

DIGITAL FUTURES ASIA

Future of FinTech in Asia: Technology Governance in a Transitioning Political Economy

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This essay is part of IT for Change's Digital Futures in Asia series. In a post-Covid context, the rapidly unfolding datafication of the economy has acquired heightened momentum. The Digital Futures in Asia series looks to assess and understand the impact of critical digital transformations in the Asian region in sectors such as work, finance and social media – which are at a crucial juncture and stand to be wholly transformed through the process of digitalization.

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I. Introduction

1.1 Rationale and Context

Equal and open internet access is a widely recognized fundamental right. Yet, restrictions on content posted online and its censorship, have been on the rise, particularly on account of the Covid-19 pandemic, specifically in developing regions globally. In the third quarter of 2020 alone, Facebook censored 22.1 million posts relating to hate speech, 3.5 million on harassment, and more than 19 million posts on graphic content. In India specifically, more than 6,000 takedown orders were issued by the central government to social media companies. As digital technologies become integral to our personal lives, the protection of human rights and freedom of expression on the internet has become a major transnational challenge.

Asian economies with their large numbers of digital consumers have become major play-grounds for both established global Big Tech players and emerging local FinTech platforms. With a cumulative GDP of around US\$ 30 trillion, these economies are home to a majority of the world's population (World Bank, 2020). Asia is also home to the largest number of FinTech hubs and growing digital finance ecosystems (Global FinTech Report, 2020), even as much of the region is bogged down by infrastructural deficits in the provision of banking and financial services (Agorize, 2016). These deficits have propelled digital financial intermediaries to fulfill the demand for financial services, albeit in an uneven way.

The Covid-19 pandemic has given a further push to the already rapid growth of the digital financial sector in the region. Though this fast-paced growth in digital finance has facilitated cost-effective and efficient transactions for a large number of consumers, the transformation has also posed new risks for people's rights, bringing new challenges for policymakers and regulators in the region. On average, the number and value of transactions reported by FinTech firms globally rose 13 percent and 11 percent respectively in the first and second quarters of 2020 compared to the previous year (CCAF, 2020). FinTech app installations grew 70 percent in the developing countries of Asia between March 2019 and March 2021, according to Tech Wire Asia. Big FinTech companies¹, particularly in India, Indonesia, and Philippines, garnered big-ticket venture capital (VC) backed investments during the pandemic (KPMG, 2021).

Growing incidents of predatory lending, upselling and cross-selling of digital services by using unauthorized user payment data, and discriminatory credit scoring practices are making low-income groups even more vulnerable (Boeddu et al., 2021). In the absence of robust regulations, FinTech businesses could gain undue power and potentially impact social and economic inequalities. Against this backdrop, there is a need for an in-depth understanding of the emerging digital finance landscape, market interactions, and business practices of FinTech players. There is also a need for deeper inquiry of

¹The FinTech companies valued over USD 1 billion are referred as Big FinTech companies in this study.

the regulatory actions and policy environment that is governing the sector. Given these problems associated with the FinTech sector, the study brings out the key trends and business practices of sectoral players in key Asian countries to the fore and analyzes their impact on users, their own market ecosystem, and the regulatory and policy environment. The study fills the current knowledge gaps in literature around FinTech platforms from digital technology governance point of view and creates future policy pathways to achieve justice-oriented goals.

1.2 Conceptual Framework and Research Scope

The study focuses on the ‘Future of Finance’ theme. This includes an in-depth enquiry of ongoing developments, current trends, and key policy measures. First, the study delves into the FinTech/digital finance landscape detailing country-level trends in Asia. It then maps the current regulatory/policy environment and gaps, and finally, outlines a future outlook for the sector, offering possible policy paths that can allow the sector to achieve equity and justice-oriented goals. The research is grounded in Asia, focusing on three sub-regions of South Asia, Southeast Asia, and East Asia. Furthermore, the research uses case studies to analyze and compare the FinTech landscape in different countries. The countries selected include those that have large FinTech sectors, namely India in South Asia, Indonesia and Philippines in South East Asia, and China and Japan in East Asia.

This study investigates the models of innovation governance and regulatory practices adopted by different countries/regions to govern the FinTech sector both in anticipatory terms (for example, by deploying sandboxes and test beds before going to the market) and on a post-hoc basis (conventional standard-setting and risk management practices). Towards this, the study uses the Organization for Economic Cooperation and Development’s (OECD) Technology Governance framework to conceptually frame this research (OECD 2018). This framework allows the research to explain not only the formal government activities that govern funding, innovation, regulation, and standard-setting policies, but also the activities of firms, civil society, and communities/citizens that use these technologies. In its broadest sense, the framework represents ways in which both individuals and organizations shape technology, and conversely, how technology shapes the social order (Winickoff & Pfotenhauer, 2018; The Commission on Global Governance, 1995; Green, 2014.) The study evaluates each country on three imperatives proposed in the OECD technology governance framework, namely, 1) Anticipatory Governance; 2) Inclusive Governance; 3) Directionality of the Governance. Additionally, the study also uses a developmental state lens (Johnson 1982; Evans 1995) to analyze five Asian country case studies selected for this research. Since the Asian Developmental State model gives rise to the sociotechnical imaginaries of accelerated FinTech adoption in the region, taking inspiration from Peter Evans concept of Embedded Autonomy (Evans, 1995) can be a useful lens to understand how FinTech development is shaping policy visions in the region. In this context, the study focusses on ways in which the FinTech sector is shaped by the prevailing policy environment, the entrepreneurial ecosystem, and the funding mechanism. Conversely, it will help us understand how these platforms/businesses, in turn, produce risks for communities that use them.

1.3 Methodology

The study relies on two methods to gather and analyze data. First, it uses the country case study method (see Table 1), analyzing different regulations and assessing them on their governance merit. Second, the study relies on expert interviews in each of the selected countries to gain insights into building the case studies. A list of interviewees is appended in the annex. Additionally, the study is supplemented with available secondary data.

Table 1. Country Case Studies

Region	Countries	Focus Area	Method
East Asia	China	FinTech governance in the era of “common prosperity”	Interviews, policy analysis
	Japan	In pursuit of a “FinTech Miracle”	Interviews, policy analysis
	Indonesia	FinTech governance in an aspirational developmental state	Interviews policy analysis
	Philippines	Emerging FinTech regulatory regime	Interviews, policy analysis
South Asia	India	FinTech governance in a middling state	Interviews, participant observations, policy analysis

2. Evolution of the Current Digital Finance Landscape

Over the last few decades, the emergence of digital technologies has profoundly impacted globalization processes, traditional business models, and organizations (Fenwick et al., 2020). The financial services sector has been an early adopter and an intensive user of technology, and the combination of finance and technology have, in many ways, accelerated globalization (Milian et al., 2019; Warf, 1989). FinTech companies develop new technologies and business models that disintermediate, simplify and reduce transaction costs, and partially anonymize financial services (LaGarde, 2018).

The digitalization of financial services started as early as the 1990s, initiated by Citibank’s Financial Services Technology Consortium (Arner et al., 2016). This was also when the term ‘FinTech’ was used for the first time to broadly define the role of information technologies in global wholesale and retail finance. After the 2008 financial crisis, the term FinTech assumed greater significance and emerged as a distinct sector. The contemporary FinTech sector is accessed by users through mobile networks and smartphone applications linked to cloud computing technology (Wójcik, 2020).

The evolution of the sector can be broadly classified into three phases (Arner et al., 2016).

Though scholars like Giancarlo Barbiroli (2013) argued that the first phase of FinTech started with the introduction of the telegraph in the mid-nineteenth century and provided fundamental infrastructure to facilitate global financial transactions, Jill Hills asserts that the introduction of the Automatic Teller Machine (ATM) in 1967 by Barclays Bank marked the beginning of the modern evolution of FinTech (cited in Hochfelder, 2002). The second phase can be traced to the late 1980s when financial services became the single largest purchaser of IT and software products and services (Holley, 2015). In the last phase, modern-day FinTech emerged as part of the digital business model that evolved after the 2008 global financial crisis (Lerner, 2013). The crisis led to a deterioration in the consumer perception of conventional banking and financial systems (Agarwal et al., 2014) and thus provided the grounds to bring about innovative technologies and business models that could serve as alternatives to the existing financial services paradigm and operate outside new regulatory obligations (e.g., Dodd Frank Act in the USA, Basel 3) (Ferrari, 2015). In the west, the financial crisis and the subsequent behavioral changes among banking consumers, coupled with regulatory changes in the financial sector, shaped the evolution of modern FinTech.

In the post-financial crisis period, the platform business model gained traction to shape financial intermediaries. The deployment of socio-technical layers — infrastructure, data, and users — is a key feature of this model (Choudary, 2015) which has the potential to rapidly scale up to gain market dominance in a shorter period and with limited investments in fixed capital and other assets (Parker et al., 2016; Kenney & Zysman, 2018). The proliferation of the platform model is based on the premise of revenue generation that monetizes combinations of user data with ‘platform ready’ external data on the internet (Helmond, 2015; Langley & Leyshon, 2020). The FinTech sector is continuously shaped by market players, the regulatory-policy community, and consumers. Conversely, the sector is also shaping consumer behavior, the regulatory environment, the policy framework, and the overall technology governance. The evolution of FinTech broadly represents the technology governance process. As defined by OECD, technology governance represents the sum of ways in which individuals and organizations shape technology and how, conversely, technology shapes the social order (OECD 2018; The Commission on Global Governance, 1995; Green, 2014).

The adoption and use of FinTech has further accelerated during the Covid-19 pandemic. The need for digital connectivity to replace physical interactions between consumers and service providers, and in the processes that produce financial services, are going to be even more critical as economies, financial services providers, businesses, and individuals navigate the pandemic and the eventual post-Covid world. Already, the pandemic has accelerated the shift to digital payments (Auer et al., 2020a). It has also intensified e-commerce (BIS, 2020; Alfonso et al., 2021), which may benefit Big Tech firms and their activities in finance. Countries with more stringent Covid-19 policies and lower community mobility experienced a greater spurt in financial app downloads in the wake of the outbreak (Didier et al., 2021).

FinTech is often promoted as a key enabler of efficient and competitive financial markets and it is increasingly popular in policy discourses that it could help in expanding access to finance for un-banked and underbanked population (Boeddu et al., 2021). As financial transactions move to the digital space, the risks associated with the analog space are

extended into the digital realm. Besides reproducing pre-existing problems, platformization also brings new risks to users as their personal data is stored, processed, and manipulated to increase the revenue stream of businesses. There are a host of regulatory issues to consider – biometrics-based identity and authentication, data protection, algorithmic decision-making, data ownership, cyber security, and so on. What makes FinTech regulation a complicated process is the issue of jurisdictional overlaps between technology/telecom regulators and financial regulators such as central banks – a problem not unknown in the developed parts of the world but heightened in Global South regions. In Indonesia, for instance, while data privacy is under the jurisdiction of the Ministry of Telecom, payments are regulated by the Indonesian Central Banking (Bank Indonesia or BI) and lending activities by the Financial Services Authority (OJK) (Aprilianti & Dina, 2021). This presents a regulatory grey zone. More recently, financial regulators have begun to recognize the high risks associated with leaving the sector in a regulatory void. A report on digital consumer rights in the country suggests that, currently, personal data protection is covered under 32 laws and associated regulations, and there is no single data protection agency that deals with data protection violations in Indonesia (Aprilianti, 2020). There are cases of micro-credit and other alternative lending platforms resorting to predatory lending practices that push vulnerable groups into debt traps (Were, 2018).

Similar problems of jurisdictional overlaps also exist in India and China, although these countries have made efforts in recent times to bring inter-agency collaboration to regulate FinTech (World Bank Group, 2019). Achieving jurisdictional compatibility between technology and financial regulatory frameworks is a common challenge faced by countries as there are evolving new data regulatory regimes being deliberated upon in most of the developing world (Taylor et al., 2020). In recent years, a revision of regulations is underway to amend older laws and formulate new ones to respond to the evolving FinTech regime across Asia (Uytsel & Ying, 2020). These efforts include developing a collaborative mechanism across regulators in the domains of technology, telecom, banking, insurance, and other sectors.

2.1 FinTech as a Solution to Financial-Inclusion-based Development in the Global South

A growing body of critical research is focused on FinTech businesses, particularly in the Global North. This work has mainly targeted digital and mobile payments (Maurer, 2012; O'Dwyer, 2015), cryptocurrencies and distributed ledger technologies (Golumbia, 2016; Tapscott & Tapscott, 2016), asset management and 'robo-advising' (Haberly et al., 2019), and crowdfunding and peer-to-peer (P2P) lending (Langley & Leyshon, 2017; Clarke, 2019). However, much of the research and policy-related literature on FinTech has been concerned with prioritizing 'financial inclusion' at the 'bottom of the pyramid' in the Global South (Mader, 2016; 2018; Aitken, 2017; Langevin 2019). The wide-ranging developments in the FinTech sector also reflect the continuity and change that has been underway in the 'developmental states' of China and other East Asian countries and to an extent in South East Asia and South Asia. (Gruin, 2019; Gruin & Knaack, 2020; Rethel & Thurbon, 2019).

FinTech platforms are increasingly being looked at as an effective way to expand financial inclusion in several parts of the world where populations are unbanked (lacking access to formal financial instruments such as banking and credit) or underbanked (having poor

access to financial instruments for credit and savings). Using the smartphone as a delivery mechanism, FinTech platforms have gained rapid market traction, especially in countries where formal financial institutions have failed to offer the basic financial services to a large section of the population, or where there is a problem of last-mile reach, or where the banking infrastructure is fragile. The emergence of FinTech is thus viewed as a significant technological innovation to the challenges associated with traditional banking and perhaps seen as a magic bullet. This techno-solutionism (Morozov, 2013) is embedded in business, policy, and media discourses. As a result, FinTech is promoted uncritically and adopted with favor (Brown & Piroška, 2021). Table 2 shows the breakup of the unbanked population, the number of mobile connections, and the number of internet users to bring out the often-stark disparities in the banking penetration and internet usage across Asia.

Table 2: Financial Inclusion and Internet Penetration

Region	Countries	Unbanked Population	Mobile Phone Connections	Internet Users
East Asia	China	19.8%	112%	71%
	Japan	1.8%	151%	92%
South East Asia	Indonesia	51.1%	124%	64%
	Philippines	65.5%	159%	67%
South Asia	India	20.1%	78%	50%

Source: Acuant, 2020², World Bank & ITU 2020³.

For example, in countries like Indonesia and Philippines, which have high numbers of mobile connections and a high concentration of unbanked populations, FinTech is promoted as an important instrument to fill the access gaps arising out of infrastructural deficits, banking on proliferation of internet and cost-effective mobile connectivity. In China and India, governments facilitated FinTech sectors' growth in a regulatory void targeting faster financial inclusion but not considering the new risks, particularly in the areas of consumer protection and surveillance capitalism, emanating from deploying new technologies (Bernards, 2019).

2.2 Pandemic-Led Acceleration

The pandemic has accelerated growth in the FinTech sector and enabled players to expand their user base and offer new services. Asia, with its growing middle-class consumers, has become the perfect market for both local and global players. The FinTech sector in Asia first took firm root in China in the early 2000s owing to the lack of strong banking and financial infrastructure. In 2018, China's FinTech investments reached USD 25.5 billion, amounting to about half of the global total of FinTech investments that year. The spread of the Covid-19 virus also precipitated the use of FinTech in India, which saw the adoption of GooglePay,

² <https://www.acuant.com/blog/the-worlds-unbanked-population/>

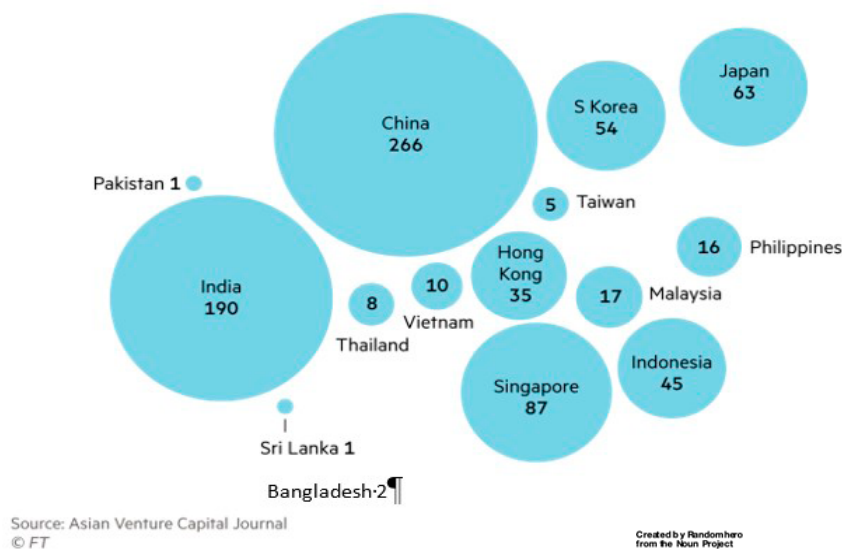
³ <https://data.worldbank.org/indicator/IT.NET.USER.ZS>

PayTM, and other apps at a larger scale than in the previous years, rising by 14, 33, and 33 percent respectively between 2019 and 2020 (Statista 2020).

In the last few years, China has also witnessed a rise in ‘Super Apps’ where Chinese Big Tech companies such as Baidu, Alibaba, and Tencent (BAT) have developed their own digital app ecosystems. FinTech is at the core of these applications. The breadth of digital services these companies offer have given them the nomenclature of Super Apps. Their platforms are used for e-commerce, ride-hailing, payments, lending, and insurance services offerings as customer lock-in strategy (Ruehl & Kyngé, 2019). These Super Apps have found a renewed vigor in the aftermath of the pandemic. As a World Bank press release in December 2020 pointed out, the penetration and adoption of FinTech had multiplied during the pandemic as the spread of the virus severely limited face-to-face interactions and forced people to adopt FinTech solutions.

Source: Asian Venture Capital Journal, Financial Times,⁴Tracxn

Figure 1: Startups that received venture capital/private equity funding between Dec 2016 and Dec 2019.



In May 2021, Indonesia’s two largest consumer technology players – the primarily ride-hailing company Gojek and the largest e-commerce company Tokopedia – merged to form the largest in-ternet corporation in the country. Both these companies offer payment and financial services to their users (Gilchrist, 2021)⁵. The so-called Super App phenomenon has caught up elsewhere in Asia as well, which is becoming home to the largest number of such companies. There is concern that these app-driven platforms controlled by few dominant players and even fewer VC and private equity (PE) investors could determine market rules and resort to ‘winner takes all’ schemes which will lead to anti-competitive behavior and abuse of market dominance (Asia financial, 2021). Many of the innovations in FinTech extend beyond financial services, where they have enabled a range of new fund-raising and investment opportunities for platforms. Currently, aspects of FinTech that raise particular concerns from the perspective of illicit finance and tax abuse include crypto currencies, blockchain technology, data mining, P2P lending, crowdfunding, money transfer services, and smart contracts. There are concerns that FinTech combines many elements, from encrypted transactions to hidden identities and e-wallets in cyberspace, each of which is perfectly geared to enable financial crimes and tax evasion.

⁴ <https://www.ft.com/content/0788d906-1a7b-11ea-97df-cc63de1d73f4>



⁵ <https://www.cnn.com/2021/06/09/goto-how-gojek-and-tokopedia-teamed-up-in-indonesias-biggest-merger.html>

3.Regional Case Studies

The case studies in this section – set in China and Japan in East Asia, India in South Asia, and Indonesia and Philippines in South East Asia – are used to explain the recent policy and regulatory developments that respond to the proliferation of FinTech businesses and digital financial services platforms. This section also maps how technology, users, and policy are shaping FinTech governance in each region. According to the World Bank's World Development Indicators, the countries selected in this study broadly fall under the lower- or upper-middle-income category, except Japan which is classified as a high-income country. Asia's technology development trajectories and associated policies could also be viewed through the lens of Chalmers Johnson's Developmental State. Japan's developmental state model inspired the East Asian and South East Asian countries to provide growth and stability while allowing the state to direct state-society-business relations (Ulrike, 2012; Sato, 2019). Though Japan drifted from the developmental state model in the late 1990s, some East and South East Asian countries, notably China, have embraced it and directed their policy vision to adopt digital technologies without regulating the related harms and only focusing on digital technology-led growth (Gruin & Knaack, 2019). FinTech startups have thrived in this environment where the state provides favorable conditions aimed at growth with few regulatory obligations for FinTech investments and business models to operate (Casanova, 2021). In recent years, there have been more concerted efforts to make rules for FinTech companies as their market dominance and influence over social life have grown considerably in Asia.

3.1 East Asia: China and Japan

3.1.1. China: FinTech governance in the era of “common prosperity”

	FinTech in Perspective	
	Overall size of the economy	USD 14 trillion
	Digital economy as percentage of total GDP	6% (narrow definition), 30% (broad definition)
	Size of 7 FinTech sectors	USD 60 billion

Source: Statista 2020, UNCTAD 2019

Innovations in the Digital Financial Services (DFS) in China beyond internet banking and electronic payments date back to the beginning of the last decade (Zhou et al., 2015). Since 2010, digital technologies have enabled the Chinese financial services industry to undergo rapid changes that unfolded at an unprecedented scale and pace (Chen, 2016). For instance, the two leading mobile payment service providers, Alipay, part of Alibaba

group, and WeChat Pay, owned by Tencent, have around one billion active users each (Klein, 2019). For most users of these platforms, digital payment ecosystems that allow them to pay utility bills, purchase travel tickets, make doctor's appointments, buy entertainment, shop online, and invest in financial products, have become an integral part of their lives. This development, especially its promotion of financial inclusion, has attracted broad international attention (Frost et al., 2019). China's 2020 Government Work Report stated that the supervision of FinTech firms is necessary to ensure that innovation occurs under proper regulation (Hsu, 2021).

According to a report by Montaigne, *China's FinTech: The End of the Wild West*, the development of the sector and the evolution of its regulatory environment can be categorized into three phases (Zhu, 2021). In the first phase, between 2000 and 2010, the Chinese Development State favored the FinTech sector's freedom to innovate, develop, and grow over its regulation. The Guidelines for Financial Innovation of Commercial Banks, introduced by the China Banking Regulatory Commission (CBRC) in 2006, was the only regulation that existed to govern the FinTech sector during this period. In the second phase, which extended between 2010 and 2015, efforts were made to regulate the sector. As early as 2010, the People's Bank of China (PBC) mandated that all "non-financial payment service-providers" seek appropriate approvals and licenses from PBC. From the same year, new regulations were introduced for the oversight of payments and P2P lending. Finally, in the third phase, there have been clear efforts to strengthen regulations since 2015, reaching a peak in 2020 and 2021 as China's banking, financial services, information technology and competition regulators 6 7 ushered in a number of regulations aimed at FinTech companies during this period. Between 2015 and 2021, about 20 regulations that would affect consumer protection, tighten data protection, stem systemic financial risks, monitor anti-competitive behavior, and curb predatory lending practices were passed. Rocky Tung, the Director of policy research at FSDC Hong Kong, remarked that China's FinTech regulations will provide stability to the sector. These regulations are a reflection of the direction in which the state would like to steer the overall economy. Companies will continue to find ways to provide quality products and services even in the current tighter regulatory environment.

The recent developments that unfolded in China with reference to the Ant Group's initial public offering (IPO) and its subsequent suspension on both Shanghai and Hong Kong stock exchanges by the regulators came as a surprise (PBC Press Conference, 2020). Pan Gongsheng, deputy governor of the PBC, urged Ant Group to align with the priorities of the state during a press meeting in December 2020, inviting the FinTech giant to "return to its origins in payment services". Ant Group's listing suspension might have caught the attention but the overall direction to bring rule-based FinTech governance needs to be seen in the context of how the State is shaping its future policy vision to reign in Big Tech firms' sway over the public sphere and market dominance.

In 2019, the PBC issued a three-year FinTech Development Plan aimed at addressing the risks and challenges posed by FinTech development in China. One of the key missions of the plan is to strengthen regulation and establish basic rules to govern FinTech sector innovations (China Banking News, 2019). In the same year, the regulator introduced a regulatory sandbox in Beijing and expanded it to six other cities which covered 11 projects by June 2020. The

⁶<https://www.globallegalinsights.com/practice-areas/fintech-laws-and-regulations/china>

⁷<https://www.institutmontaigne.org/ressources/pdfs/publications/china-fintech-end-of-wild-west-note.pdf>

sandbox allows entities to test their products, services, or solutions within a well-defined space under the supervision of regulators for an agreed duration (Caixin, 2020). Under the plan, all financial activities are under regulatory coverage and a license is required to conduct financial business, failing which businesses will be considered illegal (People's Bank of China Press Note, 2020). The trajectory of P2P lending platforms provides a reference point for impact of the new FinTech regulation and governance policies. In 2017, there were 5,970 P2P lenders operating in China; by November 2020, all of them had shut shop (Xu, 2020; Zhu, 2021). Similarly, in September 2021, China's central bank and its National Development and Reform Commission declared Cryptocurrency mining and transactions, trading as illegal (Quiroz-Gutierrez, 2022).


China's FinTech sector has cultivated data-driven business models to target consumers by integrating FinTech apps with social media platforms and chat apps, and deploying artificial intelligence technologies to collect, process, and manipulate user data to draw behavioral patterns (Zhu, 2020). The credit scoring system, for instance, is widely used by FinTech business models to assess creditworthiness of both individual users and corporations. Sesame Credit, the private credit scoring and loyalty program developed by the Alibaba Group, is embedded in the Alipay app (Zhu, 2021). It scores user behavior on a scale going up to 950. The average user starts at a 550 score. The more a user meets their obligations, the more their score increases. The higher the score, the greater the rewards. Sesame Credit supports services provided by the Ant Group and collects data from its other services, including social interactions and purchases on Alibaba Group websites by using payment histories on Alipay. Both the Alibaba Group and Ant Financial are owned by Jack Ma. Similarly, Tencent also offers credit rating services through its partner China Rapid Finance (Botsman, 2020). Its own application, Tencent Credit is currently in beta testing (Wall Pass, 2020). Amnesty International ranked Tencent at the bottom of its privacy scorecard (Amnesty International 2016). The experts interviewed from South and South East Asian countries for this study also expressed concerns over predatory practices of lending platforms funded from Chinese investors operating in the regions. Many of these platforms flout regulations and often operate illegally in jurisdictions with weaker regulatory oversight over P2P lending platforms (Tritto et al., 2020). The Chinese government's Social Credit System (SoCS) also needs to be seen in the context of how the State tracks and steers the behavior of its citizens and businesses by analyzing the user transactions data collected from various sources, particularly by Chinese Big FinTech companies (Sun 2021). According to the MERICS China Monitor report, the SoCS project can't be seen in isolation. Rather, it has to be seen in light of the Chinese Communist Party's (CCP) political vision under the leadership of Xi Jinping (Drinhausen & Brussee, 2021). Since 2014, CCP and Xi have made "comprehensive law-based governance" a top priority. This is in response to public perception that China is a low-trust society suffering from a moral vacuum as a result of socio-economic changes since the 1978 reforms program (Sohu, 2020). The Chinese State recently asserted that the rising inequality in the country should also be attributed to the unrestrained growth of digital businesses that produced billionaires in a short span of time (Ni, 2021). Accordingly, the government tightened regulations directed towards data protection, cyber security, consumer protection, and anti-competitive behavior among tech firms. These regulations, which see FinTech governance as a necessary tool to minimize the harm to users as well as society, mark a transition from the developmental state model with its emphasis on innovation and growth.

The tighter FinTech regulatory environment notwithstanding, there are a couple of areas where China's governance mechanism falls short. First, the proliferation of Chinese FinTech platforms is taking place in South and South East Asian regions where the harmonization of cross-border regulations is still a challenge. Second, the CCP-led Chinese State's tight control over FinTech data and its governance leaves little room for any multistakeholder engagement. China's larger and more resourceful FinTech companies are in a better position to offer attractive financial services to consumers compared to local companies. The larger firms have responded to the market opportunities in the region with greenfield investment, mergers and acquisitions, joint ventures, and strategic alliances (Perez, 2017).

China's transition from light regulatory growth-driven development agenda to a comprehensive rule based FinTech governance is a clear indication of the country's future policy course. China's 14th Five Year plan that was adopted in 2021 outlines that the financial system should primarily serve the real economy, not speculation and artificially-bolstered valuations. Considering the Chinese developmental state which demonstrates the attributes of 'embedded autonomy', where it maintains sufficient relationship with private enterprises yet it keeps distance to assert its autonomy from the capital and power of the private enterprises, this allows the Chinese State to avoid regulatory capture from diminishing policy effectiveness and allow the governance system to stay immune from rent seeking behavior of private interests (Zhai, 2017). The Chinese State uses this autonomy to remodel its FinTech governance to tackle growing inequality induced by the new FinTech business models.

3.1.2. Japan: In Pursuit of the "FinTech Miracle"

Japan is the second-largest economy in Asia, characterized by an advanced technological and industrial base. In recent times, however, the country has reported stagnant to declining economic productivity (McKinsey & Co and ACCJ, 2020). With China positioned as a global FinTech hub and home for some of the Big FinTech firms, Japanese policymakers are pushing for a new digital vision, and see FinTech as one of the pillars to achieving its digital economy goals (METI, 2020).

 <small>Created by Randomhero from the Noun Project</small>	FinTech in Perspective	
	Overall size of the economy	USD 5 trillion
	Digital economy as percentage of the total GDP	8-10% (narrow definition), 46% (broad definition)
	Size of the FinTech sector	USD 11 billion

Source: Statista 2020, UNCTAD 2019

Japan has historically been known as a cash-based society. A FinTech Vision document by the Ministry of Economy, Trade, and Industry (METI) published in 2017, outlines a goal to increase the ratio of cashless digital financial transactions from 18.3 percent in the same

year to 40 percent by 2027 (Japan's Fintech Vision, 2017). In the last few years, there has been an uptake in the usage of credit cards as the Japanese get more comfortable with the idea of cashless payment methods and Covid-19 speeds up a shift towards online purchases. The government has also been promoting cashless payments, aiming to double such transactions to account for 40 percent of consumption by 2025 (Hill, 2021). Japan recently amended a set of laws to establish a new government agency in September 2021, as the country aims to ramp up its digitization process. Three laws, in particular, are significant to the digital financial services sector: 1) Amendments to The Act on the Protection of Personal Information (APPI), 2) The Act on Improvement of Transparency and Fairness in Trading on Specified Digital Platforms, 3) Amended Payment Services Act (PSA).

First, let's look at the APPI. Japan established the Personal Information Protection Commission (PPC) in January 2016, tasking it with the supervision of enforcement, application, and implementation of the APPI (Hayashi and Yukawa 2021). The PPC and FSA (Financial Services Agency of Japan) have issued guidelines on data governance in the financial services sector. The amendment was passed in 2021 after a data breach occurred due to the transfer of the personal data of customers of Line Pay, a FinTech company which has operations in China, to regulate cross-border transfer of such data. Second, under the financial affairs guidelines of the amended Act, a data handling operator in the financial services sector must report any breach of Personal Information of customer data to the FSA immediately. The Act on Transparency and Fairness in Trading on Digital Platforms is enacted to ensure consumer protection, disclosure of information such as fees, handling of complaints, and prevention of fraud in the digital platform business environment, including fintech businesses. Third, the amended PSA governs fund transfers through non-banking digital intermediaries by laying down rules for different categories of transfers based on the size of funds (Ehrentraud et al., 2020). The Act also established a regulatory framework to govern virtual currencies, such as crypto assets, aimed at addressing money laundering risks arising from cryptocurrency transactions (Board, 2017).

Japan's FSA has changed the investment rules for the country's banks to acquire stakes in FinTech companies. The traditional big banks are looking to fund local and foreign FinTech companies to maintain their control over the market (Sakurai, 2020). While Japan has around 200 licensed banks, the market is dominated by the big three: MUFG Bank, Sumitomo Mitsui Banking, and Mizuho Bank (Raffone, 2021). Given that FinTech companies are emerging as alternative financial service providers and the market is dominated by three big banks, smaller banks in Japan are struggling to sustain as the customers increasingly turn to digital channels to conduct financial transactions. This will result in potential job losses and put smaller businesses in local communities at risk (Rothenberg, 2016). In 2018, the FSA revised the Banking Act to promote the development of Open Banking systems in Japan (JETRO 2020). The amendment called for 80 of the 140 largest banks to open APIs to third-party technology developers by mid-2020, the target was achieved before time. However, there are concerns about customer data being opened to third-party developers.

Yuki Mukai, a researcher on technology development and an Assistant Editor, Institute of Developing Economies Advanced School (IDEAS), Japan, who participated in an expert interview for this study in May 2021, also observed that smaller regional banks do not have the resources to make the necessary investments in digital transformation, and are,

therefore, losing their younger, tech-savvy customers. As a result, smaller banks are closing their operations in rural areas, in turn affecting older customers who have difficulty in making a shift to digital banking and financial services.

Japan's approach towards FinTech governance has changed in the last few years. It has laid out a plan in its "FinTech Vision" document, for digital technologies that aims to accelerate FinTech innovation and support businesses and communities with favorable policy and regulatory mechanisms (Bloomberg & Japan Times, 2020). The plan also emphasizes turning Tokyo into a global FinTech hub where domestic banks, financial institutions, and small and medium enterprises (SMEs) can take advantage of new technologies to remain competitive and grow in the digital space (METI, 2020). The widely shared perception that Japan lags behind in FinTech innovation and could produce only one unicorn in the space, was a key trigger in developing the new policy vision (Deloitte, 2017). The vision is a significant step towards returning to state-led industrial policymaking which Japan has long moved away from following a process of economic liberalization (Casanova, 2021). According to Mukai, Japan is also making efforts to balance the aspiration of developing an innovative technology-led ecosystem that caters to the tech-savvy youth and serving an increasingly aging population that is unable to move away from the older ways of banking and financial services ecosystem.



In 2016, The Japanese government unveiled Society 5.0 initiative as part of its Fifth Basic Plan for Science and Technology (Rojas et. al. 2021). This initiative seeks to foster human-centric innovation to address the governance challenges posed by the emerging technology ecosystem. In its study report, METI proposed a new governance model that would involve a multistakeholder engagement process where the government, businesses, and individuals/ the community participate in rulemaking, monitoring, and enforcement. The proposal also recommends developing multistakeholder, participatory co-creation model to capture data from cyber-physical interactions and receive continuous public feedback from all the stakeholders. The report sees such governance as the most suitable for achieving Japan's Society 5.0 goals.

The proposed plan also aims to evolve efficient and effective governance through global cooperation. The FSA launched a FinTech Demonstration Test Hub in 2017 to respond to the risks posed by these businesses. In this 'hub,' companies put forth new business plans before the FSA, and only after the regulator's permission implement the plan under regulations that are relatively relaxed than prior to the application (FSA, 2020; Tokustu, 2020). This is a regulatory sandbox model adopted by FSA in 2018. However, this does not incorporate the multistakeholder governance model that is proposed in the METI study. Japan's regulatory actions, FinTech vision, and ambitious Society 5.0 are clear indications that it aspires to balance between promoting competitiveness and address societal challenges. The future technology governance of FinTech is still evolving and it is still not clear in what direction Japan's FinTech governance will move forward as it implements its grand vision

3.2 South East Asia: Indonesia and Philippines

South East Asia has witnessed rapid growth in the FinTech sector, both in terms of funding and the number of users. Indonesia and Philippines, in particular, have emerged as the fourth and fifth largest FinTech markets in Asia, respectively. This growth is the result of an emphasis on financial inclusion leveraging new technologies and a favorable policy environment with fewer regulatory restrictions. This is especially critical given that over half of the population in both these countries remain unbanked (Wiradji, 2021; BSP, 2019). Jakarta and Manila currently figure among the top global FinTech hubs with a small number of companies dominating the space (Global FinTech Hub Report, 2020). In the last five years, there have been efforts to ramp up the FinTech regulatory regimes in both countries.

3.2.1 Indonesia: FinTech Governance Under an aspiring Developmental State

 <small>Created by Mardiock from the Noun Project</small> 	FinTech in Perspective	
	Overall size of the economy	USD 1 trillion
	Digital economy as percentage of total GDP	3.9% (narrow definition), 20% (broad definition)
	Size of the FinTech sector	USD 8.6 billion

FinTech products have proliferated in Indonesia. According to OJK, as of April 2020, there were 364 FinTech players, a majority of which were P2P lending companies (43 percent) and payments companies (26 percent). In the payment sector, cash-on-delivery (COD) is still the dominant payment method in e-commerce (83.73 percent) (Statistics Indonesia, 2019) but the number of electronic money transfers more than tripled in 2018 to USD 3.31 billion (East Ventures, 2020). This suggests that financial technology is shifting consumer behavior. The rapid growth of the digital economy in general, and FinTech in particular has pushed the government, industries, and consumers to adjust to new business models. Since digital transactions are carried out without the opportunity to test goods and services prior to the transaction, consumers need to be digitally literate enough to understand the terms and conditions of their electronic transaction. The largest number of complaints were received against FinTech companies by the regulators. There were over 40,000 consumer complaints against FinTech companies between 2015 and 2020 (Suleiman 2021). There are concerns on the level of financial literacy among FinTech users in Indonesia, especially since the lack of digital financial skills often contributes to losses and harms experienced while undertaking digital financial transactions.

According to Suryono et al. (2020), Indonesia is one of the most researched countries in Asia, second only to China, when it comes to FinTech development, policy, and governance. The interest in Indonesia's FinTech sector has grown recently as the country became an attractive market not only for domestic players but also, notably, for Chinese investors and platforms, particularly those in the P2P lending business (ibid). The development policies adopted to facilitate growth of the digital economy and its governance can be attributed to the nature of the Indonesian state as it evolved in the last decade. Yuri Sato (2019) suggests that Indonesia can be termed a democratic developmental state as opposed to the Chinese authoritarian developmental state. Indonesia's FinTech regulatory framework has evolved against a backdrop in which technology is being leveraged to ensure economic growth and stability, as dialogue between businesses and the state determines the sector's development trajectory (Batunanggar, 2019).



Indonesia adopted a FinTech regulatory framework that balances innovation with the integrity of the financial markets and customer protection. The strategy is aligned with the "light touch and safe harbor" regulatory approach described by Indonesian President Joko Widodo, in the 2018 Annual Meetings of International Monetary Fund and World Bank Group (IMF-WBG) in Bali (ibid). This framework is aimed at achieving five key goals: 1) Holistic and balanced strategy, 2) Agile regulatory framework, 3) Market conduct supervision, 4) Regulatory sandbox; 5) Digital innovation. There are two main regulatory authorities that govern FinTech in the country: the Bank of Indonesia (BI) which regulates FinTech-related payments and OJK which regulates FinTech-based financial services such as digital banking, P2P lending, crowdfunding, insure-tech, investments, and market aggregators. OJK is the overall supervisory authority for framing, monitoring, and enforcing rules.

The policy interventions in the FinTech sector in Indonesia appear to have ignored wider public consultations as the governance mechanism does not account for civil society as a key stakeholder. The OJK's 2020 report, Digital Finance Innovation Road Map and Action Plan proposed a FinTech governance mechanism that does not include a multistakeholder process in which the community participates. In an online interview conducted for this study in July 2021, Ira Aprilianti, a digital finance policy specialist in Indonesia, opined that the country's FinTech regulatory framework is still evolving and it will gradually adopt a multistakeholder approach to develop a co-regulation framework. She proposed the development of a Public-Private Dialogue (PPD) process where policymakers, business associations, civil society organizations, and academia can collectively shape and implement a co-regulation mechanism. This will allow public inputs to be considered in the creation, adoption, application, and enforcement of regulations.

The current framework is also simplistic and not equipped to address the challenges that come with rapid growth in the FinTech sector. During the Covid-19 pandemic, P2P lending grew 80 per-cent as personal savings deteriorated (Fitch Ratings, 2021). In 2018, an OJA study found that around half of the P2P lending platforms are operating illegally, many of them backed by investors from China and other countries (Tritto et al., 2020). The lack of a single data protection law and the absence of mechanisms to protect users from data breaches and exploitation arising from data extraction are other major challenges (Hadi et al., 2021). The draft Personal Data Protection Bill, modeled on the lines of the European

Union's General Data Protection Regulation (GDPR), is still under discussion. Finally, market consolidation is underway in Indonesia's FinTech sector as e-commerce and e-payment companies forge partnerships and carry out mergers and acquisitions (ISEAS, 2021). The pandemic led to higher digital adoption which, in turn, is driving an expansion in the user base and valuations of FinTech companies. The merger of Go-Jek and Tokopedia, two of the country's five unicorns, reflects this market consolidation.

3.2.2 Philippines: FinTech governance through data protection regime

 <small>Created by Unseed Studio from the Noun Project</small>	FinTech in Perspective	
	Overall size of the economy	USD 370 billion
	Digital economy as percentage of total GDP	8-10% (narrow definition), 46% (broad definition)
	Size of the FinTech sector	USD 5.7 – 10.5 billion

Source: Statista 2020, UNCTAD 2019

As of the end of 2020, Philippines had about 220 registered FinTech companies, according to the country's central bank — Bangko Sentral ng Pilipinas (BSP). Of these 220 registered FinTech companies, lending and payment platforms account for 24 percent and 21 percent respectively, while companies operating in the wallets and remittances space make up 12 percent each of the total recorded FinTech companies in Philippines (The Philippines FinTech Report, 2020).

During the period of 2019-20, the digital payments space witnessed rapid growth as the value of e-money transactions jumped 36 percent to USD 15 billion (The Philippines FinTech Report, 2020). The use of mobile banking and e-wallets has increased substantially during the pandemic. Electronic payment and lending transactions have been used not only for commercial transactions, but also for paying utility bills, telemedicine services, government services, and transportation.

Recently, the BSP approved the inclusion of digital banks as a distinct category of banks. Under this new regulation, a digital bank is allowed to carry out all the banking functions through a digital platform without the mediation of a physical branch. The rapid digitalization of financial services has also resulted in the proliferation of a significant number of P2P lending platforms, increasing from 72 in June 2020 to 81 in 2021. However, as many as 30 lending platforms were prohibited by the Philippines Securities Exchange Commission (SEC) on the grounds of predatory lending practices, which has been monitoring the space and issues the orders to cease their operations, when needed. In 2020,

the Philippines SEC collaborated with Google to remove illegal lending apps from Google Play Store.



This rapid expansion in digital financial transactions pushed the Philippines to actively implement a Data Privacy Act (DPA) in 2012, making the country one of the early adopters of such a law. It also established the National Privacy Commission (NPC) in 2016, designed on the lines of the EU's GDPR (Gaba, 2021). The DPA is one of the strictest data privacy laws in Asia, but its enforcement has been a challenging task due to a complex process of inter-regulatory agency collaboration. The earlier provisions of the law were limited to data sharing contracts between two data processing entities. New amendments, however, bring a more holistic approach towards data protection of personal information (SyCipLaw, 2021). In its current iteration, the DPA mandates that all FinTech data collection, processing, and sharing activities be brought under the ambit of the regulation. There are five key areas where FinTech companies need to comply with the DPA regulation: 1) Companies should obtain the consent of users; 2) They must respect the right to be forgotten; 3) Companies must notify the NPC when using automated decision-making processes; 4) In the appointment of a Data Protection Officer; 5) They must notify the NPC of any data breaches within 72 hours (Finscore, 2020).

After receiving numerous complaints about online lending platforms using the personal data of users, violating their right to privacy, the NPC issued guidelines on the processing of personal data for loan-related transactions. Data privacy was one of the key considerations when the Philippines SEC took action against illegal platforms in 2020 (Blend, 2020). In light of unethical data practices, the BSP too announced a Digital Payments Transformation Roadmap, 2020-2023, which seeks to ensure that all data and information obtained and passing through various digital channels is handled ethically and that all participants are bound by key data governance principles (BSP, 2020). In February 2021, the financial sector regulators signed a Memorandum of Agreement (MoA) on the establishment of a Cooperative Oversight Framework on FinTech innovation to evolve a framework that aims to facilitate seamless regulation and supervision of companies across the financial sector using the consultative and collaborative platform (BSP Press Note, 2021). Currently, there are no laws, rules, or regulations governing the establishment or conduct of regulatory sandboxes to test FinTech products and applications in Indonesia (Chambers & Partners, 2021).

3.3 South Asia: India

South Asia has a high concentration of unbanked population with lower smart phone penetration. India is home for six major FinTech Hubs and hosts around 50 unicorns (Findexable 2019; IBS Intelligence 2021). Financial inclusion by all means, even by force, can be explained through India's experiment with "Demonetization", Aadhaar, a unique biometric based identification provided to around one billion Indians and UPI (unified payment interface) a less coercive method to achieve financial inclusion goals.

3.3.1 India: FinTech Governance in a Middling State

	FinTech in Perspective	
	Overall size of the economy	USD 2.7 trillion
 <small>Created by Kelsey Chismore from the Neuen Project</small>	Digital economy as a percentage of total GDP	1 to 2 % (narrow definition), 15 to 20% (broad definition)
	Size of the FinTech industry	USD 26 billion

Source: Statista 2020, UNCTAD 2019

Digital payment transactions in India are poised to grow fivefold to \$1 trillion by 2023, according to Credit Suisse estimates. The Indian government has taken a number of steps to promote cashless payment transactions, demonetization being the most drastic measure of all. On 8 November 2016, the Indian government pulled out 500- and 1000-rupees currency notes from circulation, removing 86 percent of currency notes by value from circulation (Gupta, 2016; Ministry of Finance, India, 2016). Among the reasons the government cited for demonetization was that fake currency notes of bigger denominations were being used for activities like drug trafficking and terrorism, and to store unaccounted wealth (Ministry of Finance, India, 2016). The other stated goal of the policy was to formalize and digitize the economy, and in this, FinTech companies emerged as the biggest beneficiaries of demonetization (Thomas, 2018). Companies like Paytm issued full-page advertisements congratulating Indian Prime Minister Narendra Modi, cashing in on the opportunity to become a dominant mobile payment player (Tewari, 2016).

The rise of data-driven FinTech companies in India also received a boost from state digital infra-structure projects such as Aadhaar. A unique 12-digit number linked to holders' biometric and de-mographic information, Aadhaar is arguably the world's largest digital identification project (Par-ker, 2011). Ostensibly aimed at effective delivery of public services to citizens and avoiding leak-ages in service provisions, it was later made a mandatory requirement to avail financial services (Henne, 2019). Aadhar data has since become a critical ingredient in the digital business strategies for FinTech companies (Mann, 2018). FinTech companies use the Aadhaar database for customer authentication and verification. This unique digital identity-based infrastructure facilitates access to massive user data based on biometrics and verifiable identification records.

The prize in digital financialization is not the small amount of revenue derived from cashless pay-ments but rather, the user data obtained through increased surveillance and tracking of payments. Digital footprints are monetized by allowing companies to create more detailed profiles of custom-ers for better targeting of products (Gabor & Brooks, 2017). FinTech companies in India are in-creasingly using users' social media activity, call logs, message

histories, and spending habits to determine interest rates for their products (Saleem, 2019). Many of the new data business models that have emerged in the FinTech space have no tangible revenue channels. The startup CRED, for instance, which was founded in 2018 and has become a Unicorn within a short span of three years, provides a platform to manage the payment dues for multiple credit cards. In the process, CRED builds a community of high credit-worthy individuals and generates data around their purchasing behavior and payment patterns, which will be used to offer future services to these customers on the platform (Mehta, 2020; Startup Talky, 2021). Currently, there is no regulatory mechanism to oversee the data capture, processing, and usage of customer data by platforms like CRED.

FinTech regulation in India is governed by multiple entities: The Reserve bank of India, the Securities and Exchange Board of India (SEBI), the Telecom Regulatory Authority of India (TRAI), and the Insurance Regulatory and Development Authority (IRDA). India has created the India Stack, comprising three infrastructure systems – identity, payments, and data-sharing – which allow the provision of digital financial infrastructure as a public good. The National Payment Corporation of India (NPCI), a not-for-profit organization promoted by the RBI and owned by a consortium of major banks, serves as an umbrella organization for operating retail payments and settlement systems in India (RBI, 2020).

On 30 May 2021 an interview was conducted with Ranjeet Rana, a former manager with Reserve Bank Information Technology Pvt Limited. According to the interview, FinTech regulation in India is still evolving. The regulators are cautiously watching the FinTech space to gradually evolve a framework that enables innovation and growth. The biggest challenge in the FinTech sector is the lack of collaboration among different law enforcement agencies while dealing with cases such as illegal P2P lending platforms.

RBI has developed a framework for FinTech regulatory sandbox which is still in the early stages of implementation. The sandbox framework covers all activities related to FinTech except Cryptocurrencies, Credit Information, and Credit registries (RBI 2021). The RBI has offered four cohorts under the regulatory sandbox experiment on different thematic areas such as MSME lending, financial fraud detection, payments, and cross-border lending (RBI 2021). Though the media reports state these experiments are successful there are no full results available for each cohort.

While developmental states benchmark their technology governance against the pace of growth in the sector, middling states struggle to figure out when to regulate and lack a directional path for technology governance (Gruin & Knaack, 2019). India is a middling state which does not demonstrate the characteristics of a developmental state of East or South East Asian countries (Mukherji, 2016). Peter Evans, a leading development scholar termed India as a middling state in his seminal work *Embedded Autonomy*. For Evans, a developmental state is a state that maintains important ties with capital and understands the long-term needs of capital. But the state is also autonomous of capital. In his conception, Middling State doesn't exhibit such autonomy of capital completely similar to developmental state model. Though the Indian State exhibits some of the core elements of a developmental state, it maintains ambiguous and inconsistent ties with the capital and the pressure of the lobbyist groups are often more powerful than the State's planning and regulatory mechanisms (Jafri, 2021). India's FinTech governance and policy direction

in some ways reflect the aspiration to adopt a developmental state model but the lack of institutional capacity to direct the capital prevents the State to fully manifest itself into a developmental state.

4. Evaluating FinTech Governance

In the past decade, FinTech has witnessed accelerated adoption across Asia, but the degree of in-novation and technology adoption differ across countries due to their varying socio-economic con-ditions, regulatory frameworks, and policy actions. The accelerated growth of FinTech adoption can also be attributed to the Asian developmental state model adopted in the region and particu-larly in East Asia and South East Asia. Even though the developmental state model lens is useful to understand the embedded autonomy of the state's policy effectiveness but it is not sufficient to capture the comparative benchmarking of effectiveness of the technology governance mechanism in the FinTech sector. The study takes inspiration from the 'Technology Governance' framework which allows one to evaluate the effectiveness of the governance process of five cases selected for this study at a more granular level. As suggested in the OECD framework (Winickoff and Pfofen-hauer, 2018) the comparative evaluation was carried out using three key imperatives of a process-based approach to governance. The three imperatives are namely, 1) Anticipatory Governance: how different countries apply structured foresight, informed planning and public engagement while formulating a forward-looking regulatory mechanism to manage risks that are emanated from the FinTech platforms; 2) Inclusiveness: In which ways the governance process in each coun-try engages with the diverse set of stakeholders and provide the platform to represent all socio-political groups; 3) Directionality: Whether the governance mechanism deployed is sufficiently di-recting innovation to drive public purpose and achieve sustainable development goals.

Region	Country	Anticipatory Governance	Inclusiveness	Directionality
East Asia	China	Moderate	Weak	Strong
	Japan	Moderate	Strong	Strong
South Asia	India	Weak	Moderate	Weak
South East Asia	Indonesia	Weak	Strong	Moderate
	Philippines	Moderate	Moderate	Weak

Anticipatory Governance

The evidence gathered for this study suggests that none of the countries selected for this research have processes in place to identify risks and negative consequences that FinTech platforms pose to the consumers and society at large. The case studies show that exploration and developing a struc-tured foresight in the early stages of innovation is either absent or weak. China and Japan have built better processes to identify risks than

others. China relied on its state channels to assess con-sumer risks and macroeconomic consequences of the platform business models and operations, while Japan has relied on public consultations and multistakeholder mechanisms. However, both have responded with regulatory actions and sandbox experiments only after consequences of surveillance capitalism was a widespread phenomenon. Philippines has also acted with data protection law to avoid potential risks to consumer interests. Regarding regulating Cryptocurrencies, while China acted swiftly with a comprehensive ban, others have been mulling to bring either partial regulations or resorted to taxation of Crypto assets. In the Open Banking space, according to Open Banking Map, which tracks global Open Banking development, China, India, and Japan have adopted market-based approaches while Indonesia and Philippines have taken to regulatory approaches. Nevertheless, as the adoption of Open Banking expedites the regulators are yet to keep pace with the developments in this space. Overall, the Asian FinTech sector falls short of adopting an effective anticipatory governance process.

Inclusiveness

The study has assessed the inclusiveness of FinTech governance in the five countries by evaluating the regulations, development process, and government policy direction by engaging with diverse stakeholders. Moreover, the assessment looked at the way in which public engagement was carried out by providing wider representation to the citizens. When compared to other countries, Japan stands out in providing a platform for public engagement to devise its FinTech governance process. Japan's Society 5.0 outlines a comprehensive framework to engage with all the stakeholders and provide representation to different social groups, especially facilitating gender and age diversity in its technology governance framework. Another noteworthy example is Indonesia's framework for cocreation of regulatory governance for the FinTech sector. Though India and Philippines have public consultations processes in place, they lack diverse representation of actors in shaping the inclusive governance mechanism. China's heavy reliance on state channels for developing its technology governance process gives little space for wider public engagement. Regulators in all five countries have evolved sandbox experimentation which allowed them to work with a segment of consumers in a control environment. However, it is not sufficient to develop an inclusive technology governance process without engaging with a wider diverse pool of users and citizens as technology governance shapes the social order.

Directionality

To tackle the challenges of misalignment between commercialization of innovation and achieving societal goals, policy and governance should provide direction by effectively connecting innovation to grand societal challenges. In this case, the innovative FinTech business models have to be directed to address sustainable development goals. Notwithstanding the financial inclusion and entrepreneurship goals of FinTech promotion, the policy environment has to address the risks and challenges associated with the FinTech business models. FinTech governance frameworks adopted often fall short in protecting data rights of the users, data monopolization by the BigTech companies, and even larger goals of promoting equality and environmental sustainability. China and Japan have directed their governance processes to regulate such harms. For instance, China's absolute

ban on Cryptocurrency is directed to prevent inequality arising from financial speculation and achieving carbon neutrality by 2060. Similarly, Japan has tied their digital innovation outcomes to sustainable development goals in their mission to achieve society 5.0. These examples indicate how 'Technology Governance' is directed to address public-purpose goals.

In the last five years, the countries analyzed for this research have been taking steps to push for an effective 'Technology Governance' process with mixed results. While the both East Asian countries, China and Japan seem to have improved their 'Technology Governance' processes, the South East and South Asian countries are still struggling to steer their Technology Governance frameworks in a sustainable, equitable and justice-oriented direction. This research also finds that the policy and public discourses in Asia are largely revolving around regulating FinTech companies that are operating in an established business environment. There is hardly any active persuasion to promote alternative platform ownership and governance models in the FinTech sector. A collectively owned and government FinTech platforms are better suited to implement the three imperatives of Technology Governance process discussed here. Taking inspiration from Elinor Ostrom's common pool recourses would provide effective public engagement thereby directing the innovation to achieve societal needs along with economic goals.

5. Future Outlook

Asia will continue to be a source of FinTech growth and innovation as governments pay close attention to the sector with the intention of shaping it through myriad policy tools. FinTech in Asia is moving in the direction of two kinds of consolidation and market expansion practices – on one hand through mergers and acquisitions and on the other, through building "Super Apps". The FinTech market will be increasingly dominated by a few players controlling large amounts of data and claiming deep financial resources that come primarily through venture capital funding and flow of investments from larger global Big Tech firms to regional FinTech companies. FinTech space is also witnessing increasing partnerships and joint ventures among technology companies, and banking and financial institutions.

New business models like Open Banking are seen as an innovative breakthrough and gaining traction in policy discourse across the Asian region. Open Banking has been a recurring theme across the region where both business and policy circles are enthusiastically adopting it despite data privacy risks posed due to the data sharing of customer data with third-party entities. The applications or products developed by third-party technology developers based on the customer data shared by the banks can produce financial risks for banks, and could also push for overselling of the financial services resulting in serious debt traps for customers. There is need for stronger regulations and monitoring mechanism from the regulatory bodies before adopting Open Banking in a full-fledged manner.

Recently governments and regulators have woken up to the risks and challenges posed by Cryptocurrencies. As discussed in this analysis part of the study, the countries in Asia have already started taking notice of the fact that Crypto assets have quickly turned into

highly speculative financial instruments as they do not possess underlying value. There will be more regulations such as taxing the transactions and returns or absolute bans on all cryptocurrency-related activities following China's actions. As the regulatory environment tightens, the Crypto marketplace platforms might shift their bases to countries with lighter regulatory environment.

Finally, the region's less developed economies have been using FinTech to advance financial inclusion and push for more data-driven business models. The sector has produced a large number of FinTech unicorns with a high concentration of underbanked population, a contradiction that has to be resolved sooner than later. The concentration of large amounts of data and financial resources controlled by a few players with high rates of return on capital, while the rate of growth of the underlying real economy is stagnant, is already causing high inequality in the region. The effects of COVID-19 have only exacerbated the growing economic inequality in the region. The policy goals of FinTech governance in each country need to align with the sustainable development goals to address the grand societal challenges. The FinTech innovation outcomes cannot only be confined to achieving economic goals but the policy direction has to find the right balance between top-down and bottom-up approaches to integrate the mission-oriented (policy-driven) innovation with the public engagement to achieve responsible and inclusive (grassroot) societal outcomes. A future research and policy agenda should be outlined to bring alternative FinTech governance models where the platforms are collectively owned and managed. Such an agenda will have the potential to achieve the three imperatives of Technology Governance, namely, anticipatory governance, inclusiveness, and directionality which are pathways to realize both economic and societal goals.

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Annex 1

List of Expert Interview Partners

Region	Country	Expert Interviewed	Affiliation
East Asia (EA)	Japan	Yuki Mukai	Assistant Editor, Institute of Developing Economies Advanced School (IDEAS), Japan
	China and Hong Kong	Rocky Tung	Director and Head (Policy Research) Financial Services Development Council,
South Asia	India	Ranjeet Rane	ReBIT Reserve Bank Information Technology Pvt Ltd., India
		Ananth. S	Research Consultant, Reserve Bank of India, India
South East Asia (SEA)	Indonesia	Ira Aprilianti	Micro Sev Financial Inclusion, Indonesia
	Philippines	Yoonee Jeong	Digital Policy, ADB, Singapore
	SEA	Cherie Teseng	COO, Secure Solutions Group, Singapore
