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## 111 EAAE-IAAE Seminar ‘Small Farms: decline or persistence’

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### **Linking small producers to supermarkets? The role of intermediaries on the fresh fruit and vegetable market in Turkey.**

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#### **Abstract:**

A wide range of the empirical studies shows to what extent the rise of supermarkets in developing countries deeply transform domestic marketing channels. In particular, the exclusion of small producers from the so-called dynamic marketing channels (that is remunerative ones) is at stake. Based on original data collected in Turkey in 2007 at the producer and the wholesale market levels, we show that the intermediaries are decisive in order to understand the impact of downstream restructuring (supermarkets) on upstream decisions (producers). The results show first that producers are not aware of the final buyer of their produce, as intermediaries hinder the visibility of the marketing channel, their choice is restricted to that of the first intermediary. Moreover, the econometric results conclude that producers who are indirectly linked to the supermarkets are more sensitive to their requirements in terms of quality and packaging than to the price premia they set accordingly to the effort made to meet their standards. Therefore, the results question the role of the wholesale market agents who act as a buffer in the chain and protect small producers from negative shocks, but who stop positive shocks as well, and reduce incentives.

JEL: Q13, L14, D24

Key-words: supermarkets, small farmers, fresh fruit and vegetables, Turkey

## **1. INTRODUCTION**

A wide range of the empirical studies shows to what extent the rise of supermarkets in developing countries deeply transform domestic marketing channels. In particular, the exclusion of small producers from the so-called dynamic marketing channels (that is remunerative ones) is at stake. In fact, the procurement system chosen by supermarkets involves purchase consolidation as regards quality and secured volumes. This leads to requirements in terms of flows' stability and tough private quality and safety standards. The empirical analysis led on Africa (Weathersoon et al, 2002) and Latin America (Reardon and al., 2003) conclude on the fact that, even though opportunities exist for small farmers, the risks of exclusion is the highest when considering these specific countries or regions.

We focus on the Turkish Fresh Fruit and Vegetable (thereafter FFV) case: in fact, this market accounts in fact for 40% of the total agricultural production in Turkey (Oskam et al., 2004). Among other FFV tomatoes were chosen because of their weight in the total agricultural production (9,7 millions of tons per year (IGEME, 2006)). In addition, tomato is a highly demanded fresh produce in the domestic market. Even though the total share of FFV that are sold in supermarkets is rather low relatively to that of other countries (15% of total food consumption, relatively to 60% in Brazil as early as 2000 according to Reardon and Berdegue (2002)), FFV are more and more bought in supermarkets (that represent almost 20% of the total consumption nowadays). However, production is still characterized by a high number of small farms located all over the country with about 90% of the farms endowed with less than 1h. Moreover, the penetration of supermarkets in rural areas is hardly observable.

We argue in this article that this result depends highly on the legal environment of the countries with respect to the regulatory framework of transactions. We show that the intermediaries are decisive in order to understand the impact of downstream restructuring (supermarkets) on upstream decisions (producers). We draw on the previous literature that underlines the role of specialized (or dedicated) wholesalers, and introduce the regulatory environment to understand their role in a country where transactions of FFV are highly centralised.

Section 2 presents the literature dealing with the restructuring of global value chain and its consequences on the inclusion of small producers in modern marketing channels. In this view, we underline in section 3 the specificities of the Turkish FFV market. We turn to the empirical strategy of data collection to investigate (section 4 and 5) the determinants of small producers' indirect participation in the supermarkets' marketing channel.

## **2. SMALL PRODUCERS IN MODERN FFV MARKETS**

During the first of the 1990's, structural adjustment and stabilization programs significantly reduced controls and state intervention on the agricultural products markets in developing countries. The subsequent liberalization of products and capital markets led to a deep transformation of the agri-food system in these countries. The main drivers that were identified by the literature are the changes in the consumers' demand regarding quality and safety that occurred first in rich countries (Fulponi,

2007): but the transfer of production to low-wage countries and the high level of vertical integration of global chains translated the requirements to developing countries (Swinnen, 2005). This integration in global trade, and in particular in high-value supply chains, is advocated as promoting growth and poverty reduction (Aksoy and Beghin, 2005), even though the topic remains controversial. Horticultural products were proved, in that respect, to generate expected high revenues per unit of land (Weinberger and Lumpkin, 2007) and are known to be a labour intensive production. Recently, the Consultative Group on International Agricultural Research (CGIAR) has expressed more interest in fruit and vegetable production and research on high value crops has been identified as a system priority (CGIAR, 2004). The focus was then on the demand from developed countries.

Moreover, further factors are emphasized by Reardon and Timmer (2007) as having a much greater impact on the domestic agri-food systems: the restructuring of the domestic food markets, and the emergence and evolution of new actors belonging to domestic chains (intermediaries, cooperatives, food service segments) and foreign direct investments (thereafter FDI) that impact this restructuring. In fact, the authors argue that the exposure to exports is relatively low for developing countries, especially in the case of fruit and vegetables (respectively 12% and 2% of total output in 2001) and that no decisive evolution was observed since 1980. On the contrary, they underline the rise of FDIs in the food sector, namely in processing and retail. This emergence resulted in an increased level of requirements as regards quality and safety, with a notable evolution of multinational retailers towards convergence between private standards applied by the chain in developed countries and in developing countries (Reardon and Farina, 2002). Moreover, supermarkets require the consistency of the produce they buy by producers and cut costs by relying on economies of scale when procuring large volumes. Their procurement system is therefore relatively different from that of traditional retailers (Reardon et al., 2003): dedicated wholesalers are more prone to meet the requirements of supermarkets, invest in costly relationship-specific assets and develop their organisational and managerial skills; the centralisation of sales sharpens this evolution by relying on low search costs and thus turning to large suppliers.

A wide empirical literature has developed since the 1990's on the impact of the marketing channel restructuring at the producer level, especially in developing countries. In fact, the increased level of requirements was viewed as a barrier for small producers who couldn't bear the cost of delivering produce to the supermarkets.

Small farms were found to suffer under diseconomies of scale in producing quality as regard the small size of the cultivated area relatively to the necessary investment in capital, specific practices and organisation of the production. Moreover, the budgetary and liquidity constraints of small producers don't allow them to invest and adapt (Boselie et al, 2003). They thus can't cover the transaction costs to access remunerative markets, such as searching for a business partner, supervising and monitoring the production process in order to guarantee the quality level of the delivered produce, or the costs to enforce an agreement in a weak environment (Minten et al., 2007).

The early literature on the subject is mainly empirical, and rather pessimistic: Several studies of farm communities in Latin America and Africa showed that small producers were left-behind in the marketing channels restructuring driven by the supermarkets (Dolan and Humphrey, 2000, Weatherspoon and Reardon, 2003 or Reardon and al., 2003 for instance).

More recent empirical research proposes however a more moderate view. Dries and Swinnen (2004) find that standards lead to increased vertical coordination in the chain and to the emergence of contracting in the case of the dairy processing industry in Central European countries. They show that contracting doesn't exclude small producers, but that, on the reversal, they improve the access to credit and quality inputs. Minten et al. (2009) and Maertens and Swinnen (2009) also find an increased vertical coordination in the case of Madagascar and Senegal from which small farmers benefit. They also emphasized the fact that the chain restructuring can stimulate job creation and that producers should benefit from this evolution through the labour market. However, those studies focus on success stories, and the question of the replicability of the models applied in these cases is raised by other researchers (Minot and Ngigi, 2004).

The most recent stream of literature dealing with the emergence of modern supply chains and its influence at the producer level aims at modelling the impact of procurement systems in developing countries. Swinnen and Vandeplas (2007) and Swinnen and al. (2008) analyse the role of standards on growth and development. Marcoul and Veyssière (2008) study the way supermarkets monitor the production process in order to guarantee quality by lending money to producers. These models show that there are conditions under which producers may benefit from the modernization of the supply chain.

One last paper from Wang et al. (2009) shows that, in China, the penetration of supermarkets in rural areas is rather low. However, the downstream part of the food chain evolved rapidly with a large number of urban consumers purchasing food in supermarkets and restaurants. The authors propose that supermarkets mainly procure the produce from the numerous wholesale markets located around Beijing, so that producers are not directly exposed to downstream restructuring.

We propose to further investigate this issue and integrate the role of market intermediation in the analysis of the market restructuring and its impact on producers. Drawing on the previous literature on supermarkets, we distinguish thereby between the a production function and a marketing function whose costs, benefits and risk are borne by two different entities.

Concerning the costs, the requirements of the supermarkets may be matched either by the producer, or by the intermediary. Some of them related to the production process can be achieved by the producers only, but the wholesale market agents can upgrade the produce as well. Reardon et al. (2009) underline the fact that the wholesale sector evolved towards consolidation and improved as regards logistics and multinationalisation. The emergence of wholesale market agents "dedicated" to modern food industry clients is observed in many countries: those intermediaries are in charged to source from farmers produce which meet the supermarkets' requirements and rely therefore on vertical coordination. However, in the case where they act as market-makers and not only as match-makers, they can add value to the produce as well and substantially lower the search costs as they rely on a large business network..

Concerning the benefits, the prices incentives set by supermarkets to cover the costs of the provision of quality produce should, at least partly, translate up the supply chain at the producer level.

In this case, the intermediaries may act as a buffer in the marketing channel in face of a large-scale down-stream market restructuring, but as a conductor for incentives to procure quality.

### **3. THE TURKISH FFV MARKET: STRUCTURE; REGULATION AND CONSEQUENCES**

#### **3.1 Fresh fruit and vegetables in Turkey**

This concern is particularly important in Turkey as the role of agriculture is still predominant for the economy; it represents 9% of the GDP in 2006 and agricultural employment is estimated at 27.7% of the working population (TUIK, 2007): around seven million people are directly employed in agriculture, that is about the same number as in the entire EU-15 (Oskam et al, 2004). Trade liberalization and the rising demand in the region resulted in agricultural product exports (excluding agro-industry) rising to a value of approximately US\$ 3.5 billion in 2005, that is 4.8% of Turkey's total export earnings. Concerning tomatoes, Turkey was in 2005 the third tomato producer after China and USA with a total production of nearly 10 million tons (FAO Stat, 2005). However, the production is still highly fragmented with about 3 million farms (Oskam et al, 2004), mainly family managed, and located all over the country. Nevertheless, at the aggregate level, Turkey is a major producer and at the same time a major consumer of tomatoes as tomato is a highly demanded fresh produce in domestic market.

Turkish consumers however still procure the major part of the fresh fruit and vegetables they consume on open street markets. The Turkish food retail sector is still relatively fragmented. Traditional family-run outlets (bakkals), open area markets and bazaars are still widespread all over the country, especially in rural areas and small towns where modern grocery formats do not exist yet. The modern retail channel is rather low. However, its role is growing, and Turkey is considered as a strategic place for direct foreign investment. The share of hypermarkets and supermarkets in food retail sales was about 40 per cent in 2002 and currently is approaching 50 per cent. However, only 15 to 20% of the fresh fruit and vegetables consumed in the domestic markets are sold in modern marketing channels (Koç et al. 2007).

#### **3.2 Market regulation**

The FFV market in Turkey is still highly regulated and centralized. The 1995 wholesale market law obliges producers to market their produce through a so called commissioner (komisyoncu). The latter is a broker who sells the produce on behalf of the producer. The producer sets the minimum price at which he wants to sell his production, the commissioner acts then as a matchmaker and doesn't take ownership of the produce. His commission (in percentage and according to the volume sold) is set by the law: no more than 8% of the total price should be directed to him. But, as commissioners are not numerous on the wholesale markets, and as the establishment and location of the wholesale markets are decided by the municipalities, no strong competition among the commissioners is observable, and always the highest commission is charged. Commissioners are located inside the wholesale markets, and handle the goods that producers are delivering to them, or merchants, that gather (namely buy) the produce of selected areas and deliver it to the commissioners.

However, the 1995 wholesale market law takes into account the fact that direct sales, namely that are not made through a commissioner, are possible. In fact, marketing cooperatives (called agricultural development cooperatives) that are registered at the

Ministry of Rural Affairs are allowed to directly sell to final sellers (traditional markets, as well as supermarkets), and can afford a physical location on the wholesale markets. The conditions under which a producer organization can afford the certificate that allows it to bypass the commissioner, and thus the commission that should be paid, are hard to meet for these organisations. The cooperative should gather more than 50 members which is a constraint at the village level.

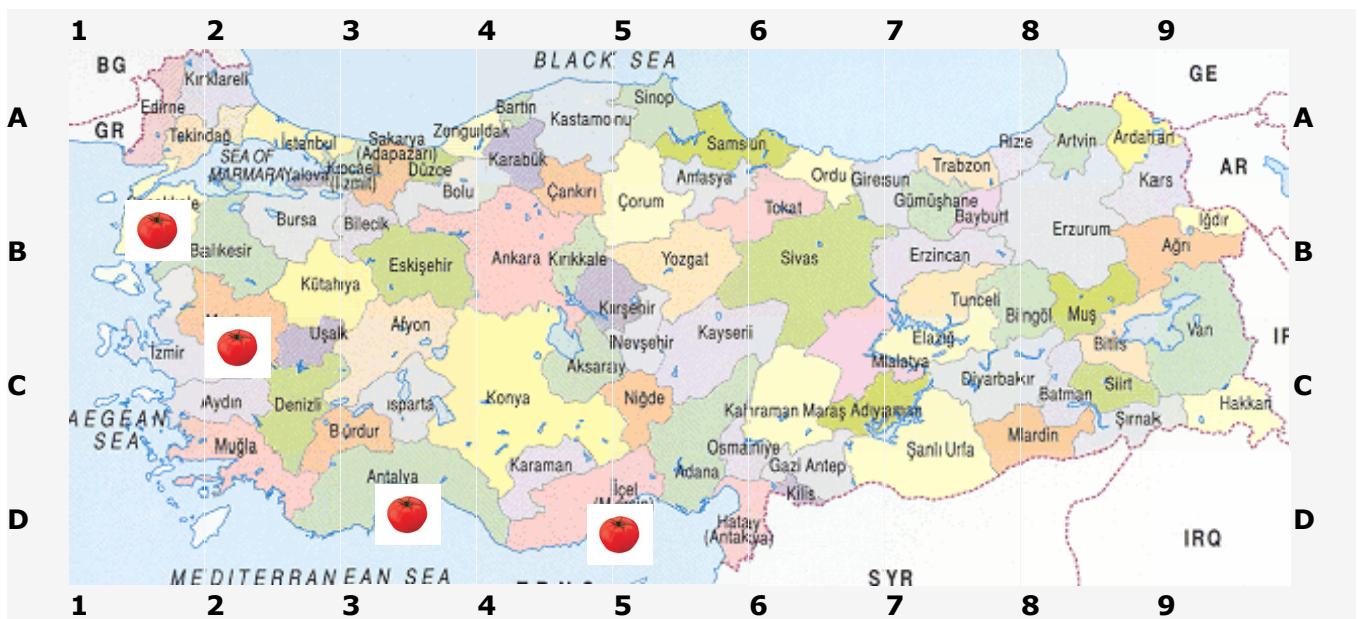
But, several laws were passed since then, and first allow since 2005 (enacted 2006) marketing cooperatives to emerge. Even if an agricultural development cooperative exists at the village level, producers can gather together in a marketing cooperative that is eligible to directly sell to final marketer, such as supermarket, under restrictive conditions (Bignebat, Codron, Lemeilleur, 2007) if they gather more than 10% of the total district area. Marketing cooperatives are headed by large producers that try to organize small producers in order to match the requirements of the law. Last credit cooperatives were allowed to market their members' production. They are deviating from their first aim (credit) and market produce for their member.

#### 4. DATA COLLECTION, DESCRIPTIVE RESULTS

The empirical study was led in the framework of the Regoverning Markets programme ([www.regoverningmarkets.org](http://www.regoverningmarkets.org)). We collected data at the producer (183 producers including the fresh and the industry tomato supply chains) and the wholesale market level (198 wholesale market agents), matched both data bases and tried to track the produce along the marketing channel.

Based on the 2004 data of the Farmer Record System, the study site consists in 4 provinces on the Mediterranean and Aegean coasts and in Marmara region Each region has particular economic, social and climatic conditions which enables to produce tomatoes throughout the year and also diversifies the marketing choice for tomato producers.

Graph 1: surveyed regions



#### **4.1. Producer level data**

Producer surveys were led from December 2006 to February 2007. villages were selected randomly. The village questionnaire was answered preferably by the head of the municipality, or by the cooperative director, and if they were not available, by old producers. The selection of the households was made according to their land endowment (half at the bottom and half at the top of the distribution). Producers were chosen randomly, and interviews were conducted in the coffee house of the village, on a face-to-face basis.

#### **4.2 Wholesale markets data**

We conducted a further survey at the wholesale markets' level in order to identify the producers that are selling to the supermarkets. Wholesale markets that are engaged in transactions with supermarkets were targeted: commissioners in Antalya, Serik, Kumuluca were interviewed on a face-to-face basis in January and February 2007; and those located in Istanbul and Bursa by phone in June 2007. For the first three wholesale markets, the survey was exhaustive, for the rest, only commissioners that were suspected to deal with the supermarkets were investigated (namely on wholesale markets that supply supermarkets). They were asked about the marketing channels they were choosing, and about the volume they were marketing in each of them. We selected the following marketing channels: traditional open markets (Pazar), supermarkets (whereby we can distinguish between Migros – local original supermarket chain -, and others), and exports. .

The individual producer data was matched with the wholesale markets data thanks to the report by the producer of the intermediary's number and wholesale market name. We are thus able to know about identity of the "second buyer"<sup>1</sup>, namely the intermediary's buyer.

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<sup>1</sup> We call it "second buyer" for convenience, but as the commissioner doesn't take ownership of the produce, he is rather the second link.



### 4.3. Marketing channel choice and descriptive results

#### *Marketing channels*

Only 2 producers report that they directly sell to the supermarkets, and 2 directly to exporters (and one of them procure directly both marketing channels). They were drop out of the data base. Direct procurement either from the exporters, or even less from the supermarkets is scarcely observable.

First, supermarkets are due to prove their procurement and sales at the end of each year so that they can't avoid the legal obligation they are facing to pass through the wholesale markets and commissioners. But the legal binding doesn't hold as far as they are trading with a cooperative. In consequence, few examples of supermarkets trying to organize producers into producers' unions can be found at the moment, especially in the region of Antalya.

As regards the export sector, it should be underlined that, even though Turkey is the 3<sup>rd</sup> producer in the world economy (in volumes), the share of the production which is exported is about 2,5%. Tozanli and El Hadad (2007) show moreover that the enterprises that contract with the exporting firms are large (about 200 permanent workers). As our study only concerns small producers that are hardly exposed to exports, we won't take into account the export marketing channel

We observed few organisational innovations in terms of alternative modes of marketing, in particular as concerns collective action. First, the qualitative surveys underline the difficulty of collective action to organize (Lemeilleur et al, 2007). As a result, 39 producers report that there is a development or marketing cooperative in their village, but only 6 of them are a coop member. Finally, none of them market their whole produce through the cooperatives.

Therefore, the role of the commissioners seems to remain dominant in the most common marketing channel scheme. This has a direct impact on the analysis of the marketing channel choice. We tried to cross the information at the commissioner level with a question asked to the producer about the "second buyer" of his produce (Table 1). When looking at the commissioner's marketing channels reported by either the producers or the commissioners, a significant difference is observable.

**Table 1: Question "Are you (Is your commissioner) selling to supermarkets?"**

Reported by the producers	Reported by their commissioner			
		Yes	No	
	Yes	3 (57%)	4 (43%)	7
	No	15 (53%)	23 (47%)	38
Total		18	27	45

We conclude that the answer given by the producer and the commissioner are contradictory for around half of the cases. The producer is not choosing a marketing channel, but rather a wholesale market agent. Moreover, only 45 out of 183 answer the question, the remaining part reported that they don't know to whom the wholesale

market agent is selling.

### *Choice of the wholesale market agent*

Moreover, more than 80% of the producers who are selling on the wholesale markets rely on only one commissioner. Producers proved to be rather faithful to their commissioner and rarely switch from one to the other. The producer were asked to report and rank the reasons why they choose a buyer: the confidence built in a long term relationship turned out to be chosen by a majority of producers with 15% of them referring to the fact that they like to know him and prefer not to switch from wholesale market agent relatively to the previous year, 16% relying on his reputation (“the commissioner has been working here for a long time”) and 17% directly referring to his honesty.

A further reason for this stability in the relationships between producers and wholesale market agents is that commissioners supply credit. Producers frequently report to suffer from credit shortage: interlinked contracts with the commissioners (advanced payment or even credit for production) are widespread. 65% of the producers in the sample report to get advanced payment from the commissioner. However, the same proportion of the populations having or not access to credit by the commissioners were granted a loan in the traditional banking system (banks or credit cooperatives).

However, 35% of the producers report that their choice is driven by the price they can get from the commissioner. Therefore, the price incentives set by supermarkets to procure quality produce should partly translate to the producers.

As concerns the supermarkets' requirements, none of the producers report getting technical assistance from the wholesale markets agents. However, about half of the sample report having changed the variety they produce according to the buyers' preferences.

## **5. EMPIRICAL STRATEGY, RESULTS WITH INTERMEDIATION**

From the matched data set, we identified producers that have a positive probability to procure the supermarkets. In fact, the produce is more often than not managed in bulk by the commissioner, and there is no possibility to trace it back to the producer. However, from the wholesale markets data base we know the proportion of the volumes sold by the commissioners to the supermarkets. We use it as a continuous endogenous variables. 39 producers have thus a strictly positive probability to sell to supermarket: at least, they are linked and thus indirectly exposed to supermarkets. We use a tobit model using the following set of exogenous variables, we selected variables (description in table 2) related to farm and producer characteristics, to location and local environment, and to commissioner characteristics. The expected influence of each of them is introduced in the discussion of the results.

Table 2: variable description and statistics

<i>Farm characteristics</i>		Mean	St. Err.
Percentage tomato 2002	Percentage of total land allocated to tomato production in 2002 (ratio)	14,49	23,4

Total land 2002	Total land area (decare, namely 0.1 hectare))	0,66	0,35
Glasshouses 2002	Area of glasshouses relatively to total area in 2002, %	0,29	0,41
Open Field 2002	1 if irrigation method used in 2002 is drip, reference: drop	0,08	0,28
<b><i>Incentives</i></b>			
Ratio off-farm/agricultural income	Off-farm income relatively to agricultural income 2006 (ratio)	0,11	0,31
<b><i>Risks</i></b>			
Number of children	Number of children living on the farm in 2006	1,07	0,92
Bank credit 2002	1 if the producer has a credit in a bank in 2002 (0 otherwise)	0,36	
<b><i>Household characteristics</i></b>			
Age	Age of the household head 2006, number of years	43,92	9,18
Age squared	Age of the household head 2006 squared	2012,92	835,09
Experience	Experience in production, number of years 2006	17,18	9,25
Experience squared	Experience in production, number of years squared 2006	380,14	362,81
Has a car	1 if the household has a car	0,62	
<b><i>Shifters</i></b>			
Cooperative	1 if a marketing cooperative is established in the village	0,45	
Technical assistance from the government	1 if technical assistance from an agronomist appointed by the government	0,02	
Technical assistance from the cooperative	1 if technical assistance from an agronomist appointed by the government	0,15	
<b><i>Market access</i></b>			
Distance to road	Distance from the plots to the proximate road (kilometres)	0,63	1,47
Distance to road squared	Distance from the plots to the proximate road squared	2,56	10,69
Distance to wholesale market	Distance from the plots to the proximate wholesale market (kilometres)	24,55	122,73
Distance to wholesale market squared	Distance from the plots to the proximate wholesale market squared	15574	17503 3
<b><i>Commissioner/Producer characteristics</i></b>			
Commissioner	1 if the commissioner is in charged of only packing the	0,41	

packs only	produce (ref: neither pack nor grade)		
Commissioner packs and grades	1 if the commissioner is in charged of grading and packing the produce (ref: neither pack nor grade)	0,25	
Experience with the commissioner	Number of years since which the producer is working with the commissioner	8,01	6,84
Experience with the commissioner squared	Number of years since which the producer is working with the commissioner squared	110,6	201,79
Established after 1995	1 if the commissioner established after 1995 (reference before 1995)	0,13	
Don't know the date of establishment	1 if the producer doesn't know the date at which the commissioner established (reference before 1995)	0,47	
Price most important	1 if the producer's criteria for choosing a commissioner is the price (0 otherwise)	0,35	
Producer packs	1 if the producer packs the produce (0 if no packing)	0,18	
Producer sorts	1 if the producer sorts the produce (0 if no sorting)	0,32	

We cluster the data at the regional level to allow for the covariation of the residuals, and thus of unobserved variability, within regions. We use lagged variables referring to the year 2002 for variables that are suspected to be endogenous. In fact, we believe that the lag is long enough to allow to conclude on causality, and the economic and financial crisis of 2000-2001 doesn't allow us to use a wider date difference. The results are presented in table 3 (p.18).

### *Economies of scale, investment and the supermarkets*

#### *Size and specialization*

We introduced variables standing for the farm's size and specialization in the fresh tomato production we focus on. Berdegue et al. (2005) for Guatemala, and Reardon et al. (2007) for Mexico, show that the leading chains source from large growers, especially in front of a dualistic sector such as tomatoes in Mexico or bananas and mangoes in Guatemala. However, the chains source from small farmers when they face a sector dominated by small farmers. The result seems to hold for Turkey as the land size has no significant influence on the probability to sell to the supermarket (*Total land 2002*), even when controlling for the fact that tomatoes can be grown with a higher productivity per unit of land under glasshouses (*Glasshouses 2002*).

Some studies, however, show that in case of increasing returns on a highly specialized production, producers may find a niche (Neven et al., 2002). But in the Turkey, the concentration of production in tomato decreases the probability to be engaged in the supermarket marketing channel.

#### *Investment in physical capital*

We introduced in the regression the proportion of the land covered with glasshouses, and that dedicated to open field production (reference, plastic houses or tunnels). None of them turned out to be significant. However, the investment in fixed capital was proven to be one of the obstacles of entering modern marketing channels. Berdegue et al (2007) show that having crop-specific farm equipment was a key requirement for entering the strawberry processing sector. In fact, Turkish consumers didn't change much in their willingness to pay for produce characteristics, and observable traditional features are the most rewarded (Tozanli and El Hadad, 2007). Therefore, open field tomatoes still represents the major part of the tomatoes grown in Turkey and mostly sold on open air markets.

#### *Human capital and the supermarkets*

The experience as an agricultural producer has a negative impact on the fact to be linked to supermarkets. Moreover, when integrating the educational level of the household head (which may be linked to a generational effect), the latter variable turns out to be non significant. We conclude that the youngest generations are more prone to be linked to supermarkets, regardless the educational level. Moreover, most of the interviewees were born in the same village (or subprovince) where they are active at the survey time, so that we can think that only few of them were drawn by the opportunities they can have in establishing as producers only to supply supermarkets.

#### *Market access*

The literature identifies further obstacles to market participation. In particular, it underlines the institutional and physical infrastructure necessary to ensure a regularly access to competitive markets (Barrett, 2008). From the theoretical point of view, multiple market participation equilibria may arise, due to sunk costs investments and coordination problems (Barrett and Swallow, 2006).

#### *Remoteness*

Farm location as an obstacle to accessing market was thoroughly documented by the literature . Transportation costs were proved to be high relatively to the expected returns of the sales. In our case, the higher the distance between the plots and the proximate asphalt road, the lower the probability to indirectly deliver supermarkets. Moreover, we draw from the descriptive statistics that those located in remote areas relatively to large roads are less likely to get information on prices.

However, this effect may be due to the village location rather than to the farm location, so that we introduce the distance to the wholesale market the producer is selling on to capture the remoteness relatively to large consumption areas. We find the opposite effect, with a probability to sell to supermarkets which is increasing with the distance to the wholesale market. This result is partly due to the fact that the wholesale market located in Antalya attracts a large number of producers as this is the largest one in the region (counting more than 300 commissioners). However, when controlling for the fact that the wholesale market the producer is procuring is that of Antalya, the result remains robust.

#### *Marketing organisations*

We investigate the role of cooperatives as marketing organisation and as technical support providers. In fact, collective action can help producers overcome specific marketing constraints (Sexton and Iskow, 1988) by benefiting from economies of scales,

building a marketing network, improving technologies. However, the authors note that public or club good provision may lead to coordination problems. The latter statement is apparently relevant for Turkey: the results show that either the presence of a marketing cooperative (*Cooperative*) in the village, or the fact that the cooperative provides technical assistance (*Technical assistance from a cooperative*) has a negative influence on the probability to be engaged in a modern marketing channel. In fact, active producer organisations are rare (Lemeilleur et al., 2007) and often inherited from the socialist collectivist system which is more often than not now rejected by producers.

### ***Intermediation and the link to supermarkets***

#### *Dedicated wholesale market agents: procurement strategies or grading?*

The supermarket marketing channel is characterized by a specific procurement system that should assure the consistency of the produce they buy. Therefore, they adopt organizational innovations such as a shift from the reliance on spot markets towards a growing use of “specialized wholesalers” (Reardon and Timmer, 2007). The results show that the probability for a producer to indirectly supply the supermarkets is higher when he grades and packs the produce himself (*Producer pack* and *Producer sorts*), rather than externalizing this marketing activity to the commissioner (*Commissioner packs only* and *Commissioner packs and grades*). The result is not straightforward as the major part of the producers (about 65%) report that their commissioner is packing and/or grading the produce himself. This observation was confirmed in field surveys whereby commissioners say more often than not that they prefer to internalize the sorting and grading and supervise it.

#### *The choice of wholesale market agents?*

Last, we introduce some variables concerning the commissioner characteristic (reported by the producer) and the producer decision criteria. We aim therefore at distinguishing the effect of trust (*Experience with the commissioner*) and reputation (*Established after 1995*) of the commissioner in the producer decision and that of price incentives.

The duration of the relationship between the producer and the commissioner is positively correlated to the probability to be linked to supermarkets. However, the commissioners who established after 1995 are less likely to sell to supermarket. We introduce as well the fact that the producer doesn't know the age of the firm held by his commissioner, namely doesn't care about it and the result shows that the effect on the probability to sell to the supermarkets is even stronger than that of the youngest firms. Therefore, we think that the probability to sell to the supermarkets is not necessarily linked, in the producers' view, with the fact that the commissioner is newly established. Moreover, the producers who report to choose their commissioner according to the price they can offer is negatively correlated to the probability to be linked to supermarkets. However, the premium paid by supermarkets to procure first quality produce on the wholesale is about 20%.

## **CONCLUSION**

We draw on the previous literature on the impact of the rise of supermarkets on small producers in developing countries, and propose to investigate the role of intermediation in assessing and understanding this impact.

Based on Turkish data, we show first that intermediation remain from far the most common marketing channel chosen by small producers. Due to the legislation and the

market structure, direct supply to supermarkets and exporters is a marginal phenomenon. Moreover, there are few original marketing organisations that could promote the access to remunerative markets, in particular, cooperatives are rare and their members not active.

We show then that, given this predominance of intermediation, producers are mostly unaware of the identity of their intermediary's clients, that is to the client they are finally selling to. The accumulation of links between the producers and the final buyer leads to an opacity of the chain from the producer's point of view.

Given this results, we introduce in a standard model of market participation variables about the intermediary used by the producer. We try to figure out to which extent the intermediation is a conductor for the incentives to produce quality set downstream, in terms of requirements and remuneration.

We conclude that the producer that are linked to supermarkets seem to have integrated the marketing activities related to the specific requirements of the modern marketing channels, namely grading and packing, but that they are not sensitive to the price premium the supermarkets offer for this effort. It can't be ruled out that the choice of the intermediary relies on criteria other than pure market ones: reputation and trust play a large role in this decision even though the wholesale markets are in Turkey highly regulated – with invoices, with a regulated commission rate – and monitored. However, further investigations should test for econometric problems (reverse causality for the variable standing for the duration of the relationship for instance).

**Table 3: endogenous variable, proportion of total produce sold to supermarkets**

<b><i>Farm characteristics</i></b>		
Percentage tomato 2002	0,0597	(0,0877)
Total land 2002	-34,12***	(8,238)
Glasshouses 2002	2,158	(1,666)
Open Field 2002	5,92	(5,248)
<b><i>Incentives</i></b>		
ratio off-farm/agricultural income	5,621	(8,56)
<b><i>Risks</i></b>		
Number of children	-0,0940	(1,143)
Bank credit 2002	0,441	(3,324)
<b><i>Household characteristics</i></b>		
Age	2,451	(2,601)
Age squared	-0,042	(0,034)
Experience	-2,671***	(0,529)
Experience squared	0,0736***	(0,020)
Has a car	-2,412	(3,817)
<b><i>Shifters</i></b>		
Cooperative	-13,88***	(4,882)
Technical assistance from the government	-5,731	(5,012)
Technical assistance from the cooperative	-3,016*	(1,671)
<b><i>Market access</i></b>		
Distance to road	-13,85**	(5,986)
Distance to road squared	1,381**	(0,542)
Distance to wholesale market	1,831***	(0,165)
Distance to wholesale market squared	-0,015**	(0,0012)
<b><i>Commissioner/Producer characteristics</i></b>		
Commissioner packs only	-16,36*	(9,190)
Commissioner packs and grades	-26,17***	(8,414)
Experience with the commissioner	1,828**	(0,874)
Experience with the commissioner squared	-0,0399***	(0,014)
Established after 1995	10,16***	(1,697)
Don't know the date of establishment	17,79***	(4,652)
Price most important	-12,12***	(4,390)
Producer packs	13,824**	(1,709)
Producer sorts	25,87***	(7,304)
Constant	-49,75	(42,36)
Pseudo-R <sup>2</sup>	0,22	
N	167	



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