

DATA GOVERNANCE IN CHINA'S DIGITAL MARKET ECONOMY



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The article explores the extant literature to articulate the theories at the background of the fundamental dynamics and platform business models driving the Chinese digital economy. It further highlights the challenges and opportunities these data-driven innovators pose to Chinese consumers and financial market efficiency, particularly competition and competitiveness (monopoly), stability and consumer data privacy protection. To these concerns, it provides an overview of the consumer-centric framework in the recent Chinese Personal Information Protection Law and offers critical analysis of the possibilities and drawbacks of the newly introduced right to data portability in Art 45. The use of theories and critical analysis in the paper is intended to provide a deep understanding of the prospects and limitations of the consumer-centric framework within the Chinese data governance regime and the areas in need of further regulatory interventions.

1. Introduction

China is arguably the model digital economy demonstrating the opportunities that the acceleration of digitalisation and datafication can have on innovation-friendly financial systems. Digital transformations heralded by deep penetrations of internet broadband and smartphone, adoption of cutting-edge technologies and rise of the internet (especially Web 2.0: including social media and online social network)¹ are reshaping the social, cultural, and economic clime in China's digital economy.² Consequently stimulating the legal and regulatory foci.

At the foundation of these transformations is the emergence and disruptions of financial technology firms (FinTech), and recently large tech platforms (so-called “big techs”) leveraging advancements in information and communication technologies,³ including cloud computing and big data analytics (artificial intelligence, machine learning and deep learning) in efficiently analysing large troves of consumer metadata, and driving transformative growth in economic developments

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¹ Alessandro Acquisti, Curtis Taylor and Liad Wagman, “The Economics of Privacy” (2016) 54(2) *Journal of Economic Literature* 444.

² Lizhi Liu, *The Rise of Data Politics: Digital China and the World* (2021), available at <https://doi.org/10.1007/s12116-021-09319-8>.

³ For further research on these technologies, see Dirk Andreas Zetsche, Douglas W Arner and Ross P Buckley, “Decentralized Finance” (2020) 6(12) *Journal of Financial Regulation* 172.

and, potentially sustainability.⁴ As of 2018, China is home to nine of the top 20 global internet firms by public or private market value.⁵ Furthermore, the Chinese duopoly, Tencent Holdings and Alibaba Group, are ranked among the top 10 publicly traded global corporations by market capitalisations, as of 2020.⁶ These tech platforms, together with other tech entrants, have stimulated meteoric growths in the Chinese digital economy, contributing a staggering 38.6 per cent (39.2 trillion Yuan or \$6 trillion) to the gross domestic product (GDP) in 2020, up 2.4 percentage points from 2019 (3.3 trillion Yuan).⁷ Their activities, visible most notably in payments to retail, allowed China to avoid potential recession by growing its earnings up to 3.2 per cent in the second quarter of 2020.⁸ Furthermore, the 2020 digital trade volume climbed to \$294.76 billion, up 47.4 per cent from \$200 billion in 2015,⁹ making China the first major economy to show signs of recovery from the debilitating effects of the COVID-19 pandemic.

These inherent potentials of tech platforms to stimulate growth in digital economies have not gone unnoticed by the national regulators and policymakers. According to the white paper published by the China Academy of Information and Communication Technology, an affiliate of the Ministry of Industry and Information Technology, the success of these tech platforms in several financial and other sectors of the digital economy, including internet and software services, stem from the acceleration in the adoption and use of online services by Chinese consumers.¹⁰ This is complemented by the positive change in consumer behaviour towards platform services, especially in digital payments resulting from the COVID-19 pandemic disruptions. As of 2020, the two largest Chinese mobile payments providers, Alipay and WeChat Pay (with market share of 55.6% and 38.6%, respectively), processed over 90% of all retail online payments in China,¹¹ around 16 per cent of the GDP. These activities can drive increased sustainable developments in China's most populous economy, with 1 per cent estimated growth in digitalisation resulting in 0.3 per cent growth in overall GDP.¹²

⁴ *Ibid.*

⁵ Market Watch, "China Has 9 of the World's 20 Biggest Tech Companies" (31 March 2018), available at <https://www.marketwatch.com/story/china-has-9-of-the-worlds-20-biggest-tech-companies-2018-05-31> (visited 11 December 2021).

⁶ Statista, "Largest Chinese Public Companies as of 2021, By Market Value" (30 July 2021) <https://www.statista.com/statistics/299742/china-largest-public-companies-by-market-value/>.

⁷ South China Morning Post, "China's Digital Economy Surges in 2020 amid Pandemic, Making up nearly 40 per cent of Country's GDP" (27 April 2021) <https://www.scmp.com/tech/policy/article/3131286/chinas-digital-economy-surges-2020-amid-pandemic-making-nearly-40-cent> (visited 11 December 2021).

⁸ *Ibid.*

⁹ South China Morning Post, "China to Pursue Digital Trade Expansion under New Five-Year Plan as Cross-Border Data Flow Restrictions Remain in Place" (21 October 2021) <https://www.scmp.com/tech/policy/article/3153196/china-pursue-digital-trade-expansion-under-new-five-year-plan-cross> (visited 11 December 2021).

¹⁰ CAICT, "White Paper on China's Digital Economy Development" (2021) http://www.caict.ac.cn/english/research/whitepapers/202104/t20210429_375940.html (visited 11 December 2021).

¹¹ Dominique Torre and Qing Xu, "Digital Payments in China: Adoption and Interactions among Applications" (2020) 172(4e) *Revue d'économie industrielle* 55.

¹² TahsinSaadi Sedik, "Asia's Digital Revolution" (2018) *Finance & Development* 31.

The above fast-paced digitalisations by tech platforms are driven majorly by several socio-economic, legal and regulatory local conditions peculiar to the Chinese economy. On the consumer side, as earlier mentioned, there is a high consumer sentiment in favour of the adoption and use of FinTech services among the digitally active populations, around 69 per cent according to a survey by Ernst & Young.¹³ This is complemented by the consumer willingness, around 78 per cent, to share personal information and transactional data with traditional institutions and newer tech platforms, in exchange for mostly zero-priced digital services.¹⁴ This consumer trend positively impacts most tech platforms' economies of scale and scope, in particular by allowing them grow their data-driven business models and gain market share through the offering of differentiated online and mobile services to unbanked and underserved population segments.¹⁵

For regulatory systems, China's adoption of a laissez faire regulatory approach to innovations and data acquisition, until recently, has created the perfect environment for tech platform's business model to thrive.¹⁶ According to a recent survey, the average growth rate in China's Information and Communication Technology sector between 2005 and 2015 was 13.7 per cent.¹⁷ Moreover, unlike the European Union which adopted a heavily prescriptive regulatory approach to innovations and data governance, Chinese regulators until 2017 encouraged disruptive innovation by quickly realising the strategic value of data in financial and economic developments.¹⁸ Pivotal arrangements include the collaborations by the National Bureau of Statistics with 11 internet firms, incorporating big data in government informational statistics, and the construction of national data centres in Guizhou in 2015.¹⁹

Despite the above inherent benefits in digitisation and financial innovations, inherent risks and challenges arise from tech platform's online business model, especially from their operation of closed-loop data ecosystems, so-called "walled gardens".²⁰ For emphasis, major tech platforms operate permissioned ecosystems for their technology and digital financial services. This dynamic inherently requires consumers to register (sign on) as a precondition to accessing and enjoying the wide range of digital (financial) services offered. As a result, the strict sign up requirements can prevent most consumers from accessing and using services from multiple rival services providers simultaneously, since consumers who refuse to

¹³ Ernst & Young Global Ltd, "How China's Open Banking Experiment Is Unfolding" (17 December 2018) https://www.ey.com/en_gl/banking-capital-markets/how-chinas-open-banking-experiment-is-unfolding (visited 11 December 2021).

¹⁴ *Ibid.*

¹⁵ Alliance for Financial Inclusion (AFI), *Fintech for Financial Inclusion: A Framework for Digital Financial Transformation* (AFI Special Report, 2018).

¹⁶ Weihuan Zhou, Douglas W Arner and Ross P Buckley, "Regulation of Digital Financial Services in China: Last Mover Advantage" (2015) 8 *Tsinghua China L Rev* 25.

¹⁷ Sedik (n 12 above).

¹⁸ Liu (n 2 above) p 48.

¹⁹ *Ibid.*

²⁰ For further research on platform economics and business models, See Geoffrey G Parker, *Platform Revolution* (Kirkus Reviews, 2016); Paul Belleflamme and Martin Peitz, *The Economics of Platforms: Concepts and Strategy* (CUP, 2021).

sign on are excluded. While this dynamic in social services may have had minor implications on consumers, the case of digital financial services is quite alarming. Since the expansion of major tech platforms into digital finance, the closed-loop business dynamic have shown strong potentials to shift market structures. Where this exists, stifling implications quickly emerge, such as restricting users to services by dominant players, as well as potentially smothering consumer outcomes inherent in fair market competition. These concerns have stimulated debates on consumer control of their personal data and data privacy within a largely concentrated digital market ecosystem.

But despite these critical regulatory and policy implications, there has been relatively few direct regulatory efforts by the Chinese regulators in compelling open ecosystems and interoperability among the new “league of giants”. In the European Union (EU), for example, regulatory interventions have included the Digital Markets Act (DMA), in November 2022, which complements the long standing provisions of the EU GDPR and existing competition rules. In particular, the DMA mandates large digital platforms (so-called gatekeepers) to comply with new obligations relating to market contestability by allowing third parties to inter-operate with the gatekeeper’s services in specific situations, as well as allowing the business users to access the data generated through these activities.²¹ In contrast to this approach, China has instead focused on adopting a similar approach to EU data governance without additional regulations for tackling the inherent issues in emerging digital market competition. The provisions in China’s recent 2021 Personal Information Protection Law (PIPL) have introduced (voluntary) legal and regulatory frameworks for platforms to enable interlinkages with rivals. This is complemented by broad provisions on consumer-centric data protection frameworks, similar to the EU GDPR, including consumer rights to data portability and general personal data protection, reflecting an alignment with the emerging global trend towards consumer-focused data governance. While the relaxed regulatory approach to interoperability and data portability in the PIPL further demonstrates the pragmatic regulatory style peculiar to China, its effective implementation and impact on the many challenges in walled gardens may require further and additional proactive and direct regulatory interventions. This could incrementally enable broader democratisation of finance, inclusive economic developments, and effective consumer data protections within China’s digital economy. As illustrated in this paper, this is because the PIPL as presently constituted may likely face similar limitations on digital competition power imbalances between market participants, similar to older EU GDPR, except complementary regulatory interventions such as the EU DMA is also developed to tackle market competition-specific situations in its digital market economy.

This article critically analyse the regulatory attempts within the general provisions of the PIPL, particularly on data portability, to break the walled gardens and

²¹ EU Commission, “Digital Markets Act (DMA)” https://digital-markets-act.ec.europa.eu/about-dma_en (visited 26 September 2023).

emerging market concentrations among Chinese tech giants principally through consumer-centric data frameworks. Specifically, the paper examines the effectiveness and limitations of this approach in relation to prominent issues in data governance stemming from market monopoly and consumer data protections and privacy. In summary, the analysis finds that while significant progress has been made on antitrust and consumer data protection with the introduction of the PIPL, several drawbacks remain. In particular from the limitations relating to technical implementations and scope of application of the new provisions in the context of digital competition and platform and big data analytics economics.

The article is in five parts. Following this introduction. Part 2 explores the extant literature to conceptualise the core dynamics of tech platforms' online business models and the economics of big data analytics driving data concentrations within closed systems. Part 3 explores instructive examples in the context of the Chinese digital economy in highlighting the prominent implications of the new data-centric business dynamic from consumer and market perspectives. In Part 4, the article critically analyse the consumer-centric framework, particularly data portability, within the PIPL to articulate the new developments, opportunities and drawbacks in relation to the interplay between consumer data portability and inherent concerns on market monopoly and data privacy. To these concerns, the paper explores several potential legal and regulatory interventions and policy directions that could better leverage the benefits of digital economies while effectively managing the risks and challenges. Part V concludes.

2. Tech Platform's Business Model and the Underlying Economics of Consumer Data Concentration

Tech platforms' online business models differ fundamentally from traditional business models which exploit vertical integration firm "pipeline models".²² Unlike incumbents, most tech platforms leverage large troves of data by tracking, gathering and linking consumer behaviour in generating network effects through advanced data analytics (ie artificial intelligence algorithms) and by providing consumer-centric innovation-focused value creation. An instructive example of the divergence between this data-driven model and traditional models can be drawn from the economics behind fixed cost, marginal cost and marginal value between these models.²³ Incumbent institutions (especially banks) rely on physical networks spread across large geographic areas to scale their financial products and services. As a result, their marginal increase in value usually drives a correlated increase in marginal costs of production, in particular from operational costs.

²² Annabelle Gawer (ed), *Platforms, Markets and Innovation* (Edward Elgar 2009); Eric Brousseau and Thierry Penard, "The Economics of Digital Business Models: A Framework for Analyzing the Economics of Platforms" (2007) 6(2) *The Review of Network Economics* 81.

²³ Douglas W Arner et al., "Zetsche, BigTech and Platform Finance: Governing FinTech 4.0 for Sustainable Development" (2021) 6 <https://ssrn.com/abstract=3915275>.

Conversely, as information intermediaries, horizontally integrated platforms which are the focus of this paper, “uses technology to connect people, organisations and resources in an interactive ecosystem in which amazing amounts of value can be created and exchanged.”²⁴ In this regard, they leverage troves of data within their established core digital services ecosystems (social networking, cloud storage services, e-commerce, ride hailing, internet search engines) at fixed cost of setting up the necessary proprietary algorithms.²⁵ But unlike incumbents, the leverage of advanced technologies and digital infrastructures enable them benefit from the efficiencies of big data at zero marginal costs. Therefore, their activities in digital financial services have been largely complementary, accounting for around six per cent of their total revenue, as value added services for their users’ convenience, starting in payments, and thereafter expanding to credit, savings, insurance and investments.

Because of this digital infrastructure and modular organisational formation, tech platforms are able to leverage technologies (particularly artificial intelligence) and big data economics in repurposing metadata for cloud-based solutions, with significantly lower marginal cost implications. The increase in marginal value at fixed cost decreases (or even eliminates) the marginal unit cost as more services are horizontally integrated using the same digital infrastructure.²⁶ This data-driven alternative model underlies the meteoric growth and successful market disruptions by giant tech platform giants in digital financial services.²⁷ For simplicity, the dynamics can be explained through the self-reinforcing data-network-activities – “DNA” feedback loop.²⁸

(a). Self-reinforcing “DNA” Feedback Loop

DNA represents the core reinforcing elements of tech platforms’ business models: data analytics, network effects, and interwoven activities. As information intermediaries, tech platforms enable interactions among large network of users through information and communication technologies.²⁹ These interactions can be one-sided, where platforms provide search engine services (for instance, Baidu); or two-sided, in which case users have access to information from multiple users within the integrated platform, including other individuals and business entities (merchants). The latter structure manifests particularly in social networking, messaging, and e-commerce platforms (for instance, WeChat, Alibaba).

²⁴ Geoffrey Parker, Marshall Van Alstyne and Sangeet Choudary, *Platform Revolution: How Networked Markets Are Transforming the Economy and How to Make Them Work for You* (Norton & Company, 2016).

²⁵ Arner et al. (n 23 above) 7.

²⁶ This is broadly termed as the “economics of transaction costs”, which according to Coase theorem may include negotiation cost, information asymmetries cost and search costs and coordination costs. See Ronald Coase, “The Nature of the Firm” (1937) 4(16) *Economica* 386. Bank for International Settlements, “Big Tech in Finance: Opportunities and Risks” (2019).

²⁷ Katarzyna Śledziewska and Renata Włoch, *The Economics of Digital Transformation: The Disruption of markets, Production, Consumption, and Work* (Routledge, 2021).

²⁸ Bank for International Settlements (n 26 above).

²⁹ Acquisti, Taylor and Wagman (n 1 above).

Instructively, these interactions allow platforms gather and analyse large troves of consumer data using big data analytics tools, particularly artificial intelligence and its sub variants. For emphasis, the volume of the data pool determines the efficiency of each tech platform's proprietary algorithms leveraged in exploiting consumer behavioural patterns and preferences. Further, information about consumer behaviour put tech platforms in strategic position to offer tailored digital services at near-zero cost, later expanding to complementary financial services.³⁰ This dynamic underlies the intersection between platform economics, the centrality of data and big data analytics economics. Specifically, the economies of scale and scope³¹ from the exploitation of data in horizontally integrated modular structures increase tech platforms' network effects.³² Larger demography of users often results in higher returns of scale and thus more value for existing users.³³ Among e-commerce platforms, for example, large consumer base attracts not only wider network of merchants who wish to leverage the online ecosystem for up-scaling their products, but also new individuals wishing to benefit from the broader product choices and competitive financial options available within a dominant tech platform.

In addition, more user interactions resulting from increased network externalities generate more data that feeds the platform's algorithm, thus restarting the cycle for higher market share and network effects, the requisite for platform's profitability.³⁴ It also allows platform to repurpose the data and profit from offering other cloud-based services (including credit scoring). Therefore, the largest market players in digital markets are those with access to large troves of data and algorithmic capabilities to analyse it for increased network effects. This organisational structure and dynamic lie at the foundation of tech platforms' entry into, and disruptions within Chinese digital financial services as gatekeepers, forcing major incumbents to redesign their business models and innovate to compete in the fast-paced digital markets environment.³⁵

From the above, it is deducible that consumer data feedback loop is central to online business models and big data analytics driving the success and market domination by major tech platforms. This is especially the case in China's digital

³⁰ Arner *et al.* (n 23 above) pp 6–8.

³¹ Economies of scale is defined as, see “the theory of the relationship between the scale of use of a properly chosen combination of all productive services and the rate of output of the enterprise”. while scope arises from connected activities. See George J Stigler, “The Economies of Scale” (1958) 1 *The Journal of Law and Economics* 54.

³² Network effects generally involve the marginal benefits each user gets from the increase in the adoption of the network by other users. See generally Carl Shapiro and Hal Varian, *Information Rules: A Strategic Guide to the Network Economy* (Boston, MA: Harvard Business School Press, 1999); Joseph Farrell and Garth Saloner, “Standardization, Compatibility, and Innovation” (1985) 16(1) *RAND Journal of Economics* 70; Susan Scott, John Van Reenen and Markos Zachariadis, “The Long-Term Effect of Digital Innovation on Bank Performance: An Empirical Study of SWIFT Adoption in Financial Services” (2017) 46(5) *Research Policy* 984–1004.

³³ For example of empirical study on network effects on ATMs, see Garth Saloner and Andrea Shepard, “Adoption of Technologies with Network Effects: An Empirical Examination of the Adoption of Automated Teller Machines” (1995) 26(3) *RAND Journal of Economics* 479.

³⁴ Arner *et al.* (n 23 above) pp 6–8.

³⁵ Sledziewska and Włoch (n 27 above).

economy where consumer behaviour and regulatory interventions have largely supported unfettered access to consumer data. Moreover, the above centrality of data to new business models and emerging digital competition has elevated the importance of data, now considered the most valuable asset of tech platforms and a determining variable in digital economies. Consequently, among digital economies like China, digitalisation and the critical roles of tech platforms has propelled the status of data and data protection to the forefront of policy debates both at domestic and international levels.³⁶ Data (ie proprietary interests) and personal information (including personality rights) of consumers are now critical production inputs leveraged by tech firms in competing for market dominance, by producing differentiated (superior) goods and setting prices. However, this dynamic raises a natural question: what advantages lie within the economics of data concentrations driving the operation of closed systems by tech giants in major digital economies such as China? This question is critical to understanding the necessary factors underlying the recent developments and inherent limitations of both the existing and emerging innovative regulatory initiatives towards managing the new channels of risks and challenges inherent in tech platforms' business models, and how to further advance them.

(b) The Economics Of Pro-Data Concentrations among Tech Giants

Since the emergence of datafication³⁷ and digitalisations, there has been a growing body of literature examining the nature and increasing relevance of data in the socio-economic and cultural restructuring manifesting within global economies.³⁸ Specifically, studies have examined the broad interplay among data, privacy and digital politics, including its impact on social welfare,³⁹ privacy,⁴⁰ censorship,⁴¹ online institutions,⁴² subordination⁴³ and digital surveillance.⁴⁴ Unsurprisingly,

³⁶ Liu (n 2 above); Douglas W Arner, Giuliano Castellano and Eriks Selga, "The Transnational Data Governance Problem" (University of Hong Kong Faculty of Law Research Paper No. 2021/039, 2021) <https://ssrn.com/abstract=3912487>.

³⁷ Datafication refers to the application of digital analytics to exploiting acquired consumer personal (or financial) data.

³⁸ Liu (n 2 above) p 46.

³⁹ Acquisti, Taylor and Wagman (n 1 above).

⁴⁰ Henry Farrell and Abraham L Newman, *Of Privacy and Power: The Transatlantic Struggle over Freedom and Security* (Princeton: Princeton University Press, 2019); John Zhuang Liu, Michael Sockin and Wei Xiong, "Data Privacy and Temptation" (National Bureau of Economic Research Working Paper 27653, 2020), available at https://www.nber.org/system/files/working_papers/w27653/w27653.pdf (visited 8 March 2024).

⁴¹ Garry King, Jennifer Pan and Margaret E Roberts, "How Censorship in China Allows Government Criticism but Silences Collective Expression" (2013) 107(2) *American Political Science Review* 326–343; Margaret E Roberts, *Censored: Distraction and Diversion inside China's Great Firewall* (Princeton University Press, 2018).

⁴² Lizhi Liu, "From Click to Boom: The Political Economy of e-commerce in China" (Doctoral dissertation, Stanford University, 2018) cited in Liu (n 2 above); Lizhi Liu and Barry R Weingast "Law, Chinese Style: Solving the Authoritarian's Legal Dilemma through the Private Provision of Law" (Working Paper, 2020).

⁴³ Scott Skinner-Thompson, "Agnostic Privacy and Equitable Democracy" (2021) 131 *Yale L J Forum* 454.

⁴⁴ Sheena Chestnut Greitens, "Surveillance, Security, and Liberal Democracy in the post-COVID World" (2020) 74(S1) *International Organization* E169–E190 <https://doi:10.1017/S0020818320000417>; Xu Xu, "To Repress or to co-opt? Authoritarian Control in the Age of Digital Surveillance" (2020) 65(2) *American Journal of Political Science* 309; Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (London: Profile Books, 1st ed, 2019).

there has also been a growing literature on the economics of data and privacy⁴⁵ and the externalities on targeted advertising,⁴⁶ personalised pricing, data acquisition,⁴⁷ and importantly, the consumer benefits (and privacy costs) from personal information sharing, popular in China.

But despite all these studies, the implications of pro data concentrations among tech giants in the specific context of digital economies such as China and their consumers remain relatively underdiscussed. In this section, the focus is therefore on how the economics of big data analytics and core elements of data drives the adoption of closed-loop systems by tech giants in the context of Chinese digital economy. Following, the paper infers from recent research,⁴⁸ by highlighting the two main elements of data: (1) nonrivalry;⁴⁹ and (2) partial excludability and how they amplify digital competition based on big data analytics capabilities in digital economies.⁵⁰ While the former, nonrivalry, revolves around the reusability of data by multiple sources simultaneously without risk of depletion, the latter illuminates the limitations to data access and redistribution by third parties. The article explores these elements concisely in describing the economics behind the pro-concentrations of data noticeable among digital economies, using Chinese tech giants as the case study,⁵¹ and thereafter highlight the (un)acknowledged market implications and increasing consumer data protection and privacy concerns. Nonrivalry is the fundamental element driving data concentrations among tech giants in digital economies where consumers show high willingness of sharing their data in exchange for access to zero-priced digital services. While this point is explored below, comments on partial excludability are subsequently considered in the paper, where arguments in support of consumer-led open data is articulated as a viable innovative regulatory response to the negative externalities of online business models.

Nonrivalry involves the ability of multiple parties (data processors) to reuse data in its unaltered form simultaneously, without risk of depletions in volume or value.⁵² This feature is critical to the increasing commodification of data among tech firms in the emerging global digitalisations. Indeed, the simultaneous use of data has stimulated the categorisation of data as a public good (like oil).⁵³ But

⁴⁵ Acquisti, Taylor and Wagman (n 1 above).

⁴⁶ Justin P Johnson, "Targeted Advertising and Advertising Avoidance" (2013) 44(1) *The Rand Journal of Economics* 128.

⁴⁷ Dirk Bergemann, Alessandro Bonatti and Tan Gan, "The Economics of Social Data" (Cowles Foundation Discussion Paper NO 2203R, 2020); Jay P Choi, Doh-Shin Jeon and Byung-Cheol Kim, "Privacy and Personal Data Collection with Information Externalities" (2019) 173 *Journal of Public Economics* 113; Rodney Garrat and Maarten van Oordt, "Privacy as a Public Good: A Case for Electronic Cash" (2021) *Journal of Political Economy*.

⁴⁸ Liu (n 2 above) p 49.

⁴⁹ Charles I Jones and Christopher Tonetti, "Nonrivalry and the Economics of Data" (2020) 110(9) *American Economic Review* 2819–2858; Hal R Varian, "Artificial intelligence, Economics, and Industrial Organization" in Ajay Agrawal et al. (eds), *The Economics of Artificial Intelligence: An Agenda* (University of Chicago Press, 2018).

⁵⁰ Yan Carriere-Swallow and Vikram Haksar, *The Economics and Implications of Data: An Integrated Perspective* (International Monetary Fund, Departmental Paper No 19/16, 2019).

⁵¹ For data excludability, see Part 4(i).

⁵² Liu (n 2 above) pp 49–50.

⁵³ The Economist, "The World's Most Valuable Resource Is No Longer Oil, but Data" (6 May 2017) <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data> (visited 11 December 2021).

this characteristic of data is distinguishable from traditional public goods as it is not subject to the inherent risks of overuse or depletion, so-called “tragedy of the commons”.⁵⁴ To prevent the risks of depletion, most arguments have supported the control and management of public goods by central authority,⁵⁵ such as through regulatory interventions that are available within data governance regimes. However, the true value of data appears to lie in the capability to analyse the large troves of data for meaningful deductions. This is foundation of digital competition in digital economies where players with advanced algorithmic powers to analyse larger varieties of powers typically have larger market share than other rivals. In China, data acquisition is relatively flexible when compared with other economies, particularly the European Union), due in part to positive consumer sentiments and the considerably relaxed data laws. As of 2018, the economy produced an estimated 7.8 trillion gigabytes of data, with a projection of 48.6 trillion gigabytes in 2025.⁵⁶

Personal data shared by consumers when onboarding on tech platform does not generally affect the value of same data being shared later with other tech providers. However, this openness can have several economic implications on the profitability and competitiveness of tech platforms, necessitating the adoption of closed systems. First, data carries inherent returns of scale,⁵⁷ the more access a tech platform has to large data sets for its proprietary analytical algorithms, the more market power and competitive advantage it gathers over its competitors through the monetisation of analysed data for higher differentiated products and services and resale to external data processors. This unique factor of digital competition drives a fierce race to the top among tech platforms competing for more data access by encouraging higher consumer adoption of their value added services for increased data generation and concentration.⁵⁸ Indeed, most tech giants initially run their businesses at a loss for several years, concentrating instead on increasing their market share (and network effects) through increased adoption among consumers. This business strategy is achieved through several initiatives such as offering free digital and complementary social services like social media, recommender services, social networking, and search engines. For example, WeChat, one of China's tech giants with a billion users, process around 45 billion messages exchanged on its digital platform for free daily.⁵⁹ Additionally, complementary (financial) services like payments may be introduced to make the platform more convenient and increase desirability to onboarded and new users. While these free value added services may

⁵⁴ The concept of tragedy of commons was first made popular by American ecologist, Garret Hardin, while discussing the difference between individual and collective rationality, see Garret Hardin, “The Tragedy of the Commons: The Population Problem Has No Technical Solution; It Requires a Fundamental Extension in Morality” (1968) 162(3859) *Science* 1243; Liu (n 2 above) p 50.

⁵⁵ Elinor Ostrom, “Tragedy of the Commons” (2008) 2 *The New Palgrave Dictionary of Economics* 1–4.

⁵⁶ CNBC, “As Information Increasingly Drives Economies, China Is Set to Overtake the US in Race for Data,” (13 February 2019), <https://www.cnbc.com/2019/02/14/china-will-create-more-data-than-the-us-by-2025-idc-report.html> (visited 11 December 2021).

⁵⁷ Ajay Agrawal, Joshua Gans and Avi Goldfarb, *Prediction Machines: The Simple Economics of Artificial Intelligence* (Harvard Business Press, 1st ed, 2018).

⁵⁸ Parker (n 20 above).

⁵⁹ Liu (n 2 above) p 48.

seem counterintuitive, platforms profitability is tied generally to its market share through which it leverages the acquired data pool and positive network effects for other profit-driven activities such as resale of processed data to behavioural advertising firms.

Importantly, when the consumers sign up to tech platforms (like WeChat, Alibaba), it is usually without full notice (or care) of the inherent implications of signing over substantial parts of their data rights, including rights to online privacy. This lapse in awareness, or relative indifference, allows tech platforms to acquire full access to consumer data, sometimes through clandestine data-gathering surveillance mechanisms without full knowledge or consent of users.⁶⁰ Data pool from this access drive the economic growth and profitability among tech platforms. For one, it enables the aggregation and redistribution of data for monetisation through resale to digital advertising firms, targeted ads processors, complementary financial products (insurance, investment products) and services (credit scoring, payments), and collection of rents from merchants using the platform for scaling their products and services online. For instance, recent reports indicate that around 60 million people exploited Tencent Holding's Super App, WeChat, in selling online goods and services in 2019.⁶¹ These activities have accelerated significantly because of the COVID-19 pandemic. Consequently the market share and profit margins of tech platforms, at least among the dominant players, have increased considerably despite the many zero-priced services offered, primarily because their business model allows the broader exploitation data as quasi assets.

Second, and importantly, the level of access and restrictions to consumer data impacts tech platforms' returns of scale. For competitive advantage, tech platforms usually prevent multihoming, by restricting users from accessing or using multiple rival platforms simultaneously and also preventing non-users from benefiting from their wide range of free data services and complementary financial services.⁶² As a result, smaller competitors who may not have similar access to data to increase their algorithmic capabilities may be driven out of the market by dominant players by preventing users from having access to competing digital services outside the platform's affiliated networks.⁶³ This can have the consequence of starving smaller platforms of needed proprietary data to innovate and generate network effects from high adoption necessary to scale their business to competitive levels. In this context, uneven access to data can have the broad market implication of creating irregular markets where only few players are dominant. Where data-sharing is

⁶⁰ Acquisti, Taylor and Wagman (n 1); Nora A Draper and Joseph Turow, "The Corporate Cultivation of Digital Resignation" (2019) <https://doi.org/10.1177/1461444819833331>; Susanne Barthe and Menno DT de Jong, "The Privacy Paradox – Investigating Discrepancies between Expressed Privacy Concerns and Actual Online Behavior – A Systematic Literature Review" (2017) 34(7) *Telematics and Informatics* 1038–1058.

⁶¹ McKinsey & Company, "Understanding Chinese Consumers: Growth Engine of the World" (China Consumer Report 2021, 2020) <https://www.mckinsey.com/~/media/mckinsey/featured%20insights/china/china%20still%20the%20worlds%20growth%20engine%20after%20covid%2019/mckinsey%20china%20consumer%20report%202021.pdf> (visited 11 December 2021).

⁶² Parker (n 20 above).

⁶³ Bruno Jullien and Wilfried Sand-Zantman, "The Economics of Platforms: A Theory Guide for Competition Policy" (2021) 54 *Information Economics and Policy* 100880.

freely available among platforms, it carries several social and economic gains, in particular from increased competition and competitiveness that can be leveraged in promoting the social welfare of consumers and inclusive economic developments.⁶⁴ In contrast, the concentration of data through technical restrictions on data sharing in walled gardens and lack of interoperability, coupled with returns of scale, implies that dominant platforms with access to larger volumes of data and algorithmic powers may continue to have more competitive advantage. Naturally monopolistic behaviours often arises from such situations where dominant players use lock-in services and high switching costs⁶⁵ to grow and leverage their market dominance for optimal profit maximisation.

The above discourse provide a concise explanation for pro data concentrations underlying major tech giants' reluctance to operate open data ecosystems, which may allow market contestability through unhindered data sharing. Even where structured/permissioned access is allowed with rivals, for example in digital payment interfaces, it appears that such arrangements are mostly subject to prohibitive costs, thus creating significant entry barriers to smaller players. Although this dynamic among tech platforms contribute to their pivotal activities in digital finance which promotes financial inclusion and economic developments in China and globally, the inherent risks and regulatory challenges on vulnerable consumers and market efficiencies can be quite significant in digital economies such as China where their activities support the broader financial system. This is further explored below in the specific context of the Chinese digital economy.

3. Implications of Walled Gardens on the Chinese Digital Economy

The activities of giant tech platforms in digital financial services, and the inherent risks and challenges from their operation of closed-loop systems have been at the forefront of recent domestic and international policy debates.⁶⁶ Central pain points revolve around the emerging nexus between financial regulations, data governance, market efficiency, consumer protection and fair competition. While the benefits tech platforms have had on the social and economic developments in China's digital economy has positioned the country as a global innovator among contemporaries, the attendant challenges of increasing change in market structure has also become prominent. In particular, the economic features at the root of most tech platform's business models have also given rise to both positive and negative externalities for China's consumers and its financial and regulatory systems.

⁶⁴ Acquisti, Taylor and Wagman (n 1 above).

⁶⁵ Joseph Farrell and Paul Klemperer, "Coordination and Lock-in: Competition with Switching Costs and Network Effects" (2007) 3 *Handb Ind Organ* 1967–2072; Andrej Fatur, *Eu Competition Law and the Information and Communication Technology Network Industries: Economic Versus Legal Concepts in Pursuit of (Consumer) Welfare* (Hart Publishing, 2012) pp 86–87.

⁶⁶ Frederic Boissay *et al.*, "Big Techs in Finance: On the New Nexus between Data Privacy and Competition" (BIS Working Paper No 970, 2021); Matthew Steven Erie and Thomas Streinz, "The Beijing Effect: China's 'Digital Silk Road' as Transnational Data Governance" (2021) 54 *NYU J Int'l L & Pol* 1, available at <https://ssrn.com/abstract=3810256>.

In this section, the paper examines some of the prominent issues emanating from pro data concentrations in institutional walled gardens, in the context of China.

(a) Consumer Perspectives

Digitalisations and the disruptions by tech giants in finance are not always bad for financial consumers. In fact, compared with incumbents service providers, network effects from tech platforms' hyper-scalability model have projected the new actors as conduits for broader financial inclusions, in terms of better access, usage, and higher quality of innovative financial services, to unbanked and underbanked segments of the population.⁶⁷ As a result, there has been a noticeable increase in consumer convenience and accessibility to broader range of affordable and personalised financial products and services, particularly in mobile-money peer-to-peer payments (Alipay and WeChat Pay), retail banking, and money market funds.⁶⁸ For instance, Alipay (launched in 2004) and WeChat Pay (launched 2011) jointly provides over a billion consumers (around 92% of all mobile payments) with easier access to dependable, safe, affordable, and efficient payment services through smartphones.⁶⁹ Similarly, Alibaba's Yue'bao, the largest money market fund (introduced in 2013), is also a major player in driving inclusive economic growth, by providing easier access to short-term credit facilities (micro loans) to individuals and small and medium enterprises who are mostly financially excluded by risk-averse banks and other regulated credit institutions. The totality of these relatable examples provide evidence to suggest that if properly managed, digital economies in which tech giants function as gatekeepers of consumer financial services can hold considerable benefits for the consumers.

However, the increased tendency for pro data concentrations within closed systems by tech giants in order to stimulate higher returns of scale and achieve market dominance common in digital economies such as China can carry several adverse legal implications for financial consumers in terms of consumer protections, and data protection and privacy particularly. First, the increased leverage of data can worsen regulatory concerns resulting from the effect of data oversharing on consumer data protection and data privacy, sometimes resulting from dark patterns.⁷⁰ This concern stems majorly from what is popularly termed a "privacy paradox, which represents the misalignment between most consumers" expressed privacy concerns and their behaviour in digital platforms.⁷¹ The existing information

⁶⁷ Michael Keane et al., *China's Digital Presence in the Asia-Pacific: Culture, Technology and Platforms* (Anthem Press, 2020).

⁶⁸ Harald Hau et al., *Fintech Credit, Financial Inclusion and Entrepreneurial Growth* (Mimeo, 2018).

⁶⁹ Aaron Klein, *Is China's New Payment Systems the Future?* (Brookings Institution, 2019); OECD, *Digital Disruption in Banking and its Impact on Competition* (2020)<https://www.oecd.org/competition/digital-disruption-in-banking-and-its-impact-on-competition-2020.pdf> (visited 11 December 2021).

⁷⁰ Dark patterns largely refers to design features in digital interfaces engineered to manipulate users into doing certain things they do not necessarily want to do, such as buying overpriced products or services. See Colin M Gray et al., "End User Accounts of Dark Patterns as Felt Manipulation" (2021) 5(CSCW2) *Proceedings of the ACM on Human-Computer Interaction* 1–25.

⁷¹ Barthe and Jong, (n 60 above) p 1039.

asymmetries in digital economies hinder consumers from making informed decisions about their data privacy in their interactions with institutions (especially tech platforms) and governments.⁷² So even though consumers in China show a strong willingness to share data with market actors, they are in most situations unaware of the full implications of such actions. As will also be argued subsequently, the introduced consent-based data framework in the PIPL may also have little effect on surmounting this concern due to the lack of digital knowledge on the part of most consumers. Furthermore, the commodification of data by tech platforms can encourage unscrupulous data practices and high risk taking in data use and management. In recent times, major tech giants have increasingly been wrapped in scandals, including the use of surveillance methods in clandestine data acquisition and manipulative exploitation for economic gain without proper consumer notice or consent (eg Facebook's Cambridge Analytica case⁷³).

In a recent study by Rodney Garrat and Micheal Lee, for example, it was suggested that payment data concentration can drive tendencies towards data monopoly in markets where firms compete with product and prices.⁷⁴ Earlier discussion have illustrated how tech giants compete through value added services, including complementary payment products, to generate higher network effects from data accumulation. In most cases, these business objectives can create conflict of interests with consumer data protections and privacy since the tech giants can be incentivised to maximise profits through extreme data exploitation. Indeed other studies mentioned earlier have also indicated that the breach of data privacy arising from the business activities of tech platforms can have (sometimes unintended) severe implications on consumers' welfare such as censorship, surveillance, social stigma, discrimination based on sexual orientation, cyber fraud and identity theft.⁷⁵

Worse still, the negative externalities from the above clandestine data tracking and processing and potential privacy breach may not limited to consenting data subjects since in digital economies such as China, most digitally active users are connected either directly or indirectly online. Therefore, the implications from negative data practices may also extend to other consumers who may ordinarily not be users of the platform's ecosystem. Specifically, regardless of their lack of consent or immediate connections, inferences can be drawn through the use of advanced predictive analytics (machine learning and predictive algorithms) with potentially negative implications, including the profiling of consumer habits from data on existing interconnections with known data subjects.⁷⁶ In this regard, inferential capabilities may result in uncontrollable, or even unknown, market prejudices, including price discriminations, where consumers can be quoted different

⁷² Acquisti, Taylor and Wagman (n 1 above).

⁷³ J Hinds, EJ Williams and AN Joinson, "It Wouldn't Happen to Me": Privacy Concerns and Perspectives Following the Cambridge Analytica Scandal" (2020) 143 *Int J Hum Comput Stud* 102498.

⁷⁴ Rodney Garrat and Micheal Lee, "Monetizing Privacy with Central Bank Digital Currencies" (2021) <https://ssrn.com/abstract=3583949>.

⁷⁵ Acquisti, Taylor and Wagman (n 1 above).

⁷⁶ Liu (n 2 above) p 51; Daron Acemoglu *et al.*, "Privacy-constrained Network Formation" (2017) 105 *Games Economic Behaviour* 255.

prices generated by algorithms for similar products or services “predicting reserve prices from similar consumer behaviour”.⁷⁷ Another instructive example of likely negative externality on non-sharers has been highlighted in the findings of a similar study, where access to only 2% of the target population’s genetic data could result in the developed model identifying the genetic data of other individuals, regardless of their non-participation in the genetic testing.⁷⁸ In yet another study by MIT students, it was demonstrated that algorithms can predict an individual’s sexual orientation based on their friend’s Facebook reported sexuality.⁷⁹ In an increasingly digitalised and interconnected economy like China where regulations on data are largely permissive and consumer sentiments remain positive, the implications from these negative circumstances can potentially go beyond individuals and result in society-wide harms. To these concerns, the paper will subsequently argue what little impact that individual consent-based frameworks introduced in the PIPL may have in ameliorating the concerns of the power imbalances between consumers and tech providers.

These concerns have motivated the developments of new data governance regimes globally with focus on personal information protection and data privacy, including the recently introduced China’s PIPL which came into force in November 2021. To this point, provisions within Chapter II of the PIPL adopts, to a considerable extent, the global consumer-centric regulatory framework, granting consumers the right to know and make decisions about how their personal information is gathered and used. Therefore, the data regulatory framework are now based on broader consumer control and ownership: informed consent, notice and access, and the opportunity to be heard. Broadly, the individual data rights provided for under the PIPL now include (1) right to access, correct, object to or restrict the processing of individual’s data; (2) the right to withdrawal consent; (3) the right to lodge a complaint to a regulator where a breach is perceived or has occurred and (4) right to data portability. These rights are supplemented by additional provisions in Chapter V on mandatory duties of data handlers, in particular on the ethical use of algorithms in automated decision-making.⁸⁰ These provisions largely reflect an alignment with existing global data frameworks, also noticeable in the European Union’s General Data Protection Regulation (GDPR) and recent EU Data Strategy.⁸¹ Together, these provisions align with the core of individual data privacy protections which focus on dignity (preserving personhood and preventing objectification) and autonomy (freedom, choice and control)⁸² in situations of power imbalances between data processors and individuals. However, it will be suggested that for transparency and efficient risk management within

⁷⁷ Acquisti, Taylor and Wagman (n 1 above) p 446.

⁷⁸ Yaniv Erlich *et al.*, “Identity Inference of Genomic Data Using Long-Range Familial Searches” (2018) 362(6415) *Science* 690–694.

⁷⁹ Carter Jernigan and Behram FT Mistree, “Gaydar: Facebook Friendships Expose Sexual Orientation” (2009) 14(10) *First Monday* <https://doi.org/10.5210/fm.v14i10.2611>.

⁸⁰ Personal Information Protection Law, Art 24.

⁸¹ Personal Information Protection Law, Art 22.

⁸² Alan Westin, *Privacy and Freedom* (New York: Atheneum, 1967).

digital economies such as China, access to actionable data pool across multiple platforms is crucial, and this may remain inaccessible unless tech platform ecosystems become more interoperable. Balancing this regulatory interventions effect on business objectives of tech platforms and consumer benefits is a major pain point in recent times and will be elaborated upon in Part 4.

Secondly, closed systems preventing multihoming can have significant impact on digital financial inclusion and consumer choice in accessing competitive digital services and financial options. Studies suggest that positive consumer outcomes are largely influenced by the contestability of market systems and interoperability among market participants.⁸³ But in digital economies where only onboarded users may access dominant platforms' superior products and digital services,⁸⁴ most consumers may be forced into "pick one of the two" situations among dominant tech providers. In the Chinese digital economy, this is better exemplified in the activities of primary Chinese duopolies, compared to other smaller rivals. Potential implications of these irregular markets structure, unfair market competition and market concentrations can result in consumer limitations from monopolistic behaviours, including search restrictions, product differentiation, price fixing, and service discriminations, by tech giants due to increased demand. Furthermore, consumers without the ability to access services offered by larger platforms may invariably suffer worse social and economic welfare arising from digital financial exclusions since the digital economy relies primarily on the activities of these gatekeepers in most consumer economic activities.

For example, access to Alipay and WeChat Pay mobile payment services are restricted to registered users (payer and payee), therefore people who are not users of the platforms may likely be left out from the global payment networks. This is further complicated by the fact that although both tech giants process majority of digital payments in China, their services are not interoperable. Thus, consumers cannot ordinarily use Alipay to satisfy financial obligations for commercial transactions within Tencent holdings' platforms and vice versa. Worse still, the interlinkage restrictions also extend to smaller tech rivals, essentially making them unappealing to consumers as suitable alternatives because of the high switching costs. This crippling situation, while prominent in payments, is not limited to it. In fact, similar trend is emerging in other financial sectors, where platforms are disrupting markets through financial products and service delivery (including money market funds). Promoting consumer choice and access to competitive financial options and service providers is therefore as important to financial inclusion in the era of digitalisation as digital access. The later of the article will suggest that more regulatory interventions are needed to tackle the limitations of the consent-based

⁸³ David Matsa, "Competition and Product Quality in the Supermarket Industry" (2011) 126(3) *Quarterly Journal of Economics* 1539–1543.

⁸⁴ Article 16 of the *Chinese Personal Information Protection Law* supports situations where consumers may still have access despite not consenting to sharing personal information, however, tech platforms are allowed to refuse such access where access to consumer data is critical to the provision of such services.

PIPL in this regard, in particular by creating effective data interoperability framework as a strategy towards market contestability.

The above concerns, although mostly applicable to individual consumers, can have broader potential implications on the overall market efficiency, integrity, competitiveness and developments of China's financial market.

(b) Innovations, Competitiveness and Financial Market Developments

The stability and efficiency of financial markets is critical to the overall health and development of financial systems. Foundational objectives among regulators therefore include *inter alia* the evaluation of market participants' taxonomies and business dynamics to identify potential threats to market integrity in the hopes of developing prophylactic — and reactive — interventions to manage the inherent risk exposures. Unchecked closed systems by tech giants can carry inherent risks and severe economic implications to the efficiency of digital economies such as China's financial markets. In this section, the paper comments briefly on two of these pain points: market concentrations; and complexities in effective risk management.

In most underdeveloped regulatory systems, such as the situation in China before 2017,⁸⁵ tech platforms seeking higher market share in unexplored (or inadequately regulated) financial markets segments leveraged existing regulatory arbitrage and existing voids in the market infrastructures for scalability and profit. Digital economies with relaxed data laws offer huge opportunities for innovative alternative financial activities. In particular, online platform business models offer instructive examples of this application, exploiting the deep penetrations of mobile telephone and internet broadband in reaching the 1.7 billion global population of unbanked consumers, in addition to existing underserved segments.⁸⁶

However, their data-driven activities (mostly) outside the regulatory perimeter applicable to traditional intermediaries (until recently in China) can create moral hazards for tech giants to engage in market monopoly practices to maximise profit generation. As private actors, their business models are primarily profit-oriented, as opposed to public policy objectives inherent in state-owned entities. The major result of this struggle for market dominance by tech giants is that it increases the tendencies towards the concentration of markets in the hands of few dominant market players. For instance, only a handful of tech platforms (including Baidu, Alibaba, Tencent, ByteDance and JD.com) have remained at the apex of China's platform economy.⁸⁷ This has been possible through their leverage of positive network externalities, operation of closed systems and broad portfolio investments

⁸⁵ Weihuan Zhou, Douglas W Arner and Ross P Buckley, "Regulating FinTech in China: From Permissive to Balanced" in David Lee Kuo Chuen and Robert H Deng (eds), *Handbook of Blockchain, Digital Finance, and Inclusion* (Academic Press, 2018) pp 2, 45–64.

⁸⁶ United Nations, Economic and Social Commission for Asia and the Pacific (UNESCAP), "Digital Finance and Sustainable Development in Asia-Pacific: Cultivating an Ecosystem Approach" in *Financing SDGs to Build Back from the Covid-19 Pandemic in Asia and the Pacific* (UNESCAP, 2021) Ch 3.

⁸⁷ Statista (n 6 above).

in the equities of other promising rival start-ups. Strong competitions in financial markets is beneficial to economic developments as it can promote efficiency. However, situations of market concentrations and lack of competitiveness resulting from unmanaged market trends can paradoxically create an adverse situation of unfair (and imperfect) market competitions, with plethora of antitrust economic implications.⁸⁸ This is especially important in China's platform economy where the centrality of data to digital competition has provided new channels of anti-trust concerns outside the perimeter of traditional competition laws. Prominent implications on economic development and market integrity have been observed in recent research suggesting that enhanced data collection and monetisation can lead to situations of "winner-takes-most" by tech firms with larger access to consumer information.⁸⁹ In conditions where advanced data analytics are involved, data concentrations can alter market structures in digital economies where data is supreme,⁹⁰ thus promoting anti-competitive behaviours through collusions and exclusionary conducts among new "data mergers".⁹¹

In response to these concerns, China's antitrust regulators have initiated extensive regulatory and supervisory tools to combat unfair market practices and oligopolies among tech giants.⁹² Prominent interventions have revolved around preventing exclusionary conducts (that have created illusive financial options) and barriers to market entry, market abuse, lack of interoperability. Recently, this have extended to preventing "killer acquisitions"⁹³ — arising from tech giants' portfolio investments in potential rivals to control their growth (or kill the competitive business idea). Crackdowns by China's competition watchdog, the State Administration of Market Regulation ("SAMR"), on giant tech platforms abuse of market dominance have accelerated recently. As of November 2021, tech giants (including Alibaba Group Holdings, Tencent Holdings, JD.com, ByteDance and Baidu Inc) were fined a total of 21.5 million yuan (\$3.4 million) for 43 antitrust violations and non-disclosures dating as far back as 2012.⁹⁴ The fines include Alibaba levied \$2.8 billion (four per cent of domestic sales in 2019) for abuse of market dominance, while food-delivery giant, Meituan, was fined three per cent of its 2020 revenue totalling \$533 million (3.44 billion yuan) for violations of anti-monopoly laws.⁹⁵

⁸⁸ Angela Huyue Zhang, "Agility Over Stability: China's Great Reversal in Regulating the Platform Economy" (University of Hong Kong Faculty of Law Research Paper No 2021/36, 2021) <https://ssrn.com/abstract=3892642>.

⁸⁹ Garrat and Lee (n 72 above) p 6; Jason Furman et al., "Unlocking Digital Competition" (Report of the Digital Competition Expert Panel (HM Government), 2019).

⁹⁰ Michael E Porter, *The Competitive Advantage: Creating and Sustaining Superior Performance* (NY: Free Press, 1985). Maryam Farbodi et al., "Big Data and Firm Dynamics" (2019) 109 AEA Papers and Proceedings 38–42.

⁹¹ Maria C Wasastjerna, "The Role of Big Data and Digital Privacy in merger review" (2018) 14(2–3) *European Competition Journal* 417.

⁹² Zhang (n 88 above).

⁹³ For further readings on the concept of "Killer Acquisitions", see Colleen Cunningham, Florian Ederer and Song Ma, "Killer Acquisitions" (2021) 129(3) *The Journal of Political Economy* 649.

⁹⁴ South China Morning Post, "China's Latest fines on Alibaba, Tencent and Baidu Show Beijing's Anti-monopoly Commitment" (21 November, 2021) <https://www.scmp.com/tech/policy/article/3156872/chinas-latest-fines-alibaba-tencent-and-baidu-show-beijings-anti> (visited 11 December 2021).

⁹⁵ Bloomberg, "China Fines Alibaba, Tencent in Latest Antitrust Investigation" (20 November, 2021) <https://www.bloomberg.com/news/articles/2021-11-20/china-fines-alibaba-tencent-in-latest-antitrust-investigation> (visited 11 December 2021).

These oligopolistic trends can have negative knock-on effects on the efficiency, integrity and developments of China's financial market infrastructures. For instance, market concentrations and data dependency can smother financial innovations and competitiveness that spur inclusive economic developments and consumer outcomes. For innovations to thrive, contestable and fair market environments must be encouraged. Particularly, a level playing field must be developed for all firms to have unhindered access to necessary data to upscale and build interconnections with dominant players.⁹⁶ In this regard, it is suggested that the consumer-centric framework of the PIPL which places the responsibility largely on consumers through permissive data portability provisions may be largely inadequate. Furthermore, efficient oversight and enforcement tools by regulators will require access to large troves of data for real-time risk monitoring and management to enable agile and innovative policy developments. This is because consumers are usually not risk averse to the implications and externalities of their willingness to share data. The heightened confidentiality surrounding consumer acquired data considered as private assets stored in proprietary data silos by tech giants can clog the efficiency of risk monitoring approaches and mechanisms. This can invariably exacerbate the digital economy's exposures to new forms of technological risks (such as cyber fraud, data loss and theft, data security risks),⁹⁷ in addition to traditional market risks. These concerns around the protection of data networks and systems of 'critical information infrastructures' form the background rationale for the introduction of China's Cybersecurity Law in 2017 (applicable to network and systems), and recently, the Data Security Law in 2021 (applicable to data processing broadly). Moreover, these frameworks are largely a development from the initial Chinese e-commerce, which came into effect on 1 January 2019 with focus on several issues including consumer protection and the promotion of competition.

Overall, it is evident from the discourse and evidences above that the operation of closed systems by tech giants can have the potential to significantly impact the social and economic welfare of consumers, and also impact the efficiency and competitiveness of financial markets, especially in digital economies. Furthermore, it also appears that the focus of regulators on accelerated antitrust investigations and extensive punitive measures in recent times may at best be adjudged as reactive, since it does not tackle the principal loopholes in tech entrants' business models on data concentration affecting the financial market and regulatory system. Therefore, the desirable panacea to issues of tech platforms' monopolies and closed systems arising from data concentrations may lie in replicating innovative data sharing common infrastructures, such as those mandated within the EU DMA. This should be complemented by individual's affirmative rights (like

⁹⁶ Douglas W Arner, Ross P Buckley and Dirk Zetsche, "Open Banking, Open Data and Open Finance: Lessons from the European Union" in Linda Jeng (ed), *Open Banking* (OUP, 2021) Ch 8 <https://ssrn.com/abstract=3961235>.

⁹⁷ For further readings on new technological risks, see Ross P Buckley et al., "Techrisk" [2020] *Singapore Journal of Legal Studies* 35. For discussion on limitations on existing approaches to data securities, see Daniel J Solove and Woodrow Hartzog, *Breached! Why Data Security Law Fails and How to Improve It* (OUP, 2022).

data portability) and forum for rights enforcement noticeable among data regimes emerging in other major economies, particularly the European Union.⁹⁸ By this approach, data privacy could be leveraged in redesigning regulatory approaches to promote data interoperability and allow consumers better opportunities to monetize their privacy. Unsurprisingly, the PIPL has introduced a hybrid data protection regime,⁹⁹ including consumer-centric framework to allow data sharing and operationalise consumer data protection and digital market integrity among critical stakeholders. The opportunities and limitations of these approach is the focus of the next section.

4. New Frontiers in China's Data Governance Framework

The implications of tech giants' walled gardens highlighted above is not limited to, but amplified within, China's digital platform economy. Globally, and particularly in the European Union, there has been considerable regulatory efforts to combat the monopoly inclinations and lack of interoperability among tech giants. For instance, US-hosted global tech giants such as Alphabet's Google, Apple, Facebook and Amazon have been subject of several antitrust investigations (and even significant punitive fines) on abuse of market dominance and breach of data privacy.¹⁰⁰ There is also a growing body of literature examining the dynamics of these platforms (Amazon, eg) to elicit their operation models and tendencies towards oligopolies.¹⁰¹ But as earlier mentioned, the implications of the new entrants on a digital economy such as China remains largely undiscussed.

Aside the punitive fines (up to 10% of annual turnover in the European Union) and threats to break-up (unbundle) dominant firms under EU rules, a new regulatory initiative is mandating open data ecosystems (interoperability) among tech giants, so-called "online gatekeepers" within the recently introduced EU DMA as part of a comprehensive EU Data Strategy.¹⁰² These provisions mandate systemic online gatekeepers within the eurozone to share structured data with rivals and regulators. Broadly, the regulation will apply to tech firms operating in at least three EU member states, with more than 6.5 billion euros market value. Interoperability in this context refers to the ability of users to enjoy digital services across multiple interlinked online platform networks.¹⁰³ The new regulation are undoubtedly improvements to the limited scope of the GDPR and Payment Service Directives 2 (PSD 2) which mandates the largest traditional banks to share account and

⁹⁸ See Arner, Buckley and Zetsche (n 96 above).

⁹⁹ For discussion on the state-centric approach in the Chinese data governance regime: see Erie and Streinz (n 66 above).

¹⁰⁰ Reuters, "Factbox: U.S. Tech Giants in the EU Antitrust Crosshairs" (30 April 2021) <https://www.reuters.com/technology/us-tech-giants-eu-antitrust-crosshairs-2021-04-30/> (visited 11 December 2021).

¹⁰¹ See, eg, Lina M Khan, "Amazon's Antitrust Paradox" (2017) 126(3) *The Yale Law Journal* 710.

¹⁰² European Commission, *European Data Strategy* <https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-data-strategy_en>.

¹⁰³ European Commission, "The Digital Markets Act: Ensuring Fair and Open Digital Markets" (2021) https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en (visited 11 December 2021).

payment data with new tech entrants. The background concept in this developing regulatory initiative on data sharing, open access and advanced consumer rights, especially among online digital platforms, is the focus in this section of the paper. The paper uses China's platform economy as the case study context for the critical analysis of new opportunities and challenges in China's data governance regime, particularly the recent PIPL.

A major tool of artificial intelligence is "application programming interfaces" (API), an algorithm that allows interlinkage and communications (software intermediary) among multiple software programs and system networks.¹⁰⁴ It has been defined as "a way for two computer applications to talk to each other over a network using a common language that they both understand".¹⁰⁵ APIs are particularly useful as overlay networks for account information enquiries, real-time payments process and seamless know-your-customer compliance, among different systems. Indeed they underlie most of the horizontal integrations within the modular structure of major tech giants under consideration in this paper. Furthermore, this technology is also coincidentally at the root of most efforts towards open competition and open access to consumer data in global jurisdictions, including China. However, what distinguishes the Chinese approach from other major economies, particularly the European Union, is the fact that the application of APIs in China is not primarily underpinned by regulatory provisions (at least within the flexible construction in the PIPL), but has nevertheless been impactful. For instance, the EU open data regime — open banking initiative¹⁰⁶ which enables the sharing of consumer permissioned data primarily between incumbent (traditional) institutions and new market entrants, Third Party Providers (Account Information Service Providers and Payment Initiation Service Providers) is embedded in the provisions of the GDPR and the PSD 2.¹⁰⁷ Other instructive examples of this regulatory frameworks for open data access include the 2018 Hong Kong Monetary Authority's Open API Framework; 2016 Singapore's Financial Planning Digital Services; and 2019 Australia's open framework launched after agreeing to recommendations in the Consumer Data Rights.

However, China's divergence and peculiarity is explainable by several factors, including positive consumer sentiments towards data sharing and Chinese regulator's *sui generis* (flexible and pragmatic) approach to regulation of innovations, tech platforms and the digital market ecosystem. To a great extent, these factors manifest in the provisions of the PIPL which highlight its strength with regards

¹⁰⁴ See Markos Zachariadis and Pinar Ozcan, "The API Economy and Digital Transformation in Financial Services: The Case of Open Banking" (SWIFT Institute Working Paper No 2016-001, 2017) p 5 available at <https://ssrn.com/abstract=2975199>.

¹⁰⁵ Daniel Jacobson, Greg Brail and Dan Woods, *APIs: A Strategy Guide* (O'Reilly Media, Inc, 2012).

¹⁰⁶ For recent global research on open banking, see Linda Jeng (ed), *Open Banking* (OUP, 2021).

¹⁰⁷ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU; Regulation (EU) No 1093/2010; Repealing Directive 2007/64/EC, OJ of 23.12.2015, L 337/35; Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L 119, 1–88.

to existing data challenges and areas of potential limitations in digital competition and data concentrations that may warrant further regulatory and supervisory interventions.

(a) Chinese Open Data Digital Markets Ecosystem?

The Chinese digital market, like most digital economies, is expansive and cuts across different sectors of the financial and social economy. For simplicity, however, the analysis here will focus primarily on the digital financial services sector. In this regard, it is germane to return briefly to and consider, the other element of data: partial excludability.¹⁰⁸ This is because it influences the noticeable gap between small and large tech platforms in their attitude towards data sharing policy initiatives and institutional designs.

Data is partially excludable because it is almost impossible to restrict unauthorized individuals/entities from gaining access (sometimes illegally through cyber theft) for duplication and use. Among tech platforms, excludability of big data can be ensured within closed systems through several data obfuscating technologies such as data anonymisation, tokenisation, pseudonymisation, encryption and offline storage, which essentially renders the data unreadable by third parties.¹⁰⁹ However, as earlier mentioned, this can significantly limit the economic and social value that may be derived from exploiting the data, especially within ecosystems (for instance, China's digital markets) that rely on information capitalism for market efficiency and competitiveness. In most cases, excludability is often anchored to national data regulations because regulatory provisions determine the level of access and distributive rights in data sharing frameworks.¹¹⁰ Instructive examples lie within the GDPR and other open banking enabling laws earlier mentioned. More importantly, the excludability of data has two essential implications on the success of an ecosystem approach to open data.

First, because data concentration heralds returns on scale and increased network externalities for large tech platforms, they naturally lobby regulators for restrictive data-sharing policies which limits (or even prevent) access to their ecosystems by rivals. Conversely, smaller tech platforms by this same logic canvass arguments for regulations mandating interlinkages and easier access to data pool to scale their businesses. This latter approach will invariably enable a level playing field for all service providers and broadens the social gains for consumers in the digital market ecosystem, although with inherent risks from data security risks. Second, the excludability of data challenges the existing global regulatory framework on data governance which is premised upon consumer ownership and control, informed

¹⁰⁸ Liu (n 2 above) p 50.

¹⁰⁹ Jones and Tonetti (n 49 above); For discussion on the application of obfuscating technologies in context of electronic payments, see David Chaum, "Security without Identification: Transaction Systems to Make Big Brother Obsolete" (1985) <https://www.cs.ru.nl/~jhh/pub/secsem/chaum1985bigbrother.pdf>.

¹¹⁰ Abraham L Newman, "What You Want Depends on What You Know: Firm Preferences in an Information Age" (2010) 43(10) *Comparative Political Studies* 1286–312.

consent and notice. Because consumers cannot prevent unauthorised access, duplications and exploitations resulting from data pollution and inferences from data analytics, it is arguable that consumer control of data processing by handlers (tech platforms) is flawed.¹¹¹ The alternative is to consider data as vested in the absolute control of state authorities, but this option also carries the risk of challenges between human rights and state powers.¹¹² It thus begs the question: does a broad consumer-led open data approach introduced by the PIPL be efficient in the Chinese platform economy?

In investigating this question, it is necessary to infer from the provisions within the primary data regulation in China, the PIPL, particularly on issues revolving around consumer affirmative rights to informed consent, data ownership, data portability and data sharing frameworks applicable to tech platforms. These provisions lie at the root of open data (interoperability) and potential development of common infrastructures for data exchange in a digital economy that can tear down the walled gardens. It is noteworthy to mention that similar approach has long existed in the context of the EU GDPR with minimal success on these concerns. This section will suggest that in a digital economy such as China, the prospect of the PIPL in this regard may suffer a similar limitation, if not worse.

(i) PIPL: Consumer Rights in the potential open data framework

First, an efficient open data system requires a framework for structured and standardised data exchange within the digital economy. As earlier mentioned, China until the PIPL adopted a laissez faire approach to API framework (open banking, eg), allowing traditional market participants to decide whether to adopt the technology in interlinking their legacy systems with new tech entrants. In comparison, data regulations within the European Union (GDPR and PSD 2), Australia, and the United Kingdom all have provisions mandating incumbents to share consumer-permissioned data in a standardised and structured form with authorised online institutions (including FinTech firms) upon request. In other jurisdictions, including Hong Kong SAR China and Singapore, these provisions are merely facilitative, allowing voluntary compliance by traditional institutions.

Interestingly, however, there appears to be a transition towards a regulatory facilitative approach to open data within the PIPL,¹¹³ allowing joint acquisition and exchangeability of data among collaborating personal information handlers,¹¹⁴ including online tech platforms. This provision suggests a shift from the

¹¹¹ There is a growing body of literature arguing that consumer-centric data governance regimes are essentially useless because individual rights are ineffective in the era of digital analytics. See Margot E Kaminski, "The Case for Data Privacy Rights (Or 'Please, a Little Optimism')" (2022) *Notre Dame Law Review* fn 1, available at <https://ssrn.com/abstract=4055627>.

¹¹² Lydia Khalil, *Digital Authoritarianism, China and COVID* (Lowy Institute, 2020) <https://www.lowyinstitute.org/publications/digital-authoritarianism-china-and-covid> (visited 11 December, 2021).

¹¹³ *Personal Information Protection Law*, Art 20.

¹¹⁴ *Personal Information Protection Law*, Art 73. "Personal information handler refers to organizations and individuals that, in personal information handling activities, autonomously decide handling purposes."

earlier laissez faire market experimentations to a light-touch regulatory framework approach. However, aside the joint liability, the conditions and infrastructure for such interlinkages and data exploitation is left entirely to the agreement of the collaborating entities. This is explainable by the fact that API frameworks had already gained prominence among market participants prior to the introduction of the PIPL.¹¹⁵ These provisions suggests a move towards a market-driven approach to interoperability with varying implications. As earlier mentioned, in situations such as this case, where no clear framework is provided for joint engagements, it can potentially worsen existing challenges from unfair market competition situations such as from data mergers and exclusionary conducts among dominant market players.

Specifically, the lack of mandatory provisions here implies that dominant players can pick and choose who to collaborate with, a circumstance that can further complicate the already herculean job antimonopoly authorities have to surmount to maintain market efficiency and competitiveness. In this regard, it will be important for clear guidelines to be introduced for managing the potential exposures from joint data acquisition and processing, in addition to the provisions allowing consumers to enforce claims jointly and severally against the data handlers. The intricacies of data analytics in inference economies is mostly beyond the comprehension of most consumers (as a result of inadequate financial, digital and data literacy and/or incentive). Consequently, the extensive affirmative individual rights may not be as effective to manage the risk exposures from these institutional collusions, unless a set of ex ante guidelines and ex post enforcement framework is introduced to give it teeth. This guideline must necessarily involve synergies between consumer protection authorities, competition watchdogs, financial regulators and data governance agencies. It is suggested that a consideration of a similar regulatory framework such as the EU's DMA may be the desirable strategy to overcome the consent-based limitations of the PIPL in this regard.

Second, a successful open data ecosystem will require broader consumer control of how their data is acquired, stored and processed. In this regard, the PIPL adopts a broad definition of personal information as “all kinds of information, recorded by electronic or other means, related to identified or identifiable natural persons, not including information after anonymization handling”¹¹⁶ while personal information handling includes “collection, storage, use, processing, transmission, provision, disclosure, deletion, etc.”¹¹⁷ The adoption of broadly construed definitions, similar to other existing data governance regimes, is a welcome development as

¹¹⁵ Ernst & Young Global Ltd, “How China’s Open Banking Experiment Is Unfolding” (17 December 2018) https://www.ey.com/en_gl/banking-capital-markets/how-chinas-open-banking-experiment-is-unfolding (visited 11 December 2021).

¹¹⁶ *Personal Information Protection Law*, Art 4. The Cybersecurity Law provides a broader definition “all kinds of information recorded in an electronic or other forms, which can be used, independently or in combination with other information, to identify a natural person’s identity, including but not limited to a natural person’s name, date of birth, identity certificate number, personal biometric identification information, address and telephone number.”

¹¹⁷ *Ibid.*

it guarantees a wider scope for consumer rights to data ownership and control by ensuring the data handling shall be in compliance with the principle of legality, good faith, integrity and necessity.¹¹⁸ Furthermore, by this provision, any individual or entity in China or worldwide which “handles” data originating from Chinese consumers will be required to operationalise the safety measures in the PIPL,¹¹⁹ thus giving the law a truly global representation. In so doing, they are expected to “follow the principles of openness and transparency, disclose the rules for processing personal information, and expressly indicate the purpose, manner, and scope of processing”¹²⁰.

To complement this, Chapter II of the PIPL contains extensive provisions, including the requirement of consumer informed consent and notice in data handling.¹²¹ Specifically, consumer data may now only be processes in predetermined conditions, such as (1) when individuals’ consents have been obtained;¹²² (2) for performance of a contract, or carrying out human resources management; (3) for fulfilling legal duties/obligations; (4) for news reporting in the public interest and (5) when the personal information concerned has been disclosed publicly by individuals themselves or otherwise legally disclosed, and the processing is within a reasonable scope.¹²³ Consumers now have the right to access their data with data handlers,¹²⁴ and in deserving cases request corrections,¹²⁵ erasure,¹²⁶ restriction or even refusal of consent.¹²⁷ For “sensitive personal information”¹²⁸ that can cause harm in all forms if illegally used or leaked (including for minors), separate consent is required. Also, there are strict circumstances where consent can be dispensed with where it concerns matters of public interest.¹²⁹ The consumer-driven framework is strengthened by provisions requiring general obligations from personal information handlers,¹³⁰ particularly tech giants operating online platforms with large user base, to ensure secure and efficient practices.¹³¹ Although equally important, the broad scope of the supervening powers of the state government on these rights is however beyond the scope of this article.¹³²

¹¹⁸ *Personal Information Protection Law*, Art 5. The concept of data ownership and control has been favoured in recent global policy directions on data protections: see Neil Richards, *Why Privacy Matters* (OUP, 2021) p 90; Cesare Fracassi and William J Magnuson, “Data Autonomy” (2020) 74(2) *Vanderbilt Law Review* available at <https://ssrn.com/abstract=3545964>.

¹¹⁹ *Personal Information Protection Law*, Art 9.

¹²⁰ *Personal Information Protection Law*, Art 7.

¹²¹ *Personal Information Protection Law*, Art 13(1), 14, 15, 16, 17.

¹²² The consent is deemed validly obtained only where the consumer gives it voluntarily without ambiguity and with full knowledge of the purpose. *Personal Information Protection Law*, Art 14.

¹²³ *Personal Information Protection Law*, Art 13.

¹²⁴ *Personal Information Protection Law*, Art 45.

¹²⁵ *Personal Information Protection Law*, Art 46.

¹²⁶ *Personal Information Protection Law*, Art 47.

¹²⁷ *Personal Information Protection Law*, Art 44.

¹²⁸ *Personal Information Protection Law*, Art 28–31.

¹²⁹ *Personal Information Protection Law*, Art 18.

¹³⁰ *Personal Information Protection Law*, Art 19–27, Ch V.

¹³¹ *Personal Information Protection Law*, Art 58.

¹³² For the state-centric approach to data governance in China, See Arner, Castellano and Selga, (n 34 above) p 27.

It is noteworthy that the PIPL includes broad provisions¹³³ on penalties for violations (five per cent of last turnover) of these provisions, including the right of individual consumers to sue, and class actions initiated by consumer organisations, where the violations affect personal rights. Furthermore, several “departments”, including the State cybersecurity and informatization departments, sectoral, and county-level departments, are empowered within the jurisdiction’s multi-layered enforcement structure for effective monitoring and oversight.¹³⁴

(ii) Data portability

In addition to the general overview of the PIPL provisions above,¹³⁵ perhaps the most important provision in the PIPL with direct relevance to open data as a regulatory response to the challenges posed by tech giants closed systems to consumer outcomes and Chinese financial markets revolves around right to data portability.¹³⁶ At a general level, data portability allow consumers to transfer their personal information (data) and other materials among competing data processing entities and information service providers without hindrance. By this concept, consumers can transfer their personal information (including financial information) between multiple platforms in order to “multihome” and benefit from the array of digital financial products and services without difficulty. For example, with data portability, consumers will be able to transfer their personal data (eg, payment information and transaction data) between Alipay and WeChat Pay, thus allowing them to make payments across these closed systems without switching between the service providers. Aside this commercial advantage, it may also involve the convenient transfer of personal social data such as videos, pictures, messages and status updates from one social networking site to another, if a consumer so desires. In principle, this can stimulate consumer outcomes where the process is clear and not to technical, to appreciate this, it is important to explore the text of the PIPL on data portability:

Textual Analysis of Article 45:

“Article 45 An individual is entitled to consult or copy his/her personal information from a personal information processor, except for the circumstances as prescribed in Paragraph 1 of Article 18 and Article 35 herein.

Where an individual requests to consult or copy his/her personal information, the personal information processor shall provide such information in a timely manner.

¹³³ Personal Information Protection Law, Ch VII.

¹³⁴ Personal Information Protection Law, Art 60.

¹³⁵ For a concise overview of the relevant provisions, see PCPD, “Highlights of the Mainland’s Personal Information Protection Law”, available at https://www.pcfd.org.hk/english/data_privacy_law/mainland_law/mainland_law.html (visited 18 March 2022).

¹³⁶ For similar considerations in the context of the EU GDPR, see Sophie Kuebler-Wachendorff et al., “The Right to Data Portability: Conception, Status Quo, and Future Directions” (2021) 44 *Informatik Spektrum* 264–272 <https://doi.org/10.1007/s00287-021-01372-w>; Peter Swire and Yianni Lagos, “Why the Right to Data Portability Likely Reduces Consumer Welfare: Antitrust and Privacy Critique” (2013) 72 *Md L Rev* 335.

Where an individual requests to transfer his/her personal information to a personal information processor designated by him/her, the personal information processor shall provide the means for such transfer if the conditions prescribed by the State cyberspace administration are met.”

From this provision, Art 45 is divided into three parts. Paragraph 1 clearly states that consumers now have the right of access (upon request) to their data with handlers and can copy or consult the available information for personal purposes, provided it does not offend the provisions on public interests and statutory duties. The scope of application is also noticeably extensive and will apply to all automated data processors including social networking sites, webservice providers, smartphone apps and cloud computing. With this, consumer opportunities for advancing their digital and data literacy (by understanding what personal information is acquired and how it is leveraged) can be further encouraged since the information can be used by consumers to determine the amount of information data handlers have on them and the accuracy of the data. Knowledge is arguably the first and most important factor in stimulating better consumer participation in data protection and personality rights safety. It is however unclear in what format the data is to be copied and or consulted, considering the fact that personal information within the definition of the PIPL includes data in electronic and other forms. It may be useful for the regulators to provide a guideline to ensure the data format is made available in an easy-to-use standardised format (preferably electronic to accommodate the large volume) to enable better consultation and fitness for purpose.

Paragraph 2 extends the power of consumers in relation to paragraph one by providing that requests for access to copy and/or consult personal information shall be processed in a “timely manner”. Although reasonable time within this context is largely unknown, it will likely be determined by the peculiar circumstances surrounding each case. But importantly, data processors can no longer delay processing request in the hopes of disincentivising consumers from exercising their rights under this provision without falling the risk of being found liable for a breach.

The most relevant provision however in noticeable in paragraph 3 which relates to the right to request the transfer of data among competing online digital service providers provided the preconditions set by the State “Cybersecurity and informatization department” are met. By this paragraph, consumers can now request the transfer of their personal information from data processors to another “information processor”, such as a rival digital platform, designated by the consumer. As a result, it is fundamentally different from the paragraph 1 and 2 because information here is not directly to the consumer but to another entirely different system or “information processor” which may be a rival competitor. The conditional requirement of compliance with guidelines of the State cyberspace administration suggests strong interlinkages between data transfer within the PIPL and cybersecurity, and by extension, may bring the activity within the scope of the Cybersecurity Law to ensure data safety. It appears from the wording that discretion of how and when

the data should be transferred lies with the host data processor, provided the pre-conditions have been complied with. In particular, the provision of this paragraph has several significant potentials to resolve the many concerns stemming from tech giants walled gardens in China's digital economies.

(iii) *Implications on monopoly and consumer outcomes*

First, unfair market competition and monopolies spurred by data concentrations in proprietary data silos can be disrupted through consumer-led market restructuring through data portability. In this context, the transfer of information by consumers among rival online platforms has the potential to create level playing field through interoperability that will stimulate innovations and contestable markets. Interoperability in this context refers to "the ability to transfer and render useful data and other information across systems, applications, or components".¹³⁷ In addition, the legal right to data portability implies that new service providers can stimulate innovation by attracting customers away from dominant incumbents to reduce (or eliminate) monopoly power. It can therefore drive further openness and transparency in digital markets and benefit inclusive economic developments among market participants and better efficiency for antitrust regulators.

However, while this provision is impactful, some inherent challenges are quite pronounced. It appears from the provision that although this envisages data interoperability, there is no clear framework for the transfer of the data between the hosting personal information processor and the designated handler. In what format should the data be transferred? Are all data to be transferred electronically? What is the time frame for the transfer and who has what obligations during and after the transfer request has been made/or transfer effected? This particularly becomes obvious when compared with similar provisions in the EU GDPR (Art 20) which requires the transfer in a standardised structured machine-readable format. In addition to this, technical interoperability among tech platforms which can break walled gardens may inadvertently pose considerable risk exposures (eg data security) from interlinkages.

Data symmetry (including consumer data and financial data) requires compatible (or at least functional equivalent) tailored coding software and information communication systems between the peering networks to facilitate data interoperability among the recipients.¹³⁸ It is without doubt that considerable initial investments in information systems and communication technologies is required for the operation and security of digital platforms.¹³⁹ Where data is freely transferable to smaller competitors who may not have adequate infrastructure (or data security

¹³⁷ Urs Gasser, "Interoperability in the Digital Ecosystem" (Berkman Klein Center for Internet and Society Research Publication No 2015-13, 2015), available at <https://ssrn.com/abstract=2639210> (Executive Summary).

¹³⁸ Gasser (n 137 above) 3; Shah Rajiv and Jay P Kesan, "Lost in Translation: Interoperability Issues for Open Standards" (2012) 8 ISJLP 119.

¹³⁹ Gasser (n 137 above).

measures) to secure the large trove of user data, the risks of data security risks may inadvertently become amplified. More concerning is the fact there is no clear provision on the responsibilities (and liabilities) during the transfer. This may further complicate the drive towards interoperability by encouraging the use of non-standard formats in data transfer by dominant players to maintain market power. The provision or Art 45 makes no express requirement for the expected standard making it difficult for consumers to determine whether the right data format was transferred and on who to enforce their data rights. One possible solution to this will be to introduce a guideline requiring that data transfer should be in machine-readable standardised formats. With this structure, compatibility will be fostered and likelihood of non-compliance on the grounds of asymmetrical data flows will be reduced if not eliminated.

Another obvious drawback from the provision is that from literal interpretation, the wording and scope of application appears too broad, applying to "all" personal information handlers irrespective of their demonstration of high market share. By implication, dominant players with substantial market share can remain giants despite the opportunities for smaller rivals to rise. This is because the right to initiate data portability has been vested exclusively with individual consumers and does not include smaller competitors who may wish to differentiate products in the market. As a result, where consumers find the larger user base of dominant players more convenient because of the larger volume of data which drives their algorithms and returns of scale, an unintended trend of portability from smaller rivals to dominant players may arise. The potential of this makes a plausible, if not strong, argument against the opportunities of data portability as a tool for monopolies and digital competition, especially in a digital economy like China where access to data and data analytics play a fundamental role in level of market share. It may be imperative for the anti-monopoly regulators to form synergies with data governance authorities and financial regulators to ensure that the market share position and undertakings within the Chinese anti-monopoly law is factored where compliance issues arise under this provision.

Second, and more importantly, is the potentials to drive better consumer outcomes (welfare) in digital markets ecosystem. As mentioned earlier in the paper, access to contestable markets promotes consumer choice and better services from differential digital products and services by rival online platforms competing for market share. With this provision, the lingering consumer limitations in benefiting from digital markets stemming from substantial locked-in services and high switching costs could be avoided with little difficulty. Consumers may now freely switch between competing data processors and online service providers without finding it costly or technically difficult. As a result, it is expected that the positive sentiments towards data sharing by Chinese consumers identified in the survey by Ernst & Young will also positively better financial options for consumers. Therefore, the provision may likely stimulate the consumer data sovereignty, thus heralding an era of inclusive democratisation of data, where the operation of closed ecosystems

is disincentivised, in particular because of consumer activities and changes in market behaviour. Here again it is evident that the PIPL has created new opportunities for broader inclusiveness and all-round developments.

But like the situation with data monopolies, the free access of data among several (unevenly secured) market participants can rival the intended benefits for which the provision was introduced. The most obvious of these concerns revolves around consumer privacy or data protection. Aside earlier minor non-binding guidelines and industrial regulations, general regulations and judicial interpretations and national laws within the Chinese Civil code, Criminal Law Amendment, Cybersecurity Law 2017 and National People's Congress decisions, the PIPL is arguably the first comprehensive legislative attempt at promoting reasonable use and protection consumer data.

As a result, the provisions in the PIPL on consumer data control and privacy are largely untested and are at best, a broad provision to be narrowed by subsequent regulatory interventions to reflect the developing policy priorities. Suffice to mention presently that the GDPR upon which the PIPL was modelled have adopted a similar approach for years with little success. The peculiar circumstance of China as a digital economy may therefore amplify the implication of these limitations. In situations where data is freely transferable, so is the broadening of risks from data breach from loss, theft and misuse (dark patterns). Some of the severe socio-economic implications of privacy earlier mentioned in the paper can be particularly amplified in this context where multiple handlers have access to same data and have to compete for market share and profit maximisation. Admittedly, the PIPL has made provisions for consumer rights to be heard in situations of perceived or actual breach of data rights. However, the absence of clear framework in this provision can make it difficult for consumers to know when this right has been breached and who to blame. In the era of inference optimisation through digital analytics, only few tech savvy individuals with sufficient data literacy can understand the intricacies of digital platforms operation.

This is worsened by the lingering issues on lack of incentives among consumers to be proactive when it relates to their data privacy rights. Recent literature suggests that consumer individual rights are largely inadequate due to most consumers indifference to online privacy where carefully worded by tech platforms.¹⁴⁰ For instance, while some consumers may exercise their choice and control with relations to pop-up privacy cookies when browsing websites, most consumers will likely just agree to the cookie banners to avoid the complexities of looking through the terms before accessing websites. This lapse can be leveraged by digital platforms¹⁴¹ (like regulatory arbitrage) in circumventing the implications of

¹⁴⁰ See, eg, Alicia Solow-Niederman, "Information Privacy and the Inference Economy" (2021). *Northwestern University Law Review*, available at <https://ssrn.com/abstract=3921003>; Nora A Draper and Joseph Turow, "The Corporate Cultivation of Digital Resignation" (2019) <https://doi.org/10.1177/1461444819833331>; Daniel J Solove, "The Limitations of Privacy Rights" (2022), available at <https://ssrn.com/abstract=4024790> or <http://dx.doi.org/10.2139/ssrn.4024790>.

¹⁴¹ Joe Nocera, "How Cookie Banners Backfired" *The New York Times* (30 January 2020) <https://www.nytimes.com/2022/01/29/business/dealbook/how-cookie-banners-backfired.html>.

the new individual rights under the PIPL. The possible solution to this might lie in informal approaches in regulatory privacy regime where government interventions is stimulated to complement the limitations of individual rights within the PIPL. Chinese regulators have likely envisaged this during the legislative process of the PIPL, discernible in the inter-departmental responsibilities with relations to implementing the PIPL alongside consumer reporting mechanisms.

Last, but far from the least, notwithstanding the challenges (eg, technical implementation) matching the new opportunities in above textual and critical analysis, it is instructive to emphasise that unlike most jurisdictions, the agility of the Chinese regulators¹⁴² when it relates to tech platforms can be a blessing in disguise. For one, the regulatory and supervisory approach which addresses concerns from tech platform operations through conventional (for instance, the Data Security Law and Cybersecurity Law) and *sui generis* approaches (such as consultations, public shaming, informal directions and multi-layered public supervision¹⁴³) may provide the necessary conduit for regulatory efficiency. It may also appear too early to judge how consumers will exploit the newly introduced consumer rights although the activities of the consumer procuratorates (Art 70) in conjunction with other supervisory authorities is one to watch out for. In fact, there are growing debates (for instance, China's 2020 "New Infrastructure" campaign on data centres) and stakeholder consultations on the proposed introduction of an internet governance guideline by the SAMR for the regulation of online platforms.¹⁴⁴ By this proposal, tech platforms can be categorised according to their economic position, market value, and active user base (like the existing EU DMA). Furthermore, tech platforms categorised as "super platforms" should be required to open their ecosystem to allow moderate interoperability with rival competitors to benefit a broader demography of users and merchants. It remains to be seen how this guideline will be framed and its scope of application vis a vis the PIPL. But from the above analysis, it is without doubt that the PIPL is a step in the right direction.

5. Conclusion

In promoting the efficiency of market systems in the era of digitalisations, considerable effort must be directed by policymakers and regulators at assessing and understanding the economic models of key market participants in the hope of better engaging private actors in inclusive economic developments. For regulators, this assessment must also include innovative but technology-neutral approaches

¹⁴² For further discussions on the prospects and drawbacks of the peculiar regulatory system in China, see Angela Huyue Zhang, "Agility Over Stability: China's Great Reversal in Regulating the Platform Economy" (University of Hong Kong Faculty of Law Research Paper No 2021/36, 2021) available at <https://ssrn.com/abstract=3892642>.

¹⁴³ Angela Zhang, "Strategic Public Shaming: Evidence from Chinese Antitrust Investigations" (2019) 237 *The China Quarterly* 174.

¹⁴⁴ Global Times, "Chinese Top Regulator to Classify Online Platforms, Improve Risk Management" (30 October 2021), available at <https://www.globaltimes.cn/page/202110/1237655.shtml> (visited 11 December 2021).

to regulating new dominant market participants by aligning traditional regulatory objectives with technology-focused risk management techniques. This article highlighted the dynamics of tech platforms and the economics behind their business models. Importantly, their leverage of cutting-edge technology has not only stimulated digital financial inclusion and economic developments in China but has also channelled new forms of socio-economic and legal risks to consumer protections, competition, market efficiency and data protection. As data is central to their business models and operations in the digital economy, it is important that any and all innovative regulatory initiatives must factor this for effective and efficient implementations.

Open data and consumer affirmative rights within the PIPL no doubt offer the unique opportunity to align several of these public policy goals without crippling the financial innovations that have so far driven the Chinese economy. The next few years will be critical for China in developing ways to combat the adverse implications online platforms have without smothering the economic benefits inherent in their hyper-scalability. The catch will be to align policy goals with the democratisation of data through the development of open data protocols and decentralised internet platforms, a necessary step for web 3.0 and China's appeal to the global economy.