The Diffusion of the Sandbox Approach to Disruptive Innovation and Its Limitations

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Faced with the challenges posed by disruptive technologies and innovations, many countries have adopted different regulatory approaches, institutional structures, and norms to maximize benefits and mitigate risks. Among such regulatory endeavors, the regulatory sandbox, first adopted by the United Kingdom in its financial sector, stands out as a prominent mechanism to strike a balance between promoting technological innovations and ensuring market order. Given the promises of the regulatory sandbox, there has been a gradual embrace of this approach by governments across continents, arguably indicating a global norm diffusion. There is also a trans-governmental endeavor to facilitate cooperation among regulators and regulatory convergence through bilateral arrangements and the multilateral "global sandbox" club. Beyond the financial sector, due to the cross-border nature and implications of many disruptive technologies and innovations, some countries have applied similar approaches to nonfinancial areas. This Article discusses examples of different approaches in Canada, Japan, Singapore, and Taiwan in areas such as energy, the environment, health care, and transportation. These developments evidence the rise of the sandbox approach to regulate disruptive technologies and innovations in different sectors at the national, trans-governmental, and global levels, which has crucial theoretical and practical implications.

By way of an in-depth analysis on Taiwan's aggressive use of the regulatory sandbox in the areas of financial services, unmanned vehicles, and more recently, artificial intelligence, this Article argues that although the sandbox approach has emerged as a handy tool for governments to manage ramifications across different sectors, there are limitations that may affect

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how countries implement this approach on the ground. Indeed, the legal system, regulatory culture, and domestic political economy since the Global Financial Crisis all play crucial roles in shaping path dependence and institutional inertia nested within regulatory agencies. One must not take the sandbox approach at face value because, in the long run, the ultimate contour of the global sandbox approach will be defined by complicated local contexts, seen or embedded.

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Introduction

While the emergence of artificial intelligence (A.I.), big data analytics, blockchain, and their applications in conventional business sectors promise considerable innovation and modernization benefits, they also generate significant social and economic disruption, creating regulatory challenges

for governments around the world.[1] Such "disruptive technology"[2] or "disruptive innovation,"[3] as defined and popularized by Clayton Christensen and Joseph Bower, refer to technologies or innovations "that cause an upheaval in the existing market structure and dominant firms by being cheaper, simpler, and more convenient than the dominant technology."[4] The advent of Uber, Airbnb, self-driving cars, and many financial technology programs (Fintech),[5] demonstrated how innovations with unconventional technological features or business models can disrupt society and the existing regulatory framework.[6] In particular, disruptive technologies and innovations can impact local markets within the original industry sector by increasing competition, efficiency, and convenience pressures.[7] At a more general level, however, disruptive technologies and innovations may also go beyond the transformation of economic relationships and fundamentally shake up "the existing model of capitalism, organizational structures, or social interaction."[8]

Faced with the challenges posed by the rise and evolution of disruptive technologies and innovations in recent years,[9] many countries have adopted different regulatory approaches and adapted institutional structures and norms to maximize benefits while mitigating risks.[10] Among

1. *See* Alice Armitage et al., *Design Thinking: The Answer to the Impasse Between Innovation and Regulation*, 2 GEO. L. TECH. REV. 3, 5–7 (2017).

2. Joseph L. Bower & Clayton M. Christensen, *Disruptive Technologies: Catching the Wave*, HARV. BUS. REV., Jan.–Feb. 1995, at 43, 43.

3. Clayton M. Christensen et al., *What is Disruptive Innovation?*, HARV. BUS. REV., Dec. 2015, at 44, 44.

4. Beth-Anne Schuelke-Leech, *A Model for Understanding the Orders of Magnitude of Disruptive Technologies*, 129 TECH. FORECASTING SOC. CHANGE 261, 261 (2018) (citations omitted).

5. Generally, Fintech refers to the use of technology "in the provision of financial services." Adrian Fisher, *Fintech: The Next Wave of Disruption*, FIN. ASIA (Aug. 31, 2015), http://www.financeasia.com/News/401363%2CFintech-the-next-wave-of-disruption.aspx [https://perma.cc/KC2Q-MZ9H]. Fintech entails competition, efficiency, inclusion, and innovation—which has increased exponentially since the financial crisis. *See id.* At the same time, Fintech can create legal and regulatory issues because of potential risks to consumers and the market regarding privacy, data protection, money laundering, and cybersecurity. *See* Douglas W. Arner et al., *FinTech, RegTech and the Reconceptualization of Financial Regulation*, 37 NW. J. INT'L L. & BUS. 371, 373 (2017).

6. *See* Armitage et al., *supra* note 1, at 9.

7. *See* Schuelke-Leech, *supra* note 4, at 261.

8. *Id.* at 262.

9. *See* Amira Karim, *The Innovation Imperative: How Asia Can Leverage Exponential Technologies to Improve Lives and Promote Growth*, WORLD BANK BLOGS (Dec. 5, 2017), https://blogs.worldbank.org/eastasiapacific/innovation-imperative-how-asia-can-leverage-exponential-technologies-improve-lives-and-promote [https://perma.cc/7VG8-FYPC]. *See generally* Andy Bounds, *Number of UK Start-ups Rises to New Record*, FIN. TIMES (Oct. 12, 2017), https://www.ft.com/content/cb56d86c-88d6-11e7-afd2-74b8ecd34d3b [https://perma.cc/V7AH-PAES]; Marianne Hudson, *New Report Confirms Startup Activity Increasing–After Years of Decline*, FORBES (June 22, 2015, 12:03 PM), https://www.forbes.com/sites/mariannehudson/2015/06/22/new-report-confirms-startup-activity-increasing-after-years-of-decline/#6f439c1f6f10 [https://perma.cc/9AP9-C8C4].

10. *See* Dirk A. Zetzsche et al., *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, 23 FORDHAM J. CORP. & FIN. L. 31, 39–43 (2017).

such regulatory endeavors, the "regulatory sandbox" (especially in Fintech) emerged as a prominent mechanism to strike a balance between promoting technological innovation and ensuring market order. First adopted by the United Kingdom's Financial Conduct Authority (FCA) in 2015,[11] the regulatory sandbox approach encourages innovation in the financial sector by exempting certain players from regulatory burdens. Specifically, if certain requirements are met, regulatory sandboxes allow Fintech actors to test their innovative technologies or business models by exempting them from full licensing and other requirements.[12] Because these actors are permitted to experiment on high-risk activities within a defined scope of operation, and under the supervision of a competent authority, sandboxes can facilitate innovation while simultaneously "protecting consumers and the integrity [and stability] of the financial system."[13] In the case of Fintech, the regulatory sandbox approach provides governments with a flexible, dynamic strategy to govern disruptive innovations in a way that balances costs and benefits in the market.

Given the promises of the regulatory sandbox, governments have gradually embraced this. In the financial markets, as a result of market demand and regulatory competition, a growing number of regulators across various jurisdictions—including Australia, Canada, Hong Kong, and the United States (U.S.)—have introduced, or have contemplated the introduction of, a sandbox to address the ramifications of the rapid evolution of Fintech innovations and business models.[14] Furthermore, trans-governmental endeavors have emerged to facilitate regulatory cooperation under the multilateral "global sandbox" club—the Global Financial Innovation Network (GFIN)—which was officially launched in January 2019 by like-minded countries.[15] Beyond the financial sector, given the cross-border nature and implications of many disruptive technologies and innovations, some countries have applied similar governance approaches to nonfinancial areas (despite the relatively immature development of the global sandbox for Fintech). Canada,[16] Japan,[17] Singapore,[18] and Taiwan[19] are noteworthy

11. *Regulatory Sandbox*, FIN. CONDUCT AUTH. (Feb. 1, 2020), https://www.fca.org.uk/firms/innovation/regulatory-sandbox [https://perma.cc/R955-4UHH].

12. Lev Bromberg et al., *Fintech Sandboxes: Achieving a Balance Between Regulation and Innovation*, 28 J. BANK. & FIN. L. & PRAC. 314, 317 (2017).

13. *Id.*

14. *See* discussion *infra* Section I.B.

15. *Global Financial Innovation Network (GFIN)*, FIN. CONDUCT AUTH. (Feb. 27, 2020), https://www.fca.org.uk/firms/global-financial-innovation-network [https://perma.cc/C9FN-32YH].

16. *OEB Innovation Sandbox*, ONT. ENERGY BD., https://www.oeb.ca/_html/sandbox/index.php [https://perma.cc/C68L-X86U] (last visited Dec. 14, 2020).

17. *How the Japanese Government's New "Sandbox" Program Is Testing Innovations in Mobility and Technology*, HARV. BUS. REV. (Feb. 11, 2020), https://hbr.org/sponsored/2020/02/how-the-japanese-governments-new-sandbox-program-is-testing-innovations-in-mobility-and-technology [https://perma.cc/J654-XWFJ] [hereinafter *The Japanese Government's New "Sandbox" Program*].

18. *Licensing Experimentation and Adaptation Programme (LEAP)—A MOH Regulatory Sandbox*, MINISTRY HEALTH, https://www.moh.gov.sg/home/our-healthcare-system/licensing-experimentation-and-adaptation-programme-(leap)—-a-moh-regulatory-sand

for resorting to regulatory sandbox approaches and their underlying principles to regulate disruptive technologies and innovations in areas such as energy, the environment, health care, and transportation.

All of these developments evidence the rise of the sandbox approach to regulate disruptive technologies and innovations in different sectors at the national, trans-governmental, and global levels, resulting in crucial theoretical and practical implications. Part I of this Article examines the development of the regulatory sandbox and how this approach has diffused globally via two channels: from domestic financial regulation to international financial cooperation, and from financial to nonfinancial sectors. Using Taiwan as a case study, Part II critically assesses whether, why, and to what extent, the rise of regulatory sandboxes encounter friction in different local contexts. Part II also examines theories of legal origin and path dependence to show how legal traditions, cultures, and institutional inertia nested within the regulatory agencies may impede their capacity to implement foreign norms.

I. Emerging Sandbox as a Common Approach to Regulating Disruptive Innovation: A Contextual Analysis

A. Regulating Disruptive Innovation: The Sandbox Approach

According to Kenneth W. Abbott, regulators face four significant problems when contemplating the promises and perils of disruptive technologies and innovations: pacing, risk governance, stakeholder engagement, and coordination.[20] "Pacing problem" refers to the general inability of law and regulation to keep pace with the ever-changing and disruptive nature of technology and innovation.[21] Unlike the last industrial revolution, where innovation processes spanned an ample amount of time, innovations in contemporary society have developed extremely fast—"in many cases[,] on exponential or near-exponential paths."[22] Thus, the sophisticated process of lawmaking hinders regulators' ability to regulate such innovations in a timely manner. Relatedly, the ever-evolving nature of certain technologies renders the quality of risk governance inadequate[23] because it is nearly impossible for regulators to come up with one-size-fits-

box [https://perma.cc/5P6V-VTNU] (last visited Dec. 14, 2020); *Regulatory Sandbox*, NAT'L ENERGY AGENCY, https://www.nea.gov.sg/industry-transformation-map/regulatory-sandbox [https://perma.cc/7TZ6-VHMA] (last visited Dec. 14, 2020).

19. *See generally* Wuren zaiju keji chuangxin shiyan tiaoli (無人載具科技創新實驗條例) [Unmanned Vehicles Technology Innovative Experimentation Act] (promulgated by the Ministry of Econ. Affairs, Dec. 19, 2018, effective Jan. 1, 2019) (Taiwan) [hereinafter UVA].

20. Kenneth W. Abbott, *Introduction: The Challenges of Oversight for Emerging Technologies*, *in* INNOVATIVE GOVERNANCE MODELS FOR EMERGING TECHNOLOGIES 1, 3–13 (Gary E. Marchant et al. eds., 2013).

21. *Id.* at 3.

22. Gary E. Marchant & Wendell Wallach, *Governing the Governance of Emerging Technologies*, *in* INNOVATIVE GOVERNANCE MODELS FOR EMERGING TECHNOLOGIES, *supra* note 20, at 136, 137–38.

23. *See* Abbott, *supra* note 20, at 5.

all solutions.[24] Furthermore, given the uncertainty and variability of disruptive technologies and innovations, stakeholder engagement in the decision-making process may surface in ways that slow down regulatory efforts because modern regulatory policy "views public communication, input and participation as essential."[25] Lastly, the complexity of these technologies and innovations usually necessitates costly and time-consuming cross-agency coordination for a rounded regulatory strategy.[26] The "gaps and overlaps resulting from dispersed and uncoordinated responsibilities are serious governance deficits that can undercut decision-making."[27] These four challenges are usually intertwined, rendering the debate regarding regulatory actions (i.e., whether governments shall take a do nothing,[28] ex ante,[29] or ex post[30] approach) exceptionally arduous. Thus, the regulatory sandbox approach becomes a flexible, dynamic alternative when regulators seek not only to remove regulations so that potentially beneficial innovations can thrive, but also to live up to their mandates of protecting citizens from unknown risks.

As previously noted, the emergence of the sandbox approach, as well as its theoretical and practical implications, calls for a close study of its diffusion from financial regulation to other issue areas, and from national to global levels. Indeed, this rapid norm diffusion can be partly explained by the regulatory characteristics of the sandbox approach, which offer practical value to policymakers facing one of the four challenges described above. In the financial sector, for example, the key rationale behind the regulatory sandbox is to enable regulators to "support innovation in financial services by collaborating with industry to better understand Fin[t]ech market dynamics"[31]—a critical challenge in the aftermath of the Global Financial Crisis (GFC).

To properly design and implement a regulatory sandbox, however, regulators need to carefully assess the approach's potential to lower entry barriers[32] within the existing regulatory framework and to minimize the risks of testing such novel solutions.[33] The sandbox approach can, therefore, be regarded as a compromised and simplified cycle of the regulatory timeline.

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24. *Id.* at 13.
25. *Id.* at 10.
26. *Id.* at 11.
27. *Id.* at 12. *See generally* ORG. ECON. CO-OPERATION & DEV., THE OECD INNOVATION STRATEGY: GETTING A HEAD START ON TOMORROW (2010).
28. *See* Zetzsche et al., *supra* note 10, at 50.
29. *See generally* Brian Galle, *In Praise of Ex Ante Regulation*, 68 VAND. L. REV. 1715 (2015).
30. *See generally* Rafal Nagaj & Brigita Žuromskaitė, *Ex Post Regulation as Method of the Public Policy in the Regulated Sectors*, 16 PUB. POL'Y & ADMIN. 538 (2017).
31. Arner et al., *supra* note 5, at 381 n.50.
32. *See* Zetzsche et al., *supra* note 10, at 96–98.
33. *See* Christopher Woolard, *A UK Perspective on FinTech Regulation: What Is (and Is Not) a Sandbox?*, FINTECH L. REP., Dec. 2016, at 1, 3 [hereinafter Woolard, *A UK Perspective on FinTech Regulation*]; Christopher Woolard, *Innovating for the Future: The Next Phase of Project Innovate,* FIN. CONDUCT AUTH. (Apr. 10, 2017), https://www.fca.org.uk/news/speeches/innovating-future-next-phase-project-innovate [https://perma.cc/UK5J-67VX].

That is, the "initial regulation" comes from the regulatory blueprint agreed upon between the regulatory authority and the regulated industry participant in the sandbox.[34] When an industry participant passes the threshold criteria and enters the sandbox, it receives certain "deregulation" treatments to the extent predetermined by the regulator (or jointly agreed upon with the participant).[35] Through public-private interactions in the sandbox, the regulator accumulates "significantly more information . . . than either prior regulator"[36] in a manner that does not involve technological and innovative developments. As a result, when an industry participant exits the sandbox (e.g., when the exemption period expires), the regulator is able to make more informed decisions in the "re-regulation" process.

B. The Trajectory of the Global Normative Diffusion of the Sandbox Approach

The regulatory sandbox presents one innovative strategy to govern disruptive innovation. Its importance has already been proven in the financial market: a growing number of regulators have considered or established a sandbox to manage the ramifications of the evolving technologies and business models amid the trend of Fintech. In the financial sector, the norm diffusion of the sandbox approach takes place through countries' unilateral adoption of it in response to a matrix of dynamics, such as market demands and regulatory competition. Moreover, given the cross-border nature and implications of the underlying technologies and innovations, Fintech is no longer confined to national borders; therefore, it has become increasingly common for a financial industry regulator to engage its counterparts by establishing trans-governmental cooperation measures. While the global sandbox for Fintech is still in the making, as previously mentioned, some countries have begun to tap into similar governance strategies in nonfinancial sectors. By sketching out the trajectory of the development of the regulatory sandbox, the following section demonstrates how this approach has diffused globally through a two-stage process: from domestic to international approaches in the financial sector, and from financial to nonfinancial sectors.

1. Unilateral Adoption of Fintech Sandbox: The U.K. and Beyond

As early as 2012, the U.S. Consumer Financial Protection Bureau introduced the earliest sandbox-like initiative called "Project Catalyst."[37] Yet, this new governance model did not crystallize until 2015, when the United Kingdom's (U.K.) FCA launched what it coined as a "regulatory

34. Peter Molk & Arden Rowell, *Reregulation and the Regulatory Timeline*, 101 IOWA L. REV. 1497, 1502 fig.1 (2016).

35. *Id.*

36. *Id.* at 1506.

37. *See generally* CONSUMER FIN. PROT. BUREAU, PROJECT CATALYST REPORT: PROMOTING CONSUMER-FRIENDLY INNOVATION (2016).

sandbox"[38]—a "'safe place' in which businesses can test innovative products, business models and delivery mechanisms without immediately incurring all the normal regulatory consequences."[39] This new scheme reflected a balancing act among the FCA's post-GFC objectives: protecting consumers, securing the integrity of the financial system, and promoting competition in the interests of consumers.[40] To stop the "bad things" while creating conditions to make the "good things" happen,[41] the U.K. sandbox requires the applicant to demonstrate satisfaction with five major criteria: (1) the intended activity is regulated by the FCA or is intended for firms regulated by FCA, (2) the products or services are a genuine innovation, (3) there is a customer benefit, (4) there is a need for a sandbox, and (5) the firm is ready for testing.[42] Among other considerations in the application process, there is a requirement for significant local presence; the applicant needs "to have a certain level of staff presence and a head office located in the U.K."[43] Once firms are permitted to participate in the sandbox, the FCA works with each firm individually on the details of the testing parameters including the duration, number of customers, target customers, customer safeguards, disclosure, data, and testing plans.[44] A participant will, depending on the nature of each business and its test, be given restricted authorization, a waiver, a rule modification, a no-action letter, or individual guidance to facilitate testing.[45] The sandbox operates according to different business cohorts. So far, there have been six cohorts of businesses admitted into the sandbox, and the application for a seventh cohort

38. *Regulatory Sandbox*, FIN. CONDUCT AUTH., https://www.fca.org.uk/firms/regulatory-sandbox [https://perma.cc/VQ3N-WQT3] (last visited Dec. 14, 2020).

39. Barbara C. Matthews, *FinTech Regulation Competition—Part I*, BCM STRATEGY (May 16, 2017), https://bcmstrategy.medium.com/fintech-regulation-competition-part-i-a9e3ae32d766 [https://perma.cc/8986-MSAX].

40. *See About the FCA*, FIN. CONDUCT AUTH., https://www.fca.org.uk/about [https://perma.cc/U32K-QEHB] (last visited Dec. 14, 2020); *see also* FIN. CONDUCT AUTH., REGULATORY SANDBOX LESSONS LEARNED REPORT 3 (2017) [hereinafter REGULATORY SANDBOX LESSONS LEARNED REPORT].

41. Woolard, *A UK Perspective on FinTech Regulation*, *supra* note 33, at 1. In 2016, Christopher Woolard, the Director of Strategy and Competition at the FCA, delivered a speech in Washington, D.C., explaining the FCA's role not only as that of "stopping the 'bad things'" but also as "helping to create conditions in which the 'good things' can happen too—empowering consumers to make good choices, setting rules designed to encourage competition and promoting new entry and innovation—to drive value in financial services." *Id.*

42. *See Applying to the Regulatory Sandbox*, FIN. CONDUCT AUTH. (Oct. 5, 2020), https://www.fca.org.uk/firms/regulatory-sandbox/prepare-application [https://perma.cc/8JGM-DL3E].

43. *Id.* Firms may also need a bank account in the U.K. to carry out testing. And in cases where a partner is required for testing—for example, in the case of an outsourced technology provider—there is an additional requirement that partner contracts be secured before testing. *Id.*

44. *Default Standards for Sandbox Testing Parameters*, FIN. CONDUCT AUTH., https://www.fca.org.uk/publication/policy/default-standards-for-sandbox-testing-parameters.pdf [https://perma.cc/Q7JE-WGLF] (last visited Aug. 13, 2019).

45. *See Sandbox Tools*, FIN. CONDUCT AUTH. (Jan. 17, 2020), https://www.fca.org.uk/firms/regulatory-sandbox/sandbox-tools [https://perma.cc/Q9EJ-2LYW].

will close in late 2020.[46] Among others, distributed ledger technology has been a popular technology utilized by the applicants.[47]

Also of note is the "Innovation Hub," a part of Project Innovate, which aims to support firms that intend to "introduce groundbreaking or significantly different financial products or services" by providing the assistance needed to apply for authorization.[48] The Innovation Hub provides services for firms that satisfy the same key criteria required to be admitted in the sandbox.[49] Together, the FCA's aforementioned measures aim to help firms transition out of the trial phase and make their products or services available to a wider customer base. Similar "innovation functions" were added when other jurisdictions introduced their regulatory sandboxes.[50]

The British regulatory sandbox soon attracted worldwide attention and led regulators in other jurisdictions—both common and civil law—to follow suit. Within the common law family, in September 2016, the Hong Kong Monetary Authority (HKMA) pioneered the adoption of a similar governance tool called the Fintech Supervisory Sandbox (FSS).[51] Since then, Australia,[52] Canada,[53] Malaysia,[54] Singapore,[55] and Sierra Leone[56] have released their cloned versions. The sandbox approach has also gained rec-

46. *Applying to the Regulatory Sandbox*, *supra* note 42.

47. *See* REGULATORY SANDBOX LESSONS LEARNED REPORT, *supra* note 40, at 9.

48. *Objectives of Innovation Hub*, FIN. CONDUCT AUTH. (Apr. 11, 2017), https://www.fca.org.uk/firms/innovate-innovation-hub/objectives [https://perma.cc/3X4Z-6AG5].

49. *See Eligibility for Innovation Hub*, FIN. CONDUCT AUTH. (May 17, 2016), https://www.fca.org.uk/firms/project-innovate-innovation-hub/eligibility [https://perma.cc/TC6B-HSCP].

50. Lev Bromberg et al., *Cross-Border Cooperation in Financial Regulation: Crossing the Fintech Bridge,* 13 CAP. MKTS. L.J. 59, 72 (2018); *see Innovation Hub*, AUSTL. SEC. & INV. COMM'N, https://asic.gov.au/for-business/your-business/innovation-hub/ [https://perma.cc/ZG8R-U3RX] (last visited Dec. 14, 2020); *New FinTech Office: A One-Stop Platform to Promote Singapore as a FinTech Hub*, MONETARY AUTH. SING. (Apr. 1, 2016), https://www.mas.gov.sg/news/media-releases/2016/new-fintech-office [https://perma.cc/L7NE-VGYR].

51. *Fintech Supervisory Sandbox (FSS)*, MONETARY AUTH. H.K., https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/fintech/fintech-supervisory-sandbox-fss/ [https://perma.cc/PD6B-B5WF] (last visited Dec. 14, 2020). Later, the Hong Kong Securities and Futures Commission and the Hong Kong Insurance Authority also created their respective sandboxes. *See Circular to Announce the SFC Regulatory Sandbox*, SEC. & FUTURES COMM'N (Sept. 29, 2017), https://www.sfc.hk/edistributionWeb/gateway/EN/circular/doc?refNo=17EC63 [https://perma.cc/4242-9DST]; *Insurtech Corner*, INS. AUTH. (Mar. 30, 2020), https://www.ia.org.hk/en/aboutus/insurtech_corner.html [https://perma.cc/KD96-KY2H].

52. *See* Bromberg et al., *supra* note 12, at 318–19.

53. *See* Ana Badour & Heidi Gordon, *Update from the Canadian Securities Administrators on Its Regulatory Sandbox for Fintechs*, FIRST REFERENCE (Sept. 15, 2017), http://icblog.firstreference.com/update-canadian-securities-administrators-regulatory-sandbox-Fintechs/ [https://perma.cc/K6BY-5A7D].

54. *See* Bromberg et al., *supra* note 12, at 318–19.

55. *See* 1 Pei Sai Fan, *Singapore Approach to Develop and Regulate Fintech*, *in* HANDBOOK OF BLOCKCHAIN, DIGITAL FINANCE, AND INCLUSION 347, 347 (David Lee Kuo Chuen & Robert H. Deng eds., 2018).

56. *See BSL Sandbox Program*, BANK SIERRA LEONE, http://www.bsl.gov.sl/BSL_Sandbox_Program.html [https://perma.cc/3TPF-XKRG] (last visited Dec. 14, 2020).

ognition in the civil law world: Japan,[57] Taiwan,[58] Thailand,[59] the Netherlands,[60] and Switzerland,[61] for instance, have adopted this regulatory tool.

While the FCA's sandbox offers a handy template for these latecomers to create their own versions, the details needed for each individual sandbox vary considerably.[62] For example, in relation to applicants' eligibility, Hong Kong's FSS is restricted to authorized institutions (i.e., banks and deposit-takers already regulated),[63] while the Singaporean sandbox is open to "[a]ny firm that is looking to apply technology in an innovative way to provide new financial services that are or are likely to be regulated . . . ."[64] There are also variations in the duration of the testing and in the type and number of customers that a sandbox participant can engage with, but the proportionality principle is, by and large, the main principle underlying these regulatory designs.[65] Among other variations, the Australian approach features a component that strikingly departs from the standard sandbox adopted in other jurisdictions. The industry-wide licensing exemption introduced by the Australian Securities and Investments Commission (ASIC) allows any business that meets certain criteria (i.e., any business not prohibited from carrying on financial services or credit activities) to test its products or services for up to twelve months.[66] Existing licensees are excluded from the ASIC Fintech license exemption.[67] Further, while participation in most jurisdictions in the sandbox is subject to the regulator's assessment and approval, in Australia, eligible firms are automatically approved for testing under this class waiver.[68] Thus, the ASIC approach not only creates a more favorable environment for startups

57. *See Act on Special Measures for Productivity Improvement Enforced*, MINISTRY ECON. TRADE & INDUS. (June 6, 2018), http://www.meti.go.jp/english/press/2018_06/0606_001_00.html [https://perma.cc/A57F-A3SM].

58. *See generally* Jinrong keji fazhan yu chuangxin shiyan tiaoli (金融科技發展與創新實驗條例) [Financial Technology Development and Innovative Experimentation Act] (promulgated by the Fin. Supervisory Comm'n, Dec. 29, 2017, effective Jan. 31, 2018) (Taiwan) [hereinafter Fintech Sandbox Act].

59. *See* BAKER MCKENZIE, A GUIDE TO REGULATORY FINTECH SANDBOXES ACROSS ASIA PACIFIC 8 (2017).

60. *See DNB and the AFM Create Regulatory Sandbox*, DE BRAUW BLACKSTONE WESTBROEK (Dec. 29, 2016), https://www.debrauw.com/alert/dnb-afm-create-regulatory-sandbox/ [https://perma.cc/P3BT-6P65].

61. *See generally* INST. FIN. SERVS. ZUG, IFZ FINTECH STUDY 2018: AN OVERVIEW OF SWISS FINTECH (Thomas Ankenbrand et al. eds., 2018).

62. *See* Zetzsche et al., *supra* note 10, at 35.

63. Key eligibility requirements set forth by the HKMA include defining the trial's boundaries (e.g., size and type of customers involved); ensuring customer protection and risk management mechanisms are in place; and having the systems and processes involved ready for testing. *See Fintech Supervisory Sandbox (FSS)*, *supra* note 51.

64. *Frequently Asked Questions on MAS Fintech Regulatory Sandbox*, MONETARY AUTH. SING. 1, 1 (2020), http://www.mas.gov.sg/~/media/Smart%20Financial%20Centre/Sandbox/FAQs.pdf [https://perma.cc/9HVL-NA4K].

65. *See* Zetzsche et al., *supra* note 10, at 73–76.

66. *See* AUSTL. SEC. & INV. COMM'N, REGULATORY GUIDE 257: TESTING FINTECH PRODUCTS AND SERVICES WITHOUT HOLDING AN AFS OR CREDIT LICENSE 16 (2017). Since the last revision of this Article, the regulatory guide has been withdrawn.

67. *See id.*

68. *See id.* at 14.

without licenses, but also makes it easier for them to test their innovations by dispensing with the application process.[69] Although it remains to be seen whether the U.K.'s approach is superior to Australia's in governing disruptive innovation,[70] it is clear that the various types of sandboxes emerging across jurisdictions have underscored the importance of regulatory cooperation in managing cross-border ramification.

2. *From Domestic Sandbox to Cross-Border Cooperation*

Despite the nature of Fintech businesses and interrelated global markets, regulation is often shaped and overseen within national borders.[71] This can both create loopholes for regulatory arbitrage and pose challenges for regulators trying to supervise and enforce their laws.[72] Thus, those challenges call for cross-border cooperation and information exchange among regulators.[73]

Such coordination generally takes place via bilateral or multilateral arrangements. The first agreement was the *Innovation Hubs Cooperation Agreement*, concluded in 2016, and updated in 2018, between the FCA and ASIC to help Fintech firms get "more support from financial regulators as they attempt to enter the others' market."[74] Similar arrangements have since mushroomed in both common law and civil law jurisdictions: the FCA;[75] the ASIC;[76] the HKMA;[77] the Monetary Authority of Singapore (MAS);[78] the Commodity Futures Trading Commission in the U.S.;[79] the

69. Bromberg et al., *supra* note 12, at 320.

70. *Id.* at 328 (arguing that the "'standard' regulatory sandboxes implemented by regulators such as the FCA are superior to the other models currently in operation [in other countries] in terms of supporting Fintech innovation and embracing principles of proactive, dynamic and responsive regulation.").

71. INT'L ORG. SEC. COMM'N, IOSCO RESEARCH REPORT ON FINANCIAL TECHNOLOGIES (FINTECH), at 70 (2017).

72. *Id.*

73. *Id.* It is crucial to note that closer cooperation among different regulators within a nation is also warranted because the operations of Fintech firms may expand beyond the scope of a given government agency's mandate.

74. *16-088MR British and Australian Financial Regulators Sign Agreement to Support Innovative Businesses*, AUSTL. SEC. & INV. COMM'N (Mar. 23, 2016), https://asic.gov.au/about-asic/news-centre/find-a-media-release/2016-releases/16-088mr-british-and-australian-financial-regulators-sign-agreement-to-support-innovative-businesses/ [https://perma.cc/M4SU-KUYN]. The 2016 agreement has been replaced by the Enhanced Innovation Hubs Co-operation Agreement. *See generally* FIN. CONDUCT AUTH. & AUSTL. SEC. & INV. COMM'N, ENHANCED INNOVATION HUBS CO-OPERATION AGREEMENT (2018).

75. *See generally* U.S. COMMODITY FUTURES TRADING COMM'N & U.K. FIN. CONDUCT AUTH., COOPERATION AND THE EXCHANGE OF INFORMATION ON FINANCIAL TECHNOLOGY INNOVATION (2018) [hereinafter U.S.-U.K. COOPERATION AND EXCHANGE ON FINTECH].

76. *See generally* AUSTL. SEC. & INV. COMM'N & DUBAI INT'L FIN. CTR., INNOVATION FUNCTIONS CO-OPERATION AGREEMENT (2017).

77. *See generally* Press Release, H.K. Monetary Auth., Co-operation Agreement Between the Hong Kong Monetary Authority and the Financial Conduct Authority on Fintech Co-operation (Dec. 7, 2016) (on file at https://www.hkma.gov.hk/eng/key-information/press-releases/2016/20161207-6.shtml [https://perma.cc/75ZN-YYEX]).

78. *See generally* Press Release, Monetary Auth. Sing., Bahrain and Singapore Strengthen Cooperation in FinTech (Nov. 14, 2018) (on file at https://www.mas.gov.sg/

Ontario Securities Commission in Canada;[80] the Financial Market Supervisory Authority in Switzerland;[81] and the Financial Sector Surveillance Commission in Luxembourg[82] are prime examples.[83]

While the mechanics of each agreement can vary, the main purpose of these bilateral arrangements is to facilitate cooperation and referrals between the innovation functions[84]—particularly, the referral mechanism and the way in which authorities share and use relevant information in their respective territories.[85] The agreement between ASIC and MAS, for instance, creates a dedicated contact for innovative financial businesses by offering assistance in understanding the "regulatory framework in the relevant [a]uthority's jurisdiction" and its application during the pre-authorization and authorization processes.[86] To be eligible for such support, firms seeking referrals from their home regulator should satisfy certain criteria such as offering "innovative financial products [or] services that benefit the consumer, investor [or] industry," and showing that they have "conducted sufficient background research" on the regulations that might apply to them.[87] The nonbinding character of these bilateral arrangements is yet another one of their salient features, though past practice reveals that similar arrangements concluded by financial regulators can be effective.[88]

Bilateral arrangements, despite their increasing number, are limited in their territorial reach. More recently, therefore, calls for regulatory cooperation seek a multilateral setting.[89] Following the initial proposition document, issued in February 2018 by the U.K.'s FCA regarding a "global sandbox,"[90] a group of like-minded regulators officially launched the GFIN in January 2019.

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news/media-releases/2018/bahrain-and-singapore-strengthen-cooperation-in-Fintech [https://perma.cc/AKY9-GB4Z]).

79. *See generally* U.S.-U.K. Cooperation and Exchange on Fintech, *supra* note 75.

80. *See generally* Ont. Sec. Comm'n et al., Innovation Functions Co-operation Agreement (2017).

81. *See generally* Memorandum of Understanding Between the Swiss Financial Market Supervisory Authority and the Securities and Exchange Commission of Brazil Regarding Cooperation for Innovation in the Financial Sector (2018) (on file at http://www.cvm.gov.br/export/sites/cvm/menu/internacional/acordos/anexos/MoU_FINMA.pdf [https://perma.cc/7UYV-FPNZ]).

82. *See generally Australia and Luxembourg Sign Fintech Agreement*, FSTech (May 10, 2018), https://www.fstech.co.uk/fst/Australia_Luxembourg_FinTech_Agreement.php [https://perma.cc/875A-EPGR].

83. *See generally* Bromberg et al., *supra* note 50.

84. *Id.* at 72.

85. *Id.*

86. Austl. Sec. & Inv. Comm'n & Monetary Auth. Sing., Co-operation Agreement 4 (2016) [hereinafter ASIC-MAS Co-operation Agreement].

87. *Id.* at 5.

88. *See* Eduard H. Cadmus, Note, *Revisiting the SEC's Memoranda of Understanding: A Fresh Look*, 33 Fordham Int'l. L.J. 1800, 1828 (2010).

89. Glob. Fin. Innovation Network, Consultation Document 7 (2018).

90. *Global Financial Innovation Network (GFIN)*, Fin. Conduct Auth. (Feb. 27, 2020), https://www.fca.org.uk/publications/consultation-papers/global-financial-innovation-network [https://perma.cc/KC4T-EXU7].

GFIN aims to fulfill three core functions: first, to act as a network "of regulators that cooperate and share innovation experience in respective markets"; second, to offer a forum for joint policy work and discussions; and third, to create an environment in which firms can test "cross-border solutions."[91] Of particular interest is cross-border testing: an initiative responding to widespread support for creating an environment where firms can "simultaneously trial and scale new technologies in multiple jurisdictions."[92] GFIN opened a one-month application window allowing interested firms to apply for a pilot phase of cross-border testing.[93] Interested firms must meet the requirements set out by all the jurisdictions in which they would like to test, and each regulator then decides whether a proposed test meets its individual criteria while ensuring that appropriate safeguards are in place.[94] Participating firms "benefit from the opportunity to test and compete in the regulated space, and their tests would help inform the future work of the [n]etwork," which could, in turn, inform relevant authorities about "potential areas of regulatory convergence" in the long run.[95] GFIN had seventeen members participate in cross-border trials.[96] Eventually, one may expect that GFIN will join the International Organization of Securities Commissions as another trans-governmental regulatory network that facilitates the coordination among regulators.[97] As explained below, the principles underlying the sandbox approach have been applied to govern regulatory challenges in other sectors.

3. *Spillovers: From Financial Sandbox to Nonfinancial Issue Areas*

Beyond the financial sector, governments have adopted the regulatory sandbox approach to address challenges brought by disruptive innovations and technologies in other sectors. For instance, in November 2018, Taiwan enacted the Unmanned Vehicles Technology Innovative Experimentation Act, setting up a sandbox scheme for the development and testing of unmanned vehicles,[98] after passing and implementing the Financial Technology Development and Innovative Experimentation Act.[99]

Similarly, since the introduction of a regulatory sandbox for Fintech, Singapore has extended this approach to three other areas: environment, energy, and health care (i.e., telemedicine services).[100] In the area of self-

91. GLOB. FIN. INNOVATION NETWORK, TERMS OF REFERENCE FOR MEMBERSHIP AND GOVERNANCE OF THE GLOBAL FINANCIAL INNOVATION NETWORK (GFIN) 1 (2019).

92. GLOB. FIN. INNOVATION NETWORK, GFIN—ONE YEAR ON 9 (2019).

93. *See id.*

94. *See id.*

95. GLOB. FIN. INNOVATION NETWORK CROSS-BORDER TESTING: LESSONS LEARNED 2 (2020).

96. *Id.*

97. *See* Bromberg et al., *supra* note 50, at 66.

98. *See* UVA, *supra* note 19, at art. 1.

99. *See generally* Fintech Sandbox Act, *supra* note 58. For a more comprehensive discussion of Taiwan's use of a regulatory sandbox to regulate unmanned vehicles, see discussion *infra* Section II.C.

100. *See Licensing Experimentation and Adaptation Programme (LEAP)*, *supra* note 18; *Regulatory Sandbox*, ENERGY MKT. AUTH., https://www.ema.gov.sg/Sandbox.aspx

driving cars, Singapore has amended its Road Traffic Act to create a regulatory scheme for testing autonomous motor vehicles.[101] While Singapore has not explicitly enacted a law or mechanism named "sandbox," the criteria and contents of the autonomous motor vehicle regulatory scheme resemble the characteristics of a regulatory sandbox, with government officials and scholars referring to it as such.[102] Conversely, in the environment and energy sectors, Singapore enacted regulatory sandboxes that closely resemble the Fintech sandbox launched by MAS in November 2016.[103] In health care, the Ministry of Health of Singapore (MOH) established the Licensing Experimentation and Adaptation Program in April 2018[104] as a regulatory sandbox to encourage the development and experimentation of new and innovative healthcare models—more specifically, telemedicine—in a "controlled environment."[105] According to the MOH, this sandbox is intended to inform licensed healthcare providers "by focusing on tele-consultation services, which provide direct clinical care (e.g.[,] diagnosis and intervention) between a doctor and patient, and work with the participating providers to bring about a safe and vibrant telemedicine environment."[106] Parallel to such regulatory developments, similar sandbox schemes were adopted by the Singaporean government in the environment and energy sectors.[107]

Japan has also embarked on a more ambitious and pro-innovation regulatory endeavor by enacting the Act on Special Measures for Productivity Improvement in June 2018.[108] Under the new law, Japan aims to provide an overarching sandbox open to all kinds of disruptive innovations and technologies, rather than limited to a specific sector such as finance or autonomous vehicles.[109] Business actors, including those overseas, are allowed to submit applications "to conduct 'demonstrations' under this new framework and test the possibilities of using innovative technologies such as [A.I.], [Internet of Things] or block[chains] for future business, especially when they cannot start businesses due to existing Japanese regu-

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[https://perma.cc/YW75-K663] (last visited Dec. 14, 2020); *The Japanese Government's New "Sandbox" Program*, *supra* note 17.

101. *See* Road Traffic (Amendment) Act, 2017 (Act No. 10/2017) § 6C (Sing.).

102. Si Ying Tan & Araz Taeihagh, *Adaptive and Experimental Governance in the Implementation of Autonomous Vehicles: The Case of Singapore*, *in* 4TH INTERNATIONAL CONFERENCE ON PUBLIC POLICY 11 (2019).

103. *See* NAT'L ENV'T AGENCY, GUIDELINES—REGULATORY SANDBOX FOR ENVIRONMENTAL SERVICES 4-3, 6-11 (2019).

104. *Licensing Experimentation and Adaption Programme (LEAP)*, *supra* note 18.

105. *Moh Launches First Regulatory Sandbox to Support Development of Telemedicine*, MINISTRY HEALTH SING. (Apr. 18, 2018), https://www.moh.gov.sg/news-highlights/details/moh-launches-first-regulatory-sandbox-to-support-development-of-telemedicine [https://perma.cc/SFJ3-3H8G].

106. *Id.*

107. *See Regulatory Sandbox*, *supra* note 100; *Licensing Experimentation and Adaption Programme (LEAP)*, *supra* note 18.

108. *See Act on Special Measures for Productivity Improvement Enforced*, *supra* note 57.

109. *See id.*

lations."[110] Competent authorities are now able to accumulate technical expertise and operational knowledge with regard to disruptive technologies and innovative business models, which will further facilitate a deliberation process for regulatory design and reform based on the data collected through demonstrations under the sandbox framework.[111]

While the global sandbox for Fintech is still in progress, the potential advantages of the sandbox approach are clear to governments such as Japan, Singapore, and Taiwan, which have established sandbox systems either as a general framework to regulate disruptive technologies and innovations, or as a tailored scheme for a specific issue area. Despite its common law origin, the regulatory sandbox approach has been adopted beyond the more internationalized sector of finance by countries and regions with both common law (e.g., Singapore) and civil law (e.g., Taiwan and Japan) traditions. Such norm diffusion across legal traditions necessitate further comparative analysis to understand the rise of the global regulatory sandbox and the normative implications (and limits) of a future convergence between common law and civil law in the age of disruptive technologies and innovations. The following analysis on Taiwan's practices offers a contextual account of such a direction.

II. The Boundary of a Global Common Sandbox? A Contextual Analysis of Taiwan

Although convergence across common and civil law jurisdictions in adopting the sandbox scheme is evident, there remains a number of questions: Is there any limitation on this convergence? Would this convergence be a convergence in both form and function, or in form alone? If the convergence exists only in form, what contributes to divergence or path dependence when implementing the sandbox scheme? Looking at Taiwan as a case study, Part II of this Article sheds light on whether there is a limit to the global sandbox by examining the country's legal transplant of Fintech sandbox schemes from common law forerunners. The focus of this part then shifts to the legislative sandbox for unmanned vehicles in Taiwan.

A. Taiwan's Adoption of the Regulatory Sandbox

Taiwan's Fintech sandbox legislation was modeled after similar existing schemes in common law jurisdictions.[112] This section examines why and how Taiwan, a civil law country, converged toward a common law practice and followed the trend of Fintech sandbox schemes.

110. *New Regulatory Sandbox Framework in Japan,* JAPAN EXTERNAL TRADE ORG., https://www.jetro.go.jp/ext_images/en/invest/incentive_programs/pdf/Detailed_overview.pdf [https://perma.cc/E2AQ-LU2S] (last visited Aug. 13, 2019).

111. *See id.*

112. *See* Sean Lin, *Fintech Regulatory Sandbox Law Passes*, TAIPEI TIMES (Dec. 30, 2017), https://www.taipeitimes.com/News/taiwan/archives/2017/12/30/2003684893 [https://perma.cc/X896-3R8K].

1. How Regulatory Competition Promotes Convergence via Domestic Legal Transplantation in Taiwan

The Taiwanese government introduced the Financial Technology Development and Innovative Experimentation Act (Fintech Sandbox Act) to permit cautious regulatory experimentation.[113] The Fintech Sandbox Act was officially enacted in January 2018.[114] The Taiwanese cabinet noted this law as the first Fintech Sandbox Act adopted at the statutory level globally;[115] and the then-Chairman of the Financial Supervisory Commission (FSC), the sole financial market watchdog in Taiwan, further emphasized that Taiwan's embrace of Fintech sandboxes also marked the first instance of this development among all civil law countries worldwide.[116]

There are several reasons why Taiwan and other civil law countries adopted Fintech sandbox schemes. Broadly, from the perspective of regulatory competition, as shown in Figure 1 below, firm or capital mobility spurs global jurisdictional competition by offering flexibility in Fintech regulation.

> Foreign jurisdictions may find it in their interest to market their . . . [Fintech sandboxes] to domestic firms in the regulating jurisdictions (the "offensive" regulatory competition). At the very least, regulating jurisdictions may avoid losing [Fintech] firms to foreign jurisdictions by supplying less restrictive rules to defend against the "sale" by foreign jurisdictions (the "defensive" regulatory competition). As a result, either type of the regulatory

113. *See* Fintech Sandbox Act, *supra* note 58, at art. 1.

114. *See generally id.*

115. *See* Press Release, Executive Yuan, Jin Rong Ke Ji Fa Zhan Yu Chuang Xin Shi Yan Tiao Lio Gu Li Chuang Xin, Ti Sheng Jin Rong Jing Zheng Li (金融技術發展與創新實驗條例—鼓勵創新 提升金融競爭力) [Financial Technology Development and Innovative Experimentation Act—Encouraging Innovation and Elevating Competitiveness for the Financial Sector] (Jan. 31, 2017) [hereinafter Executive Yuan Draft] (on file at https://www.ey.gov.tw/Page/5A8A0CB5B41DA11E/aa4a0c9d-14be-4664-ac59-fc74a056d1fd [https://perma.cc/DJ2T-RFEG]); *see also Political System: Fact Focus*, Ministry Foreign Aff., https://www.taiwan.gov.tw/content_4.php [https://perma.cc/Z952-2X62] (last visited May 27, 2019) (explaining that Taiwan's Executive Yuan is equivalent to the cabinet while the Legislative Yuan is the legislature in the central government).

116. Rui-Yao Dai, *Jin Rong Jian Li Sha He Cao An Chu Shen Tong Guo, Taiwan Shi Da Lu Fa Xi Quo Jia Shou Li* (金融監理沙盒草案初審通過 台灣是大陸法系國家) [*The Draft of the Financial Regulatory Sandbox Passed the First Review by the Legislature; Taiwan Is the First Case Among Civil Law Countries*], ETTodayNet (Nov. 8, 2017), https://www.ettoday.net/news/20171108/1048312.htm [https://perma.cc/Z56F-VN4C]. To be sure, while executive branches in civil law countries such as the Netherlands and Switzerland released their Fintech sandbox schemes as early as 2017, the Taiwanese "legislative" adoption of Fintech sandboxes in 2018 was the first official enactment of a sandbox scheme in the civil law system. *See DNB and the AFM Create Regulatory Sandbox*, De Brauw Blackstone Westbroek (Dec. 29, 2016), https://www.debrauw.com/alert/dnb-afm-create-regulatory-sandbox/ [https://perma.cc/8Q9G-Q5E4]; *Sandbox and Settlement Accounts: FINMA Amends Circular*, Fin. Mkt. Supervisory Auth. (Sept. 1, 2017), https://www.finma.ch/en/news/2017/09/20170901-mm-rs-publikumseinlagen-bei-nichtbank en/ [https://perma.cc/4943-2ND7].

> competition creat[es] a "law market" . . . .[117]

That is, regulatory competition encourages the domestic adoption of sandbox signals that is more attractive to Fintech entrepreneurs and even licensed financial institutions.[118]

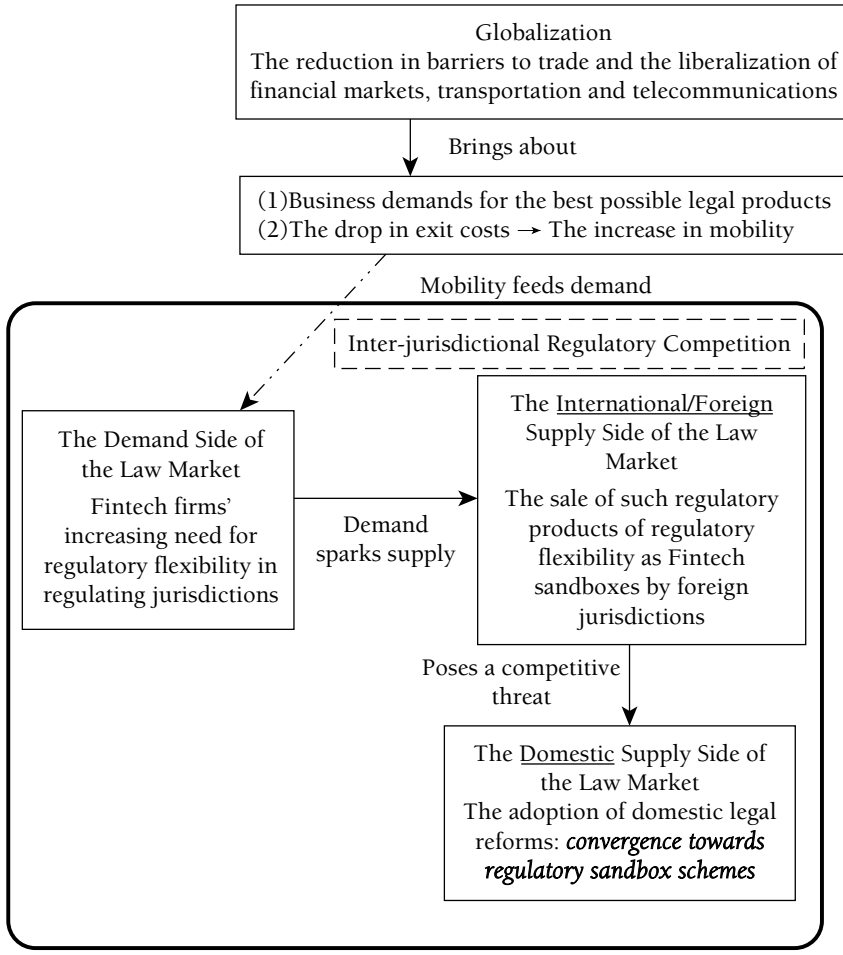

Figure 1: Regulatory competition that creates "law market dynamics" promotes convergence towards the sandbox approach.[119]

117. *See* Chang-Hsien Tsai, *Regulatory Competition and the World Bank's Doing Business Reports: Taiwan's Liberalization of the Minimum Capital Requirement for Incorporation as an Example*, 13 NAT'L TAIWAN U.L. REV. 239, 244 (2018).

118. *See id.*; *see also* Zetzsche et al., *supra* note 10, at 81 (suggesting that if "no single regulator has a monopoly on the best framework for innovation," sandbox signals will give competing financial centers a comparative advantage in global jurisdictional competition for innovations and for new jobs from "financial entrepreneurs and established institutions").

119. Tsai, *supra* note 117, at 247 fig.1.

The convergence toward regulatory sandboxes across jurisdictions, including Taiwan, is potentially a result of "law market dynamics" in inter-jurisdictional regulatory competition.[120] Specifically, the fact that the U.K. led the movement in adopting regulatory sandboxes shows that countries are engaging in regulatory competition "naturally" by adjusting their financial regulations in order to facilitate the establishment and operation of domestic and foreign Fintech firms.[121] Therefore, if a jurisdiction intends to lead the global regulatory competition to attract Fintech firms, then regulatory deliverables, such as Fintech sandboxes for policy or regulatory experimentation, should be viewed as "proactive" government responses that make regulatory posture more open and flexible.[122]

Following the trend of using the sandbox approach as an innovation-friendly signal to the market, Taiwan's financial regulator began to consider various proposals of the Fintech regulatory sandbox.[123] In December 2017, a consolidated version of the Fintech Sandbox Act was introduced and, in early 2018, it was formally passed.[124] The Fintech Sandbox Act, an output of legal transplantation that draws experience from common law jurisdictions such as the U.K. and Singapore,[125] features a promising route for startups to safely test newly developed, Fintech-enabled financial services or products[126] by temporarily exempting them, to a certain extent,

120. *See id.* at 256, 259.

121. *See* Arner et al., *supra* note 5, at 408–09. In order to assess the comparative advantages and effects of alternative legal rules, as seen with sandbox schemes, it is useful to draw on comparative law and economics, which provide theoretical frameworks such as regulatory competition, because "with regard to the same legal problem, different jurisdictions may take different approaches." Wei Shen & Wen Yeu Wang, *Conclusion: A Tale of Two Jurisdictions—Is It an End of Divergence of Private Law?*, *in* PRIVATE LAW IN CHINA AND TAIWAN: LEGAL AND ECONOMIC ANALYSES 304, 330–31 (Yun-chien Chang et al. eds., 2016). In addition to "natural" regulatory competition, would GFIN, the global sandbox scheme, further promote inter-jurisdictional regulatory competition by adopting regulatory sandboxes and thereby reinforcing the convergence of civil law and common law systems towards the regulation of Fintech's disruptive innovations? *See supra* Section I.B.2.

122. *See* Zetzsche et al., *supra* note 10, at 81, 102-03; Chang-Hsien Tsai & Kuan-Jung Peng, *The FinTech Revolution and Financial Regulation: The Case of Online Supply-Chain Financing*, 4 ASIAN J.L. & SOC'Y 109, 116, 118 (2017). "[F]or jurisdictions that wish to compete by signaling regulatory flexibility to the market, the express provision of the promotion of innovation in their mandate could be most useful." Zetzsche et al., *supra* note 10, at 97. For a discussion of sandbox conditions and styles of regulatory competition, see *id.* at 78.

123. *See infra* Section II.B.2.

124. *See* Lin, *supra* note 112.

125. *See* David Green, *Taiwan Shines a Light in the Darkness with Fintech Sandbox*, NEWS LENS (Jan. 8, 2018), https://international.thenewslens.com/article/87071 [https://perma.cc/P4AW-HQ9M]; Kuan-Chun Johnny Chang (張冠群), *Zi Jin Rong Jian Li Yuan Ze Yu Jin Rong Xiao Fei Zhe Bao Hu Guan Dian Lun Jin Rong Ke Ji Jian Li Sha He Zhi Du – Jian Ping Xing Zheng Yuan Ban "Jin Rong Ke Ji Chuang Xin Shi Yan Tiao Li Cao An"* (自金融監理原則與金融消費者保護觀點論金融科技監理沙盒制度—兼評行政院版金融科技創新實驗條例草案) [*Fintech Regulation from the Perspectives of Principles of Financial Regulation and Consumer Protection: Critical Analyses on the Bill of Financial Technology Innovation and Experiment Act Drafted by the Executive Yuan of Taiwan*], 266 YUE DAN FA XUE ZA ZHI (月旦法學雜誌) [TAIWAN L. REV.] 5, 32–33 (2017).

126. *See* Fintech Sandbox Act, *supra* note 58, at art. 1.

from regulatory burdens.[127]

2. The Link Between Legal Origin and Global Convergence Toward the Sandbox Approach

Although Taiwan is, arguably, the first civil law country to enact a Fintech sandbox scheme, its regulatory sandbox is modeled on, or to put it bluntly, directly responds to, regulatory competition from abroad— particularly from the common law world.[128] This dynamic raises further questions: What is the correlation between the regulatory sandbox approach and its legal origin? Does its legal origin explain the common law world's lead in this regulatory scheme?[129]

In *Legal Determinants of External Finance*, Rafael La Porta, Florencio Lopez-de-Sillanes, Andrei Shleifer, and Robert Visney find that legal origins (i.e., common law versus civil law) play a vital role in a jurisdiction's economic development. This framework, which became known as the LLSV framework, is closely related to the legal origins theory (LOT).[130] The LOT literature surveys and quantitatively analyzes the effects of legal rules and the quality of law enforcement on the development of capital markets, relying heavily on comparative legal studies on the taxonomy of different legal families (e.g., common law, French civil law, German civil law, and Scandinavian civil law).[131] From the empirical study of different financial indicators, and by identifying the patterns of law's effect on economic development, LLSV concludes that the legal origin of a country influences its financial development and that common law provides a better founda-

127. *See id.* at arts. 25–26.

128. *See* Jin-Lung Peng & Cheng-Yun Tsang, *Fintech Regulation and a Review of Taiwan's Financial Regulatory Sandbox Framework*, 38 MGMT. REV. 89, 91–92 (2019); *see also Southeast Asian Legal Research Guide: Introduction to Singapore and Its Legal System*, U. MELB., http://unimelb.libguides.com/c.php?g=402982&p=5866732 [https://perma.cc/4MF6-Q7PE] (last visited Apr. 3, 2020).

129. *See* David Yermack, *FinTech in Sub-Saharan Africa: What Has Worked Well and What Hasn't* 1, 3–4 (Nat'l Bureau of Econ. Rsch., Working Paper No. 25007, 2018). David Yermack extends the LLSV framework into the Fintech sphere and suggests that the legal origins theory plays a critical role under LLSV in Fintech growth. *See id.* at 4. Yermack also highlights data for the proposition that "the Fin[t]ech sector is far more vibrant in common law countries than civil law countries in sub-Saharan Africa." *Id.* Nonetheless, Yermack recognizes the following limitations of his research:

> Interpreting causation with these data is extremely difficult, since common law countries also tend to have higher incomes, and the legal systems of nations are likely associated with other outcomes in critical areas such as education. Nevertheless, the successful extension of the LLSV framework into the Fintech space represents a new insight in entrepreneurial finance; most law and finance research up to now has focused on capital markets in the mature, wealthy economies of the world.

Id.

130. *See generally* Rafael La Porta et al., *Legal Determinants of External Finance*, 52 J. FIN. 1131 (1997). LOT is also known as "law and finance, a new field in relation to the economic analysis of corporate law and financial regulation," which looks at the institutional influence of "potential legal determinants" and other "forms of law enforcement." Shen & Wang, *supra* note 121, at 317.

131. *See* Nuno Garoupa & Mariana Pargendler, *A Law and Economics Perspective on Legal Families*, EUR. J. LEGAL STUD., Winter 2014, at 36, 37–39.

tion than civil law.[132]

Professors Nuno Garoupa and Mariana Pargendler have identified six factors from the collective LOT literature that seek to explain "why a legal system could matter for economic growth"[133] (i.e., the "law matters" thesis):[134]

> (a) the costs of identifying and applying efficient rules; (b) the system's ability to restrain rent-seeking in rule formulation and application; (c) the cost of *adapting rules to changing circumstances*; (d) the transaction costs to parties needing to learn the law; (e) the ease of contracting around rules; and (f) the costs of transitions between systems.[135]

Common law's superiority to civil law in contributing to economic growth can be explained by the "adaptability channel" and the "political channel."[136] The so-called "adaptability channel" refers to the common law's ability to provide more adaptable institutions for business demands that effectively further financial markets and, in turn, economic development, compared with the less adaptive, codified principles of civil law.[137] Moreover, the "political channel" refers to the independence of common law courts, which are more effective at preventing state intervention, while civil law courts are more susceptible to the influence of executive powers.[138]

Going back to the global convergence toward sandbox schemes, and considering that the forerunners in the adoption of regulatory sandboxes are common law jurisdictions, is there a correlation between this convergence and legal origin?[139] Specifically, under the LOT, could a legal determinant, such as regulatory sandboxes led by common law systems, matter for Fintech growth? Could this be attributed to the adaptability channel under the LOT, whereby common law jurisdictions take initiatives to provide more proactive regulatory responses, such as sandbox schemes, to meet ever-evolving business demands and promote Fintech market

132. *See* La Porta et al., *supra* note130, at 1149.

133. Garoupa & Pargendler, *supra* note 131, at 59.

134. The "law matters" thesis postulates that "law and legal institutions matter a great deal for economic outcomes," which is an implicit assumption of "law and development" studies; however, many other studies provide countervailing empirical evidence to challenge the idea that "common law is superior to civil law from an economic standpoint." *Id.* at 50–51.

135. *Id.* at 59 (emphasis added).

136. *Id.* at 40.

137. *Id.* at 39–40; *see also* Jaakko Husa, *The Future of Legal Families*, OXFORD HANDBOOKS ONLINE (May 2016), https://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199935352.001.0001/oxfordhb-9780199935352-e-26 [https://perma.cc/2FMK-C685] (noting that "the economics argument has been that legal origin matters for financial development because legal families differ in their ability to adapt efficiently to evolving economic conditions.").

138. *See* Garoupa & Pargendler, *supra* note 131, at 40.

139. The correlation between legal determinants, like sandboxes, and Fintech market development has definitely been under-theorized until now, but there might be a positive correlation between the common law's efficiency and the positive economic and operational outcomes in Fintech markets. *See id.* at 58.

development?[140]

To illustrate whether legal choices affect levels of Fintech investment across jurisdictions, scholars have conducted empirical studies of government responses to Fintech in seventeen jurisdictions.[141] These studies found that a "proactive approach makes the jurisdiction more attractive as a potential location for starting [F]intech operations."[142] Nevertheless, David Yermack insists that even from an empirical perspective, the regulatory flexibility embedded in common law countries gives these jurisdictions an advantage over their civil law counterparts in fostering Fintech development.[143]

3. *Summary: The End of History for the Fintech Sandbox Scheme?*

Modeling the Fintech Sandbox Act on the sandbox schemes of common law forerunners, the Taiwanese government touted the country as the first one in the civil law system to enact regulatory sandbox legislation.[144] To restate the question posed by Henry Hansmann, Reinier Kraakman, and Francis Fukuyama,[145] does the "formal" legal convergence in Fintech governance toward the common law model of sandbox schemes by Taiwan explain whether global convergence could end with the Fintech sandbox? Or is Taiwan following the lead of other common law jurisdictions—a convergence in form alone—actually a result of path dependence created by local factors?[146]

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140. Scholars argue that there exists a "pro-market bias" in the common law system, where there are "Hayekian bottom up efficiencies in the English legal system and top down inefficiencies in the French legal system." *Id.* at 57. In terms of why common law is superior to civil law in promoting Fintech growth (at least for developing nations), David Yermack's perspective further resonates with the "pro-market bias" argument:

> [A] common law legal infrastructure can play a significant role in promoting growth. This is consistent with the views . . . about the trend over time for developing nations to stress bottom-up, market driven economic development as an alternative to top-down, state ownership driven strategies. Providing the legal conditions for well-functioning markets, which seems to be the signal achievement of common law systems, is a necessary condition for bottom-up development strategies to work effectively. We know relatively less about the optimal type of regulation to promote Fin[t]ech business, and how that regulation might interact with the legal system already in place. To a large extent, sub-Saharan African countries have taken a hands-off regulatory posture toward Fin[t]ech.

Yermack, *supra* note 129, at 16.

141. *See* Mark Fenwick et al., *Fintech and the Financing of SMEs and Entrepreneurs: From Crowdfunding to Marketplace Lending*, *in* THE ECONOMICS OF CROWDFUNDING: STARTUPS, PORTALS AND INVESTOR BEHAVIOR 103, 120 (Douglas Cumming & Lars Hornuf eds., 2018).

142. *Id.*

143. *See* Yermack, *supra* note 129, at 19.

144. *See* Peng & Tsang, *supra* note 128, at 91, 92.

145. *See generally* Henry Hansmann & Reinier Kraakman, Essay, *The End of History for Corporate Law*, 89 GEO. L.J. 439 (2001); FRANCIS FUKUYAMA, THE END OF HISTORY AND THE LAST MAN (1992).

146. In the case of corporate law, Ron Gilson divides convergence in the corporate rules system into formal and functional convergence. *See generally* Ronald J. Gilson, *Globalizing Corporate Governance: Convergence of Form or Function*, 49 AM. J. COMPAR. L.

B. A Convergence in Form Alone: Path Dependence at Work?

As discussed above, Taiwan has a tradition of heavily regulating the financial industry with a rules-based, positive-list, and ex-ante regulatory regime.[147] Thus, the Fintech Sandbox Act is important because it holistically overcomes financial regulatory barriers and allows regulators, as well as those regulated, to carry out policy experiments.[148] Nevertheless, it is unclear whether this legislation changes the intrinsic institutional philosophy of the FSC, a quintessential executive branch agency of civil law systems.[149] This Article argues that the FSC's implementation of the sandbox approach resembles the act of putting "old wine into new bottles." In other words, even though the Taiwanese government has, in form, become more proactive by enacting the Fintech Sandbox Act (the "new bottle"), the FSC might be, in function, hesitant to embrace Fintech due to its traditional institutional philosophy (the "old wine") or due to a lack of incentives to

329 (2001). According to the path dependence approach proposed by Lucian Arye Bebchuk and Mark J. Roe, the corporate rules in practice depend on distinct local, social, and economic contexts. *See* Lucian Arye Bebchuk & Mark J. Roe, *A Theory of Path Dependence in Corporate Ownership and Governance*, *in* CONVERGENCE AND PERSISTENCE IN CORPORATE GOVERNANCE 69, 95 (Jeffrey N. Gordon & Mark J. Roe eds., 2004); *see also* David Cabrelli & Mathias Siems, *A Case-Based Approach to Comparative Company Law*, *in* COMPARATIVE COMPANY LAW: A CASE-BASED APPROACH 1, 5 (Mathias Siems & David Cabrelli eds., 2013) ("Proponents of [the] 'path-dependence' theory argue that the structure of a jurisdiction's corporate governance system and the shape of its company laws are conditioned by its cultural, social, economic and political past."). For more discussion on the debate over convergence versus path dependence, see, e.g., Nicholas Calcina Howson, *China's "Corporatization Without Privatization" and the Late Nineteenth Century Roots of a Stubborn Path Dependency*, 50 VAND. J. TRANSNAT'L L. 961, 961 (2017) (analyzing China's century-old path dependence in firm organization and governance that continues to work well in the country's contemporary program of "corporatization without privatization").

147. *See, e.g.*, GU XIANG-YI & XU YING-SHU, P2P WANGLU JIEDAI PINGTAI ZHI FALU WENTI (網路借貸平臺之法律問題) [LEGAL ISSUES OF P2P LENDING PLATFORMS], *in* CAIJIN FA: XIN SHANGZHAN JIYUAN (財經法：新商戰紀元) [FINANCIAL LAW: NEW BUSINESS WAR ERA] 209, 220-21 (LCS & Partners eds., 2016); *Fa Zhan Jin Rong Ke Ji, Jian Li Si Wei Yao Tiao Zheng* (發展金融科技 監理思維要調整) [*Regulatory Philosophy Need Be Adapted in Facilitating Financial Technology*], GONGSHANG SHIBAO (工商時報) [INDUS. & BUS. TIMES] (Oct. 9, 2017), http://opinion.chinatimes.com/20171009000028-262113 [https://perma.cc/Y8C7-F5EG].

148. *See* Zetzsche et al., *supra* note 10, at 81. Dirk A. Zetzsche emphasizes that "an official sandbox policy with legislative endorsement reduces the risk of litigation for breach of a regulator's supervisory duties. The sandbox thus assists regulators in achieving *an efficient level of dispensation*, enabling them to better weigh benefits and downsides for society rather than solely for themselves." *Id.* A downside to this forbearance-based, case-by-case experimental model for regulators is that "the regulators' conduct may be found to be negligent if not backed up by the legislature," and that, in turn, "[t]his prospect of potential liability may lead to suboptimal levels of dispensation practice." *Id.* at 62–63.

149. Scholars argue that the regulatory sandbox will assist in fostering Fintech development and "can only function properly where a solid foundation of financial and technical expertise meets regulatory openness and market demand." *Id.* at 103. Therefore, presumably, without a shift in intrinsic institutional philosophy toward regulatory openness, flexibility, or adaptability, the regulatory sandbox cannot function adequately.

substitute existing regimes with new ones. [150] This dynamic may turn on three interrelated factors: regulatory capture, inertia, and risk-averse tendencies.[151]

1. The Role of Regulatory Capture

Regulatory capture played a role in Taiwan's Fintech sandbox context.[152] While the Taiwanese government marketed itself as a civil law country that adopted the Fintech Sandbox Act to welcome business innovations,[153] the legislative history, as well as legislative implementation, suggest only a "lukewarm welcome" to Fintech startups.[154] Thus, it is reported that industry stakeholders with vested interests may have exerted influence during the enactment process of the Fintech Sandbox Act.[155] Supposedly, under the strong influence of such regulatory capture, the FSC overemphasized the value of prudential regulation advocated for by local financial institutions and under-encouraged financial innovation and competition.[156]

For instance, the founder and Chief Executive Officer of Cher-

150. *See* Amos Chen, *P2P Ye Zhe Yu Yin Hang Zhu Guan Ji Guan De San Jiao Xi Ti San Fang Wu Fa Hao Hao He Zuo Dou Shi Ka Zai Xin Ren Wen Ti* (業者與銀行, 主管機關的三角習題 三方無法好好合作都是卡在信任問題) [*The Triangular Relations Among P2P Companies, Banks, and the Competent Authority: Lack of Trust Contributes to Collaborative Failure Among the Three Parties*], TECHORANGE (July 26, 2016), https://buzzorange.com/techorange/2016/07/26/p2p-taiwan/ [https://perma.cc/5L6H-SEKW].

151. *See* Thomas Philippon, *The FinTech Opportunity* 1, 10 (Nat'l Bureau of Econ. Rsch., Working Paper No. 22476, 2016) (arguing that "the focus on incumbents inherent in current regulations increases political economy and coordination costs," so that financial services remain expensive and inefficient).

152. For an explanation on regulatory capture theories, see, e.g., BARAK ORBACH, REGULATION: WHY AND HOW THE STATE REGULATES 199 (2013); Barak Orbach, *What Is Regulation*? 30 YALE J. REG. ONLINE 1, 5–6 (2012); George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. MGMT. SCI. 3, 5 (1971).

153. *See* Jhao Wan-Chun, *Li Yuan San Du Tong Guo "Jin Rong Jian Li Sha He" Shih Yan Chi Ke Da 3 Nian Chyuan Chiou Zuei Chang* (立院三讀通過「金融監理沙盒」 實驗期可達3年全球最長) [*The Legislature Passed the Fintech Regulatory Sandbox, Covering the Globally Longest Trial Period of 3 Years*], SINTOUKE [NEW TALK] (Dec. 29, 2017), https://newtalk.tw/news/view/2017-12-29/108712 [https://perma.cc/T6L8-AL7Z].

154. *See, e.g.*, *id.*

155. Legacy companies here denote large banks with layers of legacy technologies; they enjoy regulatory advantages over new competitors in a legacy system of regulating incumbents that is not only opaque and complex but is also subject to prohibitively high costs of political economy and coordination. *See* Philippon, *supra* note 151, at 15.

156. *See* Chang-Hsien Tsai, *To Regulate or Not to Regulate? A Comparison of Government Responses to Peer-to-Peer Lending Among the United States, China, and Taiwan*, 87 U. CIN. L. REV. 1077, 1118–19 (2019). In that article, Chang-Hsien Tsai argues that Taiwan's legislative sandbox might not effectively address regulatory dilemmas between prudential regulation and financial competition and innovation. Therefore, at least in the long run, Taiwan should consider reforming the structure of its financial regulatory system by creating a professional agency that is separate from the FSC, the sole financial market watchdog in Taiwan predominantly charged with prudential regulation. By doing this, Taiwan may be able to safeguard financial competition and innovation as prudential regulation concerns do not always predominate, thereby contributing to digital financial inclusion.

ryPay,[157] a rising Fintech startup with offices in both Singapore and Taiwan, said that compared to the friendly startup environments in the U.K. and Singapore, it was difficult to meet executives from financial institutions in Taiwan[158] even though the FSC keeps encouraging dialogue and collaboration between startup entrepreneurs and incumbent licensees.[159] Furthermore, when startups inquired about relevant legal issues before the enactment of the Fintech Sandbox Act, they typically received delayed or reactive responses from regulators.[160] Lamenting the challenges facing Fintech startups, a notable Taiwanese lawmaker pointed out that the legislative sandbox was designed to lower entry barriers for new Fintech firms since legacy systems that regulate incumbent banks might cost Fintech startups too much time and money, thereby creating anticompetitive entry barriers.[161] Additionally, during the drafting phase of the Fintech Sandbox Act, it was no secret to legislators that several licensed financial institutions opposed the legislation.[162]

Similarly, information from the legal treatment of peer-to-peer (P2P) lending platforms offers anecdotal support for such assumptions. When

157. CherryPay is an international, P2P payment transfer platform founded in October 2016. CherryPay, https://www.cherrypay.com/our_story.php [https://perma.cc/4JUG-VSEE] (last visited Feb. 25, 2019).

158. *See* Zong-Han Yu, *CherryPay Zhixing ZhangTang Hua De: Jianli Shahe Zhidu Ying Peihe Xin Chuang Jiasuqi!* (執行長湯化德：監理沙盒制度應配合新創加速器) [*CherryPay CEO Tang: The Regulatory Sandbox System Should Be Supplemented with Start-Up Accelerators*], Cool3c Media (Knowing) (Dec. 26, 2017, 11:43 AM), https://www.cool3c.com/article/131891 [https://perma.cc/V24S-TNY6].

159. *See, e.g.*, *Jinguanhui Jianguan Siwei de* Yanhua (金管會監管思维的演化) [*The Evolutionary Regulatory Philosophy of the Financial Supervisory Commission*], Gongshang Shibao (工商時報) [Indus. & Bus. Times] (May 2, 2018), https://www.chinatimes.com/cn/opinion/20180502000206-262113?chdtv [https://perma.cc/947G-XE6V]. For example, in 2016, the FSC officials made a decision to encourage banks and P2P platforms to collaborate with each other because the FSC had the objective of pressuring Fintech-based P2P platforms to comply with the existing laws and regulations that were applied to banks.

160. *See* Zong-Han Yu, *Taiwan Jinrong Jianli Shahe JiangGuan San Nian Fintech Hai You Jingzhengli Ma?* (台灣金融監理沙盒監管三年 Fintech還有競爭力嗎) [*Will a Fintech Firm Still Be Competitive After 3 Years of Trial in the Regulatory Sandbox in Taiwan?*], Cool3c Media (Knowing) (Dec. 28, 2017), https://www.cool3c.com/article/131978 [https://perma.cc/NMT2-RA8V].

161. Jeng-Liang Kuo, *Jian Li Sha He Shang Lu Dui Xin Chuang Ye Zhe De Tiao Zhan* (監理沙盒上路對新創業者的挑戰) [*Challenges Facing Entrepreneurs After the Legislation of the Fintech Sandbox*], *in* Yin Hang Fa Ling Zun Xun Ce Lue Yu Shi Wu (銀行法令遵循策略與實務) [Strategies and Practices of Legal Compliance in Banks] 114, 116–17 (2018).

162. *See, e.g.*, Wang Mong-Lun, *Jianli Shahe Shencha Weiyuan Xuezhe XuGuo Ban* (監理沙盒審查委員學者需過半) [*At Least 50% of the Review Committee for the Regulatory Sandbox Should Be Composed of Non-Governmental Experts or Scholars*], Ziyou Shihbao [Liberty Times Net] (Nov. 9, 2017), https://news.ltn.com.tw/news/focus/paper/1150349 [https://perma.cc/2VQW-YMZP]; *YouJinrong Jinali Sha he Jizhi, Jiu Hui You Dujiaoshou Ma??* (有金融監理沙盒機制 就會有獨角獸嗎?) [*Will Unicorns Be Born Just with the Rise of the Fintech Regulatory Sandbox?*], Gongshang Shibao (工商時報) [Indus. & Bus. Times] (Nov. 15, 2017), http://www.chinatimes.com/newspapers/20171115000048-260202 [https://perma.cc/X9BY-VYH] [hereinafter *Will Unicorns Be Born?*] (recommending that the executive and legislative branches of Taiwan take a laissez-faire approach in restructuring the country's current civil law institutional design).

the Fintech Sandbox Act was enacted, the FSC had to implement rules and regulations.[163] The FSC thus announced that the Fintech Sandbox Act would be officially implemented on April 30, 2018,[164] and added an appendix titled *Instructions and FAQ of Financial Technology Innovative Experimentation Laws and Regulations* (*Sandbox FAQ*).[165] The *Sandbox FAQ* states that under the Fintech Sandbox Act, "innovative experimentation" means using technological or business model innovations to experiment with financial businesses that require the permission, approval, or concession of a competent authority.[166] It also states that if no innovative experiment is made on such a business (e.g., the P2P lending platforms), there is no need to apply to the FSC.[167] But why did the FSC provide this unwelcomed, informal guidance for P2P lending? Based on the FSC's 2016 decision to promote banks' collaboration with P2P platforms, the FSC's goal in providing this guidance was to pressure Fintech-based P2P platforms to comply with the existing legal framework that applied to banks, thereby "supporting the extant financial system and their own style of regulation."[168] This information raises the suspicion that "the strength of industry groups" may have "curb[ed] incentives to Fintech firms and support[ed] existing subsidies and barriers to entry."[169]

2. *Conservativeness Due to Regulatory Inertia and Risk-Averse Tendencies?*

The information mentioned above also implies that before the introduction of a regulatory sandbox, the FSC's overall attitude toward Fintech startups was far from friendly. This should not come as a surprise. Presumably, due to the initial mandate and expertise of the FSC, there is a

163. *See, e.g.*, Fintech Sandbox Act, *supra* note 58, at arts. 2, 18.

164. *See* Press Release, Fin. Supervisory Comm'n, Jinrong Keji Fazhan Yu Chuangxin Shiyan Tiaoli Ji San Xiang Shouquan Fagui Jiang Yu Yi Ling Qi Nian Si Yue San Shi Ri Shixing (「金融科技發展與創新實驗條例」及3項授權法規將於107年4月30日施行) [Financial Technology Development and Innovative Experimentation Act Is About to Be Implemented on April 30, 2018] (Apr. 26, 2018) (on file at https://www.fsc.gov.tw/ch/home.jsp?id=96&parentpath=0,2&mcustomize=news_view.jsp&dataserno=201804260001&aplistdn=ou=news,ou=multisite,ou=chinese,ou=ap_root,o=fsc,c=tw&dtable=news [https://perma.cc/57HX-3NF9]).

165. *See Jinrong Keji Chuangxin Shiyan Fagui Wenda Ji* (金融科技創新實驗法規問答集) [*Instructions and FAQ of Financial Technology Innovative Experimentation Laws and Regulations*], Fin. Supervisory Comm'n (Apr. 26, 2018), https://www.mjib.gov.tw/userfiles/files/35-%E6%B4%97%E9%8C%A2%E9%98%B2%E5%88%B6%E8%99%95/files/%E5%AF%A6%E5%8B%99%E5%95%8F%E7%AD%94/02-06-13.pdf [https://perma.cc/A6MS-DBPR] [hereinafter *Sandbox FAQ*].

166. *See id.*

167. *See id.*

168. Xiang-Yi (Grace) Gu et al., Jin rong Ke Ji Fa Zhan YU Fa Lu (金融科技發展與法律) [The Fintech Development and the Law] 159–60, 161, 173 (2017).

169. Fenwick et al., *supra* note 141, at 118; *see also* Chen, *supra* note 150. As discussed below, the FSC's aggressive call for P2P platforms' partnering with, rather than competing against, banks constitutes an entry barrier to digital innovation. *See* Rory Van Loo, *Making Innovation More Competitive: The Case of Fintech*, 65 UCLA L. Rev. 232, 234 (2018). Moreover, "banks are publicly subsidized and insulated from competition." *Id.*

natural tendency for it to react according to its previous experiences in dealing with the ramifications that follow new technologies and innovations.[170] As a matter of implementation, the FSC's conservativeness toward the Fintech Sandbox Act may be related to regulatory inertia and risk-averse tendencies in decision-making.[171] The following cases further illustrate this point.

Cross-party legislators, who introduced more than twenty drafts of the Fintech Sandbox Act in December 2016, pressured the FSC to come up with its own version of the legislation.[172] Witnessing the creation of Fintech sandboxes by the U.K., Australia, Hong Kong, and Singapore, Taiwan's legislators wanted the FSC to propose a regulatory sandbox that would catch up with Taiwan's common law counterparts.[173] The FSC's draft was thus introduced in January 2017[174] and was passed by Taiwan's cabinet four months later.[175]

Another question the FSC had to resolve was whether a majority of the review committee members, who determined which firms could test in the sandbox, should be nongovernmental experts and scholars. In November 2017, legislators suggested that if "at least" fifty percent of the review committee members were nongovernmental experts or scholars, this would reduce interventions by the FSC and its conservative mindset.[176] But the

170. *See* Fintech Sandbox Act, *supra* note 58, at art. 1; Yu, *supra* note 160.

171. For an explanation on theories of bureaucrats' risk-averse tendency in decision-making, see, e.g., MAXWELL L. STEARNS & TODD J. ZYWICKI, PUBLIC CHOICE CONCEPTS AND APPLICATIONS IN LAW 358 (2009). For an explanation on theories of regulatory inertia, see generally, e.g., Melissa J. Luttrell, *The Social Cost of Inertia: How Cost-Benefit Incoherence Threatens to Derail U.S. Climate Action*, 25 DUKE ENV'T L. & POL'Y F. 131 (2014); Cass R. Sunstein, *On Not Revisiting Official Discount Rates: Institutional Inertia and the Social Cost of Carbon*, 104 AM. ECON. REV. 547 (2014). *See also* Bromberg et al., *supra* note 12, at 323 (arguing that regulators should avoid "regulatory inertia" and be more "proactive and adaptive in regulating new technologies and business practices" in the Fintech industry).

172. *See* Peng & Tsang, *supra* note 128, at 94.

173. *See* Syueh-Huei Lü, *Jianli Shahe Jinrongyeh Shuaixian Shiyan* (監理沙盒 金融業率先實驗) [*The Financial Sector Would Be Forerunners in Experimenting with the Regulatory Sandbox*], GONGSHANG SHIBAO (工商時報) [INDUS. & BUS. TIMES] (Feb. 20, 2017), https://www.chinatimes.com/newspapers/20170220000027-260202 [https://perma.cc/B9VY-U3R7].

174. *See* Press Release, Fin. Supervisory Comm'n, Jinrong Keji Fazhan Lichengbei—Jinrong Keji Chuangxin Shiyan Tiaoli Cao'an
(金融科技發展里程碑—「金融科技創新實驗條例」草案) [The Milestone for Financial Technology Development—the Draft of Fintech Innovative Experimentation Act] (Jan. 12, 2017) (on file at https://www.fsc.gov.tw/ch/home.jsp?id=96&parentpath=0%EF%BC%8C2&mcustomize=news_view.jsp&dataserno=201701120005&aplistdn=ou=news%EF%BC%8Cou=multisite%EF%BC%8Cou=chinese%EF%BC%8Cou=ap_root%EF%BC%8Co=fsc%EF%BC%8Cc=tw&dtable=news [https://perma.cc/JW9C-ZWWG]).

175. *See* Executive Yuan Draft, *supra* note 115.

176. *See* Kuo, *supra* note 161, at 115; Mong-Lun, *supra* note 162; Shu-Ting Weng, *Jin Guan Hui Zheng Shi Gong Gao "Jin Rong Ke Ji Chuang Xin Shi Yan Tiao Li"; Ye Jie Yu Li Yuan Diu Chu Si Da Wen Ti*
(金管會正式公告「金融科技創新實驗條例」業界與立院丟出四大問題) [*The FSC Officially Announced Its Draft of "Financial Technology Innovation and Experiment Act"; the Business Sector and the Legislature Made Four Major Inquiries*], BUS. NEXT (Feb. 10, 2017),

legislature's efforts in this regard were unfruitful since the final draft of the Fintech Sandbox Act somehow left this issue unaddressed. Thus, the FSC ultimately implemented the Fintech Sandbox Act by stipulating that non-governmental experts or scholars constitute "at most" fifty percent of the review committee.[177] Naturally, some legislators criticized the design of the committee, warning that the FSC's conservative approach to institutional philosophy would not be shifted.[178]

The above observation seems to resonate with the FSC's mandate to maintain prudential regulation. Established in 2004, Taiwan's FSC was modeled on the regulatory design of the U.K.'s Financial Services Authority—the predecessor of the FCA.[179] While the FCA already rebalanced consumer protection and innovation promotion by including effective competition, "innovation, productivity, and economic growth," as part of its core functions,[180] the Taiwanese financial regulator's missions remain "sound business management," "financial stability," and the "development of financial markets."[181] This is so despite the 2011 amendments to the Organic Act Governing the Establishment of the FSC.[182] Therefore, it should not come as a surprise that the dynamic nature of Fintech does not neatly fit into the mandate of the FSC.

Ample evidence shows the FSC's cautious and conservative approach in the post-GFC era. The dissolution of major investment banks, such as Lehman Brothers, led to various commercial disputes over structured notes offered by Taiwanese banks for overseas investments, which caused great

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https://www.bnext.com.tw/article/43114/fsc-announces-the-draft-of-Fintech-regulatory-sandbox [https://perma.cc/WX86-GNJG]; *Will Unicorns Be Born?*, *supra* note 162.

177. Jinrong Keji Chuangxin Shiyan Shencha Huiyi ji Pinggu Huiyi Yunzuo Banfa (金融科技創新實驗審查會議及評估會議運作辦法) [Regulations Governing the Operations of Financial Technology Innovative Experimentation Review Meetings and Evaluation Meetings] (promulgated by the Fin. Supervisory Comm'n, Apr. 27, 2018, effective Apr. 30, 2018), at art. 4 (Taiwan).

178. *See* Jingzhe Huang, *Jinrong Shahe 3 Nian Shiyan Qizhong Sandu; Waibu Pingshen Xuezhe Buneng Guoban* (金融沙盒 3 年實驗期終三讀，外部評審學者不能過半) [*Three-Year Trial in the Fintech Sandbox Was Legislated; Scholars Cannot Serve as More than Half of External Reviewers*], TechNews (Dec. 9, 2017), https://technews.tw/2017/12/29/financial-sandbox-3-years-end-of-the-third-reading-reviewers-can-not-be-more-than-half/ [https://perma.cc/DD4S-2NC7]; Siyu Zhou, *Fintech Maixiang Xin Lichengbei! Jinrong Jianli Shahe Sandu Chuangxin Shiyanqi Zuichang 3 Nian* (邁向新里程碑！金融監理沙盒三讀 創新實驗期最長3年) [*A New Milestone Marked for Fintech! The Fintech Sandbox Was Legislated; The Longest Period of Innovative Experiments Is Three Years*], Storm Media (Dec. 29, 2017), https://www.storm.mg/article/378837 [https://perma.cc/PA43-T7PJ].

179. *See About Us*, Fin. Conduct Auth., https://www.fca.org.uk/about [https://perma.cc/JZF9-M59H] (last visited May 28, 2020).

180. Fin. Conduct Auth., FCA Mission: Our Approach to Competition 6 (2017).

181. *Missions and Objectives*, Fin. Conduct Auth., https://www.fsc.gov.tw/en/home.jsp?id=10&parentpath=0,1 [https://perma.cc/7P4T-UP9L] (last visited Dec. 14, 2020).

182. *See generally* Jinrong Jiandu Guanli Weiyuanhui Zuzhifa (金融監督管理委員會組織法) [Organic Act Governing the Establishment of the Financial Supervisory Commission] (promulgated by the Fin. Supervisory Comm'n, July 23, 2003, as amended June 29, 2011) (Taiwan).

financial loss to many people.[183] For the most part, these disputes concerned the appropriate disclosure and the suitability of structured notes for non-professional investors. At the time, however, the FSC fell short of the required expertise to react to such complex, large-scale disputes.[184] As a result, individuals formed various consumer groups to pressure the FSC to intervene in the disputes. These groups organized protests and picketed the FSC building, demanding action against the banks and creating a national atmosphere that "something must be done."[185] Eventually, the public outcry led the FSC to set up an ad hoc alternative dispute resolution (ADR) scheme and exercise its power to force the involved banks to increase the settlement rate.[186] Shortly afterward, in 2012, lawmakers passed the Financial Consumer Protection Act and transformed the ADR scheme into the Financial Ombudsman Institution (FOI).[187]

That the FSC failed to respond to these controversies in a timely manner well illustrates its lack of institutional capacity. Despite subsequent reforms, such as the FOI, the FSC's schemes nevertheless retain a conservative flavor. Moreover, the aforementioned interventions by the FSC drew attention away from the faults of previous regulations; the FSC could thus avoid blame while still making risk-averse decisions. [188] Therefore, it is safe to say that the FSC remains in the shadow of the GFC. This resonates with the fact that, notwithstanding Taiwan being the first-ever civil law jurisdiction to promote Fintech businesses through legislation, Fintech has, as a matter of practice, received only a lukewarm welcome from the FSC thus far.

The legislative history of the Fintech Sandbox Act and the experiences of establishing ADR schemes—during and after the GFC—are similar because they both play a role in shaping the FSC's conservative approach, but they can be distinguished in two ways. First, as noted above, because the core mission of the FSC is to maintain the safety and soundness of

183. *See* Chang-hsien Tsai, *The Effects of the Global Financial Crisis on the Binding Force of Contracts: A Focus on Disputes Over Structured Notes in Taiwan*, *in* THE EFFECTS OF FINANCIAL CRISES ON THE BINDING FORCE OF CONTRACTS—RENEGOTIATION, RESCISSION OR REVISION 265, 274 (Başak Başoğlu ed., 2016).

184. *See* Chang-Hsien Tsai, *Choosing Among Authorities for Consumer Financial Protection in Taiwan: A Legal Theory of Finance Perspective*, *in* THE POLITICAL ECONOMY OF FINANCIAL REGULATION 219, 235 (Emilios Avgouleas & David C. Donald eds., 2019).

185. *Id.* at 221.

186. *Id.* at 240.

187. *About Us*, FIN. OMBUDSMAN INST., https://www.foi.org.tw/Article.aspx?Lang=2&Arti=32&Role=1 [https://perma.cc/8FHY-4PJD] (last visited May 28, 2020).

188. Government agencies, such as the FSC, tend to be risk averse, "defensive, threat-avoiding, scandal-minimizing," and "reluctant to take on activities that embrace seemingly intractable problems and that are fraught with the danger of unintended consequences including regulatory failure and criticism." STEARNS & ZYWICKI, *supra* note 171, at 348 (citations omitted). This might also be due to regulatory inertia—that is, "the regulator's tendency to adhere to their original proposed rules and to resist change, even when that change may make rules more effective." Asaf Eckstein, *Regulatory Inertia and Interest Groups: How the Structure of the Rulemaking Process Affects the Substance of Regulations* 1 (The Raymond Ackerman Family Chair in Isr. Corp. Governance, Working Paper No. 013, 2016).

financial institutions, it is reluctant to make changes beyond the reach of its expertise. The aforementioned GFC saga, therefore, supports the claim that, unless markets are loud enough to press top-level executives or lawmakers to step in, the FSC will remain in its comfort zone rather than explore new solutions to emerging challenges. Second, the FSC's experience with consumer groups in the structured notes disputes further reinforces its risk-averse attitude. Taken together, the potential risks associated with relaxing the regulatory control over Fintech startups are reminiscent of what embarrassed the FSC for years in the post-GFC era. These local political factors might contribute to the conservative stance of the FSC, creating a mission-conflict nuisance in the FSC's implementation of the sandbox by balancing prudential, and even consumer financial protection, considerations against the financial competition and innovation enabled by Fintech.[189]

3. *Legal Transplantation of the Sandbox Scheme and Path Dependence: Between Formalistic Implementation and Functional Internalization*

As a Fintech firm from the U.K. openly remarks, financial authorities from the U.K. and Singapore proactively respond to Fintech entrepreneurs while the Taiwanese counterpart's response is comparatively reactive.[190] This contrast in regulatory posture toward Fintech raises questions about the limitations of Taiwan's convergence, by way of legislative transplantation, toward the sandbox scheme—especially when path dependence and the FSC's conservative implementation approach is taken into account.[191]

The FSC's earlier regulatory attempt involving equity crowdfunding (ECF) regulations, borrowed from the U.S. model, further illustrates the regulator's conservativeness toward emerging Fintech markets.[192] Com-

189. Mission conflict would potentially haunt the implementation of the Fintech Sandbox by the FSC because the FSC, like U.S. prudential regulators, would focus more on the safety and soundness of banks than financial competition and innovation. *See* Tsai, *supra* note 184, at 222; Van Loo, *supra* note 169, at 234.

190. *See* Yu, *supra* note 160.

191. *See Pingyi Wanglu Yinhang Zhizhao de Baoshou Zhengce* (平議網路銀行執照的保守政策) [*Commentary on the Conservative Policy for Online Bank Licensure*], GONGSHANG SHIBAO (工商時報) [INDUS. & BUS. TIMES] (July 3, 2018), https://www.chinatimes.com/newspapers/20180703000221-260202?chdtv [https://perma.cc/G7FX-BUBW] (noting that even though the legislature enacted the Fintech Sandbox Act to encourage financial innovation, the FSC's implementation is so conservative that many startups decided not to apply for entrance into the sandbox and even relocated their whole teams overseas upon realizing that staying within the sandbox would expose their technology and business development to more uncertainty).

192. The ECF's regulations, governing public and private platforms in Taiwan, were formed in 2014 and 2015, respectively. Both of these regulations were modeled after the U.S. Title III of the Jumpstart Our Business Startups Act (JOBS Act) and the Capital Raising Online While Deterring Fraud and Unethical Non-Disclosure Act (CROWDFUND Act). But the ECF regulations were later adapted to fit local conditions, placing greater emphasis on investor protection than capital formation. Nevertheless, skeptics have a darker view: the current ECF marketplace, under the public and private double-track ECF regulations (the double-track system), demonstrates that this double-track system errs on the side of investor protection so much that the market for private portals is almost paralyzed, with new listings taking place only on the government-oper-

parative law literature studied four areas of private law: contract law, tort law, company law, and property law. In comparing China and Taiwan, comparatists argued that "[c]onvergence is more often seen in some facilitative areas of the law while local preferences remain in some more interventionist areas of the law . . . ."[193] Leading experts remarked that "[c]ompany law effectively deals with shareholder rights, which in nature is a form of property rights," and often involves local political factors and regulatory philosophies that have a more interventionist nature than contract and tort law.[194] Taiwan's ECF regulations are a type of securities regulation and part of company law, which are more interventionist areas of law where local preferences have greater influence.[195] Thus, Taiwan's domestic political economy changed the substance of ECF despite borrowing the regulatory techniques from the U.S. Consequently, the ECF's regulatory trajectory serves as an example of persistent path dependence or divergence. In this light, even though Taiwan's government transplanted regulatory techniques from the U.S.'s Capital Raising Online While Deterring Fraud and Unethical Non-Disclosure Act (CROWDFUND Act) into the ECF, the local, extralegal, or political factors and institutional philosophies underlying extant securities laws may hinder "functional" convergence thereby neglecting the legislative purpose of the CROWDFUND Act, which primarily focuses on capital formation.[196]

By analogy, the Fintech Sandbox Act is a type of financial law that governs broader categories of Fintech, including the ECF.[197] Thus, the Fintech Sandbox Act can fall into a more interventionist area of law just

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ated public platform. This implies that bureaucrats prefer the public, government-operated platform (under direct governmental control) to various private platforms for investor protection. In all, this illustrates a conservative regulatory approach to Fintech at the early stage of the market's development in Taiwan. *See* Chang-hsien Tsai, *Is a Bird in the Hand Worth Two in the Bush? Reflections on Equity Crowdfunding Regulation in Taiwan*, *in* RESEARCH HANDBOOK ON ASIAN FINANCIAL LAW 525 (Douglas W. Arner et al. eds., 2020).

193. Shen & Wang, *supra* note 121, at 321. They further assert:

> [I]t appears reasonable to predict that there may not be an end of the history of private law, at least in some more interventionist legal areas. The rights protection movement may push for a more rights-centered legal regime in these legal areas. Additionally, path dependency and switching costs in these areas may hinder a complete convergence among different jurisdictions. Convergence may encounter some obstacles such as local rent-seeking, in the uniqueness of local cultures and other forms of transaction costs (i.e., the switching cost in path dependency).

Id. at 323–24.

194. *Id.* at 322.

195. *See* Chang-hsien Tsai, *Legal Transplantation or Legal Innovation? Equity-Crowdfunding Regulation in Taiwan After Title III of the U.S. JOBS Act*, 34 B.U. INT'L L.J. 233, 276 (2016).

196. *See id.* at 276–77; *see also* Shen & Wang, *supra* note 121, at 321 ("When regulation or the redistribution of privileges is the key element in shaping laws, rules tend to diverge as different governments may deploy a variety of regulatory devices based on completely nonuniform regulatory philosophies.").

197. Bonnie G. Buchanan & Cathy Xuying Cao, *Quo Vadis? A Comparison of the Fintech Revolution in China and the West* 4 (SWIFT Instit., Working Paper No. 2017-002, 2018) (detailing "the broad categories of Fintech including cryptocurrencies,

like ECF regulations. Therefore, regulators can predict not only that local preferences will remain through the implementation of the Fintech Sandbox Act, but also that a path dependence will develop. Put differently, the FSC may well maintain a conservative attitude in implementing the sandbox scheme toward broad categories of Fintech, as seen with the ECF.

The more interventionist a legal area is, the more persistent the path dependence will be. This concept is reflected by FSC's conservative implementation trajectory.[198] What is more, a stubborn path dependence may hinder the global normative diffusion of the sandbox approach and the regulatory convergence across jurisdictions. On the one hand, this Article highlights limitations in the convergence of Taiwan, a civil law country, via its legislative transplantation toward the sandbox scheme led by common law forerunners such as the U.K., Singapore, Australia, and Hong Kong.[199] On the other hand, if the institutional philosophy of the FSC does not intrinsically shift toward regulatory openness "in function," Taiwan's adoption of the Fintech sandbox, by signaling to the market that it is simply "in form" only, will hardly be fruitful.[200] This would also substantiate the claim that "functional," foundational, and supplementary issues, such as local, political, and economic factors; extralegal norms; and business models, may matter more than the more "formal" and legal techniques exemplified by legislative sandboxes themselves.[201] The aforementioned analysis may illuminate a future trajectory: if substantial reforms of Taiwan's regulatory culture are not conducted from inside out, a stubborn path dependence may largely inhibit how the state government applies the law in practice, let alone how it promotes innovation and effective competition in any meaningful sense.

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blockchain, robo-advising, smart contracts, crowdfunding, mobile payments and artificial intelligence platforms.").

198. *See* Anthony Ogus, *Competition Between National Legal Systems: A Contribution of Economic Analysis to Comparative Law*, 48 INT'L & COMPAR. L.Q. 405, 413–14 (1999).

199. *See* Garoupa & Pargendler, *supra* note 131, at 10 (noting that "even if common law systems were more conducive to economic growth, the question of how to move from one to the other remains largely unaddressed. Legal culture, rent-seeking, and the accumulated human capital raise the costs of such transplantation.").

200. *See* Zetzsche et al., *supra* note 10, at 79; *see also* Shen & Wang, *supra* note 121, at 320 (noting that "predisposition and familiarity with the transplanted laws are more important than legal origins in assuring effective transplants," and that a "[l]egal transplant . . . is more often realized through legislative adoption, which is detached from both local actors and market players. The dynamic interaction between legal change and actors (or their epistemic assumptions) is thus easily ignored.").

201. *See* Kuo, *supra* note 161, at 114–15, 119–20. But "regulatory flexibility cannot substitute for demand. In the absence of market demand (for whatever reason) a regulatory sandbox will not assist. Sandboxes cannot substitute for a sound business model. Sandboxes can only function properly where a solid foundation of financial and technical expertise meets regulatory openness and market demand." Zetzsche et al., *supra* note 10, at 102–03.

C. Sandboxing Unmanned Vehicles and Artificial Intelligence: How Far Can We Go?

Based on the discussion on legal transplantation, path dependence, and regulatory inertia, as well as on the issues surrounding Fintech regulation in Taiwan, this Article further analyzes Taiwan's most recent use of the sandbox scheme: governing unmanned vehicles. The analysis offers another window for examining the future development of the global regulatory sandbox in Taiwan and beyond.

The Unmanned Vehicles Technology Innovative Experimentation Act[202] (Unmanned Vehicles Act) was proposed by Taiwan's Executive Yuan in May 2018 and passed by the Legislative Yuan at the end of November 2018. The Unmanned Vehicles Act authorizes the government to set up a regulatory sandbox for the testing of unmanned vehicles. More specifically, the sandbox is open to a broadly defined scope of unmanned vehicles for innovative experimentation, including automobiles, aircrafts, and ships that are either operated via remote control or autonomously.[203] To enter the sandbox, an applicant needs to submit an innovation experimentation plan that sufficiently describes the nature and scope of the innovation, the expected benefits, cooperation agreements, safety compliances, risk management, and insurance coverage.[204] After receiving the application, the Ministry of Economic Affairs convenes review meetings comprised of pertinent experts, scholars, and representatives of relevant government agencies.[205] This review process must be completed within sixty days.[206] The evaluation criteria include the plan's innovativeness, the need for entrance, feasibility, improvement, risk assessment, protective measures, and plans for compensation.[207] During the trial period, the innovative experimentation activities are not subject to laws, regulations, orders, or administrative rules because the applicants are exempted by the approved decision, but anti-money laundering and counter-terrorism financing measures still apply.[208] Furthermore, participants in the sandbox are subject to inspections by competent authorities and are required to submit relevant data and information to said authorities.[209] The time allowed to experiment within the sandbox is limited to one year, but a single extension of an additional year is allowed.[210] If the innovative experiment involves potential amendments to an existing law, the one-year restriction does not apply.[211] Instead, a maximum of four years of experiment is allowed.[212] In cases where fault is found with the experiment,

202. *See generally* UVA, *supra* note 19.
203. *See id.* at art. 3.
204. *Id.* at art. 5.
205. *Id.* at art. 6.
206. *Id.* at art. 8.
207. *Id.* at art. 7.
208. *Id.* at art. 22.
209. *See id.* at art. 14.
210. *Id.* at art. 9.
211. *See id.*
212. *Id.*

such as overreaching of scope or harmful occurrences, the competent authority may require the participants to make improvements;[213] if improvements are not made, "the competent authority may revoke the approval" for experimentation.[214]

In the drafting process, the preparatory documents and the bill proposal of the Unmanned Vehicles Act made explicit references to Taiwan's Fintech Sandbox Act and Singapore's Road Traffic Act amendment to justify the use of the regulatory sandbox approach in the area of unmanned vehicles.[215] A detailed look at the structure and substance of the Unmanned Vehicles Act shows a strong resemblance to the Fintech Sandbox Act. More specifically, a clause-by-clause analysis of these two acts demonstrates a close similarity in legislative design, signaling the growing use of regulatory sandboxes (with nearly identical structure and substance) by lawmakers in response to the challenges posed by disruptive technologies and innovations.

Indeed, more recently, beyond the fields of Fintech and unmanned vehicles, legislators proposed a bill on A.I. called the Fundamental Act on the Development of Artificial Intelligence, which was passed in May 2019.[216] The act sets out the basic legal and ethical principles in relation to the development and deployment of different, A.I.-based systems. It also includes a provision that explicitly urges competent authorities to adopt a sandbox approach in response to A.I. technologies and innovations, which would exempt legal constraints for experiments and assess the necessity of amending existing laws and regulations.[217] But the expansive use of the sandbox approach by Taiwanese legislators and regulators as a default measure and a convenient way to address legal challenges (not necessarily dilemmas) posed by disruptive technologies and innovations may prove to be problematic and detrimental to the rule of law in the long run.[218] The

213. *Id.* at art. 20.

214. *Id.*

215. *See Wuren Zaiju keji chuangxin shiyan tiali caoan zongshuoming* (無人載具科技創新實驗條例草案總說明) [*Executive Summary of the Draft Unmanned Vehicles Technology Innovative Experimentation Act*], GONGONG ZHENCE GONGMIN CANYU DE PINTAI (公共政策公民參與的平台) [PLATFORM PUB. POL'Y CIV. PARTICIPATION], https://join.gov.tw/ (last visited Aug. 13, 2019).

216. *Taiwan's Executive Yuan Approves Bill Promoting Unmanned Vehicle Experimentation*, GNSS ASIA, https://gnss.asia/new/taiwans-executive-yuan-approves-bill-promoting-unmanned-vehicle-experimentation/ [https://perma.cc/DSZ3-JSZX] (last visited Dec. 14, 2020).

217. *See Regulation of Artificial Intelligence: East/ South Asia and the Pacific*, LIBR. CONG., https://www.loc.gov/law/help/artificial-intelligence/asia-pacific.php [https://perma.cc/7B5J-V9D2] (last visited Dec. 14, 2020).

218. This, of course, depends on the design of the regulatory sandbox. The less structured the sandbox is, the more uncertainty business can face. *See* Zetzsche et al., *supra* note 10, at 58–63 (arguing that "cautious experimentation on a case-by-case basis through forbearance via no-action letters, restricted licenses, special characters, and the like . . . fails to provide long-term legal certainty for business development" and that it is these downsides that led governments to move towards more structured approaches such as regulatory sandboxes); *see also* Wolf-Georg Ringe & Christopher Ruof, *Regulating Fintech in the EU: The Case for a Guided Sandbox*, 11 EUR. J. RISK REG. 604, 616 (2020) (suggesting that for the sandbox to operate well, it is important to enhance

regulatory sandbox seems to be a handy tool for government agencies regulating Fintech, unmanned vehicles, and A.I. by which the legislature can conduct massive legal transplants, save costs, and secure legitimacy. But how far can such a legislative strategy go?

As pointed out earlier, the limits of this kind of legal transplant (partly due to the global norm diffusion of the regulatory sandbox approach) result from improperly considering social, economic, political, and cultural factors, which are significant to the process of legal transplantation. The rise of various disruptive technologies and innovations has increased public demand for regulatory actions, and the legislature has a strong incentive to secure its legitimacy by looking to foreign and international successes. The regulatory sandboxes in financial sectors established by the U.K., Australia, and Singapore readily offered such appealing models. By mimicking the regulatory designs adopted by common law countries, whose legal systems and rules usually enjoy perceived efficacy, legislators faced with regulatory challenges or dilemmas do not have to convince their constituencies that the borrowed approach will work.[219] Nevertheless, as analysis on the Fintech sandbox indicates in the context of Taiwan, such perceived efficacy might not be without hurdles, particularly when the established legal and commercial practices, institutional arrangements, and relationships in the local setting translate into regulatory capture, regulatory inertia, and path dependence that further impede the effective implementation of transplanted regulatory sandboxes. These problems might render a country's regulatory strategy and rule of law unstable and plagued by uncertainty, inapplicability, and under-implementation. In a heavily regulated issue area such as financial regulation, there may be more regulatory inertia, institutional stubbornness, and risk-averse tendency in decision-making, preventing the competent authorities from realizing the mandates and implementation measures designated under the applicable legislation.[220]

It remains to be seen if the "old wine in new bottles" problem will present itself in the regulation of unmanned vehicles or A.I., and whether there will be a lack of institutional incentives to facilitate transposing such a new approach into regulations. Unlike the financial sector, where there are strong incumbent market participants, local interests, and industry groups that may mobilize to curb the shift to the regulatory sandbox approach and create barriers to entry, unmanned vehicles and A.I. sectors may prove to be friendlier ecosystems. Still, Taiwan's financial regulator tends to resort to its previous experiences when facing legal uncertainty posed by disruptive technologies and innovations. Therefore, a future

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"knowledge about sandbox[] technologies," which will be facilitated by institutionalized dialogues between firms and regulators. In doing so, this can help "establish some certainty in applying the current legal framework," which can in turn address "regulatory uncertainty among sandboxed firms.")

219. For a similar account of food safety law reform in Taiwan, see generally Ching-Fu Lin, *The Limit of Regulatory Borrowing: "Cocktail Therapy" Reforms of Food Safety Law in Taiwan*, *in* LEGAL THOUGHTS BETWEEN THE EAST AND THE WEST IN THE MULTILEVEL LEGAL ORDER 409 (Chang-fa Lo et al. eds., 2016).

220. *See* discussion *supra* Section II.B.

development characterized by more conservative, path-dependent, reactive measures will likely be the case if there is no strong political momentum to push for effective implementation of sandboxes. Such a regulatory reality may again cast doubt on the normative influence of the global regulatory sandbox on a civil law country like Taiwan. While sectors other than financial regulation may be less interventionist in nature and may, therefore, face fewer obstacles from path dependence and regulatory inertia, a case-by-case analysis is necessary to better evaluate the various degrees of global convergence and potential limitations of regulatory sandboxes. Despite the LOT grand debate and discussion on regulatory divergence and convergence, the way forward may lie in a proper examination of local problems, practices, and needs in relation to the development and deployment of disruptive technologies and innovations when borrowing from a foreign regulatory model—especially if the foreign model is from a different legal tradition. Only when a functional, rather than formalistic, regulatory sandbox is entrenched in the legal system—in which the competent authority is truly open to a new regulatory philosophy—can Taiwan's legal transplantation be real evidence of global normative convergence. It takes time to cultivate an internationally inspired but locally adapted regulatory approach that goes beyond simply copying and pasting successful stories to realizing the benefits of tailoring legal transplantation to local contexts.

Conclusion

Disruptive technologies and innovations in various conventional sectors not only promise considerable benefits, but also generate significant social and economic tensions that pose regulatory challenges for governments. While disruptive technologies and innovations may impact the local market within the original industry sector by increasing the pressures of competition, efficiency, and convenience in a narrow sense, they may also go beyond the transformation of economic relationships and fundamentally shake up the underlying social, economic, and political infrastructures. Faced with the challenges posed by the rise and evolution of disruptive technologies and innovations, many countries have adopted differing regulatory approaches and adapted institutional structures and norms to maximize benefits while mitigating risks. Among such regulatory endeavors, the regulatory sandbox, first adopted by the U.K. for the financial sector, stands out as a prominent mechanism to strike a balance between promoting technological innovations and ensuring market order.

As discussed in this Article, the regulatory sandbox approach is designed to encourage innovation in various business sectors by allowing some players, under specific conditions, to enter the market with fewer administrative constraints (e.g., licenses) or legislative requirements. Given the promises of the regulatory sandbox, there has been a gradual embrace of this approach by governments across different continents, which arguably indicates that a global norm diffusion is on the rise. As examined in this Article, a growing number of regulators have contemplated, or have

introduced, a sandbox in the financial market. There is also a trans-governmental endeavor to facilitate cooperation among regulators and convergence in regulation through bilateral arrangements, as well as under the multilateral "global sandbox" GFIN club. Beyond the financial sector, given the cross-border nature and implications of many disruptive technologies and innovations, some countries have applied similar governance approaches to nonfinancial areas. All these developments signal the rise of the sandbox approach to regulate disruptive technologies and innovations in different sectors at the national, trans-governmental, and global levels, which has crucial theoretical and practical implications. By way of an in-depth and thorough analysis of Taiwan's aggressive use of sandbox regulation in the areas of financial services, unmanned vehicles, and more recently, artificial intelligence, this Article argues that while the sandbox approach has emerged as a handy tool for governments to manage the potentially harmful ramifications of technological innovations, there are limitations that may affect how countries implement these regulatory approaches on the ground. As seen in the case of Taiwan, the legal origin, regulatory culture, and domestic political economy in the post-GFC era all play crucial roles in shaping path dependence and institutional inertia nested within regulatory agencies. One must not take the sandbox approach at face value; it is those complicated local contexts, seen or embedded, that will define the ultimate contours and limits of global convergence towards the sandbox approach in the long run.