

TERESA RODRÍGUEZ DE LAS HERAS BALLELL

**CHALLENGES OF FINTECH
TO FINANCIAL REGULATORY
STRATEGIES**

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FOREWORD

I am delighted to have been asked to write a preface for this interesting book. How our financial markets are regulated is a critically important issue, in relation to which decisions are made particularly difficult by the ever-changing nature of the markets, and of the way in which financial transactions are effected. The growth of the Fintech phenomenon is one of the most important developments of recent years, and has attracted an enormous amount of national and international regulatory interest. This book considers the challenges for the regulation of Fintech, and provides a framework for regulatory decisions to be made in the future.

The challenges for the regulators are many. For example, Fintech is not a monolithic phenomenon. In fact, the label covers an extremely wide variety of developments, and, when used colloquially or loosely, can be an extremely dangerous tool in formulating regulatory policy. Developing a rigorous but workable taxonomy is an essential precondition to devising effective regulation, and this book is a significant contribution to that process. Moreover, Fintech is an ever-changing phenomenon: new technologies and new uses for existing technology are being developed at an alarming speed.

Developing a taxonomy, in any sphere, is not a mechanical process, however. It involves value judgments as to why the things being categorised are similar, and why they

are different, and these must be based on a good appreciation of the reason for categorisation as well as a deep understanding of the things themselves. In the context of Fintech, this activity requires understanding of both the technology itself (including its use cases), its impact on the financial market, and the possible legal responses to that impact. Such an understanding is demonstrated by Professor Rodríguez de las Heras Ballell in this volume. Her initial analysis of the three layers of the impact of financial innovation (transformation of architecture, changes in the nature and attributes of financial products and services, a transformation in the roles of market players) enables her to provide an overview of the transformation of financial transactions by technology that cuts across more formal and traditional categories (e.g. debt and equity, securities and other financial products, commercial and consumer, and so on). This is a very valuable contribution to the debate.

Of course, the regulation of Fintech does not just involve the categorisation of entirely new fields of financial activity. Many of the activities and transactions undertaken by technological means are, or appear to be, similar to those undertaken by different means in the past. An example given by Professor Rodríguez de las Heras Ballell is that of financial advice: this has traditionally been given by human beings, but can now be given by robo-advisers. Regulators need to determine the extent to which existing regulatory tools can apply, or can be adapted to apply. As is pointed out in this book, the principle of technological neutrality, which has served well as a guiding principle in the past, cannot, by itself, govern the regulation of the current innovations, such as the use of Distributed Ledger Technology and Artificial Intelligence. It needs to be supplemented by other general principles, which are developed by Professor Rodríguez de las Heras Ballell in the last chapter of the book.

Regulators, by the nature of their work, sometimes find it hard to see the wood for the trees. This is a book which looks at Fintech innovation from a bird's eye view, while

also including analysis of more concrete examples to support the analysis contained in it. It is, at one level, a highly theoretical book. However, by providing a framework and a set of principles derived from its analysis, it should prove extremely valuable to policy makers and regulators, as well as to theorists. While focusing on immediate problems, because of its high level analysis it is also likely to be applicable to the issues facing regulators well into the future. It should be read very widely.

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CHAPTER 1

UNDERSTANDING THE CONTEXT AND SETTING AN ANALYTICAL FRAMEWORK FOR FINANCIAL REGULATION

The increasing penetration of digital technologies in financial markets is evidenced by promising adoption rates¹ among users, expanding presence of fintech firms² and growing use of fintech solutions³ by incum-

¹ EY Fintech Adoption Index 2017, *The rapid emergence of Fintech*, shows a global fintech adoption of 33% compared to the 16% rate in 2015. The adoption increases up to 46% across emerging markets (Brazil, China, India, Mexico and South Africa), whereas in European countries the adoption rates are disparate. The highest percentage corresponds to Spain with 37% followed by Germany with 35%. Other European countries are below the threshold of 30%. The report pivots on a definition of Fintech that includes not only early-stage start-ups and new entrants, but also scale-ups, maturing firms and even non-financial services firms.

² As an illustration of the size of the fintech market in number of fintech-labelled technologies, according to *Crunchbase* database provides 4.359 companies in 2018 classified as fintech. In the report *Competition issues in the Area of Financial Technology (Fintech)* provided by the Policy Department A at the request of the European Parliament's Committee on Economic and Monetary Affairs, PE 619.027 - July 2018, the authors refine the overall number of fintech-labelled companies adjusting the figure to 3.852. Upon the adjustment, the report identifies that the European Union contributes to the global fintech sector with 1.020 fintech companies (p. 32).

³ Fintech is not only describing an ecosystem of innovative startups invading the financial markets with groundbreaking technological solu-

bents.⁴ The increasingly popular term of fintech captures this accelerated transformation of contemporary financial markets driven and enabled by technology and encapsulates its multifarious potential impact on services, market structure, and business models.⁵ Thus, fintech would be used as an umbrella term to describe “technology-enabled innovation in financial services that could result in new business models, applications, processes or products, with an associated material effect on the provision of financial services”.⁶ A burgeoning fintech market⁷ fuelled by an ex-

tions to revolutionize the delivery of financial services. It also comprises incumbent firms that adopt advanced technological strategies to effectively compete and innovate. Bernardo NICOLETTI, *The Future of Fintech: Integrating Finance and Technology in Financial Services*, Palgrave Studies in Financial Services Technology, Switzerland, 2017, p. 13.

⁴ In the Institute of International Finance’s survey —*Machine learning in credit risk*, May 2018— traditional commercial banks indicated increasing adoption of machine learning techniques to increase efficiency. That strategy would provide signs that incumbents are reacting to fintech challenges by the implementation of technology-driven solutions. PwC’s, *2018 Digital Banking Consumer Survey: Mobile users set the agenda* does also stress the need for traditional banks to reconsider how they sell and provide their services and how they interact with their customers. The incorporation of digital technologies —namely, as highlighted by the report, mobile-based services and products— is crucial.

⁵ CAPGEMINI, *World Fintech Report 2018* spots and describes the potential impact of emerging technologies in the provision of customer-oriented financial services —artificial intelligence, data analytics, robotics, distributed ledger technologies, biometrics, platforms, internet of things and sensors, augmented reality, chabots, etc.— from p. 20 onwards.

⁶ FSB, “Financial Stability Implications from Fintech”, p. 7, June 2017, available at <https://www.fsb.org/wp-content/uploads/R270617.pdf>.

⁷ The perimeters of the fintech sector are blurred and imprecise. Therefore, sound data on the size and the growth of the market are not easy to collect. Furthermore, the evolving nature of fintech as an emerging sector introduces complexity in the measures and the estimation of value. Statistics differ but reports and data coincide in showing growing trends for the sector. Data on fintech investment signals the growth potential of the sector and the expected financial return. As per KPMG *The Pulse of Fintech 2018*, 13 February 2019, global fintech investment more than doubled, whereas in Europe investment hit USD34.2 billion with 536 deals. KPMG, *Fintech predictions 2019* confirms “(t)he global Fintech ecosystem continued to mature at an accelerated pace over the course of 2018” — available at <https://home.kpmg/xx/en/home/insights/2019/02/Fintech-predictions-2019.html> (last visit 3/8/2019). Statista 2019 presents

ponential proliferation of fintech-labelled business models and the irruption of BigTech companies providing TechFin solutions constitute a meaningful indicator of that profound transformation of the financial sector at the pace of technological innovation.⁸ Whereas proper fintech companies irrupt in the financial market to provide financial services with the assistance of digital technologies with the aim to enhance effectiveness, reduce costs, improve customer experience or fill a gap in the market,⁹ BigTech firms are technology companies¹⁰ that incorporate in their gamut of non-financial activities the delivery of financial services, leveraging on their competitive advantages gained in other sectors —network effects, large customer base, economies of scale and economies of scope,¹¹ global

the value of fintech investments globally from 2008 to 2014 and a forecast until 2020. In 2014, the investment amounted up to 10 billion USD, whereas the estimation for 2020 increases up to 46 billion USD. S&P Global Market Intelligence, *2018 US Fintech Market Report*, does also show growing trends in variables related to the evolution of the fintech sector (including insurtech). Equally, IOSCO in the *Research Report on Financial Technologies*, February 2017, does also highlight the dramatic growth of investment in fintech companies from 2000 to November 2016. The report quotes in over 100 billion USD the cumulative investment in more than 8,800 Fintech companies (p. 5, Figure 2). A similar growing trend in investment amount and deals is evidenced in insurtech companies, as a subsector in the fintech realm. As per the OECD report, *Technology and innovation in the insurance sector*, 2017, p. 13, Figure 1, such an increasing global trend does also reveal the same point of inflexion of the ‘hype cycle’ in 2016 in term of investment amount, despite the non-interrupted increasing trend of the number of deals.

⁸ WORLD ECONOMIC FORUM, *Beyond Fintech: A Pragmatic Assessment Of Disruptive Potential In Financial Services* (Aug. 22, 2017) available at http://www3.weforum.org/docs/Beyond_Fintech_-_A_Pragmatic_Assessment_of_Disruptive_Potential_in_Financial_Services.pdf (last visited 3/8/2019).

⁹ Under different fintech business models, in LEE and Yong Jae SHIN, “Fintech, Ecosystem, Business models, investment decisions, and challenges”, *Business Horizons* 61, num. 1, January 2018, pp. 35-46.

¹⁰ Google, Amazon, Facebook and Apple (GAFA) and Baidu, Alibaba and Tencent (BAT) are the most illustrative examples of BigTech firms providing TechFin solutions. Jim MAROUS, “The Future of Banking: Fintech or Techfin?”, *Forbes*, August 27, 2018.

¹¹ The seminal work of John C. Panzar and Robert D. Willig on economies of scope —*The American Economic Review*, vol. 71, num. 2, Papers and Proceedings of the Ninety-Third Annual Meeting of the Ameri-

reach, data analytics, personalizing opportunities, technological advances.¹²

The transformative power of digital technology has been clearly perceived and increasingly internalized by market players with multiple innovation strategies¹³ for the provision of financial services, and a creative development of disruptive¹⁴ business models.¹⁵ As further elabo-

can Economic Association, May 1981, pp. 268-272— offers revealing considerations for understanding the evolution of the banking industry towards multiproduct strategies and, more importantly, the irruption of big technological companies in the financial markets. Munehisa KASUYA, “Economies of Scope: Theory and Application to Banking”, *Bank of Japan Monetary and Economic Studies*, October 1986, pp. 59- 104.

¹² These are the main drivers for BigTech companies to invade the financial realm with TechFin solutions. Agustín CARSTENS, “Big tech in finance and new challenges for public policy”, *Bank for International Settlements, FT Banking Summit*, London, 4 December 2018, at p. 3.

¹³ A survey of fintech innovations in Oscar FLYNT, *Fintech: Understanding Financial Technology and Its Radical Disruption of Modern Finance*, 2016.

¹⁴ Joseph BOWER and Clayton CHRISTENSEN, “Disruptive Technologies: Catching the Wave”, *Harvard Business Review*, 1995, pp. 43-53 explains the main features of disruption: “(t)he technological changes that damage established companies are usually not radically new or difficult from a technological point of view. They do, however, have two important characteristics: First, they typically present a different package of performance attributes—ones that, at least at the outset, are not valued by existing customers. Second, the performance attributes that existing customers do value improve at such a rapid rate that the new technology can later invade those established markets. Only at this point will mainstream customers want the technology. Unfortunately for the established suppliers, by then it is often too late: the pioneers of the new technology dominate the market.”

¹⁵ As per PWC *Global Fintech Report 2017*, even if 80% of incumbents perceive business at risk and are increasingly concerned about the losing of benefits to innovators—in Europe that perception has increased from 83% in 2016 to 89% in 2017 of incumbents—, financial institutions are embracing the disruptive nature of Fintech. Yet, 70% of financial institutions are proactively reacting to increase innovation and 82% expect and are working on Fintech partnerships in the next 3-5 years. Interestingly, report shows that prospects on the reinforcement of internal efforts to innovate in the next 5 years as a strategy to embrace fintech disruption are the lowest in Europe (75%) compared to the rest of the world and slightly below the global average (77%).

rated below, emerging technologies hold clear potential for transforming the financial sector by streamlining processes, enhancing risk management, reshaping business models, deploying personalized customer-oriented strategies, developing new products and services, automatizing tasks and decision-making, filling gaps in traditional banking, reducing transactions costs and creating new business opportunities. Nevertheless, the real impact of digital technology has not yet been entirely comprehended; hence, the regulatory and supervisory responses cannot be properly, and effectively formulated.¹⁶ On the one hand, despite the promise of fintech revolution, it can be sustained that the actual application of digital solutions in the financial market is still gradual, premature, and irregular for the purposes of formulating a definitive regulatory response. As a matter of fact, after an initial stage of enthusiastic expectations, the penetration of fintech solutions may start showing a first decline¹⁷ after reaching a peak¹⁸ of the “hype cycle”¹⁹ in 2016-2017. Such a deceleration in the growth pace may have infused doses of prudence in the estimation of future prospects and in the regulatory in-

¹⁶ European Commission, Staff Working Document, “Better Regulation Guidelines” and “Better Regulation Toolbox”, SWD (2015) final, May 19, 2015, available at http://ec.europa.eu/smart-regulation/guidelines/docs/br_toolbox_en.pdf (last visit 3/8/2019); OECD, *Recommendation of the OECD Council on Principles for Internet Policy Making* (December 2011), available at <https://www.oecd.org/internet/ieconomy/49258588.pdf> (last visit 3/8/2019).

¹⁷ Deceleration is perceived in the number of new fintech companies created and the pace of formation, but the investment in fintech projects remains robust. This observation, together with trends suggesting increasing levels of private equity and debt financing in the fintech sector, is an important indicator of a maturing market. Hence, data could be signalling that fintech sector is maturing and consolidating more than fading. Repercussions on financial regulation will be interesting. Deloitte, “Fintech by the Numbers: Incumbents, Startups, Investors Adapt to Maturing Ecosystem” (2017), at 3 and 7, available at: <https://www2.deloitte.com/content/dam/Deloitte/tr/Documents/financial-services/dcf-fintech-by-the-numbers.pdf> (last visit 3/8/2019).

¹⁸ KPMG *The Pulse of Fintech 2018*, 13 February 2019, p. 50.

¹⁹ Gartner Hype Cycle, <https://www.gartner.com/en/research/methodologies/gartner-hype-cycle> (last visit 3/8/2019).

tervention. Therefore, it can be fairly alleged that regulators and supervisors need time to observe the progressive penetration in the market, understand the fintech sector at a distance and assess the very impact on the competition upon the consolidation of the sector: it is our understanding that the difficulties to apprehend the impact of digital innovation on financial markets are mainly provoked by the lack of perception of its multi-layered nature. Although financial regulation is accustomed to grapple with a dynamic, highly changing,²⁰ and demanding market,²¹ and the technological progress²² has been an important force in the transformation of finance,²³ the vertiginous pace of technological innovation and the unpredictable effects of its application on a large scale represent unprecedented challenges for financial regulators and supervisors.²⁴ In addition to the substantial challenges arising from the disruptive potential of digital innovation in activities, market structure, intermediaries, and transactions, the time component acts as a multiplying factor of the disruption effect. The accelerated pace of technological change exerts additional pressure, not only on rules and legal solutions,

²⁰ Financial markets have incorporated digital channels and computing applications for more than 20 years - IFC, *Digital Financial Services: Challenges and Opportunities for Emerging Market Banks*, note 42, August 2017, at p. 1. Regulations have gradually accommodated to those transformations.

²¹ Jean DERMINE, "Digital banking and market disruption: a sense of déjà vu?", Bank of France, *Financial Stability Review*, n. 20, April, 2016, pp. 1-8.

²² James H. MITTLEMAN, *The Globalization Syndrome: Transformation and Resistance*, Princeton: Princeton University Press, 2000; Todd SANDLER, *Global Challenges: an approach to environmental, political, and economic problems*, Cambridge: University Press, 1997.

²³ International Monetary Fund, *Fintech and Financial Services: Initial Considerations*, IMF, Staff Discussion Note, June 2017, SDN/17/05, p. 8.

²⁴ WORLD ECONOMIC FORUM, *The Future of Financial Services. How disruptive innovations are reshaping the way financial services are structured, provisioned and consumed*, An Industry Project of the Financial Services Community prepared in collaboration with Deloitte, Final Report, June 2015, available at http://www3.weforum.org/docs/WEF_The_future_of_financial_services.pdf (last visit 3/8/2019).

but also on policymaking processes, regulatory strategies, and supervision practices. In effect, digital financial innovation does equally touch substance and form in the regulation and supervision realm —what to regulate and supervise, and how to regulate and supervise.²⁵

Whether the digital transformation of financial markets will be simply evolutionary or totally revolutionary in the medium/long term requires a close follow-up observation of the technological progress and its applications. But it seems highly irrefutable that the mere process of understanding the challenges, identifying the risks, and considering policy alternatives is already demanding innovative forward-looking approaches based on collaboration between supervisors and regulators and market players and poised for adaptive, changing, and flexible solutions —regulatory sandbox, supervisory sandbox, experiment-based initiatives, hubs, portals.²⁶

In our model, contemporary digital financial innovation can be silhouetted with three distinctive features: multidimensional impact, disruptive character, and accelerated

²⁵ An unsteady balance has to be achieved by financial regulators. On the other hand, premature regulatory intervention in an emerging fintech sector can suffocate innovation and distort competition. On the other hand, delays, regulatory gaps, or loopholes leave room for abusive or fraudulent activities, unfair competition, and loss of confidence. Balanced, proportioned, agile, and timely regulatory action is critical. DELOITTE, *Fintech. Regulatory Challenges and Financial Crime Exposure*, at p. 4, https://www2.deloitte.com/content/dam/Deloitte/de/Documents/finance/Deloitte_FinTech.pdf (last visit 3/8/2019).

²⁶ As a mere sample of strategies, methods and initiatives exemplary of the adaptive response of regulators and supervisors to the rapidness and dynamism of fintech market: Fintech Regulatory Sandbox of the Monetary Authority of Singapore (<https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/fintech-supervisory-sandbox.shtml>); Fintech Supervisory Sandbox of the Hong Kong Monetary Authority (<https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/Fintech-supervisory-sandbox.shtml>); Fintech Proof-of-Concept Hub announced by the Japan Financial Services Agency in 2017; Fintech-Proofs-of-Concept by the Bank of England (<https://www.bankofengland.co.uk/research/Fintech/proof-of-concept>); Fintech Portal at the Spanish Comisión Nacional del Mercado de Valores (<https://www.cnmv.es/portal/Fintech/Innovacion.aspx>).

pace. Hence, it is our thesis that, despite the fact that the assertion of a total and absolute novelty of technologies applied to fintech market and their outcomes cannot be upheld, the convergence of those three factors determines that current digital technology represents a point of inflexion in the adaptation process of financial regulation and supervision. As a matter of fact, that point of inflexion symbolizes a “point of disruption” that requires a more thorough and courageous reconsideration of regulatory strategies, supervisory methods and practices, concepts, principles and rules. Nevertheless, this process of catharsis and diagnosis should not necessarily lead to a total transformation of the components of financial regulation and supervision, even more it could conclude in a perfect adaptation to the challenges of digital innovation, but it is imperative. Otherwise, a conformist and excessively continuist attitude in the facing of the digital challenges for financial regulation could result in inadequate solutions, unresolved problems and unmanaged new risks, or unfocused approaches. The transformative potential of the three distinctive features of the modern era of digital financial innovation, as further explained below, should not be ignored in the analysis of the current regulatory and supervisory system.

First, the impact of technology on financial markets and services is multidimensional. Digital technology has the potential to transform market structures and business models, products and services, commercial strategies, relationships, regulation and supervision practices and methods, and market players. All dimensions of the financial sector are exposed to the transformative impact of technology. Such an extensive repercussion disconcerts regulators, and makes any attempt to produce an all-embracing regulatory strategy infeasible, ineffective, and significantly unfocused.

Second, digital technological innovation is potentially disruptive.²⁷ Unlike previous incremental transformation

²⁷ The disruptive potential of emerging technologies arises from the concurrence of some disruptive features, as explained by the Commis-