1. Governing finance in Europe: a centralisation of rule-making?

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Vet du inte, min son, med hur lite visdom världen styrs?
Dost thou not know, my son, with how little wisdom the world is governed? (Axel
Oxenstierna, 1648)

1.1 INTRODUCTION

The governance of finance in Europe is embedded in international regulatory agreements. Especially since the financial crisis of 2008, international agreements have sought to introduce rules to ensure that micro-risks (failures to maintain financial contracts) and macro-risks (contagion, leading to system-stability risks) are reduced. The implementation of international regulations in European regulations and, as a result, in national regulations, has had important repercussions on the regulatory structure of the European Union. Did these changes lead to a centralisation reflected in a shift of formal rule-making and the supervision of its implementation from the national to the supranational level? If so, why did this happen and through which processes? Who wins and who loses from this shift? Finally, what are the implications for political accountability in rule-making?

This book's answers to these questions will be provided from different research perspectives and different theoretical backgrounds: political science, law, the sociology of finance and economics. This is crucial in order to grasp the complicated processes that are triggered by regulation and its impact in this most dynamic and globally interlinked of markets. We specify the conditions under which different paths of political, social and economic development are embarked upon leading to different outcomes – that is, centralisation, decentralisation or fragmentation – and their effects. Specifying the condi-

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tions means that the answers to our research questions are not immediately self-evident. European financial regulation and its impact differ according to the political, legal and economic situations of member states. Importantly, however, they are also influenced by factors such as competition between global financial regulatory powers, self-regulation by private actors and technological innovation. These factors may not only foster the centralisation of financial regulation but they may also constitute counter-forces leading to decentralisation or fragmentation.

We consider our question on centralisation from four broad perspectives: from a *vertical international* perspective, that is, European regulation in the context of international regulatory agreements; a *horizontal international perspective*, that is, regulatory competition between regional powers and its impact on European rule-making; *hybrid regulation*, that is, the interaction between private and public actors in regulation and its impact; and *technological innovation*, that is, the impact of technological innovation on financial regulation. Linking the international (vertical and horizontal) perspectives and their impact on regulatory structure in the EU is an area that so far has been little investigated and so is a particular focus of our analysis. Moreover, given that the self-regulation of actors in financial markets has historically been of paramount importance, the interaction between private self-regulation and the public regulation of financial markets constitutes a crucial feature of the operation of financial markets. Equally, technological innovation has been another crucial factor influencing trading in financial markets and its regulation. The acceleration of these technology-driven changes due to digitalisation has raised important challenges for regulation, which we will investigate theoretically and empirically. In the conclusion, the analytical and empirical insights gained in the individual chapters of this book will be linked to see whether there are contradictions, confirmations/reinforcements or complementarities of findings.

The *vertical international perspective*: There has been much pressure to harmonise financial regulation in Europe on regional financial market regulation from international agreements and regulatory bodies. This pressure translates into a complex political process at the EU level, and in turn European regulation translates differently into member state regulation depending on specific national economic, political, institutional, legal and social factors. This means the outcomes in regulatory structure and regulatory policy substance are not necessarily uniform and do not necessarily lead to a centralisation of rule-making.

The *horizontal international perspective*: There is regulatory competition between large financial regulatory powers such as the EU¹ and the US. The attempts by these financial powers to impose their own regulation on the rest of the world or to ensure its extraterritorial application is a typical feature of

regulatory competition. This may lead to a fragmentation of the regulatory structure internationally, and in consequence to regulatory arbitrage by the regulated. Within a financial power, however, regulatory competition may lead to more internal centralisation of regulatory structures to better coordinate regulatory activities in view of external competition.

The *public/private interaction perspective*: Self-regulation by private actors and private and public co-regulation have always been important features of financial regulation. Self-regulation rules have frequently emerged in new markets, with public actors subsequently intervening step by step, leading to a form of hybrid regulatory governance structure.

The *technological innovation perspective*: Given the dynamic features of financial markets and the rapid innovation of ever more financial products based on new technologies, the question arises of the implications for regulation of these new instruments. How, for instance, do regulators deal with trillions of daily financial transactions in high-frequency trading in derivatives? Is 'regtech', an instrument developed by private actors, able to ensure compliance with public regulation or would mere principle-based regulation be the answer? The implications of these contrasting approaches for the regulatory structure are very different given that regtech leads to a harmonisation of detailed rules while principle-based regulation leaves latitude to member states when implementing the principles stated in the legislation.

All our answers to, or hypotheses on, the questions raised from these four different perspectives will be derived from theoretical arguments developed in political science (including policy analysis and political economy), law, the sociology of finance and economics. The hypotheses will then be subjected to empirical assessment by collecting data on the large bodies of legislation resulting from MiFID, MiFIR II and the capital markets union (CMU), drawing on archival material, press analyses, existing data collections and interviews with financial market actors.

Hence, *Governing Finance in Europe: A Centralisation of Rule-making?* offers an innovative and generalisable theorisation of factors driving and impeding the centralisation of rule-making in Europe and its consequences in terms of policy effects and political accountability.² In doing this, it provides the first comprehensive theoretical account of regulatory centralisation in all its multiple aspects at the regional and international levels. By focusing on international pressure, international competition between financial powers, hybrid governance by public/private actors and technological innovation, the book grasps the complex dynamics of rule-making and their impacts on regulatory structure, policy effects and political accountability. This theoretical framework is applied to two major instances of EU financial legislation that so far have been largely under-researched from our perspective, namely

MiFID II and the capital markets union, the two most important EU legislative programmes in recent decades.

1.2 THEORETICAL APPROACHES

What are the drivers of centralisation of regulatory competences in EU financial governance, and what are the forces acting against such centralisation? This chapter discusses various approaches to conceptualising this question and presents possible answers, that is, hypotheses. We start with well-established theoretical arguments drawn from political science regarding legislative processes and their outcomes in the context of higher level regulatory mandates (in particular, developed in Europeanisation research), move on to less well-known arguments from political science and law regarding rival regulatory powers, turn to new arguments drawn from the literature on regulation and the sociology of finance regarding public–private interaction in regulation, and end with little-known arguments regarding the impact of technological innovation on regulation.

We define centralisation as an intentional uploading of formal legislative rule-making and rule supervision to the supranational level. Correspondingly, we define decentralisation as an intentional devolving of legislative rule-making and the supervision of financial activity under this legislation to the national level. Furthermore, we define regulatory fragmentation as an unintended parallel rule-making and supervision of rules by various bodies at the same level or at different levels, supranational and national, in which different regulatory or supervisory regimes overlap and share fuzzy borders.

When defining centralisation, moreover, the content of rule-making needs to be taken into account. Centralisation as an intentional uploading of formal rule-making and supervision to the supranational level only implies centralisation in the implementation phase at the national level if the content of the rules is prescriptive in detail. If the rules are vague, and therefore offer many possibilities for their interpretation, we do not expect centralisation to ensue after their implementation.

1.2.1 Research Perspective One: Vertical International Perspective

From the *vertical international perspective*, we ask: how does the impact of international agreements, such as ISDA or the Basel accords, on EU legislation and its implementation in member states affect the regulatory structure at the EU and member-state levels? In particular, since the financial crisis of 2008 there has been much pressure on regional financial market regulation from international agreements and regulatory bodies to harmonise financial regulation in Europe. This pressure has translated into a complex political process

at the EU level, and in turn EU regulation has been implemented differently in member state regulations depending on each state's specific national economic, political, institutional, legal and social conditions. This means that the outcomes in terms of regulatory structure and policy substance are not necessarily uniform and that centralisation of rule-making is not necessarily observed. How do we account for such different outcomes of EU legislation adopted in the context of international agreements?

The answer to this question mainly builds on the literature on Europeanisation in which the factors and processes that determine the outcome of European legislation in member state legislation and its implementation are analysed (Héritier et al. 1994). In general terms, the literature distinguishes three channels through which higher level legislation influences lower level legislative and implementation activities: a rational-actor bargaining process within institutional rules (Héritier and Farrell 2009); socialisation (Schimmelfennig 2000); and diffusion (Börzel and Risse 2012). According to the rationalist/institutionalist approach, actors seek to maximise their preferences over outcomes within the restrictions of existing institutional rules (Héritier 2007). Using a sociological institutionalist or constructivist approach, Börzel and Risse (2012) emphasise the power of ideas and their diffusion as important channels through which European legislation is translated into national legislation. The argument is that some ideas have become so powerful and strong that actors willingly adopt them, that is, their preferences over outcomes converge. In our case, centralisation is the outcome.

Since the short- and medium-term material costs and benefits of financial regulation play a preeminent role in financial regulation, we follow a rationalist institutionalist approach. We assume that a change of preferences under the influence of normative arguments (socialisation) and copying others if pronounced material interests are negatively affected are less plausible. This does not mean that we discard ideational approaches per se. Instead, we wish to investigate how much explanatory traction one approach, the rational institutionalist approach, holds when explaining the outcomes of regulatory structure in an area where short- and medium-term material interests play a paramount role.

We further assume a certain latitude in the content of European legislation and identify actors' preferences, the given institutional rules and economic conditions as factors which predict the likely impact of European legislation on member state legislation. The same explanatory approach is used to further explain the outcome of the implementation of national legislation in actual practice on the ground. The outcome of implementation is accounted for by studying the interaction of a different set of actors, including *de facto* veto players with diverse preferences, in the specific institutional context. According to this explanatory approach, one would expect that if legislative

mandates are incomplete contracts³ the outcomes of European legislation being adopted and implemented in member states will lead to different results, that is, in our case, not to centralisation but to decentralisation or fragmentation.

Using this rational institutionalist political science explanation, we argue that the main *causal factors* determining the outcome (centralisation, decentralisation or fragmentation) are, first, the *nature of the goals and instruments* in the international agreements or standards in question. Precisely formulated objectives linked to monitoring and peer review exert more pressure on European actors when implementing international agreements. By contrast, vaguely formulated goals do not exert much pressure on them.

Second, European actors' *preferences* regarding the goals defined in an international agreement matter. If European actors, such as the Commission, the European supervisory authorities, member states and the ECB, have the same preferences as the actors that formulated the goals in the international agreement, the implementation of the international agreement at the European level is likely to happen. However, if we assume precise goals and that European actors have divergent outcome preferences, implementation will depend on the outcome of a political conflict between the international and European levels, political conflict at the European level, and subsequently political conflicts on transposing European legislation into national legislation at the national level. Different outcomes are likely.

Third, the *institutional conditions* under which political decisions on implementing international agreements at the European level are made matter. Assuming the relevant European actors have divergent preferences, the number of formal veto-players when implementing international agreements makes a difference. If there is discretion in implementation and a high number of veto-players at the European level, the outcome is unlikely to be centralisation.

Fourth, it also matters whether there are important *de facto veto players with divergent preferences* at the European level which can bring political weight to bear if international agreements/standards are to be implemented at the European or national level. Among these are industry associations, investors associations and public opinion. As the 'varieties of capitalism' literature (see, among many others, Hall and Soskice 2001) has shown, the power of *de facto* veto players varies according to institutional political economic arrangements, thereby including or excluding them from decision-making at the national level. We therefore propose a *decision-making rule hypothesis (assuming heterogeneous preferences)*:

H1.1 Under unanimous-decision and de facto consensus rules, legislation will lead to a decentralised regulatory structure in the formal legislative outcome.

The underlying causal mechanism is that actors opposing a centralised regulatory structure under a unanimity rule will veto it. Given that there are no *ex ante* control and sanctioning mechanisms, national veto players do not fear any consequences if they insist on realising their particular preferences instead of transposing the goal of regulatory centralisation. Therefore, they (threaten to) veto any transposition into national law that does not fully accommodate their particular preferences. As preferences diverge, there is no space for agreement. Therefore, the international agreement will either not be transposed into European and national law or a particularistic solution will be found. Given that this happens in other member states as well, the outcome will be a decentralised or fragmented regulatory structure. As Helleiner and Pagliari (2011, pp. 179, 186) underline, since the financial crisis there has been a domestic politicisation of financial regulation with legislators, political leaders and domestic societal groups participating in regulatory debates. Politicisation makes different outcomes more plausible.

By contrast, we propose that:

H1.2 Under majority rule, legislation will lead to a centralised regulatory structure.

The underlying causal mechanism builds on the fact that if a majority of formal decision-making actors support centralisation, they can impose it on the other decision-makers. Knowing the institutional rule, actors can anticipate the outcome of a vote. Those supporting the transposition of an international agreement into EU law – or any other centralising measure at the EU level – will therefore seek to build a winning coalition. If they succeed, EU legislation will be adopted and opposing actors have no choice other than to implement the centralising measures at the national level.

Including *de facto* veto players that are not formal decision-makers, we further propose a *de facto* veto player hypothesis:

H2 In the absence of formal and de facto veto players, the implementation of European legislation at the national level will lead to a de facto centralised structure.

The causal mechanism set into motion reflects the interaction among implementing actors of various natures – that is, bureaucrats, interest associations, target groups – that concur on the centralising goal of the legislation and contribute their respective resources to obtaining the legislative objective. A centralisation of the regulatory structure will follow. In doing this, they will not encounter any resistance. If this is the case in all member states, the result will be a centralised regulatory structure in the EU.

Another relevant argument and finding in Europeanisation research is that politically and economically powerful member states are crucial in determining whether regulatory centralisation goals are adopted or not (Héritier et al. 1994). If these states already have centralised regulatory structures, they tend to support such structures being adopted in European legislation since it saves them the transaction costs involved in regulatory adaptation (see also Mattli 1999).

Hence, we suggest a *power/adjustment cost hypothesis*:

H3 If centralised regulatory structures proposed by the EU are compatible with those in large powerful member states, centralisation is more likely.

The underlying causal mechanism is as follows. Powerful member states with centralised regulatory structures support a Commission proposal for centralisation in order to save the transaction costs of structural adaptation. Indeed, member states actively seek to upload their regulatory regimes and regulatory structures to the European level by proposing them to the Commission and, if taken on board by the Commission, they subsequently support them in the political process (Héritier et al. 2001).⁴ Otherwise, they veto the proposal or they threaten to do so. They will also have the power resources to compensate weaker member states if they adopt their regulation. Less powerful member states, instead, lack the power to do any of this. Even under formal unanimity, they would not have a *de facto* veto.

Next to the institutional rule governing the decision-making process, the specific features of the legal instrument employed for regulation constitute important factors determining the outcome. Legal instruments may contain vague or precise provisions and may or may not be linked to formal sanctions. Assuming diverse preferences of actors over outcomes – that is, centralisation, decentralisation or fragmentation – we submit a *regulatory content hypothesis*:

H4.1 If the legislative provisions are vague (be they directives, regulations, standards or guidelines), they lead to a decentralised or fragmented regulatory structure.

H4.2 If the legislative provisions are precise and linked to sanctions in the case of non-compliance, they lead to a centralised regulatory structure.

The causal mechanism underlying this claim is that a vagueness of the international agreement to be translated into European legislation allows national veto players or reluctant member state governments to frame their claims in the decision-making process as consistent with the international agreement and

the subsequent European legislation. They may thus adopt a deviant regulation or not adopt it all. At the aggregate European level, this results in decentralisation. Given that there are no control and sanctioning mechanisms, national veto players do not fear any consequences if they insist on realising their particular preferences (instead of transposing the centralising goal). As a result, they may successfully prevent a uniform transposition into European and national law. The outcome will be a decentralised or fragmented regulatory structure.⁵

When considering European legislation in the context of international agreements, a further conclusion may be drawn from multi-level governance studies (Putnam 1988; Tsebelis 1990; Hooghe and Marks 2001). The existence of an international agreement may offer the Commission a window of opportunity to take action and define a dominant role for itself in the regulation in question. Newman and Posner (2016) show that reform-minded actors may successfully use international agreements as a normative resource to strengthen their positions in the European decision-making process in order to pursue their regulatory aims. Our argument is that the Commission uses the legislative and administrative requirements posed by the international agreement to strengthen its position in the legislative bargaining process at the European level.⁶ Therefore, we submit an *institutional empowerment hypothesis*:

H5 Under the conditions required by international agreements, in the absence of powerful veto players the Commission will be able to increase its institutional power in financial regulation, which equals a centralisation of regulatory structure.

The mechanism causing this outcome is the following. By virtue of its right of legislative initiative, the Commission uses the international agreement to be adopted as a window of opportunity to propose a policy measure. In the draft it is likely to propose a strong institutional role for itself in implementing the legislation. Moreover, in shaping its position, the Commission can move faster than the Council of Ministers, which has to coordinate the various positions of the member states before proposing a measure. If in the subsequent political decision-making process the Council and the EP are not able to fend off these claims by the Commission, the latter will obtain additional institutional powers in the execution of the policy.⁷

In conclusion, from the vertical research perspective on European legislation in the context of international agreements, we argue that legislation and its implementation are subject to a variety of factors influencing European regulatory structures: national formal and *de facto* veto-players; the specificity or vagueness of the regulatory content and the type of legal instrument used; member state wishes to upload their own regulatory structure to the European level; and attempts by the Commission to increase its institutional

power. Given the actors' diverse preferences and power and differing institutional decision-making rules, specific constellations of these factors as described in the hypotheses may lead to more centralisation, decentralisation or fragmentation.

European legislation is not only influenced by international agreements as in the vertical international perspective but – from a horizontal perspective – is situated in an environment of possible competition among other large powers engaged in regulating finance.

1.2.2 Research Perspective Two: The Horizontal International Perspective

The horizontal international perspective asks whether regulatory competition between states or regional polities affects the structure of European financial regulation, and if so, how. Or more specifically, does competition with the US,⁸ and increasingly the UK, favour a centralisation, decentralisation or fragmentation of the EU's regulatory structure?

We assume that all financial powers seek to transfer their own regulatory standards to 'the rest of the world' because it offers them economic advantages and saves them the costs of regulatory adaptation. In order to develop our argument, we consider the following relevant factors.

First, we focus on the *preferences of the relevant actors* – that is, the US, the UK and the EU – as to regulatory centralisation. We assume that they all prefer centralisation over decentralisation and fragmentation but they strive for centralisation on their own terms. If their regulatory provisions differ, given the wish to centralise (each on its own terms), regulatory competition will follow.

Second, we consider the *size of the home markets* of the relevant actors (Simmons 2001; Drezner 2008). The larger the home market of a public actor, the greater its influence over the rest of the world since it has leverage by being able to grant access to its market. Regulatory power not only derives from the size and attractiveness of the home financial market but also from "being the home country for internationally important investors and institutions" (Helleiner and Pagliari 2011, p. 176). Cohen (2006) calls this 'financial intervention power'. It allows a financial centre to define regulations and impose them on others.

These factors lead to the following *regulatory competition hypothesis*:

H6 Regulatory competition between leading financial powers prompts regulatory centralisation in the other actors' internal regulatory structures.

Applying this to the concrete actors in our analysis, the underlying causal mechanism is that regulatory competition from any of the regional powers

strengthens political forces within a polity striving for a more unified and centralised regulatory approach. This is because the competitive pressure from the other polities seeking to impose their regulatory provisions on the rest of the world prompts internal policy reactions. This in turn incentivises political forces, for instance in the EU, to increasingly support a Commission-coordinated regulatory response to US regulation, leading to more centralisation of EU regulation. A centralised response (as opposed to member-state-specific decentralised responses) will create one large home market, which gives the EU and its member states more leverage in the competition with the US (Kalyanpur and Newman 2019). Thus, in the post-crisis era the EU regulatory authorities started acting unilaterally to reduce the EU's "dependence on and vulnerability to US regulation" (Helleiner and Pagliari 2011, p. 177). Most recently, the Commission and the European Securities and Markets Authority (ESMA) have emphasised that with Brexit ESMA needs supervisory instruments that enable it to react swiftly in view of "the large, liquid and interconnected capital market next door, which is not part of, or subject to, its regulatory requirements" and have called on national regulators to implement European regulation evenly "... to minimise the risks of regulatory arbitrage as a result of relocations from the UK to the EU27" (*Financial Times* 2019a).

A consequence of rivalling regulatory powers is that private actors, that is, financial firms, are tempted to engage in regulatory arbitrage or regulatory venue shopping in order to obtain the most advantageous regulatory regime for themselves. Commercial forces thereby drive the diffusion of the regulation of a regional financial power. Thus, the U.S. Security and Exchange Commission (SEC) is presently under pressure to adapt its regulations on funding investment research to those adopted under the EU's MiFID II. Stakeholders such as the Council of Institutional Investors would like to see the SEC let all managers (not only those investing on behalf of EU investors) implement the MiFID II rules (*Financial Times* 2019b).

A possible reaction of financial powers to contain regulatory arbitrage is that they may engage in a coordination of their regulatory provisions if one actor takes upon itself the costs of leadership to achieve a negotiated coordination. Coordination will be achieved if all parties profit from the coordination. The repercussion on the internal regulatory structure of the actors involved is centralisation, as only a coherent actor can successfully negotiate with other superpowers.

We therefore submit a *regulatory arbitrage hypothesis*:

H7 A high degree of transnational regulatory arbitrage by financial firms will lead to more coordination between two public regulatory actors if one of the

parties takes a leading role in such coordination. This in turn exerts pressure for more regulatory centralisation within each regional polity.

The underlying causal mechanism starts with private actors' tolerance of competing regulatory regimes. If there is such tolerance, competition will increasingly take the form of regulatory arbitrage. Regulatory actors seek to fight regulatory arbitrage and therefore intervene in a more coordinated and thereby centralising way. One of the parties needs to take on a leadership role to bring such coordination about. An actor engages in leading if the costs of leadership are less than its individual gains that can be achieved through coordinated action (Schoeller 2019, pp. 30–32). Negotiating partners follow this leadership if they perceive the gains from coordination to be superior to the status quo of competing regulation. The repercussion on the internal regulatory structure of the actors involved is an internal centralisation of regulatory structure as a precondition for a successful negotiation with the other superpowers.

Thus, at present, in the case of central counterparty (CCP) clearing houses, which were introduced by the G20 to coordinate and manage the risks of over-the-counter derivative dealing, there is a multitude of requirements for clearing houses, which creates compliance conflicts. The US first issued clearing rules and then the EU followed suit and has issued its own rules. In response, the US Commodity and Futures Trading Commission is calling for a coordination of US and EU rules (*Financial Times* 2019c).

In conclusion, from the horizontal international perspective, the relevant factors driving centralisation are regulatory competition between regional financial powers and regulatory arbitrage by firms fuelled by market mechanisms.

The European regulatory structure is not only impacted by international agreements (research perspective one) and competition with other financial superpowers (research perspective two) but also by the century-old interaction and collaboration among private and public actors in regulating finance, to which we turn next.

1.2.3 Research Perspective Three: Transnational Public/Private Regulation

The regulation of finance has had a long tradition of self-regulation by private financial actors alongside public regulation or in co-regulation with public regulators. New markets trading with innovative financial instruments emerge for purposes such as to offer access to capital to smaller companies and investors or to avoid the regulations on existing financial instruments (Goodhart 1986). New market actors may engage in self-regulation because the regulator responsible does not engage in regulation. As sociologists of finance (such as

MacKenzie 2008) show in their research on the development of stock markets, markets and firms initially engage in self-regulation, which is then frequently joined with or entirely replaced by public regulation. MacKenzie (2004) and Fenton-O'Creevy et al. (2007; see also Baker 1984) describe how in the trading pits of Chicago traders originally engaged in face-to-face trading based on mutual trust in a thin market with few players relying on informal rules, which were then gradually formalised. Knorr-Cetina and Bruegger (2002) and MacKenzie (2019) describe how actors thus created rules that defined the conditions for access to the stock market, the roles of diverse actors in the market and the market's operating rules. As markets grew deeper and the number of players and trading options increased, these informal networks broke down. However, even under such conditions actors still seek to create rules of mutual reciprocity or networks, seeking to challenge the anonymity of counter-parties in order to understand who they are trading with (Fenton-O'Creevy et al. 2007; MacKenzie 2004).⁹ Even if markets operate on the basis of advanced technology such as algorithm-based high-frequency trading, virtual social rules of obligations and rights emerge, and actors rely on a social heuristics structure to manage risks in an attempt to obtain extra information about who they are dealing with (Fenton-O'Creevy et al. 2007; Knorr-Cetina and Preda 2011; Riles 2011).¹⁰

Gradually, observing the developments in self-regulation, public regulatory actors take on a more active role in the regulation of these markets if they consider that there are micro-risks for investors and macro-risks to the system's financial stability.¹¹ Ronit and Schneider (2000) distinguish between the private legal authority that governments delegate to private actors to regulate markets and the legal authority that private actors develop on their own. Pistor (2013) goes beyond this distinction and describes the hybrid nature of money. She argues that it does not make sense to differentiate between markets and private actors on the one hand and public regulators on the other. Instead, they need to be considered joint forces. She mentions the example of collateralised debt obligations (CDOs), which were jointly created by Freddie Mac, a public actor, together with the Joint Bank of Boston and Salomon Brothers, a private actor (Pistor 2017). Along similar lines, Dorn emphasises that the capital markets union (CMU) brings a form of powers shared by public and private actors (Dorn 2016). Likewise, Fenton-O'Creevy et al. point out that the hybrid character of finance regulation is reflected in the fact that regulators are *in* the market but also *outside* the market structure.

In view of the extensive existence of private self-regulation in financial markets, for regulators the question arises of how they should deal with social rules emerging in markets, that is, virtual rules of rights and obligations that emerge in market transactions in order to have more information about who you are dealing with (private legal authority, according to Ronit and Schneider

2000). Should they get rid of existing self-regulation or build on it? Should they collaborate or co-regulate with private actors?

The response would seem to depend on the overall theoretical economic orientation of public regulators. The neoclassical school has a preference for a stochastic equilibrium model in which market competition defines the prices of financial instruments and the market by itself produces a new equilibrium in the case of market disturbances. It also considers emerging social self-regulation rules with some reservation because these rules define the conditions for market access and operating in the market.

Regulators in the theoretical school of new economics, by contrast, show a preference for building on existing self-regulation rules. They will only intervene if the social rules lead to excessive rent-seeking and fraudulent behaviour in self-regulated governance structures with fixed market roles.¹² Similarly, if the regulators perceive macro-risks or system stability risks deriving from private self-regulation arrangements, they will want to intervene. The result is hybrid public/private regulation and moderate regulatory decentralisation.

In a two-step argument, this leads to the following *self-regulation hypothesis*:

H8 Self-regulation prompts (centralised) public regulation.

In a first step,

H8.1 New financial instrument markets prompt self-regulation by new market actors,

or alternatively

H8.2 New market actors join existing self-regulating communities of private actors with fixed market roles (which regulate access and market operations).

The underlying causal mechanism is as follows. The dynamics in new markets using new financial instruments are characterised by high uncertainty. In order to reduce the risks linked to this uncertainty regarding transaction partners, private actors develop minimal social rules which actors abide by in their own interest (H8.1). Alternatively, they seek to join pre-existing private self-regulation governance arrangements where fixed rules have been established regarding the conditions for market access and market operations. Financial industry groups engage in such self-regulation through the creation of private standards, individual financial exchanges, clearing houses and firms that set regulatory standards worldwide, which are subsequently endorsed by public authorities (Porter 2005; Helleiner and Pagliari 2011).

In a second step, this regulatory structure may call forth public intervention and regulatory centralisation under the following conditions:

H8.3 If self-regulation with fixed market roles is characterised by excessive rent-seeking, there will be public intervention, that is, structural centralisation.

H8.4 If self-regulation with fixed market roles creates system-stability risks, this will be followed by public intervention leading to a centralised regulatory structure.

The underlying causal mechanism which can be observed reveals self-regulating rules on financial platforms with fixed market roles that lead to rent-seeking by the market position-holders. This is because the established rules of access to the financial platform and the costs of operating in it, as defined by the owners of the platform, are high for those seeking access to it. If public regulators consider them excessive, they will intervene in order to correct market distortions. Furthermore, if self-regulated new markets are considered to create overall system-stability risks, public regulators will intervene and create a process of regulatory centralisation.

An important explanation of why there may be a process of centralisation in financial markets and corresponding regulatory centralisation is also offered by a legal theory of finance which emphasises the close link between financial instruments and law (Pistor 2013). Law gives authority to means of payment and vindicates financial instruments and financial contracts in general. State-backed money, that is, money guaranteed by a central public actor, is the asset of last resort. At the same time, by delegating rule-making to different stakeholders, that is, private actors as in the self-regulation mentioned above, law and politics also facilitate regulatory pluralism. As a result, in a first instance this may lead to a process of regulatory fragmentation of financial markets. Since legal reforms and legal contractual financial instruments create credible commitments and allow for a scaling of financial transactions into the periphery, both domestically and globally, this also means that in the case of a crisis all actors, but particularly those on the periphery, “will face the full force of the law” (Pistor 2013, p. 325). This is because near the apex, that is, the public backstop of the money hierarchy (Mehrling 2017), on account of the power-based politics of financial markets, actors “are most likely to benefit from another lifeline” (Pistor 2013, p. 325), and correspondingly a flexible interpretation of their contracts. “This will lead over time to a greater concentration of finance at the apex where the ultimate backstop resides” (Pistor 2013, p. 325; see also Mehrling 2017). Assuming a flexibility of law (Pistor 2013), or law as incomplete contracts, as in Héritier (1999), and assuming a scarcity of liquidity, this leads to the following *hierarchy of money hypothesis*:

H9 In the case of a crisis/liquidity squeeze, the most powerful actors will successfully negotiate a position close to the top of the hierarchy/apex, which will lead to a centralisation of regulatory structure.

The causal mechanism is as follows. In the case of a liquidity crisis, large private players which have the power to threaten a withdrawal of their resources and/or are relevant to the stability of the system have more clout in negotiating solutions with the sovereign backstop actors. Since contracts are incomplete and negotiable, they may obtain supportive actions by public actors. However, in return for being ‘saved’, they have to accept more central control of their market behaviour, that is, regulatory centralisation.

Financial regulatory structures in Europe are not only affected by the implementation of international agreements, rivalling regulatory financial powers and public–private interaction, but also to an important extent by technical innovations in the development of financial instruments and business models.

1.2.4 Research Perspective Four: Technological Innovation and Regulation

Historically, important technological changes have led to profound changes in financial market transactions and forms of market organisation. The history of new technologies allowing simpler financial services to increase productivity and to gain a competitive edge in the market is well known (see, for instance, Knorr-Cetina and Preda 2011). Such transformations now appear to be accelerating. This arises in particular via the application of technological digital innovation to financial activity (fintech). Equally, however, the regulatory technology has altered (regtech), both in terms of alleviating the asymmetry of information between the regulated and the regulator and of shifting from ‘formal regulation to functional regulation’ (with implications for the preferred structure of regulation; see below).

Sociological theorists such as Knorr-Cetina and Preda (2011) analyse the impact of changing technological instruments on market transactions over the decades: from the telephone to the computer screen to automated algorithms and robot-based trading, which is used in particular in high-frequency trading in foreign exchange markets. These different technological devices have enabled new organisational forms of trading, typically from ‘fixed market role platform models’ to public order books accessible to all on the internet for bids and offers (‘all-to-all’ trading, as in MacKenzie 2018). Such technologically driven changes in market structure, organisation and behaviour have been described as a passage from network coordination with direct interaction and contracting with other individual actors (Knorr-Cetina and Preda 2011) to scopic coordination, under which markets are watched on a worldwide joint

screen and trade takes place reacting to the screen, which in turn changes the market. In high-frequency trading this happens at a speed in which dealers' decisions are based on implicit cognitive processes because *ex ante* explicit considerations would be much too slow and could not follow. Since algorithms have taken on the role of dealers making trading decisions and human beings merely watch and modify these algorithms, a new epistemic class of mathematicians has emerged who understand these algorithms and their design. Trading based on algorithms accelerates trading, as we see in high-frequency trading (Knorr-Cetina and Preda 2011; see also Chapter 2).

These technological advances imply important changes in the functioning of markets and as a result pose new challenges for the regulation of these markets. New technologies enable the creation of a multitude of new financial products, which are being marketed in new ways by fintech firms and digitalised financial service providers. Sheridan (2017, p. 417) describes the main features of fintech business as “a disruptive innovation occurring free from legacy technological systems and with asynchronous compliance”.¹³ An important implication is an increasing disintermediation – or less organisational intermediation – in trading. Thus, the number of proprietary trading firms has increased, replacing trading on a public trading floor with big banks.

What do these technology-driven changes in market dynamics and market organisation imply for regulators? They are faced with a situation in which on the one hand they would like to encourage digitally based financial innovations and the new fintech enterprises that have developed them, but on the other hand they have to ensure that there are no fraudulent practices or rent-seeking (micro-regulation) and that no systemic-stability risks result from these new market actors marketing new financial products (macro-regulation). Since the financial crisis of 2008, regulators have mainly been focusing on the too-big-to-fail risk of large financial institutions and the possible abuses deriving from an implicit government guarantee of them. The regulatory approach resulting from this has been mostly strict requirements for banks, such as minimum capital and liquidity requirements and restrictions on proprietary trading.

In the case of fintechs and technologically enabled finance in economic function areas as diverse as payment systems, lending, capital raising, investment, trading, clearing, settlement and money itself, we are faced with decentral finance and decentral risks of small firms (Minto et al. 2017, p. 434). Nevertheless, due to the global interlinkedness of financial transactions, these decentralised financial activities may pose macro-risks which – through contagion effects – may imply system-stability risks. As Magnusen (2017) argues, some fintechs, being small disaggregated actors, are more vulnerable to economic shocks than large financial institutions, the effects of which may be contagious for other small firms. Fintechs are hard to monitor and their

activities are hard to constrain because there is little systematic information about them and also because fintech markets do not engage in collective action or cooperate.

What may be observed is that established financial firms in the market start interacting with fintechs to their mutual advantage. The established players cooperate with fintechs, profiting from their flexible introduction of new financial technologies. Fintechs profit from the cooperation with established financial actors by getting support in regulatory questions and having access to the established players' customer networks (Nicoletti 2017, pp. 177–178). This creates a complex network of actors, which renders supervision more difficult (Minto et al. 2017, p. 432).

The new complexity of financial markets raises concerns to which regulators have to react. In view of the pace of large financial innovations taking place about every ten years (from the dematerialisation of stocks and bonds to digitised certificates in the 1980s and the introduction of blockchains in 2010 (SIBOS 2016), regulators are faced with considerable challenges in dealing with digitalised financial services and automated robots and their impacts on customers and markets.¹⁴ There are basically four options for regulators in view of these developments. The LSE School of Management and Finance advocates regulation by principle (Black 2005; Black et al. 2007), defining targets but leaving the choice over how to realise these targets up to the regulated. Principle-based regulation is supposed to offer flexibility for firms, facilitate innovation and thereby increase competitiveness. Regulators too enjoy more flexibility under principle-based regulation. The regulator can insist on improved firm conduct to enhance substantive compliance instead of just box-ticking. This may be advantageous for stakeholders too. The outcome is a decentralised or fragmented structure of regulation.

The second option is to build on already existing self-regulating rules established by private actors and control their implementation. In the markets for the digitally-based new financial products of fintechs, we may observe the initial steps of new players entering into contact with established private platforms in order to market their products while in turn accepting certain rules, such as capital requirements and clearing processes. The public regulator, which has to accept this first step of fintechs joining self-regulated platforms, monitors their behaviour for micro-fraudulent behaviour or possible macro-effects of system-stability risks. The outcome is a decentralised structure of regulation.

The third option is that regulators engage in a collaborative approach with the new players, balancing openness to innovation and disruptive technologies with protecting the interests of consumers, investors and privacy protection. The sandbox experiments applied by the Financial Conduct Authority to fintechs are a case in point. Using this regulatory technique, the regulator may grant regulatory exemptions for a certain period to a start-up's new financial

instrument. A question which arises is for how long and, if successful, how to scale up to a higher level (Arner et al. 2016).

The fourth option is regtech, a digitally based in-time observation of financial market transactions monitoring their compliance with existing regulations. Regtech is a category of fintech firms specialised in technologies that facilitate monitoring, reporting and compliance with regulatory requirements (Minto et al. 2017, p. 431). Financial transactions worldwide are tracked in real time (comparable to observing global weather systems). Regtech developed post-crisis because of the high fines that were imposed on financial firms and the costs of regulation and compliance. Therefore, an increase in the type and volume of data that have to be reported (such as most recently under MiFID II) has been an incentive to automate compliance and monitoring processes. For instance, in a ‘smart contract’, blockchain technologies allow “self-executing pieces of software code embedded into a blockchain system” to “automatically pay out an insurance claim” (*Financial Times* 2018c). Using artificial intelligence, the law is an inherent part of the code in the instruments, thereby regulating them. Moreover, the distributed ledger technology underlying blockchains cannot be different in different countries “because the technology is by definition borderless” (*Financial Times* 2018c). The outcome is a centralised structure of regulation.

The technologically driven changes in market actors, structure and organisation and the possible regulatory options lead us to the following hypotheses.

Assuming that the regulators have little information regarding the structures and operations of fintechs (Donald 2018), the degree of uncertainty about the nature of a new financial instrument introduced by fintechs is crucial when explaining regulators’ responses. We therefore distinguish between different types of uncertainty: (a) unclear substance of the instrument and/or the business model introduced; (b) unclear legal nature; (c) unclear effects regarding cross-sectoral risks that call for a public good provision by regulation; and (d) reduced uncertainty linked to compliance due to the use of regtech, a financial instrument developed by fintechs.

Hence, in a first step, with each hypothesis developed, the degree of uncertainty about the nature of the new financial instrument at stake has to be specified.

Unclear substantive nature of new instrument and/or business model

If the substantive nature of a new financial instrument and/or a new business model used by a fintech is unclear to the regulator, either technically or in terms of business activity, regulators may interact with private actors directly in order to collaborate in the development of potential regulatory approaches. This may happen on the basis of a public-led or private-led initiative. It can take the form of innovation hubs created by governments in which “regulated

and unregulated entities (i.e. unauthorised firms) engage with the competent authority to discuss fintech-related issues (share information and views, etc.) and seek clarification on the conformity of business models with the regulatory framework or on regulatory licensing requirements” (ESA/DP/201/02, see ESA 2018). Alternatively, public–private cooperation may take the form of regulatory sandboxing: “Regulatory sandboxes take the idea of innovation hubs a step further by creating an environment where supervision is tailored to innovative firms or services” (European Commission 2018). If a bespoke regulatory solution is found in the course of this cooperation between the regulator and fintech representatives in a member state, there remains a scaling problem. That is, the bespoke solution does not apply widely. Hence, it leads to a fragmentation of regulatory structure within the EU.

From an analytical viewpoint, the advantage offered by sandboxing and innovation hubs to regulators is that they learn more about the technicalities of the new instruments and the business rationale of the new activity.¹⁵ Industry respondents also support the possibility of sandbox regulation, as it allows them to obtain a degree of regulatory support,¹⁶ or may even grant them influence in the actual shaping of a pertinent regulation (EC fintech action plan 2018). Regulatory authorities are keen to stress that regulatory sandboxes do not involve the disapplication of regulatory obligations, but they could involve the exercise of supervisory powers or levers for proportionality that already exist. According to the ESMA surveys (2018/2019) of national competent authorities (NCAs), most national supervisors consider existing EU legislation flexible enough to be applied to the authorisation of new fintech products and services (ESMA 2019, p. 22). We conclude that:

H10 If the substantive nature of a new financial instrument and/or a new business model used by a fintech is unclear, the regulator may take recourse to bespoke regulatory solutions developed in cooperation with fintechs. The result will be a fragmented regulatory structure.

Unclear legal nature of the new financial instrument and/or business model

The unclear legal nature of a newly introduced financial instrument, such as initial coin offerings (ICOs) or cryptocurrencies, consists in uncertainty as to whether they fall within the scope of existing regulatory structures. In our case, this specifically concerns the extent to which such new fintech services are captured by the definitions provided in EU regulation, for example whether they are ‘services for consideration’ or ‘financial instruments’. From a legal point of view, a number of interpretative strategies may be pursued by the regulatory authorities. As a first option, they may pursue a functional approach, whereby in the light of uncertainty stemming from innovation, legal

concepts are interpreted broadly so as to incorporate the innovation in existing legal categories in order to prevent regulatory arbitrage and ensure that the objectives of the specific regulatory instrument are attained. As an alternative option, regulatory authorities may adopt a restricted narrow interpretation of the existing framework with a view to restricting the competence at EU level or developing a bespoke regime for the new entities (Marjosola, Chapter 5 in this volume; Möllers 2010; Gikay 2018; Lehmann 2019). Pursuing either such interpretative strategy with regard to cryptocurrencies and ICOs would lead to two possible structural regulatory outcomes, both subject to verification by EU courts.

In the concrete case of EU regulation, for example, a fintech innovation is legally considered to be a financial instrument. This would mean that the regulation is set under centralised European legislation but responsibility for implementation lies with member states. Since MiFiD II and MiFIR leave some latitude to member states in their interpretation of proportionality and flexibility in the authorisation of products and services, such an interpretation would be likely to lead to a decentralised fracturing of regulation.

H11.1 If the regulator considers a new financial product to be a financial instrument falling under existing regulation, fragmentation will be avoided. The resulting regulatory structure will be shaped according to the existing legislation and thus reproduce the existing structure (centralised vs. decentralised).

H11.2 If a new financial product is not considered a financial instrument falling under existing legislation, locally limited bespoke (self-)regulations will emerge leading to a fragmented regulatory structure.

Cross-sectoral risk protection/public good provision

Regulation often seeks to ensure the provision of a specific public good (Drahos 2004) which under normal market conditions would be under-supplied or not produced at all. In the case of the financial sector, the objectives of regulation relate to ensuring financial stability in markets, restoring incentives where risk-taking attitudes in markets are distorted as a result of perverse incentives or (re)establishing information symmetry so as to protect specific vulnerable actors (e.g. creditors). However, financial activity – and in particular financial activity which involves a high degree of uncertainty such as fintech (Pacces 2010) – may also fall within the scope of cross-sectoral regulations which have been put in place to ensure public goods such as security or individual privacy.

Given the cross-sectoral risk stemming from innovative financial instruments or services that require risk protection as an inclusive public good for all, we assume that providers prefer no regulation over regulation. This might

apply in areas such as cybersecurity, cloud outsourcing and data protection. In such areas, regulators would prefer centralised harmonised regulation in order to provide comprehensive risk protection. Since such risks extend across sectors, they require coordination among many regulatory authorities, which requires horizontal rules at the international level. While such rules exist, for instance, in private data protection and anti-money laundering, they do not exist on a wide basis with respect to cross-sectoral risks stemming from innovative financial instruments. However, if relevant cross-sectoral risk rules *are* already in place, such as in the case of data protection, regulators may engage in rule-stretching. We therefore propose:

H12 If regulators are certain that fintech activities imply cross-sectoral risks and they can build on pre-existing cross-sectoral rules protecting public goods, they will adopt centralizing measures based on these rules.

Regtech

Financial firms may offer regtech as a big data-driven artificial intelligence (AI) service based on machine learning and smart contracts. Regtech is designed partly to help financial firms deal with regulators' data requirements. However, in view of the mass of data and the dynamics of data inflows, regulators also consider using regtech instruments themselves as a possible aid to authorise processes, assess risks and control the regulatory compliance of financial firms in a new way. Instead of conducting investigative compliance control through manual sampling, universal real-time compliance control is designed into smart contracts inherent in the financial instrument (Cook 2018). Regtech lends itself to the application of large standardised regulatory requirements but not to situations with complex financial ecosystems and cooperation between diverse market participants and regulators (Donald 2018).

Assuming that regulators suffer from work overload¹⁷ and that there are pertinent regtech offers from fintechs, and further assuming that the regulatory provisions require detailed harmonised rules, we expect that:

H13.1 The low uncertainty about the application of new financial instruments and their compliance with rules due to the use of regtech offers regulators real-time insight in regulatory compliance and triggers automatic enforcement of the relevant rules. This leads to a centralisation of regulatory structure.

Moreover, the use of regtech instruments requires a large amount of resources to be employed. These comprise not only material capacities but also institutional (competences) and non-material (expertise) resources. If the regulator can afford to use regtech to implement harmonised uniform rules, it leads to a strengthening of regulatory compliance and enhances the central control

Table 1.1 *Research perspectives and hypotheses*

Research Perspective	Hypothesis	Independent Variable (Values)		Conditions	Dependent Variable
1. Vertical (international)	H1 Decision-making rule	Unanimity/ <i>de facto</i> consensus vs. (qualified) majority	Heterogeneous preferences		
	H2 Veto players	Presence/absence of <i>de jure/de facto</i> veto players	Heterogeneous preferences		
	H3 Power/adjustment costs	Compatibility of regulatory structures between powerful MS and COM proposal	Pre-existence of domestic regulatory structures		
	H4 Regulatory content	Vagueness vs. preciseness/bindingness of provisions	Heterogeneous preferences		
	H5 Institutional empowerment	Presence/absence of international agreement	Absence of powerful veto players		
2. Horizontal (international)	H6 Regulatory competition	Presence/absence of regulatory competition			
	H7 Regulatory arbitrage	High/low degree of transnational regulatory arbitrage	One party assuming leadership on coordinational efforts	CENTRALISATION DECENTRALISATION FRAGMENTATION	
3. Transnational (public/private)	H8 Self-regulation	1. Presence/absence of new instruments (H8.1) or market actors (H8.2) 2. Presence/absence of excessive rent-seeking (H8.3) or systemic risk (H8.4)			
	H9 Hierarchy of money	Presence/absence of liquidity squeeze (crisis)	Flexibility/ incompleteness of law		

Research Perspective	Hypothesis	Independent Variable (Values)	Conditions	Dependent Variable
4. Technological innovation	H10 Substantive nature	Clarity/ambiguity of new financial instrument (substantive certainty)		
	H11 Legal nature	Presence/absence of existing legislation (legal certainty)		
	H12 Cross-sectoral risks	Presence/absence of cross-sectoral risks	Pre-existence of cross-sectoral rules protecting public goods	
	H13 Regtech	Presence/absence of regtech (H13.1) Capacity (material, institutional, non-material) to make use of regtech (H13.2)	Work-overload of regulators Regulatory provisions at tl requiring harmonised rules	

capacity of regulators. Once instituted, the technology might actually save the cost of employing human resources.

H13.2 If regulators are endowed with rich material, institutional (competences) and non-material (expertise) resources, they will make use of regtech, which will result in a centralised regulatory structure.

Table 1.1 provides an overview about the research perspectives and hypotheses of this book. In the following empirical chapters, the hypotheses developed in this theory chapter will be subjected to an empirical plausibility probe by collecting data on the large bodies of legislation resulting from the MiFID II and the capital markets union (CMU). The empirical areas of the MiFID, MiFIR II and the capital markets union are used because they have been of eminent practical importance in European financial regulation in recent decades. Each area provides a universe of cases from which the authors of the individual chapters select certain measures as their concrete cases in order to probe the plausibility of the relevant hypotheses developed above. The chapters draw on archival material, press analyses, existing data collections and interviews with financial market actors.

NOTES

1. Since the 1970s, the EC/EU has increasingly strengthened its role by adopting legislation seeking to harmonise member states' regulation of financial markets.
2. We do not share the notion of 'financial market exceptionalism' which argues that financial markets are protected from regulation by the efficient capital market hypothesis. According to this view, regulators trusting in the correct pricing mechanisms of markets capturing all relevant information need not interfere in the regulation of micro aspects of financial markets. Other exceptional features of financial markets are seen in the – compared to other sectors – extremely high information barrier against regulators and the public alike understanding financial market transactions and the enormous amount of resources at the disposal of market players compared to regulators (Donald 2018).
3. That is, contracts not defined in all their details but leaving room for interpretation in the course of their application.
4. It is a common practice of large member states to offer to 'second' expert personnel to the relevant Commission DG to 'write' a legislative draft (Héritier et al. 2001).
5. In one strand of discussion on the rigidity of international agreements, there is a claim that divergent national or regional standards may be desirable if their mutual equivalence is recognised (Drezner 2008; Rodrik 2009). In the case of negative spillovers of diverse standards, this impact is contained by "international financial charters with limited aims" (Rodrik 2009).
6. The underlying causal mechanism is that pre-existing non-binding international agreements may serve as focal points to save the transaction costs of information and negotiation, and if they are used politically by reform-minded actors at lower

levels this leads to a centralisation of the regulatory structure at these levels. Moreover, as Porter argues, in informal trans-governmental networks of technocratic officials, the interests of regulators are influenced by their frequent social interactions and may eventually converge if they remain technocratic in nature and operate outside the pressure of domestic politics (Porter 2005).

7. An example of such an attempt by the Commission is the single supervision mechanism under the European Banking Union. The Commission first proposed that the supervision competences should be allocated to itself. In the face of stiff political opposition from both the EP and the member states, the task was given to the ECB.
8. Of course, the international regulatory polity now goes clearly beyond the regulatory powers of Europe and the United States, but includes China, India and other centres of wealth. However, because the US and the EU are the pace-setters in financial regulation and also for practical research purposes, this project focuses on the two 'traditional' financial powers and to some extent on the UK.
9. For example, Fenton-O'Creevy et al. (2007) describe how in foreign currency exchange markets a rule of behaviour emerged according to which actors cannot always only ask for the price of a quote but never buy, because the transactions would then only flow in one direction. Hence, the social rule emerged that you have to buy at some point.
10. Another example mentioned by Fenton-O'Creevy et al. is the self-regulation which emerged in the Hong Kong Stock Exchange. In view of listing requirements, public Chinese companies seeking access to the Hong Kong Stock Exchange address 'reputational intermediaries' to go to market, such as Goldman Sachs or McKinsey. These firms 'lend their reputation' to new companies when they access the Hong Kong stock market. They help them when submitting an initial public offering, offering advice as to the appropriate governance structures in order to reassure potential investors. For 'lending their reputation' to incoming quotable companies, the established financial firms charge a fee. Some players in new markets using high frequency trading (HFT) also apply what is called material self-regulation (MacKenzie 2018). Some firms have introduced a device to slow down trading (a 'speed bump') to reduce the advantage of HFT traders.
11. We can presently observe such developments in the activities of some fintechs, such as initial coin offerings and bitcoin networks.
12. Fixed market roles in private self-regulatory governance define rules of access and the costs of participating in the operation of trading platforms.
13. A disruptive innovation implies an actor entering with a new technology competing successfully with established market actors (such as, potentially, distributed ledger technology) (Sheridan 2017, p. 418). Legacy-free technology presents an advantage for fintechs when competing with investment banks with established computer systems. Asynchronous compliance means that the operations of fintech companies are faster than financial service regulation (Sheridan 2017, p. 419).
14. Following their distinction of the economic functions of fintechs, that is, lending and capital raising, investment and trade, and clearing and settlement, Minto, Voelkerling and Wulff (2017, p. 436) require distinctive regulatory actions.
15. During the public consultation on fintechs conducted by the Commission, some national authorities considered that regulatory sandboxing is not part of their supervision task, while others welcomed it.

16. Support is particularly needed when it comes to regulatory provisions regarding market infrastructure, that is, central clearing counterparties and central security depositories (ESMA 2019, p. 29).
17. The Financial Conduct Authority (FCA), for instance, is responsible for the supervision and regulation of 56,000 financial firms (N. Cook, FCA 2017. Webinar Regulating RegTech, 17 October, “Powering Innovation in Financial Services”).

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