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SECTION 2
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SHAREHOLDER TYPES, THEIR CONCENTRATION AND ITS
EFFECTS ON DEMUTUALIZED EXCHANGES' OPERATING AND
FINANCIAL RESULTS - AN EMPIRICAL STUDY

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Abstract

Scholars are divided over whether listing the shares of stock exchanges improves their financial performance. Applying simple OLS regressions, I test the hypothesis that exchanges' post-IPO owners are value maximizers. However, recently demutualized exchanges have a high proportion of shareholders with conflicts of interest. Therefore, I also test whether different types of shareholders have different effects on performance. I find that investment managers behave like true value maximizers. The results also show that a higher fragmentation of share ownership is associated with lower performance. The proportion of brokers, who are the most conflicted shareholders in exchanges (since they are large customers as well as owners), is too small to have a measurable effect on performance. Most interestingly I find, by way of an inductive approach to shareholding structure, that strategic shareholders, a wide array of investors with various agendas, are on balance detrimental to shareholder value. This chapter is the first in a trilogy of articles that make up my Ph.D. dissertation. It is followed by an in-depth study of the shareholding structure of individual stock exchanges, notably in order to understand more clearly who these strategic investors are and what effects they have on exchanges.

Keywords: Corporate Governance, Agency Theory, Stock Exchanges, Conflict Of Interest

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1. Introduction

Since the mid-1990s financial exchanges have witnessed major changes in their operating environment. The most important of these include fast-paced technological advances; significant modifications of their legal and regulatory environments; massive entry of new competitors; major shifts in trading patterns in parallel with exponential growth in trading volumes; and strong pressure from customers to reduce trading costs.

These developments have induced equally massive changes in the way exchanges are organized and managed, as well as major shifts in their ownership structure, requiring significant modifications in corporate governance.

Over the last 20 years in developed countries most exchanges, which had been structured as cooperatives or user-owned entities since their creation decades - or centuries - earlier, demutualized and adopted corporate structures more in line with those of financial institutions such

as commercial or investment banks. One share-one vote replaced one member-one vote and distribution of dividends replaced the previous, non-profit, norm. Among the exchanges that demutualized, majorities also listed their own shares on their exchange and, in the process, were forced to implement (with various degrees of success) the standards of transparency and governance that they used to impose on their listed customers.

2. Literature Review

2.1 Determinants of exchange ownership

Bradley (2001) traces the origins of mutuals to medieval guilds in northern Europe, which were member associations. Each guild represented a profession and they were originally linked to the boroughs in which they were established. As such, they were part of a public authority. Later, when they separated from the boroughs they came to be seen as private-sector entities.

She draws a parallel with insurance companies in the US, which began originally as stock companies and converted into mutual at the beginning of the 20th century after scandals at many life insurers. In sum, Bradley concludes, the “mutual business form was a vehicle that could promote the trust of those who might deal with the firm”.

The New York Stock Exchange, for example, was created on May 17, 1792, when 24 brokers signed the Buttonwood Agreement under a buttonwood tree outside 68 Wall Street. The agreement had two main provisions: the first was a commitment by the brokers to trade with each other, thus eliminating outside competition; the second set a minimum commission of 0.25% on every trade. By agreeing to trade exclusively with each other the brokers were automatically committing themselves to meeting regularly under the same roof to conduct their business. This required that the brokers share the cost of the required premises - in this case the Tontine Coffee House on the corner of Wall Street and Water Street, according to Sobel (2000). This situation automatically turned the brokers into joint owners as well as joint users of what later became the NYSE.

According to Stringham (2002) the London Stock Exchange had similar beginnings. After meeting informally in various locations (mainly coffee houses) to trade financial instruments in the 16th and 17th centuries, and after being banned from the Royal Exchange (a formal market for tradespeople from different trades, including grocers and cloth merchants), a group of 150 brokers formed a club and opened a new and more formal "Stock Exchange" in Sweeting's Alley in the City of London in 1773. They charged an

entrance fee for traders who wished to enter and trade securities.

The Amsterdam Stock Exchange, which claims to be the world's oldest organized exchange and is now part of NYSE Euronext Group, also had a very similar early history. "The Amsterdam Stock Exchange Association (Vereniging voor de Effectenhandel) was founded in 1851 to organize and regulate share trading in the Netherlands. Only members of this association were allowed to trade directly on the stock exchange."²¹

There are two main motivations, and several lesser ones, why the user-owned structure made sense. The main ones are: (i) the ability to apply monopoly pricing and extract economic rents as a result; and (ii) self-regulation and fraud prevention.

1) **Monopoly Pricing and extracting economic rents.** Exchange members' efforts to secure economic rents through cartel behavior are well documented. In line with other monopolistic activities, including many utilities, concessions, or licenses to exploit natural resources, there are two straightforward tools to maximize revenues: (a) by fixing prices; and (b) by restricting access to their club. Both (a) and (b) are accurately described by (Krueger 1974; Von Mises 1998), and Kahana and Katz (1990), among many others, and are well illustrated by the Buttonwood Agreement of 1792, which created what later became the NYSE. In effect, the agreement contained two clauses: the first was a minimum commission of 0.25% on all trades (a perfect example of point (a)). Point (b) is enshrined in the second clause of the agreement, in which the original 24 signatories pledge to trade exclusively with each other.

These attributes of mutuals have long been viewed with suspicion by outsiders, and became a focal point of the criticism that ultimately led to the demise of this type of organizational structure.

"Floor trading enables increases in the value of franchise for the exchange members.

Due to lack of transparency and absence of competition from remote liquidity providers, members can extract bigger rents from their clients," say (Jain and Jain 2009). The opacity resulting from the closed circle of floor traders has also made it possible for members to resort to front running - executing trades for their own account before executing a large client order that they know to be large enough to move the market price. The authors refer to several occasions when the NYSE penalized specialists for such unethical practices. In sum, these monopolistic powers enhance the value of existing assets for exchange members in the floor-trading environment.

Pirrong (1999) also highlights the nefarious effects of closed membership: because existing

²¹ NYSE website at <http://www.nyx.com/en/who-we-are/history/amsterdam>

members can restrict the number of new members allowed to join an exchange, they deliberately reduce competition. This generates economic rents for them. "Under plausible conditions, exchanges have enough members to make it unprofitable for competing exchanges to form, but fewer members than is socially optimal," he says.

2) Self-regulation and fraud prevention.

One of the most valuable assets of an exchange is reputation, as final investors are reluctant to trade on a marketplace where they are exposed to the risk of fraud or bad execution. Jackson (2004) describes reputational capital as "the most valuable asset, the most powerful force behind your business".

Bradley (2001) explains how this applies to exchanges through self regulation. She says the regulation of financial exchanges is based on the idea that investors will only trade financial instruments in markets that work properly, are not rife with fraud, have accurate and readily available price information, and in which trading, clearing, and settlement are efficient. "Because exchanges are an important element in the capital formation process, they must be seen to be clean," she says.

Hannah (2007) also emphasizes this point. Agreeing with Sylla and Smith (1995), he says Britain's more stringent disclosure requirements in the early 20th century help explain why its stock exchange was at least 50% larger than the US's, a country whose economy was twice as big.

Michie (1998) makes a similar point: "in addition to providing a location for buyers and sellers to meet, the main function of an exchange was to lay out rules to prevent fraud, misconduct or dangerous risk-taking." This notion is self-evident, because as an exchange's reputation improves more investors are attracted, bolstering revenues for the exchange's owners and thus increasing its value.

The realization that reputation was a valuable asset dates back to the very early days of exchanges, as do members' efforts to maintain control of the regulatory function. Stringham (2002) reports that attempts by the British government to regulate financial trading was one of the main reasons that led financial brokers to leave the Royal Exchange in 1698 and start trading in coffee-houses, Jonathan's Coffee-house in Exchange Alley being the most notorious. It was also during this period that the brokers started actively rooting out unreliable or dishonest intermediaries. Stringham (2002) says that initially, the only punishment for fraud or defaulting on a trade was banishment from the coffee house. But when the British law courts ruled that coffee houses were public places and owners were not allowed to restrict entry, the traders resorted to writing the names of disreputable or defaulting traders on the wall so that newcomers could avoid them.

There is an ongoing debate as to whether self-regulation leads to stricter rules and enforcement (as members seek to enhance the exchange's reputation), or looser oversight (as members seek to maximize the number of transactions, even if this means turning a blind eye to dodgy trades). The two opposite views are clearly summed up by Cary (1963) and Pirrong (1995). William Cary, a former chairman of the SEC, argues that exchanges are allowed to regulate themselves not because the government does not wish to fulfill this role but rather because market forces provide an incentive for exchanges to take this responsibility seriously and to apply it strictly. Furthermore, he says, self-regulation is not absolute, and the SEC remains the ultimate overseer of the self-regulatory institutions. Pirrong, meanwhile, argues that because competition among exchanges is not absolute, the punishment for weak standards (loss of confidence in the exchange leading to falling activity) is not immediate. Examining 10 exchanges in the US, he says they take "few, if any, measures to curb manipulation". This view was bolstered by Michael Lewis's recent allegations that demutualized exchanges have facilitated front-running by high-frequency traders, notably by renting them computer space within their facilities, which allows them to execute trades faster than final investors who transmit their trades through conventional brokers' networks. This issue is also mentioned on pages 31 and 197). Sylla (2007) also argues in favor of outside regulation. He says the view that market forces lead important information to become public does not hold historically, because people with access to information that could be used to make money have strong incentives to keep the information to themselves.

The case against self-regulation, against the backdrop of increasing competition and the race for profits, seems to be gaining ground. Aggarwal, Ferrell and Katz (2006) highlight contradictions in the arguments put forward by proponents of self-regulation. In order to justify it when exchanges were owned by their members, they insisted that the task of regulating market operations was best entrusted to people who are "close to the market". But when questioned about the potential conflicts of interest brought about by demutualization, the same exchange executives now argue that these can be handled by appointing independent directors, who are not too close to the market. Macey and O'Hara (2005) also question the compatibility of profit-seeking behavior with a regulatory role that can upset potential customers. They argue that due to intensifying competition for listings exchanges can no longer be trusted to vet whether companies are fit to offer their shares to outside shareholders, especially retail investors. Oversight of the listing function, they say, should therefore be taken away from exchanges and transferred to the SEC.

Mutually owned exchanges go hand in hand with floor trading, owing to the technological environment of the period (16th-18th centuries), which favored face-to-face trading among people who knew each other. In order to exclude outsiders and decide who could participate, members had to own the premises. And in order to generate the cash necessary for the building and maintenance of the facilities, owners had to generate generous economic rents. The most propitious structure to achieve these interlinked objectives was thus the mutual (or cooperative) structure. The other advantages induced by this choice of governance include:

3) Network effect. The term “network effect” was officially coined in the early 20th century by Theodore Vail, president of Bell Telephone, to justify the creation of a monopoly for telecommunications, but the effect itself was known well before that. It refers to the fact that the value of some activities is directly (or exponentially) related to the number of participants in that activity. One telephone, for example, is useless. But when two people are equipped with telephones, value is created because the two units can communicate. The network effect was further formalized in the 1980s and 1990s as Metcalfe’s Law (named after Robert Metcalfe, a senior information technology executive), which states that the value of a network is proportional to the square of the number of connected users. The same logic applies to financial trading: one trader by himself cannot conduct business. Two traders in contact with each other can trade if their needs coincide: that is, if the security that one trader wants to sell is the same that the other wants to buy. Adding traders under the same roof increases the chances of finding a matching need among the crowd, and having access to this pool of traders had value. “Non-members naturally wished to benefit from the network externalities of concentrated trading activity (commonly referred to as “liquidity”) and therefore paid members to represent their buy and sell orders on the exchange floor.” (Steil 2002).

Hart and Moore (1996) call it the agglomeration effect: “Perhaps above all, the key asset of an exchange is market depth: the fact that traders know that they can deal with many other traders at the exchange (i.e. there is an agglomeration effect).”

4) **Communication.** Price formation requires that traders have access to as much information as possible about the product they are trading. In the absence of telecommunications the best way to ensure the dissemination of such information was physical proximity. According to Michie (1988), arbitrage was taking place in the 1860s between the NYSE and rival exchanges set up in nearby hotel rooms, with non-NYSE members trying to gain

market insight by listening at the doors of the official exchange before running to an informal exchange to execute their trades. The value of communication is highlighted by all the early attempts by outsiders to create parallel markets: the curb outside the NYSE in New York, or the Coullisse in Paris.

5) **Transaction costs and economies of scale.** Economies of scale are well documented, especially in microeconomic literature. From Smith (1776) to Chandler (1977), the notion that the average cost of a product falls if total costs are divided by larger number of units produced is well known. Applied to exchanges, it is obvious that as the number of transactions executed in a single location increases, transaction costs (both average costs and marginal costs) decrease. In the case of trades on an exchange, Pirrong (1999) believes that reducing transaction costs was the main motivation for the formation of exchanges. “Spatial and temporal concentration of trade on an exchange reduces search costs incurred to find counterparties,” he explains.

6) **Regional or cultural motivations.** Governance regimes also seem to be driven by regional or cultural preferences. Ramos (2006) finds that exchanges in South America are mostly organized as associations, while governmental and member stock exchanges are found primarily in the Middle East. Most demutualized and publicly listed exchanges are found in western Europe and north America. The structure and governance of exchanges, she says, is heavily influenced by the level of economic freedom and the degree of liberalization of capital market controls. She also finds that democracy is an important catalyst of demutualization and going public. “This is consistent with (Rajan and Zingales 2003) view that in democracy incumbents are less able to protect their monopolies and to impose restrictions on competition.”

It is important to distinguish between factors (1) and (2), and the others. The pros and cons of monopolies, cartels and economic activities with asymmetric rights (or information) are still being debated, academically and among professionals, legislators and politicians. These debates tackle issues of fairness, efficiency and productivity that are still very relevant today, with many questions remaining unanswered.

Reason (4) belongs to the field of politics and falls outside the scope of financial research, at least under the approach adopted for this dissertation. (Because I focus on corporate governance with a particular emphasis on shareholder behavior, my main sample consists of companies operating in an economic environment that allows free trading of shares unimpeded by political interference). Meanwhile, factors (3) to (5) were mainly the result of the state of technological advancement of

the period, and were thus destined to be gradually eroded.

The demise of open outcry trading on derivatives exchanges is a case in point. Between 1990 and 1997, London-based Liffe was the only exchange to dominate trading in a foreign benchmark futures contract. Futures on 10-year Bunds (German government bonds) were then simultaneously traded on Liffe's open outcry floor and on the all-electronic Frankfurt exchange, DTB (the derivatives arm of Deutsche Boerse).

Since domestic exchanges have a natural advantage over foreign competitors in the trading of their national financial products, Liffe's dominance in Bund-futures trading was widely interpreted as proof of the superiority of open outcry over electronic trading. Locals (the equivalent of "specialists" on the NYSE) were an influential group of Liffe members who trade for their own account and provide market depth. They were actively lobbying against the introduction of electronic trading on the exchange, arguing that the technology available at the time could not offer the same liquidity as human interaction. Their main argument was that multi-tasking (the ability to analyze several factors at once) was more important than pure processing power or speed of execution in the matching of buy and sell orders. Humans, they insisted, were capable of multi-tasking while computers, no matter how fast or powerful, were not. Locals were influential enough, and their arguments sufficiently convincing, to freeze Liffe's management into inaction. Floor trading was maintained at Liffe in spite of rising evidence that electronic trading was gaining ground on exchanges around the world. Liffe even had plans to expand its trading floors. (Luce and Iskandar, 1997)²²

The City of London was stunned in the second half of 1997, when DTB's 10-year Bund futures overtook Liffe's rival contract in terms of trading volumes. This incident led to a major overhaul of Liffe's management, culminating in the resignation of the chairman and the CEO in early 1998. The incoming managerial team immediately announced the jettisoning of the new trading floor project and pledged to make major investments in a new electronic platform. (Luce and Iskandar, 1998)²³

Competition, organizational changes and technological advances are all interlinked, and play a defining role in the decision to demutualize, as we shall see in the following section.

Drivers of demutualization

The mutual structure served exchanges well for

almost two centuries. It was an obvious choice as long as market participants were not too numerous, and were of roughly equal size (in terms of their inputs and benefits derived from the exchange).

However, as Jensen and Meckling (1976) point out, agency costs exist in "any situation involving cooperative effort between two or more people even though there is no clear-cut principal-agent relationship... It exists in all organizations and in all cooperative efforts ... in universities, in mutual companies, in cooperatives, in governmental authorities and bureaus, in unions."

In a mutual or cooperative, agency costs become noticeable when the institution reaches a certain size, requiring the hiring of professional managers. Clearly, agency costs were not an issue for the signatories of the Buttonwood Agreement, but equally clearly the principal-agent issue had become a problem by the time Richard Grasso retired as CEO from the NYSE in 2003 (as will become clear in the following pages).

Demutualization was at least in part attributable to rising agency costs, as well as to other governance, strategic, competitive and technology-related issues. The recent wave of demutualizations was kicked off in 1993 by the Stockholm Stock Exchange. Several others soon followed, including the Helsinki Stock Exchange in 1995, the Copenhagen Exchange in 1996, the Amsterdam Exchange in 1997, the Australian Exchange and Borsa Italiana in 1998, and the Toronto, Hong Kong and London Stock Exchange in 2000. In 2005, about 60% of the World Federation of Exchanges' (WFE) members were either demutualized or listed.²⁴

It is still an open question whether exchanges, which are considered strategic industries in many countries, undergo a mutation in their governance structure for the same reasons that other activities do, or if this latest wave of exchange demutualizations and IPOs was prompted by developments affecting their sector specifically.

Bradley (2001) draws a parallel between exchange demutualizations and those of other industries (notably insurance). "Exchanges demutualize for reasons similar to those identified by other types of mutual firms." She singles out three main arguments for demutualization: subjecting the firm to the discipline of the marketplace; facilitating the raising of capital; and allowing diversification into areas for which the mutual structure is not adapted.

This view is corroborated by the exchanges themselves, in their regulatory filings and declarations by senior executives when announcing their demutualization plans. The CME, which demutualized in 2000 and listed on NYSE in 2002, identified five major objectives for its

²² Luce, Edward and Samer Iskandar. Liffe or death struggle. *Financial Times*, September 19, 1997

²³ Luce, Edward and Samer Iskandar. Barrow boys in cyberspace. *Financial Times*. March 14, 1998

²⁴ World Federation of Exchanges. *Cost and Revenue Survey 2005*. Published 2006

demutualization: adopting a governance and managerial structure that could respond quickly to competition; a business model aimed at creating shareholder value; the ability to expand into new business activities; allowing members to cash in on the value embedded in their membership; and facilitating mergers and acquisitions.²⁵ The Toronto Stock Exchange said that becoming a for-profit business would make it more competitive, more entrepreneurial, and more customer-focused.

These stated motivations are summed up in a survey of exchanges conducted by BTA Consulting and quoted by Scullion (2001) and Serifsoy (2008): according to the survey, the main drivers of (and expected benefits from) demutualization are: (1) to raise capital to modernize their trading systems; (2) to reduce the constraints imposed by vested interests; (3) to control costs; and (4) to increase flexibility, efficiency and competitiveness.

Ramos (2006) and Morsy (2010) conducted in-depth analyses of the process of exchange demutualization, using different methodologies. Ramos tested six hypotheses derived from various parts of financial and management literature, while Morsy adopted a theoretical approach to test whether the different aspects of the Theory of the Firm (Transaction Costs; Property Rights; Behavioral Theory; Agency Theory; and Resource-Based and Dynamic Capabilities) could explain demutualization decisions.

Ramos validates the hypothesis that demutualization and going public are responses to rising competition between exchanges. She also finds evidence that gaining the ability to merge or make acquisitions is a motivation for demutualizing and going public. "As mergers are an important instrument in enhancing liquidity, we interpret this as an additional signal of stock exchange competition," she explains. Ramos also validates her hypothesis that exchanges restructure internally prior to going public.

Interestingly, some of Ramos's findings contradict the parallel that Bradley draws between exchanges and other institutions. "Stock exchanges seem to have different reasons from the ones that have been theoretically argued and empirically found for 'common' firms," she writes. Fixed costs, adverse selection costs and liquidity costs are among the factors regularly identified in the literature as drivers of demutualization. But Ramos does not find evidence that they played a role in exchanges' decision to list their shares. She also fails to find evidence that stock exchanges go public to enhance their reputation.

In her theoretical approach relying on the Theory of the Firm, Morsy (2010) also reaches contrasting conclusions. The Transaction Costs Theory, she claims, provides a good explanation

for demutualization. The move to electronic trading, Morsy says, has undermined two of the main arguments used by advocates of mutual: price determination and the risk of market manipulation. "The new changes in today's competitive environment, that resulted from the introduction of new electronic systems have led to lower costs of trading for investors, allowed for better price determination, and lowered the chance for market manipulation - that existed under the mutual structure of stock exchanges." Recent advances in technology have also facilitated cross border trading and over time the development of inter-market trading systems (Claessens, Djankov and Nenova 2000). Therefore the shift towards demutualization of stock exchanges became a natural response to technological progress, when the mutual structure became less appealing and more costly for investors.

Similarly, Morsy finds that the Property Rights theory provides a good explanation for demutualization. Because user-owners benefiting from quasi-monopolistic rents are reluctant to jeopardize their privileges, they are inclined to resist any modernization that threatens to loosen their control over the exchange. Eventually, this situation reduces the value of the exchange, as it loses competitiveness and market share. Ultimately, this opportunity cost becomes too burdensome, and pressure to demutualize (in order to increase the value of the exchange for its owners) builds up.

The filter of Behavioral Theory leads to similar results. Morsy explains that as the competitive environment changes, the mutual or cooperative structure of the stock exchange loses its appeal. "The investor-stock exchange relationship has changed to seek better liquidity and services. Members' interests become increasingly divergent and the benefits of the cooperative structure become greatly reduced".

Agency Theory is arguably the most relevant filter in this particular situation. This is because demutualization entails a wholesale shake-up of the entire principal/agent relation. Demutualization brings in profit-seeking outside owners, as well as new professional managers who are separate from the previous owners-cum-customers (mutual owners or members). Therefore, referring to Jensen and Meckling (1976), (Fama and Jensen 1983; Fama 1980), and Elliott (2002), Morsy finds that demutualization is widely beneficial to all stakeholders, because it promises higher profits, more transparency, better management and, overall, increased value for owners and a better proposition for most users (with the exception of the floor brokers who end up losing their economic rents).

One motivation that is harder to document but cannot be discounted is that breaking the hold of

²⁵ Source: <http://www.cmegroup.com/company/history/>

the insiders was seen as a desirable end in itself. There is ample evidence that many outsiders (regulators, banks, asset managers, foreign institutions, final investors, and even the managers of exchanges) found the situation counter-productive.

As Richard Grasso, the former chairman and CEO of the NYSE, put it: “[Members] realize economic value from their right to trade on the NYSE floor.” The diversity of interests of members “is a continual source of tension and conflict. At times it leads to careful deliberations and consensual judgment. All too often it can lead to cumbersome decision-making and strategic gridlock.”²⁶

Lee (2010) makes a similar argument. He points out that the direct users of an exchange benefit from inefficiencies in its operation, while the costs of these inefficiencies are borne by end-users. A key example, he says in (Lee 1996), is how traders on the floors of exchanges frequently seek to “protect their position by resisting automation, which typically brings lower trading costs but eliminates the profits of floor traders”.

Domowitz and Steil (1999) also find that under the mutual ownership structure, members may resist innovations that enhance the value of the exchange in case this innovation threatens the demand on their intermediation services. Revisiting the subject later, Steil (2002) reiterates his earlier findings. Because members are the entrance point to the exchange, they derive their profits from their role as intermediaries. “They can therefore be expected to resist both technological and institutional innovations which serve to reduce demand for their intermediation services, even where such innovations would increase the economic value of the exchange itself. If the members are actually owners of the exchange, they will logically exercise their powers to block disintermediation.” (Steil, 2002)

Michie (1998) also emphasizes members’ role as self-regulators, which becomes a source of conflict of interest: “This role as writer and enforcer of the rules led the members of exchanges to use these same rules to safeguard their monopoly.”

Concerning competition as a source of pressure for demutualization, it is important to distinguish between exogenous and endogenous competition. Endogenous competition, which I have analyzed in detail above, is defined as competition between existing exchanges, while exogenous competition is due to new entrants.

Ramos introduces a different type of

competition: exchanges first compete for listings, but also now compete for traders. Pirrong (1999) gets into more detailed analysis of competition. He says the attitude of the large international financial institutions, which can be members or end-users putting their trades through members, depends on how internationally active they are. Institutions that can trade on several rival exchanges are less inclined to maintain the status quo if an exchange becomes less competitive than another exchange to which they have access.

In addition to competition between exchanges (endogenous) legislation enabling new entrants to launch trading venues has introduced exogenous competition (that is, other institutions providing services that compete with the main functions provided by exchanges).

There are three main reasons for the rise of exogenous competition in western economies. In the US, the 1998 SEC Regulation of Exchanges and Alternative Trading Systems Act²⁷ (Reg ATS) officially recognized the role of electronic trading networks that had already started competing with exchanges. It was followed in 2007 by Reg NMS, which aimed to establish a level playing field for competition between exchanges and the newcomers. In the EU, two major pieces of legislation led to an overhaul of the competitive environment: the Investment Services Directive of 1993 (ISD)^{ix} and the Market in Financial Instruments Directive of 2007 (Mifid). The first created the European passport, allowing financial institutions approved by regulators in one EU country to operate in all EU member states. Mifid broke the monopoly of national exchanges and allowed the creation of alternative trading venues, including ECNs, dark pools and internalized trading, among others.

Aggarwal (2002) says the situation boils down to two main forces driving stock exchanges to demutualize - increased global competition and advances in technology - and finds that these two factors are mutually reinforcing.

Summing up, at the risk of oversimplifying:

- Derivatives exchanges were under more intense competitive pressure than cash exchanges, because they never had a monopoly on the products they listed. Liffe and DTB were in direct competition on European interest rate futures and options. When electronic trading gave DTB a decisive competitive advantage, Liffe was forced into shifting to electronic trading. This required substantial investments, which in turn led to the sale of the entire exchange to Euronext.

- Stock exchanges were challenged by lower-cost new entrants when legislation ended their monopoly on trading in domestic shares. The

²⁶ Grasso, Richard, A. *Public ownership of the US stock markets*. Testimony before the US Senate Committee on Banking, Housing and Urban Affairs. US Senate, September 28, 1999.

²⁷ Full text at <https://www.sec.gov/rules/final/34-40760.txt>

legislative and regulatory changes also allowed them to start competing with each other. This led to mergers between the national exchanges (sometimes preceded by demutualization and/or IPO).

Effects of demutualization

By 2010 an overwhelming majority of exchanges in the developed world had demutualized, and a substantial proportion of them had listed their own shares. Not all of these exchanges, however, followed the logical route: change of legal structure (from mutual to corporation or limited company), followed by allowing non-members to own shares, followed by an IPO. Notorious examples include the Paris, Amsterdam and Brussels exchanges, which merged into Euronext before listing (the Paris Bourse was thus temporarily a demutualized exchange in the 1990s, but with no outside shareholders before the three-way merger). NYSE also never really went through the process of demutualizing. After several attempts (starting in 1999) were blocked by members [see (Fleckner 2006)], the exchange finally acquired publicly-listed Archipelago (an electronic exchange created in the 1990s) in a reverse merger in 2006, and the merged entity (NYSE Group) became listed as a result of the deal.^x NYSE Group then merged with Euronext a year later to form NYSE Euronext. Borsa Italiana also never conducted an IPO. After going through the legal process of demutualization in but still owned and operated by a consortium of banks that were its previous user-members, it was acquired by the London Stock Exchange in October 2007 in an allshare takeover.²⁸

The effects of the unprecedented wave of demutualizations that has taken place since the early 1990s have been observed in many areas, both intrinsic and extrinsic to the companies that operate the exchanges. The extrinsic areas include: regulation, market liquidity, and the cost of capital of listed companies. The intrinsic areas, on which this dissertation will focus more specifically, include: corporate strategy, financial and operating performance, ownership and governance.

- Strategy

Among the stated objectives of demutualizing exchanges, two aims figure prominently: the ability to acquire or merge with other exchanges and the ability to venture into new activities.

Morsy and Rwegasira (2010) find that demutualized/for-profit stock exchanges that are owned by profit-seeking investors are more likely than mutuals to seek innovative ideas and

processes in order to grow their business, and are also more careful in seeking cheap, efficient sources of financing. Demutualized exchanges have extensively used these newly found abilities. A number of mergers have been successfully completed, and many attempts were blocked or failed. OMX/Nasdaq, LSE/Borsa Italiana and NYSE/Euronext belong to the first group; Nasdaq/LSE, LSE/TMX (Toronto), NYSE Euronext/Deutsche Boerse and Singapore/Australia (as well as many other attempted combinations) to the second. However, there is little evidence that such mergers have created value, and many academic studies raise concerns that acquisitions were overpriced.

Examples of successful diversification by listed exchanges include NYSE Group: the reverse merger with Archipelago introduced electronic trading to the venerable Wall Street institution, and the subsequent merger with Euronext made it the second largest derivatives exchange operator in Europe. In 2012 the NYSE Euronext group also unveiled plans to create a major clearing operation for derivatives in London. Similarly Deutsche Boerse has in the past decade and a half created the most fully integrated financial exchange operator in the world, with activities ranging from cash and derivatives trading to information technology to clearing and settlement through its Clearstream subsidiary.

However, it can be argued that demutualization is not a prerequisite for strategic moves, such as mergers. There are many examples of exchanges merging before demutualizing or going public. In Australia the leading exchange, ASX, is a result of the merger of six regional exchanges (Sydney, Melbourne, Brisbane, Adelaide, Perth and Launceston) in 1987, followed by demutualization in 1996 and an IPO in 1998. The Paris Bourse, before its demutualization and three-way merger to create Euronext in 2000, was itself the result of the gradual absorption of small exchanges in Lille, Lyon and Marseille by Paris (the largest exchange among them). Euronext then had an IPO in 2001. The successive operations are outlined by Raulot (2007). In Japan in July 2012, the Tokyo Stock Exchange (the country's main cash market for equities) and the Osaka Securities Exchange (the dominant derivatives exchange), announced plans to merge. The resulting entity was due to become operational in January 2013, under the name Japan Exchange Group. Again, although the OSE is demutualized and listed, the Tokyo Stock Exchange was never demutualized.²⁹

But once listed, and with easier access to additional capital through secondary offerings if needed, exchanges have paid handsome prices for

²⁸ SEC Historical Society. The Institution of Experience: Self-Regulatory Organizations in the Securities Industry, 1792-2010. Available at <http://www.sechistorical.org/museum/galleries/sro/sro06c.php>

²⁹ Iwamoto, Masaki and Hasegawa, Toshiro. *Tokyo Exchange Merges with Osaka to Form World's No. 3*. Bloomberg. July 15, 2013

acquisitions. Euronext was widely criticized in 2001 when it paid £550million to acquire Liffe (it increased its bid unilaterally at the last minute after submitting a first closed-envelope offer at £500m. The two other bidders, LSE and Deutsche Boerse, had made offers in the region of £350million-£400 million, so in effect Euronext ended up outbidding itself.³⁰ Polato and Floreani (2009) analyzed the NYSE bid for Euronext and the LSE's acquisition of Borsa Italiana, and came to the conclusion that both acquisition prices were hefty. Based on multiples of other exchanges, they estimated a standalone value for Euronext ranging from €59.5 to €61.2 per share, and €55 to €67 for Borsa Italiana. Euronext shares were trading at around €60 a share immediately prior to the announcement (Borsa Italiana was not listed). NYSE's offer valued Euronext at €93.06 per share and LSE paid €100 per share for Borsa Italiana. The authors offer two explanations for this. First, they point out that a large number of exchange mergers and acquisitions took place between 2002 and 2007, a strong bull market during which share trading was rising exceptionally fast; and this could have led exchange executives to overestimate future growth prospects. Second, the exchanges were facing intense competitive pressures, which might have resulted in what could be deemed rash behavior with hindsight. The bullish argument was confirmed by an executive director of NYSE Euronext. The executive said the NYSE board was surprised by the deterioration in the group's European performance between 2006 (when the merger was agreed) and 2012 (when ICE approached NYSE about a potential acquisition). The board realized that in NYSE's future growth projections, it had assumed that growth rates from 2000-2006 would continue at the same rate for years to come. "Although Mifid was being written in Brussels, no-one thought it was relevant to anticipate that Euronext's monopoly was going to disappear and that future trading volumes would be shared with newcomers in the industry."³¹

It is important to remember that Mifid, the EU directive breaking up national exchanges' monopoly, was implemented in November 2007. Chi-X, the first pan-European alternative trading platform for equities, was launched in 2007 as soon as Mifid made it possible, and just weeks after the October 2007 LSE/Borsa Italiana deal. As Polato and Floreani (2009) point out, "the value of trading on Borsa Italiana was €74.6 billion in July 2008 whereas that on Chi-X was €73,5 billion. In March 2009 those figures were €45.9 billion and €57.1 billion respectively".

Thus, in the months following Mifid, not only

did absolute trading volumes decline on Borsa Italiana, but it was overtaken in terms of activity by a new-starter less than 18 months old. The authors believe that "at the time of LSE-Borsa Italiana merger the magnitude of competitive pressure was, probably, not fully understood, leading to valuations overestimating exchange values." This view corroborates the opinion expressed by the NYSE Euronext executive director in 2013. "Projections of future revenue growth were extrapolated on a straight-line basis from previous years," the executive said.³² The importance of Mifid and other market-liberalizing measures has been mentioned and will be revisited in more detail in Part IV of this dissertation.

The other main strategic consideration put forward by exchanges to justify their demutualizations and listings was the ability to expand into new business areas, or diversify. Here again, there are two ways to diversify: horizontally (expanding into new business or geographical areas) or vertically (developing upstream or downstream from one's main activity). The NYSE/Euronext combination illustrates horizontal expansion: it added European cash equity trading and derivatives trading to NYSE's activities. Nasdaq/OMX/Dubai is also a good illustration of horizontal expansion through geographical diversification. Deutsche Boerse is the best example of vertical integration: to complement its cash and derivatives exchanges, it owns clearing and settlement operations to handle post-trading, and earns revenues from selling trading technology and market information.

The pros and cons of vertical vs. horizontal integration, as well as those of focus vs. diversification, are still being debated and deserve closer study. However, a consensus is emerging over the "horses for courses" theory, where some strategic set-ups outperform others in different market environments, and vice versa. It is generally agreed, for example, that since derivatives and cash trading are countercyclical to each other, companies that operate both types of exchanges tend to suffer less during bear markets, when the inevitable decline in equity trading is compensated by a rise in demand for derivatives. Meanwhile, more focused stock exchanges would be expected to outperform in a bull market, and conversely pure derivatives exchanges would outperform in bear markets as investors resort to futures and options for hedging purposes.

These expectations are partly corroborated by Serifsoy (2008), who finds that "horizontally integrated exchanges possess a lower productivity value than cash markets-only operators". However, he also finds "evidence that fully integrated exchanges have a better performance than cash

³⁰ Interview with investment banker who advised Euronext on the deal

³¹ NYSE Euronext executive director in a private conversation in November 2013

³² NYSE Euronext executive director in a private conversation in November 2013

markets-only venues,” although this latter finding could be biased by the importance of Deutsche Boerse, the most fully integrated market which also happens to be one of the most profitable. Serifsoy (2008) concludes by taking “a rather cautious stance regarding conclusions on the comparative performance of business models”.

- Financial and operating performance.

Several scholars have examined the financial performance of demutualized exchanges. While most of the literature concurs that there has been an improvement in the operating and financial performance of the demutualized entities, there is no general consensus on whether the improvement can be attributed to the change in legal structure, the admittance of outside shareholders, the listing of the shares on an exchange, or a combination of these factors.

Comparing financial data before and after exchanges listed their own shares on the market, Mendiola and O’Hara (2003) found evidence that financial performance improved after the IPO. “We found that listed stock exchanges generally outperformed both the stocks on their markets and the IPOs listed on these exchanges.” Furthermore, the authors present evidence that the performance of stock exchanges with public offerings was positively correlated with the proportion of the equity sold to outsiders. The results, however, were not entirely clear-cut, as the authors themselves acknowledge. “While not every converting exchange exhibited enhanced performance, we interpret our overall results as providing strong evidence that shifting corporate governance from a cooperative to a corporate structure is value-enhancing for exchanges.”

With more data available by the time they researched the subject, and using a broader range of financial indicators, Morsy and Rwegasira (2010) came to the very different conclusion that there is no strong evidence that demutualization leads to improved financial performance. The authors say they find “persuasive evidence that suggests that the demutualization programs do not improve the financial performance of demutualized stock exchanges”. Instead, their empirical study shows an improvement in only a minority of the financial performance indicators they use. They find that “demutualization results in significant improvement in only four out of the eleven financial measures used to test for change in performance [...] The research hypothesis that demutualization improves stock exchange financial performance is not however supported in the remaining financial measures: current ratio, debt equity ratio, debt ratio, fixed assets turnover, total assets turnover, return on equity (ROE) and return on capital employed (ROCE).”

Serifsoy (2008) also finds no benefits from listing and exchange’s shares. Instead, he

concludes that just moving from a mutual structure to a corporate one confers most of the benefits to be had in terms of financial performance, even if no outside shareholders are allowed to invest in the firm. In any case, he says, the additional costs incurred by listed companies in terms of compliance and transparency obligations are too high compared with the added benefit of an exchange listing for a company that is already demutualized. “Therefore, the case for an IPO, a measure that involves considerable costs, cannot be advocated from an operative performance perspective. However, a demutualization process that retains the exchange’s customers as its main owners seems promising.” Serifsoy’s findings also contradict the widely held view that listed exchanges gain competitive advantage by having better access to capital, which in turn should allow them to invest in performance-enhancing technology. “The assumption that a demutualization process is necessary to install modern trading systems cannot be confirmed empirically,” he says. Intriguingly, the mutual exchanges in his sample have a persistently higher portion of electronic order book trading than the demutualized and listed exchanges. His conclusion is that, unburdened by the need to remunerate shareholders, some mutual exchanges are able to invest in technology in order to adopt new trading technologies without changing their governance structure.

Finally, Lee (2002) disputes the argument that exchanges with outside shareholders are necessarily under more pressure than mutuals to deliver higher financial results. He believes that mutually-owned exchanges can generate as much profit as listed ones, but that the cash-flows are just distributed in a different manner. “The main difference between a demutualized, profit-seeking exchange and a non-profit, mutually-owned cooperative exchange, is that the first type of institution can distribute profits in the form of dividends, whereas the second cannot,” he says. “This does not mean that the second type of institution does not seek to maximize profits, it just distributes them to its users as fee rebates.”

- Ownership and governance

As discussed above, it is widely agreed that breaking the stranglehold of members on exchanges was a desirable objective, and that opening ownership to outsiders was a necessary means to that end. The change in ownership of listed exchanges is widely documented.

Aggarwal (2002) examined the ownership of Deutsche Boerse after its February

2001 IPO. The IPO brought in 300 shareholders, but strategic investors such as banks, brokers and regional stock exchanges maintained a controlling 51% stake; other German institutions owned 15%; US institutions 13%; UK institutions

12%; other institutions 7%; and retail investors bought 2%. The five largest shareholders as of May 2002 were Deutsche Bank (10.1%), German regional exchanges (7.2%), Hypobank (4.7%), Commerzbank (4.6%) and BHF Bank (2.6%).

A similar exercise for the LSE, which listed on July 20, 2001 with a market capitalization of £1 billion, shows the following shareholding structure: institutional investors controlled roughly 25% of the shares, up from the original 15-20% (post-demutualization but pre-IPO); and ownership by members had fallen. As of March 2002 the major shareholders included Fidelity (9.2%), Warburg Dillon Read (4.2%), Cazenove Fund Managers (4.1%), Credit Suisse Asset Management (2.9%) and Legal & General Investment Management (2.8%). By the end of 2007, according to Polato and Floreani (2009), Deutsche Boerse had a “100% floating capital and a shareholding structure dominated by foreign institutional investors, particularly from the Anglo-Saxon financial markets”. German investors owned only 18% of Deutsche Boerse’s shares (compared with 35% in 2004), while UK investors held 29% and US investors 42%. Similarly for Euronext, which until 2000 was owned by members of its three founding exchanges (Amsterdam, Brussels and Paris); by 2007 Dutch, Belgian and French shareholders controlled only 22% of the shares, with the remainder controlled by international investors.

However, there remain many impediments to open competition and full dedication to shareholder value in the industry.

Many countries still consider the former monopoly exchange to be a strategic industry that needs to be protected. Australia, for example, has a law that puts a 5% cap on the shareholding that any institution can hold in its exchanges. In France, Jean- François Théodore, the CEO of Euronext, was widely criticized for agreeing to a transatlantic merger with NYSE [see (Raulot 2007)]. Many were disappointed that the French government did not intervene to block the deal. After all, the French authorities had intervened to protect Danone, a yoghurt maker, from being taken over by Pepsi Cola! Callaghan and Lagneau-Ymonet (2012) explain that NYSE benefited from a conjunction of factors, including the lack of credibility of some of the merger’s critics, namely the French banks, which Euronext accused of having abandoned it.

Even among demutualized and listed exchanges, many are still majority controlled by former members. In many cases, exchanges are also dominant shareholders in other exchanges (after its 2006 failed attempt to take over the LSE, Nasdaq held almost 30% of the shares of its UK rival, a situation that will be examined in detail later in this dissertation). Also, many exchanges have launched, or invested in, alternative trading

systems, when these systems were originally seen as a major source of competition that would help transform the exchanges. Many shareholders are also part owners of new platforms that compete with the exchange, or even run their own internalizing system where they execute customers’ trades that would otherwise be executed on the exchange.

Such situations put exchange managers in the awkward position of serving several masters. A position that is untenable, according to Jensen (2010), who believes the best way to serve the interests of multiple constituencies (stakeholders with diverging agendas), is to focus on a single objective, preferably shareholder-value maximization. “Without the clarity of mission provided by a single-valued objective function, companies embracing stakeholder theory will experience managerial confusion, conflict, inefficiency, and perhaps even competitive failure,” he writes. Jensen does not believe it is possible to maximize more than one factor at the same time.

“Telling a manager to maximize current profits, market share, future growth in profits, and anything else one pleases will leave that manager with no way to make a reasoned decision. In effect, it leaves the manager with no objective.”

According to Ruben Lee³³, “Different ownership groups may attempt to promote their own competing interests. They may, for example, seek to minimize the particular fees that they are required to pay. Some of an exchange’s members may also be its competitors, and these participants are likely to pursue different goals than those followed by non-competitors. Many financial intermediaries in the cash equity markets, for example, operate their own internal order matching systems in competition with the exchanges of which they are a member.”

In short, a significant proportion of an exchange’s shareholders are simultaneously its customers and shareholders of its main competitors. The main shareholders will also be represented on the board, as well as on the boards of competing exchanges. Opportunities for conflicts of interest are rife. Listed companies, for example, will logically seek to obtain the lowest possible listing fees, whereas fund managers will no doubt pressure the exchange to maximize income from all sources. Proprietary traders benefit from the lowest possible trading fees. Stockbrokers might have conflicting demands: for higher revenues (as shareholders) and lower fees (as users). Morsy (2010) sums up the potential for conflicts of interest, predemutualization: “The mutual governance structure and the heterogeneity of members of the stock exchanges (local market makers, broker dealers, international banks, etc.)

³³ SWX Group Annual Report 2006

made it difficult for them to ignore their private cost-benefit evaluations and vote for policy change.”

There are signs that the shift from user-owned to shareholder-owned entities, and the ensuing quest for value creation through improved efficiency, have led to a shift in the business strategy of exchanges. Hart and Moore (1996) detect a change in the product mix of exchanges post-demutualization, which they interpret as the result of the shift to for-profit status. Traditional functions performed by exchanges, such as providing a trading mechanism, disseminating information, acting as a clearing house, settling trades, etc., are gradually abandoned, starting with the least profitable. “Exchanges no longer need to be vertically integrated in this way. Many of these functions are offered by specialist service providers and, in many cases, exchanges have hived off particular functions.”

The governance of exchanges is also influenced, in some cases, by the exchanges’ additional role as self-regulator. This situation puts the exchange in the uncomfortable position of having to enforce rules that can antagonize its customers and, consequently, impede its business activity.

The exchange industry, which has operated for centuries as a non-profit sector with public utility connotations, is also fertile ground for the study of stakeholder theory. Two main areas of concern arise: first, the fact that most users are tied to an exchange gives the latter a natural monopoly. This leads many researchers to call for compensatory measures to prevent the “monopolist” from using its advantage to the detriment of users. Second, the dominance of exchanges as the economy’s main source of capital means that mismanagement leading to a failure raises the specter of systemic risk.

Most of the literature in this area addresses the questions of whether demutualization was really necessary, or if the shareholder-controlled structure threatens exchanges’ ability to respond to their responsibilities (regulatory, systemic, level playing field) other than creating value for shareholders.

Lauzun and Lee (2006) argue that users are very often tied to the exchange, which enjoys a dominant position in its domestic market. Therefore, these users cannot “vote with their feet”. Aware of this power, the operators of the “infrastructures can be tempted to enjoy a rent by applying non-competitive prices”. Such practices weigh on transaction costs for final investors, and more widely, on the global efficiency of markets. At the very least, extremely strict rules of governance must be imposed, giving priority to the users, Lauzun and Lee add. One way to constrain such possible anticompetitive behavior, the authors believe, is to give users of exchanges voting rights.

“We must address the question of users’ participation in the capital of listed exchanges. It is undoubtedly very highly desirable.”

Reiffen (2008) looks at whether profit seeking could tempt exchanges to relax the enforcement of rules (listing requirements as well as trading restrictions) in order to please their customers (listed companies and stockbrokers) to whom the rules apply. Reiterating the view that exchanges have been given substantial responsibilities with respect to enforcing regulations and protecting investors, he looks specifically at the period during which an exchange converts from mutual to for-profit status. “In contrast to oft-stated concerns, we find that, in many circumstances, an exchange that maximizes shareholder (rather than member) income has a greater incentive to aggressively enforce these types of regulations,” he concludes.

This view is contradicted by Kuan (2006). In this contrarian article, and referring to Akerlof (1970), the authors claim that the member-owned structure, and the monopolistic powers associated with it, allow an exchange to treat its customers as “hostages”. They believe this is the most effective way to force listed firms to be fully transparent, therefore eliminating “lemons” (or sub-par companies that a profit-seeking exchange might accept to list in spite of their defects).

3. Aims and approach

In their new corporate shape as listed entities, stock exchanges should perform in line with the findings of previous corporate governance research: the owners of listed and easily tradable shares are expected to apply pressure for financial performance, a purpose for which they have to check the temptations of the managers to whom they have devolved wide powers to run the company on a day-to-day basis.

However, due to their recent past as non-profit organizations, exchanges still have a wide array of shareholders, not all of them pure value maximizers. In addition to investment managers, exchanges also count brokers among their owners, as well as strategic shareholders with non-financial objectives.

The literature leads me to expect that financial investors are mostly value maximizers: their concentration in a firm’s capital should be positively correlated with higher sales, productivity and profits, and negatively correlated with costs. Conversely, higher dispersion of shares (i.e. a large freefloat) should be positively correlated with higher costs and negatively correlated with productivity and profitability.

In this section, I use a panel consisting of six exchanges. My objectives are twofold. The first objective is to test earlier findings about the effects of stock exchange demutualizations. For example,

the assertion by Lee (2002) that being owned by shareholders does not necessarily imply more pressure on management to achieve higher profits, since mutually-owned exchanges also distribute profits in another form: fee rebates.

The second objective is to make a contribution to agency theory by going beyond the principal/agent conundrum, and delving deeper into the motivations of various types of principals. The approach here is based on the assumption that not all principals are primarily motivated by value maximization. There are situations where principals derive more value through other means (as customers or users of a service) than from their position as shareholders of the company. In order to understand these conflicting motives, I had to analyze to what extent the identity of shareholders influences their behavior.

This approach is innovative in two ways because it leads me to examine corporate ownership not only in terms of fragmentation/concentration as has been done previously by Holderness (2009), Jensen and Meckling (1976), Fama and Jensen (1983) etc., but to delve further into the nature and motivations of shareholders. The second innovation consists of moving beyond the black and white approach of agency theory, where principals are thought to have one straightforward aim (maximizing financial value) and agents to have the opposite aim (expropriating principals by as much as they can get away with).

I have segmented shareholders into three categories depending on the degree of conflict of interest they display vis-à-vis the firm. A fourth category (shares not held by any of the three) also has its attributes, as we shall see below.

In this world, dominated by shades of grey between principal-white and agent-black, some shareholders (notably those that have commercial ties to the exchange in addition to being part-owners) can alternatively wear their principal's white hat or their agent's black hat depending on the situation.

4. Methodology

I use a database covering six exchanges over the period 2002-2011. All the exchanges are listed and their shares very liquid. They all publish audited annual reports and the list and description of their shareholders is available from Thomson One

Banker. The full list of performance variables that I test is available in the appendices to this dissertation. A more detailed description of the data and methodologies is given in Part I of this dissertation.

In the following pages I test three hypotheses (linked to shareholder types) empirically through OLS regressions. I approach hypothesis (4) inductively.

- Hypothesis (1). Wide dispersion of shares (or high freefloat) is value destroying and detrimental to financial and operating performance.

- Hypothesis (2). A high proportion of investment managers (IM) shareholders leads to greater value creation and improved corporate performance.

- Hypothesis (3). A high concentration of brokers in the shareholding is detrimental to corporate performance.

- Hypothesis (4). Strategic investors' motivations are unclear, as is the effect of their presence on the exchanges' performance. These effects, if there are any, can be value-enhancing or value-destroying. I therefore approach this part inductively, regressing the performance variables against the proportion of strategic shareholders. The aim is to find out if strategic investors on balance have a significant effect on corporate performance, and determine whether this effect is value-enhancing or value-destroying for other shareholders.

5. Empirical results

Following are the results of OLS regressions involving 16 dependent variables. Each is regressed against four independent variables, representing the proportion of the capital held by: freefloat, IM, brokers and strategic investors.

Testing hypothesis (1)

The first set of regressions shows significant results for 7 of the 16 variables. The results validate the expectation that high dispersion of shares is negatively correlated to productivity (sales per employee) and profitability (return on assets and return on invested capital). High freefloat is also positively correlated to operating expenses, as there is no dominant power to act as a counterweight to management's propensity to use company resources as it pleases.

Table 1. Independent variable: freefloat.
Number of observations: 55

Variable	R-squared	T-stat	P
DividendPayout	0.078	2.04	*
SalesPerEmployee	0.351	-5.25	***
DividendYield	0.068	2.18	*
ReturnOnAssets	0.148	-3.03	*
ReturnOnInvestCap	0.159	-3.17	**
OperatExpToSales	0.110	2.39	*
DebtToEquityRatio	0.089	2.28	*

There is no obvious causality that would explain the positive correlation to leverage and dividend payout.

Testing hypothesis (2)

Regressing the 16 dependent variables against IM holdings yields 9 significant results. The positive correlations of share price, operating profit margin, sales per employee, return on assets, pretax margin, net margin and return on invested

capital are all consistent with earlier literature stating that IMs are value maximizers. The very strong (and robust) negative correlation with leverage is inconsistent with hypothesis

(2), unless professional investors consider that exchanges are already too indebted, or there are no tax benefits to be enjoyed, as described by Modigliani and Miller (1958).

Table 2. Independent variable: IM

Variable	R-squared	T-stat	P
SharePrice	0.193	3.56	***
OperatProfMargin	0.13		
8 2.91	**		
SalesPerEmployee	0.424	6.13	***
BookValuePerShare	0.225	3.89	***
ReturnOnAssets	0.112	2.58	**
PreTaxMargin	0.103	2.68	**
NetMargin	0.136	2.88	**
ReturnOnInvestCap	0.117	2.65	*
DebtToEquityRatio	0.315	-4.94	***

Book value per share is inversely related to goodwill. One explanation for the positive correlation is that IM shareholders demand higher capital spending. This is a rational expectation in a sector where success is determined by investment in information technology. It is perfectly plausible that value-maximizing shareholders insist on constant investment.

Testing hypothesis (3)

Only two variables are correlated to brokers' shareholdings: the quick ratio, which calculates the firm's ability to cover short term liabilities with liquid assets (i.e. the company's short term financial strength); and the ratio of cash flow to sales, a measure of productivity.

Table 3. Independent variable: brokers.

Variable	R-squared	T-stat	P
QuickRatio	0.125	2.48	*
CashFlowToSales	0.126	-2.49	*

Neither result is very robust, which is in large part attributable to the generally low level of brokers' shareholding (and the fact that they are completely absent from two exchanges: LSE and

Deutsche Boerse). The negative correlation with cash flow to sales is consistent with the hypothesis that brokers are value destructive.

Hypothesis (4)

A quick reminder here that hypothesis (4) is not clear-cut. The data show that strategic shareholders are not a homogeneous group. The only thing they have in common is that their motivations for holding the shares are not purely financial. At NYSE Euronext, they consist mainly of employees and managers. According to agency theory literature, this group is expected to display signs of entrenchment, with a negative influence on corporate performance. In the case of the London Stock Exchange, the main strategic investors are competitors, a situation that is likely to be destabilizing for the company's management. At Intercontinental Exchange, the main strategic investor is the founder and CEO of the group. This puts him in a position of immense influence, giving him the power to create value for all shareholders

(including himself) or to expropriate other investors. The following analysis provides the first opportunity to measure the aggregate effect of such a diverse range of influences.

Nine of the 16 variables show correlations with the shareholdings of strategic investors, and the outcome is clearly that strategic investors are value destroying. Five key performance indicators are clearly negatively correlated to strategic holdings: the share price, operating profit margins, pre tax margins, net income and net margins.

The positive correlation of leverage is consistent with the expectation that other shareholders will seek to impose higher levels of debt as a tool to discipline the managers and employees who account for the bulk of strategic shareholdings.

Table 4. Independent variable: strategic investors

Variable	R-squared	T-stat	P
SharePrice	0.149	-3.05	**
OperatProfMargin	0.085	-2.21	*
PERatio	0.113	2.55	*
BookValuePerShare	0.102	-2.43	*
PreTaxMargin	0.163	-3.21	**
NetIncome	0.125	-2.75	**
NetMargin	0.122	-2.72	**
OperatExpToSales	0.101	-2.28	*
DebtToEquityRatio	0.148	3.03	**

The one puzzling result is that a high level of strategic ownership is associated with a high stock market valuation. This is apparent in the positive correlation of the price/earnings ratio and the negative correlation of book value per share (i.e. strategic shareholding is associated with high goodwill). After looking at the results of the individual case studies in Part III, it will become apparent that this result is consistent with situations such as that of ICE, where the bulk of strategic shareholdings is accounted for by the founder and CEO, who is gradually winding down his stake as he increases the total value of the firm. It is also consistent with situations described by Rappaport and Sirower (1998), where companies growing through acquisitions maximize the valuation of their shares in order to use them as acquisition currency. However, the same result contradicts the situation at NYSE Euronext, where strategic shareholdings are associated with management entrenchment, which is not conducive to higher share valuations. It is also inconsistent with the situation at LSE, where ownership by strategic investors has shattered expectations of a bid for the company.

Conclusion

This empirical study of exchanges' shareholders and their influence on corporate performance allows me to verify some of the findings from earlier work on stock exchanges, as well as to corroborate expectations dictated by the general literature on corporate governance. Two widely held hypotheses are corroborated: that financial investors seek to maximize the value of their investment; and that a high fragmentation of shares leads to lower performance.

I had assumed that brokers are conflicted because they play two simultaneous and conflicting roles, as co-owners and customers. On the one hand, as shareholders, they expect their investment in the exchange to generate value in the form of dividends and capital gains. On the other hand, as customers, it is in their interest to pay as little as possible in fees to the exchange. Tests to determine which of these conflicting attitudes (seeking discounts or demanding financial reward) dominates are not conclusive. This is mainly due to the small presence of brokers relative to the other blocks of shareholders.

My most interesting finding relates to the behavior of strategic investors, who turn out to be value destroying on balance. The term strategic encompasses a wide array of investors with various motivations. In this sample they consist of founders who still have power (at ICE), predators who built up a stake but failed to take full control (Nasdaq in LSE), or entrenched managers (NYSE Euronext).

My results clearly show that strategic shareholders are correlated with bad performance on balance: i.e. that these principals have an overall influence over the exchange that is closer to that of an agent. This leads me to call them Quasi-Agent Principals (QAPs), as in owners whose ambiguous relationship to the asset they have invested in ends up eroding the value of this asset.

References:

1. Aggarwal, Reena, 2002. Demutualization and corporate governance of stock exchanges, *Journal of applied corporate finance* 15.
2. Aggarwal, Reena, Allen Ferrell, and Jonathan Katz, 2006. US Securities Regulation in a World of Global Exchanges.
3. Akerlof, George A., 1970. The market for "lemons": Quality uncertainty and the market mechanism, *The Quarterly Journal of Economics* 84, 488-500.
4. Bradley, Caroline, 2001. Demutualization of Financial Exchanges: Business as Usual, *Nw. J. Int'l L. & Bus.* 21, 657.
5. Callaghan, Helen, and Paul Lagneau-Ymonet, 2012. The phantom of Palais Brongniart: economic patriotism and the Paris Stock Exchange, *Journal of European Public Policy* 19, 388-404.
6. Cary, William L., 1963. Self-regulation in the Securities Industry, *American Bar Association Journal* 49, 244.
7. Chandler, Alfred Dupont Jr., 1977. *The Visible Hand: The Managerial Revolution in American Business* (Belknap Press of Harvard University Press, Cambridge Mass.).
8. Claessens, Stijn, Simeon Djankov, and Tatiana Nenova, 2000. *Corporate Risk around the World* (SSRN).
9. Domowitz, I., and B. Steil, 1999. Automation, trading costs, and the structure of the securities trading industry, *Brookings-Wharton papers on financial services* 2, 3392.
10. Elliott, Jennifer A, 2002. *Demutualization of securities exchanges: a regulatory perspective* (International Monetary Fund).
11. Fama, E.F., and M.C. Jensen, 1983. Separation of Ownership and Control, *Journal of Law & Economics* Vol. 26, 301 - 325.
12. Fama, Eugene F., 1980. Agency problems and the theory of the firm, *The Journal of Political Economy* 88, 288.
13. Fleckner, Andreas, M., 2006. Stock Exchanges at the Crossroads, *Fordham Law Review* 74, 2541-2620.
14. Hannah, Leslie, 2007. What did Morgan's men really do?, *Draft, University of Tokyo*.
15. Hart, Oliver, and John Moore, 1996. The governance of exchanges: Members' cooperatives versus outside ownership, *Oxford Review of Economic Policy* 12, 5369.
16. Holderness, Clifford G., 2009. The Myth of Diffuse Ownership in the United States, *Review of Financial Studies* 22, 1377-1408.
17. Jackson, Kevin T, 2004. *Building reputational capital: Strategies for integrity and fair play that improve the bottom line* (Oxford University Press).
18. Jain, Chinmay, and Pankaj Jain, 2009. *Causes and Effects of Demutualization of Financial Exchanges*.
19. Jensen, Michael C, 2010. Value maximization, stakeholder theory, and the corporate objective function, *Journal of applied corporate finance* 22, 32-42.
20. Jensen, Michael C., and William H. Meckling, 1976. Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of financial economics* Vol. 3, 305 - 360.
21. Kahana, Nava, and Eliakim Katz, 1990. Monopoly, price discrimination, and rent-seeking, *Public Choice* 64, 93-100.
22. Krueger, Anne O, 1974. The political economy of the rent-seeking society, *The American Economic Review*, 291-303.
23. Kuan, Jennifer W. and Diamond, Stephen F., 2006. Ringing the Bell on the NYSE: Might a Nonprofit Stock Exchange Have Been Efficient?, *Santa Clara Univ. Legal Studies Research Paper* 06.
24. Lauzun, Pierre de, and Ruben Lee, 2006. La gouvernance des infrastructures de marché: Interview à deux voix, *Revue d'économie financière* 82, 189-200.
25. Lee, Ruben, 1996. *The Governance of Exchanges* (mimeo).
26. Lee, Ruben, 2002. The future of securities exchanges, *Brookings-Wharton papers on financial services* 2002, 1-33.
27. Lee, Ruben, 2010. *Running the World's Markets: The Governance of Financial Infrastructure* (Princeton University Press).
28. Macey, Jonathan R, and Maureen O'Hara, 2005. From markets to venues: securities regulation in an evolving world, *Stanford Law Review*, 563-599.
29. Mendiola, Alfredo, and Maureen O'Hara, 2003. Taking stock in stock markets: The changing governance of exchanges, *Unpublished paper*.
30. Michie, Ranald C, 1988. Different in name only? The London stock exchange and foreign bourses, c. 1850-1914, *Business History* 30, 46-68.
31. Michie, Ranald C, 1998. Insiders, Outsiders and the Dynamics of Change in the City of London since 1900, *Journal of Contemporary History* 33, 547-571.
32. Modigliani, Franco, and Merton H. Miller, 1958. The Cost of Capital, Corporation Finance and the Theory of Investment., *American Economic Review* 48, 261.
33. Morsy, A, 2010. Understanding the Relationship between the Demutualization Decision of Stock Exchanges and the Theory of the Firm: A Theoretical Research Note, *European Journal of Economics, Finance and Administrative Sciences* 23, 139-148.
34. Morsy, A, and K Rwegasira, 2010. Does Demutualization Matter to the Financial Performance of Stock Exchanges? An Investigation of Demutualized Member of the Stock Exchanges of the World Federation Exchanges, *International Research Journal of Finance and Economics*.
35. Pirrong, Craig, 1999. The organization of financial exchange markets: Theory and evidence, *Journal of*

- Financial Markets* 2, 329-357.
36. Pirrong, Stephen Craig, 1995. Self-Regulation of Commodity Exchanges: The Case of Market Manipulation, *The, JL & Econ.* 38, 141.
 37. Pirrong, Stephen Craig, 1999. The organization of financial exchange markets: Theory and evidence, *Journal of Financial Markets* 2, 329-357.
 38. Polato, Maurizio, and Josanco Floreani, 2009. Cross border mergers and value creation in the exchange industry: The case of diversified conglomerate exchanges, *Proceedings from WOLPERTINGER*.
 39. Rajan, Raghuram G, and Luigi Zingales, 2003. The great reversals: the politics of financial development in the twentieth century, *Journal of financial economics* 69, 5-50.
 40. Ramos, Sofia, 2006. Why Do Stock Exchanges Demutualize and Go Public?, *Swiss Finance Institute Research Paper*.
 41. Rappaport, Alfred, and Mark L Sirower, 1998. Stock or cash? The trade-offs for buyers and sellers in mergers and acquisitions, *Harvard business review* 77, 147-158, 217.
 42. Raulot, N, 2007. On a vendu la Bourse, *Comment Euronext est devenue américaine, Paris: Economica*.
 43. Reiffen, David and Robe, Michel A., 2008. *Ownership Structure and Enforcement Incentives at Self-regulatory Financial Exchanges*(Berkeley Electronic Press).
 44. Scullion, M, 2001. Demutualisation: the challenges facing global exchanges, *The compaq handbook of world stock, derivative & commodity exchanges. Mondo Visione*, pp xxv-xxxii.
 45. Serifsoy, Baris, 2008. Demutualization, outsider ownership, and stock exchange performance: empirical evidence, *Economics of Governance* 9, 305-339.
 46. Smith, Adam, 1776. *The Wealth of Nations* (1776), *New York: Modern Library* 740.
 47. Sobel, Robert, 2000. *Curbstone Brokers: The Origins of the American Stock Exchange*(Beard Books).
 48. Steil, Benn, 2002. Changes in the ownership and governance of securities exchanges: causes and consequences, *Brookings-Wharton papers on financial services* 2002, 61-91.
 49. Stringham, Edward, 2002. The emergence of the London stock exchange as a selfpolicing club, *Journal of Private Enterprise* 17.
 50. Sylla, Richard, 2007. *The rise of securities markets: What can government do?*(Cambridge University Press).
 51. Sylla, Richard, and George David Smith, 1995. Information and capital market regulation in Anglo-American finance, *Anglo-American Financial Systems: Institutions and Markets in the Twentieth Century*, 179-205.
 52. Von Mises, Ludwig, 1998. Monopoly prices, *The Quarterly Journal of Austrian Economics* 1, 1-28