In some co-operatives new members have to pay an entrance fee. In return they are paid a price which is usually higher than the one for conventional coffee paid by private purchasers, depending on whether or not the co-operative has sold the coffee under Fairtrade and organic conditions, and on the level of the international conventional prices. However, the co-operatives do not always pay the members at the moment they deliver their coffee, since they rarely have enough working capital and therefore have to wait for the payment from importers.

The structure of the coffee market in Chiapas can be described as follows: When the coffee has been harvested, pulped, fermented and dried⁵, the small scale producers who are not organised in a co-operative have in general two main sales options: They can either sell it to the local intermediaries who come to the village with their pick-up trucks, or they can transport it themselves to a small town such as the municipality centre, where there are larger purchasers with warehouses for coffee storing. The price the producers obtain in the municipality centres are slightly better than what they receive from the local village level intermediary, but then they also have to cover transport costs. The intermediary in the municipality centre is in some cases a subsidiary of a transnational company (TNC), or he or she has an agreement with such a company. This intermediary transports the coffee to a larger city centre such as Tuxtla and Tapachula where it is delivered to the TNC processing plant.

⁴ Until June 2007, the premium was 5 US cents/lb.

⁵ In southern Chiapas it is also common for farmers to sell their coffee as unprocessed cherry.

During processing the thin parchment around the bean is removed, and the green coffee that remains is exported by the TNC.

Hence, Chiapas is a region with many cases of mixed markets with a presence of both co-operatives and coffee purchasing private purchasers. It thus provides an interesting setting for investigating if co-operatives have a pro-competitive effect.

Market concentration

Entering the coffee exporting business is not easy. In order to export profitably, it is necessary to have knowledge about the functioning of the market, export procedures and the bureaucracy, and one needs to establish contact with a trustworthy international trader who also trusts the exporter. All of this implies considerable sunk costs. Financial capital is also very important since it can take several months from the time the coffee is sent to the payment from the trader arrives. In the processing and export processes there are economies of scale, exporting only small amounts of coffee is not profitable. Entry barriers are probably a main reason for an increased market concentration in the coffee exporting sector. Over the last 15–20 years there has been a tendency worldwide of merging among exporting coffee companies. In most coffee producing countries today there are just a few TNCs dominating the market (Talbot 2004, Daviron and Ponte 2005)

There are also barriers to entry at the lower level of the coffee chain, the level of the intermediaries who buy coffee directly from the farmers and sell it to the TNC processor/exporter. In order to become an intermediary coffee purchaser it is necessary to have a pick-up truck to load the coffee on, to have access to capital, and to have the skills to organize a group of suppliers. Producers will often tend to sell to the same local intermediary every year, and the local intermediaries will sell to the same transnational exporter. In order to obtain a loan from the exporter a long term, trusting relationship between the two parties needs to be built up. Hence, the local coffee markets in Chiapas is one where, in order to start up a business as a coffee trader, it is important to have initial contacts with both producers and buyers further up the chain.

Market failure

The fact that there are few coffee purchasers in Chiapas makes it possible for these purchasers to exert market power. The isolation of producers enhances this opportunity. Small scale coffee farmers in Chiapas live in rural, often isolated areas where infrastructure is scarce. Even when the roads are good, very few have their own vehicles and therefore the costs of bringing their coffee elsewhere to sell are high. They are therefore more prone to accept the prices offered by the intermediaries who come to the villages. According to Perez Grovas et al. (2002), coffee purchasers pay less to producers who live in remote villages. Interviews conducted by this author in Chiapas with government officials, coffee purchasers, researchers and cooperative members and staff reveal a belief that intermediaries in some regions are considered to be ‘territorial’, meaning that they have divided the different villages between them, and do not go into each other’s areas to buy coffee. Therefore they can buy at a lower price than the competitive one.

“They (the intermediaries) divide themselves into zones, each one corresponds to each of the big chains.”⁶

Co-operative advisor, Los Altos

In this situation producers have to accept the price imposed by the intermediary, or the sales transaction will not take place (Gonzalez 2006 p.220). The problem is not only that the coffee producers have few other options for selling their coffee. There are also few other income generating crops that they may cultivate, and few other work opportunities. What many opt for is migration, either to larger cities in Mexico, or illegal migration to the United States (Martínez and Ordoñez 1998). But these are risky strategies which often involve trauma both for the migrant and his or her family who is left behind. This means that the coffee producers in many ways are locked into a situation that it is difficult to get out of.

Also the volatility in coffee prices makes it possible for the intermediaries to underpay the producers. This makes coffee producers uncertain about the value of their coffee. An interviewed producer from Los Altos explained that if the producers in his village did not accept the price offered, the intermediary would threaten that it would soon go even further down, in order to make the producers sell. This means that the intermediary pretends to be able to predict market development. In other cases they may take advantage of the markets unpredictability to get more producers to accept a lower price:

‘The coyotes (...) say: ‘Tiemenlonla (the co-operative) is paying 18. I will pay you 20’. And so on. At 8 o’clock he says 20. But at 9 when they come with their coffee: ‘The New York coffee stock market went down!’. (...) Nevertheless the rumours remain that the coyote so-and-so is paying 20. And so on and so on...’⁷

Co-operative advisor, Selva region

The advantage for the intermediaries is the producers’ lack of knowledge. Chiapas has the lowest average years of schooling in Mexico, and the highest rate of illiteracy (INEGI 2007). Without reading skills it becomes more difficult to obtain information about the price development for coffee⁸. Also, in Chiapas the majority of the coffee producers are people of indigenous origins (Barrera et al. 2004). Indigenous people are prone to discrimination (Nolasco 1985 p. 336), and are often in a vulnerable position when it comes to negotiations because they do not speak Spanish. This means that indigenous coffee producers are more likely to receive lower prices than producers of mixed origin (meztisos).

⁶ ‘Se reparten por zona, uno corresponde por cada uno de los grandes cadenas.

⁷ Los coyotes (...) dicen: ‘Tiemenlonla esta pagando a 18. Yo le voy a pagar 20’. Ahí van. A las 8 de la mañana dice que a 20. Pero a las 9 vienen con su café. ‘Ya bajó la bolsa de Nueva York’. (...) Sin embargo queda la noticia que en tal parte el coyote Fulano esta pagando a 20. Ahí van ahí van...

⁸ According to a still unpublished household survey in Chiapas, described in chapter 4 in this thesis, in the area with few co-operatives (Cacahuatán), most producers found out about coffee prices through the intermediaries, the second most quoted source was neighbors. Very few producers informed themselves about coffee prices through the media.

Another characteristic of coffee production which creates opportunities to exercise market power is the producers need for credit. Coffee harvest takes place only once a year, and very often it is the only source of cash income for rural families. It is often difficult for the coffee farmers to make the income from one harvest last until the next. Traditionally, therefore, the coffee farmers have been dependent on credit, for the maintenance of their families as well as for financing the harvest when many of them need to hire workers (Martinez and Ordoñez 1998). In some cases they also need to borrow because of a crisis situation such as illnesses or accidents. The only credit option available to the majority of the coffee producers in Chiapas has been the private coffee purchasers, who lend money to the producer on the condition that he or she must later sell their coffee harvest to him, at the price decided by the purchaser (Nolasco 1985, Martinez 1997 p.30). This is an opportunity for the intermediaries to underpay the producers. If they do not accept the price, they know that it will be difficult to borrow another time, which means that they are not insured against crisis situations. This interlinked market setting is typical for isolated rural economies in developing countries, and similar situations have been analysed by for instance Basu (1983) and Platteau and Abraham (1987).

Cheating on weight and quality

There seems to be a general belief in Chiapas that intermediaries underpay producers by several different methods. A much cited example is that the intermediaries use false weights.

“Unfortunately, the business has been damaged to such an extent that there are people who come to buy from the producer and they see him and, ‘here comes someone to buy the coffee!’ This person arrives, weighs with these steelyards that they call machete, and they put the bag on, and they measure with the eye...and if the bag weighs 60 kilos they say that it weights 50. And since people do not weigh their coffee ‘Oh, 50, yes, take it with you’. And from this they took off 10 kilos. (...) It’s a problem.”⁹

Manager from coffee purchasing TNC, Los Altos

In the Soconusco area where they sometimes sell coffee without drying it, the intermediaries buy cherry coffee in used oil cans. Several interviewed stakeholders claimed that some intermediaries make the cans larger than the standard size, and hence more coffee fits in without the producers’ knowledge.

When negotiating about the price of the coffee, the quality is an important issue. Ideally the coffee should be clean, without any leftover fruit skin (called ‘chibola’), no spots or damaged beans, and it should not be wet. For any of these faults, a discount is made, either in pesos per kilo, or a certain number of kilos is deducted from the total weight. One way to cheat the producers is to claim that the quality of the producer’s coffee is lower than what it is

⁹ Desgraciadamente, se ha dañado tanto el negocio que hay gente que llega a comprar al productor, y lo ve y ‘ahí viene fulano que lo lleva’. Llega la persona este, pesa con las romanas que se llama machete, y ponen el bulto y ellos manejan a su antojo la ...si el bulto pesa 60 kilos dicen que pesa 50. Y como la gente no pesa su café ‘ah 50 sí, llevatelo’. Y de ahí le quito 10 kilos. (...) Es una problemática.

in reality, and thus demand too much discount. If the producer has few other options, he will have to accept.

“The coyote tell them: ‘I’ll pay you 15 pesos’. But when the bag arrives...: ‘No, a bad coffee, very low quality, look! And so even though our members know when the quality is bad, say it is so and so much black, spotted, broken, so even if it does not have anything of that and is very good, but they cannot say anything because they want it to be bought, right? ‘I’ll pay you 15 pesos, but it is very bad, so 13 if you’d like. And if not take it back with you.’ The member won’t take his bag that already cost him the transport it cost him to bring it. Do you think he’ll take it back home with him? To bring it back again to sell?”¹⁰

Co-operative advisor, Selva region

Co-operatives and private purchasers

The qualitative interviews in Chiapas revealed that many believe co-operatives have had an impact on the behaviour of the private intermediaries, or coyotes. One co-operative manager and producer made the following description of what had happened in his village:

“In the village the coyotes (intermediaries) are coming to buy coffee. Before, since there weren’t many co-operatives, they were paying a very low price. But now that many co-operatives have increased, well there are many co-operatives in Chenaló, there are about three or four co-operatives, and now the coyotes, not any more, the coyotes don’t find much coffee. Because of that now the price is going up too. Well, supposedly there is competition between the co-operatives and the coyotes¹¹”.

Co-operative manager and coffee producer, Los Altos

Another piece of evidence of the co-operatives’ influence is the often observed difference in prices offered by intermediaries before and after the co-operatives open their bodegas in the region. A functionary from the public coffee organisation COMCAFE, who previously had worked as a intermediary coffee buyer, said the co-operatives worked as ‘thermometers’, and that prices always were higher when their bodegas were open compared to when they were

¹⁰ El coyote les dice ‘te lo voy a pagar a 15 pesos.’ Pero llegando el bulto...’no, un café muy malo, muy baja calidad, mira!’ Entonces aunque el socio de nosotros sabe cuando es baja calidad, o sea tiene tantos negros, tanto manchado, quebrados, entonces si no tiene nada de eso y esta bonísima, pero no puede decir nada, porque, que se lo compre verdad. ‘Te voy a pagar 15 pesos pero es muy malo, entonces a 13 si quieres. Y si no llevate el.’ El socio no va a coger su bulto que ya le costó el flete, ya le costó traerle. Tu piensas que va le traer a su casa? Para volver lo traer a vender?

¹¹ Como siempre en la comunidad pasan los coyotajes, intermediarios para comprar café. Y siempre anteriormente como no había muchas cooperativas, pagaban muy bajo precio. Pero hasta horita como ya aumentó muchas cooperativas, bueno hay muchas cooperativas en Chenaló, hay como unas tres o cuatro cooperativas, y ya los coyotajes, ya no, los coyotes no encuentran mucho café. Por eso ya como el precio se leve también. Bueno, supuestamente hay una competencia de las cooperativas y coyotajes.

closed. A co-operative manager and advisor, who is also a scholar in agronomy, described the effect in the following manner:

“In one region, in a study that we made, when the intermediary begins to go through the villages in our zone, they may be paying for instance 10 pesos (approx 1 USD). We open our bodega and set the price to 15 pesos. We are not only operating with these 15 pesos as the price that our members receive. This turns into the regional price. What Majomut is paying becomes the regional reference. So the day after we have opened our bodega, we start collecting coffee, the price that we have set becomes the reference for the whole region. The day before those who sell to the intermediary receive 10 pesos, the day when we open the intermediary is at 15 pesos, or 14.50, a price very close to our reference. We close the bodega Friday the 15th of April, and Saturday the price is again at 10 pesos. An example. The co-operative not only has an influence on its members, but it is also a regional reference to fix the price¹²”.

Co-operative advisor

People interviewed were also asked if they believed the co-operatives had an influence on the intermediaries' tendency to cheat on weight and quality. One interviewed co-operative manager explained that since the intermediaries had problems finding enough coffee to buy, they had to weigh and pay justly in order to gain confidence with the producers.

Hence, the private intermediaries seem to be under the threat that if they pay low prices or cheat the non members on weight or quality, they will join the co-operative. The intermediaries will then lose market shares unless they pay a better price or stop cheating. On the other hand, the private purchasers possibly also increase their price in order to buy coffee from members of the co-operatives. This could be a long term strategy to destabilise the co-operative and get rid of the 'yardstick effect', so-called 'predatory pricing' (Fulton 1999). Stories told during interviews reveal that intermediaries seem to have followed this strategy in several places in Chiapas.

Another way that the co-operatives can influence price levels is by increasing the level of information and knowledge among coffee producers in general. Co-operatives often arrange meetings and courses on different issues related to coffee production and sales. This education of members could have a spill-over effect on non members who also become more informed and thereby better negotiators. The result could be that price levels increase in areas with co-operatives¹³.

¹² En una región, en un estudio que nosotros hemos hecho, cuando el intermediario empieza a recoger las comunidades en nuestra zona, pueden estar pagando, por ejemplo 10 pesos. Nosotros abrimos nuestra bodega, y fijamos el precio a 15 pesos. Nosotros no solamente actuamos con estos 15 pesos sobre el precio que reciben nuestros socios. Eso se convierte en el precio regional. Lo que paga Majomut se convierte en la referencia regional. Entonces al día siguiente que nosotros abrimos nuestra bodega, empezamos a comprar el café, el precio que fijamos nosotros se convierte en el referente de toda la región. El día anterior pueden recibir los que entregan café al intermediario 10 pesos, y el día que nosotros abrimos el intermediario está a 15 pesos, o 14,50, un precio muy cercano a nuestro referente. ...cerramos la bodega el viernes 15 de abril, el sábado el precio es otra vez a 10 pesos. Un ejemplo. La cooperativa no solo tiene una influencia sobre sus socios, sino es una referente regional para fijar el precio.

¹³ According to the earlier mentioned unpublished household survey from Chiapas, in the area where there was a stronger co-operative presence (Jitotol), most producers found out about prices through the co-operative.

Survey results organic co-operatives

In May 2007, representatives from all the organic co-operatives in Chiapas that were certified by the Mexican certifier organisation Certimex participated in workshops on how to perform internal control of their members' production methods. One workshop was held in San Cristobal, the other in Tuxtla. The representatives, one or two from each organisation, were mostly part of the technical staff, and all of them spoke Spanish and were able to read and write. A questionnaire was filled in by the participants¹⁴. Among other things, the co-operative representatives were asked if they thought the price offered by the intermediaries was higher after the co-operative came to the area, and when the warehouse of the co-operative was open. They were also asked if they believed the intermediaries cheated the producers less after the co-operative was established in the region. Only one co-operative said 'no' to all these 3 questions, and only 5 did not believe they had any influence on the intermediaries' cheating behaviour. Some of the co-operatives asked in the survey said the intermediaries offered 1–2 pesos per kilo, or 150 pesos per quintal more when the co-operative opened the warehouse for coffee deliveries. The survey shows that the majority of the co-operatives believe they have an impact on the intermediaries' behaviour, and particularly on their tendency to cheat the producers. But it also shows that almost half (45%) of the co-operatives did not think they had influenced the price of the intermediaries. Some of the co-operatives are more than 20 years old, so it is difficult for them to evaluate the before and after effect of their presence. Nevertheless the survey indicates that some co-operative members have the impression that their co-operatives do not have a competitive effect on the local coffee price.

Table 2: Survey results 38 organic co-operatives (19 also Fairtrade certified)

	Yes	No	Do not know/Not answered
Did prices go up after coop came to area?	50%	45%	5%
Do prices go up when the coop warehouse opens?	42%	29%	29%
Does the coyote cheat less after coop came to area?	74%	16%	10%
Did the coop receive external help when formed?	66%	24%	10%

¹⁴ 36 representatives responded at the workshops, later 2 other co-operatives filled in the questionnaire during an interview.

3. Modelling the ‘competitive yardstick effect’

We have just seen that there is some qualitative evidence that coffee co-operatives in Chiapas have a pro-competitive effect on prices offered by local intermediary purchasers. What follows is a theoretical model explaining how this effect could work.

Co-operatives: A literature overview

In this model, farmers can sell their coffee either to a co-operative or to a private, profit maximizing purchaser. The farmers own the co-operative and use it for marketing their product. Decisions are made according to the ‘one member one vote’ principle, and the surplus that the co-operative generates is distributed to the members according to the quantities that they have sold to the co-operative (Le Vay 1983).

The profit maximising objective of private purchasers implies that if they are able to exercise monopsony power they will pay the farmers a lower price in order to increase their market margins. The co-operative, on the other hand, will retain market margins and distribute it to the members. Since the surplus is distributed according to quantities delivered the price the co-operative pays will be higher than the private purchaser monopsony price (Helmerger 1964, Taylor 1971, Le Vay 1983). When a co-operative is formed in an area and pays a higher price than a previously monopsonist private purchaser, it may have a pro-competitive effect, which means that it will push a private purchaser in the same market towards more competitive pricing. As a result the farmers outside the co-operative will also be better off, even though they are not selling to the co-operative.

Exactly how the pro-competitive effect comes about depends on whether or not the co-operative is open to new members. An open co-operative will increase production and price to the competitive outcome and make rival private purchasers increase their price to the same level (Helmerger 1964, Cotterill 1987, p.211). But if the co-operative is closed to new members, the result could be that non members are offered monopsonist prices from the private purchaser (Tennbakk 1996). However, this can be prevented if the closed co-operative plays the role of a ‘barometer of exploitation’ (Helmerger 1964), or a ‘pacemaker’ (LeVay 1983). This means that a large difference between the co-operative and the private price could push non members to take measures such as to form another co-operative or seek government intervention to redress the situation, a possibility that ‘might lead profit seeking firms to temper their use of power with prudence’ (Helmerger 1964).

The competitive yardstick effect has been studied theoretically in the context of agricultural markets by, among others, Helmerger (1964), Taylor (1971), Cotterill (1987) and Sexton (1990). The model used here is based on the results derived by Helmerger and Taylor, but it includes costs of co-operative membership as a new component in the analysis.

The model

We now turn to the model that will be used to explain the situation in the local coffee markets in Chiapas. In a given local market, a large number of small-scale farmers cultivate an agricultural product, coffee. We assume that the coffee is a homogeneous product for all the farmers, and denote the level of coffee supplied by q . The farmers sell their coffee to purchasers located in the area. Being numerous, the farmers are price takers in this local

market, and receive the price w for each bag of coffee. The price is determined by the farmers' supply and the purchasers' demand for coffee. The purchasers' demand is determined by the final market price P , which is the price at which they sell the coffee on the international market. The international coffee market is highly competitive, and the purchasers are therefore price takers in the sales market. Hence the final market price P is taken as a constant.

Marginal production costs are increasing in the quantity supplied, and given by $w(q)$. While the number of coffee trees places a ceiling on how much coffee that can be harvested in a given period of time, some coffee trees are more accessible than others, and maintaining and harvesting more trees often implies going from the use of free household labour to hired labour. This gives rise to increasing marginal costs. Indeed, if the price of coffee is low, many farmers, and especially those who have to hire workers to harvest, prefer not to pick their coffee and instead look for work elsewhere. When the prices get higher, they can put more effort into the harvesting, taking several rounds and picking everything down to the last berry. This assumption is in line with the situation in Chiapas (Solís 2000, Martínez-Torres 2006).

The purchasers in the area are either private purchasers or member-owned co-operatives. They purchase coffee beans, process them and sell them on the international market. The companies are assumed to produce under constant returns, thus the industry is characterised by a flat marginal product (MRP) curve.

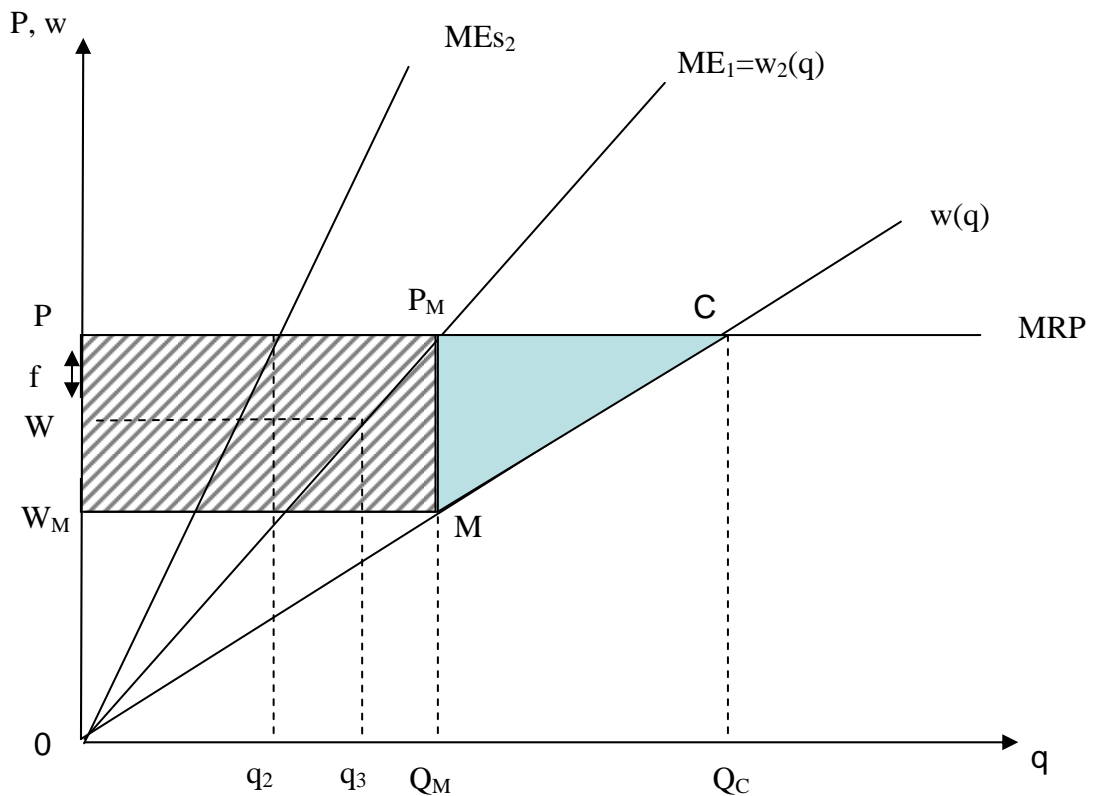
Imperfect competition with private purchasers

In this local market, a private purchaser operating as a sole buyer, or a few private purchasers operating as a cartel, will behave as a monopsonist. The private monopsonist will choose to buy coffee at a level where the marginal revenue product (MRP) equals the marginal expense (ME) for q . The monopsonist takes into account the fact that the increased demand for coffee will increase the purchase price not only for the last unit, but also for the whole quantity q purchased. The equilibrium result is illustrated in figure 1. A monopsonist private purchaser will earn P on the last unit bought, while paying the purchasing price W_M . The farmers in the area are worse off in a situation of monopsony than they would be in a situation with competition. The producer surplus they lose is equivalent to the area $W_M - M - C - P$ (the shaded and the grey area).

If there are two or very few private purchasers who engage in capacity constrained competition (Cournot competition), the firms will take into account the effect that their purchases and the related price increase have on their own profit, but not the effect that it has on the profit of the other firms. Hence the total amount of coffee, q , demanded will be larger than in the case of monopsony, but the competitive solution will not be reached. The output level will be somewhere between the competitive and the monopsony solution, and likewise the price level.

Hence, imperfect competition gives the farmers a lower producer surplus, because they sell less and get a lower price. The price and quantity is lowest under monopsony, but there will be a distortion also if the two purchasers are competing with each other as a Cournot duopsony.

Figure 1: Monopsonist private purchaser vs. monopsonist co-operative



Mixed duopsony

We will now look at a situation where a co-operative is formed in a market with a monopsonist private purchaser. We assume that the co-operative has an open membership policy. This means that while the private purchaser offers a price according to the marginal cost of production for the marginal farmer, the co-operative pays the farmer the international price P .

$$P = w$$

Hence while a private purchaser internalises the fact that purchasing a higher quantity q means a higher purchasing cost for all units purchased, this does not affect the surplus of the co-operative. The optimal purchased amount and price offer for the co-operative corresponds to the point of intersection between the producers' supply curve and the co-operative's MRP-curve, which means it is equal to the solution achieved in a competitive situation. Hence, a co-operative that is a price taker in the final market and that maximises the total return to its members, will produce at the collectively optimal output. It will base its purchases of unprocessed coffee on its MRP curve. This follows the view of Taylor (1971), who based his analysis on Enke's (1945) theories on requisite societies (consumer co-operatives). Although the incomes earned from processing and exporting would be maximised by buying the amount Q_M and offer the price w_M , the total incomes of the members would not. The net social loss made in a monopsonist situation (the grey area $M-C-P_M$) will be a net gain to the co-operative

if it increases the input level from point Q_M to point Q_C . This means that the members' total incomes will be higher if the production level increases. Hence, if a co-operative is run as a democratic institution by its members, we can conclude that it will not choose output level Q_M and price w_M .

The co-operative offers a higher price than the private purchaser. But in order to sell to the co-operative, the farmers must become members, which incurs a cost f . Examples of costs that are typical for co-operatives are fees, delayed payment, specific requirements for production and compulsory co-operative meetings. We assume that this cost is zero or very low for a given share of the farmers, s . This group will therefore sell to the co-operative. There are several reasons why f is lower for one group than for another. One could be that farmers have different alternative costs of membership, which are mostly not financial, but related to time and labour. Assuming that the farmers have different opportunity costs to labour and different preferences concerning co-operative activities, they will have different valuations of the cost f . The difference in costs can be related to characteristics of the farmers such as the availability of family workforce and work opportunities elsewhere. We can also assume that co-operative membership implies certain services such as education, or more ideologically based benefits such as a 'group feeling'. These are valued differently by the different farmers, and will for some compensate for the membership costs, for others not. Other reasons for the difference in the value of f could be that the farmers are located in different areas, which creates a difference in transport costs.

Before the co-operative is formed in the area, the private purchaser buys the amount Q_M , and pay the price w_M , as shown in figure 1. The rest of the farmers, $Q_C - Q_M$, will either not harvest their coffee or transport it to a city nearby. This would be the farmers with the highest harvesting costs or the lowest transport costs. The co-operative is formed by a share s of the farmers, who deliver coffee to it. For illustrative purposes we assume that the curve ME_1 now represents the supply curve for those of the farmers who do not belong to the group s , that is, those who do not initially sell to the co-operative, called type 2 farmers. We call this supply curve $w_2(q)$, and the ME_{s_2} -curve represents the marginal expense curve for these farmers (see figure 1). Deliveries to the co-operative are represented by the distance $Q_C - Q_M$.

What happens next depends on the membership cost f . If f is high, the farmers not belonging to the group s will not find it worthwhile to join the co-operative. The private purchaser will maximise profits by purchasing where marginal expenses equals marginal revenue, hence where $ME_{s_2} = P$. It will, as before, offer the monopsonist price w_i , but the market share will be lower than before, q_2 instead of Q_M . Farmers $Q_M - q_2$ will either not harvest or transport their coffee to the nearby city.

The farmers will only find it worthwhile to become co-operative members if the co-operative price P , less the membership costs f , are higher than what the private purchaser offers. If the private purchaser offers the monopsonist price w_i , and if $w_i < P - f$, it will be more beneficial for the remaining farmers to become co-operative members, and the private purchaser will lose the entire market. The optimal price for the private purchaser is $w = P - f$. At this price, the type 2 farmers are indifferent between joining the co-operative and selling to the private purchaser. At a price marginally above w , the type 2 farmers will sell to the private purchaser, who will buy amount q_3 . The farmers between q_3 and Q_M will not harvest or sell their coffee elsewhere.

This simple model illustrates the pro-competitive effect of a co-operative which neither takes over the entire market, nor excludes a share of the farmers definitely. In this case the effect depends on the co-operative membership costs (and benefits), and the farmers' preferences for these. The price w offered by the private purchaser is higher the lower are co-operative costs f , and if f is sufficiently large, the co-operative will not have any pro-competitive effect on the market price.

In this model we have not assumed that there is a price premium involved for the co-operative, as would be the case for the organic and Fairtrade certified co-operatives in Chiapas. If the price offered by the co-operative increases above the market price it would have the same effect as to decrease the costs of becoming a member of the organic co-operative, f , and hence the pro-competitive effect would be stronger. We have also assumed that the co-operative and the private purchaser have the same level of efficiency, which is not realistic in the case of Chiapas, where private purchasers are large multinationals and the co-operatives are small with many disadvantages in comparison, such as lack of administrative capacities and working capital. In the model, if the co-operative for some efficiency reasons offers a lower price than P , it would have the same effect as to increase f , and thereby reduce the competitive effect. Hence the extent of an organic and Fairtrade certified co-operatives' pro-competitive effect is determined by the price premium, as well as the co-operative's efficiency level, membership costs and the farmers' preferences,

4. Data analysis

The theoretical analysis and the qualitative study suggest that the co-operatives in Chiapas promote competition. If the co-operatives force private purchasers to raise their price level, we should observe a difference in the prices offered to non-members in municipalities where there is a presence of co-operatives, compared to the municipalities where there are none. The next step is to do an analysis using official data on local coffee prices in Chiapas and a range of control variables to find out if co-operative presence leads to higher coffee prices for non members.

Data sources and variables used

For the empirical analysis of the research question, I have used coffee price data at municipality level from the Mexican governmental organisation Sistema Producto Café (SPC), from October 2001 to March 2007 (SPC 2007). The data stems from the earlier mentioned project called 'Fondo de Estabilización' or 'the stabilisation fund', initiated in 2001, which purpose is to stabilise coffee prices by collecting money from coffee farmers in years when coffee prices are high, and repay them a premium in years when the prices are low. Coffee buyers send the receipts from their purchases to SPC, and this price data is available on the SPC website as monthly averages for each municipality¹⁵. All the 75 coffee producing municipalities are included in the data set that I use¹⁶. According to SPC, the data

¹⁵ <http://www.spcafe.org.mx>

¹⁶ I have also included the municipality San Cristobal de las Casas, an urban centre where no coffee production takes place, but where a lot of coffee sales are registered.

do not contain information from any Fairtrade co-operatives¹⁷. This implies that the average monthly price data from each of the 75 coffee producing municipalities are largely based on the private purchases, not those made by the certified co-operatives. Hence it is to some extent possible to isolate the ‘yardstick effect’ from the direct effect of the Fairtrade/organic co-operatives on average municipality coffee prices.

Data on international coffee prices in the same period are from the International Coffee Organisation (ICO 2007). I have used the monthly averages of the ICO Indicator prices from the ‘Other Mild Arabicas Group’, which is the most common coffee type exported from Mexico. This is the price paid on the New York and Bremen/Hamburg markets.

Five more explanatory variables are used: farm size, altitude, indigenoussness, TNC subsidiary presence and a regional dummy. These variables are expected to be somehow related to the local coffee price and therefore need to be controlled for. Data on number of coffee producers and size of coffee producing area per municipality are from the official Mexican coffee organisation COMCAFE (Comisión para el desarrollo y fomento del café de Chiapas) (2007)¹⁸. These data were employed to generate a variable for average farm size. The Mexican Bureau of Statistics INEGI (Instituto Nacional de Estadística y Geografía) (2007) has provided data on altitude and indigenoussness. The INEGI data give the altitude of the municipality centre, which is a rough measure since coffee producing villages may be situated at other altitudes. INEGI has data on the percentage of the population speaking indigenous languages. They give the numbers from the overall population in the municipality, and not just the coffee producers, but I assume that these are roughly similar. There are no official data on TNC presence, and information about the presence of TNC subsidiaries are from interviews made with the four most important TNC companies: AMSA, Cafes California, Expogranos Mexicanos and Becafisa. These companies are estimated to purchase 85 percent of the coffee in Chiapas (Bellino 2002).

Co-operative presence

As mentioned before, there are many co-operatives in Chiapas that are neither Fairtrade nor organically certified, but it is difficult to collect valid information about these. Part of the reason is that many are registered mainly to apply for certain types of government support, and dismantled afterwards. Those who do collect coffee from members sell it locally to the transnational companies and the profits they generate are therefore lower than that of the certified co-operatives. I have to exclude these co-operatives from the analysis, but although they might have a pro-competitive effect on the market prices, it is probably in any case weaker than that of the certified co-operatives, since the price they offer is lower.

Information about the number of Fairtrade co-operatives in each municipality comes from the Fairtrade Labelling Organisation (FLO) and information about organic co-operatives are from the web page of the official Mexican agricultural organisation Agrochiapas (SNIDRUS 2007). I have used the co-operatives’ physical addresses to identify the

¹⁷There is possibly price information from some organic co-operatives, but SPC was unable to give more specific information about these organic co-operatives

¹⁸ The data were delivered by the regional representative of COMCAFE in Tapachula

municipalities where they are present. For some of the organic co-operatives, only information about the postal addresses is available, while they could have members in other municipalities. The largest co-operatives (FIECH, ISMAM, Tiemenlonla and La Selva) have members and collect coffee in several municipalities, and I have used membership lists and the co-operatives' web pages to identify the municipalities where they are present. For most of the co-operatives there is no information about number of members. Of the 75 municipalities in the data set, 36 have no co-operative presence. In 24 municipalities there are 1 or 2 co-operatives, 9 have 3 or 5, and 6 municipalities have more than 6 cooperatives, among which one has 13 and one 22.

A problem with the organic co-operatives is that Agrochiapas does not have information about when the 174 organic coffee co-operatives were formed. We only know that they are present in 2006. This means that although the price data are monthly observations from 2001-2007 there is little to gain from using panel data methods, although endogeneity and potential omitted variable problems would thus have been avoided.

The alternative is to run an OLS regression on the average prices for the different municipalities, and look at their relationship with co-operative presence. However, since I only have information about organic co-operatives that existed in 2006, a price average based on a whole period implies a possible mismatch. Some of these co-operatives were probably formed after 2001, but I measure their effect as if they were present during the whole period. This could weaken the results. It is therefore better to use average prices for a period with more reliable data on organic co-operative presence, which means 2006.

A problem with OLS is that if the municipalities with certified co-operatives have some characteristics in common that we cannot control for, it could be these characteristics that lead to the better price, and not the co-operative presence. For instance it is possible that producers with sufficient organisational skills to form co-operatives, are also better negotiators and therefore able to obtain better prices from private purchasers. Or the case could be that co-operatives are more likely to be established in regions where the coffee quality is higher, due to climatic conditions or other geographical conditions than altitude (which is controlled for). This means that there could be an endogeneity problem.

Without the possibility to use panel data methods, the question that needs to be looked into is: why are there Fairtrade and organically certified co-operatives in some areas, and not in others? Obviously, each co-operative has its own story which is unique. However, few smallholder organisations are able to handle the complexities of certification and entering the coffee export market on their own (Gonzalez and Nigh 2005). Hence many of them have in common that they at the initial phase have received help and support from someone outside the community, someone with education and knowledge. In some cases this has been a person from a religious organisation, while other co-operatives have been initiated under the influence of external actors with an academic or political background. In the previously mentioned small survey, only nine of the 38 organic co-operatives said they had not received any external support when they were formed (see table 2 in section 2). Eight of the co-operatives had received help from a religious person, seven from a person related to an NGO, the rest from political or academic people.

There are several answers to the question why these external people chose to go to one village instead of another to help with the formation and certification of a co-operative. For

instance, Tiemenlonla in Palenque was started by two Catholic nuns who saw it as their vocation to go and help the marginalised people in Chiapas. They were told that the Chole people in the Selva region were among the poorest, so they went there to work and ended up creating a coffee co-operative with the villagers. In another case, a Catholic priest who was sent to work in Motozintla gathered a group of coffee producers and later became the advisor of ISMAM, a co-operative which now has more than 1200 members. The co-operative Maya Vinic, whose members belong to the religious group 'Los Abejas' received a lot of attention and external support after the massacre in Acteal in 1997, when 45 men, women and children from this group were killed by paramilitaries. Thanks to this support, particularly from foreign organisations, they were able to create their own coffee organisation.

In other words, elements not related to the population's strength in negotiating with coffee intermediaries, or the region's coffee quality, seem to be important factors when explaining the formation and success of co-operatives in Chiapas. Rather, one should expect that a benevolent external actor would choose to go to particularly marginalised regions, where the population would be uninformed about the functioning of the coffee market and not particularly good at negotiating with coffee intermediaries. This could have the effect of making the correlation between coffee prices and co-operative presence negative, not positive, unless the co-operative has a pro-competitive effect.

Explanatory variables

This section presents the different explanatory or control variables and the reasons why their inclusion is relevant.

Farmsize: Some of the interviewed stakeholders in Chiapas reported that the private purchasers pay more when they buy larger quantities because travel expenses and other transfer costs are lower per kilo. In areas where farmers produce larger quantities, hence where the average farm size is larger, it is expected that the prices are higher. Another reason to expect a positive correlation between average farm size and price is that larger producers have more resources and therefore do not need to borrow money from the private purchasers, and thus be forced to accept a lower price. Being relatively better off, they might also have more education and be better informed, and generally be better at price negotiating with the purchasers.

Altitude: Coffee grown at higher altitudes has a higher quality than that grown closer to sea level. Lower altitude coffee is more damaged, and the beans are smaller. Therefore a positive correlation between altitude and price is expected.

Indigenoussness: A negative relation between percentage of indigenous people and coffee prices is expected, since the qualitative study indicates that indigenous people are to a larger extent taken advantage of by the intermediaries. This could possibly be because of language problems, but it was also indicated that this is a continuation of an old practice, going back to the colonial era. At this time indigenous people were forced to accept the rules that were imposed upon them, which meant the establishing of a pattern which is difficult to break.

TNC presence: In some municipalities the large coffee purchasing TNCs have opened their own subsidiaries. It is not clear what the price effect of their presence is expected to be.

On the one hand they are buying further down the chain, and therefore possibly paying a higher price. If they compete with the local intermediaries they could increase the local purchasing price. On the other hand, they could also operate as large monopsonists with the opposite effect.

Regional dummy: It is also relevant to control for regional price variation. The municipalities in Chiapas were divided into two groups with the dummy variables ‘North’ and ‘South’. There are several factors that can explain regional variation; one could be that the southern regions are the ones where coffee was first introduced in the 19th century and there is more knowledge about coffee production and sales infrastructure here (Renard 2006). It could also be that this variable captures weaknesses of road quality, which is poorer in the highlands and the jungle of the north than nearby the coast in the south, and thereby the price the intermediary pays is also lower in the north than in the south.

One variable that should have been controlled for is distance to the nearest coffee exporting centre, which would reflect transport costs. Unfortunately I was unable to locate any official calculations of this. When using the air distance calculated with a map, there are no significant results. Possibly the distance from the municipality centres to the exporting centre matters less for the price than the distance from the local villages to the municipality head.

Descriptive statistics

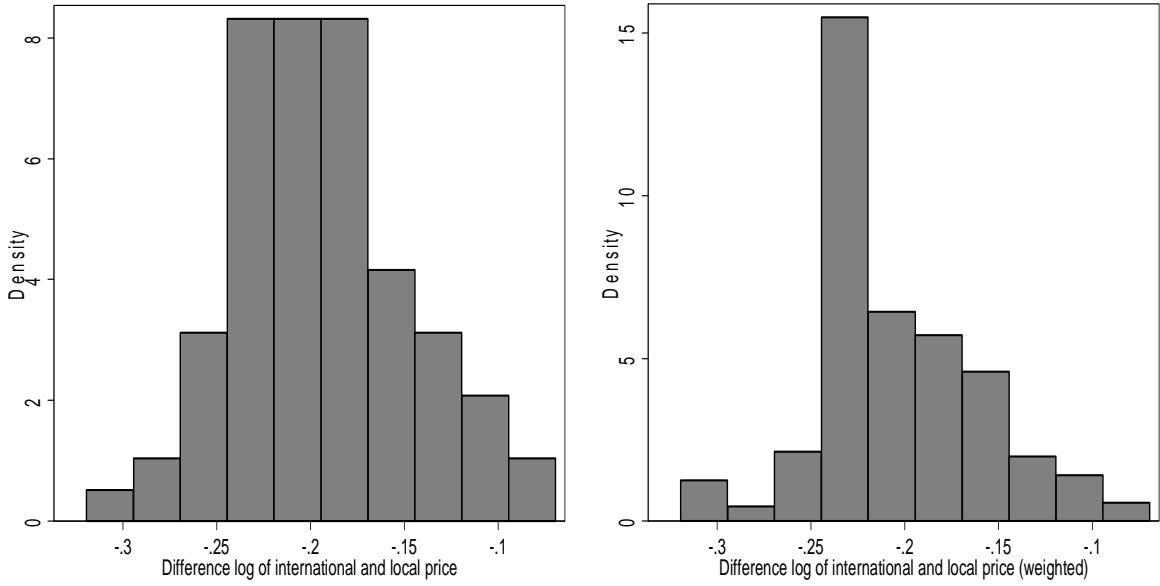
Since I only have information about co-operative presence in 2006, it is relevant to use price data from this period. The data used are only from the harvest season, December to May. The reason for this is that, firstly, I assume the off season data are noisier because it stems from less coffee deliveries from fewer municipalities. It is also more relevant to investigate the co-operatives’ pro-competitive effect by looking at the data at the time when the co-operatives are buying coffee from the members. This means that the data used are from the last entire coffee harvest, from December 2005 to May 2006.

The price data is used in the following manner: First I take the log of the ICO Arabica prices and the SPC prices, then deduct the log ICO price from the log SPC price to get the difference between the two price levels¹⁹. My dependent variable is the average price difference, or the local price relative to the international price, per municipality, over the period in question.

There is variation in the difference between the log of local price and the log of world market price in the different municipalities. This can be seen in the histograms below.

¹⁹ In some municipalities data is missing for certain months. Due to the strong variation in prices it makes sense to look at the local prices relative to the international prices instead of in absolute terms.

Figure 2: Histogram price difference international and local level



Note: Density of different levels of difference between ICO indicator price for Other Mild Arabica Group (Mexican pesos per 45.36 kilo (100 lb) green coffee), and average coffee prices paid to non co-operative members in Chiapas. The first histogram is based on number of municipalities, the second is weighted with number of producers in the municipalities..
 Source: ICO (2007) and SPC (2007)

The histograms show that most of the municipalities have average price differences concentrated on the middle section. The graph weighted with number of producers shows a higher density at the level just below the middle than the graph based on the municipalities. This means that in reality, more producers receive the lower than the municipality based average price.

A simple comparison of the price difference in municipalities with co-operative presence above and below the median for the sample shows that in the municipalities with more co-operatives the average difference between local and world market price is 204 pesos, while in those with less co-operatives than the median it is 226, implying a ten percent price increase. This indicates that producers receive 22 Mexican pesos more per quintal in the municipalities with co-operatives. The average yearly production of coffee producers in Chiapas is 8.31 quintals (COMCAFE 2007), which means that these producers receive approximately 200 pesos, 15 USD more for their harvest.

Table 3: Summary statistics for the harvest period 2005-2006, municipality level

Variable description	Obs	Mean	Std Dev	Min	Max
Average difference between log of local price and log of international price December 2005-May 2006	75	-0.2	0.05	-0.32	-0.08
Number of organic co-ops	75	1.8	3.4	0	22
Number of organic co-ops per 100 coffee producer	75	0.12	0.34	0	0.22
Percentage of population not speaking Spanish	75	8.7	14.5	0	50.8
Altitude, in metres	75	931	642	20	2740
Number of coffee producers	75	2240	2578	0	13860
Average farm size, in hectares	75	1.39	0.98	0.11	5.38
Number of TNCs	75	0.4	0.9	0	4
Number of TNCs per 100 coffee producer	75	0.13	0.94	0	0.82
The municipality is in the north of Chiapas (dummy)	75	0.62	0.49	0	1

Regression analysis

The following model describes the expected relationship:

$$p_{diff} = \beta_1 coop + \beta_2 \delta + \varepsilon$$

Where p_{diff} is the average over the period of the difference between the log of the municipality price and the log of the international price. The variable $coop$ is the number of organic co-operatives divided by number of coffee producers in the municipality, and δ is a vector of different control variables including average coffee farm size, fraction of population not speaking Spanish, altitude, number of TNC subsidiaries divided by number of coffee producers in the municipality, plus a dummy for whether the municipality is in the northern part of Chiapas.

Two municipalities, Chiapa de Corzo and Tuxtla Gutierrez are outliers. These two municipalities are in lowland, urbanised areas and there are few coffee producers there (46 in Chiapa de Corzo and 49 in Tuxtla), but each has one coffee co-operative, therefore the value for co-operatives per producer is high. The coffee price is also rather high in these municipalities, 11% above average in Chiapa de Corzo and 6% above average in Tuxtla. One could therefore suspect them to be driving positive result for the co-operative presence's impact on coffee prices. The regressions are therefore done with and without these two municipalities. The results are depicted in table 4, columns 1-4.

Table 4: Regression results

	Dependent variable: Log (local price)-log(world market price)							
	December 05-May 06				December -May 2001-2005			
	Other variables excluded (1)	Main specification (2)	Other variables, Chiapa de Corzo and Tuxtla excluded (3)	Chiapa de Corzo and Tuxtla excluded (4)	Other variables excluded (5)	Main specification (6)	Other variables, Chiapa de Corzo and Tuxtla excluded (7)	Chiapa de Corzo and Tuxtla excluded (8)
Number of co-operatives per 100 producer	0.053*** (0.01)	0.046*** (0.01)	0.099** (0.039)	0.075** (0.03)	0.054*** (0.009)	0.062*** (0.015)	0.057 (0.039)	0.03 (0.029)
Fraction of population not speaking Spanish		-0.08** (0.03)		-0.08** (0.03)		-0.09*** (0.02)		-0.09*** (0.02)
Average coffee farm size		0.002 (0.006)		0.001 (0.006)		0.01 (0.008)		0.011 (0.008)
Altitude, in 100 meters		0.0005 (0.0008)		0.0005 (0.0007)		0.002** (0.0007)		0.002*** (0.0007)
Number of TNCs per 100 producer		0.3 (0.3)		-0.02 (0.06)		-0.07 (0.4)		-0.01 (0.05)
The municipality is in the north		-0.035*** (0.01)		-0.035*** (0.01)		-0.02 (0.01)		-0.02 (0.01)
Number of observation	75	75	73	73	75	75	73	73
R-squared	0.16	0.44	0.18	0.38	0.16	0.42	0.16	0.36

*** Significant at 1% level

** Significant at 5% level

* Significant at 10% level

The coefficient for co-operative presence is positive and significant for all the specifications used with prices from the harvest period 2005-2006. Hence the results indicate that co-operative presence leads to increased local coffee prices. The economic interpretation of the results of the main specification is that if co-operative presence increases by 1 co-operative per 100 producers, the local price increase with 4.6%. The average local price in Chiapas for the harvest period 2005-2006 was 1022 Mexican pesos per quintal. A price increase of 4.6% is then 47 Mexican pesos. For the entire harvest, which for the average producer is 8.31 quintals, the price increase then corresponds to 390 pesos added income, or 29 USD.

When all the control variables are excluded, an increase in co-operative presence by one co-operative for every 100 farmers leads to a 5,3% increase in the local price. When Chiapa de Corzo and Tuxtla Guterrez, the two outliers, are excluded the percentage is larger, 7.5%, but the result is less significant. When the control variables and the outliers are excluded, the percentage increase in price is 9.9%.

Looking at the main specification for the harvest period 2005-2006 (column 1-4), the geographical dummy for northern municipalities is negative and significant, indicating that in the municipalities in the north the local coffee price is 3.5% larger than in the municipalities in the southern region of Chiapas.

The regression shows that producers with indigenous origins receive lower prices than the Spanish speaking people. The coefficient for percentage of population in the municipality not speaking Spanish is negative and significant. Economically, a 50% increase in Spanish speaking habitants corresponds to a 4% increase in the local price. Although it is not very strong, there is still an effect. One of the reasons for this could be that the non Spanish speaking population is more marginalised, meaning more illiterate and isolated. But when running the same regressions with a variable for marginalisation,²⁰ its coefficient is negative but not significant. When the indigenous variable is included in the same regression marginalisation changes sign and is less significant. That indigenusness has a stronger effect than marginalisation indicates that racial discrimination could be an important factor.

As a robustness check I run the same regressions with harvest season data from 2001-2005. The results can be seen in column 5-8 in table 4. The coefficients for cooperative presence for the different specifications are not very different from the ones in the 2005-2006 regressions, but when the outliers are excluded, it is not significant any more. An explanation to this is that there is incorrect information about co-operative presence in this period. Many of the co-operatives that were present in 2006 were established in the years before. This will bias the results downwards.

There are also other factors that give reason for not finding more statistical and economic support for the hypothesis. Firstly, this is a data set with relatively few observations, the 75 municipalities. Secondly, there are probably many co-operatives included in the data set that are too small and too inefficient to have a 'competitive yardstick effect' on their private competitors. This corresponds to the findings in the survey, where 45% of the

²⁰ Data collected by El Consejo Nacional de Población (CONAPO). They contain information about the shares of the population who are illiterate, without primary school, without sewage, without electricity, without water, with dirt floor and without refrigerators.

respondents said they did not feel that their co-operative had made the intermediaries increase their price. Thirdly, there are probably some municipalities without Fairtrade and organic co-operatives where the coyotes are competing with each other and driving prices to a competitive level. Possibly there may be co-operatives in these municipalities which are not certified and therefore not registered in the data set. Lastly, there is always the problem with accuracy of the data. In particular, for some of the organic co-operatives I have only used the postal addresses, and their real locations might be in different municipalities. And even when I have the physical address of the co-operative warehouse, it is possible that it also receives coffee from members in villages in neighbouring municipalities. It could also be that organic co-operatives exist that are not in the Agrochiapas or FLO registers. These aspects will all bias the results downwards.

Conclusion

The qualitative study from Chiapas indicates that the coffee purchasing market suffers from imperfect competition and that Fairtrade and organic co-operatives in some cases counteract monopsony power among coffee purchasers. This can also be shown in a theoretical model which predicts that co-operatives will have the effect of raising the general coffee price level in areas where they operate. The statistical analysis also supports the hypothesis that co-operative presence has a positive effect on prices paid to non members. I cannot say that I have found clear evidence, but this could possibly be due to statistical problems such as missing data, particularly on co-operatives.

In the statistical analysis the only measures used to evaluate the impact of the co-operatives are the coffee prices. Recall that in the qualitative study, interviewed stakeholders in Chiapas emphasised the cheating behaviour of the private intermediary purchasers, meaning their tendency to cheat on the weight or make unfair quality discounts. There are no data available on these aspects, and hence there is no way to statistically prove the findings of the qualitative study, that co-operatives also have an effect on the cheating behaviour of the intermediaries. In the survey among organic co-operatives in Chiapas it was found that more co-operatives (74%) thought they had effect on the cheating behaviour than on the pricing behaviour of the intermediaries (50%). If it is the case that the reduced cheating effect is more important than the price effect, then presumably in reality the pro-competitive effect is stronger than the results from the OLS regression indicate.

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Democratic institutions and economic success: the case of Fairtrade coffee co-operatives in Latin America

By

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Abstract

The paper investigates the relationship between democracy and economic success in Fairtrade certified coffee co-operatives. The Fairtrade Labelling Organisation (FLO) is a solidarity focussed initiative which emphasises democracy in the certified organisations. Democracy may be a tool for the empowerment of marginalised producers and can therefore be seen as an aim in itself. The question raised is: can democracy also have a positive effect on the economic success of the certified co-operatives? A literature review and a field study based on interviews with co-operatives in Chiapas, Mexico indicate that democracy may improve the decision making processes and the control of leadership. The statistical analysis is based on a unique data set from the Fairtrade Labelling Organisation (FLO), which consists of evaluations of Latin American Fairtrade co-operatives between 2001 and 2005. The results of the analysis are consistent with the hypothesis that democracy and economic success are positively correlated.

JEL classifications: L20, O13, O15, O17, O19, Q13, Q17

Keywords: agricultural co-operatives, democracy, Chiapas, Fairtrade, coffee.

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1. Introduction

Many of the world's poor belong to households of agricultural smallholders such as coffee producers. Their situation is made difficult by price fluctuations and an overall trend of price decrease, as well as lack of access to markets (Markelova et al 2009). An opportunity which has lately opened up for many small scale coffee producers is to join a Fairtrade certified marketing co-operative. This provides them with access to the international export market and the possibility to obtain the Fairtrade guaranteed minimum price and premium which improves their economic situation. Fairtrade labelled coffee is generally consumed in the North and it is marketed as a solidarity product that secures "a better deal for producers in the developing world" (FLO 2009). Consumers expect that by buying these products they will make a difference for the producers. In order to maintain confidence in the system the Fairtrade Labelling Organisation (FLO) puts much effort into the elaboration of standards and supervision of the co-operatives to make sure that requirements for certification are fulfilled. FLO visits the co-operatives on a regular basis to evaluate their performance, in particular whether the organisation's democratic goals are fulfilled. Co-operatives that do not fulfil the criteria receive letters with recommendations for improvements, and in cases of particularly severe violations they will not obtain recertification.

The question of how democracy and economic efficiency are linked has previously been raised and investigated both in relation to the organisation of firms (Cable and FitzRoy 1980, Jones and Svejnar 1985, Doucouliagos 1995, Yates 2006) and the ruling of nations (Lipset 1959, Barro 1999, Acemoglu et al. 2008). However, there are few studies of this relationship on agricultural co-operatives in developing countries, and none based on Fairtrade coffee co-operatives.

The democratic aspect is particularly important in developing countries where corruption is widespread and a well functioning democratic system is often lacking. If co-operative members are educated on democratic procedures and mentality they may become a resource for society at large (Bowles and Gintis 1993). The empowerment and capacity building is, according to Reynolds et al. (2004), the most valuable effect of the Fairtrade labelling system. Democracy and transparency are also important tools for members to supervise hired and elected managers (Hansmann 1996). However, democracy typically comes at the cost of reduced decision-making flexibility, which may reduce economic effectiveness (Bianchi 2002, Thorp et al 2005).

The ambition of the present paper is to analyse empirically the question of democratic organisations and economic performance, using Fairtrade coffee cooperatives as a case in point. Does FLO's emphasis on democratic structures come at a price, namely higher costs hence poorer economic performance, or do democracy and economic success go hand in hand?

In order to shed light on these questions, I make use of a data set from FLO, the evaluations of the certified coffee co-operatives written by Fairtrade inspectors. This comprises a relatively large database with detailed information about each co-operative. To

my knowledge, the present study is the first one to make use of this data for statistical analysis of any kind.

The paper starts with a general description of the administration of the Fairtrade certified coffee co-operatives. In the next section various possible links between democracy and economic success are assessed through literature reviews and field research of Fairtrade co-operatives in Chiapas, Mexico. Then follows a statistical analysis of the FLO evaluations from the Spanish speaking Latin American Fairtrade coffee co-operatives between 2001 and 2005.

2. Democracy in Fairtrade certified co-operatives

For coffee co-operatives to become Fairtrade certified they must be able to export, consist of generally small scale producers and be democratic organisations that provide members with economic and social benefits. There are also environmental criteria on the use of chemical inputs, and social criteria on the use of hired labour. The co-operatives cover the costs for certification. Once they are certified, they may sell their product under Fairtrade conditions, which include a minimum price of 121 US cent/lb and a premium of 10 cents/lb. This requires that they are able to find an importer wanting to buy coffee under these conditions. The importer will in turn market the coffee with the Fairtrade label, for consumers to recognise.

The fact that all the co-operatives in the sample are certified to the same standard means that they all have, to some extent, achieved a certain level of economic success. They have found a niche, a market opportunity that potentially can provide them with better terms of trade than what is obtained on the conventional market. But the analysis of the evaluations made by FLO inspectors shows that the Latin American Fairtrade co-operatives have different levels of economic success. Some prosper; they offer members a good price and invest in income generating activities, while others have financial problems and struggle to keep their member base. There are also differences concerning their democratic levels: some have high participation levels and well functioning democratic structures, while others are dysfunctional to the point that they are in danger of being excluded from the Fairtrade system.

Fairtrade coffee co-operatives in Chiapas, Mexico²

The members of the Fairtrade coffee co-operatives produce their coffee on individual farms. They then market it jointly through the co-operative and share the profits thus generated according to quantities delivered. These co-operatives therefore do not have collective action problems such as free riding when it comes to the production of coffee. But the members still have to administer the different activities of the co-operatives as a collective task. These

²The following description is based on field research which was done in Chiapas during a ten month period in 2006/2007. Altogether 50 in depth interviews were made with co-operative managers and other stakeholders in the coffee producing sector. Information related to the democratic aspect came up in many of these interviews, and in addition five in depth interviews were made with co-operative staff members and advisors on democracy only.

activities are mainly concerned with the marketing process: finding importers, organising deliveries, processing, transport, finance, payment and so on. In some cases the co-operatives also roast and grind some of their coffee before selling it. Furthermore the certification process must be organised in order to receive both the Fairtrade and in many cases also other certificates such as the organic. In addition many co-operatives lobby governments and NGOs for support for different projects. They also organise courses for member on coffee production and other issues such as health. Some co-operatives diversify into other sectors such as honey, crafts or tourism.

The different Fairtrade certified co-operatives in Chiapas share similar democratic structures, which again are similar to the ones described in the FLO evaluation reports from other Latin American countries. The members, who usually live dispersed in different villages, have meetings on a regular basis, usually once a month. In some cases meetings are compulsory and members are penalised for not showing up. Member groups in each community elect a delegate who goes regularly to meetings at the co-operative headquarters, where he or she will represent the community and report their opinions and ideas. The information that the delegate receives here is in turn dispersed to the members at the community meetings. In some cases the co-operative produces written information that the delegates can distribute in their communities, but often this is meaningless since the members are illiterate. Sometimes this is the case also for the delegate, who has to try to memorize the information he or she has received. In these cases distribution of information will often be deficient.

Usually the co-operatives have a general assembly once a year, where all the members are invited to participate. Every second or every third year the general assembly elects a new committee with president, secretary and treasurer. Often they also elect a control committee and sometimes a conflict resolution committee. In addition to the elected committees, the co-operatives often hire staff members with different responsibilities such as for coffee exporting or overseeing the members' coffee production methods. The total number of elected and hired staff members generally increase with the number of members in the co-operatives. Larger co-operatives may hire staff members as secretaries or with responsibility for additional activities such as roasting and packaging, craft sections etc. In smaller co-operatives there are often no hired staff members and the administration is entirely the responsibility of the elected committees. Many co-operatives also have an advisor, in Chiapas this is often an external person with either a religious or political background, who has been with the co-operative from its beginning. Usually the advisor and the hired staff members have previous experience from the coffee business sector, while the elected committee members are only experienced as producers. This inequality of knowledge can create a latent power struggle between the political leadership and the hired staff (Martinez-Torres 2006 p. 94). The elected president is the official head of the co-operative, but sometimes the leader is in reality the advisor or another hired staff member.

Members in these co-operatives influence to a varying degree the decisions that their elected and hired leaders make. Important decisions taken in the co-operatives are typically concerned with the determination of the price level and the implementation of new projects.

Decisions such as these can be taken by the hired staff members only, or in consultation with either the elected committee, the assembly of delegates or the general assembly.

Democracy and economic success

In previous literature on co-operatives and other democratic business organisations there are several explanations to finding both a positive and negative association between democracy and economic success. These aspects were also recognised among the co-operatives in Chiapas.

The relationship between members and managers of a co-operative can be seen as a principal agent relationship, where the members need to monitor the managers (Bowles and Gintis 1993). Managers that are not properly monitored may shirk, spend money unnecessarily on for instance travels and meals for themselves, or even become downright corrupt. Hence there are agency costs related with insufficient monitoring (Hansmann 1996). One could claim that democratic structures, particularly structures that increase transparency, are necessary for a proper monitoring of the managers. From this it could be expected that less democratic co-operatives also have a worse economic performance.

Lack of efficient control by members is a problem in many co-operatives in Chiapas; this is clear from the many stories of corruption among co-operative leaders. One story of corruption in a co-operative, which was not Fairtrade certified, was told in the following manner:

“There was fraud, because there were advisors, accountants, who were all from other places, and for the poor producers, who have no education, they don’t know, well, they just deliver their coffee. “I’ll pay you this price”, that’s how it was, but in reality that wasn’t the price, most of it was left with the advisors, the accountants.”³

Co-operative staff member and son of producer, Los Altos

This was a story of how the members of a co-operative were deceived by the externally hired advisor and accountant, who took their money. The members were just ‘delivering their coffee’, they had no insight into the administrative matters of the co-operative, and were therefore not in real control. The probability of corruption in co-operatives is a heavy argument for the promotion of democracy and transparency.

Another reason to expect a positive correlation between democracy and economic success is that the members of a co-operative may have important knowledge which is relevant for making the best decisions (Hansmann 1996). If decisions are based mainly on externally hired staff members’ ideas and opinions, they could be misplaced and therefore lead to economic failure. This corresponds to the findings of Berdegué (2000), based on a

³ *“había fraude, porque habían asesores, contadores, que todos ellos son de fuera, pues, y a los pobres productores, como no tienen estudios, no saben pues, solo entregan su café, “que te pago a este precio”, así salió, pero en realidad no es el precio pues, ya la mayor parte se les queda a los asesores, los contadores.”*

study of agricultural co-operatives in Chile, that the skills of the leaders are less important for economic and social successfulness than the participation of members.

However, although it is likely that individuals who know what is best for them are better off with regimes that are responsive to their wishes, expressed through active participation and voting, individuals may not always have all the necessary information to know what is best for them (Manin et al 1999). If individuals are uninformed and possess false beliefs and unattainable goals active participation would not necessarily lead to better decisions. Likewise in the co-operative literature it has been argued that members may not be the most able to choose the most advantageous path for the organisation, because they do not see the big picture, they lack education, training and experience (Harrison and Freeman 2004, Bernard and Spielman 2009).

In general the interviewed co-operative staff members in Chiapas supported the view that it is important to take the members' knowledge and opinions into account, although some of the co-operative leaders considered it a problem that the members often lacked an understanding of the co-operative processes. One co-operative staff member emphasised the quality of the suggestions made by members, claiming that this was essential since the members were the ones who better saw what their needs were.

We have always said: everyone has the right to participate and make decisions. And from that the best solutions will come out. That helps a lot to create strength, right? Inside the co-operative⁴.

Co-operative staff member, Los Altos

Democracy may also increase economic success because decisions taken democratically are more legitimate than decisions taken by leaders who do not consult members. Decisions taken jointly increase the trust in their fairness, and they are therefore easier accepted and implemented (Cable and Fitzroy 1980). In many cases the motivation of members is important, for instance when it comes to the implementation of technical change and innovations (Vanek 1970). This claim corresponds to the field research in Chiapas. Decisions taken by members were always listened to, one staff member said. Another co-operative staff member explained the following about the importance of collective decisions:

⁴ *Nosotros siempre hemos dicho, todos tenemos derecho a participar a tomar decisiones. Y de ahí se va a sacar las mejores decisiones. Eso ayudaría mucho a construir más fuerza, no? Dentro de la cooperativa.*

*They are better when the members take them and because the members take them. Sometimes, when a decision is taken, or a proposal is made which is not agreed upon, then this proposal will fall. Sooner or later the proposal falls, it ceases to have validity. Because for the organisations, one of the most important points are the decisions agreed between everyone.*⁵

Co-operative advisor, Los Altos

In other words, taking decisions without the members' approval could be counterproductive, since these decisions are not perceived as valid in the same way as a democratic decision, and therefore they are more difficult to implement. This, however, would only be the case for implementations that require the members' active collaboration, which might not be necessary for all kinds of decisions.

But democratic processes can also be time consuming. In many cases decisions need to be taken quickly, and if the leaders must consult members first, it may be too late and the opportunity will be lost. Hence democracy may slow down efficient decision-making (Jones and Svejnar 1985, Bianchi 2002).

Some of the interviewed co-operative staff members in Chiapas confirmed that democracy is both costly and reduces the flexibility of decision making. As explained by a co-operative advisor:

*Too much democracy can turn into bureaucracy. This is a danger, a threat that there can be in co-operatives. (...) When all the decisions need to pass through superior levels it takes away the activity and the flexibility of the work.*⁶

Co-operative advisor, Los Altos

For example, it was said that co-operatives managers who were too concerned about consulting the members could lose opportunities to get favourable loans because time limits ran out.

What we can see from this is that there are costs of democracy in terms of loss of flexibility, but these are weighted against the benefits: control of leadership, the members' contributions to the decisions, the increased legitimacy and facilitated implementation of the decisions. Among the stakeholders in Chiapas, the benefits from democracy were generally

⁵ *Son mejores cuando los hacen los socios y porque las hacen los socios. En ocasiones, cuando se toma una decisión, o se hace una propuesta no concertada, cae esta propuesta. Tarde o temprano se cae la propuesta, deja de tener validez. Porque para la organización cooperativa, una de los puntos más importantes son las decisiones acordadas entre todos.*

⁶ *Un exceso de democracia puede convertirse en burocracia. Eso es un peligro un amenaza que puede haber en las cooperativas. (...) Cuando todas las decisiones se tiene que pasar por niveles superiores se le quita actividad y flexibilidad al trabajo.*

seen as more important than the costs. In particular the control function of democracy seems to be valuable. The many stories of corruption and mismanagement in co-operatives, and the high level of corruption in Mexico and other Latin American countries indicate that transparency and control by members is a necessary preventive strategy. Summing up, given the environment of often poorly functioning institutions in the societies that we are studying, FLOs emphasis on democracy is likely to have a positive impact on the economic success of the co-operatives.

3. Statistical analysis of the FLO evaluation reports

The following section is a statistical analysis with data from FLO certified coffee co-operatives in Latin America. This data will be used to see if there is a correlation between the level of democracy and economic success in these co-operatives.

3.1. Data background

Data

The data base contains 285 evaluations of Fairtrade co-operatives in Mexico, Guatemala, Nicaragua, Honduras, El Salvador, Costa Rica, The Dominican Republic, Columbia, Venezuela, Ecuador, Bolivia and Peru, from 157 different co-operatives. The co-operatives have been evaluated on an irregular basis, between one and four times, from 2001 to 2005 (one from 2006). These evaluations, which are from all the coffee producing, Spanish speaking Latin American countries, comprise my data base⁷. The FLO evaluations have so far not been studied by independent researchers for academic purposes.

Evaluations

The inspectors who have written the evaluations are either locally based or people travelling from Europe. The inspectors go through a course with FLO and training with an experienced inspector. 31 different inspectors have evaluated the co-operatives in the dataset. Each inspector has written between 1 and 39 evaluations.

During the inspection visit at the co-operative, which usually lasts from 2 to 5 days, the inspectors interview staff members, investigate administrative documents and select villages at random where they go to speak to members.

The evaluations have the form of a questionnaire with approximately 200 questions, each to be answered either by a quantity or by 'yes', 'no' or 'partly'. The different sections are concerned with economy, democracy, development, environment and the use of the Fairtrade premium. There is also a section where the inspector gives his or her general impressions of

⁷ I received the evaluations in March 2006, in word files. The evaluations were then entered manually into spreadsheets. The ones from Guatemala, Nicaragua, Honduras, El Salvador and Costa Rica (77 evaluations) were entered by a hired assistant. I myself have entered the other evaluations. The data base used for this analysis does not contain all the Fairtrade certified coffee co-operatives from this period. This is because some of the evaluations made by FLO have not been transferred into their data base, or it has a different form, incompatible with the rest.

the co-operative concerning different aspects, and the inspector also writes résumés about the co-operative and the area where it is situated.

The inspector has sometimes left questions unanswered. This could be either because the co-operatives were unable to provide the necessary information, because the question for some reason was irrelevant for the co-operatives, or for other, unknown reasons.

Some basic facts about the co-operatives

The average foundation year for the co-operatives is 1989. The oldest co-operative is from 1961, the most recent was founded in 2003. About 20% of the co-operatives were founded before 1980, 60% were founded after 1990.

The average number of members in the co-operatives is 522; the smallest has 17 members and the largest 7503. The median is 200 members. 30% of the co-operatives have less than 100 and only 15% have more than 1000 members. In other words the majority are small co-operatives.

Below is a table of descriptive statistics, based on the averages for the co-operatives that provide the information. The mean numbers for each country are based on the means for the co-operatives.

Table 1: Descriptive statistics FLO registered co-operatives

	Evaluations	Number of coops	Mean foundation year	Mean FLO register year	Mean number of members	Mean plot size
Bolivia	27	16	1986	1999	163	3.2
Colombia	41	21	1993	1997	361	1.9
Costa Rica	3	2	1995	1990	1868	2
Dominican Republic	4	2	1994	1998	2828	2.7
Ecuador	5	3	2001	2003	490	2.2
El Salvador	5	4	1995	2003	105	1.3
Guatemala	29	20	1989	1999	349	1.1
Honduras	25	17	1992	1996	91	2.4
Mexico	76	35	1993	1999	550	2.5
Nicaragua	17	10	1997	1999	532	3
Peru	48	23	1985	2000	1117	3
Venezuela	4	2	1990	1993	387	3.7
Total	285	157	1990	1998	570	2.6

Source: FLO data base 2001-2005

There is significant variation in how many co-operatives there are in each country, from 35 (Mexico) to 3 (Costa Rica). The difference could either be because some countries have less coffee producers in general, because they do not have a tradition for coffee co-operatives, or because fewer co-operatives have applied for FLO certification. The average foundation year varies from 1985 (Peru) to 2001 (Ecuador). Costa Rica has the earliest average FLO register year, 1990, and Ecuador and El Salvador the latest, 2003. There is some variation in the average number of members per co-operative, with Honduras having 91, while in the

Dominican Republic co-operatives have an average of 2828 members. The average coffee plot size per member varies from 1.1 (Guatemala) to 3.7 (Venezuela).

Description of variables

Democracy

The concept of democracy is not much discussed in the corporate governance literature, but there is considerable focus on how directors and shareholders may control the management so that the company is managed in the best interest of the shareholders (Mallin 2004).

Monitoring performance is a key element. When it fails there is a tendency for company investment to shift in favor of the management's personal preferences rather than to maximize share value (Monks and Minow 2008). To avoid this information flow from management and oversight by directors and shareholders are important (ibid).

Several studies have assessed the impact profit sharing, worker ownership and worker participation in decision making at firm level has on the effectiveness of the organisation (Cable and Fitzroy 1980, Jones and Svejnar 1985, Doucouliagos 1995). Studies often compare different types of legally defined firms and not different management procedures in firms of the same type. An exception is Yates (2001), who in her study of unions and employee share ownership in Ohio also looks at aspects such as methods of communication from management to employees and different types of work unit participatory techniques.

In this paper I assume that all the co-operatives have roughly similar legal structures, that is, they are membership owned, with a one member one vote system. The purpose is to compare democracy in these co-operatives, based on the information collected by the FLO inspectors. A variable is first created that takes into account questions from the FLO evaluation scheme that can be associated with democracy. A list of these questions, or variables, is found in appendix 1. I have selected the variables that reflect the structure of the democratic organisation, meaning which institutions are in place, how much information is distributed and the participation among members in numbers. The intention is to measure democracy as structures implemented, and not as characteristics of the members.

Appendix 1 shows the summary statistics and the correlation matrix for the democratic variables. Most observations have a value of either 1 (yes), 2 (partly) or 3 (no), the others are quantitative. Most of the evaluations have some missing observations, and in order not to lose too many observations, missing observations are replaced with the mean for the remaining observations. The first principal component for the democratic variables is in appendix 4. The final democracy variable is continuous and goes from 0 to 1, where 0 is least and 1 is most democratic. To check that the results are not driven by the replacement of missing values, I also experiment with a complementary method (means of the available indicators for each cooperative) for aggregating the sub-indicators. The results of using this alternative method are reported in appendix 6.

Later I will introduce other measures for democratic institutions, dividing variables into three categories and merge them into three new variables: transparency, participation and administration.

Economic success: price offer

In the first econometric analysis economic success will be measured by one single variable: the price offered by the co-operative to members. This is the evaluation question that best captures the main economic benefit that members receive from the co-operative. Coffee marketing is the main activity of the co-operative, and assumingly it puts its efforts into doing well in order to obtain the best possible price for its members. How much the co-operative can offer members for their coffee depends both on the transaction costs and on the price it receives from the buyers. The latter is related both to the international price level and to the amount of coffee sold under Fairtrade and organic conditions. The co-operative's efforts therefore both need to be put into a marketing strategy which results in satisfactory sales prices, as well as cost minimising strategies.

In order to control for local price variation, I have deducted the price paid by local intermediaries from the co-operative price offer. This way the price captures the economic benefit of the co-operative compared to the local alternative. When this price difference is divided by the intermediary price we get the difference as a percentage. For the entire data set the mean for the price difference is 56% per kilo coffee and the median is 37%. The co-operative price offer varies between 18% less and 400%⁸ more than the intermediary price. There is also substantial variation between co-operatives in the same year, as can be seen in the table below, which gives co-operative price offers for 2005 for countries with 4 or more observations:

Table 2: Percentage difference between co-operative price offers and local price 2005

Country	Obs	Mean	Std. Dev.	Min	Max
Bolivia	12	64	74	-3	229
Colombia	11	7	15	-4	45
Guatemala	4	38	48	-1	100
Mexico	28	40	37	-18	106
Peru	18	28	22	4	94

Note: ((Co-operative price-intermediary price)/intermediary price), in USD per kilo.

Very few of the evaluations state whether the price was paid for cherry, hulled, parchment or green coffee, but unless otherwise is written I have assumed that the price is paid for parchment coffee, which, according to the information in the evaluations, is the most common form of selling the coffee to the co-operative in Latin America. However, there is likely to be some extent of error due to this.

Average coffee plot size

The average coffee plot size for members could affect the price offer for several reasons. One is the fixed costs associated with each member in the co-operative, which possibly makes costs per unit of coffee produced higher in co-operatives where the members have less coffee

⁸ There are altogether 7 evaluations where the co-operative price is more than twice the intermediary price. The high difference can be explained by a very low intermediary price.

land. This is consistent with the findings of Bernard and Spielman (2009) from Ethiopia. The other reason is that the average coffee plot size may reflect characteristics of the member group, such as level of wealth, status or interest in coffee production. Assumably larger farmers have more resources and are more able and motivated to participate in the co-operative than the smaller farmers, which may influence both the democracy and the economy aspect.

The mean for the average coffee plot size per member is 2,5 ha. The largest average for a Fairtrade co-operative is 6 ha, and the smallest is 0,25. Only 13% of the co-operatives have an average coffee plot size per member of more than 4 ha. Farmers with less than 10 ha are considered to be small scale, so there are no co-operatives comprised of mainly large scale farmers. In other words, there is variation in the data set concerning average size, but only within the lower range of what is considered small scale coffee farming.

Ability

As mentioned before, a positive association between democracy and economic success can be driven by a third factor. The ability or knowledge of the farmers can both affect to what extent farmers participate actively in the governance of a co-operative and how economically successful it is. In order to control for abilities of the group that do not change over time I use the fixed effects method. In addition, as a proxy for ability, I use the variable ‘active participation among members in meetings’. Assumably members’ active participation in meetings does not reflect the structures imposed by the co-operative, but the innate characteristics of the group. Possibly a ‘weak’ group with little interest in or abilities to support the co-operative economically or with their time, will not participate actively in meetings, while the opposite will be the case for a ‘strong’ group. The counter argument to this is that more active participation creates more conflicts, slows down the decision making processes and hinders a positive development.

In the majority of the evaluations (70%) the farmer members participate actively, in 29% they partly participate actively, and in 1% they do not participate actively in meetings. This variable is positively correlated with democracy and weakly positively correlated with the variable that measures the difference between the co-operative price and the local price. There is also a positive correlation with size (larger producers participate more actively).

FLO register year

The number of years that a co-operative has been Fairtrade registered is likely to influence both the democracy and the economic success measure. With more experience and reputation the probability of finding importers in the Fairtrade market increases, which provides the co-operative with extra incomes and hence a better price offer to members. FLO also puts pressure on the organisations to remain at an acceptable democratic level, and the expectations increase with years of registration⁹. Information about the register year is not a part of the questionnaire, but it is often found in the written summaries in the reports, on the register list from FLO, or, when available, the web pages of the co-operatives.

⁹Source: Interview Guilermo Denaux Jr., coffee coordinator FLO, March 2006

The first co-operative was Fairtrade certified in 1989 and half of the co-operatives in the dataset were certified before 1999. Nine co-operatives were inspected for the first time in 2005.

Number of members

The number of members, or the size of the co-operative, can be expected to influence both economic success and democracy. To some extent there are economies of scale in coffee marketing, which means that the larger co-operatives should do better than the smaller ones. It has also been claimed that it is harder to organise a larger group collectively than a smaller one (Wade 1987), which means that the size of the co-operative can influence the democracy variable negatively. The average number of members is 570, the smallest co-operative has 17 members and the largest 7503.

Dummy variables

I use both time dummies, country dummies and dummies for the inspectors in the analysis. Time dummies and country dummies are obviously important. Inspector dummies are necessary to avoid the problem that different inspectors can operate with different expectations and scales.

Table 3: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Difference between log of co-operative price offer and log of local price	223	0.38	0.33	-0.2	1.64
Democracy PCA variable	285	0.79	0.2	0	1
Average size members' coffee plots	253	2.56	1.32	0.25	6.71
Active participation	273	1.31	0.49	1	3
Number of members in co-operative	276	570	982	17	7503
Register year with FLO	269	1998	3.9	1989	2005

3.2. Regression analysis: Democracy, price and size

The aim of the regressions in this section is to see how democracy correlates with the co-operative price offer relative to the local price.

It is difficult to establish a causal link between democracy and economic success through econometric methods. As shown in section 2, there are several reasons why democracy may affect economic success positively. However, it could also be the other way around, that an economically well functioning co-operative more easily can afford the costs of democratic structures. This means that there could be an endogeneity problem. There may also be factors that cannot be controlled for which influence both aspects, meaning that there is a problem with omitted variables. There are no good instruments that can solve these problems, but with fixed effects it is possible to control for time invariant omitted variables.

As the dependent variable I have used the log of co-operative price minus the log of the intermediary price.

The simple model for the regression analysis is the following:

$$(\log P^{coop} - \log P^{local})_{it} = \beta_1 demo_{it} + \beta_2 cofsize_{it} + \delta_{it} + \lambda_i + \phi_{it} + \varepsilon_{it}$$

The left hand side of the model is the difference between log of the co-operative price and log of the price paid by intermediaries, where i denotes co-operative and t is time. We want to see how this is related to democracy, the average size of the members' coffee plots, and a vector of control variables δ , which includes FLO register year, active participation and number of members in the co-operative. We also include a country dummy λ_i and inspector dummy ϕ_{it} . ε_{it} is the error term. The standard errors are clustered at the co-operative level, thus allowing for difference in the variance of the error terms across clusters, and arbitrary correlation of the error terms within clusters.

The results are shown in table 4. When country fixed effects are not included in the data set, democracy is negatively, but not significantly correlated with the price offer. When country fixed effects are included, the coefficient for democracy is positive, but not significant. Heterogeneity between the countries can explain why the coefficient for democracy is negative when not controlling for this. When inspector dummies are included (column 3), the coefficient for democracy increases to 0.32 and becomes significant at the 10% level. This means that for one standard deviation increase in the democracy score, 0.2, the price difference increases by 6%. In the same column we see that the average coffee plot size for members has no significant effect on the price. The coefficient for the control variable for the members' ability (active participation) is positively but not significantly correlated with price offer. The coefficient for co-operative size is positively, but not significantly correlated with the price offered by the co-operative. This suggests that economies of scale are not central or that it is counteracted by other factors.

Fixed effects

In order to control for time invariant omitted variables I run the same regressions with co-operative fixed effects, expressed by κ_{it} in the model below. Since only seven of the co-operatives did not change their democracy score from the previous period I assume there is enough variation for a fixed effects analysis to make sense.

$$(\log P^{coop} - \log P^{local})_{ijft} = \beta_1 demo_{it} + \beta_2 cofsize_{it} + \delta_{it} + \lambda_{ij} + \partial_{ijf} + \kappa_{it} + \varepsilon_{it}$$

The results are shown in column 4, table 4. The coefficient for the democracy variable is now positively significant at the 5% level. It also increases with fixed effects, from 0.31 to 0.83. One possible explanation for this is that a different subset of observations explains in the two cases: The observations included in the fixed effects regression is larger (197 instead of 191), because FLO register year, which is missing for some of the observations, does not enter this regression. The fixed effects regression only uses co-operatives with more than one observation. When I run the OLS with only co-operatives that have more than one

observation, the coefficient for democracy is 0.42. This confirms that the difference in observations used is part of the explanation for the difference in coefficients. The other part of the explanation is that this has to do with an omitted variable problem, which biases the results downwards. With fixed effects this problem is reduced, therefore the coefficient is higher.

Table 4: Regressions with price difference as dependent variable

	Dependent variable: Log coop price - log local price			
	(1)	(2)	(3)	(4)
Democracy pca variable	-0.2 (0.15)	0.14 (0.14)	0.31* (0.17)	0.83** (0.34)
Average size	0.01 (0.02)	-0.01 (0.02)	0.01 (0.02)	0.07 (0.09)
Active participation	-0.09* (0.05)	-0.1* (0.05)	-0.05 (0.06)	-0.02 (0.1)
Number of members in co-operative/ 1000	0.003 (0.02)	0.003 (0.02)	0.003 (0.02)	0.25 (0.3)
Register year with FLO	0.002 (0.01)	-0.001 (0.01)	0.003 (0.01)	
Cons	-4.11 (14.83)	2.07 (14.59)	-5.68 (14.34)	-1.11 (0.53)
Time dummies	Yes	Yes	Yes	Yes
Country fixed effects	No	Yes	Yes	
Inspector fixed effects	No	No	Yes	Yes
Co-operative fixed effects				Yes
Observations	191	191	191	197
R-squared	0.11	0.33	0.49	0.62

*** Significant at 1% level

** Significant at 5% level

* Significant at 10% level

As a robustness test the regressions of column 3 and 4 in table 4 are reproduced with the mean of the democracy variables, this produces similar results as with the PCA democracy variable, see appendix 6.

3.3. Economic success and democracy

Measuring economic success

The price offered by the co-operative is the most important economic benefit received by the members, and we would assume that the long term aim of every co-operative is that it should be as high as possible. However, it could be argued that a high price is the result of an unsustainable co-operative practice of paying out as much as possible to members and not spending enough on long term strategically important processes and investments. Possibly, in the more democratic co-operatives the wishes of the producers win through, and hence it is more likely that they will decide on a distribution of money in terms of a higher price. The counter argument to this is that in the long term investments and spending on co-operative activities should, if the co-operative is well managed economically, also lead to higher price offers.

In any case, the price offer is only one measure, and to some extent it is prone to be influenced by coincidental factors such as a particularly good deal with an importer or an unusually low comparable local price, not to mention the always present possibility of errors in the information picked up by the FLO inspector. One way to get around this problem is to use more measures than only the price when estimating the economic success level of the cooperatives. Possibly these measures that can also say something about the economic sustainability of the co-operative and what the chances are that benefits will remain high in the future. The FLO questionnaire covers the theme of economic success by a number of different questions. One approach to the assessment of the relation between democracy and economic success is to merge these different economic success variables together and see how they are linked to the democracy variable. Other studies of economic performance in firms have also looked at more than just one aspect in order to measure this. These include changes in absenteeism, on-the-job performance, product quality, employee turnover, productivity, customer service, profitability, production costs (Yates 2006), return on capital, value added on assets and employment (Cable and FitzRoy 1980), and average capital stake per member (Jones and Svejnar 1985)

The economic success variables selected from the FLO questionnaire are listed in the summary statistics in appendix 2. Here again, information is missing for some variables, in particular investments and cost. The fact that cost per kilo sold in some cases (3) is negative, exhibits the difficulties for the inspectors in capturing this information, which leads to a certain extent of errors in the data.

As with the democracy variable missing observations are replaced with the mean. The variables were joined together by the principal component analysis and made into a single continuous variable with variation from 0 to 1, 1 being the highest score on economic success. Appendix 2 shows the correlation matrix and the first principal component for the economic success variable.

Description of the economic success variables

This section describes the variables used for the economic success variable, and argues why they are signs of economic success. However, I am aware that the variables are complex and that they could measure several other aspects as well.

The two first variables are based on the overall impression of the inspector concerning the economic situation of the co-operative.

The third one, “members supply Fairtrade coffee”, measures the percentage of farmers that supply Fairtrade coffee to the co-operative. It says something about how committed the members are to the co-operative, and also how much of the co-operative’s sales that goes into the Fairtrade market, where prices are higher.

“Delivery of products to the organisation is increasing / remaining stable in difficult situations” is also an indication of how strong the support from the member base is. This is important for the stability of the co-operative, which relies on member commitment in order to comply to the deliveries promised to importers.

If the quality sample is accepted by importer(s), it means that the co-operative produces an acceptable level of quality and that it knows the market well and what importers expect concerning different quality levels.

Not all the co-operatives are selling directly to importers; some go through another co-operative or a second level marketing co-operative. Direct negotiations means that more of the benefits from marketing accrue to the co-operative. This is reflected in the variable “the group is directly negotiating with buyers”.

“Increasing sales on other markets (other than fair trade)”, is a variable that measures the level of diversification of the co-operative. Co-operatives that rely heavily only on Fairtrade coffee exports, can be seen as more vulnerable than co-operatives with several legs to stand on. The same aspect is measured by the variable “introduction of other sources of income for members / for the organisation”.

To build up working capital is very important for the co-operatives, since interest rate payment for loans to pay farmers when they deliver their coffee is generally one of the most important expenses that the co-operatives have. The alternative, to let the members wait for their payment, is risky since they will often sell to private purchasers instead. This aspect is measured by the variable “working capital has been built up”. A related measure, which FLO has not collected data on, is the level of co-operative debts.

“Decreasing dependency on external funding” means that the co-operative is becoming more independent. If it relies heavily on external funding, it is in a more vulnerable position. Managing to decrease its dependency on external funding indicates that its economic situation is improving.

The amount invested per member is also a measure of possible future incomes. This aspect is highlighted by many authors. According to Deininger (1995), ‘the co-operative’s economic viability hinges on its ability to generate investments necessary to attain the profit maximising firm size and invest in efficient equipment’ (Deininger 1995). An empirical study of South American co-operatives identified as one of the principal factors of success the ability of members to understand the importance of capitalisation and investment (Camacho et

al. 2005). In general the FLO registered co-operatives invest in items related to production and marketing, such as storage halls, office equipment, vehicles, coffee toasters and so on.

“Difference between price received by importer and price paid to member” measures the cost per kilo of the co-operative.

The last variable on the list is the number of international buyers. A co-operative with just one or very few buyers is more vulnerable than a co-operative with more buyers.

Regression analysis: OLS

The simple OLS regression is based on the model used previously, but with the economic success PCA variable as the dependent variable:

$$eco_{ijt} = \beta_1 demo_{it} + \beta_2 cofsize_{it} + \delta_{it} + \lambda_{ij} + \partial_{itf} + \varepsilon_{it}$$

The results of this regression can be seen in table 5. In this regression country and inspector fixed effects do not change the results as significantly as with the previous model. There is always a positive correlation between democracy and economic success, significant within the 5% level. When country and inspector fixed effects are included (column 3), we get the result that a 1 point increase in the democracy score increases the score for economic success by 0.19. There is a positive correlation with the size of the co-operative in terms of members, but the coefficient here is very small. 100 more members increase the economic success score with 0.05 points. The year the co-operative was registered with FLO is also statistically significant. Economically, the results show that one year of FLO registration increases economic success with 0.01, which is not very much.

Table 5: Regression results with Economic success PCA variable as dependent variable

	(1)	(2)	(3)	(4)
Democracy pca variable	0.20*** (0.08)	0.17** (0.07)	0.19** (0.08)	0.22** (0.1)
Active participation	-0.03 (0.03)	-0.05* (0.03)	-0.05 (0.04)	-0.05*** (0.02)
Number of members in co-operative	0.03** (0.02)	0.03** (0.01)	0.05*** (0.01)	0.09 (0.08)
Average coffee plot size	0.004 (0.01)	0.002 (0.01)	0.0004 (0.01)	0.03 (0.1)
Register year with FLO	-0.009*** (0.003)	-0.01*** (0.003)	-0.01*** (0.004)	
Cons	18.47 (6.30)	21.57 (6.94)	24.86 (7.63)	-0.08 (0.16)
Time dummies	Yes	Yes	Yes	Yes
Country fixed effects	No	Yes	Yes	
Inspector fixed effects	No	No	Yes	Yes
Co-operative fixed effects	No	No	No	Yes
Observations	225	225	225	238
R-squared	0.21	0.36	0.5	0.56

*** Significant at 1% level

** Significant at 5% level

* Significant at 10% level

Fixed effects regression

The model used is the same as in the previous fixed effects regression, but the economic success PCA variable is used instead of the price offer.

$$eco_{ijt} = \beta_1 demo_{it} + \beta_2 cofsize_{it} + \delta_{it} + \lambda_i + \partial_{it} + \kappa_{it} + \varepsilon_{it}$$

The results of the regression can be seen in column 5, table 5. They are basically the same as the ones of the OLS regression, confirming the positive correlation between democracy and economic success. The size of the co-operative is not significant anymore, which could be because the change in size is not as important as the relative size. Active participation is negative and significant, meaning that the less the members participate in meetings the lower is the economic success score.

Similar results are produced when using the mean of the economic success and democracy variables, see appendix 6.

3.4. Participation, transparency and administration

So far only one measure of democratic institutions has been used. Using other variable selections as democratic measures is interesting as a robustness check of the previous results. It could also make it possible to assess which of the institutional structures are most important for the economic success of the co-operative. In the following I will check if also other measures of democratic institutions are positively correlated with price offer and the economic success variable. I have merged different evaluation questions together to form variables that are supposed to measure certain characteristics of the institutional qualities of the co-operatives. The new variables are constructed from the evaluation questions related to three different categories: participation, transparency and administration.

It would seem natural to assume that the higher the percentage of members that participate at the co-operative meetings, the more the members influence the decisions taken. But this might not be the case: for instance, low participation could both be a sign of high satisfaction with the rulers, or a sign of apathy and resignation (Bollen 1980). How participation associate with the economic success of the co-operative is an open question: On the one hand, high participation could bring out the best suggestions and decisions, and legitimise those decisions to a higher degree. But on the other hand, more active participants could also mean more time consuming decision processes, and in addition the influence of uneducated farmers could lead to counterproductive decisions.

Transparency in the co-operatives is interesting for several reasons. One is that procedures to increase transparency are likely to prevent corruption and mismanagement. The other is that more information dispersed to members should make them more apt to make more informed, hence better decisions, leading to a more prosperous economic situation.

The administrative procedures of the co-operatives could be another interesting aspect. Since the organisations in question are composed of often uneducated members, one could assume that all the formal administrative procedures become a heavy burden for those in charge, and perhaps an unnecessary one. On the other hand, it could also be the case that, although they are burdensome, these administrative structures are important for the co-operative affairs to work properly.

The three variables have been constructed with principal component analysis in the same way as the democracy and economic success variable in the previous sections. It is not always obvious which measures should be selected for which variable¹⁰. Summary statistics, correlation matrices and the first principal components for the variables included in the different measures are found in appendix 3, 4 and 5.

¹⁰ The results below are robust to changing sub-indicators that possibly could belong to more than one category. For instance, frequency of meetings could belong to the participation measure instead of the transparency measure, or existence of minutes of meetings could belong to the transparency measure instead of the administration measure.

Table 6: Correlation matrix

	Administration	Transparency	Participation
Administration	1		
Transparency	0.67	1	
Participation	0.1	0.24	1

The administration and transparency variables are highly correlated, and participation is more correlated with the transparency variable than the administration variable.

Table 7: Summary statistics:

Variable	Obs	Mean	Std. Dev.	Min	Max
Administration	285	0.78	0.24	0	1
Transparency	285	0.8	0.2	0	1
Participation	285	0.57	0.2	0	1

The three variables are first run in a fixed effects regression by themselves, then together, with price difference as the dependent variable. The results are listed in table 8.

Table 8: Regression results different democracy measures

	Dependent variable: Price difference				Dependent variable: Economic success
Administration	0.38 (0.27)			0.43 (0.28)	0.14* (0.07)
Transparency		0.53*** (0.2)		0.58*** (0.21)	0.14* (0.07)
Participation			0.23 (0.17)	0.05 (0.19)	0.08 (0.05)
Average coffee plot size	-0.07 (0.09)	0.003 (0.08)	-0.04 (0.08)	-0.02 (0.09)	0.01 (0.03)
Number of members in co-operative	0.18 (0.3)	0.19 (0.28)	0.28 (0.29)	0.17 (0.31)	0.09 (0.07)
Constant	0.58 (0.34)	0.28 (0.4)	0.57 (0.32)	-0.27 (0.44)	0.18 (0.16)
Time dummies	Yes	Yes	Yes	Yes	Yes
Inspector fixed effects	Yes	Yes	Yes	Yes	Yes
Co-operative fixed effects	Yes	Yes	Yes	Yes	Yes
R squared	0.54	0.56	0.53	0.59	0.54
Number of observations	204	204	204	204	248

*** Significant at 1% level

** Significant at 5% level

* Significant at 10% level

Administration, transparency and participation are positively correlated with the price difference when run on their own, but only the coefficient for transparency is significant. This supports the findings from the previous section, that the institutional structures implemented by the cooperatives do not affect their economic performance negatively. On the contrary the observed correlation indicates that they could lead to improvements in the price offer and hence more economic benefits for the members.

When all three variables are run together, only the coefficient for transparency is significant. Note that adding the two other dimension of institutional quality leaves the coefficient on transparency almost unchanged.

When the regression with all the different measures is run with the economic success principal component variable as the dependent variable, the result is similar to the previous

regression. This strengthens the results of the analysis made with the democracy variable. It indicates again that democratic structures are important for the creation of an economically successful organization, and that the transparency aspect that is of higher importance than participation and administration.

4. Conclusion

Some of the theoretical predictions concerning the relationship between democracy and economic success indicate that it is difficult to obtain both these aims at the same time. The qualitative field study from Chiapas suggests that there is a tension between these two aspects, but the general view is that a democratic strategy is still the best route to economic development. The expected positive relationship between democracy and economic success is found in the statistical analysis of the Fairtrade coffee co-operative data base, both when price offered to members is used as the measure for economic success, and when a range of different economic variables compressed into one success measure is employed.

Hence, the results indicate that the link between democracy and economic success is positive. This is also the case when other measures for institutional quality are used. Whether related to the administrative structures, the transparency or the participation of members, there are no signs that democracy inhibits economic success. In particular transparency seem to correlate positively with measures for economic success.

Finding out whether there is a positive or negative correlation is important for the co-operatives, FLO and the customers who buy the Fairtrade labelled products. A negative correlation could be an indication that democracy should be promoted in a way different from what it is today. Since the results of this analysis indicate a positive relationship, the policy advice indicated from this analysis is that promoting democracy and economic success at the same time and in the way that it is done with these co-operatives, is constructive.

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Appendix 1: Summary statistics and correlation matrix democracy variable

Table A.1.1: Summary statistics democracy variable

Variable	Obs	Mean	Std. Dev.	Min	Max
General judgement on whether minimum requirements for democracy, participation and transparency are fulfilled	276	1.3	0.5	1	3
The organisational structure as laid out in the statutes is democratic	280	1.1	0.2	1	2
The executive (board) is democratically elected	279	1.1	0.3	1	3
Regular updates given to members x times per year	268	5.7	4.8	1	24
Regular updates given to members: written	269	1.8	1.0	1	3
Regular updates given to members: in meetings	275	1.1	0.4	1	3
Regular updates given to members about the financial situation	274	1.1	0.5	1	3
Regular updates given to members about the state of commercial activities (contracts, prices, buyers)	270	1.2	0.5	1	3
Regular updates given to members about committee activities	262	1.3	0.7	1	3
Regular updates given to members about the state of projects	227	1.8	1.0	1	3
Frequency per year of General Assemblies of members	264	2.3	2.9	0	22
Frequency per year of Meetings of Representatives/Delegates	233	11.0	9.6	0	52
Frequency per year of Meetings on community level	197	10.7	6.7	0	50
Attendance in percentage General Assemblies of members	239	78.9	17.4	21	100
Annual report and accounts presented to members	216	89.6	10.8	40	100
Attendance in percentage Meetings of Representatives/Delegates	174	84.0	14.1	45	100
Attendance in percentage Meetings on community level	272	1.2	0.5	1	3
Annual report and accounts presented to members: written	268	1.6	0.9	1	3
Annual report and accounts presented to members: in meetings	268	1.3	0.7	1	3
Financial information explained to members	275	1.3	0.6	1	3
Annual report and accounts are approved by the members	272	1.3	0.7	1	3
A filing system exists	277	1.2	0.5	1	3
A bookkeeping system exists	275	1.3	0.7	1	3
Minutes of meetings exist	277	1.1	0.4	1	3
Plans are approved by the General Assembly	253	1.5	0.8	1	3
Producers/members are informed about price fixing mechanisms and decisions taken	274	1.5	0.6	1	3
Policies and plans are discussed with members in meetings	269	1.3	0.6	1	3

Table A1.2: Correlation matrix democratic variables

	sdem	demostr	demelec	infflow	infwrit	infmeet	inffin	infcom	infcomi	infpro	frgenasm	frmrep	frmcom	atgenm	atmrep	atmcom	anrep	anrepwr	anrepm	fininfm	anrepam	filsys	booksys	minmeet	planapga	infpfix	poldis	
sdem	1.00																											
demostr	0.22	1.00																										
demelec	0.31	0.31	1.00																									
infflow	-0.07	-0.07	0.04	1.00																								
infwrit	0.29	0.06	0.16	0.03	1.00																							
infmeet	0.08	-0.05	-0.05	-0.09	0.02	1.00																						
inffin	0.23	0.11	0.03	0.04	0.25	0.17	1.00																					
infcom	0.03	-0.07	-0.03	-0.02	0.12	0.08	0.24	1.00																				
infcomi	0.04	0.04	0.10	-0.09	0.16	0.09	0.20	0.19	1.00																			
infpro	-0.05	-0.01	0.08	0.06	0.16	-0.01	-0.03	0.09	0.11	1.00																		
frgenasm	0.00	-0.06	-0.04	0.29	0.13	-0.05	0.06	-0.04	0.09	0.12	1.00																	
frmrep	-0.05	-0.06	-0.06	0.06	0.10	0.11	-0.06	-0.08	-0.10	0.09	0.09	1.00																
frmcom	0.08	-0.11	-0.06	0.15	0.02	0.00	0.00	-0.04	-0.09	0.01	0.00	0.13	1.00															
atgenm	-0.15	-0.08	-0.18	0.11	-0.09	-0.08	-0.10	-0.02	-0.09	0.09	-0.06	0.08	0.01	1.00														
atmrep	-0.11	-0.03	-0.06	0.18	0.00	-0.21	-0.04	0.07	-0.03	0.10	0.08	0.09	0.08	0.37	1.00													
atmcom	-0.04	-0.10	-0.07	0.20	0.15	-0.09	-0.04	0.05	-0.07	0.04	0.02	0.14	0.23	0.23	0.31	1.00												
anrep	0.34	0.16	0.17	-0.03	0.27	0.09	0.34	0.15	0.28	0.07	0.08	-0.09	0.11	-0.08	-0.05	-0.05	1.00											
anrepwr	0.31	0.02	0.14	0.02	0.60	-0.04	0.28	0.07	0.19	0.11	0.21	0.14	0.04	-0.10	-0.03	0.09	0.39	1.00										
anrepm	-0.12	0.09	0.00	-0.12	-0.06	0.15	-0.02	0.01	-0.01	-0.02	-0.06	0.04	-0.15	-0.17	-0.12	-0.19	-0.03	-0.18	1.00									
fininfm	0.36	0.08	0.19	-0.13	0.32	0.06	0.39	0.15	0.22	0.01	0.04	-0.07	0.05	-0.11	-0.03	-0.07	0.61	0.42	-0.04	1.00								
anrepam	0.42	0.04	0.20	-0.11	0.38	0.02	0.24	0.05	0.21	-0.10	0.06	-0.03	0.14	-0.10	-0.14	0.00	0.56	0.48	-0.06	0.49	1.00							
filsys	0.17	0.02	-0.03	-0.13	0.29	0.03	0.18	0.08	0.07	0.03	0.13	0.00	-0.01	0.04	-0.05	0.01	0.24	0.28	-0.03	0.21	0.29	1.00						
booksys	0.17	-0.07	-0.04	-0.12	0.38	0.00	0.19	0.08	0.09	0.02	0.12	0.04	0.04	0.04	-0.06	0.07	0.33	0.33	0.02	0.25	0.31	0.62	1.00					
minmeet	0.26	0.10	0.14	0.14	0.24	0.07	0.13	0.17	0.05	-0.03	-0.03	-0.05	0.14	0.00	0.00	-0.03	0.42	0.16	0.00	0.18	0.31	0.16	0.14	1.00				
planapga	0.27	0.23	0.08	-0.10	0.25	0.05	0.12	0.02	0.08	-0.11	-0.04	-0.13	-0.03	-0.18	-0.22	-0.08	0.30	0.22	-0.01	0.22	0.34	0.09	0.08	0.19	1.00			
infpfix	0.32	0.15	0.20	-0.04	0.31	0.00	0.11	0.11	0.10	0.09	0.01	0.00	0.05	0.08	0.08	0.09	0.27	0.22	-0.04	0.31	0.25	0.18	0.13	0.13	0.03	1.00		
poldis	0.33	0.03	0.08	-0.13	0.15	-0.02	0.06	0.06	0.02	-0.04	-0.01	-0.15	0.12	-0.10	-0.15	-0.02	0.22	0.18	-0.05	0.16	0.29	0.10	0.02	0.13	0.36	0.29	1.00	

Appendix 2: Summary statistics, principal component and correlation matrix economic success variable

Table A.2.1: Summary statistics economic success measures

Variable	Obs	Mean	Std. Dev.	Min	Max
General judgement on whether minimum requirements fulfilled concerning the ability to export	267	1.3	0.6	1	3
General judgement on the economic Strengthening of the Organisation: Process requirements included in work plan	247	1.7	0.8	1	3
Members supply Fairtrade coffee	225	84.9	27.6	0	100
Delivery of products to the organisation is increasing / remaining stable in difficult situations	252	1.4	0.8	1	3
Quality sample accepted by importer(s)	251	1.1	0.3	1	3
The group is directly negotiating with buyers	275	1.9	0.9	1	3
Increasing sales on other markets (other than fair trade)	264	2.2	1.0	1	3
Introduction of other sources of income for members / for the organisation,	266	1.9	0.9	1	3
Working capital has been built up	258	1.8	1.0	1	3
Decreasing dependency on external funding	247	2.2	0.9	1	3
Amount invested per member, in USD	198	207.1	351	0	2202
Difference between price offered by co-operative and local intermediary	223	0.35	0.34	-0.33	1.56
Difference between price received by importer and price paid to member	154	0.96	0.55	-1.23	2.72
Number of international buyers	221	3.7	2.9	0	19

Table A.2.2: First principal component economic success variable

sexp	General judgement on whether minimum requirements fulfilled concerning the ability to export	0.4384
seco	General judgement on the economic Strengthening of the Organisation: Process requirements included in work plan	0.3663
memsupft	Members supply Fairtrade coffee	-0.1571
deldif	Delivery of products to the organisation is increasing / remaining stable in difficult situations	0.2215
sampacp	Quality sample accepted by importer(s)	0.1706
groupdir	The group is directly negotiating with buyers	0.3284
incsal	Increasing sales on other markets (other than fair trade)	0.2648
othinc	Introduction of other sources of income for members / for the organisation,	0.2469
workcap	Working capital has been built up	0.3649
depext	Decreasing dependency on external funding	0.3401
aminvm	Amount invested per member, in USD	-0.0945
diffav	Difference between price offered by co-operative and local intermediary	-0.0051
cost1	Difference between price received by importer and price paid to member	0.042
Nbuyint	Number of international buyers	-0.2688

Table A.2.3: Correlation matrix economic success variables

	sexp	Seco	memsup~1	Deldif	sampacp	groupdir	incsal	othinc	workcap	depext	aminvm1	diffav	Cost1	nbuyint
sexp	1													
seco	0.289	1												
memsupft1	-0.241	-0.044	1											
deldif	0.107	0.057	-0.034	1										
sampacp	0.243	0.049	-0.014	0.004	1									
groupdir	0.431	0.139	0.039	0.019	0.089	1								
incsal	0.112	0.188	-0.044	0.123	-0.007	0.177	1							
othinc	0.075	0.150	-0.038	0.111	0.010	0.065	0.162	1						
workcap	0.213	0.171	-0.020	0.227	0.097	0.133	0.041	0.196	1					
depext	0.131	0.227	-0.088	0.146	0.077	0.095	0.165	0.065	0.408	1				
aminvm	-0.087	-0.104	0.034	-0.095	-0.072	0.066	0.056	-0.129	-0.020	-0.096	1			
diffav	0.044	0.015	-0.016	-0.102	-0.054	-0.158	-0.038	0.211	-0.031	-0.043	-0.039	1		
Cost1	0.075	0.073	0.009	-0.008	-0.023	-0.067	0.046	0.031	-0.070	0.052	-0.028	0.045	1	
Nbuyint	-0.207	-0.192	0.115	-0.057	-0.013	-0.191	-0.142	-0.151	-0.083	-0.017	-0.091	-0.104	-0.042	1

Appendix 3: Summary statistics for other democracy measures:

Table A.3.1: Administration measures

Variable	Obs	Mean	Std. Dev.	Min	Max
A person is hired / nominated in charge of general administration	276	1.51	0.84	1	3
A person is hired / nominated in charge of bookkeeping	275	1.25	0.60	1	3
Filing system exists	277	1.22	0.52	1	3
Bookkeeping system exists	275	1.31	0.66	1	3
Minutes of meetings exist	277	1.13	0.42	1	3
A cash flow forecast exists	259	2.02	0.96	1	3
A business plan exists	261	2.24	0.91	1	3

Table A.3.2: Transparency measures

Variable	Obs	Mean	Std. Dev.	Min	Max
Regular updates given to members x times per year	268	5.71	4.77	1	24
Written in meetings	269	1.80	0.98	1	3
financial situation	275	1.08	0.39	1	3
Information about state of commercial activities (contracts, prices, buyers)	274	1.14	0.51	1	3
committee activities	270	1.16	0.54	1	3
state of projects	262	1.26	0.67	1	3
Frequency per year of General Assemblies of members	227	1.84	0.99	1	3
Frequency per year of Meetings of Representatives/Delegates	264	2.28	2.89	0	22
Annual report and accounts presented to members	233	11.03	9.62	0	52
Written in meetings	272	1.19	0.48	1	3
Financial information explained to members	268	1.59	0.91	1	3
Producers/members are informed about price fixing mechanisms and decisions taken	268	1.27	0.68	1	3
Is an internal control system implemented	275	1.27	0.55	1	3
	274	1.46	0.63	1	3
	278	5.71	4.77	1	3

Table A.3.3: Participation measures

Variable	Obs	Mean	Std. Dev.	Min	Max
Active participation of members in meetings	273	1.31	0.49	1	3
Information understandable by members	275	1.49	0.52	1	3
Attendance in % General Assemblies of members	239	78.95	17.47	21	100
Attendance in % Meetings of Representatives/Delegates	217	89.63	10.82	40	100
Attendance in % Meetings on community level	176	84.43	12.57	45	100
Explanations understandable by members	264	1.57	0.55	1	3

Appendix 4: First principal component for democracy, transparency, participation, administration

Code	Evaluation question	Demo- cracy	Trans- parency	Partici- pation	Adminis- tration
sdem	General judgement on whether minimum requirements for democracy, participation and transparency are fulfilled	0.281			
demostr	The organisational structure as laid out in the statutes is democratic	0.094			
demelec	The executive (board) is democratically elected	0.139			
infflow	Regular updates given to members x times per year	-0.051	-0.026		
infwrit	Regular updates given to members: written	0.294	0.376		
infmeet	Regular updates given to members: in meetings	0.046	0.059		
inffin	Regular updates given to members about the financial situation	0.219	0.324		
infcom	Regular updates given to members about the state of commercial activities (contracts, prices, buyers)	0.100	0.177		
infcomi	Regular updates given to members about committee activities	0.151	0.250		
infpro	Regular updates given to members about the state of projects	0.018	0.096		
frgenasm	Frequency per year of General Assemblies of members	0.055	0.117		
frmrep	Frequency per year of Meetings of Representatives/Delegates	-0.032	-0.006		
frmcom	Frequency per year of Meetings on community level	0.043			
atgenm	Attendance in percentage General Assemblies of members	-0.088		-0.273	
atmrep	Attendance in percentage Meetings of Representatives/Delegates	-0.070		-0.372	
atmcom	Attendance in percentage Meetings on community level	-0.012		-0.281	
anrep	Annual report and accounts presented to members	0.345	0.412		
anrepwr	Annual report and accounts presented to members: written	0.310	0.403		
anrepm	Annual report and accounts presented to members: in meetings	-0.039	-0.063		
fininfexm	Financial information explained to members	0.322	0.425		
anrepam	Annual report and accounts are approved by the members	0.345			
filsys	A filing system exists	0.215			0.466
booksys	A bookkeeping system exists	0.228			0.481
minmeet	Minutes of meetings exist	0.204			0.065
planapga	Plans are approved by the General Assembly	0.211			
infpfix	Producers/members are informed about price fixing mechanisms and decisions taken	0.211	0.265		
poldis	Policies and plans are discussed with members in meetings	0.186			
intcon	Is an internal control system implemented		0.213		
actpart	Active participation of members in meetings			0.459	
infund	Information understandable by members			0.506	

exundm	Explanations understandable by members	0.492
pchgad	A person is hired / nominated in charge of general administration	0.474
pchbook	A person is hired / nominated in charge of bookkeeping	0.447
cashfl	A cash flow forecast exists	0.282
busplan	A business plan exists	0.210

Appendix 5: Correlation matrices for administration, transparency and participation

Table A.5.1: Correlation matrix administration measures

	pchgad	pchbook	filsys	booksys	minmeet	cashfl	busplan
pchgad	1						
pchbook	0.541	1					
filsys	0.508	0.454	1				
booksys	0.554	0.475	0.621	1			
minmeet	0.020	-0.024	0.155	0.145	1		
cashfl	0.263	0.239	0.190	0.233	-0.040	1	
busplan	0.141	0.194	0.152	0.112	-0.062	0.365	1

Table A.5.2: Correlation matrix participation measures

	actpart	Infund	atgenm	atmrep	Atmcom	exundm
actpart	1					
infund	0.322	1				
atgenm	-0.167	-0.003	1			
atmrep	-0.210	-0.085	0.371	1		
atmcom	-0.112	-0.094	0.232	0.311	1	
exundm	0.305	0.629	0.006	-0.106	-0.018	1

Table A.5.3: Correlation matrix transparency measures

	infflow1	Infwrit	infmeet	inffin	infcom	Infcomi	infpro	frgena~1	frmrep1	anrep	anrepwr	anrepm	fininf~m	Infpfix	intcon
infflow1	1														
infwrit	0.030	1													
infmeet	-0.093	0.024	1												
Inffin	0.039	0.245	0.169	1											
infcom	-0.019	0.123	0.084	0.241	1										
infcomi	-0.090	0.158	0.089	0.198	0.195	1									
Infpro	0.060	0.159	-0.008	-0.030	0.088	0.111	1								
frgenasm1	0.286	0.133	-0.047	0.058	-0.041	0.094	0.118	1							
frmrep1	0.064	0.104	0.112	-0.059	-0.076	-0.105	0.095	0.087	1						
Anrep	-0.028	0.272	0.087	0.339	0.149	0.276	0.071	0.077	-0.090	1					
anrepwr	0.015	0.597	-0.040	0.276	0.073	0.192	0.106	0.212	0.141	0.387	1				
anrepm	-0.125	-0.055	0.148	-0.016	0.014	-0.013	-0.023	-0.065	0.043	-0.033	-0.185	1			
fininfexm	-0.130	0.319	0.060	0.388	0.146	0.222	0.010	0.037	-0.074	0.614	0.418	-0.040	1		
infpfix	-0.043	0.313	0.000	0.112	0.114	0.104	0.090	0.006	-0.004	0.268	0.219	-0.039	0.310	1	
intcon	-0.108	0.203	-0.038	0.174	0.037	0.114	-0.020	0.108	-0.004	0.222	0.162	0.031	0.229	0.061	1

Appendix 6: Means of democracy and economic success variables

Table A.6: Regression results mean democracy and economic success scores

	Dependent variable: Log coop price - log local price		Dependent variable: Mean economic success score	
	(1)	(2)	(3)	(4)
Mean democracy score	0.3** (0.15)	0.39* (0.24)	0.37*** (0.13)	0.39** (0.18)
Average size	0.003 (0.02)	0.05 (0.09)	-0.01 (0.02)	-0.04 (0.06)
Active participation	-0.05 (0.06)	-0.05 (0.1)	0.1 (0.08)	0.1* (0.05)
Number of members in co-operative/ 1000	0.001 (0.03)	0.3 (0.29)	-0.08*** (0.03)	-0.15 (0.21)
Register year with FLO	0.003 (0.01)		0.02*** (0.01)	
Cons	-4.9 (13.98)	0.24 (0.37)	-45.5 (16.19)	1.89 (0.38)
Time dummies	Yes	Yes	Yes	Yes
Country fixed effects	Yes		Yes	
Inspector fixed effects	Yes	Yes	Yes	Yes
Co-operative fixed effects	No	Yes	No	Yes
Observations	191	197	225	238
R-squared	0.49	0.59	0.44	0.5

*** Significant at 1% level

** Significant at 5% level

* Significant at 10% level

Note: The mean democracy score and the mean economic success score are made from the mean of all the variables included in the PCA democracy and economic success variables. Quantitative variables have been reduced to the 1, 2, 3 levels.