

The competitive evolution of Stock Exchanges

- *The case of NASDAQ OMX Stockholm*

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Abstract

The stock exchange industry has experienced a remarkable development over the last two decades. Stock exchanges that traditionally have been organized as non-profit mutual organizations or public institutions have demutualized and taken on a clear for-profit structure. Globalization as a result of changes in regulations and the advancement of technology has further fuelled the development of a competitive stock exchange industry. The aim of this thesis is to illustrate the case of the NASDAQ OMX Stockholm in the light of this competitive landscape. Following a theoretical overview, the reader is guided through the major events of the competitive evolution of the exchange. In order to put the development of NASDAQ OMX Stockholm in a further context, a comparison is made with its closest Nordic peers. The authors illustrate how regulations and the technological advancement have played a key role in the formation of NASDAQ OMX Stockholm.

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1.INTRODUCITON

1.1 Introduction

The stock exchange industry has experienced a remarkable development over the last two decades. Stock exchanges that traditionally have been organized as non-profit mutual organizations or public institutions have demutualized and taken on a for-profit structure¹. The demutualization of the Stockholm Securities Exchange in 1993 is often cited as the beginning of a global trend in which most of the world's largest exchanges changed their legal structure into for-profit corporations. Since then, a large amount of the demutualized stock exchanges have proceeded with their corporate reconstruction, going one step further by offering their own shares to the public and thus becoming listed companies themselves (Aggarwal 2002). It is a consensus in previous literature that the demutualization process has changed the stock exchange landscape into a subject of increased rivalry and competition for higher profit margins and bigger market shares between the exchanges.

Another identified force that has rearranged the traditional conditions for competition in the stock exchange industry is globalization. The world is rapidly becoming more globalized; consequently there is a growing appeal and possibility for investors to trade across country borders. As a result of regulatory changes and advancement in technology, the major limitations to international trading have been eliminated. As Stulz (1999) points out, the situation has changed dramatically since The Second World War. At that time and the decade that followed, most currencies were not convertible and many countries had explicit restrictions to foreign investments. Other limitations for international equity investments in that period of time were inadequacy of the institutions that traded the foreign shares, differences in accounting rules and exchange hedging difficulties. The economic development and the technological improvements have made the barriers for foreign investments significantly lower and cross-border trading has increased accordingly. While still far from holding the world market portfolio, it is safe to state that investors have increased their portion of international investments over the last two decades.

These trends in combination with regulatory shifts have fuelled further competitive behavior within the stock exchange industry. After becoming for-profit companies with seemingly competitive strategies, many stock exchanges have been part of a global wave of stock

¹ According to the World Federation of Exchanges report from 2011: 62% of all member exchanges were demutualized or listed companies in 2010.

exchange consolidation during the past decade. Among these are the Euronext mergers, NASDAQ OMX merger, NYSE Euronext merger and London Stock Exchange and Borsa Italiana probably the most recognized. Establishments of market operations across national borders are increasing rapidly and the merger activity has changed the market for stock exchanges remarkably. The implications of these merger activities have been analyzed by a significant number of financial economist. For instance, it has been shown that stock exchanges display economies of scale in operations and trading (Pagano 1989; Steil 2001). The results imply a more efficient cost structure of the exchanges as well as higher liquidity after mergers. Similarly, the merging stock exchanges are suggested to have a lower bid-ask spread, resulting in higher liquidity (Arnold et al. 1999). The outcomes of the above-mentioned effects should present a purely beneficial scenario for investors. Furthermore, it has been suggested that mergers of stock exchanges can reduce difficulties of investing in foreign equity through standardizations of technology and infrastructure (McAndrews and Stefandis 2002). An example of this could be a shared trading platform or clearing system. From an exchange perspective it has further been documented that a merger between stock exchanges can result in an increased market share of equity trading (Nielsson 2009). This was the case of the Euronext merger, after which the Euronext exchanges increased their total market share at the expense of the London Stock Exchange.

In view of this scenario, it seems as if the studying of a particular case can provide additional insight into the above-mentioned dynamics. The Nordic market with its main financial center in Stockholm presents one of these cases. The Stockholm Securities Exchange symbolizes the start of the demutualization and thus the evolution towards the competitive demarche of the stock exchange industry that can be witnessed in recent years. OM, the Swedish options trading company, on the other hand, has played a major role in the consolidation of the Nordic market. As the first exchange ever listed on the stock market it constitutes an interesting example of the demutualization process that initiated the merger waves within the stock exchange industry. Since the merger between the Stockholm Securities Exchange and OM in 1998, the Nordic stock exchanges have evolved from national serving exchanges to, by 2008, becoming a part of the global NASDAQ OMX Group. During this time frame the multiple mergers that have taken place between Nordic exchanges ² constitute an interesting ground for analysis. The objective of this thesis is to illustrate how NASDAQ OMX

² E.g. the merger between the OM Group and Helsinki Stock Exchange leading to the formation of OMX and the merger between OMX and the Copenhagen Stock Exchange

Stockholm has evolved during the era of merger waves. While previous studies have focused on the quantitative evaluation of demutualization and consolidations, our aim is to provide a qualitative reasoning about the key drivers behind the competitive evolution of the NASDAQ OMX Stockholm case. To put the development of NASDAQ OMX Stockholm in a perspective, we benchmark the development of its equity trading to it to its closes peers: NASDAQ OM Helsinki and NASDAQ OMX Copenhagen, that both have followed a similar route as the OMX Stockholm exchange. The equity trading has been chosen as a factor to evaluate. It provides interesting insights to investors as well as the listed firms. In summary, we pose the following questions:

- What were the major events and outcomes during the evolution of NASDAQ OMX Stockholm?
- How has NASDAQ OMX Stockholm equity trading evolved compared to its closes peers, NASDAQ OMX Helsinki and NASDAQ OMX Copenhagen?

1.2 Method and outline of thesis

The methods used will be mainly qualitative due to the descriptive character of this thesis. In this section they will be motivated in combination with a presentation of the outline of the thesis. This introduction is followed by section 2, where theories that address the key drivers of the competitive demarche of the stock exchange industry is presented. Starting with demutualization, the network effect and followed by theories about stock exchange consolidation implications, the reader is provided with selected relevant background information. This will be based on academic literature of relevance to the subject.

In section 3, the basic concepts of stock exchanges and its functions is introduced to give a solid understanding of the important elements of the industry. A case study of NASDAQ OMX Stockholm with a focus on the two last decades ,will follow in section 4. The foundation for the case study will be the recently published book *OM(X) – Från OM till Nasdaq* (Göran Blomé 2012), as well as press releases from the NASDAQ OMX website, news articles and research reports. To complement the case study and give it more substance, a series of interviews will be conducted with members of NASDAQ OMX Stockholm to get their input of the transformation of the exchange from their perspective. The section is concluded with a discussion about the main drivers identified.

In section 5, NASDAQ OMX Stockholm is compared to NASDAQ OMX Copenhagen and

NASDAQ OMX Helsinki on number of trades, turnover velocity and allocation between large-, mid- and small-cap firms. The section includes a discussion about identified differences and similarities. The purpose with this is not to make statistically significant conclusions, but rather to illustrate the outcomes of the events in the case study. The data reaches from 2000 to 2010 and it thus covers both of the main mergers of the exchange.³ In the final section, we make conclusions from the findings based on theories and the case study and propose further research questions.

2. THEORETICAL FRAMEWORK

2.1 Stock exchange demutualization

Demutualization is the process by which a member-owned mutual organization changes legal structure to form a joint stock company (Poonam 2010). *“The changes have fuelled a profit oriented and competitive demarche, which makes the discussion of them relevant for the study of competition and mergers and acquisition activity among exchanges.”*

Traditionally stock exchanges have been organized by the mutually owned and governed structure. They have enjoyed a monopolistic position on trading and their main revenue stream came from the intermediation of non-member transactions (Aggarwal & Dahiya 2005). The traders with membership had exclusive privileges and fee-reduction. Until the early 1990s almost all exchanges around the world were member-owned, mutualized organizations. The first stock exchange that went through the demutualization process was the Stockholm Securities Exchange in 1993. The vast majority of the world stock exchanges has demutualized since then, and increasingly taken it one step further into listed companies. In 2010, 44 % of the World Federations of Exchange’s members were publicly listed. The same report indicates that only 6% of the exchanges have kept their legal status of mutual or association whereas 82% were for profit entities.

The key drivers of the demutualization of the exchanges have been outlined as a combination of the deregulation of trading exchanges, the development in information technology and arising interest of conflict between the owners and the institutional investors of the exchanges. Aggarwal and Dahiya (2005) argue that by relaxing regulations the country commissions allowed for the naissance of a competitive arena for the stock exchanges and a much more

³ The OMX Group merger in 2004 and the NASDAQ merger in 2008

competitive security trading. The improvements information technology on the other hand, was the starting point for the development of alternative trading systems that were completely based on electronic trading. The cost efficient trading that was offered by these exchanges composed a threat to the traditional ones that had to migrate to electronic trading in order to stay competitive. By demutualizing exchanges could gain the needed capital and an operational freedom that enabled them to respond to the electronic trading. Similarly, Macey and O'Hara (2002) argue that the emergence of the electronic trading focused competition on who can provide liquidity the most efficiently. The shift of nature of the business from a relationship-oriented to that of a liquidity providing service additionally contributed to the gradual elimination of the ties between issuers or members to the exchange.

Yet another driver is presented by the increased conflict of interests between the member owners of the exchanges and the institutional investors. While investors tend to be cost efficiency driven the member owners and brokers do not have the same incentive to transform cost efficient changes. The difficulty to adopt changes that are good for the exchange but not for the brokers, thus state another explanatory theory for the demutualization process. A number of authors have applied this reasoning to explain the benefits of stock exchange demutualization. Another accordance in the literature concerns the fact that demutualization has emerged to facilitate the alliances and mergers of exchanges. Mediola and O'Hara (2003) propose that exchanges demutualized in order to merge, as liquidity is more easily attained with scale.

2.2 Potential outcomes of stock exchange consolidation

The evolving stock exchange industry has induced a relatively extensive amount of finance literature discussing the implications of stock exchange mergers. With the starting point of the demutualization of stock exchanges the literature has shifted from a corporate governance point of view to a firm oriented and performance based focus. There is an impressive amount of literature addressing the potential advantages of stock exchange mergers. Pagano (1989) and Steil (2002) among others, argue that economies of scale both in operations and trading result from stock exchange mergers. In this thesis, four important outcomes and commonly discussed implications of stock exchange mergers has been selected. They take both operational issues and trading activities into account. This selection is not exhaustive but it fills the purpose of our thesis and provides interesting perspectives on the competitive evolution of OMX Stockholm.

2.2.1 Operational synergies

A commonly cited benefit from merging is the possibility to create synergies by integrating the trading platforms of the stock exchanges. To improve, upgrade and operate a trading system is related to high fixed costs for stock exchanges. As these systems have a similar architecture, the merger of the systems or an agreement of shared common trading systems among exchanges, could be an efficient-increasing factor. Reflections on these synergies have been made on the results of several European exchanges' large investments in trading platforms and settlement systems during the 1990s. For instance, Deutsche Börse and the London Stock exchange both paid Andersen Consulting over \$100 million to build separate systems applying identical architectures, but on incompatible hardware platforms. Steil argues (2001) that political factors and the urge for independence among the European exchanges led to the decision to build their own proprietary version of trading systems, despite the fact that the systems applied the same market architecture. Steil (2001) further notes that a cost-benefit analysis would indicate that to buy, lease or pay for access to trading and settlement systems already in operation are the most cost-efficient option for exchanges.

2.2.2 Increased market liquidity

Liquidity, defined as the ability to buy or sell an asset quickly and at a price similar to the prices of previous transactions assuming no new available information (Current Issue Stefanadis) is an important measure of stock exchange performance. As Nielsson (2009) argues, ultimately liquidity affects the cost of capital. For instance, a low trading volume of a stock is usually translated into a high bid-ask spread. A high bid-ask spread is an undesired scenario for investors and is therefore reflected in a lower stock price⁴. The argument of increased market liquidity as a result of a stock exchange merger is based on the fact that technological compatibility of trading platforms reduces the cost of cross-border transactions, attracting new investors and generating a higher volume of trading. As Pagano notes in his famous study of trading volume and asset liquidity (1989), market depth and liquidity is stimulated when there is a large amount of continuous trading volume generated within the exchange. Trading fees could largely affect the degree of concentrations to market places as a convergence of fees will lead to concentration. Furthermore, in a more merger related paper, Arnold et al. (1999) analyze the effect of three U.S. regional stock exchange mergers on liquidity and market share of exchanges. Besides finding that that the merged exchanges

⁴ Brennan and Subrahmanyam (1996) and Datar et al. (1998) find that stock returns are a decreasing function of various measures of liquidity.

attract market share from other exchanges, they find that the merged exchanges provide narrower bid-ask spreads.

Another discussion in finance and industrial organizational literature that is related to this subject is the matter of network externalities within stock exchanges. Several studies are based on Economies (1993 and 1995) note that exchanges can be viewed as networks in which the greater the amount of customers the greater the utility for everyone. Di Noia (2001) elaborates on this theory and bases his tests of implicit mergers on “*ceteris paribus*, when firms decide to be listed on an exchange, they chose one with more intermediaries and firms due to greater liquidity on the market”⁵. Results indicating that an “implicit merger” (compatibility among exchanges) fuels market liquidity are in line with the general theory. The network effect of stock exchanges has been studied by a rich amount of authors and supports the idea of increased liquidity as a result of consolidation (Malkamäki 1999, Domowitz 1995, Madhavan et. al 2001). More recent studies provide interesting findings indicating that the liquidity gains are asymmetrically distributed among the listed firms. While studying the Euronext exchanges, Nielsson (2009) finds that the increased liquidity as a result of the merger is only significant for large firms with foreign exposure. On an exchange level, his study confirms that Euronext’s market share increased at the expense of the London stock exchange. Nielsson’s paper confirms that mergers lead to increased market liquidity, however the gains are asymmetrically distributed among firms.

2.2.3 Reduced market fragmentation

It has been showed that fragmentation results in higher price volatility and violations of price efficiency (Madhavan, 1995). In their study of a potential creation of pan-European exchanges, McAndrews and Stefanadis (2002), argue that consolidation could resolve the problem of fragmentation. In accordance with Madhavan they argue that the parallel trading of the same security on different national exchanges is considered to be contra-effective on price stability and price discovery. However it is pointed out that the reduction of fragmentation may be a long-run effect, rather than an immediate benefit of consolidation. Some empirical evidence indicates that, despite the strong economic argument for consolidation, many markets remain fragmented for a long time. This evidence, referred to as the *network externality puzzle*, was first coined by Madhavan (2000).

⁵ The expansion of remote membership access after 1996 will undoubtedly go a considerable way towards facilitating cost-effective cross-border trading, and thereby eliminate significant barriers to creating a common and expanded pool of equity market liquidity. Page 10: Competition and Integration among Stock Exchanges in Europe: Network Effects, Implicit Mergers and Remote Access.

2.2.4 Reduced competition between stock exchanges

The main potential disadvantage is monopolistic behavior from the global stock exchanges. This presents a disadvantage for the members, firms and investors of the exchanges as the potential result of such comportment would lead to increased transaction fees, decreased liquidity and potential high listing costs. A monopolistic position could also inhibit efficiency realization as a lack of incentives of creating further competitive advantages (Nielsson 2009). On the other hand, it can also be argued that there is still active competition in the current European system, e.g. through competition from quasi-exchanges, like automated trading systems or electronic communication networks. Also, although fees may not have decreased after the Euronext merger, they have remained fairly stable.

3. BASICS ABOUT STOCK EXCHANGES

The fundamental purpose of financial markets is to handle risks and to transform savings into capital funding. Stock exchanges generally provide two services. Firstly, they help companies to offer shares for sale to investors. Secondly, they manage the technical systems and the regulatory framework that enables the trading of the shares.

The starting point to understanding the different aspects of consolidations among stock exchanges is to define them and their purpose. In economic terms one can say that the stock exchanges have emerged due to their ability to reduce transaction costs in trading. Saha (2006) argues that stock exchanges exist because they lower the transaction cost by providing a ready market to the buyers and sellers of securities. In the case of stock exchanges the trading costs mainly depend on liquidity, information, clearing and settlement. Before we go further in the conceptualization of stock exchanges we should examine the historical perspectives on stock exchanges.

There are two major perspectives one can use to define stock exchanges. An exchange can be viewed from the market perspective or the firm perspective (di Noia 2001). Traditionally, a stock exchange is defined according to the market perspective as an organized market of securities. In this case, the purpose of the exchange is to offer an organized forum for security trade. The firm perspective on the other hand adds profit as a second dimension to the original purpose. Di Noia (2001) describe that the dualistic aspects of listed stock exchanges can be problematic since the exchanges have to consider that their customers and members in some

cases have become the owners. The firm perspective is gaining an increased relevance, fuelled by last decades' process of demutualization and listing of stock exchanges.

3.1 Trading Mechanisms

The ways of mechanically trading in a market place can be divided into two types: order driven and quote driven. Markets that are quote-driven have market-makers that compete by posting prices at which they commit to buy and sell a specific security, and the orders never interact. Buyers and sellers interact only with the market-maker who makes a profit through the bid-ask spread, as compensation for taking the risk of holding the inventories of the traded securities. Order-driven markets on the other hand are markets where buyers and sellers interact directly, and the price of the securities is adjusted by supply and demands mechanisms and this is the most common mechanism on electronic markets. (Cantillion & Yin 2007) When exchanges became electronic, cost curves shifted to increasing strength in economies of scale that could be gained from a larger trading activity. Before the electronic trading, each new product meant a significant cost to build new pits for the contracts and to hire employees that could trade the instruments. With the new technology, all that was needed was some extra server space, which cost significantly less. Electronic exchanges that had only a small amount of products and small trading activity experienced a significantly higher average cost per contract, which gives strong incitements of growing bigger by merging with other stock exchanges to share fixed costs (Singh 2009).

3.2 Stock exchange classifications

There are two different types of stock exchanges classified today; Regulated Markets and Multilateral Trading Facilities (MTFs). There are also firms that can trade independently outside a Regulated Market or a MTF. These are referred to as Systematic Internalizers

A regulated market is the most common form of trading place for stocks. It is by definition a multilateral system that is opened and/or run by a market operator and has specific requirements concerning the characteristics of the listed companies. London Stock Exchange and the NASDAQ OMX Group are both examples of this. An MTF represents the same trading functionality as a regulated market and they often referred to as electronic trading platforms. They differ in the sense that the MTFs are more concentrated on trading services and do not have the same listing and regulatory services as a traditional exchange. The regulatory barriers for MTF's were greatly decreased after the implementation of the Markets in Financial Instruments Directives in 2007 (Cantillion & Yin 2007)

By the end of 2010 the two regulated markets in Sweden were NASDAQ OMX Nordic Stockholm AB, which dominated the market based on market capitalization as well as number of firms, and the Nordic Growth Market. In early 2011, the former MTF called Burgundy was permitted by regulators to run a regulated market in Sweden as well. Out of the total amount of listed firms in Sweden, NASDAQ OMX Stockholm, still has by far the largest market share, as displayed in the table below.

Figure A, Swedish market for stock exchanges

Exchange	Number of firms		Market Cap. (SEKm)	
	2010	2009	2010	2009
Regulated Markets				
NASDAQ OMX Nordic Stockholm	258	258	4230	3413
Nordic Growth Market Equity	22	26	2	4
Burgundy	-	-	-	-
MTFs				
Aktietorget	130	120	8	5
First North	99	100	26	22
Nordic Growth Market MTF	18	21	1	1
Total	527	522	4267	3445

Source: Swedish Central Bank's report on Swedish financial markets 2011

3.3 Members

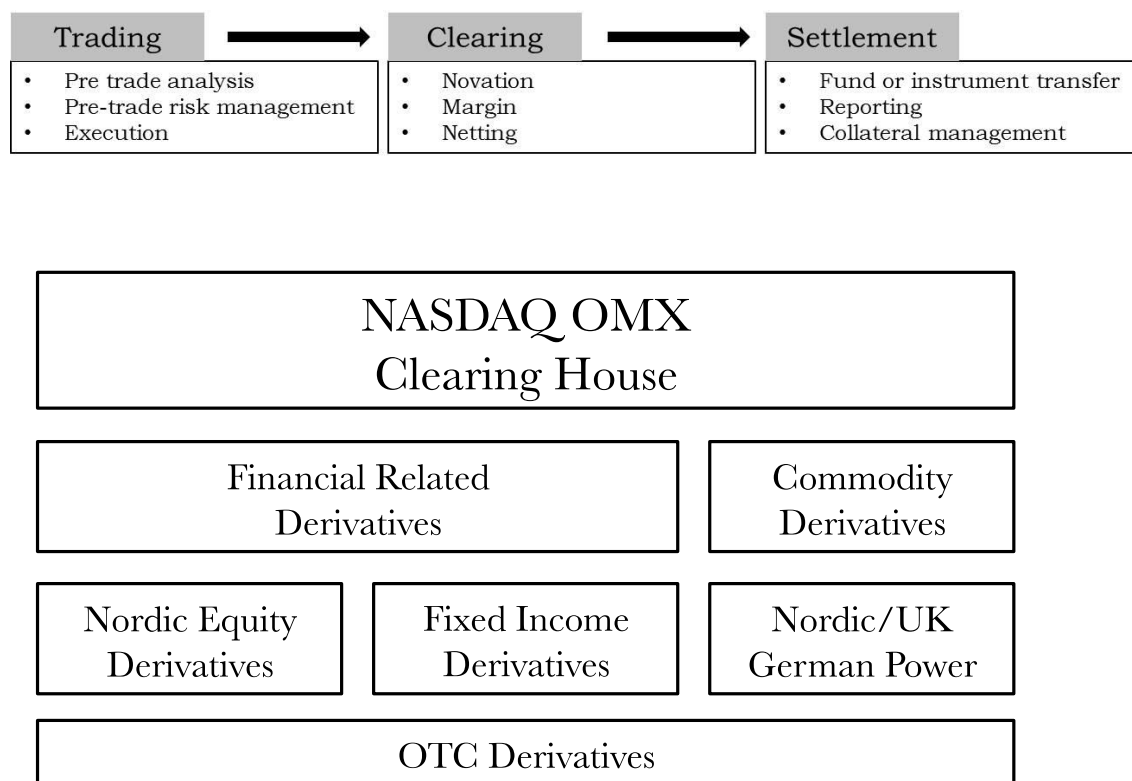
Traditionally, most exchanges have had a structure as mutually owned or membership organizations. The access to trading was owned by the traders and only they were allowed to enter the trading floor. Currently all trading on NASDAQ OMX Stockholm is conducted through its members. Investors of all sizes must go through these participants to be able to sell or buy stocks. The members consist of Swedish security firms and credit agencies with permission from the Swedish Financial Supervisory Authority (Finansinspektionen). Among these are also foreign member firms that trade from other countries than Sweden. NASDAQ OMX Stockholm has about 83 members in security trading. (OMX Stockholm website, 2012)

3.4 Clearing and Settlement

A clearinghouse typically registers and aggregates trades to keep track of who buys and sells what and to whom. After a trade, the process of clearing and settlement begins. A clearing house offers the service of netting transactions, which is to net the sum of buy and sell orders of the market participants. Netting reduces the indirect transaction costs associated with trading significantly. The clearing house takes the opposite side for every trade and it guarantees the trade by making two bilateral contracts. This is known as novation. Settlement

is the final step of a trade cycle and this is when the legal ownership of the shares is transferred from seller to buyer and the trade cycle is completed. (Cantillon & Yin 2007)

Figure B & C, The trade cycle in three steps and Structure of NASDAQ OMX Clearing House



Source: Author's own illustration, based on figure by NASDAQ OMX Nordic Stockholm website

3.5 Regulations and MiFID

According to (Singh 2009) the main objectives for regulators of financial market places are:

1. Protection of investors/customers
2. Maintenance of fair, transparent and efficient markets
3. Mitigation of systematic risk

At a local level, the regulators are often mandated to ensure fair competition, prevention of accumulated market power and keeping players from adversely affecting market access, pricing of stock, efficiency or the real economy. When technology has improved in financial markets, the regulators have had more problems fulfilling these objectives. The current main directive that European stock exchanges are subject to is the Markets in Financial Instruments Directive (MiFID). It was implemented by the European Union in 2007 and provides a harmonizing regulatory framework for all firms in the member states of the European Union

that provide financial services. It also covers Norway, Iceland and Liechtenstein. The main objective behind MiFID is to protect customers of financial institutions and increase competition. The first key aspect of MiFID is to authorize financial firms and provide them with a “passport” that enables them to provide services to other states covered by the Directive. Furthermore, MiFID states that the firms it covers must categorize the clients to assess their suitability for different investment types. The Directive also regulates the information that firms need to capture when handling clients orders to make sure that they act in the best interest of the client. Transparency before and after a trade are other important aspects of MiFID and Systematic Internalizers are also subject to that part, but will not typically have the same requirements concerning the other parts of MiFID.

3.6 Revenues

Traditional stock exchanges had three different sources of revenues: the listing fees charged to companies that are traded on the exchange, transaction fees and trading data sales. There is a big difference across firms regarding the importance of each of these revenue sources. With recent developments, there have been additional revenue sources added to the traditional ones. Firstly, some exchanges have done vertical integration into the trading process with in-house clearing and settlement services. Secondly, as electronic trading has become more important, some exchanges have found an additional revenue stream through providing technology services, for example establishing their own electronic trading platforms.

3.7 Listing

Firms list on stock exchanges to get access to capital. They usually list in their home market primarily, but for larger companies with international business it is common to cross-list their shares. What this means is that the firm has a second listing on a stock exchange in a foreign market. An interesting aspect of cross-listing is that the number of firms that already have international listing exposure is suggested to affect how big the value of a stock exchange merger is for the firms and investors.

According to (Rosenboom & Dijk, 2009) there are four main explanations to why cross-listing is positive for a firm’s value. Firstly, it overcomes the risk premium that international investment barriers add, and thus get a reduction in cost of capital. Secondly, a firm can enhance the market liquidity of the stock by listing in more liquid and foreign equity markets. This was suggested by Foerster and Karolyi (1998) when they studied cross-listings of Canadian firms in the US. An increase in stock liquidity is suggested to be the main reason for

corporate managers to cross-list their shares overseas by Mittoo (1992b), Fanto and Karmel (1997). Thirdly, cross-listing is a way to disclosure information to get better analyst coverage, greater attention in media, better accuracy of analysts and more qualitative accounting information as a result of cross-listing. Finally, by cross-listing their stock in a country with higher legal protection for shareholders, a firm can protect their minority investors. (Stulz 1999) The benefits of cross-listing need to be put into context, there are risks for potential information asymmetries between the market agents, as well as difficulties in price discovery, international arbitrage opportunities and the use of multi-market trading for increased liquidity. (Karolyi, 2006).

When stock exchanges consolidate over borders and harmonize their listings , investors get access to the capital from other countries. This is suggested to increase liquidity and attract more capital internationally. (Cision 2006) After the harmonization of the lists of the Nordic exchanges in 2006, the common market capitalization segments for firms listed on NASDAQ OMX Nordic Exchange are:

- Large Cap (market value more than 1 billion euro).
- Mid Cap (market value between 150 million and 1 billion euro)
- Small Cap (market value less than 150 million euro)

4. CASE STUDY –The evolution of NASDAQ OMX Stockholm

4.1 Stockholm Securities Exchange and OM

In 1864, the Stockholm Securities Exchange was established by a royal statute read from the pulpit of the main church in Stockholm. In 1901, the exchange got a new directive and supervision through a Securities exchange committee. This was also the year when the two listings, the A-list and the B-list, were instituted. In 1907, the banks of Sweden were allowed as members of the exchange and in 1918 a new electronic marking system was implemented that made Stockholm Securities Exchange the most modern exchange in the world. In 1972 came the introduction of computerized indexes.

During the 1980s, the financial markets were deregulated in a way that made it possible for more players to offer trading services. In 1984, more than 100 years after the establishment of Stockholm Securities Exchange, a trading company called OM AB (Optionsmäklarna AB, later The OM Group AB) was founded by Olof Stenhammar. OM was the first Swedish

market place for options and the first privately owned for-profit stock exchange in modern times. In 1987, OM listed on the Stockholm Securities Exchange and thus was the first stock exchange to become publicly listed exchange. In 1990, OM invented the world's first automated trading system and one year later it was the number one stock exchange to integrate a derivatives trading and clearing system in its business. During these early years, OM AB was still a small company of 150 employees and a turnover of SEK 283 million.

During the 1990's, the financial environment in Sweden was unstable due to imprudent regulations, an economic policy with a short-term perspective and an insolvent banking system. Along with what later has been referred to as a financial crisis, a new market liberal trend started growing in Sweden. Politicians were in favor of creating a strong financial market of international competitiveness. In 1993, the earlier market legislations of Sweden changed and a new clearing- and exchange regulation was implemented. This made it possible for a subsidiary of The OM Group called OM Stockholm to become an authorized regulated market. Shortly after, the Stockholm Securities Exchanged demutualized and registered under the name Stockholms Fondbörs. The two competitors offered slightly different services. OM Stockholm kept its focus on trading options, and they had in-house clearing, and Stockholms Fondbörs was still mainly a market place for securities and bonds. Stockholms Fondbörs did not do the clearing themselves but used the services of a clearing house.

In 1994, OM Stockholm was the first exchange in Europe to accept cross-listed companies. In an attempt to make the financial markets of Europe more integrated, the European Union (EU) came up with a new directive called The Investment Services Directive (ISD), in 1996. This gave non-banking financial firms the possibility to offer their services in other EU member states. The objective with ISD was to promote integration of capital markets and cross-border investments in the EU. An example of what followed this directive was that the German exchange Deutsche Börse and Swiss Exchange started linking their market places together. In addition to this there were many other new joint operations established and changes of ownership structures to current ones that changed the international exchange landscape significantly during at this time. Another change was going on in the US, where small electronic trading systems were established and became competitors to the traditional stock exchanges. In 1996, Swedish Swedbank Markets was first to conduct Internet trading, which was yet another important step in the technological developments which appear to have been characterizing the Swedish financial markets.

4.2 The OM Group

Already at the IPO of Stockholms Fondbörs, The OM Group acquired a smaller stake of its shares. In 1995 though, a process of merging the Stockholm Fondbörs and OM Stockholm fully started, and lasted for many years before they finally joined under the name The OM Group AB in 1997. It was theoretically The OM Group that acquired Stockholm Securities Exchange, even though it is often referred to as a merger. (Blomé sid 164) Since the two merging parties had traditions of trading securities and bonds on one hand, and options on the other, they represented very different organizational cultures. Thus both when it came to the techniques used and the trading itself, the exchanges operated under the same name group name but kept being organized as two different subsidiaries. OM Stockholm and the Stockholms Fondbörs kept their systems separate.

The culture of OM Stockholm as market orientated and the one of Stockholms Fondbörs was oriented towards bureaucracy as it had recently been a mutually owned stock exchange without for-profit objectives. (Blomé sid 174) Even though the new organization was divided, the first year of The OM Group was successful measured in numbers. Their operating profit rose by 19% to SEK 480 Million from the previous year, but due to the new equity that the merger brought, the EBIT margin dropped from 33 % to 24 %. In addition to this, the number of employees almost doubled as a result of the merger and the OM Stockholm subsidiary brought in more external consultants than before to further improve their technology. OM Stockholm got critique for this articulated focus because many believed that the new advanced technology would lead to increasing trading fees. However, as Olof Stenhammar stated in the Annual Report of 1998, the total costs of trading at OM Stockholm was among the lowest in the world, and it was meant to stay that way.

The turnover of The OM Group keeps increasing during the IT-boom and was fuelled by a growing national interest in Sweden when it came to trading shares. At this point The OM Group was finally able to fully merge the Stockholms Fondbörs into the organization on all levels and the company no longer consisted of two separate subsidiaries but of two operational divisions: Technology and Transactions. (Blomé sid. 188)

In 1999 The OM Group formed a securities alliance called Norex with Copenhagen Stock Exchange, and later the same year Oslo Stock Exchange joined as well. This alliance meant a shared trading system (SAXESS) and shared directives for trading. (Riksbanken 1999 sid.21)

One year later, as part of a new strategy of becoming a world-leading player among stock exchanges, The OM Group together with Morgan Stanley Dean Witter announced that they were to introduce a new electronic stock exchange called JIWAY. It was the first cross-boarder electronic stock exchange ever to offer the complete trade cycle from one transaction point. JIWAY was based in London and was a separate division next to the two original divisions: Technology and Transaction.

While JIWAY was still under development, the management of The OM Group received the chocking news that London Stock Exchange and Deutsche Börse was planning a merger of equals to form a new giant stock exchange under the name iX. In March 2000 there was another major announcement that the Euronext merger was going to happen. As a response to this, the OM Group decided to place a hostile bid on London Stock Exchange. This bid made London Stock Exchange withdraw its intentions of merging with Deutsche Börse to fully focus on defending itself from The OM Group. Deutsche Börse soon announced that it was considering a matching bid on London Stock Exchange to challenge The OM Group.

In an interview on September 14th 2000 the chairman of London Stock Exchange, Don Cruickshank said the following: *“People ask me – why did you take on this job? It is... a job worth doing. The Exchange was no longer to be seen as a public institution. But it was still to be central to the economic health of the UK and our ability to compete in Europe, and for Europe to compete on the world stage.”* London Stock Exchange, now lead by Cruickshank, kept defending itself against The OM Group, that in turn kept tempting the shareholders of London Stock Exchange to accept their bid. The deal never went through, but the publicity that the OM Group got in the finance world has been estimated to a value of SEK 500 Million. (Blomé s. 234) In 2002, JIWAY was shut down because of cost reductions (Blomé s 335.)

4.3 OMHEX

In 2000 discussions about a possible merger between Helsinki Stock Exchange (HEX) and Copenhagen Stock Exchange started and The OM Group soon joined in. At this time HEX was owner and operator of the exchanges and central securities depositories of Finland, Estonia and Latvia. After a period of negotiations, on May 20th in 2003, The OM Group and HEX Plc announced their decision to merge and form an integrated Nordic and Baltic market for listing, clearing, settlement and depository of securities. The merger was completed on September 14th and the headquarters were decided to be in Stockholm. Om offered 2.5 newly

issued shares in The OM Group for each share in HEX as well as 5.9 Euro for warrants. This implied a value contribution of about 29 % from HEX and 71 % from The OM Group. The name of the new company was to be OM HEX and it consisted of two divisions: HEX Integrated Markets, which was northern Europe's largest securities market (access to 80% of Nordic equities markets namely HEX Stockholm, HEX Helsinki, HEX Tallinn and HEX Riga as well as Central Securities Depositories (CSD) in Finland, Estonia and Latvia) and OM Technology, which was a provider of transaction technology solutions with global presence.⁶ The new Board was to have a fair representation of the merged parties' earlier board of directors with Olof Stenhammar as chairman. The deputy CEO of OM at that time, Magnus Böcker, commented the merger with the following words: " *Based on our vision, this pioneering step will guarantee that the Nordic region will be a truly integrated market based on a common technology platform. The merger continues to build on OM's strategy, creating competitiveness by combining world leading technology with highly efficient markets*" (Press release 20-05-2003)

The merger meant that HEX and the Baltic exchanges were also going to put the SAXESS system in use. The stock exchanges in Copenhagen, Reykjavik and Oslo were already using the system at this point, and all of them were offered to join the merger as well. In 2004 the company name was changed to OMX and the Swedish and Finish clearing stations VPC and APK merged into NCSD, which was later to become part of Euroclear. In 2005 OMX merged with Copenhagen Stock Exchange and OMX established their own MTF First North the same year. The purpose of First North was to be able to offer a simpler way for firms to list. It was meant for companies at an early stage in the life cycle that did not have the right characteristics to list on the regulated market of OMX.

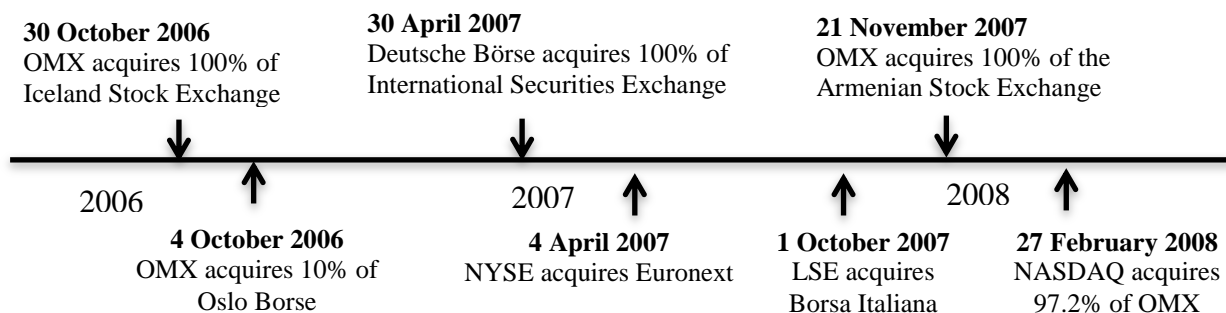
4.4 The merger with NASDAQ

This section will provide a detailed description on key events that led to the NASDAQ OMX merger. In 2006-2008 strong competitive forces were prevailing the stock exchange industry. The ratification of MiFID that would come into effect in November 2007 and result in a further opening for international competition among the European stock exchanges surely contributed to this intensification. NASDAQ's bid on the London Stock Exchange, NYSE's and Deutsche Börse's bid on Euronext are some of the key events during the first part of 2006 intended merger activity. As Christopher Cox, the Chairman of SEC, stated in his speech

⁶ OM Technology's stock market trading systems are used by over 25 different stock exchanges.

(June 22, 2006): “The question is not whether some of these exchanges will merge, but rather only when, and how”. NYSE and Euronext later merged 4th April 2007, LSE and Borsa Italiana merged on 1 October 2007 and NASDAQ merged with OMX on 27 February, 2008.

Figure D, Time line overview for NASDAQ OMX merger



Source: authors' illustration

4.4.1 Background of NASDAQ

NASDAQ was founded in 1971 as a wholly owned subsidiary of FINRA (then known as the National Association of Securities Dealers, Inc.). The process of NASDAQ's demutualization was envisioned to have three broad stages:

1. Issuing privately placed stock
2. Converting to technical exchange status
3. Issuing public stock (CRS Report for Congress 2005).

Beginning in 2000, FINRA restructured and broadened ownership in NASDAQ by selling shares to FINRA members, investment companies and issuers listed on The NASDAQ Stock Market. In connection with this restructuring, NASDAQ applied to the SEC to register The NASDAQ Stock Market as a national securities exchange. The conversion to an exchange status is a requirement to proceed to the sale to public. FINRA fully divested its ownership of NASDAQ in 2006, and The NASDAQ Stock Market became fully operational as an independent registered national securities exchange in 2007. As NASDAQ demutualized it started to look for a acquisition target. The first target that it aimed to acquire was the London Stock Exchange (LSE). After three separate attempts to acquire LSE and an equal amount of rejections from the LSE board and LSE shareholders, NASDAQ had failed to take control over the exchange and stopped further attempts by February 2007. The LSE board claimed that each of NASDAQ's bids "substantially undervalues the Company, its unique position and the very significant synergies that would be achievable from the combination of

London Stock Exchange with any major exchange group” (Press release 10 Mars 2006). Nevertheless, NASDAQ managed to acquire a significant share (28.75 %) of LSE to by the end of December 2006.

4.4.2 The situation for OMX

In 2006 OMX continued to position itself as a pan-Nordic exchange in order to strengthen its position in the stock exchange industry. Göran Blomé (2012) documents, through interviews with the management and board members of the OMX, how this strive to position the exchange as Nordic was a strategy to gain relevance in the on-going merger waves. The unwillingness of the Oslo Bors to ally itself to OMX was a difficulty that OMX tried to overcome by gradually acquiring it. By 4 October 2006 OMX acquired 10 % of the shares in Oslo Bors Holding for SEK 317 million. This was well in line with the urge for a Nordic Exchange model. The acquisition of the Iceland Stock Exchange (ICEX) was a further step in this direction. By November 30th OMX acquired the holding company Eignarhaldsfelagid Verdbrefefathing hf (EV) that owned ICEX for SEK 255 million. Another prove of this positioning strategy is that the exchange introduced common listing and a common index for all the Nordic countries in October 2006. Moreover, it changed name to The OMX Nordic Exchange Group in 13 April 2007. It is documented that The OMX Group took part in several discussions about alliances. Olof Stenhammar, the founder (1984) and chairman of OMX (1996-2007), had established a contact with Clara Furse (CEO) and Chris Gibson-Smith (Chairman) at LSE. Since the failed takeover attempt in 2000, when The OM Group launched a bid on LSE, discussions about an alliance had been going on. However, the numerous attempts from actors to acquire LSE slowed up these discussions and NASDAQ’s acquisition of a major stake of LSE put a final end to the discussions of a potential alliance between The OMX Group and LSE. Olof Stenhammar confirms that there were parallel initial discussions about mergers in process with both Euronext and Deutsche Börse since 2006 (Blomé 2012). Nevertheless, it was the relation established by CEO, Magnus Böcker with the NASDAQ CEO Robert Greifeld that proved itself the most fruitful.

4.4.3 The merger in 2008

The 25 May 2007 NASDAQ announced its bid on The OMX Nordic Exchange Group. The press release by NASDAQ of that day confirms that NASDAQ viewed the proposal as a merger and combination of two companies, with the formation of a new group “The NASDAQ OMX Group”. The bid was said to be effected through a cash and stock tender offer by NASDAQ for all outstanding shares in OMX. NASDAQ’s offer represented a

premium of 19 % to the closing price on 23 May, 2007. The offer valued OMX to SEK 25.1 billion and equivalently \$3.7 billion. The key drivers presented in a press release by OMX and NASDAQ (25 May 2007) upon the announcement are summarized as follows:

- The two exchanges had similar goals as for the pioneering in technology. OMX was described as a creator of “a world-renowned technology customer base of equity, debt and derivatives exchanges”. NASDAQ, on the other hand pioneered electronic trading and had the fastest trading platform in the US.
- Increased visibility and access to the global investment marketplace for issuers, resulting in a broad base of investors and deep pools of liquidity.
- A highly competitive derivatives market offering. OMX technology solutions were presented as the combined groups key asset in the group’s opportunities to capture growth in derivatives trading.
- Enhanced strategic opportunities to drive organic growth and continue to take part in the consolidation.
- Significant synergy potential. The pre-tax annual synergies were estimated at \$ 150 million (SEK 1,025 million). Of this amount, \$ 100 million were attributed to cost synergies and \$ 50 million were estimated revenue synergies. The cost synergies would be realized through the rationalization of IT systems, data centers, non-IT functions and reduced capital and procurement cost. Revenue synergies would be achieved through the creation of deeper liquidity pools, increased cross-border trading, increased international listings, packaged data products and enhanced technology sales.

The new formed group: NASDAQ OMX was supposed to become a holding company for the two exchanges and would be listed on NASDAQ and OMX Nordic Exchange. The headquarters were supposed to be in New York, while the technology branch would continue operate without any implications of the merger. NASDAQ would own 58% of the new group whereas OMX would own the remaining 42%.

The board of the new group would consist of 15 members, of which nine would represent NASDAQ, five representing The OMX Group and the NASDAQ CEO would remain as CEO and board member. Magnus Böcker, the CEO of OMX, would proceed as the President of the new group. The maximal cash stake that could be paid out, amounted to SEK 11,4 billion and was granted by Bank of America and JP Morgan Chase Bank. Three of the largest owners: Investor, Nordea Bank and Magnus Böcker, with a corresponding share allocation of 16.6%

had put their shares into a binding sales offer. Their offer was restricted by two conditions: 1) if a third party offered more than SEK 230 per share or 2) if the offer would fall below SEK 190 per share (as consequence of a decrease of NASDAQ's share price). The bid in general had the following restrictions in order to be valid: a) it had to be registered at SEC by 15 August, 2007. B) it had to be accepted by a large majority (two thirds) of the OMX shareholders c) it had to be supported by a OMX board's recommendation. D) the complete offer must be accepted by 15 December, 2007.

With only one trans-Atlantic stock exchange merger realized before, there were some concerns expressed from the Swedish government as for the regulations of the newly established group. The Swedish Minister for Financial Markets, Mats Odell, appointed a committee to examine the consequences of a merger between NASDAQ and OMX (Press release Swedish Government 26 July 2007). Their opinion had to be expressed by 28 September. Meanwhile the OMX board restated their unanimous support for NASDAQ's bid. On 4 June the board motivated its standpoint by pointing out that even though the historical evolution of OMX has been successful, the company would face many challenges, e.g. operational and strategic while taking in consideration growth and profitability, changes in regulations, increased competition and the fast moving consolidation trend in the market. Having evaluated several strategic options, including a stand-alone model, the board believed that the merger with NASDAQ would be the most lucrative for OMX. The board further pointed out that the merger would:

- Strengthen the Nordic region as a financial center
- Create improved career opportunities for the employees of the new group
- Not lead to any considerable reduction of staff and personnel

4.4.4 Interference from other actors

At the moment of NASDAQ's bid on OMX, the former CEO of OMX, Per Larsson, was the CEO of Borse Dubai. He had previously showed interest in OMX and in 2006, Borse Dubai approached OMX in order to buy its technology branch. The bid was immediately dismissed by OMX. By 9 August, Borse Dubai conducted a well-organized buy action on OMX. It acquired 4.9 % of its shares – the Finish regulations indicate that 4.9 % is the largest amount an actor can buy without conduction an owner-approval test. In addition, Borse Dubain acquired an option covering 22.5% of shares. Borse Dubai paid SEK 230 per share, which valued OMX to approximately SEK 27 billion. (SEK 2 billion more than NASDAQ's bid). The motivation to this action was, according to CEO Per Larsson, that Borse Dubai believed

that there was a strategic fit between the exchanges. Additionally, Borse Dubai had significant interest in acquiring OMX's technology. As a response to Borse Dubai's offer, NASDAQ announced that it offers its share of LSE for sale (this share amounted to 31 % at that time). The cash would then be used to repay debt and repurchase NASDAQ shares. Greifeld suggested that this would increase NASDAQ's share price by at least SEK 2 per share within a year. From that point, NASDAQ and Borse Dubai started conversations and the planning to form a joint buy out of OMX (Blomé 2012, p471).

4.4.5 The final turn

20 September NASDAQ and Borse Dubai communicated via a press release:

- Borse Dubai acquires OMX shares for SEK 230 per share in cash
- NASDAQ acquires the OMX shares from Borse Dubai
- NASDAQ pays with 19.99 % of NASDAQ shares plus SEK 11.4 billion in cash. Dubai gets an additional 8.4 % of NASDAQ shares. Since NASDAQ has restrictions as for the maximal owning, limited to 20% for one owner, the shares are separated from Dubai in a separate foundation. Borse Dubai can only use 5% of its shares to vote in NASDAQ.
- The DIFX borse will be co-owned by NASDAQ and Borse Dubai (NASDAQDIFX). The exchange will have the right to use OMX technology in Dubai and in other growth markets.
- Borse Dubai acquires 28% of LSE shares for 14.14 pounds per share.

The same day, Qatar Investment Authority (QIA) announced that it has acquired 20 % of LSE's shares without buying them neither from Borse Dubai or NASDAQ. It is also reported that QIA has acquired 9.98% of OMX's shares. This triggered the share price that reached 264 SEK. It became obvious that Borse Dubai and NASDAQ had to increase their bid. Indeed, Olof Stenhammar and Börje Ekholm – chairman of Investor, the biggest owner in OMX, declared that the Dubai and NASDAQ bid is too low. In September main owners of OMX decide to reformulate their selling price to SEK 265 per share in a binding irrevocable⁷. The binding could be annulated if a third party would bid SEK 303 per share. The new situation led to re-negotiations as for the number of OMX representatives in the combined group's board. The number is reduced from five to four. NASDAQ and OMX give up one spot each to Borse Dubai's representatives, which were entitled to have two representatives in the

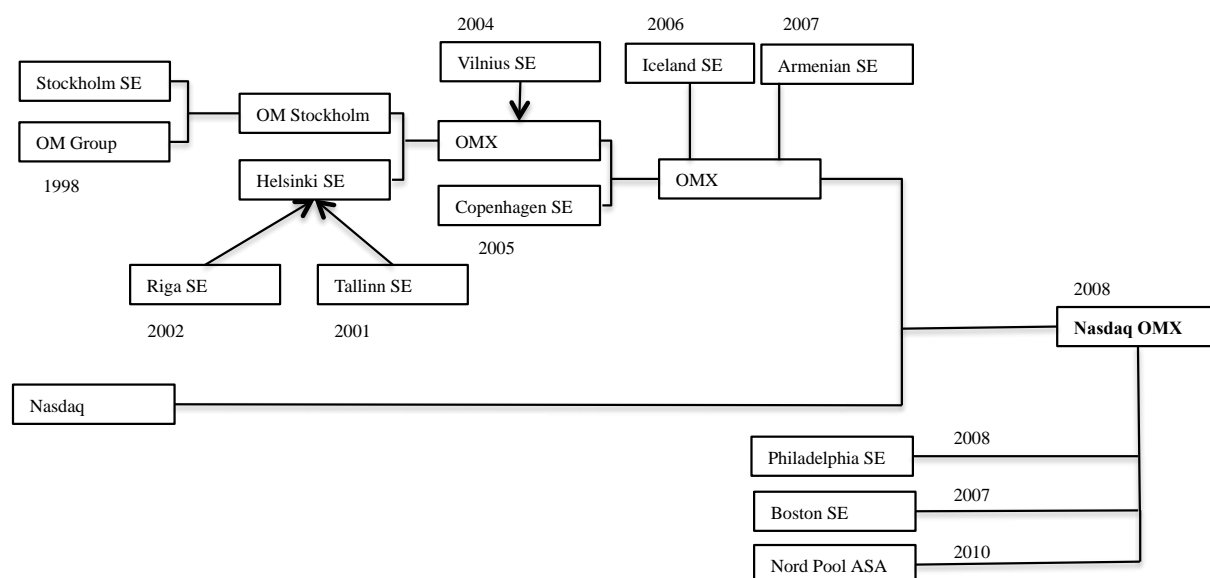
⁷ The selling price was supported by Investor AB, Nordea Bank AB, Didner & Gerge Fonder AB, Nykredit Realkredit AB, Magnus Böcker and Olof Stenhammar.

combined group. As for the board of OMX Nordic Exchange, NASDAQ declared that it would not interfere with its current composition. It was also confirmed that U.S Securities and Exchange Commission (SEC) would not interfere in any of the seven OMX countries national financial codes. Stockholm is appointed to be the European head office of the group.

4 October 2008, the Financial Market Council published its first report on the recent development of the stock exchange industry in Europe. In the light of the MiFID and the emergence of MTFs the Financial Markets Council sees two possible outcomes: “either there will be a loss of transactions at OMX, or OMX will lower its costs”. A merger is said to facilitate the cost reduction. Shortly after, the Swedish Financial Supervisory Authority accepted Borse Dubai as a legal owner of OMX and the Committee on Foreign Investments (CFIUS) in the US, approved the forthcoming ownership from Borse Dubai in NASDAQ.

In the light of the higher bid price and the support from the two governments, the acquisition of OMX could finally be realized. Gradually, large shareholders sold their holding to Borse Dubai that by 15 February could present a 97.2% ownership of OMX. On 27 February Borse Dubai sold 117,227,931 shares in OMX, representing approximately 97.2 percent of the total number of shares and votes in OMX, to NASDAQ (Press release 27 February 2008). The NASDAQ OMX Group was formed and by that OMX Stockholm had become a part of a global stock exchange group with over 3900 listed companies and operations in 60 countries.

Figure D, the evolution of The NASDAQ OMX Group



Source: Authors' illustration

4.5 Events after the merger in 2008

Since the official merger between the exchanges, significant resources have been consecrated on the integration between them. In February 2010, the final integration of trading systems among NASDAQ, the Nordic and the Baltic exchanges was launched. NASDAQ's INET system was introduced at all the exchanges. As a result all NASDAQ OMX equity markets across the world trade on the same platform. The implications of the integration are, according to NASDAQ OMX, increased liquidity and competitiveness of the Nordic and Baltic security markets. According to Hans-Ole Jochumsen, President of the NASDAQ OMX Nordic: *"This trading system shift is one of the biggest infrastructural changes in the history of the Nordic and Baltic equities markets. With INET in place we can offer investors access to the world's fastest and most scalable trading system. This will allow us to grow volumes and liquidity, which benefits all investors and ultimately the regional economies. It will enable us as an exchange and the Nordics and Baltic regions to better compete in Europe's increasingly competitive trading environment."*

In addition, the fact that members also in the US will use the same system across these countries was said to facilitate cross – Atlantic trading. From the Nordic exchanges' viewpoints it can be stated that the INET presented a significantly more advanced system than the previously used SAXESS system.

The integration of systems should not be interpreted as a merger of lists between the exchanges; e.g. the INET trading platform in the Nordics and Baltics does not include US stocks. The integration strictly applies technology and in order to gain access to NASDAQ Stock Market also legal and settlement requirements must be fulfilled. However, the application of the same trading platform used to trade US stocks was said to make access to US market technically easier for members, ultimately boosting cross-Atlantic trading volume and liquidity.

4.6 Members' perspective on the recent development of OMX Stockholm

Members' perspective of the evolution of the Swedish exchange will provide further insights into the determination of relevant aspects of a competitive demarche of the NASDAQ OMX Stockholm. The members are also referred to as brokers and conduct the transactions in securities on behalf of others, and constitute the direct link between the exchange and the investor. Taking into consideration the fact that they are in direct relation to the exchange,

their reflections can prove to be a valuable resource for the discussion of major recent events in the history of OMX Stockholm. As there has been several generation shifts since the demutualization and integration of the Swedish exchanges, the time frame that is considered in the interviews stretches from the OM and HEX merger in 2003 until today. Eight interviews have been conducted, of which two of the interviewees preferred to remain anonymous⁸. This section will present the most common point of views from the interviewed members.

4.6.1 NASDAQ OMX merger in 2008

Several perspectives are discussed within the NASDAQ OMX merger. From the benefit side it is noted that the merger with NASDAQ has led to:

- A cost reduction for brokers that trade in several exchanges. This is due to the fact that there is no need to pay several membership fees for trading at the exchanges that are included. NASDAQ and US shares are not included yet.
- Less administration
- Homogenous and clear regulations
- A faster trading system (INET)

On the other hand, several brokers note that the potential cost reduction for trading has been asymmetrically distributed. Regular brokers face different fees than the High Frequency Traders (HFT), that enjoy an average discount of 75%.

The fact that brokers are required to make more orders in order to reach the same amount of shares leads to additional costs. Grufman points out that, this strategy, in combination with the faster but less advanced trading system (INET) has emerged from US's interest to access Nordic equities through HFT. Furthermore, Larsson confirms the dramatic evolution of HFT and how it is reducing liquidity. No broker views the merger as a particular liquidity creator. Nevertheless, Larsson claims that the market is an oligopoly, in which no exchange can measure itself to NASDAQ OMX in terms of liquidity. The emergence of MTFs as a consequence of MiFID, has led to an increased fragmentation of the market. Ericson notes that this has led to confusion for their end-customers. Fees are only displayed at NASDAQ OMX, which creates confusion when the broker trades at other exchanges.

⁸ Interviews with representatives of Carnegie Investment Bank, Ålandsbanken, Pareto Öhman, Mangold Fondkommission, Neonet, Remium and two anonymous broker houses.

An interesting remark is made by that NASDAQ OMX is increasingly viewed as a competitor for the brokers. Since the merger it has lost its vision of an un-biased exchange. Surely its alliance with Citi Bank as broker and UBS smart order technology has led to this perception. When NASDAQ blocked the creation of a broker created clearing house, this was further confirmed. Brokers are currently encouraged to use EMCF's clearing services. NASDAQ OMX has a 22% stake in EMCF.

4.6.2 OM- HEX merger in 2004

This merger is viewed as the other large event in the competitive evolution of OMX.

Interestingly, brokers seem unanimous attribute, solely positive descriptions to this merger.

The merger with Helsinki gave the Swedish brokers access to the Finish market that already operated on the same system. This was a pure benefit. In financial terms this meant no need to pay for a Finish membership, and from a customer perspective this meant that the brokers could offer more products and equities. The system that OMX operated on, which was made for the Nordics, which Grufman suggest is not the case for the NASDAQ OMX system. "In Scandinavia we have a similar view on how an exchange should be organized and which services that should be offered".

4.6.3 MiFID and Increased Fragmentation

Brokers associate the recent development within the stock exchange industry with an increased level of fragmentation. The emergence of MTF (e.g. Chai-X, Turquoise) is attributed to the MiFID. The emergence of these exchanges has, according to all interviewed brokers, led to price competition among exchanges. The increased competition has been transformed into lower bid-ask spreads at NASDAQ OMX.

4.6.4 Technology and Liquidity

The lower bid-ask spread has fuelled the development of HFT. According to several brokers representatives (Mangold, Neonet, Carnegie) this relatively new phenomena is reducing the "real" liquidity in the market. Larsson (Mangold) states, "even if the total liquidity might have increased during the past years, this is just an illusion created by the HFT. The real liquidity has decreased". By real he refers to traditional trades in the name of retail or institutional investors. The high frequency traders take one position in a trade, but as soon the computers detect a real investor, they wait to execute the position (Karlsson)⁹.

⁹ This statement was exemplified by the following sentence: Assume high frequency traders have made a certain sales order in the books. When we enter with a buy order for a "real investor", the computer immediately realizes this and the high frequency traders withdraw their sales order. They believe we will drive up the price, so they wait before they sell.

4.7 Discussion of key drivers

The following discussion is structured after the major events that have been identified in the evolution of the Stockholm exchanges throughout the last two decades.

4.7.1 Domestic integration

The dynamic evolution of the OM witness about how the technology, regulations and shifts in corporate structure have fuelled the competitive demarche of the exchange industry. The technologically oriented company introduced several improvements to trading activity (e.g. the automated securities system) that gave it a possibility to fuel competition between the exchanges. The entrepreneurial culture and fast growing characteristics of this company could mainly be attributed to the private structure of OM. The listing of OM at the Stockholm Security Exchange can be viewed as a pioneering act in the corporate restructuring process that started in the 1990s. A further change of the Swedish exchange and clearing legislations, enabling the OM to become an authorized exchange and the Stockholm Securities Exchange to demutualize, can be viewed as another key driver of competition. The liberalization of the Swedish market along with the EU's adoption of ISD enhanced the willingness to create one complete exchange for Sweden and thus respond to competitive pressures from other European markets. The observations suggesting that the integration of the Swedish exchanges mainly was driven by a liberalization of Sweden's regulations as well as the development of information technology is well in line with the drivers presented in previous literature (Aggarwal and Dahiya, 2005; Mediola and O'Hara, 2003). An interesting particularity in the Swedish case is that the OM was demutualized company from its inception. It is not unlikely that this actually accelerated the demutualization of the Stockholm Securities Exchange - and hence the competitive evolution of the Swedish exchanges. (Dominating force regulatory)

4.7.2 Nordic Integration

The consolidation of the Nordic exchanges constitutes another important event in the competitive evolution of OMX Stockholm. Once again changes in regulatory environment are identified as a strong driver of increased competition. Additionally, the technological development in the mid-1990s eliminated the need of physical presence while trading. Naturally, this changed the rules of competition from nation-based to international. For the Nordic countries, that largely were inter-connected, this presented a possibility to position their exchanges as Nordic. This strategy would increase the importance of the Nordics in the increasingly competitive stock exchange industry in Europe. The perspectives of a shared platform and hence an increased liquidity led to the formation of the Norex, that later transformed in actual merger activity between the exchanges. Another relevant driver of the

shared trading system was the potential to create common Nordic indices and lists. The idea of giving investors a complete list of Nordic investments was appealing. Additionally, this could provide an additional benefit to firms that with subsidiaries in other Nordic countries. As discussed in the theoretical section about cross-listening, foreign operations induce the willingness for a firm to cross-list. After the implementation of MiFID, when competition from smaller and cheaper market places emerged, this became an important advantage of the OMX exchanges. Being able to provide a harmonized index and trading platform with access to all Nordic countries like OMX does, gives firms a strong reason to list on OMX instead of listing on a small alternative exchange and then cross-list to get access to the foreign capital.

4.7.3 Global integration

From NASDAQ's point of view the major drivers for consolidation with OMX can be pointed out as the increased pressure on NASDAQ from the failed takeover of the LSE in combination with the announcement of the NYSE Euronext merger. NASDAQ, demutualization stretched over six years, once FINRA fully divested its share in NASDAQ, the NYSE rival had already started its consolidation journey by merging with Archipelago. As Wójcik points out (2011), the battle of liquidity between the major exchanges had begun. The press release from the bid-day, present the OMX technology and the potential synergies as another driving factor. The increased competition in equity markets was certainly another key aspect of NASDAQ's desire to enter the European equity market and thus the acquisition of OMX presented itself as a highly relevant option.

As for OMX, the dynamic process of consolidation with NASDAQ and the interaction with Borse Dubai and Qatar show that NASDAQ was one of many options for further consolidation. In the case of OMX we have identified two key merger motives:

- The need for OMX to update its trading platform
- The MiFID directive

These two aspects can be directly related to the theories about incentives for mergers. Technology, identified as a key driver of the competitive demarche of the stock exchange industry can be found as one of the key synergy affect within stock mergers. As for the regulatory aspect, it changed the industry prospects by enhancing price-based competition. Only a price reduction could save OMX from a major loss of liquidity. Interestingly, the interviews with the brokers reveal that other forces have had an impact on OMX Stockholm's liquidity pool. HFT which have taken place ever since the early 2000 and is said to decrease

real liquidity. Paradoxically, the *raison d'être* for HFT to take place is high liquidity, low bid-ask spreads and fast platforms. This puts HFT into a sub-category of the technology driver.

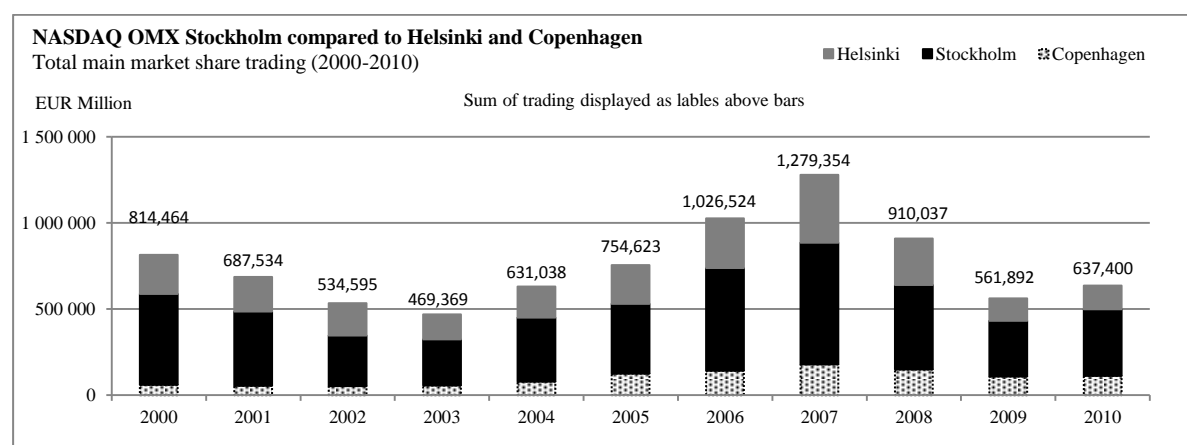
4. ANALYSIS: Comparison of the Nordic exchanges

The Nordic countries have traditionally been closely inter-connected economies. As early as in 1952, a common labor market and social security system was introduced between them. In the context of stock exchanges it has been illustrated earlier in this thesis how the Nordic region, in particular Stockholm, Copenhagen and Helsinki, have been engaged in close alliances ever since the 1999. In order to provide a context to the case of OMX Stockholm, this section will compare it to the other Nordic exchanges over the last decade. The comparison will be based on trading volume, liquidity and the allocation between large, mid and small cap firms that are listed on the exchanges. Stock exchanges operate in a highly cyclical environment, which makes its performance quite complex. However, the inter-connection between the economies and the exchanges as well as the inclusion of cyclical events in our analysis, mitigates this difficulty relatively well.

4.1 Comparison on exchange level

The cyclical development of the stock exchange industry can be observed by the total main market trading. The peak in 2007 represents trading worth 40 % more than during the outbreak of the financial crisis in 2008. Moreover, it can be noted that the total value of trading has slightly decreased over the past decade

Figure E, Comparison of trading volume

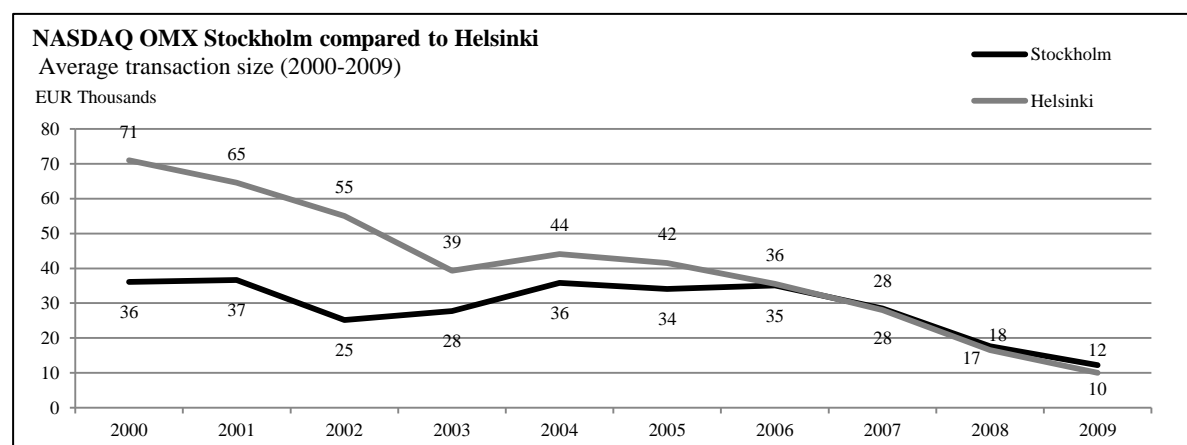


Source: NASDAQ OMX yearly trading statistics

In the first decade of the 21st century the average transaction size has decreased for both Stockholm and Helsinki (figure F). It can be noted that the average transaction size seems to

be inversely correlated with the number of transactions and the turnover velocity. A higher turnover velocity is associated with *lower* transaction size. Additionally, it is correlated with fixed transaction fee and the lot size system. The concept of the round lot one size was first implemented in 2006 at the OMX Helsinki exchange, for all equity markets. As a step in the further harmonization and liquidity increasing procedure of NASDAQ OMX Nordic, the round lot one size was also introduced at the OMX Stockholm by September 2008 (Press release, 18 June 2006). The introduction of the round lot one size has been consistent with a decrease of the average transaction size as well as an increase of the number of trades. Another event that could explain this development is the integration of the Nordic exchanges lists in 2006. This can be observed by the convergence of the average transaction size in 2006 and its mutual decrease. The increase in the number of transactions (figure G) proves that the reduced average transaction size does not directly mean that the turnover at the exchanges has decreased. In fact, the product of the average transaction size and the number of transactions has been relatively constant for both exchanges since 2004. This data allows us to draw the conclusion that the change in lot size ordering, reduced fix fees has shifted the execution of trades: from large and less frequent orders to smaller and more frequent orders¹⁰. The change is applicable for all the three exchanges.

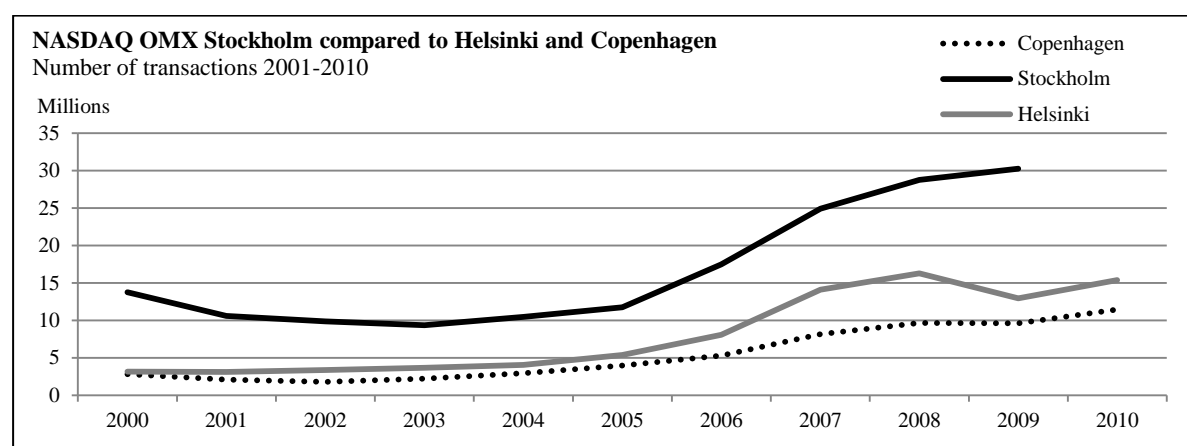
Figure F, Comparison of transaction sizes



Source: NASDAQ OMX yearly trading statistics

¹⁰ This conclusion leaves out a discussion about HFT. The emergence of HFT is likely to increase the number of trades without necessary increasing the size of them and is thus consistent with the conclusion.

Figure G, Comparison of yearly number of transactions



Note: No value reported for Stockholm in 2010. Stockholm excl. First North. Stockholm and Copenhagen including investments certificates. See figures in appendix XX Source: NASDAQ OMX yearly trading statistics

In figure H we have studied the turnover velocity since the harmonization point of the three exchanges' listings. The turnover velocity is defined as the ratio between the total turnover of shares and their market capitalization. The value is annualized by multiplying the daily average by 253 and 100, according to the following formula:

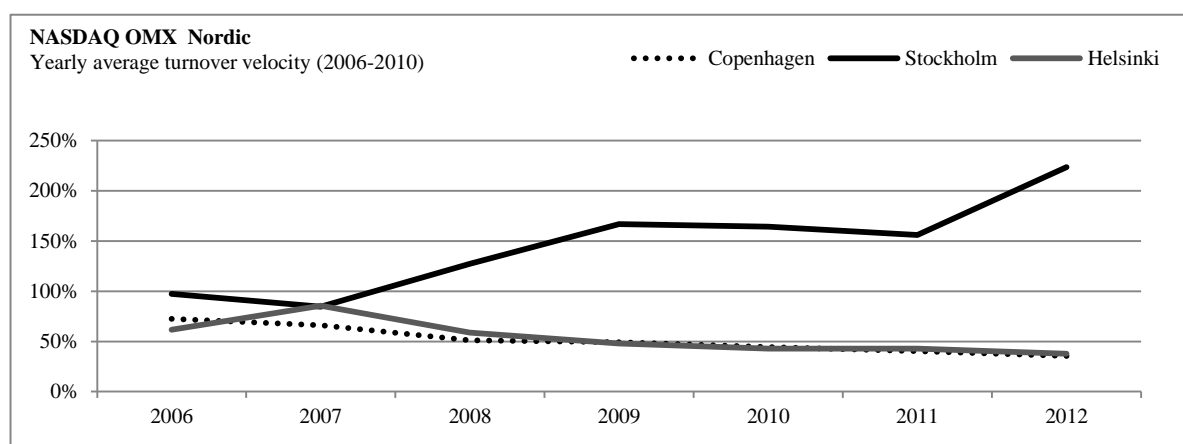
$$\text{Total turnover} / \text{Trading Days during year} / \text{Average Market Cap during year} * 253 * 100$$

The turnover velocity is measure of market liquidity. Interestingly, there is a significant distinction between the development of OMX Stockholm's turnover velocity and the two other Nordic peers. Not only has OMX Stockholm turnover velocity increased, the other two exchanges have faced a decline in turnover velocity. The relatively consistent development of the market capitalization between the three exchanges (figure I) signalize that OMX Stockholm has faced a dramatic increase in the trade of shares. The complex turmoil around 2007, when the turnover velocity for OMX Stockholm started to outperform the other has made a further conclusion difficult. In November, 2007 the MiFID was implemented in the EU. This resulted in the opening of new trading ventures. The rational outcome of this change would for a short run perspective be, *ceteris paribus*, a decrease in liquidity for the regulated exchanges of OMX. First of all, the OMX exchanges faced competition from new trading venues, second of all the reporting system changed: since the introduction of MiFID, trades do not need to be reported to the exchange were the stock is listed. The implication of this change, when considered as an isolated event, would indicate that the OMX Helsinki's and OMX Copenhagen's decline in turnover velocity is a response to the fierce competition and diffusion of reporting. The merger between OMX and NASDAQ was completed in 2008 and

presents another potentially important implication on the liquidity development of the Nordic stock exchanges. As described previously in this paper, the merger between OMX and NASDAQ had several dramatic turns. It certainly, brought attention to Stockholm and OMX Stockholm as it represented the center of events. One could reason that this attention contributed to OMX Stockholm's increased trading. Previous literature suggests that a stock exchange merger only increases liquidity for large firms with foreign exposure (Nielsson, 2009). However, a deeper decomposition of the exchanges into large, small and mid-cap firms reveals that OMX Stockholm has a similar amount of large cap firms as OMX Helsinki (figures L and M). In fact the two exchanges have a very similar allocation of firms over the whole time frame that have been studied. OMX Copenhagen, on the other hand has the smallest amount of large cap and mid cap firms (figure N). If expanding Nielsson's theory and re-apply on a stock exchange level, the theory would suggest the largest stock exchange with the widest foreign recognition would have experienced the largest liquidity increase. This application could provide a potential explanation to OMX Stockholm liquidity outperforming. OMX Stockholm is by far the largest stock exchange of the peer group (i.e. by number of trades and market capitalization) and has the widest recognition among the compared group (Media attention as a result of the LSE merger attempt provides one example of such recognition). Finally, the financial crisis might have influenced the turnover velocity asymmetrically. The inter-connection of the economies suggests that the effects of the crisis should be similar. However, a further conclusion cannot be made without analyzing the detailed outcomes of the financial crisis of 2008 for the specific economies.

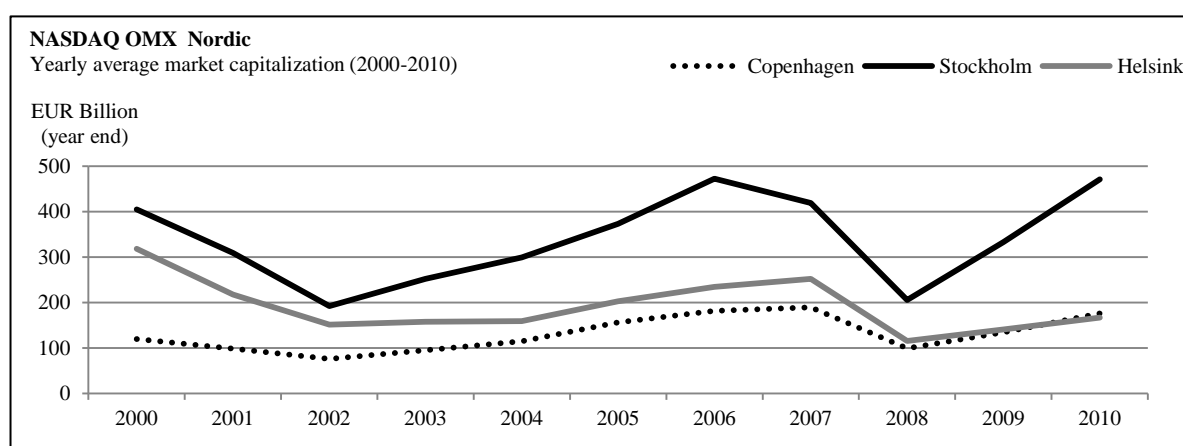
Similarly, one could reason that the HFT, defined by the brokers as a reducer of "real liquidity" could have contributed to the asymmetric development of turnover velocity. As it is suggested above, HFT, most likely has increased the number of transactions in the Nordic markets. A further discussion about HFT goes beyond the scope of this thesis.

Figure H, Comparison of turnover velocity



Source: NASDAQ OMX yearly trading statistics

Figure I, Comparison of market capitalization



Source: NASDAQ OMX yearly trading statistics

4.2 Comparison on firm level

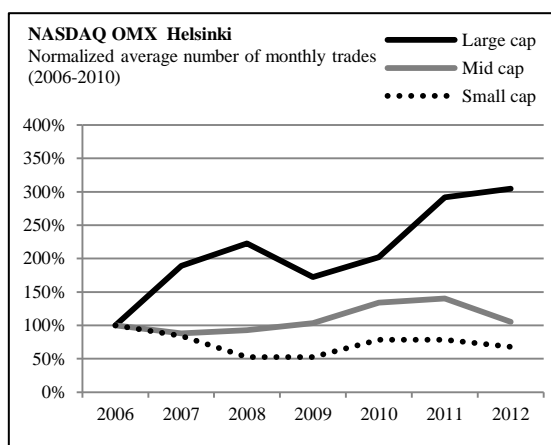
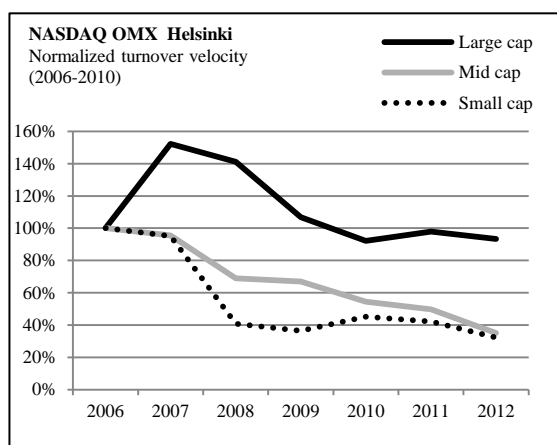
Several interesting observations can be made when dividing the exchanges by firm-size segments. First of all, we note that the increase in number of transactions, illustrated in figure G, come from an increase in number of trades of the large cap stocks. All three exchanges have experienced a drop in trades of small cap stocks and a dramatic increase of large cap trades (figures J.2, K.2, L.2). The development of mid cap stocks trades is relatively flat for all the exchanges. This asymmetry has been explained by previous literature as a consequence of investors preferring large, well-known firms with foreign sales (Nielsson 2009) post-merger. The large cap firms fit into this description. The favorable increase of trading volume for the large cap firms has also been documented from a home bias perspective (Kang and Stultz 1997). It has been shown that not only do investors not hold the world market portfolio; foreign investors do not hold the market portfolio of the country in which they invest.

Investors are in fact biased towards large companies. The phenomenon is explained by information asymmetries, as investors tend to invest in companies they know about.

While the trading volume is one explanatory variable of the liquidity measure, it does not entail the whole measure. The sharp decrease in large cap turnover velocity 2008-2009 is not consistent with the above-mentioned theories (figures J.1, K.1, L.1). Nevertheless, the lack of isolation of the merger in the broader context of events, does not allow us to draw a conclusion of the final effect of the merger between NASDAQ and OMX in terms of liquidity effects. For instance, it is likely to conclude that the financial crisis of 2008 affected the market capitalization of the larger firms more than the smaller. The global nature of the crisis suggests that large firms with foreign exposure would suffer most in terms of stock prices. Since the Nordic stock markets have seen a significant rise since 2009, the market capitalization of the larger stocks has followed, indicating a decreasing effect on the turnover velocity. A study by Anad et. al (2009) confirms that US investors turned to larger and typically liquid stocks during the crisis. Assuming that a similar pattern took place in the Nordics, one could argue that the small cap turnover velocity should have decreased the most. This is also the case for Helsinki, Stockholm and Copenhagen while considering the whole time frame. The combined effect of those two events would hence, allow us to draw the conclusion that large cap stocks have seen the largest increase in liquidity over the post list harmonization time frame. They have also seen the sharpest decrease in turnover velocity in 2008-2009. The decrease in market capitalization could be one explanation to this.

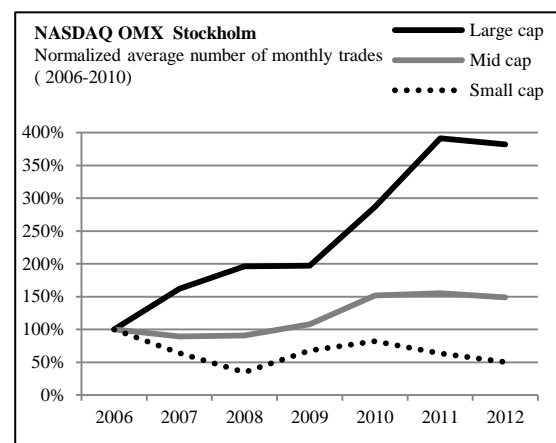
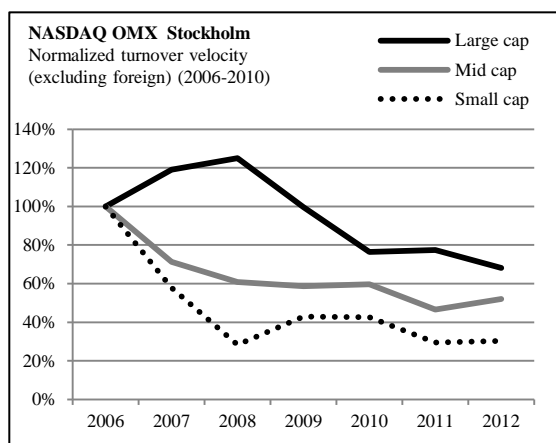
A third factor that cannot be left out when discussing turnover velocity diversity between the size categories, is the implementation of the MiFID. The increased competition and reduction of trading fees is likely to have an overall positive effect on liquidity, as discussed above. However, MiFID fails to explain the differences between the size categories of firms.

Figure J.1 and J.2



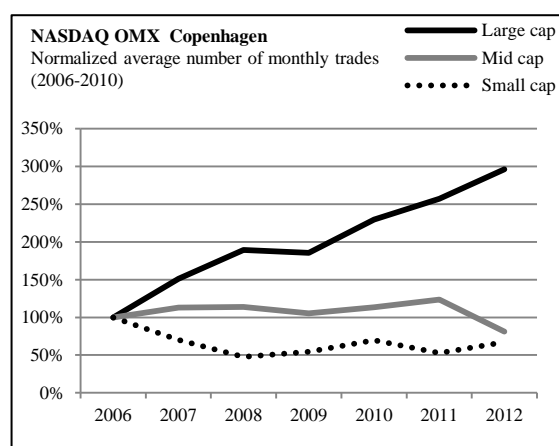
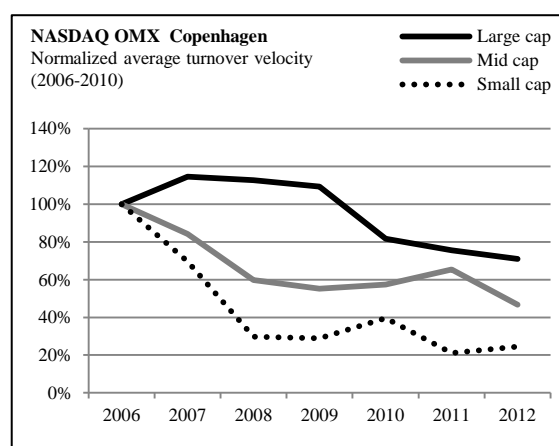
Source: NASDAQ OMX statistics for equity markets

Figure K.1 and K.2



Source: NASDAQ OMX statistics for equity markets

Figure L.1 and L.2



Source: NASDAQ OMX statistics for equity markets

Figure L, proportion of firm sizes Helsinki

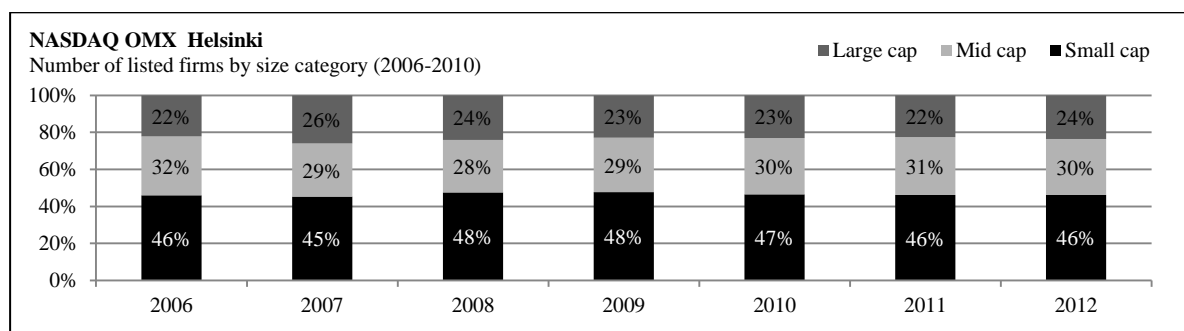


Figure M, proportion of firm sizes Stockholm

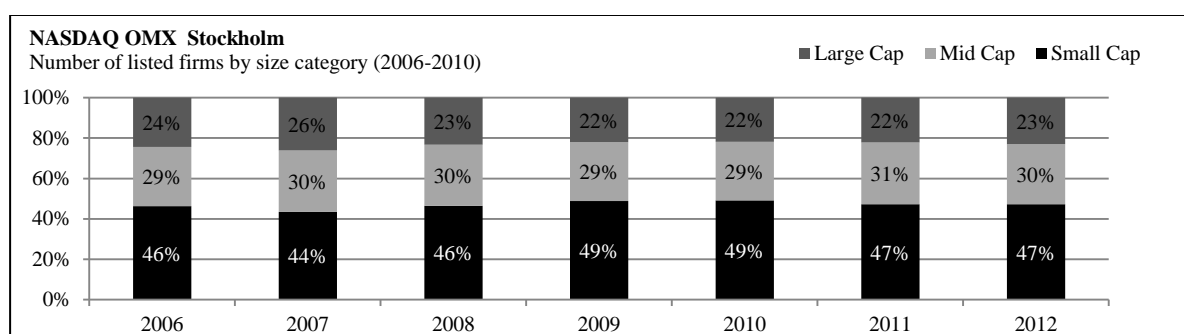
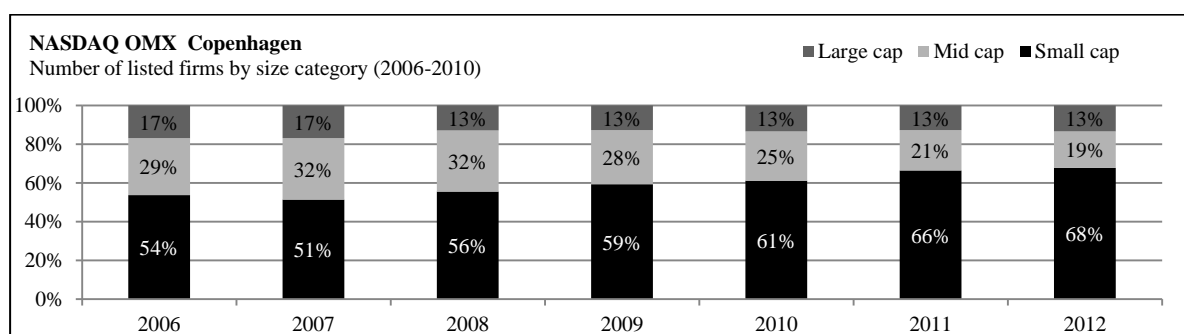


Figure N, proportion of firm sizes Copenhagen



Source: NASDAQ OMX statistics for equity markets for all three graphs

6. CONCLUSION

The objective of this thesis is to identify the major events of the competitive evolution of NASDAQ OMX Stockholm. Through a review of previous literature on subjects relating to the competitive evolution of stock exchanges, combined with thorough investigations of numerous other sources such as news articles, press releases, OM(X) as well as eight interviews with Swedish brokers, we have provided an illustration of the major events and

drivers that formed NASDAQ OMX Stockholm. By analyzing the complied information we have identified the following core events and drivers that led to the formation of NASDAQ OMX Stockholm:

- The merger of OM and Stockholm Securities exchange: this merger was mainly fuelled by the regulatory changes in Sweden that enabled OM to become an authorized exchange. By operating as a private company it accelerated the demutualization of Stockholm Securities Exchange that became the first exchange in the world to demutualize. By demutualizing the exchanges opened up for a for-profit structure, enhancing competitiveness and consolidation.
- The merger of OM and the Nordic exchanges: the key driver of these series of mergers has been identified as the advancement of information technology in the early 1990s. These advancements eliminated the need of physical presence in order to trade stocks, hence facilitated cross-border integration. It has further been noted that the Nordic region's inter-connection of economies and culture was another important part of the development towards consolidation. The ability to present harmonized listings and indices for investors and firms and position the regional exchanges as Nordic can be interpreted as a competitive response on the European stock exchange industry's development.
- The merger between the OMX Group and NASDAQ: this dynamic moment of NASDAQ OMX Stockholm's development provides an important element of its competitive evolution. In the light of the purely competitive environment, where exchanges compete on high liquidity and prices, that surrounded the exchange it became evident that a further integration was vital to offer high liquidity at low prices. The implementation of MiFID has played a major role of creating the price-based competition in Europe that ultimately has fuelled the battle of liquidity. The operational synergies and the fast trading system that was offered in the merger with NASDAQ provided the best opportunity to respond to the increased competition from global exchanges as well as MTFs.

Furthermore, the development of NASDAQ OMX Stockholm has been put in a context by a comparison from an equity trading perspective with its core Nordic peers: OMX Helsinki and OMX Copenhagen. The following findings and conclusions have been made:

- The change of the lot size system, reduced fix fees has changed the nature of trade execution in the Nordic exchanges. Trades are smaller and more frequent than in the beginning of 2000. This development is supported by a decrease of the average transaction size as well as an increase in the number of transactions.
- NASDAQ OMX Stockholm is the only exchange that has experienced an increase of turnover velocity since the harmonization of the listings of the Nordic exchanges. A possible explanation is that NASDAQ OMX Stockholm has enjoyed the most attention from foreign investors as a result of its wide recognition from the NASDAQ and OMX Group merger.
- Once studying the Nordic exchanges decomposed by firm size, we find consistency with Nielsson's projections from the Euronext merger. The large cap firms have experienced the highest increase of trading post the merger with NASDAQ. The decrease in turnover velocity can be explained by the financial crisis as market capitalization has decreased over this period.

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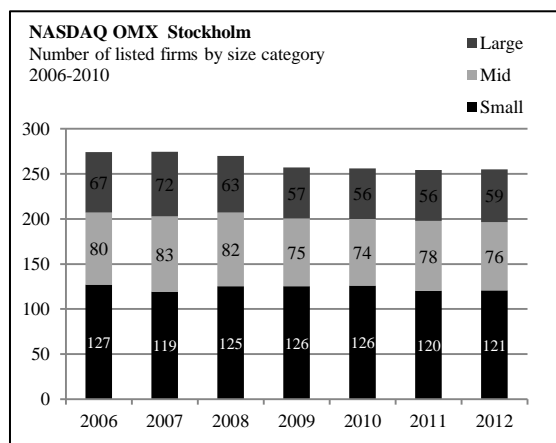
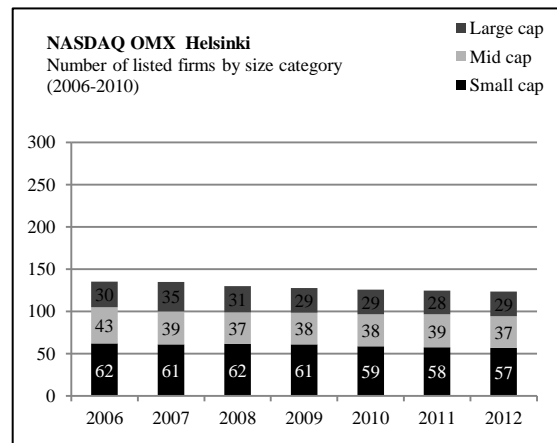
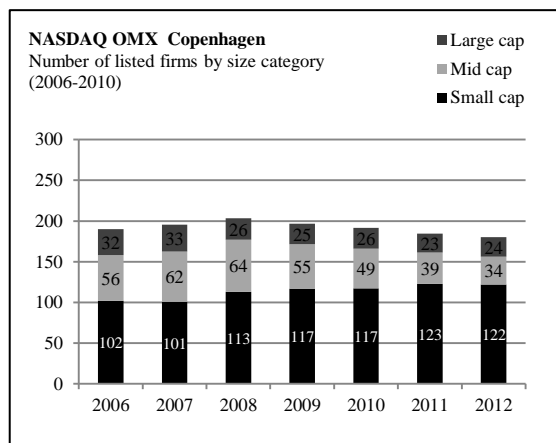
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Appendix 1.

Complementary graphs for section 4.2 graphs L – N in absolute numbers.



Source: NASDAQ OMX statistics for equity markets

Appendix 2

These exchange rates were used to translate the Swedish and Danish currencies into Euro.

Exchange rate	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
EUR/SEK	0.112	0.098	0.092	0.106	0.111	0.107	0.111	0.109	0.108	0.108	0.113

Exchange rate	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
EUR/DKK	0.133	0.134	0.136	0.134	0.134	0.134	0.134	0.133	0.135	0.134	0.134

Source: www.oanda.com and Orbis database

Appendix 3

Financial performance of the NASDAQ OMX Nordic region for the period 2006-2010.

NASDAQ OMX Stockholm

EUR Thousands	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Turnover	101,784	93,636	88,279	101,302	110,117	143,838	166,307	135,432	159,419	196,537
EBIT	53,374	43,251	42,843	49,277	55,376	79,623	107,421	78,820	74,730	92,511
-margin %	52.4%	46.2%	48.5%	48.6%	50.3%	55.4%	64.6%	58.2%	46.9%	47.1%
EBIDTA	n.a.	n.a.	n.a.	49,826	57,806	84,039	112,437	83,927	80,890	104,290
-margin %	n.a.	n.a.	n.a.	49%	52%	58%	68%	62%	51%	53%

NASDAQ OMX Helsinki

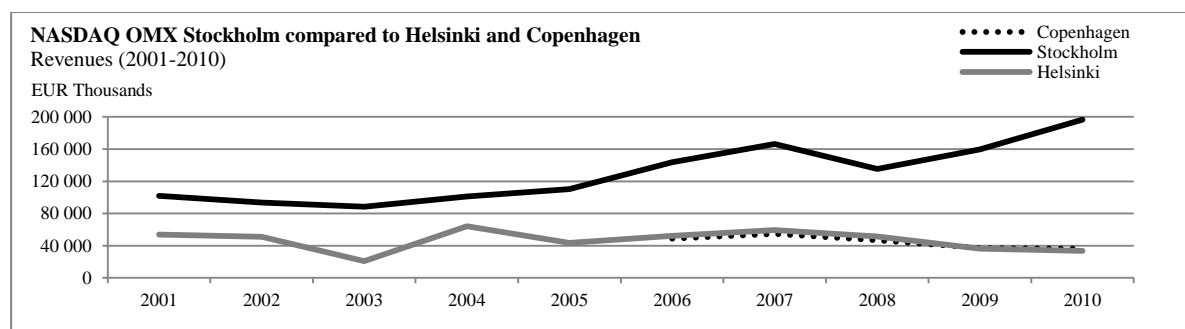
EUR Thousands	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Turnover	53,656	50,964	20,641	64,105	43,366	52,123	59,510	51,189	36,412	33,536
EBIT	35,130	31,646	11,097	34,225	23,453	31,401	37,106	28,824	21,951	23,508
-margin %	65.5%	62.1%	53.8%	53.4%	54.1%	60.2%	62.4%	56.3%	60.3%	70.1%
EBIDTA	n.a.	n.a.	n.a.	37,393	25,892	33,908	39,191	30,853	23,570	23,623
-margin %	n.a.	n.a.	n.a.	58.3%	59.7%	65.1%	65.9%	60.3%	64.7%	70.4%

NASDAQ OMX Copenhagen

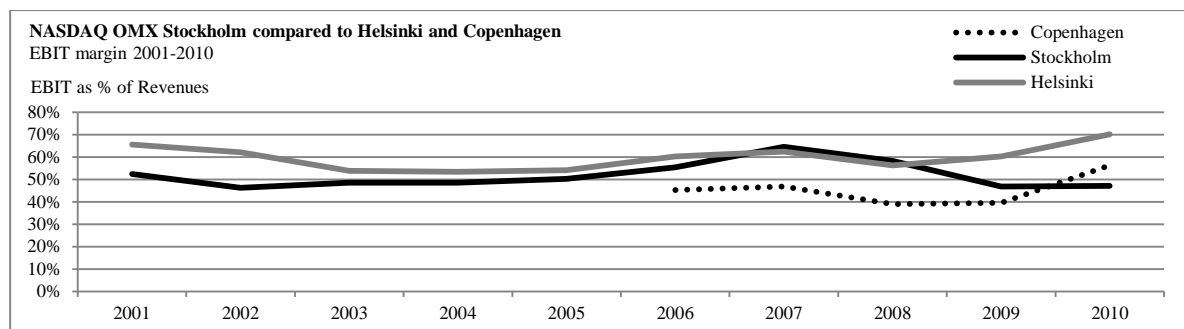
EUR Thousands	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Turnover	n.a.	n.a.	n.a.	n.a.	n.a.	48,398	54,521	46,482	37,222	36,251
EBIT	n.a.	n.a.	n.a.	n.a.	n.a.	21,890	25,540	18,130	14,693	20,355
-margin %	n.a.	n.a.	n.a.	n.a.	n.a.	45.2%	46.8%	39.0%	39.5%	56.2%
EBIDTA	n.a.	n.a.	n.a.	n.a.	n.a.	23,615	27,220	19,447	15,855	21,129
-margin %	n.a.	n.a.	n.a.	n.a.	n.a.	49%	50%	42%	43%	58%

Source: The data is gathered from ORBIS database 2012-05-12. All data is converted into EUR by the converting system of Orbis. There is no data available for Copenhagen before 2006 from this source.

Graphical presentation of financial performance



Note: OMX Stockholm exchange revenues up, Helsinki and Copenhagen flat.



Note: Historically and consistently, Helsinki has the highest operating income.

Appendix 4, Data used for graphs in figures in section 4.2

Data figure E

Trading vol. EUR Million	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Stockholm	527,556	431,709	294,891	268,822	371,543	405,389	596,570	705,410	491,878	322,321	387,000
Copenhagen	225,834	201,462	187,221	144,708	179,897	223,431	287,941	394,481	269,166	130,711	138,700
Helsinki	61,074	54,362	52,483	55,839	79,597	125,803	142,013	179,463	148,993	108,859	111,700
Total	814,463	687,534	534,595	469,369	631,038	754,623	1,026,524	1,279,354	910,037	561,892	637,400

Source: NASDAQ OMX yearly trading statistics

Data figure H

Average turnover velocity %	2006	2007	2008	2009	2010	2011	2012
Copenhagen	73%	66%	51%	49%	44%	40%	36%
Helsinki	62%	86%	59%	48%	43%	43%	38%
Stockholm	97%	85%	127%	167%	164%	156%	224%

Source: NASDAQ OMX yearly trading statistics

Data figure I

Market Capitalization EUR Billion	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Stockholm	405	309	192	252	300	374	473	419	206	333	472
Copenhagen	120	99	76	95	115	156	182	190	99	135	176
Helsinki	318	217	151	158	159	203	235	252	116	141	167

Source: NASDAQ OMX statistics for equity markets

Data figures L – N in section 4.2

Stockholm

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of listed companies at year-end	311	305	297	282	277	272	276	279	266	258	258
Number of new listings	46	24	10	5	10	9	24	13	11	7	14
Number of delistings	35	30	18	20	15	14	20	10	24	15	14

Copenhagen

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of listed companies at year-end	235	217	201	194	185	176	190	204	200	194	188
Number of new listings	8	5	0	2	3	6	20	16	6	2	4
Number of delistings	15	23	16	9	12	15	6	3	9	8	10

Helsinki

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of listed companies at year- end	158	155	149	145	137	137	136	134	129	128	126
Number of new listings	20	9	3	1	1	5	6	3	0	2	1
Number of delistings	12	12	9	5	9	5	7	5	5	3	3

Source: NASDAQ OMX yearly trading statistics