

# Customer-Controlled Firms: the Case of Stock-Exchanges

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## Abstract

In many industries there are firms whose owners are also customers. They have contrasting interests: they get more utility as the firm's profits increase, and the prices of the good decreases as their private consumer surplus increases. An interesting example is the stock exchange industry. This paper shows that a customer-*owned* monopolist always achieves first-best social outcome, but in customer-*controlled* firms, profits are not necessarily maximized and minority shareholders are damaged. When customers have equal unit demand, less profits arise if they hold a share of the firm's capital lower than their proportion over the total number of customers. When customers have equal downward demand, the firm never maximizes profits; besides, if the share of capital of customer-owners is somewhat less than the weight of customer-owners over total customers, the firm will always price at 0. Customer-controlled stock exchanges are welfare efficient if the customers (listed firms, intermediaries, price vendors, etc) hold an amount of capital equal to their proportion over the total number of customers. They never price at the monopoly price and, thus, do not maximize profit. This finding casts some doubt on the policy of listing a stock-exchange company itself on exchanges.

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## 1. Introduction

In many industries there are customer-owned enterprises; agricultural cooperatives are the most common example but they can be found also in utilities, social affiliation, housing, and banking. In many cases, all the customers have a share of the property of the firm and there are no outside shareholders (i.e., shareholders who are not at the same time customers of the firm), but this is not necessarily true. In general not all the owners are customers of the firm and not all the customers are also owners; there may exist other customers who buy the products of the firm and shareholders who do not buy the products of the firm. An example is in the stock-exchange industry. Many stock exchanges are owned or controlled by financial intermediaries who are the major buyers of the exchanges' services; on average, one third of the European exchanges' revenues come from trading services paid by financial intermediaries (Baggiolini, 1996), which are often, at the same time, among the major owners of the exchange itself. In stock exchanges, there may exist shareholders who are not customers (for example, when exchanges go public) and there may exist customers who are not owners (intermediaries, listed firms, price vendors, trading system providers).

In these kinds of firms, pricing policies and, in general, profit-maximization policies are decided by some of the customers (who are shareholders, indeed) who consume the good, whose price they are fixing themselves. This paper investigates whether there are any "perverse" effects on having these "dual-capacity" individuals who have a relationship with the firm. On one hand, they get utility as a share of the firm's profits; on the other hand, they get more utility paying the lowest price possible for the good they purchase from the firm. The different maximizing problems of diverse shareholders can also create conflicts of interest not only in pricing policies but also in investment policies, in self-regulation, and in enforcement of regulation among members. In the appendix of this paper, this argument is presented with respect to stock exchanges.

The topic of customer-controlled firms is relevant for many reasons:

- 1) Customer-controlled firms are increasingly important all over the world. Many of them are listed on stock exchanges and pricing policies, which eventually do not lead to maximize profits, may represent a problem for dispersed and minority shareholders who may gain less profits. Customer-controlled firms, in reality, may not be directly owned by a direct customer but be hidden in complex group structures. For example, it could be that a firm is controlled by a holding and this holding controls another firm that is a customer of the first one (such as

a car maker and a tire maker). The transfer pricing between the firms can affect the profitability of both firms' shareholders.

2) Normal customers, not owners, may be affected, too, in the case of different pricing policies due to customer-owners. If we start from a monopoly situation, they are going to face lower prices and increase their utility.

3) Finally, welfare may be affected, as the quantity and prices may vary depending on the customer and ownership structures of the firm.

In order to give general implications to the paper in terms of different percentages of customer-owners, some strong simplifying assumptions must be made:

- This paper concentrates on the case where all customers have the same demand; otherwise, it should be checked, case by case, who are shareholders and who are not. In this way, all the "voting" side of the problem, which arises if shareholders have different preferences, is lost.
- If some customers are also shareholders, each of them has the same stake of capital and the same voting capacity.
- Firms acting in a competitive environment always price at marginal cost and customer-owned firms could not behave differently. That is why we concentrate on a non-competitive environment where the firm is a monopolist<sup>1</sup>.
- The standard principal-agent problems of the separation between ownership and control are not taken into account, either. It is assumed that the controlling shareholders decide the pricing policies of firms through the management they appoint.

The problem of customer-controlled firms is treated in a general way, but some emphasis is added on its implication over stock-exchange companies, which represent a peculiar example of customer-controlled firm. That is why their ownership structure is described and, in the appendix, their corporate governance problems and some conflict of interest, which may arise, are briefly analyzed.

The main findings of this paper are the following:

When a monopolist firm, with constant marginal costs, faces customers who have the same completely inelastic unit demand, then welfare is never affected if the firm is customer-owned or controlled. Actually, in this case, the monopoly

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<sup>1</sup>Utilities are a common example of customer-owned firms and are generally monopolist (Hansmann, 1996).

always achieves the first best outcome. This firm will always price at the monopoly price as far as the customer-owners have a stake in the firm higher than their proportion among consumers. But if the customer-owners are “a lot” compared to the capital they own in the company, then the firm will price at zero (even lower than the marginal cost), “ripping off” all the common investors in the firm, as it gets zero or negative profits. On the other hand, if the firm is a cooperative where all the customers are also shareholders with the same voting and claim rights, then pricing policy is irrelevant.

When the firm, with constant marginal costs, faces a downward linear demand, then total welfare tends to the pure-competition welfare the closer is the percentage of capital owned by customers to the proportion of customer-owners on total customers. In this case, a monopoly is a first best solution. The firm never prices at the monopoly price. Minority shareholders always receive less profits or even a loss whenever there are many customers who own a stake of the firm a bit lower than their ratio on total customers. In this case the firm will price at zero.

The paper is organized as follows: Section 2 gives some background on the problem from a theoretical point of view and with regard to the stock-exchange industry. Section 3 analyzes the unit-demand case. Section 4 presents the linear downward-demand case. Section 5 concludes, giving some implications. The appendix deals with the corporate governance of exchanges and conflict of interest.

## **2. Customer-controlled firms and stock exchanges**

The relation of a customer-owner with the firm is very special; she gets utility from the consumer surplus from buying the good, and from a part of the profits of the firm itself.

As Hansmann (1996) notes, “firms that are collectively owned by their customers are surprisingly common and play an important role in a variety of markedly different industries.” In general they are not common in the retail goods market but more in the wholesale market. Classical examples of customer-owned enterprises, carefully described by Hansmann (1996), are: consumer cooperatives whose primary business is farm supplies; bookstores; utility companies; clubs and other associative organizations; housing cooperatives and condominiums; cooperative and savings banks owned or controlled by depositors or borrowers; and insurance companies.

Another example of an industry with customer-controlled firms is the stock-exchange industry.

## 2.1. The ownership structures of stock exchanges

Stock exchanges have different ownership structures, from the continental European traditional view of the exchange as a public entity to the new Scandinavian and Australian view of the exchange as an investor-owned firm (even a public company listed on a stock exchange itself).

In reality, there are many categories in which exchanges can be classified according to their ownership structure<sup>2</sup>:

- public entities
- cooperatives of intermediaries
- corporations controlled by intermediaries
- corporations controlled by intermediaries, institutional investors, and issuers
- corporations controlled by outside owners.

There are also some exchanges where the board may be composed of representatives not elected by shareholders<sup>3</sup>.

If shares are freely tradeable, it is plausible to think that some of the customers of the exchange, like intermediaries, listed firms, or information vendors, may buy shares of an exchange to extract private rents in terms of pricing of the different goods or even in terms of loose self-regulation by the exchange.

On the other hand, it “is apparent that the LSE is increasingly being run as a business than a cooperative. We can see no reason why the stock exchange should not now develop a corporate structure”<sup>4</sup>.

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<sup>2</sup>See Cybo Ottone (1997).

<sup>3</sup>The structure of the Board of the London Stock Exchange (21 people) is somewhat peculiar because, although membership is open only to intermediaries, there are members representative of institutional investors (2), listed companies (3), private client firms (3), and securities houses (5); there is also the government broker (appointed by the Bank of England), five executive directors, the chairman, and a deputy chairman (London Stock Exchange, 1996, appendix A).

<sup>4</sup>See the proposals of the Treasury Committee of the House of Commons of the British Parliament (March 1997) demanding that the LSE no longer be owned by member companies and move to a public offering (Financial Times, 1997b); a member of the British Parliament was quoted as saying that “the stock exchange has been run for the short-term interests of market makers rather than the maximum benefit of the London market as a whole” (Financial Times, 1997a).

Currently, many stock exchanges are cooperatives of intermediaries or corporations controlled by them. In the Stockholm Stock Exchange issuers have 50% of the shares, while the Australian Stock Exchange, Amsterdam, and Tradepoint are listed companies and so private investors may own their capital.

### **2.1.1. An application of Hansmann's (1996) theory of the ownership of enterprise to financial exchanges**

Two questions arise (Ferrarini, 1996): why "members' ownership" has prevailed as the main ownership structure of exchanges, and what is driving the ownership structure towards outside ownership.

Both questions can find an answer in Hansmann's (1996) theory of the ownership of enterprise. In his book, Hansmann treats every firm and its ownership structure looking at the relations between the firm and its "patrons" (i.e. "all persons, individuals, or other firms, who transact with the firm either as purchasers of the firms products or as sellers to the firm of supplies, labor, or other factors of production").

All firms can be classified according to three ownership structures:

- Producer-owned enterprises like employee-owned firms, agricultural cooperatives, or investor-owned enterprise which are the normal business corporations owned by patrons who supply one of the factors of production: capital.
- Customer-owned enterprises.
- Nonprofit and mutual enterprises, like many nonprofit firms, banks and insurance companies, which have no owner<sup>5</sup>.

The cost of market contracting and the cost of ownership lead to the different structures. As the cost of transacting is high<sup>6</sup>, it is efficient, other things being equal, for firms and patrons to internalize these costs so that one category owns

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<sup>5</sup>A firm's "owners" are those persons who share two formal rights: the right to control the firm and the right to appropriate the firm's profits or residual earnings. In nonprofit firms, in particular, the persons who have control are barred from residual earnings and so they cannot be considered owners.

<sup>6</sup>There are several market imperfections whose costs can potentially be reduced by assigning ownership to the affected patrons (ex-ante and ex-post market power, risk of long-term contract, asymmetric information, strategic bargaining communication of patron preferences, etc.).

the other. Then it is more efficient that this integration happens with the patrons with whom transacting is more costly<sup>7</sup>. Different structures of ownership imply different costs of governance and monitoring managers. These costs vary with respect to different classes of patrons as some of them may better govern the firm.

Hansmann's ideas can explain why member-owned exchanges arose and why they are changing.

First of all, exchanges were firms with a great degree of monopoly power in dealing with their customers and "this is a common reason for organizing the firm as a consumer cooperative." In this way, member firms could avoid two types of costs: the first is paying a monopoly price for the trading services they purchased from the exchange; the second is the underconsumption of trading services due to high prices<sup>8</sup>. The cost of ownership in an exchange led naturally to a members' ownership, as exchange members were quite homogeneous. Thus, this minimized the cost of collective decision making and gained managerial control with low costs as generally the intermediaries themselves had all the relevant information needed to organize and manage their exchange.

Nowadays, exchanges are moving from being customer-owned to being investor-owned and Hansmann's general explanation can be exploited, too.

Integration of the markets and evolution of technology change the monopoly position of exchanges, reducing the main advantage of members' ownership. Exchanges must raise capital to compete efficiently and investor ownership is the obvious solution to solve, at least partially, asymmetric information problems in the capital market<sup>9</sup>. The cost of ownership in the new environment is reduced by investor-owned exchanges mainly because the cost of collective decision making is increasing due to the massive heterogeneity of exchange members. There are no more simple brokers of the same size and profitability but they are more and more diverse. Banks are much different from brokers. Market makers, which may be different from banks, have different interests from brokers. In short, there are many conflicts among members that increase the cost of governance. Furthermore, risk bearing is reduced in an investor-owned exchange by definition, as investors are in a position to eliminate firm-specific risk through diversification of

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<sup>7</sup>For example, if a firm is a monopolist with respect to consumers but purchases its factors of production in a competitive market, then total costs are minimized if it is owned by its customers.

<sup>8</sup>It must be admitted that this is true only if members could not pass along all the higher costs to final consumers, which is likely, at least for trading on their own account.

<sup>9</sup>Hart and Moore (1995) and Cybo Ottone (1997) raise this important point.

their investment<sup>10</sup>

## 2.2. The literature on customer-controlled firms

From an industrial organization point of view, the first thing that makes customer-controlled firms different from normal firms is that, due to ownership structures, the management may not necessarily want to maximize profits. In fact, the price for, at least, one of its products can influence the shareholders' value not only through the firm's profit but also through their consumption of the good as long as the firm is not perfectly competitive. In general industrial organization textbooks view this exception as of minor importance because, as Tirole (1988) states, "the shareholders' (at least the influential ones') consumption of their firms' products is usually very small, so that price effects are small relative to the income effect generated by the firm's profit level." However, this may not be true for all the firms. Scherer (1980) says that deviations from profit-maximization behavior, "both intended and inadvertent, undoubtedly exist in abundance, but they are kept within more or less narrow bounds by competitive forces, the self-interest of stock-owning management, and the threat of managerial displacement by important outside stockholders and takeover traders." These three conditions are becoming slowly existing for exchanges, too. Competition is increasing. Stock-owning management already exists in some exchanges (the LSE, for example). Takeovers begin to happen (OM over Stockholm Stock Exchange), as well as outside ownership so that new owners replace old management.

Beyond Hansmann's (1996) book, the literature on customer-controlled firms is not abundant, while the theoretical and empirical literature on cooperatives is considerable<sup>11</sup>.

A deep analysis is in King (1977), which uses a simple model of a stock-market economy<sup>12</sup>. There is a "two-period, three states, one commodity" world in which there are a given number of securities consisting of shares in a fixed number of firms. Shareholders' consumption is affected by the firms' policies and "there is no presumption that the policy which maximizes the share price is in the

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<sup>10</sup>In general, patrons face much higher costs in spreading their transactions across a number of different firms in different industries. Actually, member firms in exchanges may have the chance to be customers and shareholders of more exchanges as shares become tradeable (see, for example, Amsterdam, Stockholm, Milan, etc.).

<sup>11</sup>See Bonin *et alii* (1993) for a recent survey, even though they concentrate on producer cooperatives.

<sup>12</sup>King's model is also analyzed by Macchiati, 1992.



shareholders' interest ... because the firm can alter the effective prices of the goods which the shareholders are implicitly purchasing." This is true in particular when the firm is a monopolist and in general "in any circumstances in which the firm can affect the prices of commodities which its shareholders buy or sell, directly or indirectly... This is often overlooked because the firm is regarded as a black box and the composition of its owners ignored" (King, 1977).

McAndrews and Rob (1996) analyze the ATM networks, which are often customer-controlled because cooperatives of banks own the ATM companies. The demand of banks for ATM services is a derived demand because the final demand is the one by bank customers. This framework looks very much like the case of stock exchanges, which can be seen as networks owned by intermediaries who are customers for the trading services that are really necessary to satisfy the demand for trading services of final investors. McAndrews and Rob (1996) show that the reason that joint ownership of a network switch occurs is twofold: "first, the joint ownership of the wholesale switch eliminates a double margin as in a standard vertical integration story; second, joint ownership results in more concentrated markets, in which the network externality is more fully exploited. Indeed, the monopoly equilibrium of the jointly owned network produces the same output as the solely owned network."

Barone and Masera (1997) propose, among other things, the listing of stock exchanges on exchanges themselves, claiming that in this way minority shareholders would be more protected and the market could verify their efficiency.

One paper related to the ownership structures and stock exchanges is the one by Hart and Moore (1995).

### **2.2.1. Hart and Moore's (1995) paper**

This paper underlines at the beginning the new challenges of exchanges: the increasing competition, due to reduced cost of communication; the changing product mix of exchanges, which no longer need to be vertically integrated as many functions (providing a trading mechanism, disseminating information, providing a clearing house, settling trades, etc.) can be offered by specialist service providers; the need to finance substantial investment programs; more open and diverse membership so that many members may have other activities outside the exchange (such as over-the-counter businesses) which make themselves competitors of the exchange.

Then, the paper considers that exchanges differ from most commercial orga-

nizations because the major exchanges are run as cooperatives, on behalf of their members, the people who use the exchange, while, on the other hand, the most common form of governance structure is outside ownership.

The purpose of their paper is to show that both outside ownership and the cooperative structure are inefficient, for different reasons and in different ways. The analysis of Hart and Moore suggests that the relative merits of the two structures depend on the level of competition between exchanges and the diversity of interest of the exchange members: the greater the competition and the greater the diversity, the more likely that outside ownership will be more efficient. The policy implication is that it is no more sensible to operate exchanges as cooperatives and “the balance of the argument is shifting towards outside ownership and this seems to be supported by the actions of the Stockholm Exchange, the CME and Nymex.”

Hart and Moore (1995) study the problem in an extreme way; they compare a profit maximizing firm (outside ownership) with a customer owned firm (cooperative). They compare an exchange facing a linear demand, which is the sum of 100 unit-demand functions with reservation prices distributed from 100 to 1, and each customer is a shareholder with one vote. They clearly show that, given the marginal cost at 20, the profit-maximizing choice for the outside owner is pricing at 60 selling the good to 40 people while the cooperative-maximizing choice is to price at 10, because of the voting rule that penalizes all the members of the cooperative who cannot trade but have a loss given that the firm prices under the marginal cost. In the paper, all the customers are also owners and all the owners are also customers.

Hart and Moore’s analysis shows that a members’ cooperative is relatively more efficient than outside ownership. Introducing competition, outside ownership becomes relatively more efficient than a cooperative, even if this is true only for a very small range of prices. In fact, they admit that “in a pure pricing model, where the median is smaller than the mean, a members’ cooperative will be (at least weakly) more efficient than outside ownership—no matter how skewed the distribution towards the smaller traders, and no matter how strong the competition.” In any case, “free entry encourages the membership to adopt a policy of pricing at cost—which is more efficient.”

Hart and Moore’s results<sup>13</sup> are difficult to generalize to the case of customer-controlled (and not fully owned) firms given that they have a very particular

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<sup>13</sup>Hart and Moore also use a model with quality choice and a pricing model where traders vary in size, to strengthen their results.

demand function, unless assumptions are made on who the customer-shareholders are and on each single demand function.

### 3. The unit-demand model

In this section, it is assumed that the firm is a monopolist in its market and is controlled by some of its customers who naturally want to maximize their total utility, which is composed of their consumer surplus and part of the profits. If these customer-owners have the right to appoint the management, this becomes also the maximizing policy of the firm. Agency problems between management and shareholders are not taken into account.

By assumption, all customers have the same utility function. In this way when the problem is extended to customers who only control the exchange, there is nothing to worry about their identity.

There are  $i$  customers ( $i = 1, 2, \dots, I$ ) who all have a completely inelastic demand for one unit of the good, which gives them gross utility of  $U$  (i.e., the consumer always buys the good if its price is lower than  $U$ ) and net utility  $U - P$ . All payoffs are monetary.

Some customers may be shareholders, too: call  $OCU$  the total *owner-customer utility*, which will vary in the following cases.

The monopolist has marginal cost of  $c < U$  and prices cannot be strictly negative.

#### 3.1. The pure monopolist

The pure monopolist prices, obviously, at  $U$  and its total profit will be  $I(U - c)$ , which is also equal to the social welfare as consumer surplus is zero.

#### 3.2. The customer-owned firm

**Proposition 1.** *The pricing policy of a monopolist owned by all its customers with equal unit demand is irrelevant.*

If all the customers own the monopolist and are the only customers, then pricing policy is totally irrelevant as the total profits for the customers-owners will be  $I(U - p) + I(p - c) = I(U - c)$ , equal to the total welfare, whatever price is fixed. Each customer will receive  $OCU = \frac{I(U-c)}{I} = U - c$ .

**Proposition 2.** *A monopolist owned by some of its customers with equal unit demand will always price at the monopoly price.*

If only a part of customers ( $B$  with  $B/I = \alpha$ ) own 100% of the firm ( $0 < \alpha < 1$ ), then the problem of the manager of the firm becomes that of maximizing the utility of each customer-owner:  $\max \frac{I(p-c)}{B} + (U - p)$ . The first term in brackets is the part of profits that goes to each customer-owner while the second part is her consumer surplus. It can be rewritten as  $\max p \frac{1-\alpha}{\alpha} + U - \frac{c}{\alpha}$ , which is an increasing function in  $p$  as  $\alpha$  is less than one and then the firm will price at the maximum possible price  $p = U$ . Total profits are  $\Pi = I(U - c)$  and total welfare is obviously the same given that there is a monopolist that perfectly price discriminates.  $OCU = \frac{U-c}{\alpha}$ , the customer's share of profits.

### 3.3. The customer-controlled firm

**Proposition 3.** *A monopolist controlled by some of its customers with equal unit demand will price at the monopoly price (their reservation price) if they control a share of capital higher than their proportion among the other consumers; if it is lower it will price at zero even with positive marginal costs. Pricing policy is irrelevant if the share of capital owned by customer-owners is equal to their proportion among the other consumers.*

Suppose now that the customer-owners only control the firm (so that the pricing policy is still decided by them) but do not own it completely (i.e., there are some minority shareholders). Assume that  $\alpha$  customers control a total fraction  $\delta$  ( $0 < \delta < 1$ ) of the firm; this fraction could be even less than 51% but must be such that the pricing policies are decided by them (i.e., the customers elect the management<sup>14</sup>). Then, assume that the controlling customers get in total  $\delta$  profits (i.e., there is just one type of stock).

In this case the managers want to maximize:

$$\max OCU \equiv \max \delta \frac{I(p-c)}{B} + (U - p) \equiv \max \frac{p(\delta - \alpha) - \delta c}{\alpha} + U.$$

As far as  $\delta > \alpha$ , the function is increasing and the firm will find it profitable to price at the monopoly price  $U$ . This means that if the customer-owners act more as

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<sup>14</sup>With disperse shareholding, like that in public companies, firms can be controlled even with less than 5% of the capital.

owners than customers in the market (i.e., the share of capital held by customer-owners is higher than their proportion over the total number of customers), then they will act as outside owners, pricing at the customer's reservation price  $U$ :  $OCU = \delta \frac{(U-c)}{\alpha}$ .

If  $\delta = \alpha$ , pricing policy is irrelevant as in the first case. Price will disappear from the profit function, meaning that each price will maximize it:  $W^i = U - c$ .

If, on the contrary, the customer-owners act more as customers than owners, (i.e.,  $\delta < \alpha$ ), the function is decreasing and the pricing policy of the firm will be to price at zero. It is convenient to price under marginal costs because then the customer-owner must bear part of the loss as profits will be negative, but his consumer surplus increases more than the loss, as some minority shareholders will share the loss:  $OCU = \frac{\delta}{\alpha}(-c) + U$ . Welfare is, obviously, always the same, given that now consumers exploit all the surplus:

$$W = I(0 - c) + I(U - 0) = I(U - c).$$

The problem is clear. A customer-controlled firm may not maximize profits. In this way, the minority shareholders receive less dividends than normal.

Another implication is that the customer-owners may not necessarily be direct customers of the firm but they may control other customers of the firm (i.e., other companies). An example may be represented by interbank deposits among banks belonging to the same group.

In any case there is no social loss given this demand function.

### 3.4. A numerical example

Assume we have three customers ( $I = 3$ ) with the same completely inelastic unit demand with reservation price  $U = 6$ . The monopolist has marginal costs of  $c = 2$ .

A profit-maximizing monopolist will naturally price at 6, getting profits of  $\Pi = I(p - c) = 3(6 - 2) = 12$ . Consumer surplus is zero.

A fully customer-owned firm may price whatever it wants given that each customer-owner will get  $U - c = 6$ , independent of the price.

A firm fully owned by *some* of its customers (for example 2) will price at the monopoly price (6) and each of them will get  $OCU = \frac{U-c}{\alpha} = \frac{6-2}{\frac{2}{3}} = 6$

A firm *partially* owned by *some* customers may price at the monopoly price or at 0 depending on the relative weight of the customer-owners.

If there are two customers (66.7% of customers) who own 80% of the firm, the price will be the monopoly price and each customer will get  $OCU = p \frac{\delta-\alpha}{\alpha} + U - \delta \frac{c}{\alpha} = 6 \frac{\frac{80}{100} - \frac{2}{3}}{\frac{2}{3}} + 6 - \frac{80}{100} \frac{2}{\frac{2}{3}} = \frac{24}{5} = 4.8$

If the two customers own 10% of the firm (still deciding the pricing policy), then the firm will price at zero, and  $OCU = p \frac{\delta - \alpha}{\alpha} + U - \delta \frac{c}{\alpha} = 6 - \frac{1}{10} \frac{2}{\frac{2}{3}} = 5.7$

## 4. The linear downward-demand case

In this section we analyze the same problem with a linear downward-demand function in order to check the effect on the maximizing behavior of customer-controlled firms.

Again, in order to generalize the argument, there is a set of customers with the same demand function.

We have  $I$  individuals with demand  $q_i = a - P$  with  $i = 1, 2, \dots, I$ .

$0 \leq P \leq a$  is the usual condition for positive finite sales and profits.

Aggregate demand is the sum of individual demands:  $Q = Iq_i = I(a - P)$ . The aggregate inverse demand (which is the horizontal sum of the single demands) is  $P = a - \frac{Q}{I}$

Marginal cost ( $c$ ) is constant and there are no fixed costs.

$\alpha = \frac{B}{I}$  is the percentage of customers who are also owners.

$\delta$  is the aggregate capital that the  $\alpha$  customers possess.

Each customer-owner wants to maximize its private profits, which come in part from the profit of the firm and in part from its consumer surplus<sup>15</sup>.

With linear downward-demand function<sup>16</sup> and constant marginal cost, the maximizing  $OCU$  is

$$\max \frac{\delta}{B} \Pi + \frac{(a - P)Q}{2} \frac{1}{I} = \max \frac{\delta}{B} I(a - P)(P - c) + \frac{(a - P)^2}{2}.$$

### 4.1. The pure monopolist

A pure monopolist, obviously, maximizes profits:

$$\max \Pi = \max I(a - P)(P - c)$$

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<sup>15</sup>The generic formula of the "owner-customer utility" ( $OCU$ ) with an increasing supply curve  $c(Q)$  is

$$OCU = \frac{\delta}{B} (PQ^* - \int_0^{Q^*} c(Q)) + \frac{1}{I} (\int_0^{Q^*} f(Q) - PQ^*)$$

where the first term is the share of the firm's profit for the customer-owner and the second term represents its consumer surplus.

<sup>16</sup>We assume that all payoffs are monetary; thus, the consumer surplus, which we take simply as the area under the demand, is expressed in monetary terms.

$$P = \frac{a+c}{2} ; Q = I\frac{a-c}{2} ; \Pi = I\left(\frac{a-c}{2}\right)^2$$

Total consumer surplus is  $C_S = \frac{(a-P)Q}{2} = I\frac{(a-c)^2}{8}$ ; individual consumer surplus is  $\frac{(a-c)^2}{8}$

Welfare is  $W = \Pi + C_S = I\left(\frac{a-c}{2}\right)^2 + I\frac{(a-c)^2}{8} = I\frac{3(a-c)^2}{8}$

#### 4.2. The customer-owned firm

It is straightforward to see that if the firm is customer-owned (i.e.,  $B = I$  and  $\delta = 1$ ), then the maximizing price is  $P = c$ . The firm makes zero profit but the customer-owner gets more consumer surplus.

In fact the maximization problem of the customer-owner becomes  
 $\max OCU = \max(a-P)(P-c) + \frac{(a-P)^2}{2} = \max aP - ac - P^2 + Pc + \frac{a^2+P^2-2aP}{2}$ .  
The first-order condition is

$$a - 2P + c + P - a = 0 \Rightarrow P = c.$$

Given that the second-order condition equals  $-2$ , the function is strictly concave.

$P = c$  is the unique maximum,  $Q = I(a-c)$ ,  $\Pi = 0$ .

Total consumer surplus is  $C_S = I\frac{(a-c)^2}{2}$ ; individual consumer surplus is equal to  $OCU$  and is  $\frac{(a-c)^2}{2}$ .

Welfare is  $W = \Pi + C_S = I\frac{(a-c)^2}{2}$ .

Notice that if the firm had priced at zero,  $OCU$  would have been, of course, lower<sup>17</sup>

#### 4.3. The customer-controlled firm

Here the situation is more complicated.

$$OCU = \frac{\delta}{B}I(a-P)(P-c) + \frac{(a-P)^2}{2} \equiv \frac{\delta}{\alpha}(aP - ac - P^2 + Pc) + \frac{a^2+P^2-2aP}{2} =$$

$$\equiv \frac{2\delta aP - 2\delta ac - 2\delta P^2 + 2\delta Pc + \alpha a^2 + \alpha P^2 - 2\alpha aP}{2\alpha} \equiv$$

$$OCU = \frac{1}{2\alpha} \left[ P^2(\alpha - 2\delta) + P(2\delta a + 2\delta c - 2\alpha a) - 2\delta ac + \alpha a^2 \right]$$

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<sup>17</sup>In particular, with a zero price  $OCU = \frac{a^2-2ac}{2} < \frac{(a-c)^2}{2}$  as  $c > 0$ .

Remember that  $0 \leq P \leq a$ . For  $P = a$  nobody buys any good and  $OCU = 0$ , while for  $P = 0$  the function has value<sup>18</sup> of  $\frac{-2\delta ac + \alpha a^2}{2\alpha}$ .

The first-order condition of the  $OCU$  is

$$\text{FOC: } \frac{1}{\alpha} [P(\alpha - 2\delta) + a(\delta - \alpha) + \delta c] = 0 \Rightarrow P^* = \frac{a(\delta - \alpha) + \delta c}{2\delta - \alpha}.$$

Notice that for the relevant values of  $P$  the first derivative has value of  $\frac{1}{\alpha} [a(\delta - \alpha) + \delta c]$  when price is 0 (and this value is less than zero, indicating a decreasing function, for  $a(\alpha - \delta) > \delta c$ ) but is always smaller than zero for  $P = a$  (the first derivative becomes  $\delta(c - a)$ , which is always negative) indicating the  $OCU$  for the relevant values of  $P$  is always decreasing if it is convex or is in any case decreasing when  $P = 0$  (eventually after a maximum) if it is concave.

The second-order condition is

$$\text{SOC: } \frac{(\alpha - 2\delta)}{\alpha}.$$

There are two main cases, related to the concavity or convexity of the function.

- The function is strictly convex when  $\delta < \frac{\alpha}{2}$ .

**Proposition 1.** *If some customers of a firm own a share of the firm lower than half of their proportion on the total number of customers, then they will always price at zero. Minority shareholders get only losses and welfare can be better than the monopoly case.*

In this case, the first-order condition gives us only the minimizing price. The price that maximizes profits will be the one that gives the highest corner solution. Given that the function is strictly decreasing in the relevant range,  $OCU$  is maximized when the price equals zero. Notice, that welfare can be better than the monopoly case. In fact,  $I \frac{3(a-c)^2}{8} < -caI + \frac{Ia^2}{2}$  if  $a^2 - 3c^2 - 2ac > 0$  which is plausible for sufficiently low marginal costs.

- If the function is strictly concave ( $\delta > \frac{\alpha}{2}$ , which means that a percentage  $\alpha$  of customers own a share  $\delta$  of the capital of the firm that is at least more than double of their percentage of the firm), then the first derivative is decreasing in  $P$  (its coefficient in the first derivative is negative, and so the slope of the function is decreasing). In order to have an interior solution

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<sup>18</sup>Notice already that  $\frac{-2\delta ac + \alpha a^2}{2\alpha} < 0$  when  $\delta > \frac{\alpha a}{2c}$ , i.e. when the customer-owners have a share of capital higher than half their proportion on total customer multiplied by a factor  $\frac{\alpha}{c}$  that is always greater than one. This means that when the customer-owners are "much more owners than customers," they will never price at zero because they would get negative utility.



we need that the profit-maximizing price  $P^*$  is in its relevant range (positive but not higher than  $a$ ):

$$0 \leq \frac{a(\delta - \alpha) + \delta c}{2\delta - \alpha} \leq a.$$

The second part of the inequality is always satisfied for  $c \leq a$  which is always true to have positive supply.

**Proposition 2.** *A monopolist controlled by some of its customers never prices at the monopoly price.*

The maximizing price will be always lower than the monopoly price, if the function is strictly concave (and if it is convex, it will always price at zero): in fact  $\frac{a(\delta - \alpha) + \delta c}{2\delta - \alpha} < \frac{a + c}{2}$  as  $c < a$ .

**Proposition 3.** *If some customers of a monopolist own a share of the firm higher than their proportion on the total number of customers, then the firm will always price higher than its marginal cost. Welfare improves with respect to the pure monopoly, but minority shareholders get less profits.*

The first part of the inequality is always satisfied for  $\delta > \alpha$  given that the marginal costs must be positive. More formally, it is satisfied whenever  $\delta c \geq a(\alpha - \delta)$  (remember that we are in the case of a strictly concave function and so in any case  $\delta > \frac{\alpha}{2}$ ). Actually, if  $\delta > \alpha$ , then the firm will always price higher than its marginal cost: in fact  $\frac{a(\delta - \alpha) + \delta c}{2\delta - \alpha} > 0$  if  $\delta > \alpha$ .

**Proposition 4.** *If some customers of a monopolist own a share of the firm equal to their proportion on the total number of customers, then the firm will always price at its marginal cost. Welfare is maximized but minority shareholders get zero profits.*

With customer-controlled firms, the competitive outcome with  $P^* = c$  is achieved in two cases: if  $\alpha = \delta$  and  $a = c$ . The first case is very important because it means that the “social” problem of customer-controlled firms is solved if the proportion of customer-owners with respect to all customers equals their share of the capital of the firm. Naturally the closer are the two proportions, the worse it is for minority shareholders, as the firm will price closer to the marginal

cost. In this case there is no incentive for a customer to become a shareholder as she gets the same surplus. When  $a = c$  the firm can only price under marginal cost, thus getting only losses. There could be an improvement in welfare from the monopoly case as far as pricing is closer to the perfect competition level.

**Proposition 5.** *If some customers of a firm own a share  $\delta$  of the firm lower than their proportion on the total number of customers and such that  $\delta < \frac{a\alpha}{a+c} (< \alpha)$ , then the firm will always price at zero. Minority shareholders get only losses but welfare can improve with respect to the monopoly case.*

If  $a(\alpha - \delta) > \delta c \Rightarrow \delta < \frac{a\alpha}{a+c} < \alpha$  (remember that  $\frac{\alpha}{2} < \delta$ ), then the maximizing price is negative and for positive prices the  $OCU$  is decreasing. This means that the maximizing relevant price is 0 (for example  $\alpha = \frac{2}{3}, \delta = \frac{2}{5}$ ). In this case the effect on welfare depends on the relative dimension of  $a$  and  $c$ . In fact (the monopoly welfare)  $I \frac{3(a-c)^2}{8} < -caI + \frac{Ia^2}{2}$  (the welfare for  $P = 0$ ) if  $a^2 - 3c^2 - 2ac > 0$ , which is plausible for sufficiently low marginal costs.

#### 4.4. A numerical example

Take  $I = 3, a = 6, c = 2, Q = 3(6 - P)$

- The profit-maximizing choice of the pure monopolist is  $P = 4, Q = 6$ , total consumer surplus is  $C_S = 6$ , and individual surplus is 2.  $\Pi^M = 12$  and  $W = 12 + 6 = 18$
- The profit-maximizing choice for a fully customer-owned firm is to price at  $P = c = 2$ . Then  $Q = 12, \Pi^M = 0, W = 24$  and each customer-owner will get a private profit equal to the maximum consumer surplus 8. Welfare is maximized; even with a monopolist we have a first best solution.
- For  $\alpha = \frac{2}{3}$  and  $\delta = \frac{2}{3}$ , again  $P = c = 2$ . Then  $Q = 12, \Pi^M = 0, W = 24$  and welfare is maximized at its first best.
- For  $\alpha = \frac{1}{3}$  and  $\delta = \frac{1}{2}$  the private-profit function is strictly concave. The profit-maximizing price is  $P = 3$  and  $Q = 9$ . The customer-owner will get  $OCU = \frac{3(6-3)(3-2)}{2} + \frac{(6-3)^2}{2} = 9$ , which is naturally higher than the fully owned enterprise where the customer-owner is getting 8.  $\Pi^M = 9(3-2) = 9, C_S = 13.5, W = 22.5$

- For  $\alpha = \frac{2}{3}$  and  $\delta = \frac{3}{5}$  the private-profit function is strictly concave and the profit-maximizing price is  $P = 1.5$ ,  $Q = 13.5$ . The customer-owner will get  $OCU = 8.1$ ,  $P = c = 2$ . Then  $\Pi^M = -6.75$ ,  $C_S = 30.375$ ,  $W = 23.625$
- For  $\alpha = \frac{2}{3}$  and  $\delta = \frac{1}{2}$ , the private-profit function is again strictly concave and the profit-maximizing price is  $P = 0$ , and  $Q = 18$ . The customer-owner will get  $OCU = \frac{3(6-0)(0-2)}{2*2} + \frac{(6-0)^2}{2} = 9$ . The intuition is clear: the customer-owners push prices to 0 because part of the loss falls over the other shareholders. Notice that  $OCU$  is less than consumer-not-owners' surplus as customer-owners also receive the loss of the firm. They may have an incentive to sell the shares but then the firm will behave like a monopolist, pricing at 4 and they would get only 2 of consumer surplus, thus they keep the shares.  $\Pi^M = -36$ ,  $C_S = 54$ ,  $W = 18$
- For  $\alpha = \frac{2}{3}$  and  $\delta = \frac{2}{5}$ , the private-profit function is again strictly concave and the profit-maximizing price is  $P = -6$ . This means that the relevant profit-maximizing price is 0, given that the function is decreasing in the relevant range. The customer-owner will get  $OCU = \frac{2*3(6-0)(0-2)}{5*2} + \frac{(6-0)^2}{2} = 10.8$ ;  $\Pi^M = -36$ ,  $C_S = 54$ ,  $W = 18$  as above.
- For  $\alpha = \frac{2}{3}$  and  $\delta = \frac{1}{5}$ , the private-profit function is now strictly convex. The first derivative is  $\frac{1}{\alpha} [P(\alpha - 2\delta) + \delta a + \delta c - \alpha a] = \frac{3}{2} (P \frac{4}{15} - \frac{12}{5}) \Rightarrow P^* = 9$  is the minimum of the function and is beyond  $a = 6$ , which is the right border of relevant values. There is a convex function that is decreasing in the relevant range. The maximum will be at  $P = 0$ .  $OCU = \frac{3(6-0)(0-2)}{2*5} + \frac{(6-0)^2}{2} = 14.4$ . The intuition is the same as above: the customer-owners push prices to 0 because part of the loss falls over the other shareholders. Notice the increase in  $OCU$  given that customers possess fewer shares than in the previous example.  $\Pi^M = -36$ ,  $C_S = 54$ ,  $W = 18$  as above.
- For  $\alpha = \frac{1}{2}$  and  $\delta = \frac{1}{3}$ , the private-profit function is again strictly concave. The profit-maximizing price is  $P = -2$ . The problem is that the first derivative, for positive values of price, is always negative. The private-profit function is strictly concave and strictly decreasing, so the profit-maximizing value is again at 0.  $OCU = \frac{2(6-0)(0-2)}{3} + \frac{(6-0)^2}{2} = 10$ .  $\Pi^M = -36$ ,  $C_S = 54$ ,  $W = 18$  as above.
- For  $\alpha = \frac{1}{3}$  and  $\delta = \frac{2}{3}$ , the private-profit function is strictly concave with an interior solution. The profit-maximizing price is  $P = \frac{10}{3}$  and  $OCU \cong 10.57$ ,

$$Q = 8, \Pi^M = \frac{32}{3} \cong 10.67, C_S \frac{32}{3} \cong 10.67, W \cong 21.3$$

## 5. Implications and conclusions

Customer-controlled enterprises have particular pricing policies that depend on the demand function they are facing. It is thus difficult to generalize a statement about their efficiency. In this paper it is assumed that all customers have the same demand function in order to give general results about the proportion of customer-owners in the firms and their influence on pricing policies.

The results are different from those in Hart and Moore (1995), who note that both outside-owned firms and cooperatives price inefficiently, when facing a downward-sloping aggregate demand formed by all different individual unit demands with reservation prices distributed over a range.

This paper, due to the different assumptions, finds that customer-owned monopolists achieve the first-best outcome when facing a downward-sloping linear demand and a unit demand (in this last case, pricing policy is irrelevant), formed by identical individual demands.

In the unit-demand case, increasing competition to the monopolist is also irrelevant unless the entrant price is lower than the incumbent marginal cost. Only in this case will the customer-owner shift to it.

In the unit-demand case, welfare is never affected and the firm will price at the monopoly price only if the share of capital of customer-owners is higher than their proportion over the total number of customers. Otherwise, it will price not at the marginal cost but at zero. The implication is clear: if the firm is facing all equal unit-demands<sup>19</sup>, investors different from customers should be very careful in buying stocks of this firm because they could get losses. Maximizing-profit firms are the only ones with customers-owners who behave more as owners.

In the linear downward demand case, there are different results. Minority shareholders *always* lose profits if pricing policies are decided by customers, independently of the relative share of capital and the proportion over all customers. The firm will never price at the monopoly price. are going to lose a lot of money. The minority shareholders may opt to quit the firm but at that point the stock value may already be lower, incorporating the losing pricing policy. In reality, the management will not really price at zero or at the marginal cost, getting negative or zero profits, but will price at a level that can assure a certain amount of profit,

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<sup>19</sup>Such as the demand for trading and listing services that stock exchanges face.

surely lower than if the firm was really profit-maximizing. The shareholders who are not customers may not realize that and keep their investment. Given that the firm may be listed on exchanges, there is a clear problem for common investors.

When the share of capital is higher than the share of all the customers, then the firm is pricing closer to the perfect competition level and so welfare always strictly improves. But if the share of capital is less than  $\frac{a\alpha}{a+c}$  (somewhat lower than the proportion of customer-owners over all customers), then the firm will always price at zero. Minority shareholders get a big loss even if welfare may improve, for sufficiently low marginal cost.

An interesting finding is that a customer-controlled monopolist is efficient (pricing at marginal cost) whenever the share of capital owned by (some of) its customer-owners is equal to their proportion on the total number of customers.

Given that public regulation is always worried about minority shareholders, especially if the firm is listed, particular attention should be given to these firms. In particular, it is important to identify not only the transaction between firms and its customer-owners but especially those among the firm and other firms, customers of the first one, and controlled by the same owner.

The implications for stock exchanges depend strongly on the different demands they are facing and the different customers.

Exchanges organized as cooperatives or fully owned companies with homogeneous members always achieve the first-best outcome. The more outside owners enter in an exchange where all the customers are also owners ( $\alpha = 1, \frac{1}{2} < \delta < 1$ ), the lower is the price, and the lower is welfare. But if there are many customers who are not owners, then the optimal policy is to achieve  $\delta$ , the closest possible to  $\alpha$  to get the competitive outcome.

Naturally, an efficient policy could be simply to set regulations such that pricing policies are not necessarily decided by shareholders. Fees could be approved by a public or external regulator, for example, but this seems incompatible with having outside owners, interested only in profits, given eventual rent-seeking behaviors of the customer-owners. Another alternative could be regulation (or self-regulation) of exchanges such that pricing policies are decided by representatives of customers who are not owners<sup>20</sup>.

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<sup>20</sup>An example is the board of the LSE, composed also of representatives of issuers (different from member firms), even though the effectiveness of fair pricing policies is doubtful. In fact, in the year ended in March 1997, the LSE charged high listing and trading fees but then decided to give a rebate of £10 million, only on trading fees, giving back the money just to customer-owners (the intermediaries) and not to the other customers (the listed firms).

It seems difficult to believe that common investors can be interested in buying shares of exchanges just for profit reasons, to diversify their portfolio, given the “interested” pricing policies of some of its owners. In this sense, the listing of a stock exchange may not seem reasonable as far as intermediaries and other customers of exchanges retain effective control of it. Listing of stock-exchange companies is plausible only with IPO of 100% of capital, limiting the purchase to investors different from customers. From a welfare point of view, the most efficient policy would be to set the placement of the stock-exchange shares such that customer-owners keep a share of the capital of the exchange exactly equal to their proportion on other customers. In this sense, regulations (or self-regulations) that allow intermediaries to buy shares of the exchange proportionally to their trading volumes (and fees) seem correct.

## **6. Appendix: governance of exchanges, conflict of interest, and self-regulation**

Some countries (Italy, for example) where the stock exchange was a government-owned utility are taking the opportunity of the implementation of the Investment Services Directive (1993/22) to privatize the exchanges, transforming them into companies that eventually could be even listed on an exchange<sup>21</sup>. In other cases, even when not government owned, like the LSE, the exchanges transformed into limited companies. In some countries the problems of the governance of the exchange led to reforms, in the U.S.<sup>22</sup>, or just to debate (the London Stock Exchange) (LSE, 1996). The access to stock exchanges is not tied any more to the membership and to ownership claims on it<sup>23</sup>.

At the same time, the new exchanges have important self-regulatory powers in terms of regulation and supervision of the market that may give rise to conflicts of interest, given some ownership structures. It is easy to understand that the issue of who must be the shareholder of the exchange is relevant in different

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<sup>21</sup>The Australia Stock Exchange, Amsterdam, and Tradepoint have already done it. The Paris Bourse is planning its listing (Financial Times, 1998).

<sup>22</sup>The reforms of NASDAQ in 1996 are an example.

<sup>23</sup>Domowitz and Lee, 1996, describe the growing perplexity about the term “members” of an exchange. “Traditionally the members of an exchange have been the owners of, and the participants on, the exchange’s trading systems, and have also either undertaken themselves, or appointed, the management of the system. As such, they were said to have a proprietary interest in the exchange. It is, however, frequently no longer true that the owners and managers of, and participants on, a trading system are all the same institutions.”

ways according to the effective powers the exchange may have. Even if it is a private company, in fact, it would be possible that all the decisions are made by an external authority given the importance of the matter. In this latter case, however, someone could be interested in buying shares of the exchange if the return is interesting.

The ownership structure may create, in principle, many conflicts of interest.

1) Conflicts between intermediaries that control the exchange and the other intermediaries (either in a minority position or not having shares of the exchange). In particular, they could discriminate through sanctions, not admitting them to particular activities, and discriminating on fees.

2) Conflicts between intermediaries who are dealers/market makers (and/or operates on their own account) and brokers. The former prefer to organize the market in an inexpensive and less transparent way to satisfy the need of institutional investors while the latter prefer transparency to meet retail customer need. In any case the conflicts may delay efficiency and development of the markets.

3) Conflicts between intermediaries that control the exchange and the intermediaries out of it (especially foreign intermediaries). They would not be interested in facilitating the access and/or remote access to the exchange, imposing artificially heavy rules because of fear of losing business passing from them to the new ones.

4) Conflicts between intermediaries that control the exchange and the issuers. They could impose high listing fees and manipulate the market<sup>24</sup>.

4) Conflicts between intermediaries that control the exchange and the investors.

5) Conflicts may also arise when there is not a clear separation between the ownership of the exchange and its customers (the same intermediaries). For example, when the NYSE tried to computerize some operations (in order to maintain market share to benefit shareholders) some shareholders who, as customers, used paper procedures fiercely opposed the project up until the point to damage the new machines<sup>25</sup>. Cybo Ottone (1997) discusses the possible interest of some intermediaries to block some labor intensive innovations, citing the examples of the locals of CBOT and of the specialist of the NYSE facing automatic trading.

6) Strategic conflicts in the same intermediary, who is a shareholder and has

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<sup>24</sup>The experience of the Stockholm Stock Exchange is clear. Issuers got 50% of the shares and pushed to have immediately remote trading even before the implementation of ISD (Pagano and Steil, 1996).

<sup>25</sup>Hathaway (1996), quoted in Barone and Masera (1997).

access to the exchange but could be also be interested in developing his own automated trading system or in avoiding to convey trades in the exchange as he could make more money trading on his own account.

7) Strategic conflict and conflict of interest for entities who are intermediaries, issuers, and owner of exchanges.

8) The most important are the conflicts derived by the relation between ownership structure and the two functions of the exchange (especially after ISD): managing and surveillance of the market. Self-regulation of the exchange<sup>26</sup> can have potential problems often analyzed in the literature. In general, self-regulating entities find it difficult to enforce rules against their members (Miller, 1991) and, even if they are sufficiently independent at the beginning, capture is going to arrive, sooner or later: “with self-regulation, regulatory capture is there from the outset” (Kay, 1988). Obvious examples can be the drafting of market regulation that affects shareholders. On the other side, the reputation and efficient regulation of exchanges affect, in the long run, its success. Fishel and Grossman (1984) point out that there is a close relationship between the extent to which a future exchange provides regulations to achieve customer protection and the volume of trade. Lee (1996) suggests that ownership should not matter if exchanges face stiff competition: “if, say, the LSE’s share-dealing owners created rules and trading systems which favored themselves over their customers, investors would go elsewhere”<sup>27</sup>. In this sense, the basic conflict of interest where one member engages in an activity (fraud) that benefits himself but hurts other members and the overall reputation of the exchange (Fishel and Grossman, 1984) is offset by competition among exchanges that should drive out of business the ones with the lowest quality/price ratio. An opposite view is in Pirrong (1995)<sup>28</sup>, who refers to market manipulation in commodity exchanges: “one cannot expect competition to ensure efficiency any more than one would expect competition between steel

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<sup>26</sup>See the arguments in Pirrong (1995).

<sup>27</sup>See *The Economist* (1997).

<sup>28</sup>According to Pirrong (1995), the view that exchanges that adopt inefficient rules concerning conduct of member firms and public customers would suffer losses in trading volume, pushing members to adopt efficient rules as profits increase in volume, has some fallacies: “The assertion that exchange members internalize nearly all of the costs and benefits of deterring manipulation is too sanguine”; the effects of competition on the incentives of exchanges to adopt anti-manipulation rules are exaggerated; and the arguments favoring self-regulation overestimate the intensity of exchange policing efforts because they ignore the effect of rent seeking and influence activities on the costs that exchanges incur to deter manipulation. Furthermore, Pirrong shows many examples where in the absence of outside regulation, exchanges showed no incentives to implement anti-manipulation rules.



producers to induce them to control the costs of the pollution from their stacks that others bear.”

That is why, in all regulatory regimes, self-regulation in the exchanges is deeply limited by public regulation or supervision, given the importance of the exchange in the financial and economic system. But external regulation may have a perverse effect on the competition among exchanges (Fishel and Grossman, 1994), for example, regulations that increase the fixed cost of operation (antifraud or disclosure regulation or customer-suitability requirements) will have a detrimental effect on the extent to which competition works to assure the optimal quality of transaction services provided by exchanges.

What is crucial is in any case the organizational structure of the exchange itself, in terms of who does what and the checks and balances between ownership and management<sup>29</sup>.

Some key points must be considered.

- Exchanges are competing markets; the main factors of competition are the quality of the services offered, product innovation, the grade of transparency, and the operative efficiency.
- The corporate governance of an exchange, especially if stocks are traded, has two main functions: the first one, common to every corporation, is to control that the management, and thus the firm, acts in the interest of the shareholders, even the minority. The second one, typical of a regulated exchange, is to give a signal to issuers, especially in situations different from the Anglo-Saxon, because issuers are not public companies.
- The same entities could become shareholder of many exchanges in Europe. This could lead to higher prices (listing or trading, depending on who they are) and a monopoly position or simply a cartel.

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<sup>29</sup>Stimson (1995) indicates the possible entities that truly govern an exchange: the governing body, the committees of the governing body, the members, individuals connected to members, the customers of the members, the executives, the regulatory supervisor, the national and international regulators, other exchanges, and lobby groups.

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