

From Demutualization to Globalisation: New Challenges for Stock Exchanges

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For about five years the widespread view that the European Union, as an evolving single capital market, has an oversupply of Stock Exchanges, combined with the peculiarity of electronic trading, has given Exchanges considerable scope to build cross-border, even global, business. In particular, after the demutualization and the self-listing of many Stock Exchanges, the proposed consolidations in the industry have accelerated, involving the denationalisation of the exchange infrastructures. More recently active competition among the Exchanges - and between Exchanges and other trading venues - has become truly global. This prospective scenario has led to a study of the challenges that Stock Exchanges have to face not only in Europe but also globally.

Field of Research: stock market, stock exchange, demutualization, self-listing.

1. Introduction

As a result of the processes of demutualization and self-listing, as well as of the need to create a single or a small number of European Stock Exchanges capable of competing with the American and other important securities markets, plans for integration among European Stock Exchanges accelerated in 2005. This trend was marked by a necessity to abandon nationalistic attitudes and place domestic Exchanges suitably within the new aggregated systems under proposal. Until 2006 the main European integration attempts had involved the three largest Stock Exchanges, i.e., the London Stock Exchange (LSE), Euronext and Deutsche Boerse, all listed in 2001.

Approaches and feasibility studies radically changed in Europe at the beginning of 2006 when the American Stock Exchanges, the New York Stock Exchange (NYSE) and the Nasdaq, entered the European integration processes.

The interest of the American Stock Exchanges in forming alliances or merging with the main European Stock Exchanges has introduced an element of uncertainty into all the integration scenarios that were opening up on a European level. In doing so, it has attracted the attention of the European Central Bank and of some European government leaders who have tried to sustain the advisability of a wholly European integration because it would help strengthen the financial system and particularly the role of the Euro.

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2. Literature Review and Methodology

The present paper analyses current developments of EU securities infrastructures, discussing possible implications for future market scenarios regarding the integration of Stock Exchanges. The theme has become of interest only in the third millennium, following the process of demutualization (IOSCO, 2000; Cybo-Ottone, Di Noia, Murgia, 2000) which has involved the largest Stock Exchanges in the world. The main topics of this process and the subsequent developments of the industry have been analysed by the European Central Bank (2003) and by the European Commission (2006) only in the last few years, being the integration and the efficiency of the EU financial markets part of their main goals. In particular, although little literature has been produced regarding this issue, it is possible to analyse these phenomena with the aid of the various tools employed in the studies of management science given that demutualized Stock Exchanges can be considered as enterprises (Lee, 1998).

Furthermore, given the lack of quantitative and price-based measures, this paper adopts a qualitative approach (Federal Reserve Bank of New York, 2002; Schmiedel, 2003; Schmiedel and Schonenberger, 2005; Stoll H.R., 2006;) to evaluate the degree and the evolution of integration of securities market infrastructures in Europe, drawing specifically upon the regulatory and operational issues raised by the recent attempts of transatlantic integrations among the Exchanges.

3. The main trends of Stock Exchanges in the third millennium

Stock Exchanges perform important functions for the economy, contributing considerably to the efficiency of capital markets, being at the cross-roads of two different processes (summarised in Table 1): a) the capital allocation process, which ensures efficient allocation of resources where the Exchange connects the needs of issuers with those of investors; b) the asset management process, whereby financial intermediaries, operating through a price-discovery service provided by the security markets, perform diverse roles in order to satisfy the requirements of the investors. The performance of these two processes becomes strategically relevant for the development of the financial system of a country and implies the offer of efficient services at competitive prices, with the aim of guaranteeing the markets' liquidity and integrity, besides reducing to the minimum the risks of contamination and of systemic instability.

Competition drives Stock Exchanges to offer better services under more competitive terms and if on the one hand this should benefit customers and the economy of the country concerned, on the other hand it forces the companies managing the markets to make a huge technological effort and to strive towards new areas of activity to compensate for any losses of traditional business. Increased competition had already become apparent in the second half of the nineties, when, in order to operate in an ever more competitive environment, Stock Exchanges abandoned their organisational structures linked to public infrastructure and, in Europe, also as a result of the dictates of the Investment Services Directive (ISD)¹, they changed their legal structure into joint-stock companies able to respond more quickly to the

changes in the competitive environment. This process is commonly termed demutualization, i.e. where a co-operative society becomes a joint stock company, mostly for profit. This process has sometimes been the result of the need to collect capital funds, but more frequently it has responded to strategic demands² and may now be regarded as the first step in the process of transformation that has recently involved most Stock Exchanges.

Demutualization set off another trend: the listing of the companies managing the Stock Exchanges infrastructures, i.e. self-listing. The members of the Stock Exchanges thus became shareholders, including in their number new entities such as hedge funds that are devoid of the interests that previously characterised Stock Exchange members, and are driven only by the Stock Exchange's ability to create value. The ever growing interest of the "outsiders" is justified both by the ability of most Stock Exchanges to produce good profits and by the interest created by the prospective aggregations, which, since 2005, have highlighted the vitality of Stock Exchanges and increased vertiginously the value of their shares.

In general terms, it can be seen that the demutualization and the self-listing processes have together contributed to changing the corporate governance of Stock Exchanges³, with the consequence that also the aggregation processes are now driven principally by the following objectives:

- 1) the creation of value for shareholders⁴;
- 2) the stakeholder interests to increase the sources of revenue;
- 3) the acquisition of the role of the leading Stock Exchange in order to exploit the advantages that go with this position.

With regard to the first of these objectives, i.e. the growth in value of Stock Exchanges, there has recently been a growing and sometimes excessive interest in the increase of the volume of the activities. The three European Stock Exchanges, which were listed in 2001 – the LSE, Deutsche Boerse and Euronext - have increased their earnings and, except for the LSE, they have widened their strategic business areas beyond the traditional *listing* and *trading* services driven by the necessity to create value for their shareholders.

In particular, Euronext and Deutsche Boerse have opted for a strong product and process diversification in pursuit of new sources of revenue. The former moving in the direction of areas adjacent to traditional cash trading and the latter seeking ways of integrating productive processes that are complementary to trading, such as clearing and settlement. In particular Euronext, as previously stated, has increasingly moved towards the construction of a federation of exchange markets, acquiring LIFFE in 2002 and MTS⁵ in 2005. Deutsche Boerse, for its part, has pursued a vertical integration strategy, acquiring post-trading structures, as did Borsa Italiana in Italy and BME Stock Exchanges in Spain.


Consequently Euronext and Deutsche Boerse are not Stock Exchanges focused on the traditional business of cash trading, but, for different reasons, they may be termed as global Stock Exchanges whose target areas are not only the traditional sectors but also the collateral and adjacent ones. For a better understanding of these competitive dynamics it proves useful to analyse the annual financial statements of the three major European Stock Exchanges, identifying the different business areas that characterize each Exchange, explaining their contribution to the overall

performance of the companies. There emerges in this regard an “Anglo-Saxon” model, characterised by a process of creation of value substantially through share listings and trading, in a highly international environment, as opposed to that of Euronext and Deutsche Boerse whose competitive strategies are based on a conglomerate differentiation of business and on a marked integration in the various areas of business.

Table 1: The main functions performed by Stock Exchanges.

Stakeholders Exchanges	Issuers	Brokers	Investors	Post trading infrastructures
Services	Liquidity service	Consulting, management and negotiation services	Liquidity, asset management and market data service	Clearing & Settlement service
Processes	Listing	Order management	Order processing	Order settlement
Venues	Stock Exchanges	Exchange markets; ATS; Internalisators		Central Counterparties (CCP); Central Securities Depositories (CSD)
Stock Exchanges' value chain	LISTING	TRADING	OTHER BUSINESS	POST TRADING

Capital allocation process 

Asset management process 

Source: own elaboration.

Table 2 shows that the main listed European Stock Exchanges which have diversified their business models through a conglomerate structure appear as effective wide range service providers, while the traditional trading services tend to assume a marginal role. Less than 12 percent of Deutsche Boerse's turnover, for example, derives now from its listing and trading activities in the cash division, while over 68% of its revenue comes from derivatives trading and clearing & settlement operations. Euronext has similarly developed through listings and trading fees, which though forming a greater part of the total turnover (29%) than in the case of the German group, are still small compared with those registered for LSE. The major part of Euronext's revenues in relative terms, moreover, comes from derivatives business, while in the case of Deutsche Boerse it comes from post-trading. The IT business also produces a far from negligible part of both Euronext's and Deutsche Boerse's profits, while this item is practically absent in LSE's balance.

Table 2: The contribution of each area of business to the total turnover in the Stock Exchanges in 2005.

	Listing	Cash trading	Derivatives trading	Clearing & settlement	Information technology	Information services	Others
LSE (*)	20%	43%	3%	/	/	32%	2%
Deutsche Boerse	9,8%	0,8	29,8%	38,4%	7,3%	6,3%	7,6%
Euronext	6,6%	22,4%	34,5%	4,1%	20,3%	9,7%	2,4%

(*) LSE closes its financial year on 31 March; the turnover analysed regards the period 2005 until 31 March 2006.

Source: Annual reports, 2005.

To sum up, the figures in Table 2 show that value chains of the listed European Exchanges are variously configured and they are themselves subject to constant and rapid change. The organisations headed by these Stock Exchanges must therefore conduct their business efficiently, diversifying into those areas that provide the greatest opportunities for growth, while at the same time divesting themselves from the provision of services that are no longer offered on competitive terms. Only in this way are they able to maximise profits, create value for their shareholders and satisfy the interest of those stakeholders that require more and more advantageous services and the reduction of the trading costs.

Furthermore, the aim of the creation of value for shareholders has led many Stock Exchanges to seek partnerships frenetically to share infrastructures and create economies of scale for the maximisation of profits. In addition, the Stock Exchanges have also started to consider the creation of value for shareholders through the acquisition of other Stock Exchanges located in other countries, leading to what has been termed the denationalisation of Stock Exchanges, or cross border integration among Stock Exchanges.

In addition to cross border integration, it is worth underlining that the opening of shares to non members of the Stock Exchanges was accompanied by the entry of institutional investors particularly active in the selection of companies they plan to invest in, who are commonly referred to as activists⁶. These include funds and investment companies that purchase shares in companies they consider to be undervalued and, the activists as shareholders, propose new management strategies aimed at increasing the value of the company.

In May 2006, the world's biggest Stock Exchange, the NYSE, and the only pan-European Stock Exchange, Euronext, became the subjects of a merger process that would have been difficult to imagine up to that time, rendering all previous European processes and agreements irrelevant.

The transatlantic NYSE-Euronext Stock Exchange, as shown in Table 3, will become the biggest and most liquid Stock Exchange with an expected aggregate capitalisation of 20 billion dollars, and the leading and most important financial market in the world.

At the same time, Deutsche Boerse, which had itself planned integration with Euronext, had presented its own aggregation offer, reviewed on several occasions, and encouraged by the reactions of the German and French governments, as well as of the European Central Bank, more favourably disposed towards a continental integration than to ceding the pan-European Stock Exchange to an NYSE-led American group. As a matter of fact the Deutsche Boerse, which also controls the world's largest derivatives market by volume, Eurex, enthusiastically supported an integration with Euronext, since a Deutsche Boerse-Euronext merger would have positive effects on European capital markets, as it would form the natural nucleus for further consolidation in the European Exchange industry.

In the same period, the most sought-after European Stock Exchange of the time, LSE, with its high international trading, as shown in Table 3 by the number of foreign companies listed, was the object of great interest on the part of Nasdaq. Up to that time each prospective acquisition offer by European and worldwide competitors had been rejected by the LSE management on the grounds that the offer price was too low in the light of the clear prospects of growth and increased value of the company and for shareholders.

In February 2007 it was evident that Nasdaq had failed for the second time in a year to win control of the LSE, disclosing that its hostile bid had been spurned by almost all the other British Stock Exchange shareholders⁷. The LSE has been successful in its strategy to defend the value of its business and in opposing the creation of the world's second trans-Atlantic Exchange. These events show that the self-listing of the main European Stock Exchanges has made them contestable, has allowed the entry into the social capital of shareholders able to influence strongly the management choices and finally opened the way to hostile takeovers by rival Stock Exchanges.

Stock Exchanges worldwide have now to reinforce their strategic position in a fast evolving global sector. The pace of mergers is accelerating and competition is becoming more intense; in addition, competition is not only transatlantic, due to the emergence of new dominant financial centres in the other continents⁸.

4. New challenges from the aggregation trends among Stock Exchanges

In keeping with the trends observed in the previous section, for the last five years the creation of a dominant European Stock Exchange appeared as a natural and inevitable process enhanced essentially by three main external factors: 1) the competition among trading venues stimulated by new European regulations; 2) the technological evolution, which affects the electronic trading and changes the structure of the stock market; 3) the needs of the stakeholders who, among other things, demand better services and an ever easier access to markets.

As regards the regulation of Stock Exchanges, in 2007 the European directive known as MiFID⁹ will permit financial intermediaries to exchange securities outside the regulated markets and to internalize orders and, more important, will allow for the creation of Multilateral Trading Facilities (MTFs), thus increasing competition in the area of the trading service, which has always represented an essential component of the Stock Exchange' total revenues. Such competition among different trading venues will inevitably lead to a decrease in fees, due to the end of the natural

monopoly from which Stock Exchanges have benefited since they were first established. With regard to this, it is worth to mention that, in mid November 2006, a consortium of seven major international investment banks¹⁰ announced the intention to build a Multilateral Trading Facility, code-named "Project Turquoise", to challenge the dominance of the predominantly national Stock Exchanges in trading of cash equities. This MTF, which will start in November 2007, when MiFID will become operative, will be operated on a mutual not-for-profit basis and access will be available to other financial intermediaries and investors. European Exchanges have reacted with apprehension to this announcement and there has been some downward movement in the share prices of listed Exchanges.

As far as the technological development is concerned, in order to become competitive Stock Exchanges have to adapt quickly to technological innovations; in general terms, more advanced electronic systems reduce the cost of handling orders and contribute to increase the turnover of Stock Exchanges. Finally, the interests of the various stakeholders, issuers, investors and financial intermediaries, determine a strong pressure on Exchanges industry for a reduction of their fees and a revision of their overall cost structures, directly or through consolidation with other Exchanges.

Consequently, the process of consolidation seems to be driven essentially by three undeniable economic forces:

- 1) economies of scale, particularly those associated with the typical synergies of information technology; in fact, the operational structure of traditional Stock Exchanges clearly comprises a high number of fixed costs; therefore Stock Exchanges are constantly seeking economies of scale, given the growing demand for extra operational capacity and ever more sophisticated effectiveness, factors that lead Stock Exchanges to grow in order to finance the modernisation of their infrastructures;
- 2) economies of scope, i.e. product, process and geographical diversification economies, with regard to the extension of typical Stock Exchange business along the whole of the production process up to the integration of post trading stages and processes;
- 3) economies relating to the positive network externalities associated with order execution, i.e. order flow attracts order flow.

In brief, the external drivers towards a consolidation of the Exchange industry require Stock Exchange to increase the volume of their business in order to attain these economies. The increase in the dimensions of the Stock Exchange structure, aiming to achieve the above mentioned synergies, can be pursued through different methodologies as Stock Exchanges, like all enterprises, have certain fundamental options for their growth; in particular, as summarised in Table 4, an Exchange can plan internal growth, can cooperate and make alliances with other enterprises of the same sector and can also merge with similar Exchanges, extending its business along a given value chain or even going beyond the chain itself.

With regards to internal growth, as previously mentioned, Stock Exchanges have been a sort of natural monopoly for a long time, albeit within a restricted area. Therefore the expansion of their business beyond the core activity, even if necessary, could be considered a sort of challenge implying various risks¹¹.

Given the fact that, in this millennium, none of the major European Stock Exchanges has managed – through internal growth - to reach a position of clear leadership at continental level, it follows that, in order to favour the growth that leads to the much sought economies and generates value for the shareholders, and satisfaction for the stakeholders, Stock Exchanges industry must be consolidated itself, i.e. it must proceed through external growth.

In general terms, consolidation can be achieved through mergers or federative structures. In terms of company profile, for a merger to be successful, the economic value of the company and the resulting synergies in terms of major services offered to the users and the reduction of the costs of services must be considered. However, to achieve such synergies, consolidation projects often require a long time and are also much more burdensome than initially foreseen, thus reducing the results that the shareholders of the companies that manage the Stock Exchanges markets expect.

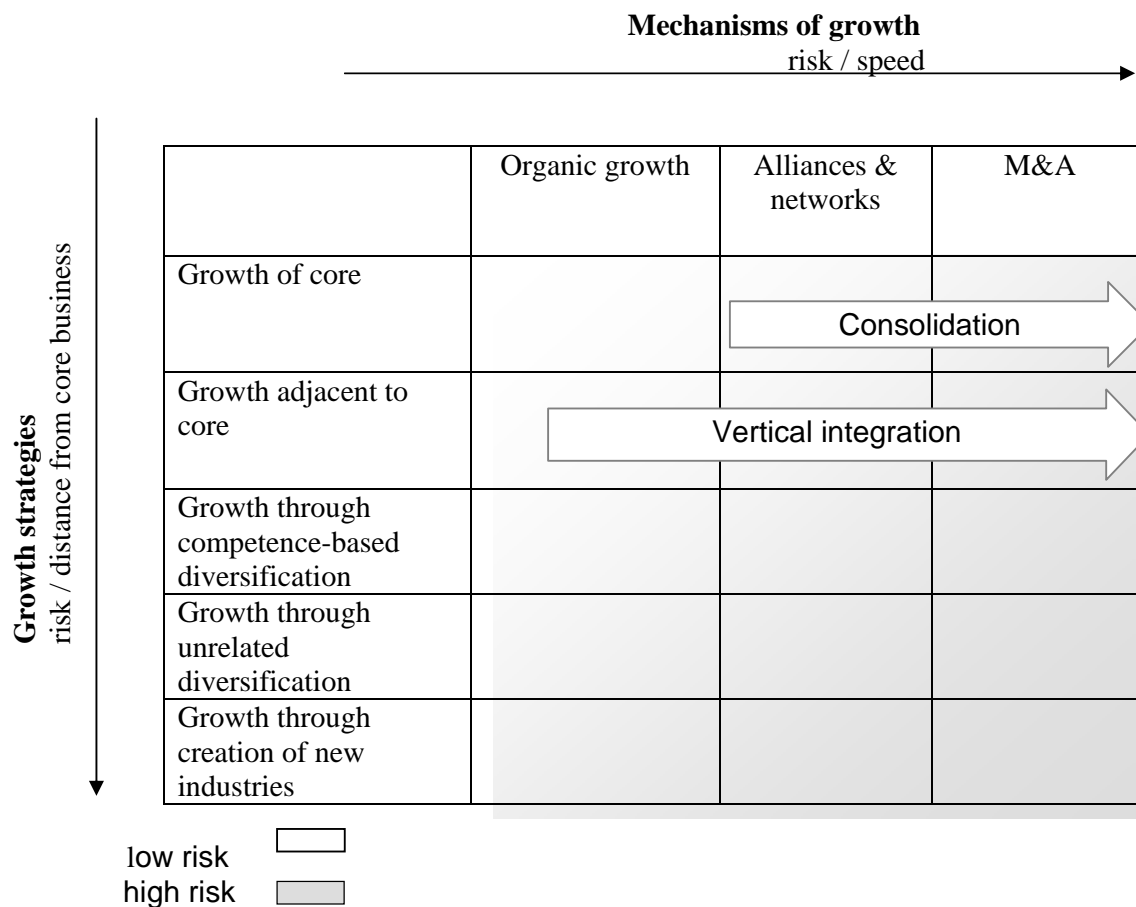
On the contrary, the federative model has seen the introduction of unquestionable advantages for financial intermediaries, for issuers, for investors and for the Stock Exchanges themselves. These benefits have recently been highlighted in a research study that analysed the results obtained over a four-year period by integrated Stock Exchanges in the Euronext holding company¹².

Table 3: Statistics on the main securities markets involved in the integration processes.

	2001			2002			Δ			2003			Δ			2004			Δ			2005			Δ			2006			Δ		
Domestic market capitalization (USD millions)																																	
Euronext	1.889.455,10			1.538.654,20			-18,60%			2.076.410,20			34,90%			2.441.261,40			17,60%			2.706.803,50			10,90%			3.708.150,10			37,00%		
Lse	2.164.716,20			1.800.658,00			-16,80%			2.460.064,00			36,60%			2.865.243,20			16,50%			3.058.182,40			6,70%			3.794.310,30			24,10%		
Deutsche Boerse	1.071.748,70			686.013,50			-36,00%			1.079.026,20			57,30%			1.194.516,80			10,70%			1.221.106,10			2,20%			1.700.708,10			39,30%		
Nyse	11.026.586,50			9.015.270,50			-18,20%			11.328.953,10			25,70%			12.707.578,30			12,20%			13.310.591,60			4,70%			15.421.167,90			15,90%		
Nasdaq	2.739.674,70			1.994.494,00			-27,20%			2.844.192,60			42,60%			3.532.912,00			24,20%			3.603.984,90			2,00%			3.865.003,60			7,20%		
Total value of share trading (USD millions)																																	
Euronext	2.092.540,40			1.974.133,70			-5,70%			1.936.573,00			-1,90%			2.472.131,70			27,70%			2.906.208,20			17,60%			3.853.321,40			30,90%		
Lse	4.520.183,20			4.001.339,90			-11,50%			3.609.718,20			-9,80%			5.169.023,60			43,20%			5.677.721,00			9,80%			7.571.698,60			33,60%		
Deutsche Boerse	1.423.370,80			1.212.301,60			-14,80%			1.299.327,40			7,20%			1.541.122,70			18,60%			1.915.304,50			24,30%			2.737.195,30			42,90%		
Nyse	10.489.030,60			10.311.155,70			-1,70%			9.691.335,30			-6,00%			11.618.150,70			19,90%			17.858.365,50			21,60%			21.789.391,80			54,30%		
Nasdaq	10.934.572,50			7.254.594,30			-33,70%			7.068.213,20			-2,60%			8.767.121,20			24,00%			10.086.739,90			15,10%			11.807.491,00			17,10%		
N° of companies with listed shares																																	
	2001			2002			2003			2004			2005			2006																	
	Dom.	Foreign	Total	Dom.	Foreign	Total	Dom.	Foreign	Total	Dom.	Foreign	Total	Dom.	Foreign	Total	Dom.	Foreign	Total	Dom.	Foreign	Total	Dom.	Foreign	Total	Dom.	Foreign	Total	Dom.	Foreign	Total			
Euronext	1.195	n a	1.195	1.114	370	1.484	1.046	346	1.392	999	334	1.333	966	293	1.259	954	256	1.210															
Lse	1.923	409	2.332	2.405	419	2.824	2.311	381	2.692	2.486	351	2.837	2.757	334	3.091	2.913	343	3.256															
Deutsche Boerse	748	235	983	715	219	934	684	182	866	660	159	819	648	116	760	656	104	760															
Nyse	1.939	461	2.400	1.894	472	2.366	1.842	466	2.308	1.834	459	2.293	1.818	452	2.270	1.829	451	2.280															
Nasdaq	3.618	445	4.063	3.268	381	3.649	2.951	343	3.294	2.889	340	3.229	2.832	332	3.164	2.812	321	3.133															

Source: World Federation of Exchanges.

Table 4: Options for growth.



Source: Gomez P., 2006.

By now it is clear that the growth in the size of the Stock Exchanges in the current market situation means that it is no longer enough to be the leading Stock Exchange on one's own continent; it is necessary to become real global competitors, and, in order to become such, the single European Stock Exchanges pursue further consolidation of the markets, greater diversification in the product offer and greater ability to reach investors and issuers throughout the world. The problem of reaching financial intermediaries outside the countries where the Stock Exchanges are located has been efficiently solved by technological development, which has permitted simple cross-border development through the expansion of remote membership¹³.

5. Conclusion

After the conclusion of the first phase of the consolidation processes among European and American Stock Exchanges, it appears clear that the creation of an exclusively European infrastructure is no longer achievable. It was a great aspiration which however politicians pursued too late because they had previously engaged in the defence of their individual national Stock Exchange.

At present the future structure of the world's stock markets presents very deep uncertainty and the challenges the Stock Exchanges have to face are many and in fact, it is important for them to continue supplying solid and efficient infrastructures for the financial markets that are becoming increasingly global. If this infrastructure is not properly supplied by the Stock Exchanges, as it seems today, other operators will come into play to satisfy the needs of financial intermediaries and investors alike. The fact emerges that the efficiency of a Stock Exchange is not given exclusively by the Stock Exchange itself, the value chain that the Stock Exchange is part of must be efficient. This has a strong impact on the competitiveness, not only of the European financial markets, but also of the overall economy. Consequently, in recent times, the value chains are subject to constant and rapid change, thus Stock Exchanges must keep up with the developments to make their business as efficient as possible and therefore legitimise their existence.

In brief, Stock Exchanges are pushed to look further than their current operational areas, diversifying their business in both similar and innovative areas, creating new activities, which compensate the losses that are recorded in the traditional services they offer. In terms of company profile, the Stock Exchanges must offer traditional services but trying to offer the users the best possible conditions and, at the same time, overcome the borders of their traditional operational field to increase operational efficiency.

Further to the publication of a number of studies, the fact has emerged that recently, to reach these aims, horizontal forms of consolidation between European Stock Exchanges and increased integration between compensation and settlement structures are preferred. In the current situation, there are obvious advantages typical of a network economy, in concentrating Exchanges; the attraction that a Stock Exchange exercises on issuers and financial intermediaries grows when it affirms its superiority by the number of participants. On the other hand, especially for the securities of the smaller enterprises, the informative advantages of national markets guarantee better liquidity conditions. In fact, the horizontal forms of consolidation of national Stock Exchanges, together with federal structures, seem to grant both these advantages.

Finally, the current aggregation processes together with the changes in regulations, and the changing needs of the clients together with the developing technology, should completely change the physiognomy of the securities industry within a few years. The borders of the traditional value chain could effectively disappear and the single links in the chain could be constantly redefined. This opens up new opportunities, not only for the Stock Exchanges but also for their clients and the new market players.

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¹ The Investment Services Directive (ISD), Directive 93/22/CEE.

² See Steil B., 2002, Changes in the ownership and governance of securities exchanges: causes and consequences, Brooking-Wharton Paper on Financial Services.

³ See Chesini G., Changes in the ownership structure of Stock Exchanges: from demutualisation to self-listing", X International "Tor Vergata" Conference on Banking and Finance, Rome, 5-6 December.

⁴ Securities exchanges integrations are dealt with cautiously, testing the mood of shareholders in the different Stock Exchanges. It is on their judgement that the different variables depend, not least the purchase price.

⁵ Euronext planned together with Borsa Italiana the acquisition of the MTS Group, the main European electronic wholesale market for fixed income securities. On that occasion, Euronext and Borsa Italiana established MBE Holding, a *joint venture* between Euronext (51%) and Borsa Italiana (49%) with the aim of buying a majority of the equity of the MTS Group. MBE formally bought 60.37 percent of MTS in January 2006, with the remaining shares owned by 27 international banking groups.

⁶ The activist's strategy relies on the fact that a company's interests and those of its management tend at times to diverge. A fund uses its shares to pressure boards of directors to implement changes that increase the value of the stock. Usually the activist buys just enough shares to represent a credible threat. The process often aims at co-operation but sometimes results in direct conflict within the target company management.

⁷ Under UK takeover rules Nasdaq cannot bid for another 12 months.

⁸ For example, in spring 2006 Dubai international financial centre (Difc), the organisation which manages the financial area of Dubai, has increased its Euronext stake from 1,49% to 1,67%. Also the Dubai Stock Exchange, as it disposes of considerable financial resources, intends to observe closely the next consolidations of international markets and eventually participate in them.

⁹ See The Markets in Financial Instruments Directive, Directive 2004/39/CE.

¹⁰ The seven investment banks, which between them control half of Europe's equity trading, are the four American banks, Citigroup, Goldman Sachs, Merrill Lynch e Morgan Stanley, and the three European banks Credit Suisse, Deutsche Bank e Ubs.

¹¹ See Gomez, speech to the 10th European Financial Markets Convention, 9th June.

¹² Through such aggregation, the information technology platform costs have fallen drastically, the instruments available for investments (e.g. bonds) have risen from a little more than 9,000 to 13,000

and the volumes of the negotiations of major stocks have increased on average of 40 percent. In short, the market has become more liquid, more efficient and transparent as regards price formation and less expensive in terms of commission fees; see Pagano M., Padilla A.J., Efficiency gains from the integration of exchanges: lesson from the Euronext "natural experiment", 4 May 2005.

¹³ See Stoll H. R., 2006, Electronic Trading in Stock Markets, in "Journal of Economic Perspectives", volume 20, Number 1, Winter.