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The German Equity Trading Landscape

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1. Introduction

Securities markets are at the heart of modern economies. Their central function is to enable issuers to raise equity capital and investors to allocate their funds to the most profitable companies and projects. Besides this macroeconomic function, securities markets serve to protect investors by providing transparent and efficient transaction platforms. Clear and enforceable regulations shall treat all market participants equally and enable for non-discriminatory access to markets and market data. Operational efficiency based on highly reliable processes and systems shall assure market availability close to 100% during trading hours. From a market microstructure perspective the most important function of securities markets is price discovery, i.e. the ability to aggregate heterogeneous information sets of different retail and institutional investors into one signal aggregating all that information: the securities price (Schwartz and Francioni, 2004).

This paper describes cash equity markets in Germany and their evolution against the background of technological and regulatory transformation. The development of these secondary markets in the largest economy in Europe is first briefly outlined from a historical perspective. This serves as the basis for the description of the most important trading system for German equities, the Xetra trading system of Deutsche Börse AG. Then, the most important regulatory change for European and German equity markets in the last ten years is illustrated: the introduction of the Markets in Financial Instruments Directive (MiFID) in 2007. Its implications on equity trading in Germany are analyzed against the background of the current status of competition in Europe. Recent developments in European equity markets like the emergence of dark pools and algorithmic / high frequency trading are portrayed, before an outlook on new regulations (MiFID II, MiFIR) that will likely come into force in early 2018 will close the paper.

2. A brief history of cash equity markets in Germany

After World War II, the historically dominant exchange in Berlin wasn't able to sustain its position due the status of Berlin in post-war Germany. Rather, a decentralized exchange landscape developed with

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regional centers that largely reflected the federal state system in Western-Germany. Regional exchanges operated in Berlin, Bremen, Düsseldorf, Frankfurt, Hamburg, Hannover, Munich and Stuttgart. This decentralized system was unable to compete with other European or even global markets like London or New York due to inefficiency, high costs given multiple duplicate infrastructures for trading, post trading and market surveillance as well as insufficient market liquidity. Political protection by the respective federal states and vested interests of the local specialists in a floor based trading system prevented necessary improvements for a long time. From the mid-80s, these deficiencies reduced due to more concentration of order flow in Frankfurt and an increasing willingness of banks and politicians to develop Frankfurt as a competitive European financial center.

Important milestones (Schmidt, 2013) in this transformation were the launch of the IBIS system in 1989, an electronic display system for bids and offers without any matching functionality, the foundation of the Frankfurter Wertpapierbörse AG in 1990, followed by setting up Deutsche Börse AG based on a renaming of the Frankfurter Wertpapierbörse AG in 1992, the introduction of Xetra in 1997 as a fully electronic trading system and the initial public offering of Deutsche Börse AG in 2001. Today, Deutsche Börse is not only acting as the operator of the Frankfurt Stock Exchange and the Eurex Exchange but provides a product and service portfolio covering the entire securities trading value chain including trade execution, clearing, settlement and custody of securities with more than 4,500 employees and a market capitalization of more than EUR 15 billion as of October, 2015 (Deutsche Börse, 2015a). While the remaining German stock exchanges are still in operation (with the foundation of “BÖAG Börsen AG” as the joint operator of the Hamburg and Hannover stock exchanges in 1999 and Bremen ceasing operations in 2007), Xetra successively increased its market share to become the largest trading venue for German stocks.

3. Electronic trading and the Xetra Trading System

Largely in parallel to the electronification of other European markets like the London Stock Exchange (LSE) or the Swiss Exchange, Deutsche Börse went live with the Xetra trading system for equities trading in 1997. The market models of these exchanges centered around the concept of the public electronic limit order book. Public limit order books were heavily debated – both among practitioners and in academic literature – as an alternative to the market making models prevailing in US markets like Nasdaq at that time. There was a widespread consensus that there is no optimum market model as such but that specific liquidity classes and the individual needs of different traders and intermediary groups have to be taken into account. This debate is reflected in market microstructure publications on the difference between dealer markets and auction markets like Garman (1976) or Mendelson (1987)

and in papers like Madhavan (1992), Pagano and Röell (1992, 1996) and Glosten (1994). In empirical research, the quote-driven Nasdaq and the order-driven NYSE were compared e.g. by Christie and Schultz (1994) as well as by Huang and Stoll (1996) by analyzing spreads and finding lower execution costs on the NYSE. Similar analysis in European markets (e.g. by De Jong et al., 1995 and Degryse, 1999) compared order-driven home markets with the quote-driven SEAQ-International model of the LSE. Another important contribution of academic literature to the debate around market models is the investigation of “hybrid” market models that combine elements of pure order driven and quote driven models by integrating market makers into order books. These market makers are incentivized by privileges like fee reductions and are obliged to continuously quote in less liquid securities. Some papers apply theoretical models and predict that market makers in a hybrid model have greater importance for less liquid stocks as these stocks suffer from higher information asymmetry (e.g. Grossman and Miller, 1988 and Glosten, 1989). The Glosten (1989) hypothesis that a designated market-maker may prevent market failure by supplying liquidity during periods when the limit order book is thin is also empirically supported by Mann et al. (2005) which examine the impact of firms on the French market employing a liquidity provider.

The Xetra trading system (Deutsche Börse, 2015b) takes the different liquidity profiles of securities and the diverging needs of different investor groups and underlying trading intensions into account and offers a broad range of market models. For highly liquid instruments, an order driven market applying an open book model integrating continuous trading and (opening, noon, and closing) call auctions is applied. Besides these scheduled / time-triggered auctions, trading safeguards called “volatility interruptions” shall enable for price continuity. A volatility interruption is an event-triggered call auction that is interrupting continuous trading or is extending the call phase of a time-triggered auction whenever the next potential execution price for a security is outside of pre-defined ranges.

For mid and small cap securities, Xetra provides a hybrid market model since Release 3 launched in October 1998: “Designated Sponsors” (initially called: “Betreuer”) are investment firms that commit to provide liquidity by quoting based on pre-defined maximum spread, minimum volume and participation rate parameters. Their quotes are not distinguishable from other public limit orders in the order book. Designated Sponsors are incentivized by fee reductions in case of trades executed in their Designated Sponsor account. Furthermore, they can achieve positive reputational effects based on a published rating of individual performance and thereby generate cross-selling revenues, e.g. by becoming member of IPO-consortia. From a trading day, order type and market transparency perspective, trading in the hybrid model is equal to trading in highly liquid securities (see above). The classification of instruments into the pure order driven market versus the hybrid model is based on the

Xetra liquidity measure that computes hypothetical round trip implicit transaction costs for different order sizes per instrument (Gomber et al., 2015a).

Since 2011, Xetra also serves as the technological basis for the former floor trading model of the Frankfurt Stock Exchange. In the former Frankfurt floor model (based on the Xontro system), that is still existing at regional exchanges in Germany, a monopolistic market maker located on the floor called “Skontrof hrer” (“Kursmakler” previous to 2002) has exclusive order book transparency and organizes the market for stocks by matching buyers and sellers as an agent. The Skontrof hrer was permitted to add execution peaks to his inventory, i.e. acting in principal capacity for market balancing purposes. In the 2011 migration from the Xontro system to Xetra, the role of the former “Skontrof hrer” was substituted by a “Xetra Specialist” role. The applied market model for Xetra Specialist trading is the continuous auction model where price determination is based on event-triggered auctions (triggering event: executable situation among customer orders or of a customer order against the Specialist quote) and trades take place at the price that enables to execute the highest volume with minimum surplus within the quote of the Specialist. The Xetra Specialist model specifically serves to support order execution and price determination in less liquid instruments. Therefore, more than one million instruments (stocks, bonds, ETFs/ETPs, funds, certificates and warrants) are provided in the Specialist model, whereas Xetra continuous trading focuses on around 2,500 liquid stocks and ETFs/ETPs (Xetra, 2015). A key further distinction are trading hours: While Xetra continuous trading is available from 9:00 am to 5:30 pm to align with European trading hours in institutional trading, the Specialist model runs from 8:00 am to 8:00 pm to also target retail investors in early and late trading.

Further specific market models on Xetra are Xetra Best that integrates order book trading and order internalisation (Gomber and Maurer, 2004) and Xetra Midpoint, a Crossing Network providing a closed order book for larger orders that are executed at the midpoint of the spread in Xetra continuous trading (Deutsche B rse, 2015b).

4. MiFID - the basic law of securities trading in Europe from November 2007

The Markets in Financial Instruments Directive (MiFID) is a centerpiece of the Financial Services Action Plan that aims at establishing an integrated and harmonized European market for financial services and products. MiFID succeeded the Investment Service Directive (ISD) of 1993 that enabled cross-border (remote) access to securities exchanges in Europe. The ISD enabled European member states – like Italy, Spain or France – to apply concentration rules, i.e. to require all orders to be executed at the national exchange, or – like Germany – to apply a so called “default rule”, i.e. to require customers to explicitly agree to an execution outside an exchange. Concentration rules and default rules triggered

banks and their lobbying organizations to accuse exchanges to exploit their monopolistic or quasi-monopolistic positions by applying cost structures that enabled them to absorb monopoly rents. Therefore, a central goal of MiFID is to enable investors to trade securities at maximum efficiency and at minimum cost by applying harmonized European regulation and a level playing field among different types of trading venues to assure competition, foster innovation and therefore resolve the former often monopolistic advantages of exchanges. MiFID was adopted on April 30th, 2004 as a European Directive and contains 73 articles that cover areas such as best execution, market transparency and organizational requirements. It had to be applied from November 1st, 2007 and requires investment firms and market operators to adapt to significant changes in securities trading and market operations. MiFID defines three types of trading venues: “Regulated Markets (RM)”, “Multilateral Trading Facilities (MTF)” and “Systematic Internalisers (SI)” (MiFID, 2004). While RM were already defined in the ISD and represent the traditional exchanges, MTFs and SIs are new types of trading venues in European securities legislation. Analogous to RM, MTF serve to bring together multiple buying and trading interests. However they are not operated by operators of a RM but by investment firms and they are not enabled to perform primary listings. An SI is an investment firm that executes customer orders outside a RM or an MTF against the own account, i.e. performs internalisation to save exchanges fees and to earn the spread (Gomber and Maurer, 2004). A fourth category “OTC trading” is implicitly defined in MiFID Recital 53 and relates to transactions that are ad-hoc and irregular, are carried out with wholesale counterparties, being part of a business relationship which is itself characterized by dealings above standard market size and are carried out outside the systems used for systematic internalisation (MiFID, 2004).

A central concept of MiFID is to enable for competition based on these new types of trading venues, however recognizing that this competition leads to fragmentation that may detriment the efficiency of the price discovery process. Extensive and harmonized pre- and post-trade transparency requirements shall serve to overcome this problem.

Furthermore, MiFID enables trading venues to apply waivers from pre-trade transparency that are based on the respective market model, type and size of the order, i.e. exemptions for reference price systems, for negotiated transactions, for orders that are held in an order management facility (like iceberg orders or stop orders) and for orders exceeding pre-defined minimum sizes (“large-in-scale waiver”). Concerning post-trade transparency, the MiFID requirements are also aligned for RMs and MTFs and require price, volume and time of transactions to be published as close to real time as possible with delays for trades above pre-defined thresholds.

5. Recent developments

Today, the competitive landscape in German equity trading has fundamentally changed from a mostly national competition with Xetra as the market leader to a pan-European competition triggered by MiFID. New MTFs like BATS, Chi-X or Turquoise entered the European market for markets and were able to capture significant market shares from the incumbent stock exchanges (Fidessa, 2015). In 2011, the largest European MTFs, BATS Europe and Chi-X merged to become BATS Chi-X Europe. BATS Chi-X Europe was granted status of a RM in May 2013. Although the incumbent exchanges achieved to keep the largest market share in their respective national stocks, BATS Chi-X Europe achieved to become number two in each national market and therefore is the largest European equity trading venue as of October 2015. For DAX 30 securities, as of October 2015, among lit markets, Xetra has a market share of 60% and BATS Chi-X Europe and Turquoise follow with market shares of 30% and 9% respectively (Fidessa, 2015).

Although MiFID tried to bring trading into regulated venues and only defined OTC trading as an exemption, OTC trading still represents a high and stable market share of more than 40% of total (lit and dark) European equities trading (Gomber et al., 2015b). Furthermore, the structure of OTC trading deviates from the regulatory intentions defined in Recital 53 MiFID. In contrary to Recital 53, OTC trades are de facto not above standard market size but most OTC trades are retail-sized trades and less than 5% are large in size according to the definition of MiFID. The SI trading venue category was only able to achieve a market share of around 1%.

The competition triggered by MiFID significantly reduced fees for members of trading venues and post-trade infrastructures (Oxera, 2011). But the competitive effect not only reduced explicit transaction costs but also increased market quality in terms of reduced implicit transaction costs, i.e. lead to lower spreads and higher market depth (see e.g. Gomber et al., 2011, Gresse, 2012 or Riordan and Wagener, 2011).

Furthermore, after the introduction of MiFID significant changes to trading and market structure took place: the emergence of algorithmic and high frequency trading (HFT) and the increased relevance of dark pools.

Automation and electronic connectivity to markets lead to increased competition among traders to make use of profitable market situations in agent and proprietary trading, e.g. by exploiting arbitrage possibilities as fast as possible. This competition triggered a demand for highest speed and lowest transmission latencies. Especially for market makers, speed became the key tool for risk management

as it has to be assured that quotes can be immediately adapted or withdrawn in case of news or extreme market movements. Co-location and proximity services were introduced to minimize the physical distance between the market participants' servers and the market server. In a recent study, ESMA estimates the market share of HFT in Europe to range between 24 and 37% in terms of value traded and between 30 and 42% based on number of trades depending on the estimation methodology (ESMA, 2014). For Xetra, which – due to its market model – is the only cash equity venue where HFT takes place in Germany, the ESMA estimates range between 21 and 36% in terms of value traded and between 24 and 36% based on number of trades (ESMA, 2014).

While the regulation of HFT on a European basis will be introduced with MiFID II likely in 2018 (see below), Germany already passed the High Frequency Trading Act in 2013. This act defines authorization and organizational requirements for investment firms and obligations on trading venues (BaFin, 2014).

Dark Pools are trading venues that shall enable institutional trades to execute large blocks without facing market impact. Due to the waivers imposed by MiFID and the large extent of OTC trading, regulators are worried about the effect of dark trading on the efficiency of the price discovery process. Therefore, besides the regulation of algorithmic and high frequency trading, the control of dark and OTC trading is a major future regulatory topic for European securities trading.

6. Outlook: MiFID II and MiFIR - The future of cash equity markets in Europe and Germany

Regulation will be the most important trigger of changes in European and German cash equity markets. MiFID is in operation since eight years now. By targeting to implement MiFID II (the legislation consists of two components: a Directive (MiFID II, 2014) and a Regulation (MiFIR, 2014)) likely in January 2018, the European legislative bodies take up recent technological improvements in trading and market structure and the lessons learned from the financial crisis. The most important regulations of MiFID II regarding cash equity trading are (i) the regulations on algorithmic trading and HFT, (ii) volume caps for dark pools and (iii) a trading obligation to curb OTC trading.

While Germany already implemented a High Frequency Trading Act, the respective requirements of MiFID II (Article 17 and Articles 48-50 MiFID II) will also require Germany to amend its regulation until 2018. The new components include testing requirements on investment firms and trading venues, a pan-European harmonization of tick sizes and far-reaching market making requirements on investment firms.

Concerning dark pool trading, MiFIR will introduce so called “double volume caps” (Article 5, MiFIR). These caps will restrict trading in a financial instrument on a single dark pool or on all European dark pools that applying the reference price or the negotiated trade waivers. If, in a specific instrument, during a 12-month period, the caps of 4% (8%) of trading in a single dark pool (all European dark pools) relative total European trading are exceeded, trading in the respective single dark pool (all European dark pools) will be suspend for a 6-month period for that instrument. Due to this future threat to the possibility of executing large blocks in a dark environment, a lot of initiatives currently are setting up new models that will not be captured by the cap regime. These initiatives include the launch of the Plato Partnership, a dark pool project set up by a consortium of asset managers and broker dealers, the introduction of intraday auctions by the LSE and the new BATS Chi-X periodic auction book model. Also in the German market, a new market model will be launched that will not be captured by the cap regime as it provides dark execution only for orders falling under the “large-in-scale”-waiver: Xetra Volume Discovery. The Xetra Volume Discovery model integrates lit and dark trading by enabling for volume orders, i.e. iceberg orders with a second hidden limit (Gomber et al., 2006). These orders can be executed both in continuous order book trading like iceberg orders and against other volume orders on the other side of the order book at midpoint. By this integration, the model overcomes a key problem of most new venues: the lack of initial critical mass.

Against the background of the high and still increasing market share of OTC trading, MiFID II introduces a trading obligation for equities (Article 23, MiFIR). This trading obligation requires all trades in equities to be executed on a RM, MTF or SI unless they are non-systematic, ad-hoc, irregular and infrequent, or are carried out between eligible and/or professional counterparties and do not contribute to the price discovery process. This trading obligation will very likely reduce the amount of OTC trading in equities, however, it remains questionable whether this volume shifts towards trading venues or whether investment firms will significantly extend the usage of the SI regime.

Again, for German and European cash equity markets the new legislations will bring significant changes and require enormous efforts for implementation both for trading venues and market participants. Whether these changes will finally improve market quality remains an open question – not only interesting and challenging for academics as a research topic but highly relevant for the welfare of our markets and finally for the economy as a whole.

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