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Securities exchanges: subjects and agents of financialization

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To be published in:

Daniel Mertens, Phil Mader & Natasha van der Zwan (eds.) (2019) International Handbook of Financialization. London: Routledge.

Abstract

How have exchanges shaped financialization? This chapter argues that similar to other financial market actors, securities exchanges have themselves undergone a significant transformation. In the last 25 years, marketization, internationalization, and digitization have fundamentally changed the way exchanges function, turning them from national marketplaces into markets actors. As a result of this transformation, exchanges have become crucial agents in processes of financialization. First, by organizing capital markets they influence market dynamics, facilitating volatility and market stability. Second, exchanges have turned into agents of disintermediation, selling and exporting financial technologies and expertise, facilitating the development of capital markets globally. Third, exchanges have emerged as politically and economically powerful players, both vis-à-vis other market actors but also towards regulators and states. Overall, through their transformation exchanges have become crucial actors in the spreading of capital markets, the transformations of contemporary finance and the politics of financialization.

Introduction

Securities exchanges are core institutions of modern capitalism, almost metonymic with capital markets and their development. But how have these institutions contributed to financialization? In vernacular language, the terms stock exchange and stock market are often used interchangeably. Exchanges are depicted as neutral spaces; they themselves are not perceived as actors in their own right. However, as this chapter argues, this is an outdated understanding of exchanges as these have transformed fundamentally and in so doing have become important agents of and key actors in financialization – both promoting financialization and acting as infrastructures within financialization processes.

Similar to other financial institutions, since the 1980s marketization, internationalization, and digitization have fundamentally transformed exchanges and their role in capital markets. From being mere *marketplaces* – national, member-controlled, non-profit organizations and physical trading locations with little agency – exchanges have transformed into what can be called *market actors*: autonomous and profit-driven actors who sell their markets, technologies, products and services to investors, and who actively create, regulate and shape (electronic) markets around the world and across asset classes. Thereby, exchanges were both shaped by financialization but also became key actors in financialization processes themselves. To explore this issue, this chapter discusses three interrelated questions: What is an exchange? How (and why) have they changed? And why does this matter for financialization?

Next to secondary literature, the chapter draws on financial news coverage, financial market databases, an analysis of 312 annual reports from exchanges,[1] and 59 expert interviews conducted with exchanges, brokers and other market participants in London, Frankfurt, Hong Kong, Shanghai and Singapore between May 2017 and September 2018. The rest of this chapter is structured as follows. Section one provides an overview of the existing literature on financialization and exchanges. Section two analyses the transformation of exchanges from marketplaces to market actors by highlighting how and why they changed through marketization, internationalization and digitization. Section three discusses exchanges after this transformation. Section four outlines why this matters for the study of financialization, focusing on how exchanges shape the workings of capital markets, financial globalization and the spread of disintermediated financial practices, as well as changing power dynamics in global finance. Section five concludes.

Exchanges in the financialization literature

Capital markets stand at the heart of and are a precondition for most of the phenomena associated with financialization (see Mader et al. 2019, this volume). But as this book section emphasizes, financialization is not only an external, structural force. It is enacted by and through certain agents. Surprisingly, exchanges – those actors who organize capital markets – have received relatively little attention in the financialization literature. In fact, exchanges are mostly viewed as neutral marketplaces with little or no agency.

Next to historical accounts of individual exchanges (e.g. Michie, 1999), political economists have rather focused on the impact that financial liberalization had on exchanges' members (Moran, 1990; Cerny, 1989), the electronification of exchange markets (Zaloom, 2006; Gorham and Singh, 2009), the politics of establishing certain exchanges (Posner, 2009; Lütz, 1998; Lavelle, 2004) or their role as policy actors (Mügge, 2011). Their own role as actors in capital markets has been analyzed only partially (Botzem and Dahl, 2014; Wójcik, 2012), focusing for instance on them creating financial products (Millo, 2007), facilitating high frequency trading (HFT) (MacKenzie et al., 2012), and the fragmentation of equity markets (Castelle et al., 2016). But these accounts have not linked exchanges and their activities to broader processes of financialization. However, as the next sections demonstrate, exchanges have both been impacted by financialization themselves and have over time become crucial agents for capital market development and the politics of financialization.

What is an exchange?

In its beginnings, the exchange was solely a marketplace, a physical location (e.g. a coffee house) where merchants met to negotiate business deals and eventually agreed to jointly finance enterprises. Pre-modern forms of exchanges have already existed at least since the 14th century in Venice, Florence and Genoa. This was followed by the founding of the Amsterdam Stock Exchange through the Dutch East India Company in 1602 which – while not the first exchange as such – was the first embodiment of what we perceive as modern stock markets. As Braudel (1983: 101) noted, "what was new in Amsterdam was the volume, the fluidity of the market and publicity it received, and the speculative freedom of transactions". Thus, the modern exchange was born. And from their inception until the 1980s, exchanges did not change much. For sure, the advent of pre-modern information technologies such as the telegraph led to changes in trading practices, a consolidation and establishment of national-level exchanges, regulation changed with recurring market crashes, existing markets matured, and new markets

for products such as futures emerged (see Engel, 2013). But little about the basic principles of what exchanges were and how they functioned changed.

Historically, (almost) all securities exchanges were member-owned. The members held all the power, the exchange was a non-profit organization and did not have much agency. As Weitzman (2011: 184) stated about the historic development of Chicago's commodity exchanges, "member control was reflected in their attitude to even the most senior exchange employees, who the traders regarded as their employees." The function of exchanges was that of marketplaces where members could trade securities, commodities or other assets. Such trading took place on a trading floor, pit or ring, where only physically present members could trade a small range of products, limited both by national boundaries and asset classes, for instance stocks of one countries' companies or certain commodities (e.g. base metals). This hardly changed over the centuries. As a special issue on exchanges in 'The Banker' (Skeete, 2008) stated, "[u]ntil the 1980s, exchanges would, in their essentials, have been recognizable to a merchant who was trading in the 14th century – the time of their inception".

However, in the 1980s and 1990s, exchanges themselves became subject to three interlinked, mutually reinforcing processes which overhauled their role in capital markets. First, while exchanges gained more agency, as market actors they also became themselves subjected to competitive pressures (marketization) from other exchanges. Second, from a mostly national focus their business activities became international, leading to consolidation and cooperation between exchanges (internationalization). Third, they turned from physical trading locations into financial technology companies (digitization). While these macro-processes (which are closely linked with financialization themselves) impacted all aspects and elements of financial markets, in the next section their impact on exchanges is analyzed before turning to how these transformed exchanges subsequently contributed to financialization processes.

Marketization: ownership, agency and competition

Marketization does not only encompass shifting ownership structures, it also works at a deeper level, and is best understood as the facilitation of "policies and processes oriented towards continuing the diffusion of market discipline" (Carroll and Jarvis, 2014: 1). Likewise, the marketization of exchanges is characterized by both changes in ownership structures as well as the introduction of competitive dynamics.

The marketization of exchanges is strongly linked to neoliberal economic reforms and restructuring which placed a greater emphasis on privatization and financial market deregulation in the 1980s and 1990s. Financial liberalization reforms such as May Day in the US (1975), the Big Bang in the UK (1986) or the EU Investment Services Directive (1993) allowed brokers to charge varying commission rates, enabled foreign participation in previously national stock markets and abolished rules requiring orders to be executed solely on exchanges, introducing a great deal of competition into the exchange industry. Exchanges were now suddenly in a marketplace for marketplaces (Castelle et al., 2016). In the face of such pressures, exchanges needed to modernize, become more efficient and customer focused, which is why many demutualized and went public, becoming traded on capital markets themselves. While the first member-owned exchange only demutualized in 1993, 50% of the world's largest exchanges had demutualized by 2002 and by 2010 they were all demutualized (with the notable exception of the state-owned Chinese exchanges). Further, many of these exchanges self-listed and 69% had become publicly traded companies by 2018 (see figure 1).

While older scholarly accounts of how exchanges work stressed the role of the exchange's members (see Abolafia, 1996; Baker, 1984), through demutualization a lot of the power to organize the marketplace shifted towards exchanges themselves, whose role became much more architectural in that sense. As one interviewee told me:

> "I think, demutualization is probably the most striking [change] in the fact that the exchanges are now fully in charge of their own destiny. They can decide what they want to compete on, decide what they want to launch, what areas of business they want to expand or attract from, whereas before they were looking after their own membership. […] So, I think it's really taking charge of their corporate direction… [that] is probably the biggest single change."[2]

However, while exchanges gained more agency, they now had to generate profits and maximize shareholder value in a completely different environment. As Lee (2002: 1) noted, at the end of this process, "exchanges now have customers, not members". Exchanges now also had to compete with their former members and owners (e.g. banks, brokers) – who tried to side-step exchanges by setting up or backing non-exchange trading platforms such as alternative trading systems (ATS), inter-dealer crossing networks or dark pools – and with one another, for listings, customers, order flow and market share as they needed to generate profits. This process was

intensified by regulations such as Regulation ATS (1998) in the US or MiFID (2005) in Europe which facilitated this competition. By 2010, European exchanges had lost more than 20% of the trading on stock markets and between 2005 and 2009 NYSE's US-market share decreased from 79.1% to 27.4% (Lannoo and Valiante, 2010).

The rapid development of over the counter (OTC) derivative markets also pressured futures exchanges, as emphasized by former Chicago Mercantile Exchange (CME) chairman Leo Melamed who stated that: "it is no secret that the combined onslaught of globalization, OTC competition, and technological advancement, have put enormous pressure on traditional futures exchanges. Indeed, in some quarters, there is a growing belief that the good days for traditional exchanges is behind them" (cited in Nystedt, 2004: 4). The looming internationalization of exchanges only intensified these dynamics.

Internationalization: expansion, consolidation and cooperation

From being institutions mainly focused on their respective national markets shielded from the outside world, increasing cross-border integration from the 1980s onwards exposed exchanges to global markets themselves which both increased competitive pressures on exchanges but also created possibilities to scale up their business, to exploit or create new markets. Liquidity attracts liquidity – size matters, and in a global world, their national markets had become too small: in order to survive, exchanges had to gain in size and had to venture into global markets.

As erstwhile national institutions – in the words of former NYSE CEO John Thain "every country has an army, a flag and an exchange" (Biglari, 2007) –, exchanges started to form huge organizations spanning the globe. While the first international mergers and acquisitions (M&A) between exchanges only occurred in the early 1990s, 71% of the largest exchanges had engaged in international M&A activities by 2018 (see figure 1). As a result of a series of mergers in the 1990s and 2000s, previously 'individual' marketplaces such as the NYSE, Chicago Mercantile Exchange or Nasdaq became (acquired by) globally active exchange groups such as ICE Group, CME Group or Nasdaq OMX that now controlled markets all around the world.[3] Exchanges also started to acquire many of their non-exchange competitors, literally buying back some of the market share they had lost a few years earlier.[4] Futures exchanges also started buying stock exchanges and vice versa, as well as trading venues for bonds, foreign exchange, carbon emissions, commodity and financial derivatives – with 85% of the largest exchanges now offering trading in multiple asset classes (see figure 1). However, mergers between exchanges

have political limitations as exchanges are still understood as quasi-public, quasi-national institutions with a strategic importance for their respective economies, as demonstrated by many failed high-profile mergers between exchanges.[5] Less liberal countries such as Taiwan or Korea do not even allow foreigners to own a majority of their exchanges or exchanges are completely state-owned as in China.

Next to consolidation within their own industry, exchanges started buying other financial services providers such as, index and data providers or clearing houses – all leading to a diversification of exchanges' business models. Further, exchanges started to form alliances, create joint ventures, cross-list and jointly develop products or create connectivities between markets by linking their trading platforms and facilitating the development of HFT infrastructures (Wójcik, 2012; MacKenzie et al., 2012). From the 1990s onwards, exchanges also started to internationalize their operations, opening offices around the world to gain access to local financial communities; these offices are usually staffed with sales and business development personal whose job is to onboard new clients and open up new markets. While CME was the first exchange to open an international office in 1987, in 2002 the then top-20 exchanges had already established 48 offices, and in 2017 the top-20 exchanges had 181 offices.[6] Overall, internationalization amplified the competitive pressures that exchanges had been subjected to but also opened up opportunities for consolidation, an expansion of their business models, new forms of inter-exchange cooperation and for them to venture into new markets.

Digitization: electronic trading, data and technology

Despite powerful images such as commemorating Initial Public Offerings (IPOs), the ceremonial ringing of the bell, or hectic activity on open out-cry trading floors, after the late 1990s traditional face-to-face trading was gradually superseded by electronic markets (Gorham and Singh, 2009). Already launched as fully electronic marketplaces, newcomer exchanges such as OM, Nasdaq, ICE or Eurex soon acquired vast market shares across asset classes, forcing incumbent floor-based exchanges such as NYMEX or LIFFE to their knees in breath taking market showdowns. The future of trading was bound to become electronic. By 2008, all major exchanges had adopted electronic trading. By 2018, 68% had closed their physical trading floors (see figure 1) – often only keeping them to "keep up appearances" for the spectacle, ceremonial events and news reporting. However, digitization also fundamentally changed the workings of exchanges.

On one side, electronic trading facilitated the marketization and internationalization of exchanges. Digitization further curtailed the power of the exchange's members who long tried to resist electronification. Instead of members physically making markets and prices in the trading pits, rings and floors via open-outcry (see Zaloom, 2006), the shift from floor-based to electronic trading transferred a lot of their power to the exchanges themselves. By running electronic matching engines, exchanges were able to replace the price-making function originally performed by floor-trading members which enabled them to facilitate financial trading on their terms. Digitization also increased competition as now everyone with some venture capital and a few lines of code was able to create a new trading platform. As already discussed, these platforms massively drove down the price of trading, partially because they did not have the huge overhead of traditional exchanges.[7] On the other side, the proliferation of data and computing capacity opened up completely new business fields for them. As exchanges were hard pressed to find new sources of revenue, they realized that the electronification of markets and the rapid development of information technology created many opportunities for them to capitalize upon. As Wójcik (2012: 131) noted, "while in the mid-1980s it was an achievement for SEAQ in London to execute up to 10 trades per second […], in 2010 computers [could] generate thousands of orders per second each."

Digitization had fundamentally changed the game. Market data became a resource that could be utilized by exchanges who realized that they sat on a gold mine. Not only could they sell market data, they could also use it to create new services and products, such as analytical tools, indices, reporting, post-trade services such as central clearing or settlement or sell their technology – often enforcing the exclusivity of their products through a vertical silo business model. Consequently, exchanges started investing heavily into market data, data analytics, and indices, which facilitated the expansion of new asset classes such as financial derivatives based on continuous streams of market data (Millo, 2007). As a result, exchanges have increasingly become "content providers" (Lee, 2002), selling market data, technology and other services to their clients.

Digitization also facilitated the internationalization of exchanges. Instead of requiring access to a physical trading floor in one specific location, everyone with the necessary hard- and software could participate in these markets, as long as regulatory and organizational obstacles had been resolved. Digitization overhauled traditional trading technologies (open-outcry floor trading)

tied to their traditional corporate governance form (mutuality), reinforced marketization and internationalization pressures, and simultaneously opened up a whole new range of business opportunities for exchanges.

The exchange as market actor

Despite these processes of marketization, internationalization and digitization, the public perception of exchanges is still nostalgically clinging to their historic form, taking little account of the fact that between the 1980s and today, exchanges have changed beyond recognition. First, while exchanges have become actors in their own right, they have also become subject to competition, forcing them to innovate, generate profits and diversify their business model. Second, exchanges have become more global and complex institutions. Third, exchanges have become electronic markets and financial technology companies. From being mere *marketplaces* – national, member-controlled, non-profit organizations and physical trading locations with little agency – exchanges have transformed into what can be called *market actors*: autonomous and profit-driven actors who sell their markets, technologies, products and services to investors, and who actively create, regulate and shape (electronic) markets around the world and across asset classes. Figure 1 summarizes this transformation of exchanges.

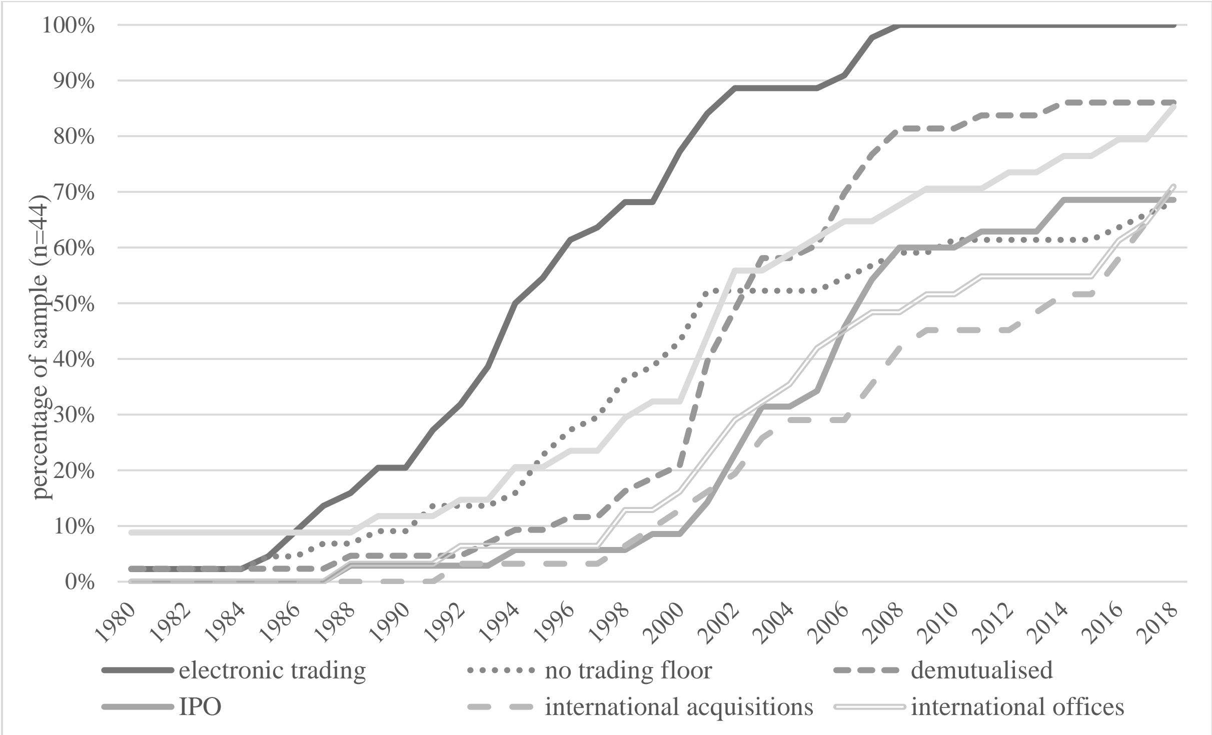

Figure 1: The transformation of exchanges, 1980-2018 (sample of 44 largest exchanges globally; author's calculation, based on corporate reports, exchange website information and financial news).

Once "traditional" stock exchanges today only make between 5-20% of their profits through the listing and trading of stocks – which is their original function for facilitating corporate finance (Zysman, 1983). Exchanges have diversified their business horizontally – by adding new asset classes to their portfolio – and vertically, by offering various other products and services. You can now buy proprietary market data and data analytic tools from exchanges, license their indices, use their benchmarks as reference prices, trade various financial products and asset classes on their different trading platforms – not only equities but also bonds, currencies, commodities or derivatives –, co-locate your servers next to theirs, and use their clearing house, settlement, collateral management, custodian services and regulatory reporting tools. Through this consolidation, exchanges gained control over large parts of capital market trading infrastructures – a business that turned out to be hugely profitable.

An analysis of exchanges' business segment revenue reporting illustrates these changes. At London Stock Exchange (LSE) Group, stock trading revenues declined to 8.40%, while its index business FTSE Russell (37.65%) and post-trading/clearing business LCH.Clearnet (36.72%) became much more prominent (LSE, 2017). ICE Group who runs the NYSE, the world's largest stock market, as well as dozens of other marketplaces such as LIFFE or NYBOT, has over the years heavily invested into data, analytics and indices, now generating 54% of its revenue with this business segment (ICE, 2017). In 2017, stock trading revenues at Nasdaq – the company that, next to the iconic Nasdaq market, also runs ten markets in Northern Europe – were at only 11% while its corporate services (27.89%), market data (23.72%) and technology (12.08%) segments all became more important (Nasdaq, 2017). Over time, stock trading revenue at Deutsche Börse Group decreased from 35.35% in 2000 to 7.17% in 2017 while derivatives and clearing increased to 40.70% and its post-trade business to 36.02% (DBG, 2017). This development is similar for most global exchanges. While trading stock trading has become less important, exchanges today mostly generate their rising revenues through derivatives, post-trading services, indices and market data.

While traditionally, every country had an exchange of varying size, a new global hierarchy between exchanges has emerged. An enormous concentration of marketplaces, liquidity and power has taken place, and a majority of markets is now controlled by a few global exchange groups (CME Group, ICE Group, Nasdaq, Deutsche Börse Group, LSE Group and Cboe). While these global exchange groups are complemented by a few regional players (HKEx, SGX,

Euronext) and some larger national exchanges (Japanese JPX, Brazilian B3, Canadian TMX, Indian and Chinese exchanges). These global exchange groups run the largest, most prestigious markets, dominate discussions within the industry, own important technological know-how, indices and products as well as large parts of global market infrastructures. Within a context of asset management capitalism, exchange-traded funds (ETFs) and a rise of passive investment (see Fichtner 2019, this volume), exchanges have only gained additional power to shape markets. Today, a small number of global exchanges holds significant power over the governance, development and organization of global capital markets.

How exchanges shape financialization

As the contributions to this part of the handbook highlight, financialization is not only an external, structural force, it is enacted by and through certain agents. While exchanges have themselves been influenced by processes of financialization as discussed above, they are also crucial actors in and agents of financialization processes. First, as market organizers, exchanges shape capital market dynamics, facilitating volatility and speculation. Second, exchanges are crucial facilitators of capital market development globally. Third, power dynamics within capital markets have shifted with exchanges becoming more powerful actors vis-à-vis both other market actors as well as states.

Shaping capital markets: financialized trading, volatility and speculation

By creating, organizing and enabling capital markets in the first place, exchanges are able to shape their form, content and dynamics. Rather than investors who are active within a market, exchanges play a much more architectural role for markets as they control and create the infrastructural arrangements that are necessary for their functioning in the first place. As organizers of markets, exchanges provide a public good and should be concerned with the long-term stability of markets, but they are also profit-driven businesses in need to create shareholder value. This is an important contradiction at the heart of exchanges because in their roles as market organizers and marketplayers they have contradictory incentives. As the NYSE (cited in Macey and O'Hara, 2005: 572) stated in a 2003 white paper (while still mutually-owned), “the [cooperative ownership] structure [of the NYSE] seeks to maximize the efficiency, reliability and integrity of the market, rather than to maximize profit as in the public company model.” Not only have exchanges’ business models become more short term-oriented, but this also has effects on the markets they organize.

As exchanges' revenues depend on investors trading in their markets, they have an incentive to develop these markets in a way that trading activity (and thereby speculation and volatility) increases. Exchanges for instance provide the necessary infrastructures (i.e. co-location, direct market access), trading rules (new order types, e.g. flash orders) and products (data analytic tools, real-time market data) that enable HFT in the first place. While proponents of HTF argue that it increases market liquidity, its opponents argue that it actually sucks up liquidity, severely threatens market stability and that HFT trading is usually to the detriment of less technologically sophisticated traders (MacKenzie et al., 2012: 288-290). Exchanges also facilitate the increased trading of derivatives for instance by creating these financial products in the first place (Millo, 2007) as well as encouraging larger trading volumes through market maker schemes or fee rebates for those investors who trade large volumes of these contracts. By facilitating high trading volumes and by reinforcing corporate governance standards, exchanges also facilitate shareholder value orientation in listed companies (Erturk 2019, this volume).

More than mere bystanders, exchanges are gatekeepers of capital markets, deciding who gets in, what is traded and how trading is conducted, as investor strategies are influenced by trading regulations and the products they can use – they are agents of financialization as they engage in financial structuring and liquidity provision (see Chiapello 2019, this volume). While deregulation was meant to facilitate market processes, control over marketplaces has since concentrated in the hands of a few global exchanges who are now crucial in enabling financialized corporate practices and speculative trading which leads to volatility in markets, potentially impacting financial stability.

Financial globalization: spreading capital markets around the world

From 1980 to 2005, the number of countries with stock exchanges has increased from 59 to 117 (Weber et al., 2009). By connecting evermore investors, providing them with more investment opportunities and internationalizing financial products and markets, exchanges also facilitate the globalization of capital markets. Cross-border market integration is not a given, but only possible through institutional changes such as widespread regulatory harmonization (e.g. MiFID), the formation of global marketplaces through exchanges (e.g. through trading hour extensions), or the creation of links between markets (e.g. cross listings). While the role of the state and international financial institutions (Lavelle, 2004), domestic political coalitions (Zhang, 2009) and pressures from global markets (Cerny, 1989) have been highlighted as push

factors for capital market development, the role of exchanges in these processes is less well understood (but see Botzem and Dahl, 2014).

Where does the knowledge of how to create capital markets come from? In fact, global exchange groups have been crucial in training regulators, investors and "local" exchange operators in how advanced financial markets work. Further, they have been exporting their financial technologies and infrastructures to underdeveloped markets, helped to develop these in the first place and sometimes even run these smaller markets, promising to create growth by capitalizing on their economies of scale and help create new financial products and services. In return, the global exchanges earn fees, buy (a stake in) those (much) smaller exchanges and have preferential access to their market data and products. While primarily commercially driven, there is also an almost missionary element to these activities as these global exchanges see it as their task to spread the gospel of efficient markets across the globe (Weitzman, 2011).

This role of exchanges can for instance be observed in how capital markets developed in East Asia. Nasdaq for instance "provides technology to more or less all the exchanges in Asia-Pacific",[8] thereby helping them to develop these capital markets. CME Group also has multiple cooperations and ownership stakes with Asian exchanges helping to develop financial products or enable their trading on CME's 24h-trading platform Globex.[9] Next to cross-listings with Korean (KRX) and Taiwanese (TAIFEX) exchanges, Deutsche Börse formed a joint venture with the Shanghai Stock Exchange and the China Financial Futures Exchange (CFFEX), the China Europe International Exchange (CEINEX), whose aim is to facilitate China's capital market development abroad. The Japanese (JPX) and Korean (KRX) exchanges meanwhile have heavily invested in South East Asian markets, partially owning and establishing new exchanges in Myanmar, Laos and Cambodia, while as part of the Belt and Road Initiative Chinese exchanges have partially acquired exchanges in Pakistan, Kazakhstan or Bangladesh. Countless similar arrangements exist or have already been conducted. Exchanges have turned into agents of financial globalization, spreading the development of capital markets globally, thereby immensely facilitating financialization processes.

The politics of financialization: shifting dynamics of power and governance in finance

Through consolidations in the exchange industry, global giants like CME, ICE or Nasdaq have emerged as actors with tremendous political and economic power, directly influencing power dynamics within global finance and the politics of financialization. While banks were once their

owners/members, this relationship has changed completely as they have become clients and competitors of now demutualized, profit-driven global exchanges. While for a long time banks had the upper hand, trying to circumvent paying exchange fees by backing ATS or by threatening to move their derivatives business OTC,[10] post-global financial crisis these dynamics have reversed. Banks have been increasingly constrained by regulations, while exchanges have consistently gained business from them: by facilitating central clearing on (exchange-owned) clearing houses, by trying to get OTC derivatives trading onto exchanges (futurization) and by lobbying regulations such as MiFID II, EMIR and Dodd-Frank (see for instance Ferrarini and Moloney, 2012; Helleiner et al., 2018). While the power of banks has somewhat decreased since the global financial crisis, the centrality of exchanges in global finance has increased significantly.

Next to their increased power within finance, power dynamics towards states have also changed (see also Wang, 2019, this volume). This is especially important in light of the historically close relationship between states and exchanges, with the perception of exchanges as national icons with a quasi-public task of running capital markets, thereby conducting many monitoring, regulatory and supervisory functions. By occupying these roles, exchanges had a privileged position in policy processes or preferential access to policy makers. As for instance one former exchange representative noted:

> "So, we would have for example a monthly meeting with the Bank of England. One month they would host lunch, next month we would host lunch. It was because the government through the Bank would like to have a finger at the pulse of what was happening. […] So, that gave us some leverage in the corridors of power… with the government, the Treasury and across the political hue. […] Exchanges had an important role to play."[11]

While exchanges are no longer quasi-public national institutions but rather profit-oriented global corporations, close relationships between exchanges and states still persist today, which raises questions over whether their influence might have become too big. In contrast to banks, trust in exchanges and their actions remains relatively unquestioned post-crisis – also because they facilitate a neutral image of themselves. As Botzem and Dahl (2014: 78) emphasize, "rather than highlighting their own actorhood, they depict themselves as a marketplace […]

which leads to a vast underrating of their impact on processes of economic and institutional change".

But their actions are anything but neutral. As index providers, exchanges for instance decide about countries' inclusions or exclusions into their indices, yielding considerable power over investment flows (Alloway et al., 2017), whereas by enabling hedging and exit possibilities (Hardie, 2012) or by deciding on clearing house collateral frameworks they can have a significant impact on countries' refinancing operations (Genito, 2019) – in both instances constraining governments' behaviors and nudging them towards conforming with a neoliberal rulebook of disintermediated, 'free' capital markets that exchanges organize (see for instance, Doll, 2019). Overall, exchanges have been central in the politics of financialization and financial regulation.

Conclusion

While exchanges represent one of the institutional foundations of modern capitalism, since the late-1980s, exchanges have undergone a major transformation, being impacted by financialization processes themselves. From solely being marketplaces, marketization, internationalization and digitization led to a transformation of exchanges and overhauled their role in capital markets. First, from having little agency, demutualization turned exchanges into actors in their own right but also subjected them to market dynamics and competitive pressures. Second, from a mainly national focus their business became increasingly international and they diversified their geographical and business scope enormously. Third, due to digitization they turned from being physical trading locations to running electronic markets and becoming financial technology companies. Today, exchanges are global corporations with a wide variety of business activities, both acting within and organizing, governing, shaping capital markets – in that sense they have turned from marketplaces to market actors.

Thereby, exchanges have become both important agents of and key actors in financialization. First, by organizing markets exchanges decide what can be traded and by whom. However, their transformation has created incentives for them to create market structures that facilitate more volatility and speculation, thereby contributing to financialized trading and corporate governance practices. Second, through selling and exporting their financial technologies and expertise, exchanges have been important actors in the development of capital markets and spreading market-based financial practices globally. Third, exchanges have emerged as

powerful players within global finance, both vis-à-vis banks but also with regard to regulators and states, influencing financial regulation and the politics of financialization. By raising questions about the changed role of exchanges in capital markets, this chapter highlights the role of exchanges as important actors in and agents of financialization. Capital markets do not emerge out of a vacuum, but actors propel their development. Exchanges are one of these important actors.

While this chapter provided an overview of exchanges, their transformation and how they contribute to financialization processes, obviously exchanges are not uniform and there are significant differences between them. State-owned exchanges in China for instance certainly play a different role in markets than global exchanges. A future avenue of research could therefore be a more detailed, comparative analysis of the (possibly diverging) roles that exchanges perform in capital markets and financialization processes. It also remains unclear how exchanges relate to other market actors in a changing post-crisis global financial ecosystem, for instance to banks, high frequency traders, index providers or asset managers. And, especially when it comes to derivative markets, exchanges are still dwarfed by OTC trading. How do these different markets interact and what does it entail for the power of exchanges? In a changing post-financial crisis world, addressing these questions could offer important insights for our understanding of current transformations of global finance and its role in financialized capitalism.

References

Abolafia, M. Y., 1996. *Making Markets: Opportunism and Restraint on Wall Street*. Cambridge: Harvard University Press.

Alloway, T., Burger, D. & Evans, R., 2017. Index Providers Rule the World—For Now, at Least. *Bloomberg*, 27 November.

Baker, W. E., 1984. The Social Structure of a National Securities Market. *American Journal of Sociology,* 89(4), pp.775-811.

Biglari, H., 2007. Strategic view: Exchanges seek a new model. *Financial Times*, 16 November.

Botzem, S. & Dahl, M., 2014. Trust in transparency: value dynamics and the reorganization of the Baltic financial markets. In: Alexius, S. & Hallström, K. T. (eds.) *Configuring Value Conflicts in Markets.* Cheltenham: Edward Elgar, pp.63-81.

Braudel, F., 1983. *Civilization and capitalism, 15th–18th century: The wheels of commerce.* New York: Harper & Row.

Carroll, T. & Jarvis, D. S. L. (eds.), 2014. *The Politics of Marketising Asia*. Basingstoke: Palgrave Macmillan.

Castelle, M., Millo, Y., Beunza, D. & Lubin, D. C., 2016. Where do electronic markets come from? Regulation and the transformation of financial exchanges. *Economy and Society,* 45(2), pp.166-200.

Cerny, P. G., 1989. The 'Little Big Bang' in Paris: financial market deregulation in a dirigiste system. *European Journal of Political Research,* 17(2), pp.169-192.

DBG, 2017. *Financial Report*. Frankfurt: Deutsche Börse Group.

Doll, I. O., 2019. Argentina Wants MSCI to Upgrade Local Shares to Emerging Status. *Bloomberg*.

Engel, A., 2013. Futures and risk: the rise and demise of the hedger-speculator dichotomy. *Socio-Economic Review,* 11(3), pp.553-576.

Ferrarini, G. & Moloney, N., 2012. Reshaping Order Execution in the EU and the Role of Interest Groups: From MiFID I to MiFID II. *European Business Organization Law Review,* 13(4), pp.557-597.

Genito, L., 2019. *What Markets Fear: Understanding the European Sovereign Debt Crisis Through the Lens of Repo Market Liquidity.* PhD Thesis, University of Warwick.

Gorham, M. & Singh, N., 2009. *Electronic Exchanges: The Global Transformation from Pits to Bits*. Burlington, MA: Elsevier.

Hardie, I., 2012. *Financialization and Government Borrowing Capacity in Emerging Markets.* Basingstoke: Palgrave Macmillan.

Helleiner, E., Pagliari, S. & Spagna, I. (eds.), 2018. *Governing the World's Biggest Market: The Politics of Derivatives Regulation After the 2008 Crisis*. Oxford: Oxford University Press.

ICE, 2017. *Annual Report*. Altanta: Intercontinental Exchange Group.

Lannoo, K. & Valiante, D., 2010. The MiFID Metamorphosis. *European Capital Markets Institute,* ECMI Policy Brief No. 16/October 2010.

Lavelle, K. C., 2004. *The Politics of Equity Finance in Emerging Markets*. Oxford: Oxford University Press.

Lee, R., 2002. The future of securities exchanges. *The Wharton Financial Institutions Center,* Working Paper 02-14.

LSE, 2017. *Annual Report*. London: London Stock Exchange Group.

Lütz, S., 1998. The revival of the nation-state? Stock exchange regulation in an era of globalized financial markets. *Journal of European Public Policy,* 5(1), pp.153-168.

Macey, J. R. & O'Hara, M., 2005. From Markets to Venues: Securities Regulation in an Evolving World. *Stanford Law Review,* 58(2), pp.563-616.

MacKenzie, D., Beunza, D., Millo, Y. & Pardo-Guerra, J. P., 2012. Drilling through the Allegheny Mountains. Liquidity, materiality and high-frequency trading. *Journal of Cultural Economy,* 5(3), pp.279-296.

Michie, R., 1999. *The London Stock Exchange: A History*. Oxford: Oxford University Press.

Millo, Y., 2007. Making things deliverable: the origins of index-based derivatives. *The Sociological Review,* 55(2), pp.196-214.

Moran, M., 1990. *The Politics of the Financial Services Revolution The USA, UK and Japan*. Basingstoke: Palgrave Macmillan.

Mügge, D., 2011. *Widen the market, narrow the competition: banker interests and the making of a European capital market*. Colchester: ECPR Press.

Nasdaq, 2017. *Annual Report (Form 10-K)*. New York: Nasdaq Group.

Nystedt, J., 2004. Derivative Market Competition: OTC Markets versus Organized Derivative Exchanges. *International Monetary Fund,* IMF Working Paper WP/04/61.

Posner, E., 2009. *The Origins of Europe's New Stock Markets* Cambridge: Harvard University Press.

Skeete, H., 2008. A new breed of exchange. *The Banker*, 5 May.

Weber, K., Davis, G. F. & Lounsbury, M., 2009. Policy as myth and ceremony? The global spread of stock exchanges, 1980–2005. *Academy of Management Journal,* 52(6), pp.1319-1347.

Weitzman, H., 2011. Chicago's Decade of Innovation: 1972-1982. In: Harris, L. (ed.) *Regulated Exchanges: Dynamic Agents of Economic Growth.* Oxford: Oxford University Press, pp.174-201.

Wójcik, D., 2012. *The global stock market: issuers, investors, and intermediaries in an uneven world*. Oxford: Oxford University Press.

Zaloom, C., 2006. *Out of the Pits: Traders and Technology from Chicago to London*. Chicago: University Chicago Press.

Zhang, X., 2009. From banks to markets: Malaysian and Taiwanese finance in transition. *Review of International Political Economy,* 16(3), pp.382-408.

Zysman, J., 1983. Government, markets and growth: financial systems and the politics of industrial change. Ithaca: Cornell University Press.

[1] This sample (n=44) is comprised of the largest stock and derivatives exchanges globally as well as the largest exchanges for each region (e.g. Johannesburg Stock Exchange for Africa).
[2] Interview with business development unit of global exchange in London (11 October 2017).
[3] Wall Street Journal, 3 March 2016, p.17; see also: https://tinyurl.com/y54zs6jh (last accessed: 10 September 2018).
[4] Nasdaq acquired BRUT in 2004 and Inet in 2006, NYSE bought Archipelago/ArcaEx in 2006, LSE acquired a majority in Turquoise in 2009, and in 2017 Cboe acquired BATS Global Markets.
[5] Such as attempted takeover of LSE by Nasdaq in 2006, TMX Group by LSE in 2011, or mergers between the Australian and Singaporean exchanges in 2011, NYSE Euronext and Deutsche Börse in 2012, and between Deutsche Börse and LSE in 2017.
[6] Data obtained from exchanges' annual reports (2002 and 2017)
[7] Interview with CEO of alternative trading system in London (11 October 2017).
[8] Interview with general manager of global exchange in Hong Kong (5 July 2017).
[9] See: http://www.cmegroup.com/international/ (last accessed: 22 June 2018).
[10] Interviews with business development units of global exchanges in London and Frankfurt (11 October and 2 November 2017).
[11] Interview with former CEO of exchange in London (8 January 2018).