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The FinTech Revolution and Financial Regulation: The Case of Online Supply-Chain Financing

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Abstract

Online supply-chain financing has been a relatively novel funding channel for suppliers as small- and medium-sized enterprises ("SMEs") to obtain loans in that the revolution of financial technology ("FinTech") transforms traditional supply-chain financing, which used to be administered only by official banks, to an online model also used by electronic commerce platforms ("e-commerce platform"). Endeavours towards financial inclusion of the underserved SMEs could rationalize why we should allow for or encourage FinTech innovations exemplified by the online supply-chain financing mentioned above. What would be an adaptive regulatory regime for such innovative FinTech-enabled financial services as the online supply-chain financing? Within our conceptual framework to regulate the FinTech industry at the early stage, rather than rigorous rules traditionally placed on large financial institutions, a principles-based strategy should be adopted to strike a balance between financial stability and access to financial services advanced by disruptive innovations. As a necessary complement, regulatory sandboxes would be needed to spur a shift in institutional philosophy to a principles-based regulatory regime. In other words, the regulatory attitude of FinTech regulation should be humble and light-touch to promote innovation for improving digital financial inclusion, albeit on the premise of containing potential systemic risk and protecting consumer interest in the meantime.

Keywords: financial disintermediation, financial inclusion, principles-based regulation, regulatory sandbox, light-touch/humble regulation, financial technology

1. INTRODUCTION

The phenomenon that financial services are proffered while bypassing traditional banking intermediaries is generally described as "financial disintermediation."[1] Funding programmes, sponsored by core companies either with or without the co-operation of banks for core companies' suppliers or distributors, is the so-called supply-chain financing[2]; as supply-chain

1. In this article, "financial disintermediation" refers to the phenomenon that traditional banks are replaced with other intermediaries of financing. Lin (2015), pp. 655–7. Inherently, there may be other non-bank credit intermediaries in this system; specifically, "[t]hose non-bank intermediaries include special-purpose entities and other entities that operate without access to central bank liquidity or public sector credit guarantees, including finance companies, hedge funds, money-market mutual funds, securities lenders, and investment banks" (Schwarcz, 2013, p. 1783).

2. See PwC (2014), p. 2.

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financing programmes can also be put in place without banks, this exemplifies a type of financial disintermediation.[3] Moreover, supply-chain financing has been evolving and will be more complex due to the rapid growth of financial technology ("FinTech"), which "refers to the use of technology to deliver financial solutions."[4] For example, companies have already been able to raise funds in such innovative ways as equity-based crowdfunding.[5] The FinTech revolution disrupts the traditional type of financial products and services such as supply-chain financing by combining finance with technology[6]; in particular, this can be illustrated by online supply-chain financing, which has been a relatively novel funding channel for suppliers as SMEs to obtain loans as the FinTech revolution transforms traditional supply-chain financing, which used to be administered only by official banks, to an online model also used by electronic commerce platforms ("e-commerce platform").[7] As such, the FinTech revolution would help improve financial access and universal inclusion.[8]

For instance, Foxconn (Hon Hai Precision Industry Co., Ltd, also known as "Foxconn") took advantage of FinTech to develop supply-chain financing in China recently. Foxconn, a Taiwan-based conglomerate, is Apple's (Apple Inc., "Apple") largest contract manufacturer with major factories in China.[9] In recent years, Foxconn has been trying to expand into more higher-margin business, such as financial services.[10] One of these financial services is providing loans to Foxconn's tier-one suppliers. For example, one of the business units within the Foxconn group had a turnover of more than USD157 million in transactions since this financial-services unit was launched in 2014.[11] With a comparative advantage of the familiarity with the business statuses of its suppliers, Foxconn could leverage more areas of its supply chain from the starting point of online supply-chain financing.[12] Specifically, one of its business units

3. See Philippon (2016), p. 2 ("[FinTech] innovations can disrupt existing industry structures and blur industry boundaries, facilitate strategic *disintermediation*") (alteration in original, emphasis added). From a global perspective, the rise of supply-chain financing may be because: "[I]n many developing and emerging market economies, the capacity of the local financial sector to support new traders [as SMEs] is limited. Moreover, after the financial crisis, several global banks have 'retrenched', for various reasons. In this context, supply-chain finance arrangements, and other alternative forms of financing such as through factoring, have proven increasingly popular among traders" (Auboin et al., 2016, p. 1, alteration in original).

4. Arner et al. (2015), p. 3. See also Philippon, *supra* note 3, p. 2 ("FinTech covers digital innovations and technology-enabled business model innovations in the financial sector").

5. Specifically, with the benefit of development of the Internet, start-ups could raise the capital they need in the early stage from individuals through equity-based crowdfunding given that securities law registration requirements would be exempted under the JOBS Act in 2012 (the Jumpstart our Business Startups Act of 2012, the "JOBS Act") and the SEC final "Regulation Crowdfunding." See Tsai (2016), p. 240.

6. To vividly illustrate FinTech as the combination of technology and finance, "[t]he magical combination of geeks in T-shirts and venture capital that has disrupted other industries has put financial services in its sights" (The Economist, 2015). See also Philippon, *supra* note 3, p. 15 ("Like in other industries, FinTech startups propose disruptive innovations for the provision of specific services"). Specifically, the FinTech movement enabled the traditional supply-chain financing to go online and to leverage the big transactional data collected from the online platform. See *infra* Section 2.1.

7. As discussed below, there are three business models of online supply-chain financing: (1) traditional offline supply-chain financing administered by dealer/commercial banks would go online; (2) e-commerce platforms provide the services of supply-chain financing on their online platforms; (3) commercial banks would collaborate with e-commerce platforms to engage in online supply-chain financing. See *infra* Section 3.2. As this article would focus on the role of e-commerce platforms to illustrate a sort of financial disintermediation, whenever online supply-chain financing is mentioned throughout this article without specifying which model, we refer to the second and third models.

8. See *infra* Section 3.5.

9. Foxconn.com (2016).

10. Dou & Wong (2015).

11. *Ibid.*

12. *Ibid.*

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(which will be called the "Foxconn e-commerce platform" in this article) is planning to provide financing programmes to the corporate users on this e-commerce platform themselves.[13] In addition, JD.com ("JD"), one of China's largest e-commerce platform giants,[14] has been earlier developing the business of supply-chain financing via its online stores since 2012.[15] Up until the end of 2013, the cumulative turnover of the online supply-chain financing provided through co-operation between JD and commercial banks was close to USD1.2 billion.[16]

In recent years, regulators have been faced with the challenge of how to regulate "sharing economy" such as the rise of Uber (Uber Technologies Inc., "Uber").[17] Nonetheless, policy-makers appear to fail to create a new set of regulations or change the institutional philosophy and to recognize sharing economy as a different form of capitalism.[18] Likewise, the non-traditional online supply-chain financing is a different kind of FinTech market that should be regulated differently from traditional banking.[19] That is, online supply-chain financing, a subconcept under the idea of sharing economy as well as a new business model for suppliers as SMEs to raise funds, is a distinct type of business model of digital financial inclusion (like "finance-Uber" or "finance-Airbnb"),[20] which should be regulated in a different approach.[21] One of the insights from the following case-study of Foxconn's online supply-chain financing would be that a new type of financial services is emerging with the FinTech revolution as Foxconn uses information technologies to achieve digital financial inclusion of SMEs.[22] Therefore, an alternative regulatory framework that is friendly to the FinTech newcomers is needed to strike an optimal balance between financial stability and access to financial services, both of which would be two significant goals of FinTech regulation.[23]

Theoretically, financial regulators' objectives include ensuring financial stability, prudential regulation, conduct and fairness, and competition and market development.[24] The institutional philosophy or regulatory attitude adaptive to such innovative FinTech-enabled

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13. See *infra* Section 3.4 (discussing the case-study of Foxconn's online supply-chain financing).

14. JD.com (2016).

15. Cao & Qian (2016), p. 34.

16. *Ibid.*, at p. 35. See *infra* Section 3.4 (discussing the case-study of JD's online supply-chain financing).

17. A way to observe the sharing economy is that individuals in the sharing market share privately owned assets and information regarding a market demanding use of these assets. And this is the model of success used by those sharing networks such as Uber, Airbnb, and Kickstarter. Dyal-Chand (2015), p. 246. Moreover, the concept of sharing economy could be categorized into three subtypes: (1) product service systems, where "individuals and companies rent goods as services, rather than selling them as products (e.g., renting out a power drill)"; (2) redistribution markets, where goods belonging to individuals may be swapped, let out or sold; (3) collaborative lifestyles, which refer to the idea that "people share their time, space, skills or money" (Lee, 2015, p. 147).

18. Dyal-Chand, *supra* note 17, p. 247.

19. See *infra* Section 4 (proposing a conceptual framework for regulating emerging FinTech markets such as online supply-chain financing).

20. See Philippon, *supra* note 3, p. 18; *infra* Section 3.5 (illuminating digital financial inclusion).

21. This article argues that online supply-chain financing is similar to P2P lending like LendingClub and Prosper, which can be categorized as collaborative lifestyles under the broader concept of sharing economy, where "individuals share their time, space, skills, and money" (Lee, *supra* note 17, p. 147).

22. See *infra* Section 2.1. See also *The Economist*, *supra* note 6 ("[The FinTech revolution] promises not just to make finance more secure for taxpayers, but also better for another neglected constituency: its customers") (alteration in original).

23. See Philippon, *supra* note 3, p. 16. See also *ibid.*, at p. 18 ("If the goal of financial regulation is to foster stability and access to services, then regulators should consider policies that promote low-leverage technologies and the entry of new firms. This alternative approach can complement the current, incumbent-focused approach").

24. Arner et al., *supra* note 4, p. 32.

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financial services as online supply-chain financing would indeed be an important issue in the near future. In other words, with a view to promoting financial access and universal inclusion, making the adaptive regulatory response to the rapidly developing FinTech markets is of vital importance. In general, the methods for supervising the FinTech-based financial industry include a principles-based regulatory regime and a rules-based one.[25] From the perspective of regulatory humility, in the early stage of online supply-chain financing, a principles-based regulatory approach might be more adaptive to promoting online supply-chain financing; and, thanks to the development of FinTech markets, access to financial services will thus be advanced, albeit on the premise of not compromising financial stability and consumer interest. Therefore, with the rapid growth of such FinTech-based financial services as online supply-chain financing, how to construct a principles-based regulatory regime complemented with other well-designed regulatory techniques will be a challenging endeavour for regulators in the near future. Put simply, financial regulators should be humble and remove regulatory entry barriers with which FinTech firms are faced at their early stage. The increase of business models of digital financial inclusion would improve access to financial services by the underserved. Most importantly, the advancement of digital financial inclusion does not mean that we would compromise regulatory goals of consumer financial protection and prevention of potential systemic risks. Even if adopting a principles-based regulatory regime, we would strike an optimal balance among financial stability, consumer financial protection, and the improvement of financial access and inclusion.

This article is organized as follows. Section 2 gives a theoretical overview of the FinTech revolution, financial intermediation, shadow banking, and principles-based vs. rules-based regulatory regimes, to pave the way for analyzing how to regulate FinTech markets such as online supply-chain financing. Section 3 carry outs the case studies of JD's and Foxconn's online supply-chain financing to highlight emerging regulatory issues. Specifically, this article will study how financial inclusion could be improved by comparing these two different models of online supply-chain financing with the traditional supply-chain financing administered by commercial/dealer banks. This comparison would tell us that the financial inclusion achieved by the former might justify why we should allow for or encourage FinTech innovations. In terms of how a regulatory framework should be designed in this FinTech era, given that online supply-chain financing can be viewed as a type of financial disintermediation, JD and Foxconn would act as alternative financial intermediaries; hence, a principles-based regulatory regime might be more adaptive in the early stage of the FinTech markets. In Section 4, we further discuss the regulatory implications. We attempt to provide a conceptual framework on how laws and the institutional environment should rapidly respond to developments of the FinTech industry exemplified by online supply-chain financing. Specifically, if a jurisdiction shows interests in engaging in global regulatory competition for attracting FinTech start-ups, a risk-based proportionate regulation in principles-based approach should be adopted based on a shift in institutional philosophy or regulatory attitude to light-touch or humble regulation. On top of that, market-based regulatory mechanisms such as the regulatory sandbox as a necessary complement would be supportive to emerging business models of digital financial inclusion, especially in their early stage. Finally, we conclude.

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25. *Ibid.*, at pp. 35–6. A principles-based regime imposes more flexible compliance obligations, whereas a rules-based approach creates clear but more rigid rules. The principles-based regime seems to be more adopted in the UK. *Ibid.*, at p. 36.

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2. THE FINTECH REVOLUTION AND ONLINE SUPPLY-CHAIN FINANCING

With the rapid growth in FinTech over the last few years, a new type of financial services or products provided through the Internet have appeared. In fact, the global financial crisis that started in 2008 could be a turning point, creating a new group of market participants applying technology to financial services or products.[26] In particular, online supply-chain financing was enabled by FinTech, which will be illustrated especially in the case-study of Foxconn.[27] In simple, an online e-commerce platform established with the help of FinTech performs a crucial part in allowing businesses to seek funds they needed more easily, thus helping to achieve financial access and inclusion. Concepts relevant to financial disintermediation will be discussed below to lay the foundation of examining issues on FinTech regulation.

2.1 Financial Disintermediation

2.1.1 The FinTech Revolution and Financial Disintermediation

The combination of financial services with information technology brings about the revolution of FinTech.[28] In particular, the FinTech revolution has become a main feature of financial market development in the emerging economies such as those in Asia Pacific.[29] Currently, the financial market is being changed owing to FinTech at least in these categories: (1) banking technology (such as data management, analytics, and security); (2) payments (such as payment solutions); (3) cyber currency (such as blockchain and Bitcoin); (4) business finance (such as peer-to-peer ("P2P") business lending and crowdfunding); (5) consumer lending (such as P2P lending and robo advisers); (6) alternative cores (such as digital banks).[30] In China, the People's Bank of China reported in 2014: "[T]here are six major categories of Internet finance: online payment (including mobile payment), P2P lending, non-P2P micro-lending, online fund distribution, financial institutions' Internet platform, and crowdfunding"; among the six categories of Internet finance mentioned above, the most prominent types of financial business on the Internet include: first, online payment; second, financial products distribution; and, third, online financing, embracing P2P lending and supply-chain financing.[31] Specifically, major interests of online financing includes crowdfunding[32]; P2P lending, which is a funding programme between credit-worthy borrowers and return-seeking lenders through online platforms; and online supply-chain financing or Internet-enabled SME loan, meaning that Internet companies serving as lenders grant loans to SMEs with which they have a business relationship.[33] Above all, online

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26. Arner et al., *supra* note 4, p. 15.

27. See *infra* Section 3.4 (discussing the case-study of Foxconn's online supply-chain financing).

28. Arner et al., *supra* note 4, p. 3.

29. *Ibid.*, at p. 4.

30. Moon (2016). The "P2P business lending" here indicates that individual investors of the public lend money to corporate borrowers via online platforms called peer-to-peer lenders. MoneySuperMarket.com (2016). Online supply-chain financing explored in Section 3 below, however, is not involved with individual investors, but more related to business-to-business financial services sponsored by core enterprises in their supply chains.

31. Fung Business Intelligence Centre (2015), p. 2 (alteration in original).

32. Crowdfunding is an evolving method of raising money, where members of the public may make investments with their online or social media networks. Tsai, *supra* note 5, p. 240.

33. Fung Business Intelligence Centre, *supra* note 31, p. 3.

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supply-chain financing or Internet-enabled business-to-business ("B2B") loan as well as its legal implications are the focus in this article. The legal issues underlying FinTech-enabled supply-chain financing are worth being analyzed to rethink institutional philosophy or regulatory approaches. In concrete terms, the growth of the aforementioned non-traditional financial intermediaries, from "too-small-to-care" to "too-big-to-fail," generates a direct challenge or conundrum in regulating financial innovations.[34] Therefore, the question of how the regulatory regimes should respond to FinTech innovations and thus be adjusted is of vital significance in this FinTech era.[35]

With respect to the nature of online supply-chain financing, it can be viewed as a type of financial disintermediation in the first place, with JD and Foxconn acting as a rising financial intermediary instead.[36] Thanks to new information technology as well as market reforms, old markets of finance are being disrupted while new ones are being created.[37] Conventional financial intermediaries, such as commercial banks, have performed their core financial functions to make transactions more efficient and less risky; however, new financial intermediaries could effectuate these core purposes of financial intermediation more easily because of market developments and new technologies such as high-speed electronic communication networks used.[38] On the flip side, the fact that non-bank intermediaries (especially Foxconn, to be discussed in Section 3 below) operate without public-sector credit guarantees or central bank liquidity could be considered to be disintermediation or a kind of shadow banking.[39] To be sure, modern finance is faster, larger, more complex, more global, more interconnected, and less human, so that the emerging systemic risk of "too-linked-to-fail" will grow more challenging and pressing.[40] In short, new financial intermediation may in large part bring about the rise of shadow banking.[41]

2.1.2 Online Supply-Chain Financing and Shadow Banking

In general, shadow banks are private lending companies not regulated by the government, and they lend money at a much higher interest rate; SME suppliers in China have difficulties in borrowing money, such that they will turn to friends, relatives, or even shadow banks for obtaining the loans they need.[42] Broadly defined, shadow banking or market-based financing can be viewed as "asset and maturity transformation by entities that are not regulated as banks"; shadow-banking activities, which are not well regulated, would erode the stability of the financial system.[43] Traditionally speaking, non-bank companies like Bear Stearns and

34. Arner et al., *supra* note 4, pp. 34–5.

35. See *infra* Section 4.

36. See *infra* Section 3.

37. Lin, *supra* note 1, p. 652.

38. *Ibid.*, at pp. 650, 652–4. Some commentators, however, view these financial innovations as general reinforcement of intermediation through substitution and layering, rather than true disintermediation, "where links in a financial process are eliminated." See e.g. *ibid.*, at p. 655.

39. See Schwarcz, *supra* note 1, p. 1796 ("The disintermediated financial system, or shadow banking, encompasses financing and financial services provided through non-bank entities").

40. Lin (2014), pp. 586–8.

41. Lin, *supra* note 1, pp. 653–4.

42. Coates (2015).

43. Barr et al. (2016), p. 23. In fact, the definition of shadow banking is different for different commentators. At a minimum, shadow banking includes any short-term wholesale borrowing or funding. *Ibid.*, at p. 24.

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Lehman Brothers that perform some banks' functions are called shadow banks as well, usually relying on short-term debt significantly.[44] Financial institutions-oriented reforms such as the Dodd-Frank Act (The Dodd-Frank Wall Street Reform and Consumer Protection Act, "Dodd-Frank Act") in the US indirectly regulated the shadow-banking sector in recent years.[45] More importantly, these shadow-banking activities require proportionate regulation to strike a balance between the promotion of FinTech developments and the reduction of emerging systemic risk that they possibly pose.[46]

As discussed before, one of the fundamental characteristics of online supply-chain financing is financial disintermediation.[47] On top of that, financial disintermediation is often said to create the shadow-banking sector.[48] Online financing facilitated by FinTech firms, such as P2P lending and supply-chain financing, may be deemed as shadow banking or market-based credit intermediation.[49] For instance, the booming market of P2P lending is largely unregulated in China.[50] Consequently, as part of shadow banking, Internet finance in general and P2P lending in particular would reveal a regulatory vacuum, since a systemic risk to the formal banking sector would arise due to the lack of sufficient supervision and information disclosures.[51] It is thus necessary to design regulations over shadow banking to lower potential systemic risks caused by shadow banking to the whole financial market.[52] In the early stage of the FinTech revolution, should we have a parallel regulatory regime for both official banks and FinTech start-ups? From a high-level perspective to regulate FinTech innovations, as the FinTech revolution brought creativity to the financial market, regulators should strike a balance between promoting the creativity of FinTech markets and controlling systemic risks created by the largely unregulated shadow-banking system.[53] Specifically, when it comes to banking regulation, the size of a financial institution matters owing to its relevance for systemic risk, and scale can act as "a proxy of importance to the real economy."[54] If a jurisdiction is about to promote the development of FinTech innovations, FinTech start-ups are unlikely to be regulated in the same way as official banks when their collapse would not destroy an important credit channel. Nevertheless, once FinTech companies as non-bank credit intermediaries could "themselves reach systemic size and scope quite independently of the commercial banking system ... their importance to the real economy will require their designation and supervision as systemically important institutions."[55] Therefore, before FinTech firms reach the threshold of being "systemically important institutions," we may consider taking a principles-based and risk-based proportionate approach to regulating online supply-chain financing.[56] Meanwhile, we may also

44. Carnell et al. (2013), p. 37.
45. Avgouleas (2015), pp. 675–8.
46. See *infra* Section 4.1.
47. See *supra* Section 2.1.1.
48. Schwarcz, *supra* note 1, p. 1784.
49. Armour et al. (2016), p. 448.
50. Shen (2016), pp. 203, 418.
51. *Ibid.*, at pp. 203–5.
52. Shen (2015), p. 79.
53. See *ibid.*, at p. 85.
54. Armour et al., *supra* note 49, p. 447.
55. *Ibid.*, at p. 448.
56. See *infra* Section 4.1.

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adopt a more flexible institutional philosophy to fit in with this FinTech-enabled and emerging financial market.

2.2 *FinTech Regulation: Towards a Principles-Based Regulatory Regime?*

As disruptive technologies have developed at a faster pace than law, they raised the question of how law-makers or regulators should respond. For example, since the businesses of sharing economy such as Airbnb or Uber as online intermediaries turned more and more prosperous, corresponding regulatory response or constraints emerged to address regulatory debates such as those regarding public safety.[57] The questions concerning what, when, and how regulatory intervention should be made for these disruptive technologies would be crucial.[58] When it comes to FinTech-based industries such as online supply-chain financing, the issue about striking a balance between ensuring or promoting the development of technologies and lowering the systemic risk is pressing as well. In the early stage of the FinTech revolution, providing an adaptive regulatory framework would be helpful to promote it while preventing potential systemic risks before it goes too far beyond law. With FinTech developments, an adaptive regulatory framework would make innovative products or services effective and legitimate.[59] Therefore, in designing the regulatory regime for such innovative FinTech-enabled financial services as online supply-chain financing, regulators should rethink its regulatory basis or institutional philosophy especially in the context of global regulatory competition for attracting FinTech firms and markets.[60] In other words, from the perspective of both the FinTech-based industry and financial regulators, a change in regulatory attitude would be needed to address the issue of how FinTech-based products and services should be regulated.[61] What follows will further introduce two distinct types of regulatory regimes: a principles-based regulatory regime vs. a rules-based one. Furthermore, in order to map out an adaptive conceptual framework for governing online supply-chain financing, this article will delve into case studies of supply-chain financing in Section 3 and then propose the regulatory framework in Section 4.

A principles-based regime imposes more flexible compliance obligations.[62] Since the potential participants in FinTech industries are start-ups mostly, the principles-based approach may provide start-ups with the benefit of flexibility at their early stage; nonetheless, the higher cost of legal compliance associated with a rules-based approach would be balanced by being more attractive to investors given that regulatory clarity and legal predictability could be important for start-ups and investors.[63] Nevertheless, a "more principles-based" financial regulation ("MPBR") might help more rapidly respond to the challenges arising from the complexity and innovativeness of modern financial markets.[64]

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57. See Lee, *supra* note 17, pp. 178–9; see also Fenwick et al. (2016), pp. 4–5.

58. *Ibid.*, at pp. 7–8.

59. *Ibid.*, at pp. 17–18.

60. *Ibid.*, at p. 18 ("In a global society in which regulatory competition is the 'new normal', regulators can pay a heavy economic price for being overly cautious or abandoning the project of trying to establish a meaningful basis for regulation") (footnote omitted).

61. Arner et al., *supra* note 4, p. 36.

62. *Ibid.*, at p. 36 ("Under this regulatory approach, more focus is given to the spirit of a regulation rather than 'box-ticking'. This seems to be the route taken in the UK. Private parties subject to this regime may have a certain degree of discretion in implementing the regulation").

63. *Ibid.*, at pp. 36–7.

64. Awrey (2011), p. 273.

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When it comes to the principles-based regulatory regime, principles are used to create a framework to sketch out the regulatory goals and values, whilst "regulatees are left free to devise their own systems for serving such principles."[65] This regulatory strategy, with its UK counterpart as "risk-based regulation," has been adopted over the past two decades but somewhat fallen due to the financial crisis of 2007–09.[66] Still, the emergence of principles-based financial regulation is one of the most important regulatory developments; in nature, this regulatory strategy has been seen as "light-touch" regulation.[67] As previously discussed, principles-based regulation might be insufficient to assure regulatory clarity and certainty; however, a principles-based regulatory regime would incorporate principles in written rules to make regulated market participants not commanded to follow detailed instructions regulators give, while regulators would rely on the regulatees to invent methods of controlling risks themselves.[68] In addition, this kind of light-touch or humble regulation would help people make better decisions in a more effective way.[69]

In contrast, a rules-based regime lays down clearer but more rigid, costly, and complex rules, thus more likely creating entry barriers to new competitors.[70] As just mentioned, even if a principles-based regulatory regime may not provide sufficient clarity and certainty as the rules-based regulatory regime does, a principles-based regulatory regime could be more dynamic and effective in keeping regulatory pace with the times.[71] The MPBR represents a shift in institutional philosophy from a historically predominant rules-based regulatory regime to a less prescriptive approach.[72] This move towards the more principles-based regulatory regime entails a construction of more high-level and broader principles.[73] Within this more principles-based regulatory regime, "rather than contemplating the wholesale abandonment of rules, MPBR envisions that rules and principles can play complementary re-enforcing roles."[74]

65. Baldwin et al. (2012), p. 302.

66. *Ibid.*, at p. 302.

67. Awrey, *supra* note 64, p. 281 (mentioning the association of MPBR with "light-touch" approach to regulation); Baldwin et al., *supra* note 65, p. 302 ("It has been seen as the soft epitomization of 'light-touch' regulation"); Armour et al., *supra* note 49, p. 549 ("After the financial crisis, however, principles-based regulation became a lightning rod for criticism, stemming mainly from a perception that it had institutionalized the FSA's allegedly 'light touch' approach towards public supervision and enforcement").

68. Baldwin et al., *supra* note 65, p. 303.

69. Juurikkala (2012), p. 51. Furthermore, in terms of humble regulation, the government should be a nudger. Sunstein (2013), p. 9. And a simpler disclosure is a simple way to nudge. *Ibid.*, at p. 93. For example, to regulate equity crowdfunding, which is one of the innovative FinTech markets like online supply-chain financing, light-touch or humble regulation would be more appropriate. In other words, regulatory techniques should be based on regulatory humility; specifically, simpler disclosure requirements would be better to nudge people and to help start-ups raise capital. Therefore, via regulatory techniques based on regulatory humility, capital formation would be taken as a priority without an unduly compromise of investor protection. Tsai, *supra* note 5, p. 277.

70. Arner et al., *supra* note 4, pp. 36–7. Even though a principles-based regulatory regime may be more suitable for FinTech start-ups at the early stage thanks to its flexibility, in light of the idea that legal requirements and compliance obligations need to adapt to the size and scale of a business as it grows, the higher regulatory costs of a rules-based approach will, however, be a benefit as start-ups turn into large institutions. *Ibid.*, at p. 37.

71. Baldwin et al., *supra* note 65, p. 303.

72. Awrey, *supra* note 64, pp. 282–3 ("MPBR reflects a tacit acknowledgement that the effectiveness of a regulatory regime in delivering desired regulatory outcomes is a product not just of statutory design, but also *institutional philosophy*") (emphasis in original).

73. See *ibid.*, at p. 282.

74. *Ibid.*, at p. 282.

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2.3 *Summary*

We have analyzed fundamentals of online supply-chain financing, revealing that the supply-chain financing capitalizing information technologies reflects the concepts of financial disintermediation and shadow banking in a sense. In addition, online supply-chain financing is a type of novel FinTech markets, distinct from traditional banking. Therefore, if a jurisdiction aims to support FinTech industries, such more flexible institutional philosophy as MPBR would be needed to respond rapidly to emerging FinTech developments.[75]

Theoretically, as one of the emerging innovative financial services, the FinTech-enabled supply-chain financing may be more suitable to be regulated under a principles-based regulatory regime. In order to re-enforce the role of principles to govern online supply-chain financing, risk-based proportionate regulation would be preferred to a one-size-fits-all one.[76] Next, we will move to the empirical part below, namely the case studies on online supply-chain financing facilitated by JD and Foxconn, to examine whether principles-based regulation is adequate for regulating online supply-chain financing in the current era of FinTech from the perspective of market participants. Then, based on the integral perusing in Sections 2 and 3, we will in Section 4 propose a conceptual framework to govern online supply-chain financing in particular and that for FinTech regulation in general.

3. ONLINE SUPPLY-CHAIN FINANCING: CASE STUDIES

3.1 *Data and Methods*

This article will examine the regulatory issues regarding online supply-chain financing through the cases of JD and Foxconn. In addition to tapping secondary sources to analyze these two cases, two in-depth interviews have been conducted to qualitatively examine some details of Foxconn's online supply-chain financing in particular. Questions for these in-depth interviews are designed as semi-structured questions.[77] This article applies "purposive sampling" to choose the samples. This method relies on the thesis of the research and chooses the most relevant sample.[78] The data used in this article include two in-depth interviews conducted personally with the following interviewees: a senior in-house counsel of Foxconn's headquarter (HQ) who is familiar with Foxconn's FinTech businesses, as well as a chief operation officer of an e-commerce platform within the Foxconn group. Since the Foxconn group is one of the largest conglomerates in China, and is also expanding its business of online supply-chain financing, Foxconn's case could be representative enough.[79] Meanwhile, the data collected from these interviews with the

75. See Armour et al., *supra* note 49, pp. 550–1.

76. See *infra* Section 4.1.

77. Semi-structured questions are a group of questions that the authors set up in advance and that are relevant to the issues specified; the questions would be extended, depending on the answers of the interviewees. Fontana & Frey (1994), p. 373.

78. Yin (2011), p. 88. In terms of other commonly used sampling methods, there are convenience sampling, snowball sampling, and random sampling. Convenience sampling is to sample conveniently all the samples available now; snowball sampling is based on the current samples to obtain others; and random sampling is to sample statistically from a population. *Ibid.*, at pp. 88–9.

79. In principle, researchers should interview sufficient interviewees to collect reliable data. If the research sample could not include an entire population of interest, the data could be collected from a representative sample of that population. Webley (2013), pp. 933–4. In this way, given that it is difficult to interview all the market participants engaging in online supply-chain financing in China, we chose Foxconn as a representative sample because of its scale in

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Table 1. The data and method

Sample	Interviewee	The date of interview	Symbol
A senior in-house counsel in Foxconn's HQ	The lawyer	2016.7.7	A
An e-commerce platform within the Foxconn group	The chief operation officer of the e-commerce platform	2016.8.2	B

Source: The Authors.

interviewees in the Foxconn group could provide reliable findings so as to analyze the business model of Foxconn's online supply-chain financing, thus pushing us to reflect on the corresponding institutional philosophy appropriate for online supply-chain financing.[80] The aforementioned data and method are described in Table 1. As shown in Table 1, letters A and B correspond with each of the interviewees, since the data secured are confidential. In this article, the interview codes are in the form of "Xy," where "X" is the capitalized symbol from A to B representing a specific interviewee, while "y" is the number for the interview questions and his/her answers for each of those questions. In the following parts, we will briefly introduce online supply-chain financing in China, and then examine JD's case by reviewing the second-hand literature. Further, Foxconn's case will be demonstrated by analyzing the data collected from second-hand and from in-depth interviews.

3.2 *Online Supply-Chain Financing in China*

3.2.1 *The Status Quo*

In China, 70% of individuals and 55% of SMEs could not obtain loans from banks.[81] Even though they could take out loans from banks, there would often be an interest rate set high together with a collateral loan, in addition to other requirements such as depositing savings in or buying financial products from those banks.[82] In other words, it is difficult for not a few SMEs to borrow money from traditional banks. Nonetheless, given that e-commerce platforms own the detailed financial and operational data of their suppliers, these platforms have a comparative advantage in providing the suppliers with such financial services as loans.[83] Further, through integrating online platforms with offline companies, a more robust B2B ecosystem as created by the Alibaba platform will emerge to offer a wide range of financial services and products.[84]

Thanks to the development of information technology, traditional supply-chain financing administered by official banks has evolved and been upgraded to an online model. Specifically, several characteristics of the supply-chain financing capitalizing on the Internet are as

(F'note continued)
the manufacturing industry; and we decided to interview two interviewees within the Foxconn group who are familiar with Foxconn's online supply-chain financing.

80. See *infra* Section 4.1.

81. Cao & Qian, *supra* note 15, p. 47.

82. *Ibid.*

83. *Ibid.*, at pp. 47–8.

84. Soo (2016).

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follows: first, the operation of supply-chain financing will be faster; second, there will be a platform operating with a standard operation process; third, the trend that related industries along supply chains will integrate with each other becomes more obvious; and, fourth, the cost of credit will decrease by reducing requirements of collaterals, since online supply-chain financing can take advantage of online big data, hence addressing information asymmetry.[85]

3.2.2 The Business Models of Online Supply-Chain Financing

Three business models of emerging online supply-chain financing capitalizing on the Internet could be briefly summarized as follows: first, traditional offline supply-chain financing administered by dealer/commercial banks would go online; second, e-commerce platforms such as Alibaba provide the services of supply-chain financing on their online platforms; and, third, commercial banks would collaborate with e-commerce platforms to engage in supply-chain financing.[86] The first model is the so-called "Supply Chain Financing Web 2.0"; under this model, the traditional supply-chain financing carried out by commercial banks will go online where, however, neither original ways of processing are changed nor any affiliated e-commerce platform is created (whilst the information regarding funding, logistics, and business will integrate altogether through the banks' online platforms).[87] The second model indicates that e-commerce enterprises will grant loans to sellers or buyers as SMEs via their own online platforms after getting licensed from financial regulators to do so.[88] And, under the third model, commercial banks will utilize their own funding to offer financial services to supply-chain participants via e-commerce platforms operated by themselves or by third-party platforms[89]; this model can be exemplified by the following JD's case.[90] Moreover, a shift in the relationship among the players in the supply-chain financing from the traditional model to the aforementioned third model could be illustrated as in Figures 1 and 2.

Furthermore, after core enterprises get licensed to perform supply-chain financing by themselves (viz. the second model mentioned above), the ecosystem of supply-chain financing will be closely linked, and suppliers and distributors as SMEs can be firmly supported via taking out loans from their core companies on e-commerce platforms which are operated by the core enterprises simultaneously. This ecosystem of online supply-chain financing enabled by the Internet is illustrated in Figure 3. This model will be further explained in the following Foxconn's case.[91]

In this article below, the cases of JD's and Foxconn's online supply-chain financing are demonstrated individually, on the one hand, to exemplify different levels of financial disintermediation of online supply-chain financing where the Foxconn's case stands for a higher level of financial disintermediation than that of JD in that Foxconn would create their own lending arms, rather than relying on the supply of financing from external banks, as shown in the JD's

85. Yang & Wen (2016), p. 187.
86. *Ibid.*, at pp. 187–92.
87. *Ibid.*, at pp. 187–8.
88. *Ibid.*, at p. 190.
89. *Ibid.*, at pp. 192–3.
90. See *infra* Section 3.3.
91. See *infra* Section 3.4.

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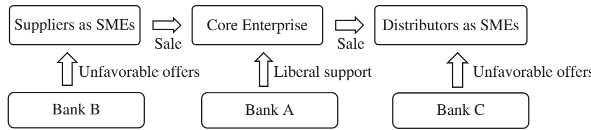

Figure 1. Traditional supply-chain financing
Source: Cao & Qian, *supra* note 15, p. 52; Wen (2016), p. 4.

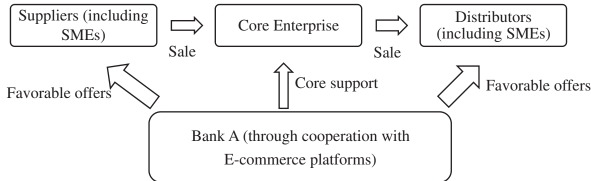

Figure 2. The online supply-chain financing where banks collaborate with e-commerce platforms
Source: Cao & Qian, *supra* note 15, p. 52; Wen (2016), p. 5.

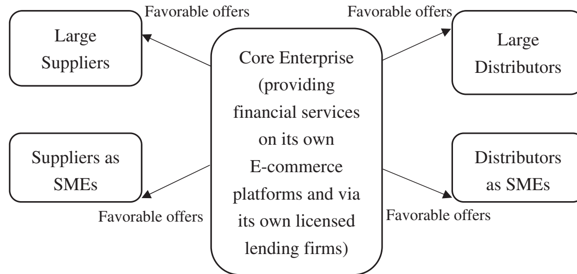

Figure 3. The ecosystem of online supply-chain financing facilitated by core enterprises as e-commerce platforms
Source: The Authors.

case. On the other hand, these two cases are also compared to illustrate how FinTech innovations generated a distinct kind of online supply-chain financing, which would improve financial inclusion of SMEs that had been unbanked or underbanked in the context of traditional supply-chain financing administered by dealer/commercial banks.

3.3 The Case of JD's Online Supply-Chain Financing

JD, as a core enterprise in its ecosystem, has been building up the business of supply-chain financing on its online e-commerce market-place since 2012.[92] In addition to short-term credit provided to its suppliers and distributors on its online retail platform, JD provided a variety of Internet-based financial products and services.[93] For example, in November 2012, JD launched "Jingbaobei" to provide its suppliers with instant-approval loans within three minutes.[94] In October 2014, JD launched "Jingxiaodai," which promises instant-approval

92. Cao & Qian, *supra* note 15, pp. 33–5.
93. Xiang (2016).
94. Jingbaobei.com (2016); Fung Business Intelligence Centre, *supra* note 31, p. 5.

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Table 2. JD Finance's Internet finance businesses

Type	Service or product	Launch date	Profile
Online payment	JD Payment	October 2012	Online payment via collaboration with 120 banks
Online financing (supply-chain financing)	Jingbaobei	November 2012	A three-minute-approval financing service for suppliers
	Jingxiaodai	October 2014	An instant-approval financing service provided to all the merchants on JD's existing e-commerce platform
Financial product distribution	JD Xiaojinku	March 2014	Wealth management financial services
Crowdfunding	Coufenzi	July 2014	A crowdfunding platform

Source: Fung Business Intelligence Centre, *supra* note 31, at 5; Cao & Qian, *supra* note 15, p. 34.

loans further to all the merchants, including suppliers as well, on its e-commerce platform.[95] In July 2013, JD established "JD Finance Group" ("JD Finance"), turning JD into an online financial service provider while doubling as an e-commerce platform player.[96] As Table 2 demonstrates, JD Finance's current online financial services and products encompass online payment, supply-chain financing, P2P lending, and even crowdfunding. Among others, as in Figure 2 and the third model of online supply-chain financing discussed above,[97] JD collaborated with the Bank of China, a major commercial bank in China, to offer financial services to lenders on its e-commerce platform.[98]

3.4 *The Case of Foxconn's Online Supply-Chain Financing*

3.4.1 *The Business Model*

Several business units within the Foxconn group facilitate supply-chain financing, even though their respective roles may be slightly different (B1, B4). Specifically, as a core enterprise in supply-chain financing, Foxconn would operate an e-commerce platform (A1, A2, B1). On this e-commerce platform, Foxconn acts as a core enterprise and a seller to sell suppliers' products downstream to get profits (B3). In the near future, this e-commerce platform will also provide loans to suppliers, such that suppliers who need funding can ask for loans via this e-commerce platform (B4). When it comes to the model of supply-chain financing, "Foxconn has obtained business licenses from Chinese local governments to provide loans, factoring, financial guarantees and equipment leasing."[99] Accordingly, as in Figure 3 and the second model of online supply-chain financing discussed above,[100] Foxconn created its own e-commerce platform, providing financial services to their suppliers via their own online platform after getting licensed from financial regulators to do so. This model differs from the third model used by JD which collaborated with the Bank of China to engage in online supply-chain financing.[101]

Given that Foxconn know its suppliers' business statuses as well as JD knows theirs, Foxconn's e-commerce platform can leverage their business connections and then monitor

95. Jingxiaodai.com (2016); Wang (2014); Fung Business Intelligence Centre, *supra* note 31, p. 5.
96. Fung Business Intelligence Centre, *supra* note 31, p. 5.
97. See *supra* Section 3.2.2.
98. Cao & Qian, *supra* note 15, pp. 33, 68.
99. Dou & Wong, *supra* note 10.
100. See *supra* Section 3.2.2.
101. See *supra* Section 3.3.

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their suppliers' business statuses very well, thus lowering possible credit risks (B2). Specifically, the suppliers soliciting loans are all Foxconn's existing suppliers, and the conditions for becoming Foxconn's qualified suppliers are so strict that the default risk would be very low (A6, B5, B11). What's more, another advantage for Foxconn (the core enterprise in their supply chain) to carry out supply-chain financing would be that it will make merchants as SMEs more willing to buy products through the e-commerce platform in that they can be offered better financing programmes (B8).

3.4.2 The Risks

The default rate or credit risk of supply-chain financing arranged on the e-commerce platform would be low because Foxconn can oversee financial statuses of its suppliers well (A6, B2, B5, B11, B21).[102] For instance, there was only one non-performing loan in the past years (B11). To be sure, the market participants in the ecosystem of supply-chain financing would be so closely linked that a systemic risk might take place if a huge number of defaults or non-performing loans take place (B14).

In order to reduce the potential systemic risk, laws or regulations would still play an important role notwithstanding large core enterprises such as Foxconn have audited their suppliers as borrowers carefully (B12, B 16, B20). Nevertheless, there is no doubt that laws or regulations governing online supply-chain financing should not be too stern (A13, B16, B17). In China, the e-commerce industry has turned quite prosperous. Therefore, if laws or regulations are too strict, it may be harmful to the development of the supply-chain financing operated by e-commerce platform players (A13, B17). In addition, self-regulation may be a feasible method for governing online supply-chain financing under an institutional framework of *laissez-faire* regulation (A13, A14, B18, B19).

3.5 Summary

Over previous few years, Internet finance has turned a hot topic in China.[103] Among the FinTech markets, we focus on online supply-chain financing. In particular, we study the cases of JD and Foxconn to analyze the financing programmes provided by core enterprises to its suppliers or merchants via their e-commerce platforms. Both JD and Foxconn operated their own e-commerce platforms first, and then they would arrange loans via their online platforms, even though, in JD's case, it was the Bank of China that directly granted loans to lenders albeit through JD's e-commerce platform. Thanks to the familiarity with their own suppliers or merchants, the credit risk of online supply-chain financing would be low. In contrast, without the co-operation with commercial banks, Foxconn not only would serve as a core enterprise in its supply chain, which procures or sells products; but it would also play an important role in the process of online supply-chain financing, by directly providing loans to its suppliers or distributors via its licensed lending companies. Compared to the JD's case, where it was the commercial bank that supplied the financing, the Foxconn's case might stand for a higher level of financial disintermediation in that it would create its own lending arms to act as a shadow bank granting loans to SMEs that had been underserved in the

102. See *supra* Section 3.4.1.
103. Fung Business Intelligence Centre, *supra* note 31, p. 1.

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context of traditional supply-chain financing administered by dealer/commercial banks. Endeavours towards digital financial inclusion of the underserved could rationalize why we should allow for or encourage FinTech innovations exemplified by these two aforementioned business models of JD and Foxconn.[104]

However, it seems that there is currently not an adequate regulatory regime over this Internet-based supply-chain financing to contain the potential systemic risk. In addition, from the perspective of the supply-chain financing participants, laws or regulations governing such an emerging FinTech business as online supply-chain financing should not be too rigorous, but these activities should not be totally free from regulation either (A13, A14, B16, B17, B18, B19). To promote the development of innovative FinTech markets whilst managing potential systemic risk with adaptive regulation, this article will propose a conceptual framework based on the institutional philosophy of light-touch or humble regulation below.

4. A CONCEPTUAL FRAMEWORK FOR REGULATING ONLINE SUPPLY-CHAIN FINANCING

As a commentator argues, to address the current issue that financial services remain expensive and inefficient, instead of the approach to a top-down structural change in regulation of incumbents which is subject to prohibitively high costs of political economy and co-ordination, "regulators should consider policies that promote low-leverage technologies and the entry of new firms."[105] Therefore, in devising FinTech regulation to strike an optimal balance between fostering an access to financial services and maintaining financial stability, we should keep in mind how to facilitate new entry and more intense competition from FinTech start-ups in the age of the FinTech movement.[106]

Following the previous discussions in Sections 2 and 3, we will propose a conceptual framework for regulating online supply-chain financing in this section. In Section 2, we tentatively concluded that a principles-based regulatory regime might be more adaptive to innovative FinTech businesses such as online supply-chain financing in the early stage of the FinTech revolution. A principles-based regulatory regime refers to the institutional philosophy of light-touch or humble regulation, and this regulatory attitude is the pith and substance of the conceptual framework we are going to promote. Along this line, normative implications including the adoption of the regulatory sandbox with a self-regulation approach to consumer protection will be drawn in this section to complement a shift in institutional philosophy to MPBR.

104. In this digital era, digital financial inclusion benefits efficient interconnection between participants in the market. However, how to create adaptive regulatory approaches and how to accelerate the use of digital technologies will be crucial to improve financial access and achieve universal financial inclusion. GPFI (2016), p. i.

105. Philippon, *supra* note 3, pp. 1, 2–3, 9, 18. The current financial system might also be troubled by incumbents' regulatory capture, hence creating entry barriers to new competitors. See *ibid*., at p. 16 ("FinTech firms will enter where they think they can make a profit, but there are many regions of the financial system where incumbents are entrenched and entry is difficult"); Cable (2015), p. 12 ("[R]eformer startups represent the public interest. The success of their products exposes current regulation as wrongheaded. Reformer startups and their grassroots advocates educate, or expose, regulators and lawmakers who would otherwise be hopelessly anachronistic or beholden to incumbents").

106. *The Economist*, *supra* note 6 ("The bigger effect from the fintech revolution will be to force flabby incumbents to cut costs and improve the quality of their service. That will change finance as profoundly as any regulator has").

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4.1 Regulatory Humility: A Principles-Based Strategy

As the business of Foxconn's online supply-chain financing would unfold, what would be an adaptive regulatory framework to strike a balance between financial market stability and access to financial services advanced by FinTech innovations? We argue for a shift in institutional philosophy of financial regulation to light-tough or humble regulation especially in the early stage of the FinTech revolution. By regulatory humility or a light-touch approach, we mean the adoption of a principles-based regulatory strategy or MPBR, viz. "a proportionate risk-based approach."[107] Therefore, we might tend to recognize the importance of embracing regulatory experimentation in a principles-based approach to FinTech regulation not least in the context of global regulatory competition for attracting FinTech firms and markets.[108] Reframing the institutional philosophy from a rules-focused perspective to MPBR would facilitate "a greater degree of openness and flexibility on the part of regulators" and "the incorporation of new knowledge or subsequent discoveries."[109] In addition, under the conceptual framework constructed here, regulatory techniques in the future would be able to allow for new entrants of FinTech firms while appropriately supervising financial stability. In 2016, the "G20 High-Level Principles for Digital Financial Inclusion" (the "G20 Principles") was announced to provide a basis for country action plans in regulating digital financial services. The perspective to promote competition in financial markets underlying our conceptual framework is aligned with that of the G20 Principles in that the G20 Principles advocate implementing a framework that should be "flexible enough to cover both new and existing service providers and product innovations" and promoting "market participation (including for new and foreign entrants)."[110] Accordingly, it may not be appropriate that the FinTech regulation is too strict in the early stage of FinTech firms; the spirit of FinTech regulation should embrace regulatory humility, namely risk-based proportionate MPBR.[111]

Specifically, humble regulation indicates lessening unnecessary regulations, lowering transaction costs, and shifting the regulatory focus from *ex ante* restrictions to *ex post* remedies.[112] Given that the size or scale of a financial institution matters owing to its relevance for systemic risk, regulations governing online supply-chain financing in this FinTech era

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107. See Arner et al. (2016), p. 6 ("For regulators, RegTech provides the means to move towards a *proportionate risk-based* approach where access to and management of data enables more granular and effective supervision of markets and market participants") (emphasis added).

108. As commentators note in terms of the link between inter-jurisdictional regulatory competition and regulatory experimentation, "[r]egulators need to take the idea of regulatory competition seriously. Most obviously, this entails a greater willingness to engage in policy and regulatory experiments in which different regulatory regimes are adopted and results compared. To some extent, regulatory competition will occur 'naturally', as different jurisdictions adopt different regulatory models" (Fenwick et al., *supra* note 57, p. 23, alteration in original, footnote omitted). For how regulatory competition in financial regulation would spur "a process of regulatory experimentation and updating, resulting in progressively more desirably regulatory regimes," see Armour et al., *supra* note 49, p. 635. And for how demand and supply dynamics underlying regulatory competition or the market for law constrains regulating jurisdictions from disregarding business demands and from imposing excessive regulation, see generally Tsai (2010).

109. Fenwick et al., *supra* note 57, p. 24. See also Armour et al., *supra* note 49, pp. 550–1; Baldwin et al., *supra* note 65, p. 303 ("[Principles-based regulation] ... adapts to changing circumstances better than prescriptive rules") (alteration in original); Brummer et al. (2014), p. 7 (noting that one of the potential negatives under rules-based regulatory regimes is "deterrence with respect to innovation" whereas one of the potential positives under principles-based regulatory regimes is "flexibility and innovation in the face of 'rapidly changing environments'").

110. GPFI, *supra* note 104, p. 12.

111. See *supra* Section 2.2. The G20 Principles advocate providing "an enabling and proportionate legal and regulatory framework for digital financial inclusion" (GPFI, *supra* note 104, pp. 1, 11). This framework would "not impose excessive, non-risk-based compliance costs;" further, "[a] risk-based approach to compliance and oversight is also needed for a proportionate approach to supervision" (*ibid.*, at pp. 11–12, alteration in original).

112. Tsai, *supra* note 5, p. 257, footnote 123.

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should take a more flexible regulatory approach, which is humble or light-touch regulation.[113] At least in the early stage of these emerging FinTech businesses, MPBR might be the cure. That is, given the complexity and innovation of modern financial markets, MPBR with the institutional philosophy of regulatory humility might overcome the challenges facing regulators.[114] In concrete terms, there are four elements of a more principles-based regulatory regime. First, outcome-oriented principles are principles designed to achieve regulatory outcomes rather than technical rules for regulated make participants to merely comply with.[115] Second, a philosophical shift in regulators' and actors' roles in achieving the regulatory goal would change regulators' attitude to relax their reigns of regulation and to "leverage the accumulated expertise of ... regulated actors in vital areas such as risk management."[116] Third, the success of MPBR turns on a targeted and proportionate enforcement of regulations and intensive supervision.[117] In particular, under the conceptual framework of regulatory humility, a proportionate governance without excessive regulation will help regulators regulate FinTech activities but not restrain their developments.[118]

When it comes to the fourth element of MPBR, a great change in the relationship between regulators and the regulatees would facilitate a sophisticated dialogue, thus establishing "the driving force behind MPBR: generating, updating, and disseminating substantive and technological content on a dynamic basis in response to market and regulatory developments."[119] Specifically,

> [principles-based regulation ("PBR")] also involves a continuing "regulatory conversation" between regulators and regulatees regarding the meaning and application of the rules. Central to the success of PBR is, accordingly, trust in the competence and responsibility of the regulatees. According to the PBR optimists, this is a method of encouraging regulatees to think for themselves and assume responsible approaches. It fosters a move beyond mere box-ticking approaches to compliance towards higher levels of performance.[120]

If a jurisdiction intends to lead the global regulatory competition for attracting FinTech firms, a principles-based strategy should be pursued with a shift in intuitional philosophy

113. See *supra* Section 2.1.2. This method of regulating new FinTech businesses also applies to regulations of equity-based crowd funding in Taiwan, which is an emerging way for raising capital in this new FinTech era as well. See Tsai, *supra* note 5, p. 264. In other words, humble regulation can be put into practice by employing such regulatory techniques as simpler disclosure to "nudge" protected investors and to remove unnecessary red tape for start-ups seeking early stage funding. *Ibid.*, at p. 264. Another example for simpler and proportionate regulation is that "[i]n the EU, the proposed Market Abuse Regulation moves exactly in this direction: issuers trading on 'S[mall and]M[edium-sized] E[nterprise] growth markets' will be subject to a simplified, less burdensome regime as regards ongoing disclosure of price-sensitive information and insiders' lists"; this example tells us that "[r]egulators are increasingly aware of the need to increase the [mandatory disclosure] system's flexibility, so as to take the larger relative weight of disclosure-related costs for small issuers into account" (Enriques and Gilotta, 2015, pp. 529–30, alteration in original, footnote omitted). When it comes to consumer protection for digital financial services, the G20 Principles also suggest "[developing] *proportionate* service provider requirements for digital financial services, including: (i) clear, *simple*, and comparable disclosures of terms, fees and commissions" (GPFI, *supra* note 104, p. 16, alteration in original, emphasis added).

114. Awrey, *supra* note 64, p. 315.

115. *Ibid.*, at p. 286.

116. *Ibid.*, at p. 287.

117. *Ibid.*, at pp. 289–90.

118. Chiu (2016), p. 8.

119. Awrey, *supra* note 64, pp. 288–9. In this sophisticated dialogue, regulatory goals are more transparent and regulated actors could share their information and expertise with a view to achieving the regulatory objectives. *Ibid.*, at p. 288.

120. Baldwin et al., *supra* note 65, p. 303, alteration in original, footnote omitted.

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to light-touch or humble regulation; as a necessary complement, such market-based regulatory mechanisms as the regulatory sandbox discussed below would be supportive to such FinTech developments as online supply-chain financing.[121] In other words, as non-traditional FinTech firms could grow rapidly from "too-small-to-care" to "too-big-to-fail" or create the emerging systemic risk of "'too linked to fail' ... regardless of their value or size despite not being classified as systemically important financial institutions,"[122] to complement the principles-based and risk-based proportionate governance regime,[123] the regulatory sandbox adopted by the UK is worthwhile to be explored further below.

4.2 Regulatory Experimentation: The Regulatory Sandbox

On the one hand, the UK leading the adoption of the regulatory sandbox implies the horizontal experimentation across different jurisdictions that they are engaging in regulatory competition "naturally" by adjusting their financial regulation with a view to facilitating the establishment and operation of domestic and foreign FinTech firms.[124] This, on the other hand, suggests the vertical experimentation within given jurisdictions that "such experimentation is also important within a particular jurisdiction as it provides regulators with data on the real-world effects of a particular regulatory scheme in a comparable setting."[125]

Under MPBR, in order to appropriately regulate such FinTech innovations as online supply-chain financing, we might consider some soft powers or market-based regulatory approaches. Specifically, the UK Financial Conduct Authority (FCA) adopted the regulatory sandbox, permitting "financial innovation to be carried out in experimental ways within the parameters of regulatory approval and monitoring."[126] Further, the regulatory sandbox is a "'safe place' in which businesses can test innovative products, services, business models and delivery mechanisms without immediately incurring all the normal regulatory consequences of engaging in the activity in question."[127] The regulatory sandbox would signify that the FCA introduced a formal form of proportionate governance without excessive regulation, which is aligned with the spirit of MPBR.[128]

Along this line, the aforementioned regulatory sandbox implemented by the FCA provides us with some important policy implications. Regardless of the detailed techniques of regulatory sandboxes, the institutional philosophy behind should be emphasized. Specifically, when the FCA investigated the feasibility of setting up this regulatory initiative,

121. See *infra* Section 4.2.

122. Arner et al., *supra* note 24, pp. 34–5; Lin, *supra* note 40, pp. 586–7.

123. See *supra* Section 2.2.

124. Arner et al., *supra* note 107, p. 8 ("Currently there are at least four jurisdictions consulting on (and implementing) this new regulatory approach of the regulatory sandbox. They are the UK, Australia, Singapore and Hong Kong"). For other jurisdictions having shown interest in establishing similar mechanisms, see *ibid.*, at p. 45.

125. Fenwick et al., *supra* note 57, p. 23.

126. See Chiu, *supra* note 118, p. 7.

127. Financial Conduct Authority (2015), p. 2. See also UK Government Chief Scientific Adviser (2015), p. 52 ("In fostering close collaboration between regulators, institutions and FinTech companies, much might be learnt from clinical trials (i.e. Phase III) structures. Specifically, regulator monitored 'sandboxes' for innovators to *experiment* with virtual environments or real people") (footnote omitted, emphasis added). Meanwhile, the G20 Principles appear to emphasize regulatory sandboxes by recommending developing an enabling and proportionate legal and regulatory framework that "should also allow for piloting innovative new delivery channels, products and services, and business models, without having to immediately comply with all regulatory requirements" (GPFI, *supra* note 104, p. 12).

128. See Chiu, *supra* note 118, pp. 7–8.

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there were three key factors that it considered. In order to construct similar market-based governance mechanisms, we can refer to these three factors taken into consideration in regard to the UK regulatory sandbox. The first factor is barriers: the FCA would consider the regulatory barriers facing firms in testing an innovative idea and how they can be reduced and to what extent.[129] The second factor is safeguards for the operation of the sandbox; that is, the FCA would set safeguards "to ensure consumers and the financial system are appropriately protected during testing."[130] The third factor is a legal framework: the FCA would consider what regulatory arrangements are imposed by EU legislation and "therefore are not within the gift of the FCA to change."[131] Since the legal framework the FCA considered is to fit in with EU law limitations in particular, this factor would not be further discussed in this article below.[132]

When it comes to the case-study of Foxconn's online supply-chain financing, in deciding to develop the related business, Foxconn would prefer more flexible regulations rather than excessive ones if a government intends to support the development of online supply-chain financing operated by e-commerce platform players.[133] Accordingly, financial regulators should be humble and remove regulatory barriers with which FinTech firms are faced at their early stage; this is consistent with the first factor that the FCA took into account.[134]

As for the second factor, in promoting FinTech developments, it is undoubtedly imperative to set safeguards to ensure consumer protection.[135] However, under our conceptual framework of humble regulation, we would suggest an informal self-regulation approach to consumer financial protection rather than one-size-fits-all formal legal rules as safeguards.[136] The self-regulation proposal for consumer financial protection in the early stage of the FinTech revolution are consistent with the spirit of regulatory sandboxes in that the sandbox would take a "wait-and-see" approach, which is "seen as more efficient to let a market *self-regulate* until it became worthy of regulators' time" and that "[t]his approach can be cost-effective for regulators, and industry, as it *experiment* with initiatives until they become sufficiently important to attract regulatory scrutiny."[137] More importantly, the G20 Principles

129. Financial Conduct Authority, *supra* note 127, p. 3.

130. *Ibid.*

131. *Ibid.*, at pp. 3–4.

132. Likewise, outside of the EU, the Singaporean government will adopt a regulatory sandbox enabling market participants to experiment with FinTech solutions. In this regulatory sandbox, firms that are interested in innovative FinTech solutions could be tested in the environment where specific regulatory requirements will be relaxed. In addition to this regulatory environment, safeguards to contain the consequences of failure of these experiments will be provided whilst the safety and soundness of the financial system will be maintained. If the government and the FinTech firms are satisfied with the outcomes of these experiments, and the FinTech firms can comply with the relevant regulatory requirements, innovative solutions that are experimented on a relatively small group of customers and in a fixed period could be deployed in the market on a broader scale. Monetary Authority of Singapore (2016).

133. See *supra* Section 3.2.2.

134. See also Arner et al., *supra* note 107, p. 47 ("From a start-up perspective, regulatory sandbox access represents an opportunity to operate without complete licensing obligations").

135. *Ibid.*, at p. 47 ("[T]he sandbox needs to uphold the regulators' mandates and particularly that of consumer protection") (alteration in original).

136. As a commentator asserts, financial regulators could "take a 'wait and see' approach, preferring to monitor developments regulating financial innovation" and "adopt informal approaches or soft law, in order to be flexible in governing financial innovation"; for example, the UK Financial Services Authority before 2013 "subjected private equity and hedge funds to monitoring, and also encouraged their compliance with *voluntary industry standard codes*" (Chiu, *supra* note 118, p. 7, footnote omitted, emphasis added).

137. Arner et al., *supra* note 4, pp. 33–4, alteration in original, emphasis added.

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"[e]ncourage providers of digital financial services to *self-regulate* to a higher standard than required under prevailing law (for example, through an enforceable, *industry-based code of conduct*)."[138] In addition, the findings from the Foxconn's case-study that industry self-regulation should be emphasized is aligned with the aforementioned perspective of the G20 Principles to some extent.[139] In sum, the market-based regulatory sandbox framework might help lower the regulatory barriers that FinTech start-ups would encounter, therefore promoting FinTech innovations for improving digital financial inclusion, albeit on the premise of preserving financial stability and not compromising consumer protection; more importantly, this framework could be used to spur a process of transition to PBR or rather a change in regulatory attitude to MPBR.

4.3 Summary

This article seeks to construct a potential conceptual framework from a high-level perspective to regulate such FinTech innovations as online supply-chain financing. Given that supply-chain financing facilitated via online e-commerce platforms is a disruptive and innovative business model, one-size-fits-all financial regulation parallel to that for official banks might not be appropriate in its early stage. That is to say, in order to manage financial stability while promoting this emerging FinTech business, a more flexible regulatory regime should be adopted. A more principles-based regulatory regime reflects the pith of light touch and the institutional philosophy of humble regulation as well. Instead of the rules-based regulatory regime, MPBR represents a risk-based proportionate approach to online supply-chain financing without excessively restraining its developments. The regulatory techniques of PBR have been implemented by the FCA through the regulatory sandbox. As such, the regulatory sandbox provides adaptive mechanisms to relax relevant regulatory requirements over FinTech-based businesses and solutions, but MPBR, which represents a shift in institutional philosophy from a historically predominant rules-based regulatory regime to a less prescriptive approach, is the fundamental regulatory attitude to overcome looming challenges in FinTech markets. Indeed, after the global financial crisis, PBR has been criticized to some extent; however, since the modern financial market is characterized by its complexity and rapid changing, a prescriptive rules-based regulatory regime would not easily keep up with this market trend; MPBR would be more conducive to overcoming these FinTech-related challenges by generating more responsive and effective regulations.[140] Meanwhile, regulatory sandboxes will play a key role in putting the spur to a shift in regulatory attitude to MPBR.

5. CONCLUDING REMARKS

Since the FinTech revolution is disrupting the financial industry, modern financial activities have become more complicated and financial regulation requires a shift in institutional philosophy to respond rapidly to emerging developments. For example, the FinTech revolution transforms traditional supply-chain financing, which used to be administered only by official banks, to an online model also used by e-commerce platforms. In China, Foxconn

138. GPFI, *supra* note 104, p. 16, emphasis added.

139. See *supra* Section 3.4.2.

140. See Awrey, *supra* note 64, p. 304.

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has leveraged FinTech to expand its business into online supply-chain financing since 2015. Moreover, just as JD launched its business of online supply-chain financing, Foxconn would build its own niche to provide loans to its suppliers directly via online platforms with the benefit of its familiarity with their business statuses. Notwithstanding, what would be an adaptive regulatory regime for such innovative FinTech-enabled financial services as online supply-chain financing?

With a view to proposing a conceptual framework to regulate the FinTech industry at the early stage, we first examine the fundamentals of Internet-enabled supply-chain financing. In nature, as an innovative method for suppliers to get loans whilst bypassing traditional banks peculiar to Foxconn's business model, online supply-chain financing reflects financial disintermediation or shadow banking to an extent where Foxconn acts as a new non-bank credit intermediary. Through the case studies of JD's and Foxconn's online supply-chain financing, we appear to find that market participants might also need an adequate level of public regulation to avoid potential systemic risk. Fintech regulation, however, should be proportionate and flexible at the early stage of the FinTech movement to ensure the development of Internet-enabled FinTech industries such as online supply-chain financing. Not examining detailed rules, this article offers a high-level conceptual framework for FinTech regulation to be designed in the near future. Under the conceptual framework of light-touch and humble regulation, a change in the regulatory attitude to MPBR would be needed to help promote online supply-chain financing in its early stage, rather than rigorous rules traditionally placed on large financial institutions. In other words, instead of a rules-based regulatory regime in a prescriptive approach, a more principles-based regulatory regime could nudge market participants towards the regulatory objectives. To complement MPBR, regulatory sandboxes led by the UK allowing for regulatory experimentation within a jurisdiction is worthwhile to be adopted on the one hand, so as to strike an optimal balance between financial stability and access to financial services advanced by disruptive innovations. On the other, regulatory sandboxes would be needed to spur a shift in institutional philosophy to a principles-based regulatory regime. To sum up, in the early stage of FinTech developments such as online supply-chain financing, if a jurisdiction shows its interest in engaging in global regulatory competition for attracting FinTech firms, even though financial regulation still performs an important part in supervising FinTech innovations to contain the emerging systemic risk of "too linked to fail," a risk-based proportionate (viz. not one-size-fits-all) principles-based regulatory strategy would be conducive to the support of the FinTech start-ups, thus promoting innovative business models of digital financial inclusion, albeit on the premise of containing potential systemic risk and protecting consumer interest in the meantime.

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