

**Regulatory Sandbox: A protected playing field between the Law and Innovative
Entrepreneurship?**

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ABSTRACT

No Innovation ever operates in a legal void. Unlike Innovation, the law operates more predictably. Given the incertitude of the Innovations, the risk-benefit calculus often merits an equilibrium between the Law and Innovative Entrepreneurship. In a way, Sandboxes signal a regulator's propensity to underpin Innovative Entrepreneurship by promoting a balanced practice of dispensation, rather than one focused on legal consequences, and potential liability. Sandbox is not a typical legal institution, but an innovation in legal regulation that pushes regulators and regulatory actors beyond traditional and trusted roles. Sandbox is not a panacea in addressing the regulatory dilemmas concerning Innovations, nor is it the sole remedy. Yet, it is perhaps too soon to decisively conclude whether the merits of the Sandbox outweigh its limitations. Regardless of how Innovation cycles unfold from here, the Sandbox phenomenon and sandy territories merit closer attention by policymakers as it fabricates a protected playing field between the “Law and Innovative Entrepreneurship”.

KEYWORDS

Sandbox, Law, Regulations, Innovation, Innovators, Innovative Entrepreneurship.

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1. INTRODUCTION

With every passing era, the world gains from new discoveries that advance humankind. Thanks to new technologies, inventions, and innovations (“**Innovations**”), conventional markets are being disrupted while new ones are being originated. Through their influence on productivity, employment, skills, resource allocation, trade, and the environment, these markets are creating a substantial effect on the economy. In particular, Innovations are transforming ways in which individuals create, operate, interact, consume and produce. In all, these new realities are reshaping different facets of economy, society and everyday lives of human beings.

In the age of Innovation, cycles are shorter and technological transition is likely to be immutable. With advancements taking place at an incessant and exponential speed, regulators confront the dual challenge of encouraging new market entries while at the same time comprehending the unprecedented changes and complexity of the legal framework entailed in order to align policies suitably. Beyond this, exponential explosion of Innovations has transcended administrative boundaries domestically and internationally. In this modern narrative, traditional approaches are likely to form fragmented regulations that address narrow problems without acknowledging unintended implications for the more extensive system. In this way, the solution to the regulatory dichotomy of paralysis is a willingness to move beyond the expectation of finality surrounding regulatory decision-making.

In this scenario, among the regulatory endeavours, the Regulatory Sandbox (“**Sandbox**”) emerged as one of the leading experimental tools for nurturing the true potential of Innovation. From a regulatory point of view, Sandboxes enable regulators to make permissive or restrictive decisions with confined results closely observing their effects. This innovative space lets firms explore new business models that can be tested in a controlled way.

While this autonomy has appealing features, perceived efficacy might not apply without encountering hurdles, mainly when the established legal norms translate into regulatory inertia that impedes the

effective implementation of Sandboxes. This may render Sandboxes nothing but shiny toys with lots of fanfare and no substance, leaving fewer success stories than critiques.

Even while there is widespread consensus that fostering Innovation should be a priority, there is far less agreement on what this entails and how to achieve this objective legally. The motivation for writing this paper comes from the perception that we need an emergent formulation and unconventional yet balancing approach to regulate Innovation. Overall, this dissertation uncovers and contributes to the conceptualisation of the Sandbox phenomenon and examines whether such a new mechanism is warranted to protect the Innovative Entrepreneurship. More broadly, this dissertation adds nuances to prior studies that tout significance of Sandboxes and adopts a qualitative analysis approach to examine the activities of Sandboxes.

This paper shall proceed by briefly reviewing the theoretical relationship and interaction between the Law and Innovative Entrepreneurship (**Part 2**), before developing a broader conceptual framework for characterizing Sandboxes as a distinct regulatory instrument (**Part 3**). This framework will then be used to anticipate and map challenges in administering Sandboxes (**Part 4**). Finally, based on this evaluation, this paper shall draw the conclusion in its last section (**Part 5**).

Research is current to 15 August 2022. All URLs placed within the footnotes are verified as of 15 August 2022.

2. LAW AND INNOVATIVE ENTREPRENEURSHIP

2.1 Law and Regulations

A legal structure combines explicit law, implicit practices, and a broader cultural framework within which the law is situated, which in turn implicates ethical, social and economic considerations.¹ Law, an institution that is universal in nature² exists to resolve conflicts and regulate interactions within the social and economic systems.³ It consists of systems of rules, regulations, standards, and procedures created and applied by social institutions which provide a framework in which entities and businesses strategize, operate, and develop.⁴ Such entities, in turn, use law as a resource to advance and defend their businesses and shape law in various direct and indirect ways.⁵ Law not only helps to stabilize expectations by creating greater business certainty, but it also provides legitimacy for businesses, shielding them from fundamental challenges.⁶ In some instances, law provides competitive advantages for some businesses over others.⁷ Thus, it is possible to argue that law and enterprises interact in mutually supportive and mutually constraining ways.⁸

Law and Entrepreneurship merit consideration as distinct fields of legal study.⁹ It covers the assessment of optimal legal structures that facilitate the commercialisation of entrepreneurial

¹ Andrew Askland, *Why Law and Ethics Need to Keep Pace with Emerging Technologies*, in Gary Merchant *et.al.*, *The Growing Gap between Emerging Technologies and Legal-Ethical Oversight: The Pacing Problem* (New York: Springer 2011), 19. <<https://link.springer.com/content/pdf/10.1007%2F978-94-007-1356-7.pdf>>.

² Andrei Marmor and Alexander Sarch, 'The Nature of Law' (The Stanford Encyclopedia of Philosophy 27 May 2001). <<https://plato.stanford.edu/archives/fall2019/entries/lawphil-nature>>.

³ Pascal Philippart, 'The law: a system made up of opportunities for the entrepreneur' (2017), 18 *Projectics* 37, 38. <<https://doi.org/10.3917/proj.018.0037>>.

⁴ Marc Galanter, 'Law Abounding: Legislation Around the North Atlantic' (1992), 55 *MOD L REV* 1, 1-2. <<https://www.jstor.org/stable/1096842>>. Also, Noel Campbell, 'Entrepreneurial action and the rules of the game: An editorial to introduce the Journal of Entrepreneurship and Public Policy' (2012) 1 *Journal of Entrepreneurship and Public Policy* 4. <<https://doi.org/10.1108/20452101211208326>>.

⁵ Gregory Shaffer, 'How Business Shapes Law: A Socio-Legal Framework' (2009) 42 *Connecticut Law Review* 147, 151. <<https://ssrn.com/abstract=1426302>>.

⁶ *Ibid*, 153.

⁷ David Vogel, 'Environmental regulation and economic integration' (2000) 3 *Journal of International Economic Law* 265, 268. <<https://doi.org/10.1093/jiel/3.2.265>>.

⁸ Shaffer (n 5).

⁹ Darian Ibrahim and D. Gordon Smith, 'Entrepreneurs on Horseback: Reflections on the Organization of Law' (2008) 50 *Arizona Law Review* 71, 76. <<https://scholarship.law.wm.edu/facpubs/1683>>.

opportunities, as well as the regulation of entrepreneurial firms.¹⁰ Law and Entrepreneurship is quite diverse in orientation from “Law and Economics,” “Law and Sociology,” and other interdisciplinary efforts.¹¹ Rather than applying the tools of other disciplines to law, the study of “Law and Entrepreneurship” examines the influence of law on entrepreneurial behaviour and entrepreneurial behaviour on law.¹² While it is outside the scope of this paper to engage in a full-scale elaboration of these concepts and their relationship, it is nevertheless worthwhile to briefly explain some terms used throughout this paper for consistency.

Regulation is an unwieldy concept. It is yet indistinct who counts as a “regulator” and what considered as “regulation”.¹³ Regulation signifies the sustained and focused attempt to alter the behaviours to produce a broadly identified outcome, which may involve mechanisms of standard-setting and information-gathering.¹⁴ It exists mainly to safeguard citizens and enterprises, correct market failures and can be perceived on a spectrum ranging from a command-and-control regulation to pure self-regulation. To a large extent, the most formal contribution to the regulatory environment is made by the law.¹⁵

Although some authors argue that the excessive regulations may create *de facto* barriers into otherwise competitive markets and even unsettle investment and entry¹⁶, most of the literature emphasises that entry is relaxed in the presence of well-enforced rules and regulations, which make markets more competitive and enhances transactional trust.¹⁷

¹⁰ Masako Ueda and D. Gordon Smith, ‘*Law & Entrepreneurship: Do Courts Matter?*’ (2006) 2 *Entrepreneurial Business Law Journal* 353. <<http://ssrn.com/abstract=896762>>.

¹¹ *Ibid*, 72.

¹² Steven Hobbs, ‘*Towards a Theory of Law and Entrepreneurship*’ (1997) 26 *Cap U L Rev* 241. <https://scholarship.law.ua.edu/fac_articles/154>.

¹³ Geraint Howells and Reiner Schulze, *Modernising and Harmonising Consumer Contract Law* (Berlin, New York: Otto Schmidt/De Gruyter European Law Publishers 2009), 91.

¹⁴ Julia Black, ‘*What is Regulatory Innovation?*’ in Julia Black *et al.* (ed.), *Regulatory Innovation* (Edward Elgar Publishing 2005), 11.

¹⁵ Roger Brownsword and Han Somsen, ‘*Law, Innovation and Technology: Before We Fast Forward—A Forum for Debate*’ 1 *Law, Innovation and Technology* 1, 10. <<https://doi.org/10.1080/17579961.2009.11428364>>.

¹⁶ Alberto Alesina *et al* ‘*Fractionalization*’ (2003) 8 *Journal of Economic Growth* 155. <<http://nrs.harvard.edu/urn-3:HUL.InstRepos:4553003>>.

¹⁷ Simon Johnson *et al.* ‘*Property Rights and Finance*’ (2002) 92 *The American Economic Review* 1335. <<http://www.jstor.org/stable/3083253>>.

While the precise relationship between law and regulation is indistinct,¹⁸ it could be argued that if regulation is primarily about channelling the behaviour, then legislation is a specie of regulation.¹⁹ To the extent that regulators rely on instruments and strategies other than legislation, regulation is broader than law.²⁰ On the other hand, to the extent that regulation does not encompass tasks as constitution making, then law is broader than regulation.²¹ Regulations are capable of capturing ‘soft law’ that may be overlooked by traditional definitions of ‘law’.²² In the context of Innovation, where funding priorities and professional standards play a key role, a broader focus on ‘regulation’ is more capable of explaining the influence on Innovation than the concept of law in its traditional sense.²³ Thus, it might be inferred that while law and regulation intersect with one another, they are not co-extensive.²⁴ Yet, sometimes these concepts are used as equivalents.²⁵

To simplify the analysis, this paper does not seek to differentiate sharply between “law” and “regulation”, but rather reconcile these notions, which have a direct and indirect influence on Innovation.

2.2 Innovative Entrepreneurship

Given the inherent multi-dimensionality in entrepreneurial activities, some authors have expressed apprehensions over the scarcity of studies that adopt a holistic approach to Entrepreneurship.²⁶ To address the lack of a holistic perspective, scholars have adopted the concept of “ecosystems” from

¹⁸ Roger Brownsword, *Rights, Regulation, and the Technological Revolution* (Oxford, online edn, Oxford Academic, 2009), 6. <<https://doi.org/10.1093/acprof:oso/9780199276806.001.0001>>.

¹⁹ *Ibid.*

²⁰ *Ibid.*

²¹ Karl Llewellyn, *The Normative, The Legal, and the Law-Jobs: The Problem of Juristic Method* (1940) 49 Yale Law Journal 1355. <<https://doi.org/10.2307/792545>>.

²² Lyria Bennett Moses, *How to Think about Law, Regulation and Technology: Problems with ‘Technology’ as a Regulatory Target* (2013) 5 Law, Innovation and Technology 1, 4. <<https://doi.org/10.5235/17579961.5.1.1>>.

²³ *Ibid.*

²⁴ Howells (n 13).

²⁵ Sofia Ranchordás, *Sunset Clauses and Experimental Regulations: Blessing or Curse for Legal Certainty?* (2015), 36 Statute Law Review 28. <<https://doi.org/10.1093/slr/hmu002>>.

²⁶ David Audretsch and Doğa Kayalar-Erdem, *Determinants of Scientist Entrepreneurship: An Integrative Research Agenda* in Alvarez, Sharon Agarwal *et.al* (eds), *Handbook of Entrepreneurship Research. International Handbook Series on Entrepreneurship* (Springer Boston 2005). <https://doi.org/10.1007/0-387-23622-8_6>.

Also, Scott Shane, *A general theory of entrepreneurship: The individual-opportunity nexus* (Edward Elgar Publishing 2003). <<https://doi.org/10.4337/9781781007990>>.

ecological study and applied it to management scholarship to explore organisations' external environment.²⁷ This approach has also been used to explore other ecosystems, specifically to Innovation and Entrepreneurship.²⁸ Although empirical research on entrepreneurial ecosystems is restricted, the majority of qualitative studies disregard potential industry-specific factors that may influence entrepreneurial activities.²⁹ In consequence, evidence-based knowledge from empirical investigations cannot necessarily be applied to Innovations.³⁰

Today, much confusion exists about the proper definition of Entrepreneurship.³¹ Some observers use the term to refer to all small businesses; and others to all new businesses.³² Specifically, Entrepreneurship can be referred to as an activity that involves discovery, evaluation, and exploitation of opportunities to introduce new goods and services, ways of organising markets, processes, and raw materials through organised efforts.³³ Although this definition is broad enough to incorporate almost all conceivable aspects of Entrepreneurship, this dissertation, while referring to the term "Entrepreneurship", shall confine its scope to the "Innovative Entrepreneurship" –new age, technology-based startups that transform Innovations into market value by offering products, and services that had not existed previously or are not known to have a comparable widespread offering.³⁴

A closer look reveals that every Innovation has social implications, and there are social triggers for every Innovation.³⁵ Like all forms of Entrepreneurship, Innovative Entrepreneurship originates from

²⁷ James Moore, 'Predators and prey: A new ecology of competition' (1993), 71 Harvard Business Review 75. <<https://hbr.org/1993/05/predators-and-prey-a-new-ecology-of-competition>>.

²⁸ Laurent Scaringella and Agnieszka Radziwon, 'Innovation, entrepreneurial, knowledge, and business ecosystems: Old wine in new bottles?' (2018) 136 Technological Forecasting and Social Change 59. <<https://doi.org/10.1016/j.techfore.2017.09.023>>.

²⁹ Ben Spigel, 'The relational organization of entrepreneurial ecosystems' (2017) 41 Entrepreneurship Theory and Practice 49. <<https://doi.org/10.1111%2Fetap.12167>>.

³⁰ Ahmad Alaassar et al. 'Ecosystem dynamics: exploring the interplay within fintech entrepreneurial ecosystems' (2022) 58 Small Business Economics 2157, 2161. <<https://doi.org/10.1007/s11187-021-00505-5>>.

³¹ Peter Drucker, 'The discipline of innovation. Leader to Leader' (Harvard Business Review August 2002). <<https://hbr.org/2002/08/the-discipline-of-innovation>>.

³² *Ibid.*

³³ Scott Shane and S.Venkataraman, 'The Promise of Entrepreneurship as a Field of Research' (2000) 25 Academy of Management Review 217, 218. <<http://www.jstor.org/stable/259271>>.

³⁴ William Baumol et al., 'Good capitalism, bad capitalism, and the economics of growth and prosperity' (Yale University Press 2007).

³⁵ Dr. Georg Serentschy, 'Innovation and Regulation in the Digital Communications Field-The Regulatory Journey from a European Perspective' (2021), 3. <https://www.serentschy.com/wp-content/uploads/2022/01/20210802_Innovation-and-Regulation-FINAL.pdf>.

a nexus of individuals and opportunities. Broadly, Innovative Entrepreneurs are recognised for their unique ability to exploit new market opportunities and transform Innovation into market value by creating new products and services (“**Innovative Entrepreneurs**” or “**Innovators**”). Yet, majority of these Innovative enterprises do not to produce radically new solutions but rather enhance or imitate existing ones.³⁶

2.3 Law Shaping Innovation, Innovation Shaping Law

No Innovation ever operates in a legal void.³⁷ Laws are not developed based on the function of the underlying Innovations, but on how that function interacts in society.³⁸ While the Innovation itself is not a basis to regulate, the fact that Innovation has made new things or practices conceivable can be a reason to introduce new regulations.³⁹

For a confluence of reasons, the level of interaction between Innovative Entrepreneurs and regulators has seemingly increased.⁴⁰ It is through interactions with Innovative Entrepreneurs that regulatory frameworks become more resilient and informed about market dynamics.⁴¹ In the same manner that regulatory intervention influences Innovations, the potential influence of Innovative Entrepreneurs on regulators has also been discussed by some commentators.⁴² Though, no systematic evidence exists in the literature that gives an extensive insight into how regulatory procedures evolve as a result of social interactions with Innovative Entrepreneurs or vice versa.⁴³

³⁶ Agnieszka Skala, *Digital Startups in Transition Economies: Challenges for Management, Entrepreneurship and Education* (Palgrave Pivot Cham 2019), 4. <<https://doi.org/10.1007/978-3-030-01500-8>>.

³⁷ Gerhard Wagner, ‘Robot Liability’ (2018). <<https://ssrn.com/abstract=3198764>>.

³⁸ Gregory Mandel, ‘Legal Evolution in Response to Technological Change’ in Roger Brownsword *et al.* (eds.), *The Oxford Handbook of Law, Regulation and Technology* (Oxford Handbooks 2017).

³⁹ *Ibid.*

⁴⁰ Elizabeth Pollman, ‘The Rise of Regulatory Affairs in Innovative Startups’ in D. Smith *et al.* (eds.), *The Cambridge Handbook of Law and Entrepreneurship in the United States* (Cambridge Law Handbooks, Cambridge University Press 2022), 48. <<https://doi.org/10.1017/9781316771105.004>>.

⁴¹ Lev Bromberg *et al.*, ‘Fintech sandboxes: Achieving a balance between regulation and innovation’ (2017) 28 *Journal of Banking Finance Law and Practice* 314. <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3090844>.

⁴² Douglas Arner *et al.*, ‘FinTech and RegTech in a nutshell, and the future in a sandbox’ (2017) 3 CFA Institute Research Foundation 1. <<https://ssrn.com/abstract=3088303>>.

⁴³ Ahmad Alaassar *et al.*, ‘Exploring how social interactions influence regulators and innovators: The case of regulatory sandboxes’ (2020) 160 *Technological Forecasting and Social Change* 1, 4. <<https://doi.org/10.1016/j.techfore.2020.120257>>.

Theoretically, Innovative Entrepreneurs, by their nature, are agents of change.⁴⁴ If a government contemplates controlling or channelling a certain kind of behaviour and determines that the desired conduct is best achieved by product design, then Entrepreneurs might be co-opted into regulatory schemes and, to this limited extent, Innovative Entrepreneurs, *qua* agents of the government, become regulators.⁴⁵ The fortunes of the businesses often depend not only on the markets, but also on the resolution of legal issues concerning a core aspect of their operations. Some of these enterprises make changing the law a material component of their business model and pursue a line of business that involves a legal issue at its core.⁴⁶ Pollman and Barry call this activity “regulatory entrepreneurship” and refer to the businesses that participate in it as “regulatory entrepreneurs”.⁴⁷

Mainly, two possible dimensions of interaction between regulation and Innovation, namely; “regulation for Innovation” (regulation introduced to stimulate Innovation, and achieve Innovativeness) and “regulation of Innovation” (Innovation as regulatory target) can be established.⁴⁸ Given its inherent challenges, this paper precinct its observations to “regulation of Innovation”, which comparatively appears to be the crucial and alarming issue concerning the Innovative Entrepreneurship.

2.4 Innovative Entrepreneurship and Legal, Regulatory Challenges

Innovation is an exceptionally dynamic activity in the ‘world-to-be-regulated’ evidenced by the introduction of novel applications that are exerting pressure on traditional legal concepts⁴⁹ and invading numerous precincts of the economy. These Innovations are characterized by pervasive uncertainties about risks, benefits, future directions, and demands. More broadly, the governance of

⁴⁴ John Hagedoorn, *Innovation and Entrepreneurship: Schumpeter Revisited*, 5 *Industrial and Corporate Change* 883. <<https://doi.org/10.1093/icc/5.3.883>>.

⁴⁵ Roger Brownsword, *Code, control, and choice: why East is East and West is West* (Cambridge University Press 2018).

⁴⁶ Elizabeth Pollman and Jordan Barry, *Regulatory Entrepreneurship* (2016) 90 *S Cal L Rev* 383, 385. <<https://ssrn.com/abstract=2741987>>.

⁴⁷ *Ibid.*

⁴⁸ Anna Butenko and Pierre Larouche, *Regulation for Innovativeness or Regulation of Innovation?* (2015) TILEC Discussion Paper No. 2015-007 1, 1. <<https://ssrn.com/abstract=2584863>>.

⁴⁹ Roger Brownsword *et al.* (eds), *The Oxford Handbook of Law, Regulation and Technology*, (Oxford Handbooks 2017), 3.

Innovations often requires, among other things, anticipating concerns and agilely responding to them as they appear.⁵⁰ In this context of rapid technological change, the contours of legal and regulatory action are not pronounced, nor are the frames of analysis.⁵¹

Unlike the last industrial revolution, where Innovation processes traversed a sufficient amount of time, Innovations in contemporary societies, such as nanotechnology, biotechnology, applied neuroscience, geoengineering, insurtech, surveillance technologies, regtech, robotics, artificial intelligence, big data analytics, blockchain, and metaverse have advanced rapidly. Today's regulatory mechanisms are designed for much more centralized, concentrated marketplaces.⁵² Structurally, regulatory systems are either industry-centric or product specific and built on regulating individual firms, licensed and supervised under clearly identified regimes, based on the types of products they offer and activities they engage in.⁵³ The silo-based regulatory architecture, in which independent regulators oversee separate sectors under distinct statutory schemes, is an institutional embodiment of this approach.⁵⁴ Within each regulatory silo, the relevant regulator operates under a clearly defined set of policy priorities, reflecting the legislative assessment of the core risks posed by the specific regulated entities and activities.⁵⁵

Conventional approaches are likely to create piecemeal regulations that address narrow issues without acknowledging unintended implications for the broader legal system.⁵⁶ As a result, regulations concerning Innovative products and services could become obsolete before they are finalized. It is also conceivable that regulatory gaps will emerge where no agency has jurisdiction, leaving the system vulnerable to emerging risk and growing uncertainty that chills Innovation.⁵⁷ Given this

⁵⁰Jack Stilgoe, 'Developing a framework for responsible innovation' 42 *Research Policy* 1568, 1570-1571. <<https://doi.org/10.1016/j.respol.2013.05.008>>.

⁵¹ Brownsword (n 49) 4.

⁵² Jo Ann Barefoot, 'Modernizing Consumer Financial Regulation For the Digital Age' M-RCBG Associate Working Paper Series No. 152 1, 11. <https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/files/AWP_152_final.pdf>

⁵³ *Ibid.*

⁵⁴ Saule Omarova, 'Technology v Technocracy: Fintech as a Regulatory Challenge' (2020) 6 *Journal of Financial Regulation* 75, 81. <<https://doi.org/10.1093/jfr/fjaa004>>.

⁵⁵ *Ibid.*

⁵⁶ Barefoot (n 52) 1.

⁵⁷ *Ibid.*

complexity, no single regulatory agency is in a position to regulate these Innovations effectively and comprehensively.⁵⁸ As a deduction, it is worth noting that in the contemporary settings, traditional command-and-control intervention is not always an effective form of response.

Until now, it has been a general assumption of law and policymakers that regulation should be constant, simple and predictable, and aligned to commercial realities.⁵⁹ Typically, once a legal rule or a regulatory program exists, it remains stable until there is some impetus for change. Indeed, indistinct, contradictory, and unstable legislation becomes a potential cause of a legal system's dysfunctionality. Yet, discretion and flexibility in regulations are not only admissible but also, in some sectors, desirable.⁶⁰

Broadly, the regulators face a choice between taking a traditional hard law approach or leaving it to self-regulation and, concomitantly, a softer form of law.⁶¹ When the former approach is embraced, the hard edges of the law can be softened in variety of ways, especially by adopting a 'technology neutral' drafting style, by delegating regulatory authority and by encouraging a culture of purposive interpretation in the courts.⁶² Conversely, where softer law is preferred, the regime can be hardened up by moving towards a form of co-regulation.⁶³ However, no matter which approach is adopted, there is no guarantee that it will be effective, and intricacies of the regulatory regime will always reflect a tension between the need for flexibility (if regulation is to move with the Innovation) and the demand for predictability and consistency (if regulatees are to know where they stand).⁶⁴

⁵⁸ *Ibid* 34.

⁵⁹ Roscoe Pound, *An Introduction to the Philosophy of Law* (Yale University Press 1930), 101.

⁶⁰ Bronwen Morgan *et al.*, *An Introduction to Law and Regulation: Text and Material* (Cambridge University Press 2007). Also, Robert Baldwin *et al.*, *Understanding Regulation: Theory, Strategy and Practice* (Oxford University Press 2012), 414. Also, Eleanor Fox, 'Rule of Law, Standards of Law, Discretion and Transparency Rule of Law Symposium' (2014) 67 SMU Law Review 795. <<https://scholar.smu.edu/smulr/vol67/iss4/10>>.

⁶¹ Ryan Hagemann *et al.*, *Soft Law for Hard Problems: The Governance of Emerging Technologies in an Uncertain Future* (2018) 17 Colo Tech LJ 37. <<https://heinonline.org/HOL/P?h=hein.journals/jtelhtel17&i=51>>.

⁶² Roger Brownsword and Morag Goodwin, *Regulatory connection II: Disconnection and sustainability*. Chapter. In *Law and the Technologies of the Twenty-First Century: Text and Materials* (Cambridge University Press 2012). <<https://doi.org/10.1017/CBO9781139047609.022>>.

⁶³ *Ibid*.

⁶⁴ Roger Brownsword, *The shaping of our on-line worlds: getting the regulatory environment right* (2012) 20 International Journal of Law and Information Technology 249, 265. <<https://doi.org/10.1093/ijlit/eas019>>.

The globalization of business has profoundly undermined the territorial basis of lawmaking.⁶⁵ It has called into question the traditional monopoly position of the state as the provider of law.⁶⁶ Moreover, the cross-cutting impact of Innovation has obfuscated sectorial boundaries and created new challenges for fields. The rapid growth of Innovations, the associated systemic risks and legal constraints that emerge out of Innovative enterprises, the changing support landscape, and the impact of Innovations on the identification and acquisition of entrepreneurial opportunities are all factors that challenge the understanding of the traditional dynamics of the regulations and regulatory approaches which are plodding along slower today than ever before.⁶⁷ While the industry is continuously accelerating the pace of developing and commercializing new tech products, regulators remain predominantly in an observation mode.⁶⁸ The sophisticated process of lawmaking hinders the ability of regulators to regulate such Innovations in a timely manner. This results in “ossification” of rulemaking, whereby promulgation of new regulations becomes increasingly delayed and difficult.⁶⁹ Innovation has pioneered the concept of “agile” workflow that involves intense, cross-disciplinary collaboration and rapid development of solutions, in contrast to the linear, sequential design and decision-making processes of regulators.⁷⁰ In this context, the metaphor of *the hare and the tortoise* is often conjured up.

It is worth reconsidering one of the most basic assumptions, the statement that law lags behind Innovation. Part of this assertion seems to stem from the observation that law changes gradually.⁷¹ Some scholars have even assessed what they have regarded as a “pacing problem” of law lagging

⁶⁵ Erin O'Hara and Larry Ribstein, *The Law Market* (Oxford University Press 2009), 217.

⁶⁶ Anne Peters, *The Competition between Legal Orders* (2014) 3 International Law Research 1, 3. <<https://ssrn.com/abstract=2404377>>.

⁶⁷ Gary Marchant *et. al*, *Innovative Governance Models for Emerging Technologies* (Edward Elgar Publishing 2013). <<https://doi.org/10.4337/9781782545644>>.

⁶⁸ Omarova (n 54) 109.

⁶⁹ Thomas McGarity, *Some thoughts on deossifying the rulemaking process* (1992) 41 Duke Law Journal 1385. <<https://doi.org/10.2307/1372818>>.

⁷⁰ Barefoot (n 52) 11.

⁷¹ Richard Stewart, *Administrative Law in the Twenty-First Century* (2003) 78 New York University Law Rev 437. <<https://www.nyulawreview.org/wp-content/uploads/2018/08/NYULawReview-78-2-Stewart.pdf>>.

behind the technology.⁷² Given the intensifying pacing problem between regulation and Innovations, regulators frequently struggle to keep up with Innovations.

According to the literature, four main approaches have emerged to balance support for Innovations.⁷³

The *first* approach involves doing nothing or *laissez-faire*. This approach means not regulating Innovative firms. Under the *second* approach, the regulators are equipped by the legislature with a mandate to grant restricted licenses, special charters, or partial exemptions for Innovative firms. In the *third* approach, structured experimentalism – regulators provide a structured piloting exercise for experimentation with new approaches involving the application of various Innovations. Lastly, the *fourth* approach reforms the existing regulations or develops new regulations.

Flowing from this, the next section presents the central characteristics of Sandboxes, positioning it as one of the apex regulatory and structured experimental supports for Innovative Entrepreneurship.

⁷² Wulf Kaal and Erik Vermeulen, 'How to Regulate Disruptive Innovation - From Facts to Data' (2016) 57 *Jurimetrics* 1. <<https://ssrn.com/abstract=2808044>>.

⁷³ János Kálmán, 'Ex Ante Regulation? The Legal Nature of the Regulatory Sandboxes or How to Regulate before Regulation even Exists' in Gábor Hulkó and Roman Vybiral (eds.), *European Financial Law in times of crisis of the European Union* (2018), 219. <<https://ssrn.com/abstract=3255850>>.

3. UNBOXING THE SANDBOX

Given the uncertainty of Innovations, the risk-benefit calculus often merits an equilibrium between the “Law and Innovative Entrepreneurship”, which incites governmental efforts to form regulations suited to the conditions of the new reality. In a way, Sandboxes signal a regulator's propensity to underpin Innovative Entrepreneurship⁷⁴ by promoting a balanced practice of dispensation, rather than one focused on legal consequences, and potential liability.⁷⁵ Intrinsically, it endeavours to synchronise technological constructions (Innovations) with social constructs (legislations and regulations).⁷⁶

A working theory of Sandboxes is best served by first contrasting them from what they are not: other models of top-down regulation, which often begin with the premise that the governing agency's primary objective is public interest.⁷⁷ The experimental method is deeply rooted in history and over the centuries, this method expanded to multiple sciences, including law and policy.⁷⁸ Specifically, Sandboxes have a more recent history than experimental regulations. The contemporary development of experimental legal regimes such as Sandboxes occurred against the backdrop of growing scholarship on the principle of effectiveness⁷⁹, evidence-based lawmaking⁸⁰, temporary legislation⁸¹, and Innovations, specifically in the financial sector.

⁷⁴ Ross Buckley *et al.*, 'Building Fintech Ecosystems: Regulatory Sandboxes, Innovation Hubs and beyond' (2020) 61 Wash University Journal of Law & Policy 55, 71. <<https://ssrn.com/abstract=3455872>>.

⁷⁵ Dirk Zetzsche *et al.*, 'Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation' (2017) 23 Fordham Journal of Corporate and Financial Law 31. <<https://ssrn.com/abstract=3018534>>.

⁷⁶ Serentschy (n 35) 9.

⁷⁷ Jonathan Adler, 'More Sorry Than Safe: Assessing the Precautionary Principle and the Proposed International Biosafety Protocol' (2000) 35 Texas International Law Journal 173, 195. <https://scholarlycommons.law.case.edu/faculty_publications/226>.

⁷⁸ Rose McDermott, 'Experimental methods in political science' (2002) 5 Annual Review of Political Science 31. <<https://doi.org/10.1146/annurev.polisci.5.091001.170657>>.

⁷⁹ Maria Mousmouti, 'Operationalising Quality of Legislation through the Effectiveness Test' (2015) 6 Legisprudence 191. <<https://doi.org/10.5235/175214612803596686>>.

⁸⁰ Rob van Gestel and Gijs van Dijck, 'Better regulation through experimental legislation' (2011) 17 European Public Law 539. <<https://www.researchgate.net/publication/254777897>>.

⁸¹ Jacob Gersen, 'Temporary legislation' (2017) 74 University of Chicago Law Review 247. <<https://chicagounbound.uchicago.edu/uclrev/vol74/iss1/12>>

Despite their prevalence, scholarship on Sandboxes is limited. Scholars are still at the stage of defining Sandboxes in conceptual terms, such as ‘*principles-based*’⁸², ‘*opportunity-based*’⁸³, ‘*smart*’,⁸⁴ ‘*experimental*’⁸⁵ or ‘*anticipatory*’⁸⁶ regulation. Whereas some jurisdictions refer to Sandboxes as “*RegLabs*”⁸⁷ or “*Innovation Labs*”.⁸⁸ Nonetheless, these terminologies are material only to the extent that they distinguish Sandboxes from other innovative regulatory initiatives.

A Sandbox is not a typical legal institution, but an innovation in legal regulation.⁸⁹ A Sandbox is not a means to evade any regulatory controls or enforcement activity. It is also not even an endorsement from any regulatory bodies for a specific business model, product, or service. Sandboxes provide holding space for Innovation to be tested at a micro level under the benign watch of a regulator.⁹⁰ But, Sandboxes are not substitute for a sound business models and can only function properly where a solid foundation of technical expertise meets regulatory openness and market demand.⁹¹ Specifically, Sandbox is a tool for Innovation-friendly, future-proof and resilient regulatory framework that masters disruptive challenges in a digital age.⁹² It is complex and path-breaking regulatory territory that pushes regulators and regulatory actors beyond traditional and trusted roles.⁹³ In general,

⁸² Hilary Allen, ‘*Regulatory Sandboxes*’ (2019) 87 *George Washington Law Review* 579. <<https://ssrn.com/abstract=3056993>>

⁸³ Deirdre Ahern, ‘*Regulators Nurturing FinTech Innovation: Global Evolution of The Regulatory Sandbox as Opportunity-Based Regulation*’ (2019) 15 *Indian Journal of Law and Technology* 345. <<http://hdl.handle.net/2262/91649>>.

⁸⁴ Zetzsche (n 75).

⁸⁵ Sofia Ranchordás, ‘*Experimental lawmaking in the EU: Regulatory Sandboxes*’ (2021) University of Groningen Faculty of Law Research Paper No. 12/2021 1. <<https://ssrn.com/abstract=3963810>>.

⁸⁶ Harry Armstrong and Jen Rae, ‘*A working model for anticipatory regulation*’ (2017) London: Nesta 1. <https://media.nesta.org.uk/documents/working_model_for_anticipatory_regulation_0.pdf>.

⁸⁷ Schan Duff, ‘*Regulatory Sandboxes: Modernizing Digital Financial Regulation*’ (Aspen Institute 12 July 2017). <<https://www.aspeninstitute.org/publications/modernizing-digital-financial-regulation-evolving-role-reglabs-regulatory-stack/>>.

⁸⁸ UNSGSA FinTech Working Group and CCAF, ‘*Early Lessons on Regulatory Innovations to Enable Inclusive FinTech: Innovation Offices, Regulatory Sandboxes, and RegTech.*’ (Office of the UNSGSA and CCAF: New York, NY and Cambridge, UK, 2019) 26. <https://www.unsgsa.org/sites/default/files/resources-files/2020-09/UNSGSA_Report_2019_Final-compressed.pdf>.

⁸⁹ Kálmán (n 73) 8.

⁹⁰ Deirdre Ahern, ‘*Regulatory Lag, Regulatory Friction and Regulatory Transition as FinTech Disenablers: Calibrating an EU Response to the Regulatory Sandbox Phenomenon*’ (2021) 22 *Eur Bus Org Law Rev* 395, 404. <<https://doi.org/10.1007%2Fs40804-021-0pt0217-z>>.

⁹¹ Zetzsche (n 75) 103.

⁹² Lauren Fahy, ‘*Regulator Reputation and Stakeholder Participation: A Case Study of the UK’s Regulatory Sandbox for Fintech*’ (2022) 13 *European Journal of Risk Regulation* 138. <<https://doi.org/10.1017/err.2021.44>>.

⁹³ Ahern (n 83) 345.

Sandboxes feature broad-based principles instead of detailed rules, softer legal norms, less formal enforcement strategies, and require reciprocal trust and aligned interests to function appropriately.⁹⁴ Distinctively, Sandboxes frequently adopt a system of approval regulation to determine the eligibility of Innovative firms, which is usually predicated on the basis of broad-based criteria.⁹⁵ Such conditions are often indicative rather than exhaustive⁹⁶ and generally tied to the underlying objectives of Sandboxes.⁹⁷ As such, a measure of discretion applies to regulatory decision-making⁹⁸ as it operates outside of agencies' typical approval paradigms⁹⁹ and offers an environment to Innovative Entrepreneurs for ongoing guidance from regulators. This expectation of regulatory engagement differentiates Sandboxes from other regulatory waivers and exemptions.¹⁰⁰

Principally, the "initial regulation" in Sandboxes comes from the regulatory blueprint agreed upon between the regulatory authority and the regulated industry participant in Sandbox.¹⁰¹ When an industry participant meets the threshold criteria and enters the Sandbox, it receives inevitable "deregulation" treatments to the extent predetermined by the regulator or jointly agreed upon with the participant.¹⁰² By virtue of public-private interactions in Sandboxes, the regulator garners significantly more information than either prior regulator.¹⁰³ As a result, when an industry participant exits Sandbox, the regulator can make more informed decisions in the "re-regulation" process.¹⁰⁴ The relationships that are emerged during this process become influential for crafting appurtenant

⁹⁴ Heikki Marjosola, *The problem of regulatory arbitrage: A transaction cost economics perspective* (2021) 15 Regulation & Governance 388. <<https://doi.org/10.1111/rego.12287>>.

⁹⁵ Walter Johnson, *Caught in quicksand? Compliance and legitimacy challenges in using regulatory sandboxes to manage emerging technologies* (2022) Regulation & Governance, 5. <<https://doi.org/10.1111/rego.12487>>.

⁹⁶ Ahern (n 90) 409.

⁹⁷ Wolf-Georg Ringe and Christopher Ruof, *Regulating Fintech in the EU: The Case for a Guided Sandbox* 11 European Journal of Risk Regulation 604. <<https://doi.org/10.1017/err.2020.8>>.

⁹⁸ Ahern (n 90) 409.

⁹⁹ Jacob Sherkow, *Regulatory Sandboxes and the Public Health* (2022) Univ Ill L Rev 357, 359. <<http://hdl.handle.net/2142/113404>>.

¹⁰⁰ Allen (n 82) 580.

¹⁰¹ Peter Molk and Arden Rowell, *Reregulation and the Regulatory Timeline* (2016) 101 Iowa Law Review 1497. <<https://ssrn.com/abstract=2420289>>.

¹⁰² *Ibid.*

¹⁰³ *Ibid.*

¹⁰⁴ *Ibid.*

regulatory policies.¹⁰⁵ Viewed broadly, Sandbox mechanism narrows the high failure rates associated with new venture creation.¹⁰⁶

The UK Financial Conduct Authority (FCA) is credited with creating the first formal Sandbox and propagating the notion globally. Given the promises of the Sandbox, there has been a gradual embrace of this approach by governments across continents, arguably indicating a global norm diffusion.¹⁰⁷ Although there is no consensus on the definition of a Sandbox, the FCA has defined it as “a ‘safe space’ in which businesses can test Innovative products, services, business models and delivery mechanisms without immediately incurring all the normal regulatory consequences of engaging in the activity in question”.¹⁰⁸ Yet, from a regulator’s perspective, a significant contribution of Sandboxes may not lie in offering a highly restrictive safe space, but in its signalling function: communicating regulator flexibility towards Innovative firms.¹⁰⁹ Moreover, Sandboxes bring a crucial dimension of transparency to *ad hoc* forbearance or dispensation practices, allowing easier comparison among potential Sandboxes entrants.¹¹⁰

Unsurprisingly, one of the commonly claimed objectives of Sandboxes is to encourage Innovative Entrepreneurialism and Innovation.¹¹¹ Another commonality amongst Sandboxes globally is the limited scale, restricted nature of activities Innovative firms can conduct in the Sandbox environment. Nonetheless, the definition, form and implementation of what constitutes a Sandbox varies.¹¹² The immanent legal character of this legal institution is difficult to summarise at times, owing to variances in the legal thinking of jurisdictions.¹¹³ Notably, there has been significant variation in the forms of

¹⁰⁵ *Ibid.*

¹⁰⁶ Kris Aerts *et al.*, ‘Critical role and screening practices of European business incubators’ (2007) 27 *Technovation* 254, 254. <<https://doi.org/10.1016/j.technovation.2006.12.002>>.

¹⁰⁷ Chang-hsien Tsai *et al.*, ‘The Diffusion of the Sandbox Approach to Disruptive Innovation and Its Limitations’ (2020) 53 *Cornell Int’l L J* 261, 264. <<https://ssrn.com/abstract=3487175>>.

¹⁰⁸ Financial Conduct Authority, ‘Regulatory Sandbox’ (2015). <<https://www.fca.org.uk/publication/research/regulatory-sandbox.pdf>>

¹⁰⁹ Douglas Arner *et al.*, ‘Fintech and Regtech: Enabling Innovation While Preserving Financial Stability’ (2017) 18 *Georgetown Journal of International Affairs* 47, 7. <<https://ssrn.com/abstract=3211708>>.

¹¹⁰ *Ibid.*, 5.

¹¹¹ UNSGSA (n 88) 22,58.

¹¹² Michael Wechsler *et al.*, ‘The State of Regulatory Sandboxes in Developing Countries’ (2018) *SSRN Electronic Journal* 1, 6 <<https://ssrn.com/abstract=3285938>>.

¹¹³ Kálmán (n 73) 221.

the Sandboxes that have been adopted, with the result that the term Sandbox often means diverse things in different jurisdictions.¹¹⁴ These disparities can be more obvious when the regulator's legislative requirements and available resources differ.¹¹⁵ Frameworks are tailored to fit the specific needs, priorities, laws, mandates and resources of a jurisdiction and Sandbox operator.¹¹⁶ Finally, there is also significant disparity in the practical implementation of Sandboxes around the world.¹¹⁷ Some jurisdictions allow a broad range of financial products and services to be tested in Sandboxes, whereas others are much more restrictive.¹¹⁸ Most jurisdictions place limitations on the duration of testing, typically, from six months to two years,¹¹⁹ but a few outliers do not specify any limit on the duration of the Sandbox trial.¹²⁰ The United Kingdom's Sandbox was structured to encourage iterative discussions between Innovative firms and regulators, but other jurisdictions, notably Australia have done less to stimulate this type of engagement in their Sandboxes.¹²¹ Overall, this illustrates the vast array of possible permutations of regulatory treatments in Sandboxes.

Beyond regulatory Sandboxes, industry sandboxes have also emerged and been utilized in various fields. Industry sandboxes are operated by industry stakeholders, not by regulators.¹²² It supports the testing of solutions, without giving access to any form of regulatory relief.¹²³ Besides this, private and proprietary sandboxes also exist for testing and experimentations. Nonetheless, this dissertation confines its scope to the "regulatory" Sandboxes. However, it is worth noting that some of the

¹¹⁴ Allen (n 82) 592.

¹¹⁵ Wechsler (n 112) 9.

¹¹⁶ *Ibid.*

¹¹⁷ Hilary Allen, 'Sandbox Boundaries' (2020) 22 Vand J Ent & Tech L 299, 303. <<https://ssrn.com/abstract=3409847>>.

¹¹⁸ *Ibid.*

¹¹⁹ Global Financial Innovation Network (GFIN), Consultation Document (2018), 18. <https://files.consumerfinance.gov/f/documents/bcfp_global-financial-innovation-network_consultation-document.pdf>.

¹²⁰ Baker McKenzie, 'A Guide to Regulatory Fintech Sandboxes across Asia Pacific' (2017). <https://www.bakermckenzie.com/-/media/files/insight/publications/2018/01/qrg_ap_regulatoryfintech_jan18.pdf?la=en>.

¹²¹ Allen (n 82) 598.

¹²² Elizaveta Gromova *et al.*, 'Regulatory Sandboxes (Experimental Legal Regimes) for Digital Innovations in BRICS' (2020) 7 Brics Law Journal 10, 18. <<https://doi.org/10.21684/2412-2343-2020-7-2-10-36>>.

¹²³ *Ibid.*

prominent characteristics that shape Sandboxes globally, as stated below, may not always be the exclusive feature of Sandboxes.

3.1 Structured Experimentalism

Perhaps less obviously, regulatory acceleration requires two elements that are currently in short supply. One is the need for regulators to conduct “experimentation”¹²⁴ and the second is the requirement for a robust “collaboration”.¹²⁵ Structured Experimentalism is an innovative approach to test products, services, or business models in a real but created regulatory framework with the possibility to enter the market after the test period.¹²⁶ Structured Experimentalism may quiver the traditional approach of regulations which have thus far been perceived as a typically “reactive” mechanism to market failures or risks.

Pertinently, not all experimental policies can be facilitated by temporary legislation, and not all temporary legislations are experimental.¹²⁷ Mainly, Sandbox is more specific type of the experimental legal regime that encompasses a close collaboration between public and private actors¹²⁸ and conducts testing of Innovative products, or services for a limited time and limited area under regulatory supervision.¹²⁹ In Sandboxes, regulators demarcate a legal area for experimenting, where the inhibitions stemming from the existing regulations are suspended temporarily.¹³⁰ Largely, Sandboxes

¹²⁴ Barefoot (n 52) 5.

¹²⁵ *Ibid.*

¹²⁶ Kálmán (n 73) 220.

¹²⁷ Antonios Kouroutakis and Sofia Ranchordás, ‘Snoozing Democracy: Sunset Clauses, de-Juridification, and Emergencies’ (2016) 25 Minnesota Journal of International Law 29. <<https://scholarship.law.umn.edu/mjil.264>>. Also, Ittai Bar-Siman-Tov, ‘Temporary Legislation, Better Regulation and Experimentalist Governance: An Empirical Study’ (2018) 12 Regulation and Governance 192. <<https://doi.org/10.1111/rego.12148>>.

¹²⁸ Byungkwon Lim and Charles Low, ‘Regulatory Sandboxes’ (Edward Elgar Publication 2021). <<https://doi.org/10.4337/9781800375956.00026>>.

¹²⁹ General Secretariat of the Council, ‘Council conclusions on regulatory sandboxes and experimentation clauses as tools for an innovation friendly, future-proof and resilient regulatory framework that masters disruptive challenges in the digital age’ (Council of the European Union 2020), 14. <<https://data.consilium.europa.eu/doc/document/ST-13026-2020-INIT/en/pdf>>.

¹³⁰ Stefan Philipsen *et al.*, ‘Legal enclaves as a test environment for innovative products: Toward legally resilient experimentation policies’ (2021) 15 Regulation and Governance 1128, 1132. <<https://doi.org/10.1111/rego.12375>>

position regulators as the administrators and coordinators of various experiments that facilitate learning about the emerging technologies and applicability of various regulatory norms.¹³¹

Innovations are often met with highly polarised debates over how to regulate them as advancements derived from Innovations have far-reaching consequences for the well-being and cohesion of society.¹³² Famously, David Collingridge identified this regulatory dilemma as new technologies emerge. Stated simply, regulators tend to find themselves in a situation in which they either do not know enough about the (immature) technology to make an appropriate intervention, or they know what regulatory involvement is appropriate, still they are no longer able to turn back the (mature) technology.¹³³ Even when regulators feel sufficiently assured about the benefits and risk profile of technology, a bespoke legislative framework comes with no guarantee of sustainability. Furthermore, Brownsword's description of the 'challenge of regulatory connection' is another account of the dilemma of Innovation, which describes the mismatch between contemporary laws and regulatory approaches that are designed for the technological landscape of the past, necessitating constant "reconnection".¹³⁴ As a result, an apparent solution to these predicaments is to adopt some form of policy experimentation.

The logical premise of experimentalism lies in the assumption that regulations can fail, hence it is preferable to adopt a trial-and-error paradigm that is in line with a rapidly changing situation in which authorities do not know underlying complexities in advance.¹³⁵ Experimentalism strives to capitalise the potential of new governance strategies to manage uncertainty and provide flexibility.¹³⁶ Experimental legal instruments contribute to the development of evidence-based law-making process

¹³¹ Sofia Ranchordás, *Experimental Regulations for AI: Sandboxes for Morals and Mores* (2021) University of Groningen Faculty of Law Research Paper No. 7/2021, 23. <<https://ssrn.com/abstract=3839744>>.

¹³² Gregory Mandel, *Emerging Technology Governance*, in Gary Merchant *et.al.* (eds.) *Innovative Governance Models for Emerging Technologies* (Edward Elgar Publishing 2013), 44-45.

¹³³ Brownsword (n 49) 21.

¹³⁴ Moses (n 22).

¹³⁵ Cristina Poncibò and Laura Zoboli, *The Methodology of Regulatory Sandboxes in the EU: A Preliminary Assessment from a Competition Law Perspective* (2022) EU Law Working Papers No. 61, Stanford-Vienna Transatlantic Technology Law Forum, 2. <<https://law.stanford.edu/publications/no-61-the-methodology-of-regulatory-sandboxes-in-the-eu-a-preliminary-assessment-from-a-competition-law-perspective/>>.

¹³⁶ Charles Sabel and William Simon, *Minimalism and experimentalism in the administrative state* (2011) 100 GEO L J 53. <https://scholarship.law.columbia.edu/faculty_scholarship/735>.

and the continuous reassessment of regulation.¹³⁷ Having said that, this is plausible only if and when they are well designed and evaluated according to objective and pre-established criteria.

3.2 Principles-based Regulations

A principles-based regulatory regime refers to the institutional philosophy of “light-touch regulation”, which is the pith and substance of Sandboxes.¹³⁸ They are designed to achieve regulatory outcomes than technical rules for regulated market participants.¹³⁹

Through advocacy surrounding Innovation, policymakers around the world are gradually making a momentous shift away from the rules-based approach to principles-based regulatory regimes.¹⁴⁰ One of the potential negatives under rules-based regulatory regimes is “deterrence concerning Innovation” whereas, one of the potential upsides of principles-based regulatory regimes is “flexibility and innovation in the face of rapidly changing environments.”¹⁴¹

According to advocates of a principles-based approach, such a shift will abbreviate barriers to entry, intensify competition, and increase flexibility related to compliance.¹⁴² On the other hand, opponents are concerned about the ambiguity it may create and the ensuing cost of that uncertainty to market actors.¹⁴³

3.3 *Ex post* and Collaborative Approach

Historically, the timing of the regulatory intervention has been a key consideration in regulatory designs. The optimal time for eventual regulation depends on the question of when Innovation

¹³⁷ Ranchordás (n 131).

¹³⁸ Chang-hsien Tsai, ‘*The FinTech Revolution and Financial Regulation: The Case of Online Supply Chain Financing*’ (2017) 4 *Asian Journal of Law and Society* 109,121. <<https://ssrn.com/abstract=3035386>>.

¹³⁹ Dan Awrey, ‘*Regulating Financial Innovation: A More Principles-Based Proposal?*’ (2011) 5 *Brook J Corp Fin & Com L* 273, 286. <<https://brooklynworks.brooklaw.edu/bjcfcl/vol5/iss2/1>>

¹⁴⁰ Christie Ford, ‘*Innovation-Framing Regulation*’ (2013) 649 *The ANNALS of the American Academy of Political and Social Science* 76, 92. <<https://doi.org/10.1177%2F0002716213489249>>

¹⁴¹ Chris Brummer and Daniel Gorfine, ‘*FinTech: Building a 21st Century Regulator’s Toolkit*’ (2014) Santa Monica: Milken Institute, 7. <<https://milkeninstitute.org/reports/fintech-building-21st-century-regulators-toolkit>>

¹⁴² Jeremy Hill *et al.*, ‘*Principles-Based Regulation: Lessons from the U.K. Financial Services Authority*’ (2007) 7 *Futures & Derivatives Law Report* 18.

¹⁴³ Cristie Ford, ‘*New Governance, Compliance, and Principles-Based Securities Regulation*’ (2008) 45 *American Business Law Journal* 1, 7-8. <<https://heinonline.org/HOL/P?h=hein.journals/ambuslj45&i=7>>.

becomes socially, technically, or economically pertinent.¹⁴⁴ Under *ex ante* regulation, the regulatory agencies determine their enforcement approach and the externality producer feels the weight of the regulator's influence before or during the time the externality is produced.¹⁴⁵ Whereas, in *ex post* approach, the regulator's decision and the resulting impact both arrive after the occurrence of regulated conduct.¹⁴⁶ Innovation itself introduces an element of competition, driving out the need for *ex ante* regulation.¹⁴⁷

Prior commentators have emphasised the risk that regulators' will often lack comprehensive information about the considerations.¹⁴⁸ This "informational problem" is exacerbated by regulators limited access to the forms of information or knowledge which are relevant for the development of Innovation, specifically "inventive knowledge" (what facilitates the intellectual or material creation), "emergent knowledge" (the information generated by Innovations), and "interpretative knowledge" (what makes us perceive something as Innovative, or the added value of a novelty to the state-of-art).¹⁴⁹ On that basis, it could be argued that *ex post* approach is often desirable to *ex ante* solutions.

Furthermore, neither regulators nor Innovative Entrepreneurs comprehend how Innovations can comply with regulations, especially in a heavily regulated industry; consequently, a collaborative approach is needed to facilitate experimentation and information sharing regarding novel solutions.¹⁵⁰ Sandboxes frequently structure dialogues and activities supporting, supervising, or facilitating information exchange between regulators and Innovative Entrepreneurs, thereby intensifying regulators' understanding of Innovation and participants' knowledge of regulation by providing bespoke guidance to Innovative Entrepreneurs.

¹⁴⁴ Serentschy (n 35).

¹⁴⁵ Jon Hanson and Kyle Logue, 'The Cost of Cigarettes: The Economic Case for Ex Post Incentive-Based Regulation' (1998) 107 Yale Law Journal 1163. <<https://repository.law.umich.edu/articles/1744>>.

¹⁴⁶ *Ibid.*, 1273.

¹⁴⁷ Rob Frieden, 'Ex Ante versus Ex Post Approaches to Network Neutrality: A Comparative Assessment' (2015) 30 Berkeley Tech LJ 1561. <<https://heinonline.org/HOL/P?h=hein.journals/berktech30&i=1666>>.

¹⁴⁸ Martin Ebers, *Regulating AI and Robotics: Ethical and Legal Challenges* in Martin Ebers and Susana Navas (eds), *Algorithms and Law* (Cambridge University Press 2020) 97. <<https://doi.org/10.1017/9781108347846.003>>.

¹⁴⁹ Alfons Bora, 'Knowledge and the Regulation of Innovation' (2010) 7 Poiesis Prax 73, 76-78. <<https://doi.org/10.1007/s10202-010-0073-7>>.

¹⁵⁰ Alaassar (n 43) 10.

3.4 Regulatory Safe Harbour

Within the Sandbox, regulators often emphasise achieving relevant outcomes as the indicator of regulatory success rather than compliance with specific behaviours. Thus, Sandboxes differ from general regulatory reforms in that the relief provided by a Sandbox is confined to “specifically selected firms” on a “case-by-case basis” and is in effect only “for a limited time”.¹⁵¹ Firms within the Sandboxes often receive some combination of reduced regulatory burdens, limitations on regulatory liability, expedited regulatory decisions and increased communication with and advice from regulators¹⁵² that pilot Innovations without systemic risk.¹⁵³ Regulators use various legal or non-legal methods, such as express waiver of rules, licensing requirements, custom guidance, or commitment not to enforce the existing rules to create safe harbour.¹⁵⁴ Essentially, it reduces initially-applicable regulations that incentivise Innovative firms to base their operations and allows Innovative Entrepreneurs to understand the expectations of playing in a bounded field.¹⁵⁵

Sandboxes implicitly offer an alternative to the default form of punitive regulatory enforcement against non-compliant activities by carving out an “interim” area of permissible activities.¹⁵⁶ The apparent voluntary nature of the Sandboxes incentivise Innovative firms to distinguish themselves from regulatory arbitrageurs, if not to evade potential antagonistic enforcement.¹⁵⁷

Relatedly, findings indicate that Sandboxes have the requisite regulatory powers to provide licensing reliefs and establish or alter the boundary conditions of exemptions during participation to align with

¹⁵¹ Zetzsche (n 75) 75.

¹⁵² UNSGSA (n 88) 27,32.

¹⁵³ William Magnuson, *Regulating Fintech* (2018) 71 Vand L Rev 1167.

<<https://heinonline.org/HOL/P?h=hein.journals/vanlr71&i=1211>>.

¹⁵⁴ Philipsen (n 130). Zetzsche (n 75).

¹⁵⁵ Grant Frazier and Nicholas Walter, *Regulatory Sandboxes: How Federal Agencies Can Take Part in Cooperative Federalism and Catalyze Innovation and Economic Growth through Exercise of Their Exemptive Authority* (2020) 18 DLJ, 4. <<https://ssrn.com/abstract=3561263>>.

¹⁵⁶ Iris H-Y Chiu, *A Rational Regulatory Strategy for Governing Financial Innovation* (2017) 8 European Journal of Risk Regulation 743, 745. <<https://doi.org/10.1017/err.2017.50>>.

¹⁵⁷ *Ibid.*

the business models of each Innovative firms.¹⁵⁸ Taken together, a tailoring approach and regulatory powers enable regulators to identify a safe harbour under the umbrella of Sandboxes.

¹⁵⁸ Ahmad Alaassar, '*A Phenomenon-driven Exploration of Regulatory Sandboxes in FinTech Entrepreneurial Ecosystems*' (University of Agder/RMIT University, School of Business and Law 2021). <<https://hdl.handle.net/11250/2758259>>.

4. THINKING OUT OF THE SANDBOX

Sandboxes are not the first or only instrument adopted to administer Innovations and ambiguity associated with it. Insights may be drawn from how other mechanisms have performed in these endeavours when accounting for relevant technological and societal considerations. Regulatory experiments are also performed in the form of a pilot program.¹⁵⁹ Although most of the relevant literature considers the instrument conceptually similar to Sandboxes, there are nuanced differences between the two. A pilot program is generally initiated by the regulator itself and accompanied by a set of pre-determined regulatory requirements that provide clear guidance on how firms in the pilot program should conduct their business.¹⁶⁰ Sandboxes, on the other hand, are triggered upon the application by the Innovative firm who intends to conduct a trial. The regulator frequently orchestrates pilot programs to open up a market, whereas Sandboxes are primarily utilised by the regulator to explore and redefine present regulatory parameters for Innovations.¹⁶¹

Sandboxes greatly resemble the “Test-and-Learn”, approach but are designed to be a more proactive, transparent, standardized and published process.¹⁶² Test-and-Learn is an *ad hoc*, and a bespoke solution with a bottom-up approach, designed pursuant to a dialogue between Innovators and regulators.¹⁶³ Sandboxes are only open to Innovators who meet the eligibility thresholds, which are predefined, publicized, and standardised by the regulators. In Test-and-Learn approach, regulators typically use exemptions such as letters-of-no-objection or case-by-case waivers to allow Innovators to operate in an environment free of specific regulation, while allowing regulators to engage as outcomes become more evident during the testing process.¹⁶⁴

¹⁵⁹ Cheng-Yun Tsang, ‘From Industry Sandbox to Supervisory Control Box: *Rethinking the role of regulators in the era of Fintech*’ (2019) 2019 Journal of Law, Technology and Policy 355, 359. <<https://ssrn.com/abstract=3420539>>.

¹⁶⁰ International Finance Corporation, ‘*Blockchain: Opportunities for Private Enterprises In Emerging Markets*’ (January 2018).<https://www.ifc.org/wps/wcm/connect/2106d1c6-5361-41cd-86c2-f7d16c510e9f/201901-IFCEMCompass-Blockchain-Report.pdf?MOD=AJPERES&CVID=mxYj-sA>>.

¹⁶¹ Tsang (n 159) 359.

¹⁶² World Bank Group, ‘*How Regulators Respond To FinTech: Evaluating the Different Approaches – Sandboxes and Beyond*’ (2020), 35. <<https://openknowledge.worldbank.org/handle/10986/33698>>.

¹⁶³ Wechsler (n 112) 10,14. Also, Zetzsche (n 75).

¹⁶⁴ *Ibid.*

Commonly, Incubators and Accelerators provide programs that offer specifically designed support services, access to physical facilities, and networking opportunities, all while adhering to standard selection criteria and exit policies.¹⁶⁵ These Incubators and Accelerators are inherently different from Sandboxes owing to the nature of specific activities conducted by them. As for Accelerators, the selection is focused on scouting entrepreneurial teams rather than individual Innovative Entrepreneurs.¹⁶⁶ Similarly, Sandboxes evaluate applicant's eligibility by taking into account factors such as individual characteristics, concept readiness, and Innovative solutions offered by their business models.¹⁶⁷ While it may be argued that Incubators, Accelerators, and Sandboxes conduct comparable selection activities, there are noteworthy differences which are worth considering. A case-by-case tailoring approach adopted by Sandboxes contrasts with the more streamlined programs that Accelerators provide.¹⁶⁸ Sandboxes often have the regulatory powers to adapt testing parameters to each firm, whereas, there are no significant studies that indicate whether Incubators and Accelerators have similar authority to grant exemptions or adjust regulatory framework conditions.¹⁶⁹

Among the commonly adopted approaches by regulatory authorities, Innovation Hubs have also gained attention. Innovation Hubs provide a dedicated point of contact for firms to raise inquiries with competent authorities and to seek non-binding guidance on regulatory and supervisory expectations, including licensing requirements.¹⁷⁰ Certain characteristics such as regulators' intervention of supporting Innovation, licensing exemptions, and regulators' roles in sharing knowledge about regulatory frameworks distinguish Sandboxes from Incubators and Accelerators.¹⁷¹

Due to these specific characteristics, evidence on Incubation activities that is not "industry-specific"

¹⁶⁵ Tzameret Rubin *et al.*, 'Knowledge flow in technological business incubators: Evidence from Australia and Israel' (2015) 41 *Technovation* 11, 13. <<https://doi.org/10.1016/j.technovation.2015.03.002>>.

¹⁶⁶ Charlotte Pauwels *et al.*, 'Understanding a new generation incubation model: The accelerator' (2016) 50 *Technovation* 13, 19. <<https://doi.org/10.1016/j.technovation.2015.09.003>>.

¹⁶⁷ Alaassar (n 158) 117.

¹⁶⁸ *Ibid.*

¹⁶⁹ *Ibid.*

¹⁷⁰ European Securities and Markets Authority (ESMA), 'FinTech: Regulatory sandboxes and innovation hubs' (2018). <https://www.esma.europa.eu/sites/default/files/library/jc_2018_74_joint_report_on_regulatory_sandboxes_and_innovation_hubs.pdf>.

¹⁷¹ Alaassar (n 158) 3.

may not be entirely transferable to the study of Sandboxes.¹⁷² Sector-specific knowledge, on the other hand, falls short when it comes to studying unique incubation activities like FinTech start-ups.¹⁷³ Besides the identified similarities and differences, business support services are not distinctive features of Sandboxes.¹⁷⁴

Although Sandboxes have generated considerable interest among some policy scholars, a few apprehensions about their soundness remain. Experimental instruments carry with them a set of normative assumptions about the “ideal” world.¹⁷⁵ Thus, deviations between these assumptions and realities on the ground could create conflicts in regulatory approaches. Additionally, existing scholarship has unveiled certain shortcomings of experimental legal regimes, including their frequent politicisation, premature termination, unsatisfactory assessments, and the general absence of methodological preoccupations.¹⁷⁶ It is also argued that most regulatory questions raised in connection with Sandboxes could be effectively resolved without a live testing environment¹⁷⁷ and similar outcomes may be more affordably achieved through Innovation Offices and other tools.¹⁷⁸

4.1 Principle of Legality

Despite their potential to assist regulatory Innovation, experimental laws have been criticized because of their arbitrariness, casuistic character, and the limited legal validity of their outcomes.¹⁷⁹ Legally, experiments are challenging because they pose a threat to core legal principles of legality, certainty, equality, and public accountability, also referred to as “rule-of-law principles”.¹⁸⁰ Sandboxes are

¹⁷² *Ibid.*

¹⁷³ *Ibid.*

¹⁷⁴ *Ibid.*

¹⁷⁵ Cristie Ford, *Innovation and the state: Finance, regulation, and justice* (Cambridge University Press 2017).

¹⁷⁶ Sofia Ranchordás, *Constitutional sunsets and experimental legislation: A comparative perspective* (Edward Elgar Publication 2014).

¹⁷⁷ UNSGSA (n 88) 7.

¹⁷⁸ *Ibid.*

¹⁷⁹ Omarova (n 54).

¹⁸⁰ Alberto Castro, *Principles of good governance and the ombudsman: a comparative study on the normative functions of the institution in a modern constitutional state with a focus on Peru* (1st edn, Cambridge: Intersentia 2019).

much more vulnerable when it comes to the legality principles.¹⁸¹ The legality principles and the values that coincide with it are not automatically respected for Sandboxes.

Indeed, legal scholars and courts are long critical of the constitutional admissibility of experimental laws,¹⁸² as well as the legal resilience of Sandboxes.¹⁸³ Moreover, unless prescribed by law, civil courts are not necessarily bound by the outcomes and decisions of a regulator.¹⁸⁴ It is possible that a court may reach different conclusions about the regulatory experiments.¹⁸⁵ As a result, it may be claimed that Sandboxes without express statutory authority may be less robust than they appear.

4.2 Sandbox Paradox

Worryingly, there appears to be a kind of competition amongst global regulators, reflected as a “race to the bottom”, to create light-touch possible regimes in order to entice Innovative Entrepreneurs to their jurisdictions.¹⁸⁶ Pragmatically, Sandboxes should not be taken at face value. It is those intricate local settings, such as embedded social, economic, political, and cultural aspects that will define the eventual contours and boundaries of legal transplants¹⁸⁷ and convergence towards Sandboxes in the long run.¹⁸⁸

Sandboxes pose another risk that has not received the same level of attention within the literature or public discourse. Intrinsicly, Sandboxes have the potential to give certain economic privileges and reliefs to specifically selected firms without extending those benefits to other similarly situated firms

¹⁸¹ Philipsen (n 130) 1135.

¹⁸² Sofia Ranchordás, ‘*Experimental Regulations and Regulatory Sandboxes – Law Without Order?*’ (Law and Method, 2021). <<https://doi.org/10.5553/REM/.000064>>

¹⁸³ Philipsen (n 130) 1134-1136.

¹⁸⁴ Philipp Maume, ‘*Reducing Legal Uncertainty and Regulatory Arbitrage for Robo-Advice*’ (2019) 16 European Company and Financial Law Review 622, 637. <<https://doi.org/10.1515/ecfr-2019-0022>>.

¹⁸⁵ *Ibid.*

¹⁸⁶ Jemima Kelly ‘*A "Fintech Sandbox" Might Sound Like a Harmless Idea. It's Not*’ (Financial Times 05 December 2018).

<<https://www.ft.com/content/3d551ae2-9691-3dd8-901f-c22c22667e3b>>.

¹⁸⁷ Alan Watson, ‘*Legal transplants: An approach to comparative law*’ (University of Georgia Press, 1993), 21. Describes legal transplant as moving of a rule or a system of law from one country to another, of from one people to another.

¹⁸⁸ Tsai (n 107) 294,296.

or competitors.¹⁸⁹ Resultantly, such participating firms permitted to participate in the Sandboxes get a competitive edge over their non-qualified competitors. This presents something of a paradox for policymakers.¹⁹⁰

Commonly, the precise form of the potential advantages of a Sandbox to participating firm will be contingent upon its structure and the benefit it offers. For instance, making it easier for participating firm A to secure a limited-use licence for testing a new product or service could potentially impact non-participating, incumbent firm B, which was not admitted to participate in the Sandbox. Firm B is now compelled to play catch-up and invest the time, money, and efforts necessary to obtain a full licence. All the while, firm A is already establishing a customer base and gaining what is commonly referred to as the “first-mover advantage.”¹⁹¹ This redirects firm B’s investment resources that could have been spent on research and development or marketing. Although at a fixed point in time, even if firm B has the edge as an incumbent, over the life of both firms, firm A’s easier market access point may result in a long-term advantage over firm B. Put simply, Sandbox may give admitted firms a head start over their traditional competitors. The longer a firm is allowed to exist within the Sandbox’s regulatory environment, the more pronounced this benefit will likely be.

4.3 Regulatory Arbitrage and Interoperability

Pertinently, the increasing level of adoption and the proliferation of different Sandboxing models have prompted concern of regulatory arbitrage.¹⁹² Regulatory arbitrage refers to strategies designed by Innovative firms to achieve an economically equivalent outcome to a regulated activity while circumventing the legal conditions (colloquially, complying with the letter while avoiding the spirit and substance of the law).¹⁹³ According to ‘Porter hypothesis’, where stringent and narrow regulation

¹⁸⁹ Brian Knight *et al.* *The Sandbox Paradox: Balancing the Need to Facilitate Innovation with the Risk of Regulatory Privilege* (2020) 72 South Carolina Law Review 445, 448. <<https://ssrn.com/abstract=3561860>>.

¹⁹⁰ *Ibid.*

¹⁹¹ Roger Kerin *et al.* ‘First-Mover Advantage: A Synthesis, Conceptual Framework, and Research Propositions’ (1992) 56 J of Marketing 33. <<https://doi.org/10.2307/1251985>>

¹⁹² ESMA (n 170) 8.

¹⁹³ Victor Fleischer, *Regulatory Arbitrage* (2010) 89 TEX L REV 227, 229. <<https://heinonline.org/HOL/P?h=hein.journals/tlr89&i=233>>.

of any kind is imposed on Innovative firms, the latter is likely to innovate itself in order to escape the regulatory requirements.¹⁹⁴

Commonly, Innovative Entrepreneurs and capital tend to flow along the path of least resistance.¹⁹⁵ So, if one industry has a Sandbox that stimulates Innovation and another does not, more resources are likely to flow towards the industry with the Sandbox. Regulatory arbitrage, if left unattended to by regulators, has the potential to develop a systemic risk.¹⁹⁶ On the flip side, some of the discussions on regulatory arbitrage often neglect non-legal impediments to setting up a business in new jurisdictions.¹⁹⁷ These non-legal constraints may also be decisive factors in evaluating the utility of Sandboxes.¹⁹⁸

Although much of the literature on Innovation emphasises the key relevance of national systems, some scholars have claimed that globalization has greatly diminished or even eliminated the significance of the nation-state.¹⁹⁹ Many Innovations are being developed and deployed simultaneously in different markets.²⁰⁰ Since damages resulting from the use of Innovations might occur across jurisdictions, coordination on enforcement among regulators can be particularly challenging, either owing to the past precedents, divergent regulatory approaches or challenges in apportioning liabilities across multiple jurisdictions.²⁰¹ As a corollary, a closed and narrow national approach to Sandboxes is likely to foreclose Innovative business models, which are depended upon a transnational approach.

¹⁹⁴ Michael Porter, *The Competitive Advantage of Nations* (Harvard Business Law Review 1990). <<https://hbr.org/1990/03/the-competitive-advantage-of-nations>>.

¹⁹⁵ Malcolm Baker, *Corporate financing decisions when investors take the path of least resistance* (2007) 84 *Journal of Financial Economics* 266. <<https://doi.org/10.1016/j.jfineco.2006.03.005>>

¹⁹⁶ Tanju Yorulmazer, 'Has Financial Innovation Made the World Riskier? CDS, Regulatory Arbitrage and Systemic Risk' (Federal Reserve Bank of NY Paper, 2013). <<http://ssrn.com/abstract=2176493>>.

¹⁹⁷ Allen (n 117) 313.

¹⁹⁸ *Ibid.*

¹⁹⁹ Kenichi Ohmae, *The Borderless World: Power and Strategy in the Interlinked Economy* (Harper Business, New York, 1990).

²⁰⁰ GFIN (n 119) 3.

²⁰¹ OECD/Korea Development Institute, "Foreword", in *Case Studies on the Regulatory Challenges Raised by Innovation and the Regulatory Responses* (OECD Publishing, Paris 2021), 18. <<https://doi.org/10.1787/8163d0e4-e>>.

These transboundary challenges are exacerbated by the pacing issue: the fact that regulatory frameworks lack the agility to accommodate the increasing pace of technological advancements extends the avenues for regulatory arbitrage.²⁰² This puts increasing strain on regulators operating within the boundaries of their own jurisdictions.²⁰³ Predominantly, Sandboxes are designed at national, sometimes even subnational levels of government.²⁰⁴ From a practical perspective, such fragmented national frameworks often create regulatory friction and a mismatch between the regulatory regimes and corresponding markets that the Innovative Entrepreneurs aim to serve.²⁰⁵ This feature enables firms to evade compliance by electing the jurisdictions that are most advantageous to them.²⁰⁶

Given that the state Sandbox initiatives may be impeded by the need to comply with the federal regulatory structures, the adoption of “cooperative federalism” concept could prove constructive, particularly for unlocking the full extent of promised de-regulation benefits.²⁰⁷ The term “cooperative federalism” refers to a system of local, state, and federal government interaction in which several levels of government, especially the state and federal governments share a collective responsibility in the governance.²⁰⁸ Cooperative federalism, in particular, focuses on how the federal government can jointly work with state governments as partners to exercise governmental authority in productive and efficient ways.

In theory, global Sandboxes may facilitate cross-border development through shared testing programs and condense the potential for regulatory arbitrage across individual Sandbox jurisdictions.²⁰⁹ The primary objective of global Sandbox is to ensure the eligibility of a firm participating in one Sandbox

²⁰² *Ibid.*

²⁰³ *Ibid.*

²⁰⁴ Allen (n 117) 301.

²⁰⁵ *Ibid.*

²⁰⁶ OECD (n 201) 19.

²⁰⁷ Paul Watkins et al. *First in the Nation: Arizona's Regulatory Sandbox* (2018) 29 STAN L & POL'Y REV ONLINE 1, 16. <<https://law.stanford.edu/publications/first-in-the-nation-arizonas-regulatory-sandbox/>>

²⁰⁸ *Ibid.*

²⁰⁹ World Bank Group, *Global Experiences from Regulatory Sandboxes: Finance, Competitiveness & Innovation Global Practice* (Fintech Note No.8 2020) 6,15.

to participate in the Sandbox of another country, either simultaneously or sequentially.²¹⁰ The promotion of collaboration and coordination among the international regulatory platforms in a plurality of countries while fulfilling a single application and set of conditions is, at heart, the challenge present in any attempts at regulatory interoperability.²¹¹ Ultimately, when considering both risk and reward, the singular policy goal should be abundantly clear, which shall set common principles or international standards in order to steer the path towards cross-Sandbox interoperability.

4.4 Sunset Clause and Horizon Scanning

A static regulatory stance around Sandbox may prove too rigid as markets adapt and move. Given the dynamics of Innovation, a realistic assessment of Sandboxes is pressing, which could be partially addressed by introducing a provision similar to the sunset clause in the mechanism. A sunset clause is a provision embedded in legislation that allows a piece of legislation or a regulatory board to expire on a certain date unless the legislature takes affirmative action to renew the legislation.²¹² Typically, two elements, limited duration and *ex post* evaluation characterise sunset clauses. Sunsetting is particularly effective when the dynamic uncertainty of markets renders it difficult to foresee what Innovations and correlative systemic risks will emerge.²¹³ A similar clause for Sandboxes is crucial for horizon scanning and investigating in the future to evaluate whether the existing regulatory methodologies, processes, and instruments are prepared to embrace the anticipatory approach and to guarantee that Sandboxes are not reduced to an empty buzzword.

²¹⁰ Carlos Muñoz Ferrandis, *Fintech Sandboxes and Regulatory Interoperability* (Stanford Law School 14 April 2021). <<https://law.stanford.edu/2021/04/14/fintech-sandboxes-and-regulatory-interoperability/>>

²¹¹ *Ibid.*

²¹² Brian Baugus and Feler Bose, *Sunset Legislation in the States: Balancing the Legislature and the Executive* (Mercatus Research, Mercatus Center, Arlington, VA, 2015), 3. <<http://dx.doi.org/10.2139/ssrn.3211623>>.

²¹³ Roberta Romano, *For Diversity in the International Regulation of Financial Institutions: Critiquing and Recalibrating the Basel Architecture* (2014) 31 YALE J ON REG 1, 43. <<http://hdl.handle.net/20.500.13051/8189>>.

4.5 Dedicated Outreach Strategy

Sandbox is a piece of a challenging regulatory jigsaw puzzle whose enigmatic parts are not static, but rather evolving.²¹⁴ Its invention responds to the necessity of regulators to gain an understanding of Innovations rather than risking an inept approach to regulating emerging technologies when business models and risks are not yet fully bedded down and understood.²¹⁵ Traditionally, the organisers of Sandboxes are financial regulators as financial markets are a closely regulated sector in which safe development of Innovations require a distinct approach. Nevertheless, the challenges associated with Innovation are not unique to the financial sector only, but are evident in other sectors as well. Thus, individualised evaluation of these sectors is essential owing to their peculiarities, making each one relevant for dedicated research. In the absence of a *sui generis* regulatory regime tailor-made for sectors, implementation of Sandbox may be characterised as a stopgap measure.²¹⁶ Besides this, in practice, different types of Innovations, such as Sustaining Innovations²¹⁷, Efficiency Innovations²¹⁸, Disruptive Innovations²¹⁹, and Catalytic Innovations²²⁰, would require different strategic and regulatory approaches. Therefore, a dedicated outreach strategy in many ways should form an intrinsic part of Sandboxes.

4.6 Post-Sandbox Framework

One underlying assumption of Sandbox is that new services fall in whole or in part within the scope of the existing regulatory framework.²²¹ This assumption is not fully tested.²²² Sandboxes might not

²¹⁴ Ahern (n 90) 396.

²¹⁵ *Ibid.*

²¹⁶ *Ibid.*

²¹⁷ Kálmán (n 73) 219. Sustaining Innovations are the ones that replace old products with newer models.

²¹⁸ Kálmán (n 73) 219. Efficiency Innovations are the ones most common in our current economy and the ones that reduce or simplify the processes in the creation and delivery of an existing service or product.

²¹⁹ Kálmán (n 73) 219. Disruptive Innovations are not essentially breakthrough technologies that make good products better; rather they are innovations that make products and services more accessible and affordable, thereby making them available to a larger population.

²²⁰ Clayton Christensen *et al.*, *Disruptive Innovation for Social Change* (2006) 84 Harvard Business Review 94. Catalytic Innovations are distinguished by their primary focus on social change, often on a national scale.

²²¹ Christopher Chen, *Regulatory Sandbox and InsurTech: A Preliminary Survey in Selected Countries* (2018) 2-3. <<https://ssrn.com/abstract=3275929>>.

²²² *Ibid.*

really solve the underlying challenges and dilemma to deal with the junction of sectors; what comes within regulatory scope and what would happen after the end of Sandbox?.²²³ At present, Sandboxes are not meant to exist forever. It is uncertain what will happen after the completion of Sandbox. This leads to the significant question: what substantive rules, regulations or principles should be adopted to achieve the long-term regulatory goal for Innovations? While this nagging question merits a fuller exploration which is outside the domain of this paper, following section shall briefly outline a few broad concerns and considerations while dealing with this question.

Indeed, the policy debate is better served by refraining from drawing immediate solutions and conclusions. The fragmentation of market participants would require regulators to adopt a sequential process. Ideally, options of pursuing Sandboxes in the short-term and devising hard-law rules for the medium haul simultaneously would deliver an agile twin-track strategy to address regulatory unwieldiness. Though, any rule, legal or non-legal, issued by a regulator has a number of different dimensions.²²⁴ These are first its substance: what it concerns.²²⁵ Second, its status: whether it is legally binding or not, and the sanction, if any, which attaches to its breach.²²⁶ Third, its character, whether it prohibits, permits, discourages or mandates certain behaviour.²²⁷ Fourth, its linguistic structure: whether the language which the rule uses is vague or precise, whether the rule is simple or complex in its requirements, whether its language is clear and easily understood, or opaque.²²⁸ It is equally vital that these regulations need to be sophisticated and reasonably capable of withstanding the test of time. Future interdisciplinary scholarship is expected to refine this framework, making it possible to evaluate the broader value of Sandboxes in the advancement of evidence-based lawmaking.

²²³ *Ibid.*

²²⁴ Julia Black, *Forms and Paradoxes of Principles Based Regulation* (2008) LSE L Soc'Y & ECON WORKING PAPERS 1, 14. <<https://www.lse.ac.uk/law/working-paper-series/2007-08/WPS2008-13-Black.pdf>>.

²²⁵ *Ibid.*

²²⁶ *Ibid.*

²²⁷ *Ibid.*

²²⁸ *Ibid.*

Crucially, policy judgments are based, in large, on the relevant facts.²²⁹ The selected facts are those that regulators believe are pertinent in deciding *what*, *when* and *how* they should intervene.²³⁰

The *what* question concerns identifying Innovations that must be regulated or requires regulatory reform.²³¹ However, demarcating the scope of a technology may not always be self-evident.

Whereas, the *how* question is about the form and substance of the regulation.²³² Regulation does not exist to promote Innovation but is a critical part of the landscape that influences Innovation.²³³ The literature offers no clear answer on how regulation can foster innovativeness; the answer which largely depends on the type of Innovation, the sector, and nature of the issue Innovation addresses.²³⁴ An effective and cohesive regulatory strategy in the Innovation space must, at the very least, reflect a deeper and broader understanding of how new technologies challenge the core substantive principles and operative rationale of the existing system of regulation, rather than any particular regulatory scheme.²³⁵ Where new legislations or regulatory amendments are deemed necessary, the extent to which they should be tailored to specific Innovation remains an unsettled question.²³⁶

On other hand, the *when* question concerns the timing of any regulatory intervention.²³⁷ The debates regarding the best approaches to address Innovation often revolve around questions of whether to regulate them in advance of Innovation or to allow Innovation to develop and then, if required, regulate afterwards.²³⁸ The present regulatory infrastructure's time frame for rulemaking is largely inadequate to address regulatory challenges associated with Innovation.²³⁹ While rule makers may be

²²⁹ Mark Fenwick *et al.*, *Regulation Tomorrow: What Happens When Technology Is Faster than the Law* (2017) 6 Am U Bus L Rev 561, 571. <<https://ssrn.com/abstract=2834531>>.

²³⁰ *Ibid.*

²³¹ Alberto Alemanno *et al.*, *Better Business Regulation in a Risk Society* (New York: Springer 2013) 287. <<http://dx.doi.org/10.1007/978-1-4614-4406-0>>.

²³² Black (n 224) 14.

²³³ Knut Blind, *The Impact of Regulation on Innovation* (Nesta Working Paper No. 12/02, 2012). <https://media.nesta.org.uk/documents/the_impact_of_regulation_on_innovation.pdf>.

²³⁴ Moses (n 22).

²³⁵ Omarova (n 54) 87.

²³⁶ Moses (n 22) 17.

²³⁷ *Ibid.*

²³⁸ Ross Buckley *et al.*, *Financial Innovation in East Asia* (2014) 37 SEATTLE L REV 307. <<https://digitalcommons.law.seattleu.edu/sulr/vol37/iss2/2/>>.

²³⁹ Fenwick (n 229) 572.

able to update regulations to address regulatory issues caused by Innovation, given its exponential nature, they are less able to adequately update existing rules in the existing regulatory framework where regulators are engaged in a long, drawn-out process that includes hearings, proposed rules, the submission of comment letters, before finalising a regulation.²⁴⁰

Accelerating advances in Innovation exacerbates the problem of unrevised statutes, but the crux of the issue remains the same: a dissymmetry between law and newly arising facts because the law has not anticipated these new facts and attempts to govern them with an antiquated understanding of their meaning.²⁴¹ Reprising the description of law as the matching of facts and principles, the challenge for law is to be keenly attentive to new facts in order to fashion principles that will sort out the challenges that they present.²⁴² Moreover, the task of establishing these facts may be made difficult by the lack of an adequate reliable data on the effects of Innovation.²⁴³ Arguably, the “relevant facts” that constitute the foundation of the legislation are never going to be obvious or settled. Some facts may be difficult to empirically justify or debate, even amongst experts in the field of Innovation.²⁴⁴

The single-minded quest for increasingly granular technical or technologized solutions is potentially undermining regulators’ ability to address the broader structural concerns posed by Innovations.²⁴⁵ It keeps regulators in an innately reactive posture, presumptively ceding the initiative and control over Innovation to private actors.²⁴⁶ And, as any financier or technologist knows, playing catch-up is never a winning strategy.²⁴⁷ Policies should be designed to acknowledge that some constraints are inherent to regulatory systems. Fixing business behaviours by tightening and escalating regulation succeed

²⁴⁰ *Ibid.* Also, Lynn Blais *et al.*, *Emerging Science, Adaptive Regulation, and the Problem of Rulemaking Ruts* (2018) 86 TEX L REV 1701, 1706. <<https://law.utexas.edu/faculty/publications/2008-Emerging-Science-Adaptive-Regulation-and-the-Problem-of-Rulemaking-Ruts>>.

²⁴¹ Askland (n 1) 19,20.

²⁴² *Ibid.*

²⁴³ Mandel (n 132) 62.

²⁴⁴ Fenwick (n 229).

²⁴⁵ Omarova (n 54) 78.

²⁴⁶ *Ibid.*

²⁴⁷ *Ibid.*

partially, and creates a perpetual race between regulators and industry that the government never fully wins.²⁴⁸

Strategically, Sandboxes do not need focus narrowly on issuing waivers or on running pilots.²⁴⁹ Regulatory relief and testing are significant when it comes to introducing novel products to market.²⁵⁰ Nonetheless, real regulatory uncertainty only accounts for a small percentage of regulatory issues that Innovative startups upstart face.²⁵¹ As a result, it makes little sense for regulatory agencies to spend excessive resources only on developing waiver or waiver-like policies.²⁵² Rather, its focus on addressing and at times eliminating legal impediments to launching new products that are fully compliant and welfare-improving deserves more attention in Sandbox constructs.²⁵³ Arguably, these initiatives are more significant than running a few regulatory experiments and granting exemptions.

Understandably, Innovation reflects the heart of what Sandbox is about. Yet, the combination of Innovation and public interest should not, of itself, be construed as a free pass into the welcoming atmosphere of Sandbox. There are sizable challenges for regulators in determining the qualifying activities of Sandbox, including the threshold question of whether certain activities should be excluded from eligibility on policy grounds.²⁵⁴ Undoubtedly, a balance is needed between not trampling on Innovation and not allowing risks to proliferate unrestrained.²⁵⁵ Still, in the nuanced world of Innovation, establishing that set point and justifying it from a legal and regulatory perspective is a far from straight-forward task.²⁵⁶ Nonetheless, Sandboxes are, in principle, suitable tools for achieving a balance between the “Law and Innovative Entrepreneurship” as a regulatory

²⁴⁸ Barefoot (n 52) 11.

²⁴⁹ Dan Quan, *A Few Thoughts on Regulatory Sandboxes* (The Stanford Center on Philanthropy and Civil Society, 25 September 2019). <<https://pacscenter.stanford.edu/a-few-thoughts-on-regulatory-sandboxes/>>.

²⁵⁰ *Ibid.*

²⁵¹ Dan Quan, *BankThink CFPB can do better by fintechs than a 'policy tool'* (American Banker, 04 November 2019). <<https://www.americanbanker.com/opinion/cfpb-can-do-better-by-fintechs-than-a-policy-tool>>.

²⁵² Quan (n 249).

²⁵³ *Ibid.*

²⁵⁴ Ahern (n 90) 408.

²⁵⁵ *Ibid.*

²⁵⁶ *Ibid.*

instrument and in the context of experimental legislation. Still, their design, execution, and the probability of their acceptance by traditional regulators, and courts should not be taken for granted.

5. CONCLUSION

Innovation is a tool and what to create of it is a matter of choice. Who gets to exercise this choice, to what extent, and with what effect is a domain of law. Unlike Innovation, the law operates more predictably. Nonetheless, it is not a foregone deduction that stringent and stable regulatory intervention is the ideal policy. Arguably, regulation is not the optimal lens for extenuating the challenges posed by Innovation, as it can never rival the innovativeness of Innovations. As a period of chaos between the technology and technocracy ensues, determining *what*, *when*, and *how* to structure regulatory interventions remains an ambitious task for lawmakers. As a result, the traditional regulatory structures are passing into obscurity while being gradually replaced by an ephemeral and evolving array of experimental soft law regimes.

Sandboxes underpin the embryonic stages of Innovative Entrepreneurship. The brilliance of Sandbox lies in how it shelters the Innovators to navigate the impasse of an unsettled regulatory territory. The observations in this paper fortify the continuing eminence of the unique regulatory adaption presented by Sandboxes. Yet, no regulatory approach can ever be perfect. Sandbox is not a panacea in addressing the regulatory dilemmas concerning Innovations, nor is it the sole remedy. Yet, it is perhaps too soon to decisively conclude whether the merits of the Sandbox outweigh its limitations. Regardless of how Innovation cycles unfold from here, the Sandbox phenomenon and sandy territories merit closer attention by policymakers as it fabricates a protected playing field between the “Law and Innovative Entrepreneurship” and represents an intended regulatory response to the arduous process of regulating Innovations, which often deviates from the beaten legal path.

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