

The rise of supermarkets in developing countries: Implications for credit markets

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The rise of supermarket in developing countries has important implications for the agricultural system in these countries. To lessen the intense price competition in retail markets, supermarkets have introduced private food standards. While the literature has pointed out the additional financial burden for producers, associated with the introduction of supermarket standards, it has ignored its positive demand effects. This paper examines the relationship between downstream product competition and upstream credit access for agricultural producers. In doing so, the analysis shows that as long as there is coexistence of the supermarket and domestic marketing system the entry of supermarket should broaden the financial opportunities of the agricultural producers.

1. Introduction

Before 1990, the development of supermarkets was very slow in developing countries, since it was only supported by local capital. Then saturation and intense competition in developed countries retail markets and much higher margins to be made by investing in developing markets have fostered investment by European, U.S., and Japanese supermarket chains. For instance, Carrefour earned three times higher margins on average in Argentina compared to its French operations in the 1990s (Reardon et al., 2003). In addition urbanization, with the consequent entry of women into the workforce, has contributed to and favored the spread of supermarket in developing countries (for details see Trail, 2006).

This recent phenomenon implies that supermarkets will increasingly and already do influence the structure and conditions of the agri-food system in developing countries. For example, Reardon and Berdegue (2002) calculate that supermarkets in Latin America buy 2.5 times more fruits and vegetables from local producers than all the exports of produce from Latin America to the rest of the world. Similarly, Okado (2001) reports that supermarkets in Kenya already buy three times the volume of produce that is bought by the export market.

As supermarkets increasingly dominate food retail, they will determine the conditions, and the potential for small farms and firms to sell agri-food products. In particular recent food scares have spurred the development of supermarket private standards that promote the safety of their products to avoid food safety scandals. Such incentive has been reinforced by rapid concentration on the retail side, since these private standards introduce differentiation of the food products and thereby lessen the price competition. Therefore, supermarkets have an increasing influence

on developing countries, not only through their investments, but also through the imposition of their private standards (Reardon and Farina, 2002, Reardon and Berdegúe, 2002, Boselie et al., 2003; Fernando et al., 2003 and Weatherspoon and Reardon, 2003). To understand the impact of the supermarket on farmers in developing countries, the implications of the introduction of higher food standards cannot be ignored.

Developing countries often lack in the financial and technical capacity to implement and enforce such standard. As Boselie (2002) shows in the case of Ahold for fresh produce in Thailand, compared with the North American or the European market, produce marketing in these regions is characterized by poor institutional and public physical infrastructure support. Private infrastructure, such as packing houses, cold chains, and shipping equipment among suppliers and distributors is usually inadequate.

In this perspective supermarket investment presents an opportunity for developing countries. Since it can substitute to public investment and foster the development of a marketing channel for higher food standard products. Such marketing channel can extend the size of the market to consumer willing to pay for higher quality food products; which in turn can increase the return on investment in agricultural production and provide better opportunities for farmers.

However, to meet the requirements of the supermarket an upfront investment is often required by farmers. This investment can range from upgrading management skills to new equipment purchase to establishment of quality control and coordination systems. Such investment costs can be very substantial relative to the means of small firms, and can force their exit or their movement to a less profitable market. A growing body of literature suggests that small producers can face considerable difficulties meeting the requirements of supermarkets (see for instance Dolan Humphrey, 2000 and Dolan, Humphrey, Harris-Pascal, 2001).

The objective of this paper is to examine the impact of supermarket entry on the access to credit by farmers. In this paper, survival of downstream producers hinge on their access to external financial sources of funding. In developing economies credit market are often plagued by moral hazard and broader access to credit constitutes a focal target of development policies.

In this paper production is characterized by two sectors: a domestic and a supermarket retailing sector. Each sector has its own procurement system as well as its own food standard. While the supermarket has developed a private standard the domestic retailer follows the public standard set by the domestic authority.

To supply either sector, farmers need external financial capacity to finance production. The credit market is model *a la* Holmstrom and Tirole (1997). Such investment can be founded by three sources: domestic institution such as bank, informal moneylenders and the supermarket itself.

Finally, downstream, the supermarket's marketing strategy is that selling higher quality produce compensates for the higher prices. Standards then become crucial to differentiate the supermarkets' product from that of the local markets. To capture this fact on the downstream market heterogeneous consumer in term of preference make their purchasing decision observing the nature and the price of the products supplied.

The paper is organized as follow. The first section presents the model. The next section analyses the financing of farmers. The third section examines the implication of the supermarket entry on the market structure. Then in a next section, based on the established results, the impact of the emergence of higher food standards is explicitly determined. The last section concludes the article.

2. Presentation of the model

Production requires a fixed investment I and farmers are financially constrained. Their level of finance, denoted by A , is assumed to be uniformly distributed between 0 and \bar{A} , where $\bar{A} > 0$ denotes the level of finance of the wealthiest farm. Furthermore, for tractability, farmers produce at most one unit of agricultural product. Farmers have the choice between two projects:

- **The domestic retailer project.** The domestic retailer represents local retail shops. The products sold by this domestic retailer follow the country food standards, α_d , that are set by a public agency. The probability of success of a diligent farmer in meeting the public requirement is p_H , while the opportunity cost of effort is increasing with the stringency of the food standard and is given by $\alpha_d B$. The overall return of the domestic retailer project is R_d .
- **The supermarket project.** The supermarket follows its own private standard, α_s which is assumed greater than the public food standard. Hence, the opportunity cost of effort for farmers is increased to $\alpha_s B$, but it is assumed that the probability of success for farmers when exerting effort remains the same. In addition, to comply with the supermarket requirements, an upfront investment C in infrastructure is necessary. Indeed, the supermarket usually imposes substantial investments, such as irrigation systems, greenhouses, trucks, cooling sheds and packing technologies, among other things. Finally, the overall return of the supermarket project is R_s .

Although the supermarket may finance a fraction of its project, for tractability, it is assumed that both projects are directly financed by the

bank². To make the problem interesting, farmers are protected by limited liability and diligence by farmers is socially desirable.

In the downstream market heterogeneous consumers in terms of preferences make their purchasing decision observing the price and nature of the products (i.e. public/supermarket private standard). Consumers are modeled in the spirit of Mussa and Rosen (1978) and we denote by θ the consumer differentiating attribute. For tractability, this attribute is assumed to be uniformly distributed between $[0, M]$ and each consumer purchases at most one unit of the good. Thus, M also denotes the maximum market size. The utility of consumers with the differentiating attribute θ is given by

$$U = \begin{cases} \theta\alpha_s - R_s & \text{if purchased from the supermarket,} \\ \theta\alpha_d - R_d & \text{if purchased from the domestic retailer,} \\ 0 & \text{otherwise.} \end{cases} \quad (1)$$

For tractability, the marginal cost of producing one unit of agricultural products is normalized to zero. Thus, the project return, R_s and R_d , also denotes the per unit retail price charged by the supermarket and the domestic retailer, respectively. Based on expression (1), the demand for the domestic retailer product is

$$D_d = \begin{cases} \frac{R_s - R_d}{\alpha_s - \alpha_d} - \frac{R_d}{\alpha_d} & \text{if } R_s > \frac{\alpha_s}{\alpha_d} R_d \\ 0 & \text{otherwise.} \end{cases} \quad (2)$$

On the other hand, the quantity demanded for the supermarket product can be expressed as

$$D_s = \begin{cases} M - \frac{R_s - R_d}{\alpha_s - \alpha_d} & \text{if } R_s > \frac{\alpha_s}{\alpha_d} R_d \\ M - \frac{R_s}{\alpha_s} & \text{otherwise.} \end{cases} \quad (3)$$

Note that because the supermarket and domestic retailer products are assumed to be vertically differentiated, to insure the coexistence of both markets, it is necessary to have $R_s > R_d$.

Before concluding this section, it is interesting to note that $1/\theta$ can be interpreted as the marginal utility of income (Tirole, 1988). As reported in the literature (see for instance Reardon et al. 2003 and Trail, 2006), with urbanization, the emergence of a wealthier social class is a major determinant of the diffusion of supermarkets in developing countries. The current framework captures the fact that consumers with the lowest

² For details on the financing of small farmers by supermarkets please refer to Marcoul and Veyssi re (2007).

marginal utility of income (i.e. the highest θ) are more eager to consume the supermarket food products.

3 **Financing of farmers**

Financing is modeled in fashion similar in spirit to Holmstrom and Tirole (1997). As explained in this section, the proper implementation of the project requires that all agents be provided with adequate incentives. In particular, the contract design problem consists in optimally sharing the project return, among the contracting parties. The optimal sharing rule should be such that it guarantees the participation of all agents without destroying incentives for diligent behavior.

Supermarket project.

The supermarket project involves three agents: the farmers, the supermarket and the bank. The return of the supermarket project has to be shared, such that

$$R_s = R_f + R_l + \pi_s.$$

Here, π_s denotes the rent of the supermarket, while R_f and R_l denotes the rent of the farmers and the lenders.

Farmer incentive compatibility constraint

To guarantee proper effort by the farmer, he should be provided at least as much while exerting effort as when shirking i.e.

$$p_H R_f \geq \alpha_s B.$$

The bank participation constraint: The banking sector is assumed perfectly competitive and in order to accept a loan application, the bank should at least break-even. The break-even condition is expressed as:

$$p_H (R_s - R_f - \pi_s) \geq I + C - A,$$

or equivalently,

$$A \geq A_s = I + C + \alpha_s B + p_H \pi_s - p_H R_s. \quad (4)$$

Recall that C denotes the necessary upfront investment to produce supermarket products. It is important to understand that according to (4) sole the farmers that can justify of a level of collateral $A \geq A_s$ will be financed by the bank to supply the supermarket.

Supermarket participation constraint

Finally for the supermarket to be willing to develop the project, it should be that:

$$p_H \pi_s > 0.$$

Domestic retailer project.

Farmers who were not granted credit to supply the supermarket, can still supply the domestic retailer. The domestic retailer project also involves three agents: the farmers, the domestic retailer and the bank. The return of the project has to be shared, such that

$$R_d = R_f + R_l + \pi_d.$$

Here, π_d denotes the rent of the domestic retailer.

Farmer incentive compatibility constraint

Again, to guarantee proper effort by the farmer, he should be provided at least as much while exerting effort than when shirking i.e.

$$p_H R_f \geq \alpha_d B.$$

The bank participation constraint:

As before, to be granted financing for the domestic retailer project, the farmer's level of finance has to be such that

$$A \geq A_d = I + \alpha_d B + p_H \pi_d - p_H R_d. \quad (5)$$

Therefore farmers with finance such that $A < A_d$ will have no access to funding and are left credit constrained.

Domestic retailer participation constraint

Finally to guarantee the participation of the domestic retailer it should be that:

$$p_H \pi_d > 0.$$

The following proposition summarizes our results.

Proposition 1 (Market segmentation). *Assuming coexistence of both marketing channels - domestic retailer and supermarket- the financial contract passed between farmers, the bank, the domestic retailer and the supermarket is as follows:*

- when $\bar{A} \geq A \geq A_s$, farmers borrow from the bank and supply the supermarket procurement system,
- when $A_s \geq A \geq A_d$, farmers borrow from the bank and supply the domestic retailer procurement system,
- when $A \leq A_d$, farmers have no access to credit and are excluded from the marketing systems.

Furthermore, the expected rent of the supermarket can be expressed as

$$p_H \pi_s = p_H R_s + \frac{R_s - R_d}{\alpha_s - \alpha_d} - (I - \bar{A}) - C - \alpha_s B - M,$$

while domestic retailer expected rent is given by

$$p_H \pi_d = \left(p_H + \frac{1}{\alpha_d} \right) R_d - \alpha_d B - (I - \bar{A}) - M.$$

Proof: Given that farmers are uniformly distributed and produce at least one unit, the number of farmers who supply the supermarket also denotes the total quantity supplied by the supermarket. This quantity is given by

$$S_s = \bar{A} - A_s,$$

or using (4),

$$S_s = p_H R_s - (I - \bar{A}) - C - \alpha_s B - p_H \pi_s. \quad (6)$$

When $A \leq A_s$ farmers do not receive funding to supply the supermarket marketing channel. However, they can still receive funding to supply the domestic retailer as long as $A \geq A_d$. Thus, with the entry of the supermarket, the total quantity supplied to the domestic retailer becomes

$$S_d = A_s - A_d,$$

or using (5),

$$S_d = p_H R_d - p_H R_s + C + (\alpha_s - \alpha_d)B + p_H \pi_s - p_H \pi_d. \quad (7)$$

At equilibrium, both the market for the domestic retailer and for the supermarket products clear, such that $D_d = S_d$ and $D_s = S_s$. Substituting back the demand expressions (equations (2) and (3)) into the respective supply equations (equations (6) and (7)), the expected rent of the supermarket is expressed as

$$p_H \pi_s = p_H R_s + \frac{R_s - R_d}{\alpha_s - \alpha_d} - (I - \bar{A}) - C - \alpha_s B - M, \quad (8)$$

while domestic retailer expected rent is given by:

$$p_H \pi_d = \left(p_H + \frac{1}{\alpha_d} \right) R_d - \alpha_d B - (I - \bar{A}) - M. \quad (9)$$

The empirical literature describing the emergence of supermarkets in developing countries has forcefully argued that supermarkets tend to contract with large, wealthy farmers, while poor ones are left behind. Our model underlies the simple logic behind these observations: supermarkets set up high standards that often require substantial investment on the part of farmers. Thus, only wealthy farmers are able to finance the upfront investment, while poorer ones are credit-rationed and will, as such, turn to the traditional segment.

Furthermore, this literature has also emphasized that the domestic retailing sector is often jeopardized by the entry of supermarket. The supermarket private standards are in general more stringent than public standard and fierce competition by the supermarket can drives out domestic retailers. For example, following the emergence of supermarket 64,198 small shops went out of business in Argentina from 1984 to 1993, and 5240

small shops closed their doors in Chile from 1991 to 1995 (Reardon et al., 2003).

Lemma 1. *Let define $\bar{R} = \frac{\alpha_d[\alpha_d B + (1-\bar{A})+M]}{\alpha_d p_H + 1}$ as the minimum retail price that can be charged by the domestic retailer. With the entry of the supermarket, the domestic retailing sector is not jeopardized, as long as, $R_d > \bar{R}$.*

Proof The proof is straightforward from equation (9).

According to Lemma 1, the survival of the domestic retailing sector is contingent on the domestic project's return, which ultimately depends on the equilibrium price. Therefore, to assert the impact of supermarket entry, it is necessary to determine the effects of the supermarket entry on retail prices. The next section studies this question.

4. Market structure and projects' return

Assuming coexistence of both marketing channels (i.e. $R_s > \frac{\alpha_s}{\alpha_d} R_d$), first note that given equations (2) and (3), the supermarket project' return can be written as

$$R_s = \alpha_s M - \alpha_d D_d - \alpha_s D_s. \quad (10)$$

Similarly, for the domestic retailer, it corresponds to

$$R_d = \alpha_d M - \alpha_d D_d - \alpha_d D_s. \quad (11)$$

Thus, the size of the market, as well as consumer preference for each product, determines the returns for each project. Furthermore, while the supermarket is assumed to behave as a monopolist, the domestic retailing sector is composed of symmetric retailing shops. The problem for a retail shop can be written as

$$\max_{d_d} \{R_d d_d\},$$

or equivalently,

$$\max_{d_d} \{\alpha_d (M - D_d - D_s) d_d\}.$$

Here, d_d denotes the quantity sold by a single retail shop. The first order condition implies that

$$\alpha_d M - \alpha_d (1 + \chi) D_d - \alpha_d D_s = 0, \quad (12)$$

where $\chi = \frac{\partial D_d}{\partial d_d} \frac{d_d}{D_d}$ denotes the conjectural variation elasticity of demand.

Assuming that there are N domestic retailing shops, given that $D_d = \sum_{i=1}^{i=N} d_{di}$, $\frac{\partial D_d}{\partial d_{di}} = 1 + \sum_{j \neq i} \frac{\partial d_{dj}}{\partial d_{di}}$. In theory, $\frac{\partial d_{dj}}{\partial d_{di}}$ represents the "conjecture" of firm i regarding how firm j will react to an increase in quantity by firm i . It can be divided into three classes. Negative values of the conjecture indicate adaptive behavior, a zero value may refer to a cournotian behavior

and positive values denote expectation matching behavior. Assuming that individual firms anticipate other firms' behavior, reasonable boundaries for conjecture can be set at -1 and 1 (Anderson, 1977). For instance, under Cournot conjecture $\frac{\partial d_{ji}}{\partial d_{di}} = 0$, while under Bertrand conjecture $\frac{\partial d_{ji}}{\partial d_{di}} = -\frac{1}{N-1}$. Given that $\frac{d_d}{D_d}$ denotes the market share, the conjectural variation elasticity will take a value between 0 and 1. The parameter χ allows an examination of various types of strategic interactions among domestic retailing firms. If, for instance, the N firms compete in quantities (i.e., Cournot-Nash competition), $\frac{d_d}{D_d} = \frac{1}{N}$ and $\frac{\partial D_d}{\partial d_d} = 1$ (given that Cournot conjecture imposes that $\frac{\partial d_{ji}}{\partial d_{di}} = 0$); thereby, $\chi = \frac{1}{N}$. Similarly, if the N firms are engaged in price competition and have no capacity constraints, $\chi = 0$ (given that $\frac{\partial d_{ji}}{\partial d_{di}} = -\frac{1}{N-1}$, then $\frac{\partial D_d}{\partial d_d} = 0$). Obviously, $\chi = 0$ also captures the perfectly competitive outcome. Finally, if the firms collude and act as a monopoly (expectation matching behavior), $\chi = 1$.^{3, 4}

Given that the supermarket is assumed to behave as a monopolist, its problem is

$$\max_{D_s} (\alpha_s M - \alpha_d D_d - \alpha_s D_s) D_s,$$

and the first order condition is obtained as

$$\alpha_s M - \alpha_d D_d - 2\alpha_s D_s = 0. \quad (13)$$

According to equations (12) and (13), the Nash equilibrium quantity of the supermarket product is given by

$$D_s^* = \frac{(1 + \chi)\alpha_s - \alpha_d}{2(1 + \chi)\alpha_s - \alpha_d} M, \quad (14)$$

while the Nash equilibrium quantity of the domestic retailer product corresponds to

$$D_d^* = \frac{2\alpha_s - \alpha_d}{2(1 + \chi)\alpha_s - \alpha_d} M. \quad (15)$$

Substituting equations (14) and (15) into equations (10) and (11), the return for the supermarket project can be expressed as

$$R_s^* = \frac{(1 + \chi)\alpha_s \alpha_s - 2\alpha_d \alpha_s + \alpha_d \alpha_d}{2(1 + \chi)\alpha_s - \alpha_d} M. \quad (16)$$

³Conjecture and conjectural variation elasticities have been the subject of confusion in notation and interpretation. For a good review and discussion see Lavoie, 2005.

⁴While we have assumed that domestic retailing firms are symmetric and hold the same conjecture, more generally, $\chi = \sum_{i=1}^N s_i \kappa_i$ where s_i denotes the market share of firm i and $\kappa_i = \frac{\partial D_d}{\partial d_{di}}$ (see, for instance, Porter 1983).

Similarly the domestic retailer project return is given by:

$$R_d^* = \alpha_d \frac{(\chi - 1)\alpha_s + \alpha_d}{2(1 + \chi)\alpha_s - \alpha_d} M. \quad (17)$$

It is important to understand that R_s^* and R_d^* represent equilibrium prices of the supermarket and domestic retailer project, respectively. Substituting back equations (16) and (17) into (8) and (9) will provide the expected rent earned by the supermarket and domestic retailer, respectively, under coexistence of both marketing channels.

5. Impact of the supermarket private standard

Intuitively, more stringent supermarket standards should raise the return of the project and thereby raising farmers' credit opportunities. However, as explicit in Lemma 1, domestic retailers may be unable to compete with the supermarket and as a result driven out of the market. This, in turn, may strengthen the credit constraints faced by farmers.

Based on the previously established results, this section examines the impact of differing stringency in the supermarket food standards, on the market structure and its implication for supplying farmers.

Proposition 2. *There exists a standard threshold level defined by $\alpha_s^* = \alpha_d \frac{(\alpha_d p_H + 1)M + \alpha_d B + (I - \bar{A}) + M}{2(1 + \chi)\alpha_d - (\alpha_d p_H + 1)(\chi - 1)M + 2(1 + \chi)[(I - \bar{A}) + M]}$ and such that:*

- $\alpha_s \leq \alpha_s^*$, then the market for domestic retailer and supermarket products will coexist. In this regime when the stringency of the supermarket standard increases, the number of farmers having access to funding increases as well. Moreover the existence of the supermarket always increases the number of farmers funded, in comparison to a situation where there is no supermarket.

- $\alpha_s \geq \alpha_s^*$, then with the entry of the supermarket, the market for domestic retailer products vanishes. Here, the number of farmers funded will decrease as long as the supermarket has a greater degree of market power than the domestic retailers.

Proof The domestic retailer will participate in marketing activities as long as its expected rent is positive (i.e. $p_H \pi_d \geq 0$) Using expression (9), $p_H \pi_d \geq 0$ if

$$\alpha_s \leq \alpha_s^* = \alpha_d \frac{(\alpha_d p_H + 1)M + \alpha_d B + (I - \bar{A}) + M}{2(1 + \chi)\alpha_d - (\alpha_d p_H + 1)(\chi - 1)M + 2(1 + \chi)[(I - \bar{A}) + M]}.$$

Since farmers supply at most one unit, the aggregate equilibrium quantity corresponds to the number of farmers funded. Prior to the entry of the supermarket, the demand for domestic products is given by $D_d = M - \frac{R_d}{\alpha_d}$.

Then, the maximizing behavior by the domestic retailing sector implies that the number of farmers financed can be expressed as

$$F_b = \frac{M}{1 + \chi}.$$

Under coexistence, the number of farmers funded corresponds to

$$\begin{aligned} F_c &= D_s^* + D_d^* \\ &= \frac{(3 + \chi)\alpha_s - 2\alpha_d}{2(1 + \chi)\alpha_s - \alpha_d} M, \end{aligned}$$

given that

$$F_c - F_b = (1 + 2\chi)(\alpha_s - \alpha_d) + \chi^2 \alpha_s > 0.$$

Thus, under coexistence, the number of farmers funded strictly increases. Finally, if the supermarket is the sole supplier, the demand for its product corresponds to $D_s = M - \frac{R_d}{\alpha_d}$ and the number of farmers funded is given by

$$F_s = \frac{M}{2} \leq F_b.$$

F_s will be lower than F_b as long as $\chi \neq 1$; in other words, as long as the domestic retailer is not a monopolist like the supermarket.

The reasoning behind this proposition is as follows. With the entry of the supermarket, to meet its demand, the domestic retailer needs to extend credit to smaller producers. According to equation (5), to do so, the domestic retailer has to diminish its expected rent. As a result, farmers are left with a greater share of the project and more farmers have access to funding. However, as the stringency of the supermarket standard increases, the domestic project's return decreases (see equation (17)). Therefore, the rent of the domestic retailer decreases to the point where selling domestic products is not a viable option (see Lemma 1).

However, when the supermarket faces no competition, it will maximize its expected rent. To do so, the supermarket will reduce its volume of sale and, as a result, farmers will face fewer financing opportunities.

5. Discussion and concluding remarks

In this paper, farmers' credit access is modeled in a framework similar in spirit to Holmstrom and Tirole (1997). However, unlike Holmstrom and Tirole (1997) the project returns are endogenously determined by the relative stringency of each food standards as well as the retailing market structure. This allows to understand the implication of the emergence of a marketing system for high quality food products, which is

often associated with the spread of supermarkets in developing countries, on farmers credit access.

According to Proposition 2, a regulator seeking to extend farmers' credit access should impose a maximum standard level on the supermarket food products, such that the entry of the supermarket does not jeopardize the existing domestic retailing sector.

Nevertheless, it is not clear whether the supermarket has an interest in driving out the domestic retailing sector. Given that the presence of the lower quality products allows him to charge a higher price for its food products than in absence of lower quality products. In a sense the presence of the domestic retailing sector allows the supermarket to better discriminate among consumers willing to pay for higher food standards. Thus, it may be the case that the supermarket prefers to set a standard level below α_s^* . In that case there is no need to regulate the supermarket food standards.

Furthermore, if the regulator cannot control the supermarket food standard, yet to preserve the domestic retailing sector it may diminish (raise) the domestic food standard. A change in stringency of the domestic food standards has ambiguous effects on the survival of the domestic retailing sector. On the one hand, its reduction will diminish the opportunity cost of effort for farmers and thereby the overall cost of production of the domestic products. This, in turn, will favor the survival of the domestic retailing sector. On the other hand, a reduction in food standards results in a reduction in demand for the domestic food products, which will curtail the market share of the domestic retailing sector. Whether the cost reduction effect dominates the demand effects will determine the best policy for the regulator. In some countries, evidence suggests that the demand effect outweighs the raise in cost of production implied by more stringent food standards (see for instance, Reardon and Farina, 2002 and Reardon and Berdegué, 2002). For instance as reported by Reardon and Berdegué (2002), in South America, in response to the entry of supermarkets, domestic retailers have raised the stringency of their food standards.

Therefore our results suggest that the entry of supermarkets in developing may extend farmers credit access, via the emergence of a marketing channel for food products with more stringent standard.

Finally, while this paper focuses on one trait of the supermarket organization, its ability to set higher food standards, the supermarket is defined by other characteristics. In particular the empirical literature reports that the supermarket procurement organization not only provides extension services to farmers, but also additional funding via inputs loans. Marcoul and Veyssiere (2007) using a similar framework of analysis shows that such organization of procurement may also be conducive of better financing opportunities for farmers.

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