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NYSE changing hands: Antitrust and attempted acquisitions of an erstwhile monopoly

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NYSE Changing Hands: Antitrust and Attempted Acquisitions of an Erstwhile Monopoly*

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Abstract: The Intercontinental Exchange's current attempted acquisition of NYSE-Euronext is the third takeover proposal in as many years. In this article the two previous attempts are reviewed and lessons are drawn from an antitrust and competition policy perspective concerning the evolving competitive landscape of exchanges.

Keywords: NYSE-Euronext, Deutsche Börse, Nasdaq, Intercontinental Exchange, Direct Edge, BATS Global Markets, Stock Exchanges, Derivatives Markets, Mergers, Acquisitions, Antitrust, US Department of Justice, European Competition Commission, DGComp, SEC.

* Larry White gave some much appreciated feedback on an earlier draft. The remaining shortcomings are my own.

1. Introduction

As of this writing the relatively young commodities exchange IntercontinentalExchange (ICE) under Jeffrey Sprecher is well underway in its \$8.2 billion acquisition of NYSE-Euronext—the parent company of the venerable New York Stock Exchange. This is not the first attempt at bringing NYSE-Euronext under new ownership in recent years. In fact, it is not even the first time that ICE is involved in an acquisition attempt of late of the NYSE. In 2011 the Frankfurt, Germany, stock exchange group, Deutsche Börse AG, was planning to acquire the NYSE. During that process, Nasdaq and ICE pursued a competing hostile take-over bid of the NYSE. In the end, neither of these transactions was consummated—leaving the door open for the current acquisition of the NYSE by ICE alone. This article briefly reviews the two prior acquisition attempts. The focus is on shedding light on the various markets in which exchanges compete against each other, and how US and European competition authorities assessed the possible impact of each transaction.

2. Background

The New York Stock Exchange is the largest stock exchange in the world in terms of the market capitalization of its listed stocks and it is the oldest continuously operating stock exchange in the United States.¹ At times in excess of eighty percent of daily traded equities volume for some stocks are handled on the New York Stock Exchange, and roughly a third of current US equities trading goes through the NYSE.

The exchange grew out of the Buttonwood Agreement among brokers in 1792, which eliminated the role of auctioneers and also set fixed commissions for trades. The name under the first constitution of the organization in 1817 was the New York Stock and Exchange Board, which was shortened to the now familiar New York Stock Exchange (NYSE) in 1863. The nickname “Big Board” literally refers to the big board that listed offers for stocks.

For most of its history the NYSE had a virtual monopoly for stock listings and also as a trading venue for equities. While the NYSE experienced some competition from other New York and regional exchanges as well as some specialized venues from time to time, rarely would the NYSE drop under eighty to ninety percent market share in either listings or trading volume. Whatever meager competition there was, effectively ended under the regulations introduced by the newly formed Securities and Exchange Commission (SEC) in the wake of the Great Crash and subsequent Great Depression. Among other reforms introduced at that time, was that all stock listings were required to adhere to the most stringent NYSE standards, removing one of the competitive angles that other exchanges had used to gain listings.

Only in the latter third of the twentieth century did the NYSE begin to experience nascent competition. In the late 1960s and early 1970s, competition entered within its operations when due to urging from the Antitrust Division of the US Department of Justice (USDOJ) the SEC began to require a more flexible pricing structure for stock broker

¹¹ The Philadelphia Stock Exchange began operations in 1790, but has not been in continuous operations as an equities exchange. It currently operates as an options exchange.

commissions. Previously these had been set uniformly across all members of the NYSE, but by 1975 this collusive scheme was replaced by individual rate-setting, which then also opened the door to discount brokerage services. Later, the NYSE also began to face direct competition from outside, when the National Association of Securities Dealers (NASD) began to compete against its services with electronic quoting and trading through Nasdaq, which later in this century formally became a registered exchange.

While the NYSE's history is rooted in floor trading by market makers, Nasdaq was conceived as an electronic market. However, very much in line with consolidation movements across financial markets globally, in terms of trading venues both the NYSE and Nasdaq have expanded by buying smaller domestic trading markets (e.g., the American Stock Exchange, AMEX and the electronic trading platform ARCA for the NYSE, and the Philadelphia and Boston exchanges for Nasdaq) as well as foreign exchanges (e.g., the electronic trading and clearing group Euronext which includes the London International Financial Futures and Options Exchange (Liffe) for the NYSE, and the Scandinavian exchange group OMX for Nasdaq). In the meantime, the US market has had two electronic communications networks (ECNs), BATS Global Markets and Direct Edge, formally register as stock exchanges—resulting in a total of four equities exchange operators for displayed orders in the US.

It had been argued that while the NYSE was an iconic brand known worldwide, it had been behind in adjusting to the modern market place. Given the prevailing mergers and acquisitions movements at both the national and the supranational levels, this combination of perceived strengths and weaknesses made the NYSE both a desirable and a forthcoming target for consolidation.

3. The Deutsche Börse proposed transaction

In Early 2011 the Deutsche Börse (DB) and the NYSE agreed to merge in a deal valued at about \$9 billion. The Deutsche Börse is one of the largest exchange operators in the world with many venues in Europe, but also with business interests in the US and Asia. It operates the largest German stock exchange, the Frankfurter Wertpapierbörse, and is the owner of the Luxembourg-based clearing house Clearstream.

In order to proceed with the deal, one of the hurdles that needed to be cleared was that regulatory approval had to be secured both in Europe and in the US, with both companies having active concerns on both sides of the Atlantic. The USDOJ positively noted that having obtained waivers from the merging parties there was extensive communication and frequent contact between the investigative staffs of the Antitrust Division and the European Commission. Of course, the assessments of the competitive impact of the proposed transaction nonetheless required independent analyses and resulted in distinct findings.

3.1 The US Perspective

From the US view, the potential impact of the Deutsche Börse's indirect presence was an issue that needed to be addressed. The DB had a controlling interest in the Frankfurt-based Eurex

which was the owner of the NY-based options trading venue International Securities Exchange (ISE). The ISE, in turn, was the largest equity holder of Direct Edge—one of the four large equities exchange operators in the US, with control over the two trading platforms EDGA and EDGX. Through its subsidiaries, the DB thus had an over thirty percent ownership stake in one of the NYSE’s main rivals in the US in the equities trading space. In addition to its ownership stake, the ISE appointed board members to Direct Edge and also had a presence on the exchanges run by Direct Edge. Moreover, the ISE had a right to veto any possible expansion of Direct Edge into the options trading space. In light of this structure, applying the newly revised horizontal merger guidelines (HMGs), the Antitrust Division of the USDOJ identified three relevant antitrust markets in the US in which the merger would lead to a substantial lessening of competition.



Figure 1: Deutsche Börse and NYSE as direct competitors in US equities trading spaces through the DB’s interest in Direct Edge: Exchange Traded Products, Displayed Trading, Data Products

The first market identified was displayed equities trading services. Equities trades take place in many venues, e.g., registered stock exchanges and electronic communications networks (ECNs), dark pools, and internalized broker/dealer trading. But displayed trading—largely made up of trading on the registered exchanges operated by the NYSE, Nasdaq, BATS and Direct Edge and accounting for roughly two-thirds of all daily equity trades—play a special role in the national market system. In particular, traders in all venues rely on the price discovery process that happens only on displayed venues and traders frequently rely on the liquidity that is found on exchanges especially for lower-volume and thinly traded stocks and in times of market distress or high volatility. Moreover, some traders use so-called directed orders to specify a registered exchange at which they want their orders to be executed; and non-marketable limit orders are also displayed in markets. As such, the competition provided by the four large exchange operators is vital in preserving and fostering the national market system. In accordance with the HMGs, the USDOJ concluded that a hypothetical monopolist controlling all displayed equities trading venues that was not subject to regulatory constraints would impose at least a small but significant and non-transitory increase in price (this is the so-called SSNIP test), implying that displayed equities trading venues constituted a relevant antitrust market.

The second market of concern was the market for listings services for exchange traded products (ETPs). ETPs are derivatively-priced products in that their value is derived from an underlying instrument such as a portfolio, commodities, an index, currency, or the like. The most popular exchange traded products are exchange traded funds (ETFs) that are tied to

stocks, commodities or indices. Unlike mutual funds—which can have a similar composition—shares of ETFs are traded directly on exchange. The markets for ETPs was a strong growth area in investing and have therefore become an important part of exchanges’ businesses as ETPs must be listed on an exchange in order to commence trading. Exchanges compete in terms of their market models in order to try to attract ETPs to their venues.

The final market identified as a concern was real-time proprietary equity data, viz. non-core trading data. Core trading data, which includes executed trades and best bids and offers, are required to be reported by regulation. In contrast, non-core data, such as depth of book data, is considered proprietary and exchanges aggregate and disseminate non-core data as part of their business model. Indeed, data have become more and more valuable as end-users have an increased appreciation and ability to work with and extract value from data.²

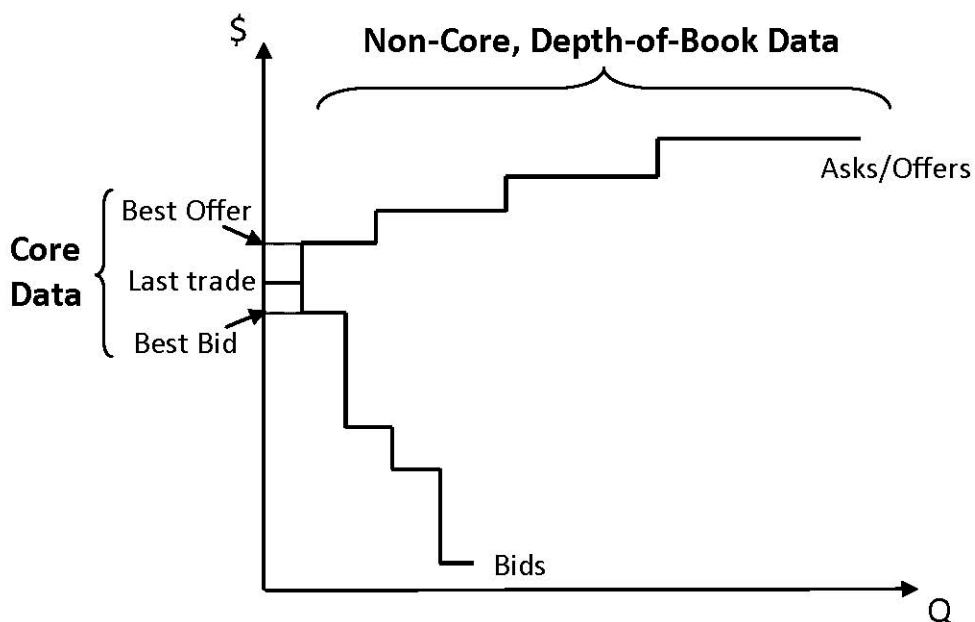


Figure 2: Example of Core Data (Last Trade, Best Bid and Offer—BBO) and Non-Core, Depth-of-Book Data for a Stock

The indirect presence of the DB at Direct Edge would potentially have allowed them to exert undue influence on Direct Edge’s actions. And the access to information at Direct Edge would also have a chilling effect on innovative activities at Direct Edge. This latter concern was particularly pronounced in light of Direct Edge’s role as an innovator in pricing strategies in the exchange space—having also used inverted pricing, in which traders providing liquidity were charged, whereas those taking liquidity were subsidized—a novel pricing structure on these two-sided platforms for trading. Moreover, the flow of information between the two competing exchanges would also increase the probability of coordinated actions.

² It is interesting to note that as of this writing the two smaller recent additions in the US exchange space—BATS and Direct Edge—have announced plans to merge. Part of the rationale for this merger is tied to the growing importance of data markets.

Because exchanges require sufficient liquidity to be viable, new entry in the exchange space is hard to establish and so entry would likely not have occurred in a timely and sufficient manner to alter the competitive dynamics. Hence, the result of the proposed merger would be a substantial lessening of competition affecting pricing, service, and innovation in the three identified markets. In light of these concerns the Antitrust Division of the USDOJ drafted a proposed final order in which the Justice Department would not contest the merger provided that the ISE fully divested itself from Direct Edge. This severing of the connection would address all competitive concerns across all three markets that were identified as problematic.

3.2 The European Perspective

The European competition authorities, DGComp, identified equity trading and settlement and index licensing as possible areas of interest, but the main concerns quickly focused on derivatives markets. A merger of the DB and NYSE-Euronext would have brought under one roof the two largest derivatives trading venues in the European Economic Area, the Eurex derivatives exchange and the London International Financial Futures and Options Exchange (Liffe).

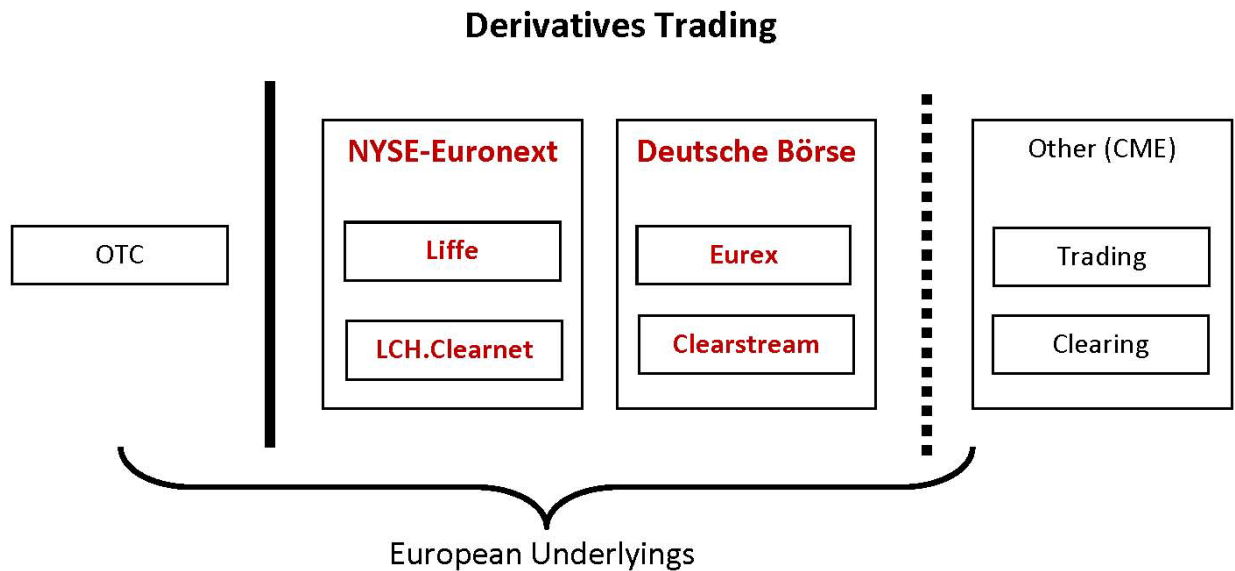


Figure 3: The Deutsche Börse and the NYSE as direct competitors in global exchange traded derivatives based on European underlyings.

In contrast to equities trading, where contracts are settled in the spot market, derivatives contracts establish future obligations of parties. That is, the purchaser of an option or futures contract must rely on the seller being able to fulfill their obligation under the contract when the contract matures. For this reason clearing of derivatives contracts take on a separate and important dimension in order to mitigate counter-party risk of default. In the US options market there is central clearing through the Options Clearing Corporation (OCC) which

takes on all counter-party risks, so that an options contract between two parties effectively always involves the OCC as a third party intermediary that bears all obligations and insures the risk. Since an antitrust enforcement action by the USDOJ resulting in a consent decree that opened up options contract trading at competing venues through the practice of multiple-listings this space has since been very competitive.

However, the European derivatives clearing system is similar to the US futures markets with so-called “vertical silos,” where trading venues have their own affiliated clearing houses. In particular, the DB owns Clearstream and NYSE-Euronext owns the London Clearing House LCH.Clearnet. These clearing operations have strong scale economies: members who have many contracts outstanding often have off-setting positions which can be cancelled out. An implication of this is that the scale economies that are required to enter the derivatives trading markets as a platform pose an effective barrier to entry.

In the end, the European Commission was satisfied that competitive concerns in areas other than derivatives trading were not substantial. However, there was an assessment that global exchange trading of derivatives based on European underlyings would suffer substantially as the merger would result in a “near-monopoly” controlling over ninety percent of trade in that area. In so finding, the European Commission also identified trading off-exchange (the over-the-counter (OTC) derivatives market) to be a distinct and separate market for antitrust purposes, as trades in the OTC market are generally for larger contracts and are undertaken for specialized purposes, resulting in much lower liquidity in these markets.

DGComp did identify the Chicago Mercantile Exchange (CME) as another global player among derivatives exchanges, but noted that they do not have a substantial offering in the product lines of concern and would also be unlikely to enter in this area. Because the joint company would also merge their clearing operations, this would likely result in it becoming impossible for any other player to enter the market. In partial recognition of this, the parties actually argued that the resulting joint clearing was a net positive of the merger for the derivatives market. DGComp was not persuaded by this, noting that the resulting quasi monopoly firm would not be forced into a position to pass on savings to customers.

Some remedies were proposed by the parties. These centered on divesting some smaller product lines and opening up the clearing operations to future products. However, these did not go far enough to assuage the commission’s concerns, who thus concluded that allowing the modified deal to be consummated would deprive the market of the benefits of price competition and would also reduce innovation in the space.

Facing this strong opposition from the European agencies, the DB and the NYSE abandoned the deal, making the proposed US divestiture remedy of Direct Edge moot.

4. The Nasdaq/ICE hostile takeover bid

Even while the DB-NYSE deal was receiving regulatory scrutiny, Nasdaq and ICE proposed a competing hostile takeover bid of the NYSE in April of 2011. The deal was valued at in excess of \$11 billion and would have resulted in Nasdaq acquiring the US-based stock related businesses (listings, trading and data), whereas ICE would take over the NYSE’s European derivatives unit, the London International Financial Futures and Options Exchange, Liffe.

In an unprecedentedly quick response, the USDOJ threatened to sue to enjoin the transaction in little over six weeks' time after the initial announcement. The Antitrust Division noted that the NYSE and Nasdaq were the only two full service stock exchange operators in the US and their roles in the US financial markets was so central that permitting the merger to commence would in effect allow for a merger to monopoly in several critical markets. In particular, the agency identified four markets that were cause for concern.

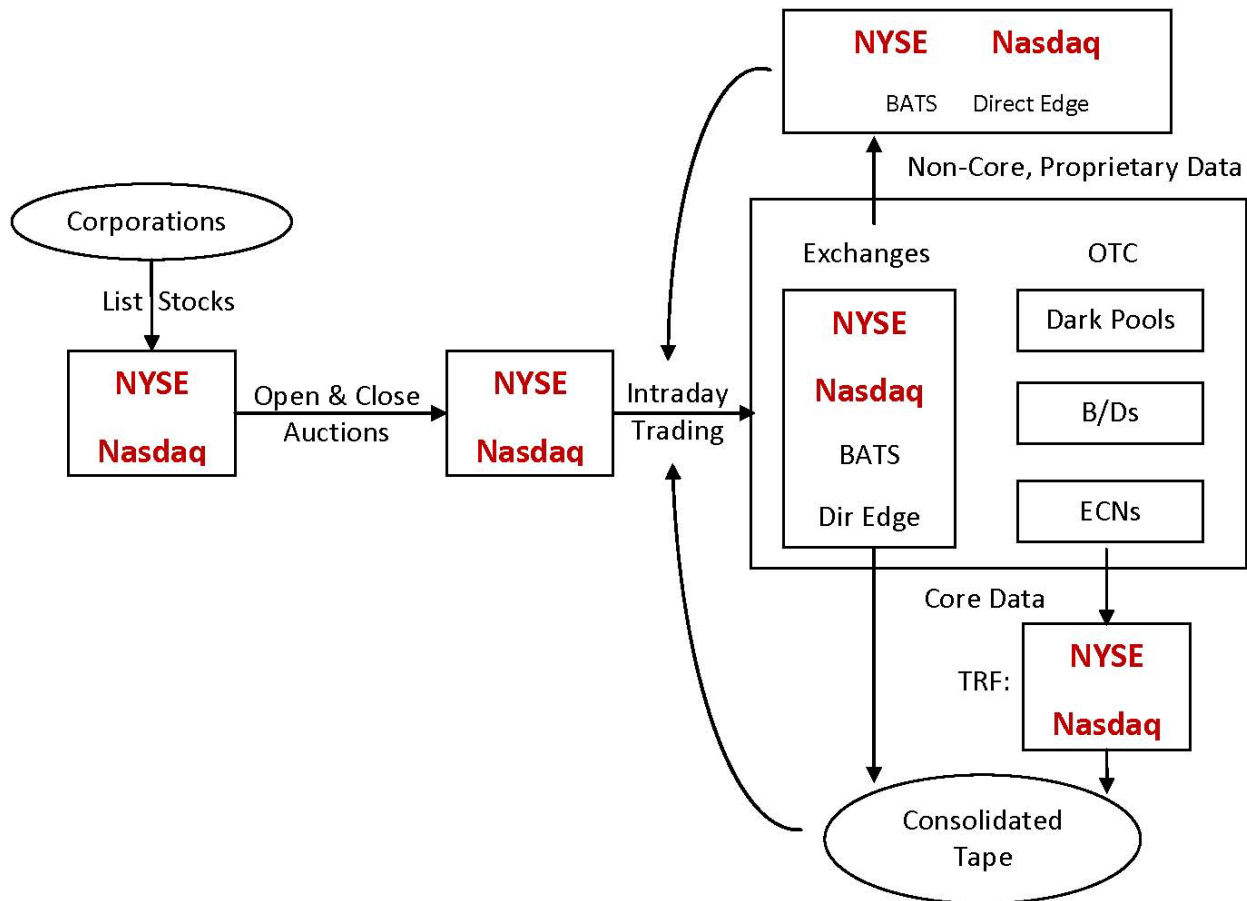


Figure 4: Nasdaq and the NYSE as direct competitors at critical junctions in US equities markets: Listings, Open and Closing Auctions, Trade Reporting and Proprietary Non-Core Data.

The first market identified as a merger to monopoly was that of corporate stock listing services for firms. Before a firm's stock can be traded on exchanges, the firm must be registered at an exchange. Virtually all exchange traded companies in the US are listed on either the NYSE or Nasdaq. As such, the two competitors effectively act as gatekeepers to the US equity markets. The importance of the listing decision is clear both in terms of serving as a screen for investors, but also as implicit certification affecting the reputation of the listed company. While there are some foreign companies that list in the US (with either the NYSE or Nasdaq), US-headquartered corporations virtually never choose their primary listing abroad so that a substantial lessening of competition for US-based listing services would not lead to firms accessing foreign capital markets.

The second market in which a merger to monopoly was identified was for opening and closing auctions for stocks. Once markets have closed in the evening, many orders for stock transactions accumulate overnight when active trading and price formation for stocks has ceased. In order to fulfill orders in the morning when markets open, specialized price-finding mechanisms need to be instituted. Similarly, large institutional investors often rebalance their portfolios at the end of a trading day and mutual funds are valued at the closing quote of stock, giving the closing of the trading day special significance. For this reason a unique price-finding mechanism is also needed at the end of the trading day. Both the NYSE and Nasdaq have developed proprietary auctions for these purposes, which are also used for the rare occasions that markets need to be restarted after an unplanned closure, for instance due to technical problems or extreme market turmoil having led to the suspension of trading. The prices established at these auctions are used as guides throughout the financial markets, and traders base their expectations and decisions concerning trading on these prices.

Thirdly, the NYSE and Nasdaq are the only two active trade reporting facilities (TRFs). These are relevant for all trades executed off exchange—accounting for roughly a third of all daily equities transactions. Security and Exchange Commission (SEC) regulations require that all stock transactions be reported within a short time period after their execution so that they are disseminated on the consolidated tape. Off-exchange trades, e.g. transactions in dark pools or broker-dealer internalized trades cannot be reported directly and must be reported through a TRF—requiring that they go to those operated by the NYSE and Nasdaq.

Operating the only two active trade reporting facilities gave the NYSE and Nasdaq access to data beyond what was generated by trading activity on their exchanges. As noted above, data is an increasingly important revenue stream for exchange operators and given the volume of trade that is generated on the NYSE and Nasdaq exchanges, the merger would also allow them to control a substantial portion of real-time equity trading data. This then, was the fourth market, real-time proprietary data products, in which the merger would have led to a substantial lessening of competition.

Given the critical role that the NYSE and Nasdaq play in the US financial markets—facing each other as head-to-head competitors at so many crucial junctions—the USDOJ did not propose any possible remedies and instead informed the parties that they intended to go to court to enjoin the transaction. In response, the parties decided to abandon the takeover bid.

5. Concluding Remarks

As the analysis of the regulatory agencies has made clear, exchanges are active in many inter-related, yet distinct markets. Because of the recent merger activity among exchange operators, virtually all large exchange operators are now active in more than one national market, and most have a presence on several continents. This gives rise to multi-faceted antitrust and competition analyses – even though operating across international borders has not and cannot without substantive regulatory changes lead to pooling of liquidity across national boundaries.

In contrast to both the Deutsche Börse and the Nasdaq/ICE attempted acquisitions, the current proposal with ICE alone as the acquiring company does not raise significant competitive

concerns on either side of the Atlantic, as ICE is primarily involved in commodities trading in the US—where the NYSE has only a diminutive presence.

Bibliographic Notes

Opinions expressed in this piece are the author's and they are not purported to reflect any other person's or agency's views. All factual statements in the article are also available elsewhere in the public domain. There was much contemporary writing about the fate of the NYSE, some of which was speculative in nature and much of which surely was guided by particular agendas. Authoritative writings concerning the positions of the US Department of Justice and the European Commission can be found at their websites.

The horizontal merger guidelines used by US enforcement agencies are available here: <http://www.justice.gov/atr/public/guidelines/hmg-2010.html>. The USDOJ's complaint filed in regard to the Deutsche Börse's acquisition attempt as well as the proposed final order in this case are available here: <http://www.justice.gov/atr/cases/borseag.html>. A press release tied to the decision is here: http://www.justice.gov/atr/public/press_releases/2011/278537.htm.

The USDOJ's press releases and a statement by the Assistant Attorney General for Antitrust concerning Nasdaq and ICE's hostile takeover bid are available here: http://www.justice.gov/atr/public/press_releases/2011/271214.htm and here: <http://www.justice.gov/atr/public/speeches/271259.htm>. Nasdaq's attempted takeover is also briefly reviewed in W. Robert Majure, "The Antitrust Division: Economic Issues Presented in 2010-2011," *Review of Industrial Organization*, 2011, 39: 327-334.

The European findings concerning the proposed Deutsche Börse deal are available here: http://europa.eu/rapid/press-release_IP-12-94_en.htm.

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Published in: *International Review of Law and Economics*, 35 (2013), pp. 73-79.
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Forthcoming in: *International Game Theory Review*.

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Published in: Journal of Economic Behavior & Organization, 88 (2013), pp. 78-89.
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Forthcoming in: International Economics and Economic Policy.
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Forthcoming in: The Review of Economics and Statistics.
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Forthcoming in: Journal of Institutional and Theoretical Economics.
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Forthcoming in: Journal of Industrial Economics under the title "Strategic Obfuscation and Consumer Protection Policy".
- 75 Haucap, Justus, Heimeshoff, Ulrich and Jovanovic, Dragan, Competition in Germany's Minute Reserve Power Market: An Econometric Analysis, November 2012.
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- 70 Karaçuka, Mehmet, Çatik, A. Nazif and Haucap, Justus, Consumer Choice and Local Network Effects in Mobile Telecommunications in Turkey, October 2012.
Published in: Telecommunications Policy, 37 (2013), pp. 334-344.
- 69 Clemens, Georg and Rau, Holger A., Rebels without a Clue? Experimental Evidence on Partial Cartels, April 2013 (First Version October 2012).
- 68 Regner, Tobias and Riener, Gerhard, Motivational Cherry Picking, September 2012.
- 67 Fonseca, Miguel A. and Normann, Hans-Theo, Excess Capacity and Pricing in Bertrand-Edgeworth Markets: Experimental Evidence, September 2012.
Published in: Journal of Institutional and Theoretical Economics, 169 (2013), pp. 199-228.
- 66 Riener, Gerhard and Wiederhold, Simon, Team Building and Hidden Costs of Control, September 2012.
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Published in: European Economic Review, 56 (2012), pp. 1759-1772.
- 64 Jovanovic, Dragan and Wey, Christian, An Equilibrium Analysis of Efficiency Gains from Mergers, July 2012.
- 63 Dewenter, Ralf, Jaschinski, Thomas and Kuchinke, Björn A., Hospital Market Concentration and Discrimination of Patients, July 2012.
- 62 Von Schlippenbach, Vanessa and Teichmann, Isabel, The Strategic Use of Private Quality Standards in Food Supply Chains, May 2012.
Published in: American Journal of Agricultural Economics, 94 (2012), pp. 1189-1201.
- 61 Sapi, Geza, Bargaining, Vertical Mergers and Entry, July 2012.
- 60 Jentzsch, Nicola, Sapi, Geza and Suleymanova, Irina, Targeted Pricing and Customer Data Sharing Among Rivals, July 2012.
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