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Chapter 9: Digital Currency: A Global Regulatory Framework is Needed

Digitalization is reshaping society, and monetary systems, commerce and banking are no exception.[1] So far, the private sector is driving the change: several specialized payment providers in China, Kenya and India offer e-money to specific geographic regions. However, private digital currencies, crypto or stablecoins have yet to make a dent in mainstream payments.[2]

This could change quickly with the deeper involvement of leading card networks, banks and technology giants. Leveraging their existing platform and network could allow these companies to capture a relatively large part of the payment activities. Visa, the world's largest electronic-payment network, has filed a patent application for a 'Digital Fiat Currency'. In contrast, banks such as Signature Bank and Chase have launched digital currencies (token-based Signet and JPMCoin, respectively) that focus on business-to-business payments. Wells Fargo Digital Cash, however, will support cross-border payments. Facebook is moving forward with a less ambitious version of the Libra that focuses on creating a more traditional payment network tied to local currency.[3]

The public sector has also seen significant developments recently. In April 2020, China became the first major economy to pilot a digital currency, while the Bank of England has published the design principles for a similar approach.[4] Overall, central banks are now expressing a keen interest in the topic and

1 The author would like to thank Oscar Contreras and Benjamin Smith for their assistance and useful discussions on the topic.

2 Some of the specialized payments providers are Alipay and WeChat in China, PayTM in India, and Moffer-Pesa in Kenya. Other private initiatives are cryptocurrencies like bitcoin or stablecoins like Tether, TrustToken's TrueUSD, Circle's USD Coin, DAI, or the Universal Protocol Alliance's UPUSD and UPEUR.

3 Nathaniel Popper and Mike Isaac, 'Facebook-Backed Libra Cryptocurrency Project is Scaled Back', in *The New York Times*, 16 April 2020, https://www.nytimes.com/2020/04/16/technology/facebook-libra-cryptocurrency.html.

4 Bank of England, *Central Bank Digital Currency. Opportunities, Challenges and Design*, A Discussion Paper, March 2020, https://www.bankofengland.co.uk/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design-discussion-paper.

more than 70 per cent are engaged in Central Bank Digital Currency (CBDC) related work.[5]

The multiplication of private digital currencies and the potential for CBDCs emphasize the necessity of a global framework. More specifically, it shows the need of requirements and standards to ensure that all these initiatives lead to an improvement of financial inclusion, security and consumer protection, efficiency in domestic and cross-border payments, and resilience of the payments landscape.

So far, much of the regulatory initiatives are uncoordinated. They are segmented across countries and focus on the extension of existing models to the potential introduction and form of CBDCs, on regulations of private cryptocurrencies, and on the implementation and regulation of various types of fast payment systems. Most ignore that, ultimately, the new innovative money instruments may not fit within the existing regulation and legacy systems. Indeed, technological innovation challenges current practices and existing legal and regulatory jurisdictions, either geographic or sectoral.

To avoid unnecessary regulatory and monitoring burdens, as well as regulatory arbitrage, an international network of regulators, such as the G20, needs to play a more decisive role in shaping these developments, from the innovation to the regulation. This would also ensure they contribute to global economic growth and financial inclusion.

This chapter lays out a few elements that must be part of the discussion when designing the global oversight framework for a digitalized financial world to ensure the outcome is a pertinent, inclusive and adaptable system of standards, rules, practices and regulations. So far, most of them have received less attention than more technical issues such as personal privacy, the architecture of a digital currency system or their potential impact on the financial system.

First, the chapter highlights two necessary requirements in the design of digital currencies that are essential to their success as well as to their contribution to economic growth and financial inclusion: transparency and interoperability. Then, it discusses the oversight framework that will support the global implementation of these and other requirements, and facilitate the emergence of a less fragmented approach to the global digital regulation of finance. More specifically, it identifies trade-offs among global regulatory issues encountered when

5 Codruta Boar, Henry Holden and Amber Wadsworth, 'Impending Arrival – a Sequel to the Survey on Central Bank Digital Currency', in *BIS Papers*, No. 107 (January 2020), https://www.bis.org/publ/bppdf/bispap107.htm.

focusing on capital access, market structure and consumer experience. It shows that developed and less developed countries tend to have different sets of regulatory priorities and propose a road map to bridge these gaps when discussing global policies.

9.1 Requirements: interoperability and transparency

The digitalization of the financial world will support public policy goals such as financial inclusion and enhanced effectiveness of cross-border transfers if it creates a digital ecosystem that is trustworthy, convenient, easy to use, accessible, fast and affordable. For a digital currency, this means it has to demonstrate the integrity of its design and overall architecture (transparency) and it has to work well across different platforms and functions (interoperability).

Transparency

The creation of Bitcoin in 2008 coincides with a time where the level of trust in governments and banks was low. This attempt to shift the trust from banks and states to algorithms and encryption software did not succeed as much as expected. Yet it provides an excellent illustration of the necessity for a digital currency to convince its users of the integrity of its design and overall architecture. This is true whether the digital currency is from a decentralized or centralized system.

A distributed network, such as Bitcoin, has to synchronize, validate and record token transactions in a replicated database. Such a system includes incentive mechanisms (consensus protocols) to ensure that the group of connected computers agree on the transactions that it is recording.[6] These consensus protocols are necessary due to the decentralized nature of the cryptocurrency networks: the servers that participate in the network are untrusted.[7]

A centralized system, such as a CBDC, faces a different problem. Because the set of activities will go beyond the trusted current mechanism, the design and architecture of the CBDC platform need to be known to all to create an appropriate level of integrity and verification in the system. The central bank will have

6 The best-known example in cryptocurrencies is Proof of Work (PoW), which is also known as Bitcoin mining.

7 David K.C. Lee and Ernie G.S. Teo, *The New Money: The Utility of Cryptocurrencies and the Need for a New Monetary Policy*, 23 May 2020, https://ssrn.com/abstract=3608752.

to be clear about the various activities and capabilities of each participant in the system. It will have to share the code used to disclose the CBDC functions and the responsibilities and liabilities of key actors. The trust in the CBDC will come from the ability for all stakeholders to assess the computer code, to check if it functions as disclosed, to look for bugs and to test its resilience to hacks. Stakeholders need to trust the code to trust the CBDC.

Transparency is not a new concept in financial services regulation, where transparency and disclosure by regulated entities, and their activities, systems and processes is a core element. The same logic should apply to all digital currencies.

Interoperability

The digitalization of the economy may lead to a more segmented world as each technological platform may have an incentive to develop a self-sustainable ecosystem. Yet digital currency users who hold an account in a bank or non-bank financial institution should be able to send and receive money from anyone else at low latency and cost. In other words, a digital currency has to be multi-functional and multi-platform.

Unlike physical cash, whose interoperability declines outside of its domestic context, digital money can have excellent interoperability. Credit cards help illustrate some of the expected benefits: they allow users to spend money in different countries (because the credit card company and banks convert to the appropriate fiat currency) and online. In contrast, cash is mostly limited to domestic transactions.

It is highly likely that the future digital world will be a collection of disparate platforms and ecosystems. The success of any digital currency, whether a private or public initiative, will rely on its broad usage across them. Furthermore, and especially for CBDC, interoperability with existing and future systems is critical to ensure its adoption and longevity.[8] Finally, a digital currency designed to function on or in conjunction with any platform will have a significant role in commerce: by working almost everywhere, it will create a simple store of value, and will facilitate fast, efficient and immediate payments.

8 Markus K. Brunnermeier, Harold James and Jean-Pierre Landau, 'The Digitalization of Money', in *NBER Working Papers*, No. 26300 (September 2019), https://scholar.princeton.edu/markus/node/154836.

9.2 Elements for an inclusive and adaptable global framework

Requirements for the design of a digital currency need to be standardized and implemented across the world as there will be more than one digital currency. A global regulatory framework is a necessary complement to ensure global standards in the design and their implementation. Furthermore, this internationally coordinated effort is the only solution to deal with the disconnect between geographic regulatory jurisdictions and coverage of the digital platforms that expand beyond countries' borders.[9] Added to that, the increasing cross-border use of digital currencies, the growing presence of non-financial companies providing financial services and the fast pace of these changes will very soon make the current regulatory and monitoring framework used to assess financial stability obsolete.

The new framework should include concepts such as governance for data usage and exchange. The network of relevant authorities needs to grow beyond financial regulators to include technology-related ones. Finally, the standardized regulations, rules and practices need to consider how digitalization impacts countries differently.

The level of development, needs and concerns of the country drives its regulatory focus, leading to a segmented landscape of initiatives dealing with technological change in finance. There is a clear delineation between developed and less-developed countries; in terms of issues related to capital access, between financial inclusion and financial stability; in terms of issues related to market structure, between market efficiency and antitrust; and in terms issues related to consumer experience, between consumer welfare and data usage.[10]

Capital access: financial inclusion and financial stability

MercadoLibre in Latin America, Alipay, and WeChat in China, and M-Pesa in Kenya and India are often used to illustrate how tech firms' involvement in financial services helps financial inclusion.[11] Large tech companies rely on their abilities to pool, process and use pertinent information to provide financial services

9 Ibid.

10 Claude Lopez and Benjamin Smith, *It's Bigger than Big Tech: A Framework to Understand the Economy of Tomorrow*, Milken Institute, 2020, forthcoming.

11 Bank for International Settlements (BIS), 'Big Tech in Finance: Opportunities and Risks', in *Annual Economic Report 2019*, June 2019, p. 55–79, https://www.bis.org/publ/arpdf/ar2019e3.htm; Dennis Ferenzy, *A New Kind of Conglomerate: BigTech in China*, Institute of International Finance (IIF), November 2018, https://www.iif.com/Portals/0/Files/chinese_digital_nov_1.pdf; Tobias Adrian and Tommaso Mancini Griffoli, 'The

to the untapped population. Consumers can use smartphones and free internet access to open bank accounts, pay for goods electronically and apply for loans.

In contrast, in the United States, strategic partnerships between large tech companies and incumbent financial institutions raise concerns regarding financial stability. The tech company can provide a third-party service to a financial institution, such as Capital One using Amazon Web Services, or offer a financial service through its digital platforms with a financial institution managing the back-end delivery, such as the Apple Card resulting from the partnership between Apple and Goldman Sachs. In both cases, a single disruption to the tech company could have downstream effects on the financial institutions, magnifying the risk to the broader financial ecosystem.[12]

Similarly, most international institutions focus on the potential risk these companies may represent to financial stability. These companies dominate the provision of some financial services and the lack of alternative, if they were to fail, is a concern: a sudden loss in consumer trust for Alibaba could lead to a mass exodus of deposits, with the potential to disrupt the entire interbank funding system in China. Alibaba owns one of the world's largest money market funds.[13]

Market structure: market efficiency and antitrust

A country's needs in infrastructure – physical and digital – drive the effects of tech companies on its market structures and regulatory focus.

Emerging and developed economies' regulators and international organizations have praised the efficiencies brought by tech companies to domestic markets, from developing the necessary infrastructure to lower costs, improved quality of goods and services and increased amount of capital investment in research and development.[14]

In contrast, antitrust regulators in developed economies focus on the lack of competition inherent with the dominant position of large companies in some markets. Their ability to invest large amounts of capital into new technologies

Rise of Digital Money', in *FinTech Notes*, No. 19/01 (July 2019), https://www.imf.org/en/Publications/fintech-notes/Issues/2019/07/12/The-Rise-of-Digital-Money-47097.

12 Financial Stability Board (FSB), *BigTech in Finance. Market Developments and Potential Financial Stability Implications*, 9 December 2019, https://www.fsb.org/?p=19398.

13 Ibid.; Dennis Ferenzy, *A New Kind of Conglomerate: BigTech in China*, cit.

14 In China, Alibaba was essential in the expansion of the freight and logistics infrastructure to rural areas, a necessary step to gain access to their mostly untapped consumer base.

such as artificial intelligence and machine learning allows them to increase their offering of products and services while controlling the associated costs.[15] While acknowledging the efficiency gains, European officials have raised concerns derived from this dominant position, such as killer acquisitions, limitation of consumer freedom and manipulations of the consumer decision-making process.

Consumer experience: consumer welfare and data usage

The contribution of technology to both capital access and market structure relies on the ability to access and process data collected from the customer.

The benefits are unquestionable. Technology is the main contributing factor in the lowering of the remittance system's cost and the increasing speed of transactions.[16] The use of artificial intelligence and machine learning helps identify fraud and other criminal activities.[17]

But tech companies' usage and management of consumer data have been a concern for regulators, mainly from Europe and the United States. The issues raised range from digital authoritarianism and the spread of misinformation to systematic bias in the financial services sector, data privacy and data ownership rights.[18]

Data access, usage and management are at the core of the technological innovation that improves access to services – financial and others. This is especially the case for underserved populations, often located in less developed countries. Yet Europe drives most of the regulatory efforts related to data protection, dictating the terms of the regulatory framework based on its priorities.

15 Luigi Zingales and Filippo Maria Lancieri, *Stigler Committee on Digital Platforms. Policy Brief*, September 2019, https://www.chicagobooth.edu/research/stigler/news-and-media/committee-on-digital-platforms-final-report; Digital Competition Expert Panel, *Unlocking Digital Competition*, London, HM Treasury, March 2019, https://www.gov.uk/government/publications/unlocking-digital-competition-report-of-the-digital-competition-expert-panel.

16 In Asia, Alibaba's subsidiary Ant Financial provides remittance services that are cheaper and quicker than the ones offered by financial institutions. BIS, 'Big Tech in Finance: Opportunities and Risks', cit.

17 Dennis Ferenzy, A New Kind of Conglomerate: BigTech in China, cit.

18 Ibid.; Luigi Zingales and Filippo Maria Lancieri, *Stigler Committee on Digital Platforms. Policy Brief*, cit.; Kathryn Petralia et al., 'Banking Disrupted? Financial Intermediation in an Era of Transformational Technology', in *Geneva Reports on the World Economy*, No. 22 (2019), https://voxeu.org/node/64605.

Unchallenged, these standards will become global and could adversely impact economic growth in other countries with different needs and challenges.

Conclusion

The digitalization of the economy will not lead to one global and unique system but to several platforms. A successful digital currency would have to function in most of them. Yet these platforms will expand beyond countries' regulatory and monitoring jurisdictions, emphasizing the need for a new global oversight framework.

Interoperability and transparency are essential requirements to ensure that technology leads to financial inclusion as well as cost reduction and speed increase for cross-border transfers. They will also provide a level of competition that will continue to encourage the fast pace of innovation.

They need to be complemented by a global coordinated effort to implement these requirements as well as to design a set of rules, regulations and best practices that will ensure the good functioning and monitoring of the financial system.

This chapter suggests reorganizing financial regulatory discussion related to the creation of this oversight framework around three dimensions: capital access for financial integration and financial stability, market structure for market efficiency and antitrust, and consumer experience for consumer welfare and data usage. This classification of the regulatory concerns allows us to understand how they are related to each other and why different countries prioritize them differently. A country may prioritize financial inclusion over financial stability, depending on its level of development, but that may change with the evolution of its economy. Similarly, underserved communities, individuals or companies in developed countries will benefit from a more nuanced approach to financial regulation.

Digitalization imposes a new way of thinking to fully exploit the benefits of technology. An idea supported by the G30's recommendation: 'the benefits of network effects in payments should be set against the detrimental effects of reliance on dominant private firms'.[19] The goal is to create an inclusive framework that supports inter-jurisdiction coordination and minimizes the risk of regulatory fragmentation.

19 Group of Thirty, *Digital Currencies and Stablecoins. Risk, Opportunities, and Challenges Ahead*, Washington, July 2020, p. 8, https://group30.org/publications/detail/4761.

The coordination of international standards will ensure technical interoperability between digital currency infrastructure and payment and banking systems, as well as for cross-border transfers. Digital currencies will force an evolution of the financial services, yet there is a strong potential of complementarity between digital money within the banking system and outside it.[20] As previously discussed, the success of a digital currency depends on the trust users have in it. So far consumers in Africa and Asia tend to trust telecommunications and social media companies for financial transactions more than regular banks, while in advanced economies, they tend to trust CBDC more than tech or credit card companies.

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