

AN EMPIRICAL APPROACH TO THE RULE OF LAW: THE CASE OF
REGULATORY SANDBOXES

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Abstract

Different regulatory techniques have been employed, at different governance levels, when science and technology clash with the law. Likewise, Regulatory Sandboxes are tools provided by the legislator to deal with technology-enabled financial services. As far as this latter aspect is concerned, our main focus shall be on the deployment of blockchain and DLT technologies in FinTech owing to their potential to multiply the hurdles of the legal challenges already raised by the Internet as well as by the financial dematerialisation and globalisation. With regard to these elusive phenomena, Regulatory Sandboxes aim at remedying the shortcomings, abuses or misuses of existing legal rules without, at the same time, creating an obstacle or an excessive burden to innovation. They may in essence be conceived as a nuanced consequence of both, as the European-derived “better regulation” model as well as the underlying proportionality and precautionary principles. The outcome of this process represents a sort of “learning by doing”, to be employed with the peculiarity of a rapidly changing and technology-driven financial activity towards a double-layered purpose of legal relevance: on the one hand, the return under the judicial auspices of the law of otherwise unregulated cases; on the other hand, the mutual harmonisation between the law and the case under the competent Regulatory Authority’s supervision. By holding out the promise of a tailored and more flexible application of the current legal rules, an activity, which was previously carried out under the dominant framework of lex cryptographica and informatica, is lured within legally regulated borders. This represents a procedural process for recovering the original meaning of the Rule of Law, i.e. its effectiveness.

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1. Premise

The boundaries of the Rule of Law become blurred in the passage between different historical periods and different doctrinal theories¹. Consequently, dealing with this concept implies a prior understanding about «which» Rule of Law we are referring to². In keeping with the limited scope of this work, beyond any substantive question of «content», the focus is rather on «how» the law regulates, in other words the way of making the law effective vis à vis new technological systems³.

Indeed, when the law moves towards domains which entail technical knowledge and understanding, the balance to be struck becomes more complex in respect of that usually managed by legal reasoning⁴. It implies something more than the underlying conflicting interests. More specifically, it involves the preliminary understanding of technically complicated issues⁵. Consequently, it is precisely in this regard – as the legal doctrine has stressed – that different regulatory tools and different legal techniques as well as different level of regulation come into play⁶. Their purpose may be summarised in the following and mutually intertwined objectives: flexibility, quality, legitimacy and effectiveness.

¹ As for the genealogical and evolutionary reconstruction of the concept across different European cultures, see L. HEUSCHLING, *État de droit, Rechtsstaat, Rule of Law*, Dalloz, Paris, 2002. For an overview of the concept of Rule of law within the EU, see K. LENAERTS, *New Horizons for the Rule of Law within the EU*, in *German Law Journal*, No. 21/2020, pp. 29 ff.

² E. SANTORO, *Diritto e diritti: lo stato di diritto nell'era della globalizzazione – Studi genealogici: Albert Venn Dicey e il Rule of law*, Giappichelli, Torino, 2008, pp. 140 ff.

³ As for re-shaping of the concept of Rule of Law which includes normative and non-normative regulatory solutions (i.e. technological management) and its consequent extension to issues of substantial nature according to a three-layered scheme of regulatory responsibility, see R. BROWNSWORD, *Law, Technology and Society: in a State of Delicate Tension*, in *Politeia*, 2020, pp. 39 ff.

⁴ According to A. COCKFIELD, J. PRIDMORE, *A Synthetic Theory of Law and Technology Furthermore*, in *Minnesota Journal of Law Science & Technology*, No. 2/2007, p. 476, “in times of technological change, (when interests traditionally protected by law are threatened), legal analysis should become more contextual and forward-looking and less deferential to traditional doctrine”. For comprehensive overview of the challenges posed by technology, the consequent institutional reaction in terms of ways of regulation and governance strategies, see R. BROWNSWORD, E. SCOTFORD, K. YEUNG (Edited by), *The Oxford Handbook of Law, Regulation and Technology*, Oxford University Press, Oxford, 2017, in particular pp. 225 ff.

⁵ As for the difficulty of striking a balance in reference to the complex interaction among competing interests and the need to preserve the full potential of innovation of Internet, see, G.N. MANDEL, *Legal evolution in Response to Technological change*, in R. BROWNSWORD, E. SCOTFORD, K. YEUNG (Edited by), *The Oxford Handbook of Law, Regulation and Technology*, cit., pp. 225 ff.; G. DE MINICO, *About the regulation of internet: constitutional issues, models and challenges*, in *Osservatorio sulle fonti*, n. 3/2017, p. 28.

⁶ L. BENNETT MOSES, *Regulating in the face of sociotechnical change*, in R. BROWNSWORD, E. SCOTFORD, K. YEUNG (Edited by), *The Oxford Handbook of Law, Regulation and Technology*, cit., pp. 573 ff.; B.J. KOOPS, *A taxonomy for descriptive research in law and technology*, in E. PALMERINI, E. STRADELLA (edited by), *Law and Technology*, Pisa University Press, Pisa, 2013, pp. 37 ff.

At this point in time, a question is raised: «Is Law itself a technology?»⁷. If this is so, the contemporary concept of Rule of Law cannot fail to be extended to include the modalities (i.e. the techniques) that the legislator should adopt in order to lead back to otherwise elusive phenomena of technological origin. Accordingly, the focus shifts to “how” the law works in its attempt to prevent its failure, abuse or misuse, without becoming an obstacle to innovation, competitiveness and efficiency.

The relevant and consequent regulatory techniques, examined in depth by legal scholarship, vary according to the economic and technological sector involved and the level of government implied, but they do share some aspects. Consequently “if we want to try to define some features of this process, we could say that we are facing a juridification with a low formal intensity and a high effectiveness impact”⁸.

Bearing this premise in mind, our aim is neither an in-depth review of the whole set of regulatory models developed over the years when legislators dealt with the challenges resulting from globalization and technological evolution, nor the analysis of the whole set of challenges posed by the latter to the effectiveness of the Rule of Law.

Set against this backdrop, the purpose is rather to focus on one specific regulatory technique which has been recently developed in reference to FinTech by some legislators and underpinned at the European level: the Regulatory Sandbox. Consequently, our aim is essentially to test this technique against the above-mentioned procedural concept of the Rule of Law (i.e. “how” the law governs).

Moreover, with regard to the subject matter involved in the Regulatory Sandbox and the whole set of the technology-enabled financial services, our intention is to highlight the deployment of a specific technological system (blockchain and DLT) because of its ability to multiply the hurdles of the challenges already posed by the Internet, dematerialisation and globalisation in finance⁹. Indeed, its operative way of action is something different from the Internet’s usual way of operating, making even more difficult for the law to cast a net over its intended recipients (in a few words to be effective).

⁷ Reference is to A. SANTOSUOSSO, *A general theory of law and technology or a general reconsideration of law?*, in E. PALMERINI, E. STRADELLA (edited by), *Law and Technology*, cit., p. 152. The reverse side of the question focuses on the technological management that displaces rules, according to the perspective evidenced by R. BROWNSWORD, *Law, Technology and Society: in a State of Delicate Tension*, in *Politeia*, 2020, p. 27

⁸ S. RODOTA’, *Technology and regulation: a two-way discourse*, in E. PALMERINI, E. STRADELLA (edited by), *Law and Technology*, cit., p. 30.

⁹ For an overview of the legal challenges stemming from blockchain and DLTs, see the Report prepared for the European Commission - DG Communications Networks, Content & Technology, *Study on Blockchains – Legal, Governance and interoperability aspects*, 2020.0931, p. 46 ff.

To sum up, a Regulatory Sandbox in FinTech draws our attention in two directions. On the one hand, like the aforementioned regulatory techniques, its purpose is to tackle the technological issues with composite phenomena, whilst leaving some latitude to the recipients; on the other hand, it takes these regulatory techniques one step further by introducing an experimental period under the supervision of a public authority in concrete cooperation with the relevant operators. Indeed, it follows an empirical model, which is similar to that usually conducted by clinical or social trials, except for some additional nuances. Regarding this latter aspect, it seeks to acquire an in-depth knowledge and understanding of the use of a given technological system within a certain sector, the adequacy of the existing legal rules and – in turn – it provides an input (should this prove necessary) for possible regulatory changes. In essence, this procedural model is well-suited for getting to the core of the original meaning of the Rule of Law, that is to say its effectiveness.

Finally, we do not mean to cast a shadow over the underlying substantial and constitutional concerns about the democratic legitimacy of the process, but rather to take stock of our procedural perspective to allow further deepening of the question according to different legal approaches.

2. A few words about blockchain and distributed ledger technologies in the financial sector

Before dealing with Regulatory Sandboxes, a step back is necessary. In this last respect, the focus is on both, the subject matter currently involved in Regulatory Sandboxes (FinTech) as well as one of the main and most recent technological tools this subject matter relies on (blockchain and distributed ledger technologies)¹⁰.

Indeed, technology-driven financial services are rapidly evolving and cover a wide range of products and services usually managed by traditional financial institutions¹¹. They range from lending to payment systems for asset

¹⁰ S. NASCIMENTO, A. PÓLVORA, A. ANDERBERG, E. ANDONOVA, M. BELLIA, L. CALÈS, A. INAMORATO DOS SANTOS, I. KOUNELIS, I. NAI FOVINO, M. PETRACCO GIUDICI, E. PAPANAGIOTOU, M. SOBOLEWSKI, F. ROSSETTI, L. SPIRITO, *Blockchain Now And Tomorrow: Assessing Multidimensional Impacts of Distributed Ledger Technologies*, Publications Office of the European Union, Luxembourg, 2019, p. 13: “Blockchain and other distributed ledger technologies (DLTs) are technologies enabling parties with no particular trust in each other to exchange any type of digital data on a peer-to-peer basis with fewer or no third parties or intermediaries... To be clear on the terminology, blockchain is part of the broader family of DLTs. DLTs are particular types of databases in which data is recorded, shared and synchronised across a distributed network of computers or participants. Blockchain technology is a subset of DLTs employing cryptographic techniques to record and synchronise data in ‘chains of blocks’”.

¹¹ As stressed by P. YEOH, *Innovations in Financial Services: Regulatory Implications*, in *Journal of Financial Regulation and Compliance*, No. 2/2017, p. 190, in the immediate years subsequent to the great financial crisis “tech start-ups began making the scene because of the financial gap brought

management and their enabling digital factors are not only distributed ledger or blockchain technologies but cloud computing, Artificial Intelligence (AI) and Big Data Analytics as well. On the contrary, it is likewise true that these technological innovations are able to be applied to a wider range of sectors than the financial one and similarly pose challenges to the regulatory framework involved¹².

Bearing this premise in mind, it is not for our limited purposes to deal with an in-depth review of both side of the coin: the reference to all technological applications in finance or their exploitation beyond the financial sector¹³.

Our aim is rather to focus on one particularly technology (blockchain) and how it works within a particular domain (finance) owing to the myriad of legal challenges it poses.

The term FinTech englobes a wide range of services in the financial sector: “including innovations in financial literacy and education, retail banking, investment or office improvement (e.g. back-office functions)”; moreover “the expression FinTech has also become a synonym for the emerging financial services sector in the 21st century. In this context, FinTech covers a broad range of services and products, such as cashless payments, peer-to-peer (P2P) lending platforms, robotic trading, robo-advice, crowdfunding platforms, and virtual currencies”¹⁴.

about by the focus of the formal banking system spending most of its time and resources on repairing their fractured balance sheet and their simultaneous aim of avoiding lending risks, especially to small and medium enterprises (SMEs). This financial void attracted the attention and energies of tech start-ups and others not only in the advanced economies but also in emerging economies seeking the benefits of lower costs and scale in the financial services sector”.

¹² A.M. GAMBINO, C. BOMPRESZI, *Blockchain e protezione dei dati personali*, in *Diritto dell'informazione e dell'informatica*, No. 3/2019, p. 624, stress that blockchain applications, called “Dapp” (which means Decentralised Applications) are able to be used for a potentially indefinite number of purposes.

¹³ As underlined by M. FINCK, *Blockchains Regulating the Unknown*, in *German Law Journal*, No. 4/2018, p. 672 “Blockchain is indeed considered a general purpose technology that could be relied upon in a wide variety of circumstances”. For the financial implications of the use of the blockchain system, see K. BALISAGAR, M. DE LA MANO, G. DUQUESNE, *Blockchain, fintech and competition: Is blockchain the next coordination device in the banking sector?*, in *Concurrence*, No. 1/2019, p. 39. From a legal perspective, the normative definition of the Distributed Ledger Technologies was laid down by Article 8-ter of the Law Decree 14 December 2018, No. 135, converted into the Law 11 February 2019, No. 12.

¹⁴ According to the definition given by C. KARAKAS, C. STAMEGNA, *Financial Technology (FinTech): Prospects and challenges for the EU*, European Parliament Research Service, March 2017, p. 2.

Regarding this latter aspect, Fintech is the quintessence of the dematerialization and globalization of the economy¹⁵, taking traditional financial activities a step further¹⁶.

Indeed, FinTech arises from the intersection between financial services and digital technology, in a few words it is about “technology-enabled innovation in financial services”¹⁷. More specifically, the financial sector is the largest user of digital technologies: “FinTech solutions using digital identification, mobile applications, cloud computing, big data analytics, artificial intelligence, blockchain and distributed ledger technologies are being rolled out. New technologies are changing the financial industry and the way consumers and firms access services, creating opportunities for FinTech-based solutions to provide better access to finance and to improve financial inclusion for digitally connected citizens”¹⁸.

Moreover, whenever FinTech involves the use of that particular technology called blockchain and distributed ledgers, it undergirds a twofold revolution within the technological and financial landscape which – in turn – poses multifaceted legal challenges¹⁹.

From a technical point of view, blockchain and distributed ledger technologies rest on the RSA algorithm (an acronym taking the initials of its developers: Rivest, Shamir, Adleman), which is a system of public-private key cryptography making “it possible for people to broadcast their public keys widely, knowing that it would be nearly impossible to uncover the underlying private keys”, this method could underpin secure and authenticated digital signatures²⁰. In addition, these innovative technologies imply the transition from the one way information flow (from a server to a client), to a peer-to-peer networks (P2P) relying on “a decentralized infrastructure where each participant in the network (typically called a “peer” or a “node”) acts as both a supplier and a consumer of information resources”²¹.

¹⁵ For the relationship between finance and cyberspace, see M. BETZU, *Stati e istituzioni economiche sovranazionali*, Giappichelli, Torino, 16 ff.

¹⁶ For the description of this economic evolution, see G.F. FERRARI, *Globalizzazione, internazionalizzazione dell'economia, implicazioni istituzionali*, in G.F. FERRARI (edited by), *Diritto pubblico dell'economia*, Egea, Milano, 2019, pp. 139 ff.

¹⁷ COM (2018) 109/2, *FinTech Action plan: For a more competitive and innovative European financial sector*, p. 2.

¹⁸ *Ibidem*.

¹⁹ See, M. FINCK, *Blockchains Regulating the Unknown*, cit.

²⁰ P. DE FILIPPI, A. WRIGHT, *Blockchain and the Law – The Rule of Code*, Harvard University Press, Cambridge-London, 2018, p. 15. A clear description of the way of functioning of this technology is also provided by H. OLIVIER, U. DU PASQUIER, *Blockchain and Distributed Ledger Technology (DLT): Academic Overview of the Technical and Legal Framework and Challenges for Lawyers*, in *International Business Law Journal*, No. 5/2018, pp. 423 ff.

²¹ P. DE FILIPPI, A. WRIGHT, *Blockchain and the Law – The Rule of Code*, cit., p. 17.

Consequently, a new distributed database (called blockchain) had been built up by matching these technical acquisitions (public-private key cryptography, digital signatures, peer-to-peer system). Accordingly, when it is applied within the financial sector, it allows tangible currency becoming immaterial bits recorded in the computer memory and prevents illegitimate (i.e. double) spending²². Bitcoin, which is a spread experience within this process, underlies a protocol according to which the consensus of the members of the network allows to validate and store each transaction and its blockchain can be fully downloaded by anyone who joins it. Consequently, “the Bitcoin blockchain can be regarded as a tamper-resistant ‘book’ with identical copies stored in a number of computers across the globe. Anyone can add new content to the book, and one new content has been added, all existing copies of the book are updated on computers running the Bitcoin protocol”²³.

Blockchain systems (other than that employed by Bitcoin) have been employed with the aim of remedying the flaws shown by the latter, giving rise to further decentralized protocols, such as the Initial Coin Offerings (ICOs) or other crowdfunding or financial initiatives²⁴.

This brief “technical” premise allows us to better deal with both the scope and the risks stemming from the application of a blockchain system in the financial sector. In this regard, the cross-sector question (beyond the different sectors involved) is: how neutral and appropriate is the existing legislation or how much need is there for a harmonized and targeted legal response?

It is concerning this aspect that the peculiar customized approach taken by the Regulatory Sandbox to tackle the problem comes into play.

3. General and specific challenges of legal concern

As anticipated at the beginning, when the law comes into contact with a technology it needs to encompass a broader view than usual, indeed it is not only question of balancing conflicting interests or values but also of grasping complicated technological issues and understanding them. As such, it is crucial that we have an essential awareness of the real scope of the legal challenges posed by technological innovation²⁵.

²² For the blockchain operative mode in reference to cryptocurrency, see N. LOUVET, *Les apports de la blockchain et des actifs numériques au secteur financier*, in *Dalloz IP/IT*, No. 10/2019, pp. 546.

²³ P. DE FILIPPI, A. WRIGHT, *Blockchain and the Law – The Rule of Code*, cit p. 22. For in-depth review of the characteristics featuring Blockchains, see also pp. 33 ff.

²⁴ As stressed by A. SPITHOVEN, *Theory and Reality of Cryptocurrency Governance*, in *Journal of Economic Issues*, No. 2/2019, p. 385, “Several cryptocurrencies (coins and tokens) have been created and disappeared since the launch of the Bitcoin”.

²⁵ Borrowing the words of E. CORAPI, *Regulatory Sandbox in FinTech?*, in *Diritto del commercio internazionale*, No. 4/2019, p. 786.

Regarding this latter point, the use of blockchain systems within the financial sector poses a double layer of legal challenges: some are shared challenges, common to other economic sectors and technological innovations; others are specifically attuned to the application of this peculiar technological “architecture”.

As for the former, they encompass the need for consumer protection, fair competition, data protection, anti-money laundering, safety, transparency etc. In a few words, the crosscutting need is the safeguard of lawful action, avoiding abuses, circumvention of law and fraud that digitalization may facilitate²⁶. Concerning this aspect, as widely described by the legal doctrine, some of the main regulatory tools developed by legislators to tackle this composite legal and technical issue²⁷ are the use of general clauses and their reference to technical standards²⁸, technological neutrality²⁹, public/private – national or transnational – regulations and soft law at large³⁰.

In this optic, the European Committee for Standardization (CEN) and the European Committee for Electronic Standardization (Cenelec) set up a Focus Group in 2017 in order to examine the needs of standardization of blockchain and DLT technologies in depth. In September 2018, a White Paper containing “Recommendations for adopting common standards in Europe on Blockchain and DLT (distributed ledger) technologies” was issued to provide a standardization model at the European level to avoid fragmentation and consequent obstacles for the proper functioning of the Single Digital Market.

Accordingly, the European Commission Action Plan on FinTech highlights the opportunities arising from FinTech and – more specifically – from crypto-assets, but it also stresses the implied risks, issuing a warning about vulnerability of virtual currencies, money laundering and terrorist financing: “all warnings point to the fact that crypto-asset investment is high risk and that investors

²⁶ For an in-depth review of tensions between the architectural features of blockchain systems and the assumptions on which the GDPR is founded, see the Study carried out by M. FINCK, *Blockchain and General Data Protection Regulation – Can distributed ledger be squared with the European Data Protection Law?*, PE 634.445, July 2019.

²⁷ For an encompassing overview of the issue, see S. RODOTÀ, *Technology and regulation: a two-way discourse*, in E. PALMERINI, E. STRADELLA (edited by), *Law and Technology*, cit., p. 29.

²⁸ A. ZEI, *Shifting the boundaries or breaking the branches? On some problems arising with the regulation of technology*, in E. PALMERINI, E. STRADELLA (edited by), *Law and Technology*, cit., pp. 167 ff.

²⁹ L. BENNETT MOSES, *Regulating in the face of sociotechnical change*, in R. BROWNSWORD, E. SCOTFORD, K. YEUNG (Edited by), *The Oxford Handbook of Law, Regulation and Technology*, cit., p. 586, states that “regulatory regimes should be technology-neutral to the extent that the regulatory rationale is similarly neutral” but at the same time the Author stresses the needs that technological neutrality does not hinder “the importance of clarity/interpretability and ease of application” (p. 587).

³⁰ F. CAFAGGI, *New foundations of transnational private regulation*, in E. PALMERINI, E. STRADELLA (edited by), *Law and Technology*, cit., pp. 77 ff.

may incur substantial losses due to their volatility but also due to the lack of market transparency and integrity”³¹.

Consequently, as well as other sectors where conflicting interests come into play (the interests for competitiveness, developments, economic growth and efficiency as well as the opposite interest for protection of individuals, their rights and safety), the trade-off stands on fostering innovation while protecting people from its risks³². As stressed by the Expert Group on Financial Innovation established by the European Commission, “the EU should take a proactive lead in responding to these developments, so that it can help shape the global technology-enabled financial market, thereby promoting its fundamental European values, such as data privacy and fair competition. Both data protection and competition law may be perceived by some as inhibitors of rapid uptake of FinTech, notably because fast developing non-EU financial markets operate under considerably less stringent standards than European markets. However, if calibrated appropriately, the Group regards these areas of law, in the long run, to offer means of protecting its values whilst not posing an undue barrier to the innovative use of technologies”³³.

Against this background, the key legal principle, suitable for crafting a regulatory framework that is able to fit these purposes, is the principle of proportionality which works in both direction: testing the technology-neutral approach of the existing regulatory system and highlighting any need to adapt it.

As for the latter (legal challenges specific to the use of blockchain in the financial sector), the pivotal issue rests on the operative mode of action of this technology that takes the Internet challenges and the financial sector risks a step further.

Indeed, technologies such as Internet and blockchain cut across territorial boundaries³⁴, but differently from the former they do not have any centralized intermediaries located within a territory to which national laws could be

³¹ COM (2018) 109/2, p. 3.

³² M. FINCK, *Blockchains Regulating the Unknown*, in *German Law Journal*, cit., p.684.

³³ Final Report to the European Commission by the Expert Group on Regulatory Obstacles to Financial Innovation, 13 December 2019, pp. 11-12.

³⁴ The legal doctrine regarding Internet features and their relationship with public authorities and fundamental rights is extensive, for an overview of the implications of the internet relationship with public power and fundamental rights, see, ex plurimis, R. BROWNSWORD, *Law, Liberty and Technology* as well as M. LEE, *The Legal Institutionalization of Public Participation in the EU Governance of Technology*, both these contributions in R. BROWNSWORD, E. SCOTFORD, K. YEUNG (Edited by), *The Oxford Handbook of Law, Regulation and Technology*, cit., respectively at the pp. 41 ff. and pp. 620 ff.; A. PAPA, *Il diritto dell'informazione e della comunicazione nell'era digitale*, Torino, 2018; T.E.FROSINI, O.POLLICINO, E.APA, M.BASSINI (edited by), *Diritti e libertà in Internet*, Milano, 2017; O. POLLICINO, G. ROMEO (Edited by), *The Internet and the Constitutional Law – The protection of fundamental rights and constitutional adjudication in Europe*, New York, 2016; S. RODOTA', *Tecnopolitica – La democrazia e le nuove tecnologie della comunicazione*, Laterza, Roma-Bari, 2004.

applied. On the contrary, they are rather distributed among States and operate autonomously according to their *lex cryptographica*, i.e. their code of action which cannot be altered by any single party³⁵. “In effect, with *lex cryptographica*, national laws get pushed to the edges. Individuals decide whether to interact with these autonomous systems, frustrating legal regimes focus on implementing rules on central parties that currently control or help facilitate online activity. If blockchain-based autonomous systems become increasingly used to provide online services, government will need to adopt new techniques and approaches to shape or regulate these services. Traditional legal doctrines, especially those focused on regulating middlemen, will not easily translate to these new decentralised and autonomous systems, and the broader adoption of blockchain technologies may ultimately require the development of alternative mechanisms of regulation that better account for the distinctive characteristics of *lex cryptographica*”³⁶.

Consequently, these aspects featuring blockchain systems and the underlying *lex cryptographica* are putting the Rule of Law and its aim of effectively reaching the addressed entities under further strain. Because of their autonomous code, their decentralised network, the lack of secure and recognized identification and authentication procedures, the ability of the law to bring its intended recipients under its auspices is undermined³⁷.

Moreover, when blockchain is employed for crowdfunding and crypto-asset management, the disintermediation that has taken place could influence the leverage of monetary policy³⁸.

To sum up, it is the overall political and legal leeway of action that could be affected. Indeed, blockchain technology in FinTech is difficult to regulate not only because of its immaterial subject matter (crypto-assets), and not only because of its “architectural” distributed features, but also because of its unfolding evolutionary path and the consequent parallel lack of in-depth understanding and knowledge of its features as well as the consequent lack of awareness about the adequacy of the existing law.

This is the reason why public authorities, at National and European levels are employing an empirical approach in order to bring the phenomenon back under the Rule of the Law. The referred approach is developing by means of the so called “innovation facilitators”.

³⁵ P. DE FILIPPI, A. WRIGHT, *Blockchain and the Law – The Rule of Code*, cit., p. 51.

³⁶ *Ivi*, p. 52.

³⁷ As clearly underscored by the thematic Report published on 27 September 2019 by the European Union Blockchain Observatory & Forum about *Legal and regulatory framework of blockchains and smart contracts*, p. 5, in reference to decentralised blockchain-based networks “it can be difficult to ascertain who the actors in the network are, where they are located, and what exactly their actions have been”.

³⁸ P. DE FILIPPI, A. WRIGHT, *Blockchain and the Law – The Rule of Code*, cit. p. 70.

4. Innovation facilitators in FinTech: the case of Regulatory Sandboxes.

Innovation facilitators have been experimented with by some EU Member States, underpinned by the European Parliament in its resolution of 17 May, 2017 on FinTech³⁹ and by the European Commission in its FinTech Action Plan for the aim to set up a comprehensive EU experimentation framework⁴⁰.

As defined by the Joint Report on FinTech of ESMA (European Securities and Markets Authority), EBA (European Banking Authority), EIOPA (European Insurance and Occupational Pension Authority), “Innovation facilitators typically take the form of ‘innovation hubs’ and ‘regulatory sandboxes’. Innovation hubs provide a dedicated point of contact for firms to raise enquiries with competent authorities on FinTech-related issues and to seek non-binding guidance on regulatory and supervisory expectations, including licensing requirements. Regulatory Sandboxes, on the other hand, are schemes to enable firms to test, pursuant to a specific testing plan agreed and monitored by a dedicated function of the competent authority, innovative financial products, financial services or business models”⁴¹.

With specifically regard to the latter, the legal doctrine has stressed that “the imaginative metaphor of the sandbox (literally, that shallow box filled with sand where children can play without danger) designates “protected regulatory spaces” where innovative financial products and services can be developed and tested before they are offered on the market”⁴². Indeed, “A regulatory sandbox can be defined as a set of rules that allows innovators to test their product or business model in an environment that temporarily exempts them from following some or all legal requirements in place... The technique is designed to be mutually beneficial for regulators and the regulated in reducing legal uncertainty for the latter. The former in turn hope to stimulate innovation and experiment with legal frameworks. The approach mainly finds application in the FinTech sector and constitutes an intriguing example of how, when

³⁹ In its Resolution (2017)0211 on FinTech the European Parliament (par. 7) “Recommends that the competent authorities allow and encourage controlled experimentation with new technologies, both for new entrants and existing market participants; notes that such a controlled environment for experimentation may take the form of a regulatory sandbox for FinTech services with potential benefits for society, which brings together a wide range of market participants and already exists with success in several Member States; highlights that a proactive and forward-looking engagement by authorities, in a dialogue with market participants and all other relevant stakeholders, is necessary and can help supervisors and regulators to develop technological expertise”.

⁴⁰ COM (2018) 109/2, p. 9: “The Commission would welcome further efforts to identify best practices across the EU and set up common principles and criteria for innovation hubs and regulatory sandboxes. Other follow-up actions could include promoting the setting-up of innovation hubs in all Member States and coordinating their operations. This could lead to considering an EU experimentation framework for adopting and adapting to new technologies”.

⁴¹ JC 2018 74, *FinTech: Regulatory sandboxes and innovation hubs*, p. 3.

⁴² E. CORAPI, *Regulatory Sandbox in FinTech?*, cit., p. 791.

technology changes, regulation does as well. Sandboxing is designed to be a tool to bring innovations to market more quickly while safeguarding public interest considerations”⁴³ As such, Regulatory Sandboxes take up a more experimental approach in respect of Innovation Hubs which are qualified mainly by regulatory and compliance purposes⁴⁴.

Consequently, within the Regulatory Sandbox model the supervised application of existing rules is fitted to innovative financial services or business models according to the proportionality principle⁴⁵. This is to say that some margin of manoeuvre is given to the supervisory authorities when they apply the existing legislation. This also means an experimental approach to this new technology-enabled system underlying a cooperation among institutions, competent supervisory authorities and firms.

Concretely speaking, Regulatory Sandboxes have been set up outside the EU boundaries (Australia, Canada-Ontario, Malaysia, Hong Kong, Switzerland, Dubai, Russia, Indonesia, Singapore, Taiwan, Thailand), while within the EU, the first country which experienced Regulatory Sandboxes in 2016 was the United Kingdom under the supervision of the Financial Conduct Authority, followed by the Netherlands and Denmark in 2017, Lithuania and Poland in 2018, Spain, Hungary and Italy in 2019.

The Joint Report of the ESAs sets out some of the cross-sector features of Regulatory Sandboxes enacted in different EU Member States. In particular, these Regulatory Sandboxes:

- 1) are allowed to involve different financial sectors;
- 2) are open to all financial firms, both incumbent and new entrants as well as other firms (e.g. technology providers partnering with financial institutions);
- 3) are allowed, in addition to regulated financial services, to more specifically involve other products or services in the testing period that enable or facilitate the provision of regulated financial services by another party or that facilitate compliance solutions as well as the involvement of blockchain technologies;
- 4) require a licence;
- 5) are requested to apply regulatory obligations mandatory pursuant to EU and/or national law, however competent authorities are allowed to use their

⁴³ M. FINCK, *Blockchains Regulating the Unknown*, in *German Law Journal*, cit., p. 677.

⁴⁴ In this respect, see M.T. PARACAMPO, *Dalle regulatory sandboxes al network dei facilitatori di innovazione tra decentramento sperimentale e condivisione europea*, in *Riv. Dir. Bancario*, No. 2/2019, p. 224.

⁴⁵ P. YEOH, *Innovations in Financial Services: Regulatory Implications*, in *Journal of Financial Regulation and Compliance*, cit, p. 193, describes this approach as founded on a “Principle-based approach”.

existing powers to tailor regulatory requirements during the testing phase according to the proportionality principle;

6) impose specific entry conditions determining the eligibility of participants;

7) require genuine innovation to be proved as eligibility criteria;

8) imply testing parameters, determined on a case-by-case basis, as further eligibility criteria;

9) allow a controlled exit from the sandbox with either the continuation or the discontinuation of the proposition⁴⁶.

4.1 The Italian Regulatory Sandbox

In Italy, the first Regulatory Sandbox was introduced during the parliamentary decision-making for the conversion of the Decree Law of April 30, 2019, No. 34⁴⁷ (the so-called Growth Decree).

Article 36, paragraph 2-bis/2-nonies, seeks to achieve the trade-off between the promotion of competitiveness, innovation, efficiency by fostering technology-driven financial and insurance services and products and the opposite need to protect consumers, investors and fair competition. Accordingly, it carries out some directives for a regulatory and supervisory framework tailored to FinTech.

It draws on some key features which characterise the fundamental architecture of Sandboxes, more specifically, the proportionality principle, an experimental cross-sector approach and public-private cooperation.

Indeed, the experimental period rests on the proportionality principle pursuant to paragraph 2-ter-quarter-quinquies of Article 36: it means that it is limited in time; its requirements and procedures are to be fulfilled. The eligibility criteria are moreover simplified and customized to the case; the legal form of business may derogate to the legal forms provided for in current legislation.

Accordingly, every requirement within this experimental framework is allowed to be tailored to the peculiar characteristics of the case provided that they comply with the protection of consumers and investors as well as with the proper functioning of the market (see par. 2-quinquies of Article 36).

Pursuant to the experimental purpose, competent regulatory authorities (which are the Bank of Italy, the Italian Supervisory Commission for firms and stock market – CONSOB – and the Italian Insurance Supervisory Institute – IVASS –) are allowed to carry out the experimentation and are requested to report the consequent need for legislative and regulatory changes aimed at

⁴⁶ For an in-depth analysis of the features of Regulatory Sandboxes, see JC 2018 74, pp. 17 ff.

⁴⁷ See Article 36, par. 2-bis) and ff. of the Law 28 June 2019, No. 58.

fostering the development and the stability of the relevant sector and the protection of savings.

In the light of a cross-sector and public-private cooperation, regulations are expected to encourage relations among institutions, competent authorities and sectoral firms (see par. 2-bis of Article 36). Indeed, the Ministerial Decree in its adoption process by the Ministry of Economy and Finance has not only accepted the opinions of the Bank of Italy, CONSOB and IVASS (according to par. 2-bis of Article 36), but has also been submitted to an open on-line consultation with a deadline of March 19, 2020.

Moreover, the implementation of this cross-cutting approach also pertains the introduction of a FinTech Committee, which shall consist of Ministerial members⁴⁸ as well as of members coming from the Bank of Italy, CONSOB, IVASS, the Italian Data Protection Authority, the Italian Competition Authority (AGCOM), the Agency for Digital Italy (AgID), and the Revenue Agency. Moreover, the Committee is allowed to invite other institutions, authorities and stakeholders to its meetings for consultative functions. The scope of action of the Committee covers the definition of purposes, plans and actions addressed to foster the development of FinTech solutions as well as helps contacts among institutions, authorities and sectoral firms.

In keeping with the goal of openness and cross-sector cooperation, Article 8 of the Ministerial Decree (in the process of adoption) provides for an informal “dialogue” among competent supervisory authorities, the FinTech Committee and entities interested to enter the experimental period.

5. Governance by experimentalism

Nowadays, the complexities of the social, economic and technological scenario have produced a double intertwined legal evolution⁴⁹. On the one hand, it involves legal contents, their shift to new legal paradigms⁵⁰ and the underlying choice for principle-based instead of rule-based approaches⁵¹. On the other

⁴⁸ Pursuant to Article 36, par. 2-octies, the Ministry of Economy and Finance, the Ministry of Economic Development, the Ministry of European Affairs.

⁴⁹ L. BENNETT MOSES, *Regulating in the face of sociotechnical change*, in R. BROWNSWORD, E. SCOTFORD, K. YEUNG (Edited by), *The Oxford Handbook of Law, Regulation and Technology*, cit., pp. 585 ff. deals with the issue of technological evolution in a double-layer perspective: on the one hand, it entails the regulatory design framework, on the other hand it implies the level of institutions engaged with technological regulation tasks (i.e. the governance system).

⁵⁰ As for the description of this legal phenomenon, see M. GIULIANO, *La blockchain e gli smart contracts nell'innovazione del diritto del terzo millennio*, in *Diritto dell'informazione e dell'informatica*, No. 3-4/2018, pp. 993-994.

⁵¹ As for the convenience of choosing a principle-based approach, see S. RODOTÀ, *Tecnopolitica - La democrazia e le nuove tecnologie della comunicazione*, cit.

hand, it entails a procedural and formal change encompassing the way legal rules are produced and come into force⁵².

As concerns this latter aspect, the decision-making process has evolved becoming more complicated and extensive. Indeed, in keeping with the guidelines provided by the EU, a long cycle frequently follows that starts with the stakeholder and expert consultations⁵³, goes through the impact assessment⁵⁴ and compliance with drafting rules (i.e. better regulation)⁵⁵, passes through the rule-making deliberation, and ends with the monitoring and evaluation of public policies⁵⁶. Moreover, the law frequently introduces an experimental period of application by means of sunset clauses⁵⁷.

Currently, experimentalism of the law is not a new phenomenon. Like experimentation in the medical sector, social policies have also undergone experimental practices. In France, Article 37, par. 1 of the Constitution provides for experimentation of laws or regulations⁵⁸ and within this framework it is worthwhile to recall the legislative experimentation of the “Revenu de Solidarité Active” in 2007. Likewise, Italy has experienced the “Reddito minimo di inserimento” in 1998 pursuant to Article 59, par. 47 of the Law of December 27, 1997, No. 449 as well as the “social card” for people and families in need of financial assistance pursuant to Article 2, par. 46-47, of the Law No. 10/2011.

Moreover, experimentation of legal provisions has also involved ICT innovations. In Italy, it is worthwhile to recall, among others, the experimentations involving the Electronic Identity Card and the telematic civil trials. These cases initially concerned a reduced scope of application and provided for their gradually extension.

Again in Italy, an experimentation with electronic hoverboards or mono-wheels pursuant to the limited scope provided for in the Law of December 30,

⁵² M. FINCK, *Blockchains Regulating the Unknown*, in *German Law Journal*, cit., pp. 675 ff., describes the different regulatory strategies in respect of new technologies in the following ways: “wait and see”; “issue narrowing or broadening guidance”, “sandboxing” and “issue new legislation”.

⁵³ COM (2001) 428, *European Governance: A White Paper*, in <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52001DC0428>.

⁵⁴ COM (2002) 276, *Communication on impact assessment*, in <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2002:0276:FIN>.

⁵⁵ COM (2015) 215 final, *Better regulation for better results – An EU agenda*, in <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2015:0215:FIN>.

⁵⁶ For an overview of this normative cycle, see A. C. AMATO MANGIAMELI, *Tecno-regolazione e diritto. Brevi note su limiti e differenze*, in *Diritto dell'informazione e dell'informatica*, No. 2/2017, pp. 160-161. For the specific issue of the evaluation of public policies, *ex plurimis*, A. LA SPINA, *Politiche pubbliche: analisi e valutazione*, Bologna, 2020.

⁵⁷ A. C. AMATO MANGIAMELI, *Tecno-regolazione e diritto. Brevi note su limiti e differenze*, cit., p. 162.

⁵⁸ According to Article 37, par. 1, reviewed in 2003, the French Constitution states that laws or regulations may be introduced, for limited scope and time, experimental rules.

2018, No. 145 (Article 1, par. 102 and the relevant Ministerial Decree 4 June, 2019) is currently underway.

Against this backdrop, it may be pointed out that this sort of experimentation differs from the impact assessment carried out during the decision-making process. This latter intervenes *ex ante*, i.e. before the adoption of the law while the former intervenes *ex post*, i.e. after its adoption⁵⁹. Moreover, experimentation of the law differs from the evaluation of public policies because of its goals, its temporary period of application and its reduced scope of application⁶⁰. Furthermore, the participation of stakeholders in both process, *ex ante* impact assessment and *ex post* policy evaluation, is different in nature and scope from that involved during the testing period of a law.

Consequently, the experimentation of the law englobes some specific features in terms of purposes, temporary application and rationale. It seeks, for its purposes, to test the effectiveness, efficacy and efficiency of legal regulation during their temporary application to limited cases before its possible generalisation⁶¹. Accordingly, the underlying *ratio legis* differs from the classical *ratio* of legal rules as it is an anticipation of a possible future more comprehensive normative reform. Therefore, as underscored by the legal doctrine, experimentation with legal regulations helps to lower ideologist perspectives and allows more pragmatic approaches⁶² but at the same time it exposes itself to the risk of infringement of the equality principle⁶³.

Set against this backdrop, experimentation of the law is (in a few words) a means for assessing the advantages and disadvantages of a reform before it is given a general application⁶⁴.

⁵⁹ See T. SACHS, *L'evaluation du dispositive juridique: l'exemple d'une loi experimentale*, in *Rivista Italiana di diritto del lavoro*, No. 1/2011, p. 471.

⁶⁰ M. MAGNANI, *Sperimentazione in materia di lavoro e sistema delle fonti: eguaglianza vs. autonomia*, in *Rivista Italiana di diritto del lavoro*, No. 1/2011, pp. 430 ff.

⁶¹ In reference to the aims of experimentation of laws, see T. SACHS, *L'evaluation du dispositive juridique: l'exemple d'une loi experimentale*, in *Rivista Italiana di diritto del lavoro*, No. 1/2011, pp. 466 ff.

⁶² P. ICHINO, *Come il metodo sperimentale può contribuire al progresso del diritto del lavoro*, in *Rivista Italiana di diritto del lavoro*, No. 1/2011, p. 394.

⁶³ As pointed out by P. ICHINO, *Come il metodo sperimentale può contribuire al progresso del diritto del lavoro*, cit., p. 398, the pivotal legal question in reference to experimentation of the law is “whether” and “within what limits” a derogation from a general and coercive legal provision may be permitted. In this respect, a Pareto efficiency approach and the reasonableness principle are deemed to be a solution.

⁶⁴ A. FAIS, *La décentralisation e la sperimentazione normativa in Francia*, in *Nuove Autonomie – Rivista di diritto pubblico*, No. 2-3/2006, p. 467.

Bearing this premise in mind, Regulatory Sandboxes, which are also being rolled out within the FinTech landscape, entail an experimental approach⁶⁵. Nevertheless, the experimentalism we have described so far is slightly different from the one implicit in a Regulatory Sandbox. Indeed, the former sets out new legal rules which are to be tested for a limited time and scope. It is aimed at understanding the usefulness and effectiveness of the reform, assessing its reasonableness to this experimental purpose. The latter shares the time limits, but it does not entail any new statutory regulations. On the contrary, it is aimed at testing the existing legal rules against new technological phenomena and it allows derogations for a better tailored and flexible set of rules. So, while in the classical experimentalism uncertainty concerns the effects resulting from the application of new laws or regulations, within Regulatory Sandboxes this uncertainty about the scope of application of laws or regulations does not arise from the novelty of the law but from the underlying case that encompasses a lack of in-depth understanding about the object to be regulated (i.e. the underlying technology-enabled innovation in financial services)⁶⁶. As in medical trials, it is rather a question of testing the rollout of new technologies whilst setting them within legally controlled boundaries, particularly significant for blockchain and DLT technologies that are continuously evolving and improving their systems. Regulatory Sandboxes is consequently a procedure that in keeping with the precautionary principle and the principle of proportionality, seeks to bring a rapid change, not fully understood and architecturally elusive technology (such as blockchain and DLT) as well as the underlying technology-driven financial occurrence, under the umbrella of the law.

In doing so, the legislator cooperates with competent public authorities and stakeholders in a mutual exchange of expertise that allows the existing rules to become more resilient and otherwise unregulated activities to enter into a regulated perimeter. Accordingly, the opportunities stemming from this new procedural framework for the sake of innovative financial activities are seized and at the same time the risks involved are kept under control⁶⁷. Consequently,

⁶⁵ M.T. PARACAMPO, *Dalle regulatory sandboxes al network dei facilitatori di innovazione tra decentramento sperimentale e condivisione europea*, cit., p. 219, underlines that when entering the wide and heterogeneous FinTech ecosystem, a change in the regulatory approach is needed.

⁶⁶ This is the reason why M. FINCK, *Blockchains Regulating the Unknown*, in *German Law Journal*, cit., p. 683, states that “It is indeed only through a polycentric collaborative effort that the complex regulatory challenges posed by blockchain technology can be addressed satisfactorily”. The Author also stresses (p. 687) that “Blockchains remain an experiment, albeit one with staggering prospects. Regulators should embrace this spirit of experimentation in making this a key feature of their own approach”.

⁶⁷ For this recurring relationship between regulatory challenge and regulatory opportunity as well as the consequent need to reach a trade-off between law and code, see A. C. AMATO MANGIAMELI, *Tecno-regolazione e diritto. Brevi note su limiti e differenze*, cit., pp. 164-165.

rights and freedoms avoid being exclusively left to private agreements in combination with the *lex informatica* code of action⁶⁸.

This is the reason why, beyond questions of regulatory substantial content, it is the regulatory approach itself that reveals a suitable methodological model against failures, abuses and misuses of the law and – in turn – a model that is able to master the underlying risks.

6. An enhanced Rule of Law?

Regulatory Sandboxes could be conceived as a nuanced consequence of both, the better regulation European-derived model (which aims at limiting the intervention of the legislator to what strictly necessary)⁶⁹ and the underlying proportionality and precautionary principles (that moreover come at stake when science and technology clash with the law and furthermore when the involvement of an ongoing and not yet fully known technological evolution such as blockchain and DLT is in the focus)⁷⁰.

Traditionally both these principles play a role within the *ex ante* impact assessment and during the decision-making process for a better understanding of the issue to be regulated and the consequent adequacy of the legal rules to be enacted.

Within a Regulatory Sandbox, it is not a question of carrying out a risk assessment and impact assessment before a law is enacted (as usually done along the normative cycle), or even an evaluation of the efficacy of a new and temporary legal rule (as done in the aforementioned social and digital trials or within the policy evaluation process). It is rather a question of testing the resilience of existing legal rules allowing a public authority and the involved stakeholders to conduct a “trial” in respect of technology driven financial services, which technical and legal implications are far from being fully known, moreover when the use of blockchain and DLT are implied⁷¹.

⁶⁸ For the description of “lex informatica” such as a further source of rule-making than law and government regulations, see J.R. REIDENBERG, *Lex informatica: The Formulation of Information Policy Rules Through Technology*, in *Texas Law Review*, No. 3/1998, pp. 553 ff.

⁶⁹ The renewal of the EU’s commitment to evaluate existing legislation before proposing change is confirmed by the Communication of the European Commission, *Better Regulation: taking stock and sustaining our commitment*, 15th April 2019, p. 4, in https://ec.europa.eu/info/sites/info/files/better-regulation-taking-stock_en_0.pdf.

⁷⁰ A. NAPOLITANO, *L’evoluzione del principio di precauzione nel panorama giuridico nazionale ed europeo*, in *De Iustitia*, 1/2019, pp. 64 ff.; E. FISHER, R. HARDING, *The Precautionary Principle and Administrative Constitutionalism: The Development of Frameworks for Applying the Precautionary Principle*, in E. FISHER, J. JONES, R. VON SCHOMBERG (Edited by), *Implementing the Precautionary Principle: Perspectives and Prospects*, Edward Elgar, Cheltenham, 2006, pp. 113 ff.

⁷¹ As underlined by M. FINCK, *Blockchains Regulating the Unknown*, in *German Law Journal*, cit., p. 685, “Through dialogue and cooperation both sets of actors could remedy their respective struggles.

The outcome of this process represents a sort of “learning by doing”, getting employed with the peculiarity of an ongoing, rapidly changing and technology-driven financial activity towards a double layer purposes of legal relevance: on the one hand, the return under the cover of the law of otherwise not regulated cases; on the other hand, the mutual harmonization between the law and the case. As far as this latter aspect is concerned, not only is it appropriate to comply with previously established legal requirements but also these latter are allowed to be customized to the specific aspects of the former. This is the task that the public authority charged with this “work in process” is requested to tackle. As such the borders of the sincere cooperation principle are enlarged, starting from political institutions and other public bodies of a technical nature and ending to include private FinTech operators. By means of the promise of a tailored and more flexible application of the current legal regulations, an activity previously carried out under the dominant framework of the *lex cryptographica* and *informatica* is directed to comply with legal requirements in accordance with the proportionality and precautionary principles⁷² and by means of these procedural steps, the effectiveness of the Rule of Law is recovered to the degree that this is possible.

We have already seen that sandboxes and government-backed initiatives are mechanisms to create such dialogue and allow both sets of actors to learn from the pragmatic application of the technology”.

⁷² As such, the legislator shows to take with caution both, the weak and the strong version of the precautionary principle according to the perspective suggested by C.R. SUNSTEIN, *Laws of Fear – Beyond the precautionary principle*, Cambridge University Press, Cambridge, 2005, pp. 109 ff.