

OPEN BANKING AND LIBRA: A NEW FRONTIER OF FINANCIAL INCLUSION FOR PAYMENT SYSTEMS?

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A wide range of digital initiatives have an impact on ‘financial inclusion’, *ie*, access to banking services both for underbanked and low-income customers. Promoting financial inclusion using virtual platforms in low and middle-income countries enables reaching vulnerable and excluded customers. This article examines the new frontiers of open banking and cryptocurrencies for payment systems from the perspective of inclusive financial development. The possibility for technology-based change in the financial markets is demonstrated in the online delivery of banking services and in the business models and operations of intermediaries that provide them. Enhancing the appropriate public policy on financial data and the availability of ‘open data’ for use by other firms and investors represent the main challenges for regulators. This article argues that there is a public interest in data access that requires coordination at industry level and may also require regulatory intervention to ensure the governance of data technologies.

I. INTRODUCTION

The range of digital technologies used in financial services is very broad, including for example household and small business lending, online and mobile payments, capital market transactions, wealth management and regulatory reporting and compliance. Likewise, a wide range of digital initiatives promotes ‘financial inclusion’, *ie*, access to banking and insurance services both for underbanked and disadvantaged customers.¹ Enabling financial inclusion using digital technology in low and middle-income countries means reaching vulnerable and excluded customers as well as integrating underserved customers into mainstream financial systems. Access to technology can support financial inclusion, which “denotes banks’ provision of basic financial services at affordable costs to those that need and qualify for them”.² The

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¹ Daniela Gabor & Sally Brooks, “The Digital Revolution in Financial Inclusion: International Development in the Fintech Era” (2017) 22 *New Political Economy* 423 at 424.

² Emily Lee, “Financial Inclusion: A Challenge to the New Paradigm of Financial Technology, Regulatory Technology and Anti-Money Laundering Law” (2017) 6 *JBL* 473 at 474.

case of M-Pesa in Kenya has become paradigmatic of promoting small business lending, access to financial services at fair pricing for customers with disabilities and access to credit for low-income households and particularly for the disadvantaged gender (*ie*, women).³

This article sheds light on the impact of digital technology in payment systems from the perspective of promoting financial inclusion. Digital technologies, often referred to as FinTech, comprise *inter alia* cryptoassets, virtual platforms, artificial intelligence and RegTech (*ie*, applications of digital technology by regulatory and compliance actors). The aim of this article is to examine the importance of the ‘world of alternatives’—both alternatives to credit, like peer-to-peer (P2P) lending platforms, and alternatives to payments, such as Open Banking—and assess the potential of financial innovation to contribute to the financial inclusion policy agenda. The possibility for technology-based change in the financial industry is demonstrated by the new delivery of financial services and the business models and operations of intermediaries that provide them. This is illustrated by the case of China which has seen rapid shifts to both mobile payments (*eg*, AliPay, WeChat Pay) largely replacing notes and coins in urban areas⁴ and to non-bank loan intermediation through the spectacular growth of the Chinese version of P2P lending.⁵

In parallel, recent progress in blockchains suggests that one of the interesting potential applications of the technology is in “disintermediation protocols”, which remove the need for having trusted third parties in a collaborative environment involving many (potentially anonymous) stakeholders.⁶ A UK Government report also suggests that the technology offers the potential, according to the circumstances, for individual consumers to control access to personal records and to know who has accessed them.⁷ This report aims to facilitate secure access and traceability to confidential financial records and messages, focusing on the governance and assurance of access to records. The policy focus is on removing the need to have a trusted intermediary or authority in order to lower the costs associated with the operation of the system, which allows for strong business models for the deployment of the system.

This raises the following questions: (1) which elements of the financial services value chain or individual products and services, can be provided independently and competitively by technology-based companies; (2) whether this undermines the competitive position of incumbents, perhaps leaving them with little except

³ Scott Burns, “M-Pesa and the ‘Market-Led’ Approach to Financial Inclusion” (2018) 38 *Economic Affairs* 406 at 410-411.

⁴ John Engen, “Lessons from a Mobile Payments Revolution” *American Banker* (29 April 2018), online: *American Banker* <<https://www.americanbanker.com/news/why-chinas-mobile-payments-revolution-matters-for-us-bankers>>.

⁵ Kieran Garvey *et al*, *Cultivating Growth: The 2nd Asia Pacific Region Alternative Finance Industry Report (September 2017)*, at 57, online: University of Cambridge Judge Business School <https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-09-cultivating-growth.pdf>.

⁶ Hossein Kakavand, Nicolette Kost De Sevres & Bart Chilton, “The Blockchain Revolution: An Analysis of Regulation and Technology Related to Distributed Ledger Technologies” (5 January 2017), online: SSRN <<https://ssrn.com/abstract=2849251>>.

⁷ UK Government, *Distributed Ledger Technology: beyond block chain*, at 18-20, online: UK Government <<https://www.gov.uk/government/publications/distributed-ledger-technologyblackett-review>>.”

loss-making but unavoidable responsibilities for maintaining underlying infrastructure or regulatory compliance; (3) whether the new technology opens up new customer opportunities, overcoming contractual and other barriers that have limited access to many financial services; (4) whether it instead exacerbates problems of access with FinTech ‘cherry picking’ the profitable high margin opportunities and eliminating opportunities for providing access through relationship-based intermediation and cross-subsidy.

Enhancing the appropriate regulatory policy on financial data and the availability of ‘open data’ for use by other financial firms, investors and other ‘stakeholders’ are the main concerns for regulators. This article argues that access to financial data is a ‘public good’⁸ which requires coordination at industry level and may even require ad hoc intervention to ensure that the data needs of industry and policymakers are met appropriately.⁹ In parallel, there is a public interest in data access to expand financial inclusion and thus mitigate inequalities and forms of social discrimination among customers. Data access becomes the paradigm of financial inclusion, both in terms of sustainable expansion of microfinance and efficient (*ie*, equal) delivery of technological innovations.¹⁰ This justifies a regulatory intervention aiming to establish inclusionary programmes for consumers impeded from opening bank accounts in the United Kingdom (“UK”), in developed and in developing countries. Similar ‘public good’ considerations apply to cyber security, nowadays a major concern for all financial services firms, in particular because of the risk of substantial fines for breaches of data protection regulations such as failures to protect consumer information.¹¹

Part II discusses the regulatory framework for FinTech addressing the main issues of governance and control of data. It deals with the impact of new generation technology-centred payments on financial inclusion considering the advent of Open Banking as an alternative form of “business ecosystem characterised by the widespread use of data-enabled services to deliver innovative and more competitive services to consumers”.¹² It also advances a set of recommendations for how such payments may be better regulated so as to benefit the community at a local and global level bearing in mind potential risks to the stability of the financial system worldwide. Part III assesses the growth of digital financial-inclusion platforms such as mobile-phone money-transfer systems, P2P and online credit payment services. It focuses on

⁸ It is generally considered by the economic literature that “a public good is one where the consumption of the good by one individual in no way prevents others consuming the good or diminishes their enjoyment of it”. In other terms, a public good is one where there is no rivalry and non-exclusion in consumption. See, among others, David M Kreps, *A Course in Microeconomic Theory* (UK: Harvester Wheatsheaf, 1990) at 168.

⁹ Solon Barocas & Helen Nissenbaum, “Big Data’s End Run around Anonymity and Consent” in Julia Lane *et al*, eds, *Privacy, Big Data, and the Public Good: Frameworks for Engagement* (UK: Cambridge University Press, 2014) at 45-46.

¹⁰ On this point see the views expressed in the seminal work of Ross P Buckley *et al*, “Sustainability, FinTech and Financial Inclusion” (2020) 21 *EBOR* 7 at 10-11.

¹¹ Arben Asllani, Charles Stephen White & Lawrence Etkin, “Viewing Cybersecurity as a Public Good: The Role of Governments, Businesses and Individuals” (2013) 16 *Journal of Legal, Ethical and Regulatory Issues* 7 at 9-10. See also Benjamin Powell, “Is Cyberspace a Public Good - Evidence from the Financial Services Industry” (2005) 1 *Journal of Law, Economics & Policy* 497 at 498-499.

¹² Oscar Borgogno & Giuseppe Colangelo, “Data, Innovation and Transatlantic Competition in Finance: The Case of the Access to Account Rule” (27 January 2020), at 2, online: SSRN <<https://ssrn.com/abstract=3251584>>.

the successful case of M-Pesa in Kenya, a virtual infrastructure that provides access to the money market, and the experience of non-bank loan intermediaries in China, *eg*, Alipay, a popular network for e-commerce transactions. These digital financial platforms represent a new frontier for payment systems in terms of opportunity to increase inclusive developments among underserved customers. Part IV explores the interplay between blockchain applications, financial disintermediation and financial inclusion. The widespread expansion of new currency tokens along with digital coin offerings poses challenges for the monetary authorities and raises concerns for the operational risk of virtual transactions. The recent initiative of “Libra”, a cryptoasset-based payment system sponsored by Facebook, though highly controversial, has the potential to overcome the current weaknesses of decentralised blockchain networks but can represent a threat for the sovereignty of central banks and for the prudential supervision of banking regulators. A public response from monetary authorities is the newly launched Central Bank Digital Currency, an innovative and competitive electronic form of payment aiming to maintain the transparency and traceability of financial transactions. Part V concludes.

II. TECHNOLOGY-BASED CHANGE IN THE FINANCIAL INDUSTRY

A. Data Access and Financial Inclusion

FinTech and digital technologies are the main drivers of financial inclusion globally, widening access to banking and insurance services both for low income households and small businesses. Financial inclusion can be defined as sustainable usage of money services and is linked with technological development that affords customers the possibility of arranging transactions among users through packages of data.¹³ Conversely, financial exclusion refers to the inability to access suitable financial services and is often exacerbated by a lack of digital literacy which leads to disparities in the use of technologies.

Financial exclusion and low utilisation of digital technologies tend to be correlated to factors such as old age, gender (*ie*, being female), poor education, non-Western culture, low income, ethnic or religious minority status, rural or remote area of residence and disability.¹⁴ However, the use of data represents the main challenge to achieve financial inclusion: specifically, accessing data (*eg*, deposits, loans and remittances) implies ownership of accounts and control of investments which are generally managed by credit institutions. There is a growing public interest in providing broad data access as part of an inclusive financial policy to eliminate barriers in allocating resources. Access to data displays the contours of a public good and its use should not exclude or prevent other participants’ benefit.¹⁵ On this view, data

¹³ See, among others, Naoyuki Yoshino, “Financial Inclusion, Financial Stability and Income Inequality: Introduction” (2018) 63 *Singapore Economic Review* 1 at 2.

¹⁴ Joy Malala, *Law and Regulation of Mobile Payment Systems: Issues Arising ‘post’ Financial Inclusion in Kenya* (London: Routledge, 2018) at 71.

¹⁵ On this view see Julia Lane *et al*, “Editors’ Introduction” in Julia Lane *et al*, eds, *Privacy, Big Data, and the Public Good: Frameworks for Engagement* (Cambridge: Cambridge University Press 2014) at xii-xiii.

access can serve the public purpose of promoting the inclusiveness of financial services by exploiting alternative sources (digital payment records, cloud computing and social media behaviour) that can be accessible to all categories of consumers: this can enhance the sharing of information and reduce recourse to intermediaries.¹⁶ Therefore, ensuring access to data collection, monitoring and assessment of information can be considered as a key public policy intervention for expanding access to finance.¹⁷

Promoting financial inclusion is associated with promotion of equal conditions in market operations and equal participation in productive activities although these objectives require cross-sectoral coordination between authorities.¹⁸ To mitigate factors that cause exclusion regulators should adopt policy measures aimed at opening data access and prevent asymmetries in the delivery of FinTech products.¹⁹ The way in which this works out represents one of the most important concerns in finance: alternatives to payments in the forms of financial inclusion and shadow payments raise concerns of consumer protection. Further, alternatives to established payment systems include virtual currencies and digital access to credit (*ie*, peer to peer (“P2P”) lending and crowdfunding) which involves electronic practices and the use of online platforms in the arrangement of payments.

Another concern relates to the role of traditional mutual forms of financial intermediaries (such as building societies and credit unions), as access to financial services is increasingly virtual rather than face to face. Therefore, the challenge is whether the new financial technologies are destructive of community bonds that have supported mutual finance and whether they can support alternative forms of economic organisation or social enterprises (such as is already happening to at least a limited degree through donation-based or reward-based crowdfunding).²⁰ In developed countries, FinTech changes reveal a proliferation of new mobile and internet based financial services applications but their market shares mostly still remain very small.²¹ Where new services have become widely used, *eg*, PayPal for online payments, this ‘piggybacks’ on existing financial services infrastructure.²²

¹⁶ Gayatri Murthy *et al*, *FinTechs and Financial Inclusion: Looking past the hype and exploring their potential*, at 8, online: Consultative Group to Assist the Poor <https://www.cgap.org/sites/default/files/publications/2019_05_Focus_Note_Fintech_and_Financial_Inclusion_1_0.pdf>.

¹⁷ Alfred Hannig & Stefan Jansen, *Financial Inclusion and Financial Stability: Current Policy Issues*, ADBI Working Paper No 259 (December 2010) at 20-21, online: Asian Development Bank <<https://www.adb.org/publications/financial-inclusion-and-financial-stability-current-policy-issues>>.

¹⁸ Committee on Payments and Market Infrastructures, World Bank Group, *Payment aspects of financial inclusion in the fintech era* (April 2020), at 39, online: Bank for International Settlements <<https://www.bis.org/cpmi/publ/d191.pdf>>.

¹⁹ Franklin Allen *et al*, *The Foundations of Financial Inclusion: Understanding Ownership and Use of Formal Accounts*, World Bank Policy Research Working Paper 6290 (December 2012) at 2.

²⁰ Crowdfunding are financial platforms that support direct holding of small investments in equity and debt as an alternative to intermediation through banks and financial intermediaries. See Armin Schwienbacher & Benjamin Larralde, “Crowdfunding of small entrepreneurial ventures” in Douglas Cumming, ed, *The Oxford Handbook of Entrepreneurial Finance* (UK: Oxford University Press, 2012) at 371-372.

²¹ Marc Pilkington, “Blockchain technology: principles and applications” in F Xavier Olleros & Majlinda Zhegu, eds, *Research Handbook on Digital Transformations* (Canada: Edward Elgar, 2016) at 226-227.

²² Roger W H Bons *et al*, “Banking in the Internet and mobile era” (2012) 22 *Electronic Markets* 4 at 197-198.

B. FinTech and the Governance of Data

In the aftermath of the FinTech revolution, lenders have more information to assess the credit quality of borrowers and to make decisions on whether (and how much) to lend more quickly.²³ Payments technologies and payments regulation are rapidly evolving: these changes are occurring just as much in the regulated financial services space, through the *EU PSD2 Directive*²⁴ and the Open Banking remedies being applied by the Australian New Payments Platform,²⁵ and the remarkable shift to mobile payments in China. FinTech has an impact on financial industry structure, organization and business models: it further changes the household and business attitudes to financial services and adoption of digital technologies. However it is worth exploring the consequences of new forms of data and algorithmic processing in financial services and the regulatory applications of financial technologies, for example, how it might be used to support regulatory objectives and whether it can be used to manage market instability. In this context, FinTech represents an incentive for promoting financial inclusion through digital platforms in low and middle-income countries, for example the use of mobile phone payments in East Africa.²⁶

FinTech holds the promise of addressing fundamental problems of resource misallocation and social and economic inequity in financial services.²⁷ Supporting the continuing ‘information technology revolution’ in the financial markets, especially in addressing barriers such as the constraints of legacy systems and need for cooperation, *eg*, on standardisation and on effective digital identity solutions, constitutes the new frontier of regulators.²⁸ However, there is little consensus amongst investors and policymakers on how technological change can shape the industry in the longer term, both in terms of industrial structure and business model.²⁹

Regulators have seen an explosion of financial technologies, supporting the establishment of digital banks, the crowdfunding of both consumer lending and small business equity and debt, a range of innovative online and mobile based payments and far-reaching change in business processes across the banking, insurance, investment

²³ Lord Hodge, *The Potential and Perils of Financial Technology: Can the Law adapt to cope?*, online: UK Supreme Court <<https://www.supremecourt.uk/docs/speech-190314.pdf>>.

²⁴ EC, *Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC*, [2015] OJ, L337/35 [*EU PSD2 Directive*].

²⁵ The New Payments Platform is an innovative and open access platform for fast payments in Australia supported at the industry level to expedite financial transactions and reach vulnerable customers. See Reserve Bank of Australia, *The New Payments Platform*, online: Reserve Bank of Australia <<https://www.rba.gov.au/payments-and-infrastructure/new-payments-platform/>>. See also: New Payments Platform, online: <<https://nppa.com.au/>>.

²⁶ It is referred to mobile payments technologies in emerging markets, mostly relating to the successful M-Pesa network in East Africa.

²⁷ Phil Mader, “Microfinance and Financial Inclusion” in David Brady & Linda M Burton, eds, *The Oxford Handbook of the Social Science of Poverty* (UK: Oxford University Press, 2016) at 844-485.

²⁸ Juan M Sánchez, “The Information Technology Revolution and the Unsecured Credit Market” (2018) 56 *Economic Inquiry* 914 at 915.

²⁹ Ian Pollari, “The Rise of Fintech: Opportunities and Challenges” (2016) *The Australasian Journal of Applied Finance* 15 at 16.

advice and other financial services.³⁰ These new technologies have the potential to correct the economic inefficiencies in financial services evident for example in high levels of margins and employee remuneration, frequent financial instability and the difficulties faced by many households and small businesses in accessing external finance or protecting themselves from risks of financial loss.³¹

FinTech is supporting a range of new forms of intermediation including loan-based and equity-based crowdfunding.³² There is an emerging attention on these new forms of intermediation (eg, using the data created by these platforms) that are revolutionising business models. However, these forms of disintermediation raise the following concerns: (1) the lack of regulatory framework on data quality, disclosure information, market integrity and conduct risk; and (2) how new digital technology affects customer perceptions and customer behaviour and its impact on the behavioural biases that undermine the presumption of ‘caveat emptor’ (ie, the customer is responsible for ensuring they are not disadvantaged in financial transactions).³³ It has been argued that “one of the issues which the invention of virtual currency has brought into sharp focus is the possibility of disintermediating the entire banking sector”.³⁴ The relationship between governance and technology in financial services implies both the impact governance has on technology adoption and the possibility of using technology to improve governance. This is a particularly prominent concern for financial services because weaknesses in governance and culture have been a major problem in the sector, an underlying cause of the global financial crisis and of the many recent failures of conduct in large financial institutions. A related issue is excessive ‘short-termism’, the problematic emphasis in financial intermediation on short-term rather than long-term performance.³⁵

Weaknesses in governance and culture may also be a barrier to the full application of new technologies in the financial services. First, technology has until only a few years ago been regarded as a secondary, back office function, ‘plumbing’ that is required to support the marketing and trading activities that create returns, but not something that merits substantial attention from senior management. Nowadays much trading activity has been computerised and technology is increasingly employed for engaging with customers, but old attitudes and a lack of understanding may persist with potentially negative impact. On this view, it is observed that “a deep understanding of the technology underlying a digital asset is essential to

³⁰ Robert Armstrong, “High tech takes on high yield in US online banking” *Financial Times* (10 February 2020), online: *Financial Times* <<https://www.ft.com/content/8ee3bad2-4c18-11ea-95a0-43d18ec715f5>>.

³¹ Andrea Minto, Moritz Voelkerling & Melanie Wulff, “Separating apples from oranges: Identifying threats to financial stability originating from FinTech” (2017) 12 CMLJ 428 at 429-430.

³² Robert Wardrop & Tania Ziegler, “A Case of Regulatory Evolution – A Review of the UK Financial Conduct Authority’s Approach to Crowdfunding” (2016) 14 CESifo DICE Report 23 at 25-27.

³³ Ryan Calo, “Digital Market Manipulation” (2014) 82 *George Washington Law Review* 995 at 1013-1014.

³⁴ Simon Gleeson, *The Legal Concept of Money* (UK: Oxford University Press, 2018) at 153.

³⁵ Andrew G Haldane, *Growing, Fast and Slow*, online: Bank of England <<https://www.bankofengland.co.uk/-/media/boe/files/speech/2015/growing-fast-and-slow.pdf>>. See also Alfred Rappaport, “The Economics of Short-Term Performance Obsession” (2005) 61 *Financial Analysts Journal* 65 at 66.

evaluate the risks associated with purchasing it”.³⁶ A second issue is that emphasis on short-term profitability discourages the potentially large investments needed to replace or upgrade old legacy systems, especially when substantial amounts are already devoted to regulatory compliance. A third issue is that firms in financial services are very reluctant, when compared to other technology-based industries such as internet commerce or mobile telephony, to cooperate on technical issues, such as standard setting.³⁷

The central question on technology and the governance and coordination of financial services is the extent to which financial technologies may themselves help address weaknesses of culture and governance in financial institutions. A fundamental characteristic of today’s giant financial institutions is their lack of transparency. Senior management does not have direct contact with or understanding of the operational level, a weakness often exacerbated by the way they have grown through multiple acquisitions so that internally they run hundreds of different operational systems that do not communicate adequately with each other.³⁸ Employing technology has the potential to unbundle and simplify financial intermediation, so that processes are broken up into easily understood elements, thus improving their governance although this runs into incentive problems. If the market power of firms and the administrative power of senior management rest on lack of transparency and oversight, then they can be expected to exert substantial resistance to technological change that promotes transparency and increases competition. They will likely need to change their cost structure and invest in new technologies, as some of the most successful international banks³⁹ and insurance companies⁴⁰ are already doing. The use of technologies to move away from the risk of discretion in the manual intervention improves access to information and helps supervisors to identify the gaps in the regulation of the financial sector.

Stakeholders and policymakers are paying close attention to developments in FinTech, both because of the perception that they should support domestic capacity in what is a nascent and rapidly growing new industry with potentially global impact,

³⁶ Joshua Mitts, “A Legal Perspective on Technology and the Capital Markets: Social Media, Short Activism and the Algorithmic Revolution” (31 January 2020), at 49, online: SSRN <<https://ssrn.com/abstract=3447235>>.

³⁷ Jun Liu, Robert J Kauffman & Dan Ma, “Competition, cooperation, and regulation: Understanding the evolution of the mobile payments technology ecosystem” (2015) 14 *Electronic Commerce Research and Applications* 372 at 373.

³⁸ Kevin Houstoun, Alistair Milne & Paul Parboteeah, “Preliminary Report on Standards in Global Financial Markets” (13 Apr 2016), at 26-28, online: SSRN <<https://ssrn.com/abstract=2531210>>.

³⁹ HSBC Bank has been very active in promoting financial innovation and technology in the business activities. Specifically, HSBC Bank has adopted a risk-based approach to regulate FinTech (eg, machine learning, network analysis tools, cash-cryptographic tools and digital payments) which means a risk assessment based on case by case decision. See Markos Zachariadis, *Banking of the Future. Finance in the Digital Age*, at 7, online: HSBC Bank <<https://www.hsbc.com/-/files/hsbc/news-and-insight/2019/pdf/191108-bof-report.pdf>>.

⁴⁰ Lloyd’s International Trading Advice (“LITA”, a consultancy within Lloyd’s that gives insurance companies regulatory information about the countries in which it operates) implemented artificial intelligence (“AI”) providing a “cognitive search engine” that dispenses information to the LITA team on regulation documents when providing advice abroad. Lloyd’s are constantly supervising the AI system through human judgement on all results it produces. See Lloyd’s, *The Future at Lloyd’s*, at 17, online: Lloyd’s <<https://futureat.lloyds.com/blueprint-one/our-future-solutions/>>.

and because digital technology can address some of the perceived shortcomings of the traditional financial services industry (eg, lack of consumer protection, weaknesses in governance, gaps in compliance and improved provision to previously underserved regions).⁴¹ The UK Government has issued a FinTech Sector strategy, which includes the formation of a Cryptoassets Task Force⁴² (consisting of HM Treasury, the Bank of England, and the Financial Conduct Authority (“FCA”)) with the aim of helping the UK to be at the forefront of harnessing the potential benefits of the underlying technology, while guarding against potential risks.⁴³

In parallel, the European Commission has launched a wide ranging ‘Fintech Action Plan’ and is expected to put substantial resources into supporting the development of FinTech across the EU.⁴⁴ Supervisory authorities are also taking steps to enhance innovation with a leading role played by ‘Project Innovate’ and regulatory sandbox programmes run by the FCA in the UK, which allow automated machines to reduce the manual intervention of regulators.⁴⁵ The question is to what extent these and wider associated developments will have implications on the structure of the financial services industry, the way it relates to its customers and performs its core functions and the way it is regulated. The UK is a leading centre for new financial technology companies, challenging incumbents and offering substantial business process improvements in banking, insurance, asset management and investment advice and wholesale capital markets. UK public policy towards these recent developments has focused on practical support for technology-based start-ups and the ‘eco-system’ that sustains them.

Issues arising from digital technology and financial inclusion are wide ranging and require regulatory attention, especially in the context of anti-money laundering (“AML”), combatting the financing of terrorism (“CFT”) and know your customer (“KYC”) requirements. These issues underline several economic, regulatory, legal and social concerns such as cybercrime, data protection, privacy, adequate dispute settlement mechanisms and crisis management procedures, surveillance of migrants, particularly to understand the physical barriers in communities of immigrants.⁴⁶ For example, FinTech highlights challenges in the regulatory framework in terms of the interpretation of smart contracts, attribution of responsibility for the acts and omissions of robots and enforcement of contractual obligations. Further, FinTech raises major data issues that relate closely to the identity, security and their regulation

⁴¹ Jon Frost, *The economic forces driving fintech adoption across countries*, BIS Working Papers No 838 (February 2020), at 5, online: Bank for International Settlements <<https://www.bis.org/publ/work838.htm>>.

⁴² HM Treasury, *Cryptoassets Taskforce: Final report*, at 11-13, online: UK Government <<https://www.gov.uk/government/publications/cryptoassets-taskforce>> [Cryptoassets Taskforce Final Report].

⁴³ HM Treasury, *Fintech Sector Strategy: Securing the Future of UK Fintech*, at 9-10, online: UK Government <<https://www.gov.uk/government/publications/fintech-sector-strategy>>.

⁴⁴ Financial Stability, Financial Services and Capital Markets Union, *FinTech action plan: For a more competitive and innovative European financial sector*, online: EC <https://ec.europa.eu/info/publications/180308-action-plan-fintech_en>.

⁴⁵ FCA, *Project Innovate*, online: FCA <<https://www.fca.org.uk/firms/fca-innovate>>.

⁴⁶ Daron Acemoglu, Asuman Ozdaglar & Alireza Tahbaz-Salehi, “Systemic Risk and Stability in Financial Networks” (2015) 105 *American Economic Review* 564 at 565.

for financial services firms.⁴⁷ Issues of data security and privacy are also central to the broad challenge of consumer attitudes to the newly established Open Banking.⁴⁸

C. The New Frontier of Open Banking

The willingness of consumers to adopt novel technologies in retail financial services, whether in payments, savings products, insurance, household lending or other markets is evidenced by the implementation of Open Banking that requires the largest UK banks to offer standardised technical interfaces ('open application programming interfaces' ("open APIs")).⁴⁹ Specifically, APIs request banks to open up their customer databases to third parties according to the *EU PSD2 Directive*.⁵⁰ This allows customers to securely share data with third parties competing in the provision of payments and other current account services.⁵¹ It has been argued that "'open APIs" represent one of the best-practice ways of implementing mandatory data sharing frameworks".⁵² Open Banking's APIs enable authorised or registered third party providers to simplify access to their financial data and make payments on their behalf: it is an opportunity to improve competition among financial firms and implement new financial inclusion strategies.⁵³ APIs technology can increase the quality of banking products and lower transaction costs: it can enhance service technology innovation by means of improved data analytics.⁵⁴ The Open Banking revolution is generating extraordinary amounts of information, but arrangements for access to, security and use of this information struggle to keep up to pace. The ownership and control of data is now a central concern (reflected in the EU General Data Protection Regulation ("GDPR")⁵⁵) particularly for information including countering the threat of cyber-crime. Identity and lack of transparency represent serious issues, especially in financial services and public services, where digital identity and valid consent are fundamental to both efficient delivery and protection against

⁴⁷ Inna Romanova & Marina Kudinska, "Banking and Fintech: A Challenge or Opportunity?" in Simon Grima *et al*, eds, *Contemporary Issues in Finance: Current Challenges from Across Europe: Volume 98* (UK: Emerald Publishing, 2016) at 21-22.

⁴⁸ Laura Brodsky & Liz Oakes, *Data sharing and open banking*, at 2-3, online: McKinsey & Co <<https://www.mckinsey.it/sites/default/files/data-sharing-and-open-banking.pdf>>.

⁴⁹ See Competition and Markets Authority, *CMA paves the way for Open Banking revolution* (9 August 2016), online: UK Government <<https://www.gov.uk/government/news/cma-paves-the-way-for-open-banking-revolution>>.

⁵⁰ *EU PSD2 Directive*, *supra* note 24.

⁵¹ Ben Regnard-Weintrabe & Jane Finlayson-Brown, "Adapting to a Changing Payments Landscape" in Jelena Madir, ed, *FinTech: Law and Regulation* (UK: Edward Elgar Publishing, 2019) at 37-38.

⁵² Miguel de la Mano & Jorge Padilla, "Big Tech Banking" (2018) 14 *Journal of Competition Law and Economics* 494 at 515.

⁵³ Alistair Milne, "Competition policy and the financial technology revolution in banking" (2016) 103 *DigiWorld Economic Journal* at 156.

⁵⁴ Daniel Gozman, Jonas Hedman & Kasper Sylvest Olsen, *Open Banking: Emergent Roles, Risks & Opportunities*, at 9, online: Association for Information Systems <https://aisel.aisnet.org/ecis2018_rp/183> [Open Banking].

⁵⁵ EC, *Regulation (EU) No 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)*, [2016] OJ, L119/1 [GDPR].

fraud.⁵⁶ Open Banking can bridge the gap of information asymmetries between bank and clients by improving data access and creating a more competitive environment. It can also reduce the intermediation fees and the recourse to traditional lending services through innovative digital services that aim to reach excluded customers.

Payment systems are closely linked to the broader impact of technology on industry and public services and to wider issues of identity and data infrastructure. While there is a very large diffusion of data through digital platforms, *eg*, on biometric identification and on cyber security, there is relatively scarce understanding of policy and practices applied to financial markets. This is a large gap, especially as combatting fraud, establishing counterparty identity and effective enforcement of KYC and AML relate to two of the fundamental challenges: regulation and governance.

The launch of Open Banking also aims to address the lack of competition in current account services and small business lending. This should be an effective competition remedy, lowering barriers to entry in the market for personal current account and payments services, but its effectiveness depends on customer attitudes.⁵⁷ Consumer attitudes are key to the adoption and application of financial technology and, more generally, to the efficient regulation of financial services. Lack of consumer understanding of financial products and the uneven record of interventions to correct this situation can be a barrier in the diffusion of FinTech.⁵⁸ Financial technology might help overcome this lack of understanding (both in terms of product design and presentation and in development of technology-based financial education) and the regulatory and institutional arrangements that best ensure that firms use new technologies to address rather than exploit financial illiteracy.

Open Banking can have an impact on the social and psychological factors that influence individual financial choice, especially in the case of long-term savings choices. Decisions on appropriate financial provision towards retirement are increasingly treated as an individual risk-return decision (reflected in the winding down of defined benefit pension schemes and the exercise of rights to withdraw from collective pension arrangements).⁵⁹ While it can be observed that individuals are often best placed to make the financial decisions that most affect them, little attention has been paid to how behavioural biases⁶⁰ (*eg*, default options in decision-making) may lead to insufficient provision, inappropriate investments or exploitation by advisers or intermediaries who make substantial profit at their clients expense. Disclosure

⁵⁶ Adrien Alberini & Vincent Pfammatter, "Blockchain and data protection" in Daniel Kraus, Thierry Obrist & Olivier Hari, eds, *Blockchains, Smart Contracts, Decentralised Autonomous Organisations and the Law* (UK: Edward Elgar Publishing, 2019) at 291.

⁵⁷ It has been argued that 'an open platform approach potentially lessens the profit share of the innovator due to increased competition and lower barriers to entry, and also reduces the possibility of customers being "locked-in" to the platform as switching costs are particularly low'. See on this point Markos Zachariadis & Pinar Ozcan, "The API Economy and Digital Transformation in Financial Services: The Case of Open Banking" (14 July 2017), at 10, online: SSRN <<https://ssrn.com/abstract=2975199>>.

⁵⁸ Annamaria Lusardi & Olivia S Mitchell, "The Economic Importance of Financial Literacy: Theory and Evidence" (2014) 52 *Journal of Economic Literature* 5 at 6.

⁵⁹ Christopher C Nicholls, "Open Banking and the Rise of FinTech: Innovative Finance and Functional Regulation" (2019) 35 *Banking & Finance Law Review* 121 at 122.

⁶⁰ Henrik Cronqvist & Stephan Siegel, "The genetics of investment biases" (2014) 113 *Journal of Financial Economics* 215 at 216-217.

rules could help as do intermediaries' incentives to advertise their successes. Predictably, however, intermediaries will not publicise their own failures, and investors will discount competitors' disclosures because they come from a biased source. On this view, Open Banking can be considered as a new frontier of disclosure for making data as 'open' as possible to support both the delivery of services, better governance and the design of public policy. It can create an innovative market in data-led services in order to allow customers to have control and ownership over their transactions.

The development of an Open Banking system has a huge potential to reach customers who are currently excluded from the traditional capital markets: it represents an important driver for financial inclusion in terms of customer protection and information disclosure.⁶¹ This means increased competition and financial education: availability of data and easy comparisons can help consumer organisations to educate financial services consumers and to reduce information asymmetries in finance.⁶² It can be strengthened with a further reform of the *EU PSD2 Directive* that should include provisions on duty of care and responsibility in using data: statutory law should regulate the sharing of open bank accounts and payment origination schemes without the use of card networks. The EU regulators should introduce *ad hoc* standards for APIs mechanisms enabling retail depositors to maintain control over their data: this would create a common set of practices for banking institutions in the application of digital initiatives while preserving security and privacy. These standards would also harmonise 'open up' systems for third parties accessing banking services and automated processes of banking products distribution.

III. FINANCIAL INCLUSION IN PAYMENT SYSTEMS

BigTech companies are increasingly emerging as financial players across markets in developing economies. In this context, the growth of digital software and innovations for excluded customers reveals a complex interplay between mobile money payments and bank activities.⁶³ These and wider associated developments have important implications for the structure of the financial services industry, the way it relates to its customers and performs its core functions and how it regulates particular societal angles around social welfare and financial inclusion. This can open opportunities for using technology to support take up and provision of financial services to the vulnerable (because of age, illness or disability), poor and financially excluded. The use of smartphone payments and the promotion of financial inclusion in East Africa as well as the dramatic development of online credit in China suggest that new technologies can reach previously underserved customers groups at scale.

⁶¹ James Black, "In Open Banking's brave new world could using a third party to initiate payments weaken consumer protection?" (2019) 1 JIBFL 25 at 26.

⁶² Open Banking, *supra* note 54.

⁶³ Julia Anderson & Francesco Papadia, "Libra as a currency board: Are the risks too great?" *Bruegel Blog Post* (27 January 2020), online: Bruegel Blog Post <<https://bruegel.org/2020/01/libra-as-a-currency-board-are-the-risks-too-great/>>.

Mobile money services enable anyone to access the banking and financial sectors cheaply through virtual cross-border ‘agent’ branches. Mobile money business is striking the banking system and reducing the physical cash although the payment technologies are mainly dominated by telecoms. Telecommunication operators play a fundamental role in reaching the underserved as they have wider distribution networks.⁶⁴ Connectivity enables the digital transfer of money among customers via the provider’s transaction authorisation system through a mobile phone. This expedites the access of excluded people to providers of savings, credit, and insurance products. The explosion in connectivity is linked with growing communications infrastructure in poor and rural areas although significant gaps in mobile coverage and access remain, particularly in countries with state-owned telecommunication monopolies or government control of payments (*ie*, Cuba and the Caribbean region).⁶⁵

The mobile money business provides a clear example of a market-based approach to inclusive financial development however it is debated whether technological innovations will entirely replace the ‘bank-led’ model by ensuring access for excluded customers in non-enabling environments. As discussed in Part III, section B, account-based central bank digital currencies can support financial inclusion by providing electronic payment services through money issued by the central banks.⁶⁶ Financial inclusion has an internal dimension with significant consequences for the domestic financial services industry and an external dimension with equally significant cross border impacts. However, perceived financial cost is the most significant factor to affect the behavioural intention to adopt technologies. This indicates that mobile banking is considered costly to the people which limits adoption. Perceived usefulness has a significantly positive effect on attitudes toward using technologies and attitudes on using have a significantly positive effect on behavioural intention to use the technologies.

A. *The M-Pesa Mobile Technology*

The innovation of M-Pesa mobile technology in developing countries (*eg*, Kenya, Uganda and Tanzania) as a digital financial-inclusion platform of access to credit—at fair pricing for customers with disabilities, living in rural areas, discriminated by gender (*eg*, women face social inequalities in earnings and work responsibilities)⁶⁷ and for low-income households—demonstrates the expansion of decentralised payment systems. M-Pesa is a product of institutional arrangements established through a public-private partnership between the UK’s Department for International

⁶⁴ Andres Schipani, “Nigeria banks raise stakes in Africa mobile payment technology game” *Financial Times* (22 November 2019), online: *Financial Times* <<https://www.ft.com/content/9bb51a06-e39c-11e9-9743-db5a370481bc>>.

⁶⁵ Ann C Sérora & Juan Miguel Fach Arteagab, “Telecommunications technology transfer and the development of institutional infrastructure: The case of Cuba” (2000) 24 *Telecommunications Policy* 203 at 211-212.

⁶⁶ Agustín Carstens, *The future of money and payments*, at 5-6, online: SUERF <<https://www.suerf.org/policynotes/5175/the-future-of-money-and-payments>>.

⁶⁷ Rajiv Prabhakar, “Financial Inclusion: A Tale of Two Literatures” (2019) 46 *Social Policy & Society* 37 at 46-47.

Development, Vodafone and the Kenya's largest mobile network operator Safaricom (which is partly owned by the Vodafone group).⁶⁸ This partnership was supported by the Central Bank of Kenya and major global institutions (International Monetary Fund, World Bank and the United Nations) that adopted the 'test and learn' approach to the regulation of mobile-money services.⁶⁹ Specifically, the 'test and learn' method indicates an inductive process of regulatory adaptation to technological infrastructure that enabled Safaricom to distribute credit, savings and insurance products through the M-Pesa platform.⁷⁰ The combination of FinTech innovation and digital money renders M-Pesa unique in the panorama of payment systems, its capacity to distribute financial services for underserved population has the merit of meeting the demand of customers outside conventional financial markets and enable business relationships among excluded categories of people.⁷¹

Digital money service providers have the potential to create business opportunities for unbanked consumers and facilitate access to financial products. The launch of M-Pesa has been instrumental in facilitating access to finance and banking services more specifically in reducing the transaction costs of intermediation. M-Pesa is a form of FinTech lending mechanism, a platform-intermediated online credit that aims to fill the gap of asymmetries between underserved borrowers and traditional lenders. As a loans delivery service it lowers the costs associated with traditional forms of credit access and repayment.⁷² Promoting money-transfer service in vulnerable populations involves redistributive measures necessary to address socio-economic disadvantages that cause exclusion.⁷³ M-Pesa is a valuable innovation in the payment systems world for its applications to social and sustainable development. On this view, M-Pesa can be considered as an online intermediary that provides financial products in exchange of decision-making power and market concentration.⁷⁴

Despite the laudable contributions of digital financial platforms in terms of new frontiers for inclusionary regulation, it has been observed that "M-Pesa is regulated

⁶⁸ M-Pesa is a SMS technology that works through a SIM card and mobile number that provide money transfer and microfinancing services both in English and Swahili (the local language) to facilitate the inclusion of people living in the rural areas. This technology allows customers to convert cash into electronic money and expedite e-payments among users. See M-Pesa, online: Vodafone <<https://www.vodafone.com/what-we-do/services/m-pesa>>.

⁶⁹ Mobile money is defined as "money virtually stored in electronic form in a cellular device". On this point, see Malavika Nair & Rahimat Emozozo, "Electronic Currency in Africa: M-Pesa as Private Inside Money" (2018) 38 *Economic Affairs* 197 at 200.

⁷⁰ Njuguna Ndung'u, "The M-Pesa Technological Revolution for Financial Services in Kenya: A Platform for Financial Inclusion" in David Lee Kuo Chuen & Robert Deng, eds, *Handbook of Blockchain, Digital Finance, and Inclusion, Volume 1: Cryptocurrency, FinTech, InsurTech, and Regulation* (The Netherlands: Elsevier, 2017) at 40.

⁷¹ Iris H-Y Chiu, "A new era in fintech payment innovations? A perspective from the institutions and regulation of payment systems" (2017) 9 *Law, Innovation and Technology* 190 at 210.

⁷² Prashant Bharadwaj, William Jack & Tavneet Suri, *Fintech and Household Resilience to Shocks: Evidence from Digital Loans in Kenya*, National Bureau of Economic Research Working Paper No 25604 (February 2019), at 23, online: National Bureau of Economic Research <<http://www.nber.org/papers/w25604>>.

⁷³ Olga Morawczynski, "Exploring the usage and impact of "transformational" mobile financial services: The case of M-PESA in Kenya" (2009) 3 *Journal of Eastern African Studies* 509 at 510.

⁷⁴ Saule T Omarova, *Technology v Technocracy: Fintech as a Regulatory Challenge* (10 July 2020), online: SSRN <<https://ssrn.com/abstract=3545468>> [Omarova].

according to a logic of opportunity rather than a politics of redistribution”.⁷⁵ The growing expansion of mobile-money market raises concerns in terms of inequality, barriers to trade and limitations to infrastructure. This can increase the scope for technological discrimination particularly where minorities do not own a mobile phone or do not hold an account to convert cash into electronic money.⁷⁶ Digital inequality can lead to digital divide where mobile facilities do not guarantee that users can easily access online money services.

In addition, the aims of mobile companies in emerging markets do not necessarily target income inequality and the fair distribution of resources. It is not clear whether positive outcomes have been generated by online money agents in poor areas. The business activities of mobile credit platforms can reveal negative consequences for local firms and investors: limited competition, dominant position in digital payment infrastructures and the accumulation of revenues are some of the unintended results of mobile money services. These perceived shortcomings are significant in African regions (*eg*, Zambia, Malawi, and Mozambique) where phone companies have taken advantage of the rapid spread of telecommunication technologies.⁷⁷ The wide use of mobile money schemes for transferring funds (*ie*, remittances) faces questions of potential market distortions due to concentration of risks and lack of prudential regulation and supervision of electronic payments transactions (*eg*, unregulated money creation).⁷⁸

B. Mobile Payment Schemes and P2P Lending: The Experience of China

The FinTech revolution has reshaped the loan intermediation of credit institutions enabling borrowers and lenders to negotiate lending transactions through virtual platforms and digital payment methods. In this context, China has experienced a widespread of technologies in banking and financial sectors with the launch of mobile money schemes supported by social network, *eg*, Alipay and WeChat Pay are considered major firms that secure transactions utilising high sophisticated software such as contactless and facial recognition (scanning consumers' faces).⁷⁹ Alipay is a popular e-commerce scheme of sale of goods owned by Ant Financial which provides clearing and settlement services: it offers the possibility to invest in the loans market and money market funds according to the Chinese financial regulators (the China Banking Regulatory Commission and the China Securities Regulatory

⁷⁵ Serena Natile, “Regulating exclusions? Gender, development and the limits of inclusionary financial platforms” (2019) 15 *International Journal of Law in Context* 461 at 474 [Natile].

⁷⁶ Thomas Philippon, “On FinTech and Financial Inclusion” (2019) National Bureau of Economic Research Working Paper No 26330 at 17, online: National Bureau of Economic Research <<http://www.nber.org/papers/w26330>>.

⁷⁷ Jonathan Greenacre, “Regulating the Shadow Payment System: Bitcoin, Mobile Money, and Beyond” in Philipp Hacker, Ioannis Lianos & Georgios Dimitropoulos, eds, *Regulating Blockchain: Techno-Social and Legal Challenges* (UK: Oxford University Press, 2019) at 183.

⁷⁸ Alliance for Financial Inclusion, *FinTech for Financial Inclusion: A Framework for Digital Financial Transformation*, at 6-7, online: Alliance for Financial Inclusion <https://www.afi-global.org/sites/default/files/publications/2018-09/AFI_FinTech_Special%20Report_AW_digital.pdf>.

⁷⁹ Lerong Lu, “How a Little Ant Challenges Giant Banks? The Rise of Ant Financial (Alipay)’s Fintech Empire and Relevant Regulatory Concerns” (2018) 28 *International Company and Commercial Law Review* 12 at 19.

Commission).⁸⁰ WeChat Pay is a social media network run by Tencent that delivers payment services through various applications such as e-wallet, barcode and messaging.⁸¹ These new payment interfaces are generally linked to traditional bank accounts: Alipay users operate through their bank accounts and WeChat Pay is connected to the WeBank accounts.

The incentive of linking mobile payment providers to deposits can increase the leverage of banks which would be exposed to risks of unregulated transactions and liquidity runs. Although Alipay and WeChat Pay have digitised China's credit system, their activities raise questions on the sharing of users' information and customers protection.⁸² These delivery versus payment platforms work with the authorisation of the central bank, the People's Bank of China, which can be deemed as a form of control from the central government over clients' data. This is exacerbated by the fact that "the clients of Big Tech companies suffer from information asymmetry because they do not have sufficient information about the data or the algorithms that are used to organise and analyse them".⁸³ It can be argued that the rise of digital platforms for payment systems has rapidly evolved into the big data governance as a new frontier of FinTech innovation. Tracking users' credit history and consumers behaviours through mobile applications face problems of misleading information and abuses of customers' profiles.⁸⁴ For instance, using the human face to replace cash and debit cards poses risks of unlawful dissemination of data and identity frauds.

The growth of the P2P lending market has driven the process of disintermediation and decentralisation of finance.⁸⁵ as a result, the digitisation of delivery chains and stocks of supplies "offer potentially important tools in directing resources quickly and efficiently to the stakeholders that need it the most".⁸⁶ In parallel, technological innovation and mobile money schemes have provided open access to data creating new venues for financial inclusion especially from the perspective of small and medium businesses in disadvantaged areas that can borrow via P2P lending.⁸⁷ It has

⁸⁰ Chuanman You, "Recent Development of FinTech Regulation in China: A Focus on the New Regulatory Regime for the P2P Lending (Loan-based Crowdfunding) Market" (2018) 13 CMLJ 85 at 92-93.

⁸¹ Tyler Aveni & Joep Roest, *China's Alipay and WeChat Pay: Reaching Rural Users* (December 2017), at 1, online: Consultative Group to Assist the Poor <<https://www.cgap.org/research/publication/chinas-alipay-and-wechat-pay-reaching-rural-users>> [Tyler & Roest].

⁸² Daithí Mac Síthigh & Mathias Siems, "The Chinese Social Credit System: A Model for Other Countries?" (2019) 82 *Modern Law Review* 1034 at 1052-1053.

⁸³ Katharina Pistor, "Statehood in the digital age" (2020) 27 *Constellations* 3 at 14.

⁸⁴ Hilary J Allen, "Experimental Strategies for Regulating Fintech" (6 March 2020), at 8-9, online: SSRN <<https://ssrn.com/abstract=3533240>>.

⁸⁵ Dirk A Zetzsche, Douglas W Arner & Ross P Buckley, "Decentralized Finance" (25 March 2020), at 14, online: SSRN <<https://ssrn.com/abstract=3539194>>.

⁸⁶ Douglas W *et al*, *Digital Finance & the COVID-19 Crisis* (31 March 2020), at 6, online: SSRN <<https://ssrn.com/abstract=3567534>>.

⁸⁷ China has registered an impressive increase in rural bank account—"from 2016, about 104 million rural users around 17 percent of the rural population compared to the 398 million urban users"—led by the use of mobile payments among rural users. See Tyler & Roest, *supra* note 81 at 2. The success of Small and Medium-Sized Enterprise Lending and Asset-Backed Securities has been generated by Alibaba in China as estimated by Nicolas Blancher *et al*, *Financial Inclusion of Small and Medium-Sized Enterprises in the Middle East and Central Asia*, at 25, online: International Monetary Fund <[https://www.elibrary.imf.org/view/IMF087/25557-9781484383124/25557-9781484383124.xml?redirect=true](https://www.elibrary.imf.org/view/IMF087/25557-9781484383124/25557-9781484383124/25557-9781484383124.xml?redirect=true)>.

been reported that China has become the world's largest P2P lending market mainly driven by crowdfunding platforms (donation-based, reward-based and equity)⁸⁸ and policy intervention that promoted online lending and alternative financing channels to address micro, small, and medium enterprises, farmers and lower income individuals.⁸⁹

The proliferation of smartphone applications has triggered the expansion of P2P retail chains and allows customers to access financial products using mobile networks without the recourse to bank intermediation.⁹⁰ The P2P lending market holds the promise of facilitating financial inclusion and creating new forms of funds for consumers and investors. Given the growing pace of e-commerce and mobile money services in the financial sector, tech companies have changed the market for loans: the experience of China is indicative to illustrate the expansion of non-bank business models in response to the notable use of alternative finance and its governance structure.⁹¹ Non-bank intermediation and P2P lending have increased competition in the banking sector although they have customised the origination and distribution of loans to consumers and investors. This can increase the risk of monopolisation of non-bank platforms in the loans market with the consequence of relegating traditional banks to a marginal role in funding loans originated by BigTech companies.⁹² This would affect the quality of loans and inflate the price of debt securities: it would also face challenges in terms of prudential supervision and regulatory requirements since the non-banks operate outside the lens of supervisory authorities. Prudential issues involve competitive advantage and profitable segments that the non-bank intermediaries potentially enjoy when negotiating with customers. Specifically, non-banks evade most of the mandatory banking regulations (*eg*, capital buffers, liquidity provisions, information disclosure, resolution procedures etc) and raise the question of the emergence of a need to ensure a statutory intervention.⁹³

IV. THE BLOCKCHAIN INNOVATION

The possible displacement, in the near future, of banks and financial companies by decentralised technologies such as 'blockchain' may allow households and businesses to cheaply and conveniently exchange payments, provide loans and pool

⁸⁸ Crowdfunding donation-based, reward-based and equity-based are methods of financing characterised by the motivation of investment of funders and what they expect in return for their money. See Ivo Jenik, Timothy Lyman & Alessandro Nava, *Crowdfunding and Financial Inclusion*, World Bank Consultative Group to Assist the Poor Working Paper (March 2017), at 5, online: Consultative Group to Assist the Poor <<https://www.cgap.org/research/publication/crowdfunding-and-financial-inclusion>>.

⁸⁹ Tyler Aveni and Ivo Jenik, *Crowdfunding in China: The Financial Inclusion Dimension*, at 2, online: Consultative Group to Assist the Poor <<https://www.cgap.org/research/publication/crowdfunding-china-financial-inclusion-dimension>>.

⁹⁰ Huan Tang, "Peer-to-Peer Lenders Versus Banks: Substitutes or Complements?" (2019) 32 *Review of Financial Studies* 1900 at 1901.

⁹¹ Moran Ofir & Ido Sadeh, "A Revolution in Progress: Regulating P2P Lending Platforms" (17 March 2020), at 10, online: SSRN <<https://ssrn.com/abstract=3530901>>.

⁹² Miguel de la Mano & Jorge Padilla, "Big Tech Banking" (2019) 14 *Journal of Competition Law & Economics* 494 at 509.

⁹³ Zennon Kapron, "From digital payments to digital finance: How China's tech companies are redefining banking in Asia and soon Europe" (2018) 12 *Journal of Payments Strategy & Systems* 68 at 73.

risks without the need for financial intermediaries.⁹⁴ Data technologies including distributed ledger technologies ('blockchains') can help with the management and data access permissions, hence providing effective compliance solutions with respect to data regulatory frameworks, such as the *GDPR*. Blockchain technology backed by a possible modification of the law on the recognition and transfer of property rights in the future might prove instrumental in unlocking the value of the assets possessed by the very poor.

Blockchain algorithms specifically allow transactions, or transfers, to be aggregated into blocks and added to existing chains using public and private key cryptography.⁹⁵ They are digital network protocols whose governance system is characterised by complex transactions between various stakeholders.⁹⁶ Blockchain has the potential to make centralised records obsolete with transactions stored on the decentralised ledger. It can reduce errors, improve efficiency and eliminate transactional risk. Distributed ledgers do not only verify records of transactions but also verify them without apparent human intercession.⁹⁷ For instance, blockchain's smart contracts introduce economic agents that could be viewed as robots (objects) or as legal persons (subjects), in which case they could have the same rights and responsibilities as a natural person.⁹⁸

The growth of distributed ledger technology ("DLT") during the last decade has spurred lively academic and policy debates on the potential use of software code as a governance tool and its relationship with the formal legal system.⁹⁹ These debates extend beyond financial regulation¹⁰⁰ and touch upon the role of law, the state and the judicial system in the current era of technological innovation which is characterised by DLT, smart contracts¹⁰¹ and artificial intelligence.¹⁰² To understand the

⁹⁴ Don Tapscott & Alex Tapscott, *Blockchain Revolution: How the Technology behind Bitcoin Is Changing Money, Business, and the World* (Canada: Penguin, 2016) at 283-284. See also Melanie Swan, *Blockchain: Blueprint for a New Economy*, 1st ed (US: O'Reilly, 2015).

⁹⁵ Marco Iansiti & Karim R Lakhani, *The Truth About Blockchain*, at 9-10, online: Enterprisers Project <https://enterpriseproject.com/sites/default/files/the_truth_about_blockchain.pdf>.

⁹⁶ Darcy W E Allen & Chris Berg, "Blockchain Governance: What we can Learn from the Economics of Corporate Governance" (15 January 2020), online: SSRN <<https://ssrn.com/abstract=3519564>>.

⁹⁷ Bill Maurer, *The Racial Capitalism of Blockchain: Alternative Markets for Human-Computer Flourishing or Computational Slavery?*, online: University of Helsinki <<https://blogs.helsinki.fi/anthropology/2019/02/18/bill-maurer-the-racial-capitalism-of-blockchain/>>.

⁹⁸ Smart contracts are defined as "computer codes that can perform whatever action the participants agree to with tokenised securities or interests over the blockchain network". See Joseph Lee, "Smart contracts for securities transactions on the DLT platform (blockchain): Legal obstacles and regulatory challenges" (24 February 2020), at 25, online: SSRN <<https://ssrn.com/abstract=3523317>>.

⁹⁹ Primavera De Filippi & Aaron Wright, *Blockchain and the Law: The Rule of Code* (US: Harvard University Press 2018) at 13-14 [De Filippi & Wright].

¹⁰⁰ See eg, Cryptoassets Taskforce Final Report, *supra* note 42.

¹⁰¹ An idea first developed by Nick Szabo, *The idea of smart contracts*, online: Satoshi Nakamoto Institute <<https://nakamotoinstitute.org/the-idea-of-smart-contracts/>>. The literature on smart contracts is already vast. See eg, Alexander Savelyev, "Contract Law 2.0: 'Smart' contracts as the beginning of the end of classic contract law" (2017) 26 Information & Communication Technology Law 116; Jeremy Sklaroff, "Smart Contracts and the Cost of Inflexibility" (2017) 166 UPaLRev 263; or Jason Allen, "Wrapped and Stacked: 'Smart Contracts' and the Interaction of Natural and Formal Language" (2018) 14 ERCL 307.

¹⁰² See eg, Ioannis Lianos, "Blockchain Competition" in Philipp Hacker *et al*, eds, *Regulating Blockchain* (UK: Oxford University Press 2019) at 332.

opportunities created as well as the risks posed by DLT it is necessary to identify the features that distinguish it from conventional digital technologies. Since the internet became broadly available, an ever-increasing portion of transactions is conducted online. In most cases, credit cards and debit cards issued by banks are used to pay for goods and services that are purchased online. Alternatives such as PayPal are still reliant on the existing bank-dominated payments system.¹⁰³ When customers use their credit or debit card to make online purchases payment moves from the buyer to the seller via a chain of financial intermediaries.¹⁰⁴ In other words, conventional online transactions are made possible by trusted financial intermediaries that ensure that value is transferred securely from amongst contracting parties by maintaining a ledger (record) of transactions.

On the contrary, DLT, as its name suggests, obviates the need for trusted intermediaries maintaining centralised records as it is based on a record (ledger) of transactions that is distributed across all computers that participate in the network (nodes) and is updated and verified in (close to) real time through the use of cryptography and the labour of a large number of independently acting individuals (miners).¹⁰⁵ To be exact, this description corresponds to public permissionless DLT networks, such as the Bitcoin blockchain. It is also possible to use DLT (including blockchain) to construct closed permissioned networks where one or several trusted parties have the responsibility of updating the ledger. Still, it is public permissionless DLT networks that offer the greatest promise and pose the greatest risks. This is because DLT makes it possible to create tokens that can be exchanged in the cyberspace in a way that is functionally equivalent to the exchange of cash in the real space. Such tokens can be used as means of payment, as they are unique and once “spent” they cannot be spent again. This is because the distributed ledger of transactions is updated in very short time intervals. That being said, cryptocurrencies, such as bitcoin, do not currently have the features of money identified in economic theory, as they lack general acceptability as a means of payment, even if they can be used to store and transfer value.¹⁰⁶

Moreover, DLT-supported tokens can function as securities and as vouchers. The former is true for tokens that carry rights such as rights to a cash stream or voting rights.¹⁰⁷ The latter is true for tokens that encapsulate an entitlement to receive goods

¹⁰³ PayPal is a FinTech company that operates as a small business lender and non-bank institution providing loans and cash advances to owners and self-employed. It is a popular electronic service that offers the possibility to use a bank account to pay for a purchase, or the funds stored on consumer’s PayPal account.

¹⁰⁴ For a summary account, see *eg.* Law Commission, *Consumer Prepayments on Retailer Insolvency*, paras 7.5-7.8, online: Law Commission <<https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2016/07/56284-Law-Comm-HC-543-Web-pdf.pdf>>.

See also UK Cards Association, *Card Payment Cycle*, online: UK Cards Association <http://www.theukcardsassociation.org.uk/getting_started/card-payment-cycle.asp>.

¹⁰⁵ See De Filippi & Wright, *supra* note 99 at 59-60.

¹⁰⁶ Bjerg argues that bitcoin does not exhibit the full characteristics of any of the three principal types of money: Commodity money, fiat money and credit money. See Ole Bjerg, “How is Bitcoin Money” (2006) 33 *Theory, Culture & Society* 54.

¹⁰⁷ In that sense, DLT token offerings can be used as infrastructure for equity crowdfunding. Equity crowdfunding has grown massively in recent years and, in 2015, the UK held one eighth of the global market. For a discussion of the benefits equity crowdfunding can bring to start ups as well as the risks it engenders for investors, see John Armour & Luca Enriques, “The Promise and Perils of Crowdfunding: Between Corporate Finance and Consumer Contracts” (2018) 81 *Modern Law Review* 51 at 55-56.

or services for free or on preferential terms at a future date, known as utility tokens.¹⁰⁸ Securities tokens can conceivably obviate the need for capital markets intermediaries such as stock exchange operators, traders, investment firms and investment banks. In parallel, both securities and utilities tokens can be used to finance business ventures through crowdfunding thus providing businesses with an alternative to public capital markets. The combination of DLT with the already booming platform economy¹⁰⁹ that enables P2P lending (also known as loan-based crowdfunding)¹¹⁰ can thus challenge all the core functions of the financial system and the role of financial intermediaries to maintain payments infrastructure, offer payment services, act as the main lenders to individuals and businesses, maintain the infrastructure of the capital markets and offer services to firms seeking to raise funds and investors in capital markets.

However, some commentators are sceptical regarding the technical ability of DLT networks to operate as effective means of payment and replace securities registries maintained by financial intermediaries.¹¹¹ Schuster has highlighted that in a DLT system it is impossible to know which transfer occurred first in the case of two transfers of the same token that take place in close time proximity.¹¹² As there is no central ledger, different nodes will record the sequence of the transfers (the first being valid and the second invalid based on the *nemo dat* rule¹¹³) differently. However, the consensus system through which miners update the distributed ledger resolves this problem. Granted, the time sequence that will be determined through this process may not be the real time sequence, but this is also the case as far as the conventional financial system is concerned.

A more convincing argument against the use of DLT-based tokens as currency, securities or vouchers is based on the fact that it is impracticable to reversing entries in the distributed ledger in the case of transactions that have been executed on the system but are treated by the applicable law as void, voidable or unenforceable.¹¹⁴ It is therefore impossible to synchronise entitlements as shown on the distributed ledger with legal entitlements. It is certainly true that the assumed immutability of

¹⁰⁸ Indeed, the greatest part of initial coin offerings consists of utility tokens. See Wulf A Kaal, "Crypto-Economics – The Top 100 Token Models Compared" (20 April 2019), online: SSRN <ssrn.com/abstract=3249860>.

¹⁰⁹ For a discussion from a transaction costs perspective, see Orly Lobel "Coase and the Platform Economy" in Nestor M Davidson, Michele Finck & John J Infranca, eds, *The Cambridge Handbook of the Law of the Sharing Economy* (UK: Cambridge University Press 2018) at 67-68.

¹¹⁰ P2P lending takes place through online platforms. It has grown dramatically in recent years, particularly in China. For an empirical investigation of determinants of default risk in peer-to-peer lending in China, see Xuchen Lin, Xialong Li & Zhong Zheng, "Evaluating borrower's default risk in peer-to-peer lending: Evidence from a lending platform in China" (2017) 49 *Applied Economics* 3538.

¹¹¹ These can include registries for securities. See Eva Micheler & Luke von der Heyde, "Holding, Clearing and Settling Securities through Blockchain/Distributed Ledger Technology: Creating an Efficient System by Empowering Investors" (2016) 31 *Journal of International Banking & Financial Law* 631; and Eva Micheler, "Custody Chains and Asset Values: Why Crypto-securities Are Worth Contemplating" (2015) 74 *Cambridge Law Journal* 505.

¹¹² Edmund P Schuster, *Cloud Crypto Land*, LSE Law, Society and Economy Working Papers 17/2019 (2019) at 5-6, <<http://www.lse.ac.uk/law/working-paper-series>> [Schuster].

¹¹³ This is a property law doctrine found both in civil law and common law systems that states that a transfer of title is only valid if the transferor has the title. From an English law perspective, see *Bishopsgate Motor Finance Corporation Ltd v Transport Brakes Ltd* [1949] 1 KB 322 (EWCA).

¹¹⁴ See Schuster, *supra* note 112 at 14-16.

DLT makes it impracticable to grant effective proprietary remedies (*ie*, to reverse a transfer of title). However, this is not in itself a convincing argument against the use of DLT. Proprietary remedies are in any case limited in most legal systems, *eg*, where goods have been obtained by someone other than their true owner and subsequently sold to an innocent third party. The reason why the law permits valid acquisition of title in exception to the *nemo dat* rule is to enable socially useful transactions to take place. Such transactions have traditionally been sales of goods in marketplaces where buyers cannot be demanded to enquire whether the seller has valid title on the goods.¹¹⁵ If we accept that DLT enabled transactions have created a new marketplace and that there is social interest in enabling the smooth operation of this new marketplace it would follow that certain exceptions need to be added to the *nemo dat* rule when transfers of title are effectuated via DLT networks.

Thus, the main promise of DLT is a (partial) move towards disintermediation by dispensing with the need to engage the services of financial institutions.¹¹⁶ At its best, disintermediation can reduce costs for individuals and businesses, remove currently existing entry barriers for small businesses and investors with small portfolios, force large financial institutions to offer better value for money through increased competition, and reduce systemic risk to the extent that the systemic importance of large financial intermediaries would decrease.¹¹⁷ Such benefits could materialise if a significant volume of transactions took place via DLT networks without requiring financial intermediation to the effect that DLT networks came to constitute a broadly used alternative to the conventional financial system.

However, a conceivable alternative disintermediated financial system operating based on public permissionless DLT networks also poses a range of challenges. DLT networks are not legal persons and do not have legally mandated governance systems. As a result, such systems may be susceptible to cyber-attacks and technical malfunctioning that, if they ever rise to prominence, could lead not only to losses for their users but to a wider financial crisis.¹¹⁸ It follows that operational risk is a major concern that could give rise to systemic risk. At the same time, the investment opportunities that initial coin offerings (“ICOs”) enable are typically very risky (and often fund raisers are fraudulent) thus raising questions of retail investor protection.¹¹⁹ In addition, DLT enabled transactions can be used to facilitate illegal activity such as trade in illicit drugs, money laundering and tax evasion.¹²⁰ Therefore, the main conventional rationales for regulating the traditional financial system, namely, financial

¹¹⁵ See *Feuer Leather Corporation v Frank Johnstone and sons* [1981] Com LR 251 (EWHC), per Neil J: “...there is no general duty on a buyer of goods in an ordinary commercial transaction to make inquiries as to the right of the seller to dispose of the goods...”.

¹¹⁶ They thus render traditional accounts obsolete. See Philipp Paech, “The Governance of Blockchain Financial Networks” (2017) 80 *Modern Law Review* 1073 at 1077-1078.

¹¹⁷ For an examination of the components of systemic risk, see Steven L Schwarcz, “Systemic Risk” (2008) 97 *Georgetown Law Journal* 193; Steven L Schwarcz & Lucy Chang, “The Custom to Failure Cycle” (2012) 62 *Duke Law Journal* 767.

¹¹⁸ Veerle Colaert, “RegTech as a Response to Regulatory Expansion in the Financial Sector” (18 July 2018), at 12-13, online: SSRN <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2677116>.

¹¹⁹ See Schuster, *supra* note 112 at 12-14.

¹²⁰ For a discussion of the use of blockchain technology to evade legal rules, such as the so-called Silk Road, see Andrés Guadamuz & Christopher Marsden, *Blockchains and Bitcoin: Regulatory Responses to Cryptocurrencies*, online: First Monday <<https://firstmonday.org/article/view/6198/5163>>.

stability, customer protection, market confidence and combatting financial crime, are also applicable to a hypothetical DLT-based financial system.

The harder question is to identify what qualifies as proportionate regulatory intervention to address the risks of harm emanating from DLT finance without unnecessarily stifling innovation and preventing potential benefits from materialising. Previous work in the area has established that it is perfectly feasible to regulate DLT networks, as there are several identifiable actors, either natural or legal persons, which can be the subjects of regulation.¹²¹ These actors include internet service providers, miners, core software developers, end users, established financial intermediaries and emerging intermediaries.¹²² In terms of political incentives for States to regulate DLT networks, it is clear that governments have strong incentives to impose restrictive regulation when DLT networks are used to evade the law, and that they have incentives to support their use as compliance mechanisms that can facilitate compliance with legal and regulatory obligations.¹²³

The current approaches taken by different governments in relation to DLT networks vary considerably and could be classified into three categories: (a) abstaining from regulating DLT while warning investors and defending the regulatory perimeter;¹²⁴ (b) introducing special legislation to attract DLT activity while imposing certain minimum governance requirements;¹²⁵ and (c) restricting or even prohibiting participation in DLT networks.¹²⁶ The approach taken by the UK is more akin to the first category. There are no special rules on DLT networks and the FCA has emphasised that whether ICOs qualify as public offers of securities must be assessed by ICO promoters on a case by case basis.¹²⁷ The FCA has issued warnings to retail investors highlighting the risks of investing in tokens and has put in place a regulatory sandbox where certain transactions can take place in a safe regulatory space.¹²⁸ In other areas, such as P2P lending, the approach that has been followed is different: the FCA has introduced an authorisation and supervision regime for P2P lending platforms.¹²⁹ Whilst DLT is undoubtedly in the sights of regulators, lawyers, and policymakers, there is clearly a need to exercise a degree of restraint when considering legal and regulatory measures targeted at DLT applications, as evidence on the benefits and risks of these technologies is still emerging.

¹²¹ Michèle Finck, *Blockchain Regulation and Governance in Europe* (UK: Cambridge University Press, 2018) at 34-35 [Finck]; and De Filippi and Wright, *supra* note 99.

¹²² See Finck, *supra* note 121 at 47-58.

¹²³ Karen Yeung, "Regulation by Blockchain: The Emerging battle for Supremacy between the Code of Law and Code as Law" (2019) 82 *Modern Law Review* 207.

¹²⁴ The UK, Singapore and Switzerland have clarified that utility and currency tokens are not subject to securities regulation.

¹²⁵ This is the case for France and Thailand.

¹²⁶ China has imposed a complete ban while South Korea has banned new offerings. On global regulatory responses to ICOs, see Iris H-Y Chiu, "Pathways to European Policy and Regulation in the Cryptoeconomy" (2019) 10 *European Journal of Risk Regulation* 738 at 742-743.

¹²⁷ On the UK regulatory approach see FCA, *Guidance on Cryptoassets: Policy Statement PS19/22*, online: FCA <www.fca.org.uk/publication/policy/ps19-22.pdf>.

¹²⁸ FCA, *Regulatory Sandbox*, online: FCA <<https://www.fca.org.uk/firms/innovation/regulatory-sandbox>>.

¹²⁹ FCA, *Loan-based ('peer-to-peer') and investment-based crowdfunding platforms: Feedback to CP18/20 and final rules: Policy Statement PS19/14*, online: FCA <<https://www.fca.org.uk/publication/policy/ps19-14.pdf>>.

A. *The Case of Libra*

The traditional banking functions of deposit-taking and payment intermediation are being unbundled in a new world of alternatives that stretches from virtual currencies to cryptoassets and from shadow payments to quasi-money. The pace of change in the regulated and unregulated sector that is covered by financial technology services and products has accelerated since Bitcoin was created in 2009.¹³⁰ The recent project “Libra”, a cryptoasset-based payment system launched by Facebook, represents an alternative model to enable underprivileged people reaching financial networks although it has raised concerns among policymakers and stakeholders because of the risk of fundamentally changing the market of virtual currencies.¹³¹

Libra can offer alternative money transfer services to reduce remittance payments fees and organisational barriers: it can also facilitate integration with legacy systems if accepted as a cash equivalent through ‘an international treaty-based arrangement built on a global stablecoin’.¹³² Like Bitcoin and other cryptoassets (eg, Ethereum), Libra will provide a new alternative method of digital payment: it holds the promise to deliver inclusive financial services by leveraging Facebook’s users.¹³³ As a cryptoasset established on a decentralised, permissioned blockchain network, Libra units will be transferred nearly instantaneously between user accounts from anywhere in the world on the Libra blockchain through a proprietary P2P payment platform.¹³⁴ The Libra Association will be responsible for managing the unit’s market value and its stability. Libra or a Libra-like competitor from the private sector could impact the world of *fiat* money and could have significant potential in terms of financial inclusion. Libra will rely on a platform of nearly 2.5 billion Facebook users and aims to have regulatory approval, but a number of issues relating to financial stability, privacy and compliance with anti-money laundering and countering the financing of terrorism rules remain a potential stumbling block for its adoption.¹³⁵ It has the potential to overcome the current barriers of decentralised blockchain networks;

¹³⁰ Rosa María Lastra & Jason Grant Allen, *Virtual currencies in the Eurosystem: Challenges ahead (Monetary Dialogue July 2018)*, at 8, online: European Parliament <https://www.europarl.europa.eu/cmsdata/150541/DIW_FINAL%20publication.pdf>.

¹³¹ Victor Mallet, “G7 warns on ‘serious risks’ posed by Libra and other digital coins” *Financial Times* (18 July 2019), online: Financial Times <<https://www.ft.com/content/a6cbf244-a926-11e9-984c-fac8325aaa04>>.

¹³² Dirk A Zetzsche, Ross P Buckley & Douglas W Arner, “Regulating LIBRA: The Transformative Potential of Facebook’s Cryptocurrency and Possible Regulatory Responses” (15 January 2020), at 28, online: SSRN <<https://ssrn.com/abstract=3414401>>.

¹³³ Jess Cheng, “How to Build a Stablecoin: Certainty, Finality, and Stability Through Commercial Law Principles” (2020) 17 *Berkeley Business Law Journal* 320 at 322.

¹³⁴ Stablecoin is generally considered a low volatility cryptoasset although there is no legal and agreed definition on it. Stablecoins aim to create a level of safety typically required for a currency. On this discussion see International Organisation of Securities Commissions, *Global Stablecoin Initiatives*, at 3, online: International Organisation of Securities Commissions <<https://www.iosco.org/library/pubdocs/pdf/IOSCOPD650.pdf>>. See also Financial Stability Board, *Addressing the regulatory, supervisory and oversight challenges raised by “global stablecoin” arrangements*, at 6-7, online: Financial Stability Board <<https://www.fsb.org/wp-content/uploads/P140420-1.pdf>>.

¹³⁵ William Blair & Emiliios Avgouleas, “Opinion: A New Era of Global Payments is Coming” *Caixin* (28 August 2019), online: Caixin <<https://www.caixinglobal.com/2019-08-28/opinion-a-new-era-of-global-payments-is-coming-101456077.html>>.

however, absent any rule prohibiting transactions where payment is made by Libra units it would be permissible.

Libra will function independently of the central bank arena bringing an innovative mechanism of lending and free money transfers: this would certainly create a new platform for cross-border payment systems, thus permitting users to make payments worldwide without incurring foreign currency fees.¹³⁶ However, Libra seeks to issue money outside the perimeter of traditional bank and banking sector regulation: it operates without the conventional bank-based payment system which means it is unlikely that it would be elevated to legal tender.¹³⁷ On this view, the risk of a regulatory gap for proprietary P2P payment platforms and virtual monetary institutions can be addressed by central bank digital currencies that represent an alternative system of monetary sovereignty as discussed in the next section.

The project of Libra is inherently connected with the business of remittances by migrant workers currently subject to high transfer fees. Whether a social media company such as Facebook—whose leadership has identified the need for efficiency in cross-border transfers and retail remittances—can improve the lives of migrant workers and the families that those workers support back in their home countries is the main challenge.¹³⁸ The World Bank estimates that annual remittance flows to low and middle-income countries reached \$529 billion in 2018, an increase of 9.6 percent over the previous record high of \$483 billion in 2017.¹³⁹ Using technology to enable speedy transfer of remittances at nearly zero cost in an environment that is safe from external threats can have an appreciable impact on financial inclusion, especially where remittances are an important part of a family's annual income.¹⁴⁰

Through the adoption of digital IDs and other identification techniques it can secure access to the underbanked giving the opportunity to keep the bulk of the remittances in safe storage.¹⁴¹ It gives poor households and vulnerable groups the possibility to receive stable and predictable returns on savings, which would allow for better planning of the households' consumption and investment needs. Then, the transfer of some of the balances into a savings account would allow the underserved to use some of the funds to buy insurance to cover the impact on earnings of health and other contingencies (eg, a bad harvest). Moreover, turning part of the remittances into savings in a seamless process constrains consumption for instant gratification and can boost the long-term investment plans of low-income households. Thus, carefully planned savings balances may eventually be used for the purpose of human capital development including private investment in education and especially the education

¹³⁶ Jason Grant Allen & Rosa Maria Lastra, "Border Problems: Mapping the Third Border" (2020) 83 *Modern Law Review* 31.

¹³⁷ On this discussion see Dan Awrey, "Bad Money" (2 April 2020), at 33, online: SSRN <<https://ssrn.com/abstract=3532681>>.

¹³⁸ Kavita Datta, *Migrants and their Money: Surviving financial exclusion* (UK: Bristol University Press, 2012) at 89-90.

¹³⁹ Joseph Dana, "Facebook's Libra and The Remittance Market in the Gulf" *Medium* (11 July 2019), online: Medium <<https://medium.com/@ibnezra/facebooks-libra-and-the-remittance-market-in-the-gulf-9845027b154>>.

¹⁴⁰ Daniel Radcliffe & Rodger Voorhies, "A Digital Pathway to Financial Inclusion" (11 December 2012), at 4-5, online: SSRN <<http://ssrn.com/abstract=2186926>>.

¹⁴¹ Safe storage of savings emanating from the remittances, once a part of them has gone into consumption, is very important.

of girls.¹⁴² Cash balances can be used as collateral to enable very poor households and the previously underbanked to acquire capital assets such as machinery, which can boost the productivity and income of small businesses or farms.

B. *The Central Bank Digital Currencies*

The public policy response to Libra is the development of central bank digital currencies (“CBDCs”) designed to issue electronic tokens into the monetary system. The Bank of International Settlement defined a CBDC as “a new form of digital central bank money that could be made widely available to the general public and serve as an alternative safe, robust and convenient payment instrument”.¹⁴³ The expansion of private currencies (cryptoassets) owned by BigTech companies has raised the question of regulating the perimeter of stablecoins and technology-based assets. Decentralised and permissionless cryptocurrencies (eg, bitcoin, Tether and Ethereum) operating on blockchain platforms have changed the traditional activities of bank intermediaries and threatened the sovereignty of central banks.¹⁴⁴ Ensuring access to central bank currency in digital form represents a challenge for monetary authorities that seem reticent to adopt the idea of establishing a new payment system because of the operational risk and macroeconomic consequences.¹⁴⁵

Nevertheless, the Bank of England has proposed a platform of CBDC operating through a central bank core ledger, API access, Payment Interface Providers and registered users.¹⁴⁶ Although this structure seems practical for private sector operators, its usefulness needs to be tested among customers due to the technicality of applications that allow layers of opacity in the settlement activities (eg, data connection and offline payments). The European Central Bank (“ECB”) has lauded the merits of money digitisation (immediacy, relative security and efficiency), pointing on the usefulness of deposit based CBDC being superior for controlling illicit activity rather than more privacy-enabling token-based systems.¹⁴⁷

CBDCs aim to provide electronic currencies for wholesale and retail P2P payments. However, their role as legal tender and their regulatory framework are still debated. Various models of CBDCs have been advanced such as the “indirect CBDC” (a model with intermediation with the central bank keeping track of wholesale

¹⁴² See Natile, *supra* note 75 at 464.

¹⁴³ Bank of International Settlement, *Central bank digital currencies* (March 2018), at 1, online: Bank of International Settlement <<https://www.bis.org/cpmi/publ/d174.pdf>>.

¹⁴⁴ Peter Lee, “How central bank digital currencies will take over the world” *Euromoney* (20 February 2020), online: *Euromoney* <<https://www.euromoney.com/article/b1kdtblmtbgszp/how-central-bank-digital-currencies-will-take-over-the-world>>.

¹⁴⁵ Christian Pfister, *Central Bank Digital Currency: A Primer*, at 7-8, online: SUERF <<https://www.suerf.org/policynotes/10947/central-bank-digital-currency-a-primer>>.

¹⁴⁶ Bank of England, *Central Bank Digital Currency Opportunities, challenges and design*, at 26-27, online: Bank of England <<https://www.bankofengland.co.uk/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design-discussion-paper>> [Bank of England]. This model is mainly characterised by a database that records CBDC value and processes the payments transactions made using CBDC accompanied by an API to allow third-party Payment Interface Providers to securely send payment instructions and ask for updates from the ledger.

¹⁴⁷ Ulrich Bindseil, “Tiered CBDC and the financial system” (2020) European Central Bank Working Paper Series No 2351 at 7-8, online: European Central Bank <<https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2351~e8c18bbd60.en.pdf>>.

accounts), the “direct CBDC” (a model without intermediation where the CBDC keeps a record of all balances and transactions) and the “hybrid CBDC” (a mixed model of payment intermediation and direct claims on the central bank).¹⁴⁸ Another proposal focuses on the possibility that CBDC can be designed as cash or deposits and can be interest-bearing with social value: this view is attractive for conceiving CBDC cash-driven with optimal welfare effects for depositors and households to reduce the risk of credit shortages.¹⁴⁹

As monetary value stored electronically, a CBDC can be exchanged in digital tokens and deposits. Thus, its main rationale is to replace physical cash (banknotes and coins) in the financial markets. Basically, the CBDC should create an alternative option of central bank money to arrange payments without intermediaries: it has the potential to create a resilient, innovative and competitive payment system.¹⁵⁰ Further, CBDCs offer new opportunities of financial inclusion for households and businesses although they face challenges in terms of monetary stability. Specifically, CBDCs can have implications for the clearing and settlement procedures and for the banking system: as a new means of payment and store of value they can affect the confidence of customers who are usually more familiar with bank deposits and card networks. While the promise of reducing the use of paper money represents a technological innovation in the digital infrastructures, there is a risk that CBDCs may not be recognised as a payment method in the legal framework of central banks.¹⁵¹ This is because the fact that CBDCs can be backed by central banks does not automatically qualify electronic currencies as a store of value in the financial markets. CBDCs should be regulated both as a measure of value and means of exchange: the legality of digital coins should be qualified as *fiat* money in terms of payment instrument with an underlying unit of account.¹⁵²

Unlike stablecoins or cryptoassets, CBDCs could ensure transparency and cost-free transactions avoiding volatility and fluctuations in the securities markets.¹⁵³ However, the success of CBDCs is subject to acceptability by consumers and legal recognition of digital cash which can be challenging due to the difficulties of converting retail payment methods into accessible e-money. In addition, replacing physical cash with digital assets can have consequences in terms of anonymity and traceability of payments: this would undermine the degree of privacy among users. CBDCs would facilitate the disclosure of crime activities (fraud and cyber-attacks) and the sharing of customer transactional data, *eg*, risk profile which are within the scope of

¹⁴⁸ Raphael Auer & Rainer Böhme, “The technology of retail central bank digital currency” (March 2020) BIS Quarterly Review 85 at 88, online: Bank of International Settlement <https://www.bis.org/publ/qtrpdf/r_qt2003j.htm>.

¹⁴⁹ Itai Agur, Anil Ari & Giovanni Dell’Ariccia, *How Could Central Bank Digital Currencies Be Designed?*, at 7, online: SUEF <<https://www.suerf.org/policynotes/9763/how-could-central-bank-digital-currencies-be-designed>>.

¹⁵⁰ Bank of England, *supra* note 146 at 8-9.

¹⁵¹ Hubert de Vauplane, “Cryptocurrencies and Central Banks” in Jelena Madir, ed, *FinTech: Law and Regulation* (UK: Edward Elgar, 2019) at 119.

¹⁵² On this point Emiliios Avgouleas & William Blair, “The Concept of Money in the 4th Industrial Revolution – A Legal and Economic Analysis” (10 March 2020), at 23-24, online: SSRN <<https://ssrn.com/abstract=3534701>>.

¹⁵³ Michael D Bordo & Andrew T Levin, “Central Bank Digital Currency and the Future of Monetary Policy” (2017) National Bureau of Economic Research Working Paper 23711, at 6-7, online: National Bureau of Economic Research Working Paper <<http://www.nber.org/papers/w23711>>.

the *GDPR* framework. On this view, a CBDC could act as a leverage for financial inclusion and open banking: it is inclusive as it provides easy access to money network and digital facilities, and it is open in terms of competition between electronic providers and interoperability between deposit accounts.

This model could also be functional in the context of developing countries with high barriers to enter the financial sector and limited entry to payment systems. At the same time, it could pose a threat for central banks in developed countries due to the risk of establishing alternative channels of money outside the scope of traditional monetary policy.¹⁵⁴ For instance, the ECB has called into question the legal function of a digital currency that represents an effective means of exchange but lacks a store of value both from the perspective of tiered interest rates and swaps with conventional bank deposits.¹⁵⁵ While the ECB acknowledges the benefits of digitisation, it reinforces its position as custodian of the conventional banking system manifesting concerns on the possibility to issue digital currencies in the monetary market. Specifically, the ECB expresses a conservative view on CBDCs maintaining a cautious position for the possible disruptive consequences of replacing paper banknotes with cryptocurrencies.

Introducing electronic payments using central bank money would mark a definitive shift towards financial disintermediation and the digitisation of banking assets. This could require new regulatory requirements for liquidity and capital buffers of credit institutions as well as new standards for bank reserves. Further, the structure of CBDCs would require new supervisory tools to monitor the availability of e-money in times of stress and avoid potential systemic crisis: this would have significant impact on the stability of the monetary system particularly if the CBDC is not backed by the central bank. Another challenge concerns the accessible technology necessary to be adopted for the hybrid functionality of CBDC in view of the non-reliability of smartphones and non-mandatory use of DLT. A possible solution could resemble the open banking innovation: in this way the CBDC could act as money provided through APIs with the authorisation of central banks and customer consent. A CBDC would operate in support of central banks ensuring transparent payments and increasing financial inclusion to unbanked customers. It can thus be argued that CBDC provides an alternative platform to deliver money services and settle payments under the supervision and monitoring of central banks. Using digital money to obviate the costs of intermediation and reduce the asymmetries of banking transactions would favour the inclusive participation of the public in the process of credit allocation.¹⁵⁶ Unlike Libra, the governance of CBDC relies on market-makers ability to trade stablecoins which can have implications for financial integrity and price stability. On this view, the ECB has warned on the potential source of risks that the malfunctioning of stablecoin's asset management functions could cause to the

¹⁵⁴ Christian Barontini & Henry Holden, Proceeding with caution—a survey on central bank digital currency, at 11-12, online: Bank for International Settlements <<https://www.bis.org/publ/bppdf/bispap101.pdf>>.

¹⁵⁵ European Central Bank, *Exploring anonymity in central bank digital currencies*, at 3-4, online: European Central Bank <<https://www.ecb.europa.eu/paym/intro/publications/pdf/ecb.mipinfocus191217.en.pdf>>.

¹⁵⁶ See Omarova, *supra* note 74 at 59. See also Ulrich Bindseil, 'Central Bank Digital Currency: Financial System Implications and Control' (2019) 48 *International Journal of Political Economy* 303 at 304-305.

financial system.¹⁵⁷ The role of issuer and market-makers in the CBDC system is unclear and the regulatory framework generally depends on the jurisdiction in which the stablecoin is arranged.¹⁵⁸ While Libra would create a new global payment system based on cryptoassets, the CBDC initiative is still in its infancy for developing a market in sovereign stablecoins that would be confined to national and regional level.¹⁵⁹ CBDCs lack cross-border infrastructures and access to foreign exchange transactions: their arrangements fall outside conventional monetary policy and their operability depends on the specific design provided by the issuing authority.

V. CONCLUSION

New technologies, platforms and business models in the financial services are gradually displacing incumbents and capturing a growing share of their customer base. Understanding these new business models is linked to fundamental challenges such as industry structure, regulation, consumer attitudes and data governance. There is still a long way short of fully understanding these developments and whether they can be replicated in other jurisdictions. There may be a problem of ‘success bias’ with relatively little attention to the lessons to be learned from less successful efforts of this kind. A more serious concern is that it has yielded little by way of strategic or analytical insight that can help identify what barriers must be overcome to achieve widespread adoption, and which solutions are scalable and can be adopted at an industry level to make a substantial quantitative difference to overcoming barriers to accessing financial services.¹⁶⁰

Since a wide range of FinTech initiatives have impact on ‘financial inclusion’ in both the developed and developing world it is fundamental to ensure equal access to data technologies. Competition in finance, alternative platforms for payments, ‘open up’ systems of accounts and digitisation of transactions are the main benefits brought by these technologies from the perspective of financial inclusion. Banks are adapting to this new world and technology offers new opportunities and new risks to payment intermediation. There is a crucial opportunity for banks which could also occupy a vital space in this trend towards decentralisation and disintermediation both as funders and as gatekeepers and validators, but the question is what changes they will have to make to take advantage of these opportunities. Issues arising from digital technology and financial inclusion are wide ranging and require regulatory attention, especially in the context of AML, CFT and KYC requirements. This is a large gap, especially given that there is a public interest in data access, raising problems with data quality, lack of data standardisation, legacy and failures of data

¹⁵⁷ Mitsutoshi Adachi *et al.*, *A regulatory and financial stability perspective on global stablecoins*, online: European Central Bank <https://www.ecb.europa.eu/pub/financial-stability/macprudential-bulletin/html/ecb.mpbu202005_1~3e9ac10eb1.en.html>.

¹⁵⁸ Bank for International Settlements, *Investigating the impact of global stablecoins* (October 2019), at 17-18, online: Bank for International Settlements <<https://www.bis.org/cpmi/publ/d187.pdf>>.

¹⁵⁹ Robby Houben & Alexander Snyers, *Crypto-assets: Key developments, regulatory concerns and responses*, at 8-9, online: European Parliament <[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/648779/IPOL_STU\(2020\)648779_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/648779/IPOL_STU(2020)648779_EN.pdf)>.

¹⁶⁰ Ambreena Manji, “Eliminating Poverty? ‘Financial Inclusion’, Access to Land, and Gender Equality in International Development” (2010) 73 *Modern Law Review* 985 at 990-991.

integration rooted in weakness in data strategy, data governance and data culture, which in consequence affects a firm's ability to effectively and efficiently comply with regulation.

Many of the most pressing of economic and regulatory issues can be related to distortions in financial markets, especially the misallocation of savings away from productive opportunities, the exploitation of customers and the failure to provide effective risk management and sufficient and appropriate priced savings and credit opportunities to all who need them. FinTech holds promise of addressing many of these fundamental problems in financial services. But the regulatory authorities need support from market actors, both in terms of the development of specific technical solutions tailored to policy challenges and, perhaps more importantly, in shaping a broader understanding of where public policy intervention to promote the social benefits of FinTech is most needed.