Cambridge Journal of Economics 2022, 1 of 26
https://doi.org/10.1093/cje/beac054

Platform power: monopolisation and financialisation in the era of big tech

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This paper addresses the questions of corporate power represented by digital platforms. We undertake a conceptual analysis of platform power so that it can provide an explanation of key motivations and behaviours for monopolisation in the platform economy. We argue that there emerges a hierarchical power structure in which platform companies relentlessly pursue power over users, and small platforms increasingly depend on big tech and financial capital. Drawing theoretical insights from the monopoly capital school and empirical evidence from platform companies in China, this paper further explores the macroeconomic implications of platform monopolisation and financialisation. It is demonstrated that the hierarchical power structure in the platform economy may increase income inequality, exacerbate overcapacity and generate financial instability.

Key words: Platform power, Monopolisation, Financialisation, Macroeconomic implications
JEL classifications: L12, P12, K20

1. Introduction

The rise of the platform economy is one of the most prominent phenomena after the global financial crisis in 2008. As platforms insinuate themselves into the economy, it is estimated that 70% of service industries in the USA are potentially affected by one or more platforms (Kenney et al., 2021). Digital platforms can remarkably lower transaction costs by utilising new technologies such as artificial intelligence (AI), big data, cloud computing, mobile internet and the internet of things (IoT) to link and match producers and customers. They expand the scale of transactions, mobilise social resources and are increasingly shaping the nature of the economy and the way of living. Today, the most influential tech companies, such as Apple, Amazon, Alphabet, Tencent and Alibaba, are operating or holding shares of multiple platforms. At the same time, platform companies also occupy a dominant position on the list of global unicorns, that is privately held start-up companies valued at over one billion US dollars. It is estimated that 70% of unicorns are platform companies (Evans and Gawer, 2016).

Manuscript received 16 May 2021; final version received 25 August 2022
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Efficiency and power are the two themes that have emerged in recent studies on the platform economy. Orthodox economics mainly focuses on efficiency by addressing how digital platforms have facilitated transactions, created jobs or income sources and generated externalities (Cramer and Krueger, 2016; Bourne, 2019; Saran and Sharma, 2019). Platforms are generally considered 'two-sided' or 'multi-sided markets' because they harness network effects or trigger a self-reinforcing feedback loop (Rochet and Tirole, 2003; Gawer, 2014). In contrast, researchers in heterodox economics, sociology, communication or legal studies largely focus on the power relations between platform companies and producers (particularly gig workers), customers or regulators. These studies have uncovered how platform companies pursue growth over profits as an essential infrastructure or market intermediaries, leverage dominance as integrating across the market, exploit information by relentlessly collecting data, extract surplus out of producers via algorithm management and digital Taylorism. Therefore, tensions are rising between platform companies, especially big tech and contemporary regulatory frameworks (Khan, 2017; Rosenblat and Stark, 2016; Drahokoupil and Piasna, 2017; Schor and Attwood-Charles, 2017; Rosenblat, 2018; Shapiro, 2018). It is noted that platforms, though presenting themselves as 'empty spaces' within which market activity occurs, in reality, enact a form of 'control and governance and control over the rules of the game' (Srnicek, 2017, p. 47).

Despite intensive discussions on platform power across different disciplines, the literature primarily focuses on micro-level power relations between individual platforms and relevant actors. Systematic analysis that presents an overall picture of power relations in the platform economy and connects it with the macroeconomy is still lacking. However, recent developments have clearly shown that platform companies are transforming the form of monopolisation while playing an ever-growing role in the financialisation process globally (Thatcher et al., 2016; Fourcade and Healy, 2017; BIS, 2019; Sadowski, 2019; FSB, 2020; van Doorn and Badger, 2020; Fernandez et al., 2020; Auvray et al., 2021; Langley and Leyshon, 2021). Supported by financial capital such as venture capital, private equity and sovereign wealth funds, platform companies constantly expand with the purpose of locking in users and creating ecosystems. The monopolisation and financialisation of the platform economy have led to a novel political-economic structure, generating increasingly important macroeconomic implications regarding distribution, capacity utilisation and financial stability.

Analysing the macroeconomic implications of monopolisation is a tradition of the monopoly capital school related to, but distinct from the orthodox industrial organisation theories. Researchers in this school argue that monopoly capitalism has a stagnation tendency due to a rising profit share and sluggish growth of investments (Baran, 1957; Baran and Sweezy, 1966; Cowling, 1982; Cowling and Sugden, 1987). Despite the changes in technological, institutional and macroeconomic contexts, we suggest this tradition is still relevant today. Following this tradition, this paper analyses platform monopolisation through the lens of platform power. It then explains the dependence of small platforms on big tech and financial capital, and the macroeconomic implications of monopolisation and financialisation in the platform economy. In this paper, the phrase 'small platforms' refers to all platforms except big tech, given that big tech giants are themselves big platforms.[1] We argue that a power hierarchy has taken shape in the platform economy, which consists of big tech and financial capital

[1] The fundamental difference between small platforms and big tech is discussed in Section 4.

at the top, small platforms in the middle, producers, customers and other users at the bottom. With the platformisation of more sectors in the economy, this emerging yet already noticeable hierarchy has had certain impacts on the performance of the contemporary macroeconomy.

This paper contributes to the ongoing literature on big tech in two ways. First, it undertakes a conceptual framework of platform power to interrogate monopolisation and financialisation in the platform economy and reveals the dependence of small platforms on big tech and financial capital. Second, it demonstrates how the hierarchical power structure in the platform economy contributes to the macroeconomic transformation characterised by rising inequality, overcapacity and financial instability. Theoretically, we revisit the framework and arguments put forward by the monopoly capital school and extend the analysis to the macroeconomic implications of platform monopolisation and financialisation in the era of big tech. Empirically, the development of the platform hierarchy in China is introduced as a representation for the power dynamic in the platform economy.

Our paper focuses on the business of digital platforms which are the leading players in the digital markets to harness a set of data-driven technological and organisational arrangements in matching supply and demand and facilitating transactions. Put differently, digital platforms are the 'intermediation and capitalisation of digital economic circulation' (Langley and Leyshon, 2017). Meanwhile, the platform economy is an economic form and a set of business models in which producers and consumers produce, transact and distribute under the organisation and coordination of digital platforms.

The rest of the paper is organised as follows. We begin, in Section 2, by presenting the stylised facts in China's platform economy in the past decade with a highlight on the coercive nature of competition to which platforms are subjected. Then we introduce a theoretical framework to unpack the concept of platform power and illustrate why it is instrumental for understanding the platform economy dominated by big tech in Section 3. The next section analyses the role of critical resources for platforms in creating and strengthening their power in monopolisation and explains the heavy dependence of small platforms on big tech and financial capital. Section 5 presents a three-layer power hierarchy that is increasingly salient in the macroeconomy. We then follow the insights from the monopoly capital school, discussing the macroeconomic implications of the platform power hierarchy. Section 6 concludes.

2. Coercive competition and profit polarisation in China's platform economy

By 2017, China had already become, along with the USA, one critical centre of gravity around which today's digital world is organised. The east coast of China and the US West are home to nine of the top 10 and 18 of the top 20 internet platform companies measured by market capitalisation (Candelon et al., 2018). China is also one of the world's largest investors and adopters of digital technologies, as well as the second-largest home to the world's unicorn companies. The McKinsey Global Institute (2017) pointed out that China could set the world's digital frontier in the coming decades, echoed by The Economist (2021) and the *Harvard Business Review* (Dychtwald, 2021). Given China's scale to drive the rapid commercialisation of digital business models and the advantage of enormous labour and consumer markets, platform companies in China led by big tech Tencent and Alibaba are creating a

multi-faced and multi-industry digital ecosystem that touches every aspect of life and expands internationally. The digital transformation has attracted tremendous interest from the financial market, both domestic and international, made a profound impact on the Chinese economy and increasingly become influential on the worldwide digital landscape. Thus, China's platform economy in many dimensions can be regarded as a typical case, representing some general tendencies of the big tech economy worldwide.

Two key features in China's platform economy are particularly salient. The first is the highly intensive competition, which, however, takes different forms for big tech and for small platforms. The second is the polarised profits among platform companies.

Competition among big tech platforms is mainly to build and maintain an ecosystem, for which they heavily invest in R&D, aggressively merge & acquire other companies, especially newcomers and relentlessly expand to new sectors to lock in users in their platform ecosystems. This has generated wide interests and debates on the implication for the global platform economy (Financial Times, 2021; The Economist, 2021). The two leading examples are an e-commerce company Alibaba and a social networking and gaming company Tencent. Both companies not only host increasing varieties of business on their platform, such as cloud service, logistics, advertising, etc., but also invest massively in ride-hailing, bike-sharing and food delivery, from large cities to medium and small ones and China to overseas (Keane and Yu, 2019). Their competition over the market share of mobile payment, a key infrastructure of the ecosystem, has also been fierce both in China since 2013 and in Southeast Asia since 2016.

In contrast, small platforms are trapped in a coercive regime of competition in which the expansion behaviours of firms can significantly decrease the profitability of other firms that do not grow quickly enough. This pressure leads to an 'expand-or-die' situation in which firms are compelled by each other to expand. Under this circumstance, competition is not simply intense but rather coercive because, in order to survive the competition, firms are facing limited strategic options such as cut-throat pricing, over-investment, adopting cost-cutting rather than productivity-enhancing technologies and taking excessive debt, which all may potentially harm the sustainability and financial safety of the firms in the long run (Crotty, 1993, 2003). The coercive 'expand-or-die' situation is best illustrated by their engagement in intense price or 'subsidy' wars and large M&A rounds through 'burning cash' with the support of financial capital. For instance, China's ride-hailing industry since its inception in 2012 has witnessed a cycle of competition leading to the concentration of capital and further intensifying competition. The earliest ride-hailing platforms, Kuaidi and Didi, after initial market expansion, soon waged a price war in 2014 through massive investment in subsidising both riders and drivers. By September 2015, Didi successfully merged Kuaidi and initiated a new price war with Uber, which ended in August 2016 with Didi acquiring Uber's China business at seven billion US dollars. Half a year later, Meituan, a platform known as the 'Chinese Yelp' for its online-to-offline business model offering services from restaurant reviews, food delivery, movie ticketing and travel bookings, expanded to the ride-hailing market. Although Didi still occupies the largest market share, it faces rising competition, preventing Didi from raising the price and cutting subsidies.

Different forms of competition lead to polarised profits. Over the years, the two big tech giants, Alibaba and Tencent, have achieved great success in controlling the digital infrastructure and access to certain platform services. The dominance of these two platform companies helps them achieve massive cash flow and high profitability, rare among other internet companies in China. However, facing the coercive competition,

small platform companies such as Didi have burned cash at a record speed. Failure in any round of competition would put them in a precarious or fragile position likely to be soon replaced, and more importantly, lose the opportunity to get funding. In fact, as many market observers pointed out, 'burning cash' to chase operational scale, has become alarmingly fashionable among Chinese platform companies, which arguably heralds the topic of an internet bubble (Financial Times, 2016). Figure 1 below documents the profit and loss made by the leading platforms in China since 2017. While the big tech represented by Alibaba and Tencent achieved high profits, Didi and Meituan incurred significant losses when they are compelled to prioritise growth over profit.

The profit polarisation observed in China is by no means unique in the global platform economy. Figure 2 here presents the average profit rates for six big tech giants—Microsoft, Apple, Alphabet (Google), Amazon, Meta (Facebook) and Alibaba, and other platform companies listed in the US stock market in 2013–21.

The massive investment that unprofitable platform companies are coerced to make is largely sponsored by financial capital. Given the weak profitability incurred in the business of small platforms, the relentless investment continuing into these platforms is worth interrogating. How do we understand the coercive competition among small platforms and the polarised profitability between big tech and small platforms? What can the coercive competition and profit polarisation lead to, in terms of the monopolisation and financialisation in the platform economy? What are possible macroeconomic

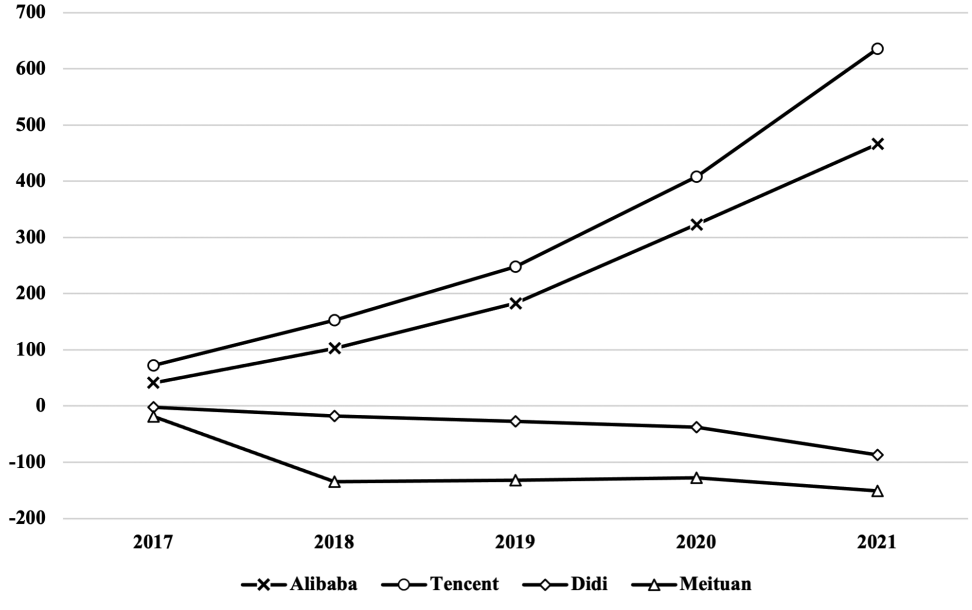

Fig. 1. *Cumulative profits (in billion RMB yuan) for selected big tech platforms and small platforms in China, 2017–21.*
Sources: Annual financial statements; authors' calculation.
Notes: Alibaba and Tencent, two mega platform companies, are selected as representatives of big tech, while Didi and Meituan are still relatively small platforms. Didi and Meituan started to release publicly available data in 2017. Profits are measured with net income (loss).

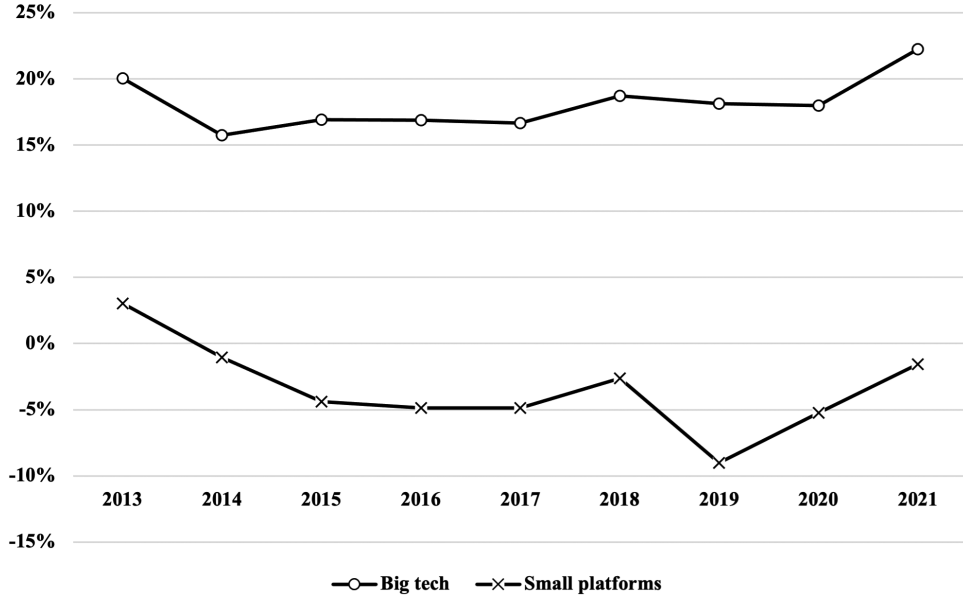

Fig. 2. *Average profit rates for big tech platforms and small platforms, 2013–21.* *Sources:* Data are from Standard & Poor's Compustat annual database. Notes: Big Tech platforms refer to six top platform companies listed on the Nasdaq Stock Market or New York Stock Exchange: Microsoft, Apple, Alphabet (Google), Amazon, Meta (Facebook) and Alibaba. Tencent is not in the sample because it is not listed in the USA, so there are data-compatibility issues. The list of small platforms combines the platform company list on *platformeconomy.com* and the unicorn start-up company list on Wikipedia. The authors confirm that the list contains only platform companies using information from the official websites of these companies. In total, there are 98 companies on the list of small platforms by 2021. The profit rate is a ratio of operating income before depreciation divided by total assets.

impacts of the platform monopolisation and financialisation? To address these questions, in the next section, we introduce a theoretical framework to unpack platform power, the pursuit of which drives monopolisation in the platform economy.

3. Theoretical framework: platform power

Platform power reflects an asymmetric relationship between platforms and their variety of users, including workers, small manufacturers, retailers, advertisers, publishers, app developers and various customers. This asymmetry, as the essence of platform power, is conceptually distinct from the conventional market power that highlights market shares and pricing behaviours, and more appropriately applies to the competition and monopolisation in the platform economy.[2] Like corporate power, platform

[2] Highlighting the power dimension of platform economy does not rule out the competition dimension. In fact, both competition among platforms and competition between platforms and users are interwoven with power relations. While the former will be demonstrated in Section 4 when competing for critical resources is discussed, the latter is more evident when platforms make profits not only based on their technological advantages in competition but also based on their power over users. For instance, one issue in recent policy discussion is that platforms such as Amazon sometimes play the dual role of 'umpire and player' (Caffarra et al., 2020): operating marketplaces while also offering their own products on these marketplaces, competing with retailers that must submit data to the platforms in order to access these marketplaces.

power is not entitled to all platforms. We will demonstrate below that only platforms meeting certain conditions can possess and exercise platform power and that different platforms may have different levels of power.

The focus of power is not new in social sciences. While Dahl's definition – 'A has power over B to the extent that he can get B to do something that B would not otherwise do' (Dahl, 1957, pp. 202–3) is well received, the conceptualisation of power varies in scholarly discussions. It is recognised that as a property of social relations, power resides implicitly in the other's dependency. Complex power structures can be analysed by understanding the interconnections among power networks (Emerson, 1962). In neoclassical economics, power usually refers to the regulatory power of the government or the market power of monopolies. Samuel Bowles (1991) challenges the narrow focus and emphasises the power of shortsiders in contested exchange. In labour studies, power is more specifically referred to as the bargaining power of capital or labour in the labour market and the control in the production process as well as organising power (Silver, 2003). In classical labour process research, power touches upon the victory of managers in separating execution from planning and in monopolising the production knowledge and process (Braveman, 1974). Power may also be reflected by 'the game of making out' set by management to shape an internal ideology in production, such as a 'voluntary servitude' among workers (Buroway, 1982). In Lawson's social ontological analysis, a fundamental feature of modern social reality is a complex structure of positional powers, comprising rights and obligations in process and all social relations, in a sense, can be understood as power relations (Lawson, 2012).

Recent literature on digital platforms has started to focus more specifically on platform power. For instance, Schüßler et al. (2021) label the exercise of power and control as dominance and stress it, along with mutuality and autonomy, as one canonical social relation in platforms as contested relational structure. Lynskey (2017) emphasises the power of platform over information flows and individual behaviours and suggests using the concept of a 'digital gatekeeper' as a better alternative for regulatory scrutiny. To better assess platform power and inform regulatory changes, van Dijck et al. (2019) also emphasise platform companies as part of an integrated platform ecosystem where hierarchies and dependencies are built into their architecture. Culpepper and Thelen (2020) point out that companies with platform power benefit from the dependence of consumers, leading to profoundly new modes of influence peddling. Similar concerns are increasingly shared among critical studies on big tech platforms (Dolata, 2017; Zuboff, 2019; Darmody and Zwick, 2020; Cutolo and Kenney, 2021; Rikap, 2021; Cioffi et al., 2022).

In this study, we build on the work of prior scholarship and, more specifically, adopt Fleming and Spicer's conceptualisation in analysing corporations (2007) and interrogate platform power in four dimensions with equal importance: as coercion, manipulation, domination and subjectification. The 'Coercion' aspect follows Dahl's definition, involving one individual or organisation directly getting another to follow orders. 'Manipulation' refers to setting agendas and prioritising issues to constrain the behaviours of others. 'Domination' entails the ability to shape perception, cognition and preferences, thus establishing the status quo 'as taken for granted, normal and natural' (Fleming and Spicer, 2007, p. 22). The fourth dimension, 'subjectification', draws on Foucault (1982), stressing the capacity to craft or constitute the selfhood of others in order to make them more amenable to organisations. In this case, power 'inserts itself

into their actions and attitudes, their discourses, learning processes and everyday lives' (Foucault, 1980, p. 39). In this paper, we argue the framework of power by Fleming and Spicer (2007, 2014) is conceptually suitable and valuable for us to unpack and investigate the power of platform.

First, the platform power of coercion. Coercion comes more fundamentally as a threat. Platform companies can threaten users because platforms have increasingly served as the essential infrastructure in the digital economy era, whose function is similar to that of the railroads in the nineteenth century US economy and the stock exchange system in the contemporary global financial market (Srnicek, 2017; Khan, 2018; Rahman, 2018). Essential infrastructure integrates deeply into the crucial links in the capital circulation thus helping reduce the cost of production and circulation for producers, and raising the utilisation rate of the productive capacity, as well as bringing convenience for customers. Users would encounter hefty costs once they leave the infrastructure, which creates their dependence on platforms. In this regard, essential infrastructure can be viewed as privately owned 'public goods'. Platform companies, as a gatekeeper, can effectively cut off the rights for certain users to access the essential infrastructure, imposing credible threats on users.

Second, the platform power of manipulation. In most cases, platform companies actively 'platformise' the traditional economy, instead of becoming part of it. Platforms, by highlighting their intermediary role, prioritise the issues of how to better intermediate and at the same time makes their producer role and employer role non-issues. This attempt can effectively resolve users' challenges to platforms by setting an agenda favourable to platforms. Studies of platforms, however, show that platforms do not retain themselves only as an intermediary. For instance, Lina Khan's case study of Amazon (2017) demonstrates that Amazon not only provides an online platform, but also directly competes with third-party companies using its services, and exploits information collected on them to take over the hot market. Studies on rider-hailing companies have also revealed the intensive management conducted by the platform on its drivers, so the labour process and transaction process are both under close supervision (Rosenblat and Stark, 2016; Qi and Li, 2020). Presenting themselves as a neutral intermediary only to serve a function of matching markets, platforms manipulate their public images while exercising absentee controls over their users. Thus, issues like social responsibilities are simply prevented from arising because they contradict the entrenched and taken-for-granted rules of platforms.

Third, the platform power of domination. Platform companies often manage their identity or narrative as a representation of technical rationality and high efficiency through public communication. The construction of this image manufactures such an ideology that the rules used by platforms are a natural result of innovation and efficiency, thus following these rules would be a recognition of technical rationality. Therefore, platforms adopt and legitimise rules by claiming that they are technically more efficient or particularly more effective, whereas the real reason is that they advance the interests of those who are in a position of control while working to the detriment of subordinates by extracting surplus from them. For instance, the location data extracted by social network platforms, in the name of better serving users, are taken advantage of by platforms to profit from the third parties. This application is like the adoption of steam engine in factories during industrialisation, leading to the legitimisation of a factory regime that disciplines workers (Thompson, 1963).

Fourth, the platform power of subjectification. While the third face of domination aims to capture the user recognition and identification of platforms, subjectification involves a productive process that shapes the constitution of users, including their attitudes, behaviours and other possibilities underlying how users experience themselves as people. In other words, this power produces the kinds of people users feel they naturally are. As platform companies extract data, and exploit data via algorithms for user profiling, they can target audiences with more precision and success, form information cocoons to restrict options and nudge behaviours. Thus, reality itself is undergoing a mental invention and becomes subjugated to commodification and monetisation and reborn as 'behaviour'. This logic of accumulation, as often referred as 'surveillance capitalism' seriously challenges social contract, democracy and freedom (Zuboff, 2015).[3]

Acquiring and maintaining power is crucial for all business. As John Kenneth Galbraith correctly pointed out, modern corporations acquire power over markets and power is comprehensively deployed in the total economy—a reality elided by neoclassical economics (Galbraith, 1973). Companies conduct long-term investment with inevitable uncertainties, while power can help provide a relatively stable and expected external environment for capital accumulation. Powerful corporations more easily receive stable financial support, maintain sources and prices of supplies, access buyers and establish a stable relationship with regulators. More power, via reducing risks, increasing resilience and maintaining a high and stable markup, can effectively enhance corporate profitability.

Similarly, platform power also reduces uncertainty and enhances profitability. As the essential infrastructure for a host of users, even their rivals that depend upon it, powerful platforms can shape the overall products and services offered on the internet and structure the communication possibilities for users (Dolata, 2017). The solid reliance for users on the essential infrastructure allows powerful platforms to price differently to different users. Powerful platforms may also effectively manage and discipline workers while evading their responsibility as a formal employer. The manipulation power assists platforms to avoid labour regulation and antitrust scrutiny by lowering costs to comply with them. At the same time, powerful platforms also nurture user recognition via a hegemony of technological efficiency and rationality, dismissing or rejecting concerns on data extraction, privacy protection and other controversial issues detrimental to profitability. Powerful platforms continue to shape and reshape user preference and behaviours, increase 'user stickiness' and engagement to safeguard and

[3] The four dimensions above together constitute platform power in a manner analogous to the power of a person in organising and broadcasting a sports game. When the organiser of the game is the owner of the grand stadium, unless teams agree to play on this 'platform', they can be easily excluded losing a direct access to the audience—a power of coercion. When the organiser, under the cover of organiser, not only sets rules and has the final say with all ruling on the field, but also directly participates in the game or disciplines players in pushing for better performance, this involves the power of manipulation. The organiser can also divide the game into shorter sessions for more commercial times, on the grounds of improving the fairness of the game and some other sports rationality. The ideology or narrative of improving the performance or fairness could cover up the financial incentives and benefits of the attempt, which reflects a power of domination. If the organiser also controls the media reports of the game with attractive stories made up or exaggerated from some personal experiences of players, it is likely to arouse the interest and attention of the audience and even shape their own identity in watching the game. This power of subjectification tends to create super fans that easily relate themselves to certain players or teams, willing to share the strong identity and thus present more predictable preferences, attitudes and behaviours appearing to the organiser. The multitude of roles played by the organiser is a mixture of integrated powers controlled and exercised to advance the interest of the organiser.

expand revenue sources. Hence, platform power serves the crucial goal all platforms wish to achieve.

4. Understanding platform monopolisation and financialisation through the lens of power

4.1 Platform power, critical resources and monopolisation

Unlike the traditional economy, platform monopolisation is not limited to occupying a specific market or sector,[4] but rather a process in which platforms achieve exclusive control of a set of *critical resources* in the platform economy. The platform economy cannot be reduced to a two-sided market. Quite the contrary, it is an economic system entailing data extraction, processing, storage, analysis and monetisation, which heavily relies on critical resources as technological and organisational infrastructure that are indispensable for the platform economy to exist and operate. To be more specific, these critical resources at least include: first, the end devices users rely on for a networked interaction, such as smart phones, tablets, game platforms, virtual reality (VR) and augmented reality (AR) equipment; second, the operational systems that provide unified technical standards for application usage in end devices; third, users and user data as well as basic internet tools to accumulate users, interact with users and gather user data (such as search engines, social network, media sharing, map apps, etc.); fourth, large public data centre and AI technologies that provide cloud computing services and cloud server space for users including many other platforms; fifth, the payment systems and logistics service for establishing the platform business model and connecting online information with offline services. These inter-connected resources together constitute the pre-requisite basis of the platform economy.

The essential goal for platform monopolisation is to pursue, maintain and expand platform power by monopolising critical resources in the platform economy. While traditional monopoly also involves certain critical resources such as urban land, natural resources, brands, etc., the critical resources that are particularly relevant for the platform economy have four salient features. First, there is no one-to-one correspondence between a platform-economy critical resource and a particular market or sector. These resources are general-purpose resources which can help platform companies enter multiple fields. Second, critical resources in the platform economy consist of a series of technologies, infrastructure, instruments, organisations, data and users, which complement each other, granting firms that have the whole set of resources significant competitive advantages. Third, the production of critical resources in the platform economy requires different inputs and hence builds different levels of entry barriers for the owners. Some recourses are capital-intensive (e.g. data and users), while other resources are both capital-intensive and knowledge-intensive (e.g. AI technologies). Lastly, the boundary of critical resources in the platform economy is dynamic because platform companies, especially big tech giants, consistently develop and shape the boundary by investing in new technologies and turning them into new critical resources.

[4] Sectoral boundaries are ambiguous in the platform economy. For instance, a ride-hailing platform can use its algorithm and data to expand to the food-delivery sector.

All corporate platforms engage in certain behaviours with the purpose of monopolising critical resources, but not all are capable to do so and become powerful platforms. Therefore, critical resources can play an essential role of setting effective barriers to entry and solidifying the platform as essential infrastructure. Some platforms acquire only one or two critical resources (such as massive users and data), while others monopolise a whole set of them. Therefore, platform economy is never a homogenous entity. Building upon a paradigmatic shift put forward by van Dijck et al. (2019) to consider the platform economy as an inter-relational, dynamic structure, we further contend that the platform economy is essentially a complex power structure organically consisting of platform companies with different degrees of power and different levels of dependence. We will elaborate these arguments below.

Platforms' pursuit of power by monopolising critical resources raises an immediate question: why don't platforms just take advantage of network effects to become a monopoly? Platform monopolisation, in the literature, is largely treated as a consequence of the network effects from the two-sided markets (Rochet and Tirole, 2003). The peculiarities of these markets are usually claimed to lead to a competition dynamic in which winner takes all (or most). However, this is not a necessary result for all platforms. In particular, labour-based digital platforms, as detailed in Fleming *et al.*'s study (2019), have clear economic and organisational limitations to roll out automatically across other industries and sectors.

Compared to the big business that grew up during the industrial era that exhibit economies of scale on the supply side, platform monopolies grow steadily based on the demand-side economies of scale in the Internet era (Shapiro and Varian, 1999; Parker et al., 2016). However, once competitors achieve user acquisition beyond a critical mass, the network effect can easily challenge the incumbent. For platforms without monopolised critical resources, the network effects are not strong enough to block off competitors and it is difficult to create dependence of users and retain them in the platform. The network effect may also be restricted due to geographical segmentation.[5] Some platforms may also fail to keep users when their business models fail to provide satisfactory service to users. In this case, a reverse network effect can become dominant and render user maintenance increasingly hard for platforms. User dependence on platforms can diminish when switching and multihoming strategies are widely adopted, leading to high uncertainties for the platforms to maintain or even expand their scale. In addition, the barriers of entry in the platform economy have declined in the past decade along with rising outsourcing to cloud computing, software assistance, user redirection, logistic service and other resources (Varian, 2018; Kenney and Zysman, 2019). In general, network effects do help platforms gain competitive edge, but it cannot safeguard platforms from future competition and challenges.

Power protects platforms from cut-throat competition, while the lack of it renders platforms in a precarious market position with fragile profitability. As we discussed in Section 3, platform power has four different dimensions. Monopolising critical resources is crucial for producing and reproducing platform power in all dimensions. When the critical resources are not exclusively controlled, the power of coercion is eroded because users would be less dependent on the particular platform and the platform would be unable to discipline users with the threat of exclusion. With declining user dependence, it is hard to reproduce the power of manipulation, as agenda-setting

[5] For instance, ride-hailing platforms are operating in geographically segmented cities, which limit network effects within single cities.

and maintaining the role of a neutral intermediary both require holding critical resources. If a platform heavily relies on outsourcing to acquire access to critical resources, users and the public would more likely question what the platform's core business is or what the platform really does in necessitating its existence. The technical rationality behind the power of domination becomes less persuasive or more questionable when users discover that the platform without critical resources is less technologically advanced than it propagates. Without massive users, data and tools that can further accumulate users and data, the power of subjectification would lose the base. It is in this sense that platforms are compelled to acquire and preserve an exclusive control over critical resources in the platform economy.

The concept of critical resources sheds light on the fundamental difference between big tech and small platforms. As the acquisition and exclusive control of critical resources rely deeply on a high standard of technology, funding, users and data, not all platforms are capable of possessing or even monopolising critical resources. It is the exclusive control of a whole set of critical resources, not the market scale, that determines the difference between big tech and small platforms. Today's big tech giants are big platforms at the centre of the platform economy in control of a set of interconnected critical resources that largely accumulated from the knowledge resources as tech companies (Pagano and Rossi, 2009; Pagano, 2014). These resources constitute an organic whole, which reinforce each other and underpin the building of ecosystems that enclose multiple sectors and lock in users. In contrast, small platforms are only capable of acquiring one or two critical resources, usually data and users and they are unable to monopolise these resources because competitors may accumulate similar resources. Small platforms are facing pervasive competition due to the limitations of the network effects, or only keeping a small niche market that big tech giants are yet to, or unwilling, to touch. Small platforms also need to rely on the cloud service and other critical resources only occupied by the big tech giants and thus remain subject to big tech's technical influence. Both the fierce competition and the inescapable dependence on the big tech giants put small platforms in a vulnerable position with weak and uncertain profitability.

Hence, the platform economy consists of more powerful platforms and less powerful platforms. The formation of it is an evident demonstration of the peculiar relevance of power for platforms. The relentless pursuit of power is not only because power brings benefits and advantages, but also because the lack of it leads to unbalanced dependence, fragility and weak profitability. This pursuit itself can be viewed as a Schumpeterian innovation process (Schumpeter, 1935; Perez, 2002): platforms pursue power via technical and organisational innovation and achieve and profit from the exclusive control of critical resources as a result. The emphasis on platform power here is not to imply the relevance of power only for platform economy—power also plays a crucial role in the traditional economy. Nevertheless, the particular importance of power for platforms lies in the distinct technological and organisational features behind the essentialness of critical resources. Power or the lack of it determines the position of a platform in the platform economy, the nature of competition it is facing and the strategies and behaviours it adopts.

Mapping platform monopolisation via the lens of platform power illuminates the distinct feature of the platform economy: first, the platform economy is not a homogenous entity. The division among big tech and small platforms largely lies in the platform power or lack of it; second, network effect by itself is insufficient to capture

platform monopolisation, the latter should be understood via the production and reproduction of platform power. Doing so sheds light on two stylised facts about platform expansion. First, small platforms face fierce competition and generate meagre profits or even incur heavy losses but still undertake rapid expansion supported by financial capital. This is the consequence of the lack of critical resources; meanwhile, this also reveals the attempts to establish critical resources such as users, data and key apps. Economic theories emphasise expected profitability and uncertainty as important factors in making investment decisions (Crotty, 1993). Platforms, in the context of competition and loss, can hardly justify high expected profitability or low uncertainty, but they still make large investments to pursue growth over profits.[6] Their expansion can be understood as attempts to produce and reproduce power as a compelled strategy. It is through expansion that platform companies may gain power. In this case, firms would have no choice but to switch to a survivalist strategy no matter how much this cost in terms of diminished efficiency and adaptability in the longer term (Crotty, 1993). Second, though big tech platforms have made massive investments in R&D, which can produce knowledge that would contribute to the critical resources, more extensively and intensively, they all engage in M&A and venture investment. These strategies are crucial to maintain their existing critical resources and reproduce new ones, to guard against possible changes of boundaries for critical resources in the rise of new technology and business models. For instance, along with the promising prospect of the metaverse, VR/AR equipment has become an important end device and led Microsoft to acquire Activision Blizzard to better safeguard its power. The pursuit of power motivates and shapes the monopolisation of platforms; it also brings finance into the game.

4.2 Platform power, financial dependence and financialisation

Platform companies may employ different strategies to acquire critical resources. First, they tend to initiate or engage in price wars by subsidising users to increase their bases. Studies find that platforms' revenue may be limited in practice due to supply shortages; thus, platforms have a strong incentive to attract users via subsidies (Fang et al., 2019). Second, platform companies expand to several sectors to establish a digital ecosystem, which can lock in users, producing user data and converting it into valuable assets for the platform companies (Thatcher et al., 2016; Fourcade and Healy, 2017; Sadowski, 2019; Zuboff, 2019; van Doorn and Badger, 2020, pp. 201–3). This could be achieved by developing new services using the existing platform algorithm and big data, or more directly by acquiring entrants before they become significant competitive threats or stunting the entrant's growth (Stucke and Grunes, 2016, p. 286). Third, platform companies also invest heavily in R&D for cloud computing, machine learning and deep learning to update important software and hardware. They also exert profound control over new platforms via M&A and venture investment to grab more users, data and frontier technologies.[7]

[6] It is noteworthy that platform investments are mostly financial investments in forms of M&A or venture investments.

[7] Competition-induced innovation can be explained by the Smithian theory on the integration of competition and the division of labour, as well as the Schumpeterian theory on innovation leading to monopoly and monopoly pushing for more innovation. Marx's theory of competition is helpful in explaining why companies are compelled to expand capacity for survival: by investing in the face of coercive competition and battered profits, platform companies have pushed themselves into a financially dependent and short-term survivalist position (Marx, 1990).

Regardless of the strategies platform companies take for monopolisation, they all require adequate financial capital support, which determines the massive financial demand from platform companies. Thus, to examine the monopolisation practices, it is instrumental to trace the sources of the financial support. In fact, due to their differences in profitability, small platforms and big tech giants meet their financial demands differently, which not only leads to distinct forms of financialisation but also generates a financial dimension of the hierarchy in the platform economy.

Small platforms are vulnerable to competitors, leading to precarious market positions and the lack of solid profitability, which compels platform companies to resort to external financial sources to sponsor their strategies to acquire critical resources and build up platform power. Big tech, by mastering frontier technologies, locking in producers and consumers and establishing itself as the essential infrastructure that others cannot bypass for a variety of services, would be able to extract surplus for their reproduction of power.[8] In this respect, Hilferding's *Finance Capital* (1910) provides valuable insights for analysing the relationship between monopolisation and financialisation. When internal surplus is yet to suffice for expansion, as in the case of small platforms, financial capital becomes the sponsor of monopolisation. Indeed, financial capital, represented by venture capital, private equity and sovereign wealth funds, has become a prominent player in the development of small platforms, and implanting the goals of financial speculation in the platform economy. By contrast, big tech platforms have a sufficient internal surplus, with which they engage in massive buyouts and shareholding of small platforms and start-up tech companies, generating the financial control of less powerful companies. This is illustrated by the reluctance and apparent indifference shown by Facebook (now 'Meta') and Google to engage with large shareholders (Ricketts, 2018).

Table 1 traces the investments of the three big tech giants or financial institutions active in China's platform economy – Tencent, Alibaba and Softbank. Funding small platforms is a shared top strategy to accumulate users and data, followed by common efforts to digitalise traditional sectors, develop intelligent devices, construct logistic networks, build IT infrastructure, etc. In acquiring and maintaining these critical resources in all dimensions, they attempt to keep competition at bay and keep their high profits.

Table 2 traces the source and amount of financial capital invested in the two representative small platforms, Didi and Meituan. It reveals that these rapidly growing platforms attracted financial investments from various financial institutions, both domestically and globally, as well as the venture arms of big tech. These small powerless platforms are coerced into competition, because their survival and expansion are unsustainable without the support from the financial market.

These examples showcase the fact that big tech and important financial institutions are key players standing behind the coercive competition among small platforms. The latter, due to their limited control of critical resources and thus weak platform power, find themselves entrapped in a cash-burning cycle with strings attached to big tech and financial capital.

5. The platform power hierarchy and its macroeconomic implications

With the platform economy increasingly penetrating the whole economy (Kenney et al., 2021), relations and structure in the platform economy will reveal the direction

[8] Profitable big tech may take a lot of debt for tax reasons, which is a different issue.

Table 1. *Financial investment of Alibaba, Tencent and Softbank*

	Investment directions	Share in major investments (percent)
Alibaba 2013–21	Small platforms	36.6 (e-commerce, 26.9; content, 3.8; transportation, 1.4; sharing, 2.0; social network, 2.6)
	Digitalisation of traditional sectors (traditional commerce, medical services, education, real estate, etc.)	18.4
	IT & intelligent devices	15.7
	Logistics (basically for e-commerce)	15.1
	Entertainment and media	7.3
	Physical infrastructure (information sector)	5.0
	Traditional finance	1.8
Tencent 2013–21	Small platforms	62.8 (e-commerce, 28.4; social network, 17.7; transportation, 10.3; finance, 2.5; content, 1.3; sharing, 1.3; searching, 1.3)
	Digitalisation of traditional sectors (traditional commerce, medical services, education, real estate, etc.)	12.7
	IT & intelligent devices	11.3
	Logistics (basically for e-commerce)	2.4
	Entertainment and media	4.2
	Physical infrastructure (information sector)	5.0
	Traditional finance	1.6
Softbank 2013–21	Small platforms	59.3 (e-commerce, 24.9; transportation, 29.7; sharing, 2.6; finance, 2.2)
	Digitalisation of traditional sectors (traditional commerce, medical services, education, real estate, etc.)	5.0
	IT & intelligent devices	16.7
	Logistics (basically for e-commerce)	2.9
	Manufacturing	16.1

Sources: Authors' elaboration using data from *pedata.cn*.

of an ongoing structural transformation of the macroeconomy. Considering the power imbalance and the dependent relations among big tech, financial capital, small platforms and varieties of users, we argue that the power structure in the platform economy can be better understood as an interconnected power hierarchy summarised in Figure 3.

On the one hand, producers and customers become increasingly dependent on platforms (especially big tech), since platforms function as a techno-infrastructure to intermediate transactions, match producers and customers, collect data and commissions and implement algorithmic management. On the other hand, small platforms cannot survive and expand only by their own network effects without the financial support from big tech and capital markets. While platform monopolisation reflects

Table 2. *Sources and amount of financial capital for Meituan and Didi*

	Financial capital				Accumulated investments and valuation by Oct. 2020 (millions USD)
	Independent venture capital	Corporate venture capital	Private equity	Others	
Meituan	G Squared (USA) Baillie Gifford and Co. (UK) Fidelity (USA) Glade Brook (USA) Sequoia Capital (USA) Trustbridge Partners (China) DST Global (China) IDG Capital (China) Source Code Capital (China) Qiming Venture Partners (China) Juntong Capital (China) Lightspeed China Partners (China)	Google (USA) Booking Holdings (USA) Tencent (China) China Resources Holdings (China) Alibaba Group (China) Wanda Group (China) Xiaomi (China) Fosun RZ Capital (China)	Tiger Global Management (USA) Coatue Management (USA) General Atlantic (USA) Hillhouse Capital Management (China) Capital Today (China) China Development Bank Capital (China) FountainVest Partners (China)	GIC (Singapore) Temasek (Singapore) Mubadala Investment Co. (U.A.E.) CPP Investment (Canada) China International Capital Corporation (China) Innoangel Fund (China)	Accumulated investment: 9,815 Valuation: 50,900–55,000

Table 2. *Continued*

	Financial capital				Accumulated investments and valuation by Oct. 2020 (millions USD)
	Independent venture capital	Corporate venture capital	Private equity	Others	
Didi	GGV Capital (USA) Farallon Capital Management (U.S.) GSR Ventures (USA) Matrix Partners (China) Sequoia Capital (USA) DST Global (China)	Toyota (Japan) Booking Holdings (USA) Uber (USA) Apple (USA) CE-Ventures (UAE.) Foxconn Technology Company (China) China Post Group (China) China Poly Group Corporation (China) Ant Financial Services Group (China) Alibaba Group (China) Ping An Ventures (China) Tencent (China) Sina Weibo (China) eHi Car Services (China)	SoftBank Group (Japan) Tiger Global Management (USA) Silver Lake (USA) BlackRock (USA) Capital International Private Equity Funds (USA) Coatue Management (USA) OppenheimerFunds (USA) Huasheng Capital (China) Hillhouse Capital Management (China) CITIC Capital (China)	Mubadala Investment Co. (U.A.E.) Temasek (Singapore) Bank of Communications (China) China Merchants Bank (China) China Life Insurance (China) China International Capital Corporation (China) Beijing Automotive Industry Holding Co. (China)	Accumulated investment: 20,710 Valuation: 62,000

Sources: Authors' elaboration using data from *cbinsights.com*.

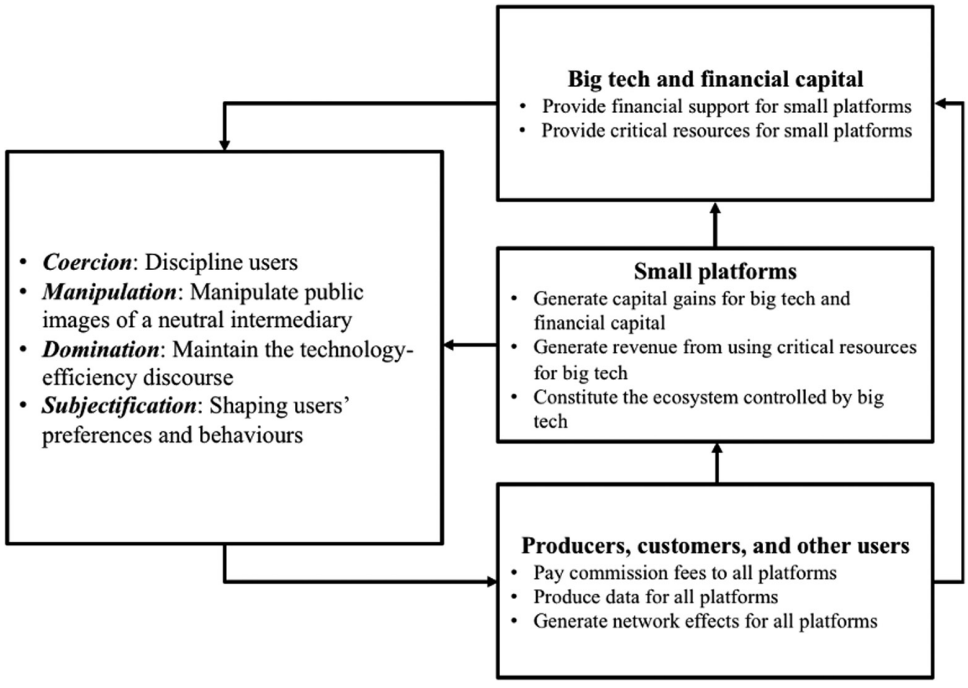

Fig. 3. *Power hierarchy in the platform economy.*

the four power dimensions shaping the dependence between users and platforms, the dependence of small platforms on big tech and financial capital is witnessed in the following three tendencies.

First, the rising dependence of small platforms on financial capital nurtures a valuation-driven expansion of platforms that may deviate from an otherwise more sustainable business model. Instead of seeing platform expansion as an infrastructure building process that requires long-term construction and innovation, venture capital and private equity increasingly view platforms as an essential source of financial value creation and capture. Instead of being an accelerator for platform companies to be worth real money in cash, financial capital now has the upper hand on the development trajectory of platforms, especially at the start-up stage, a clear indication of the rising power of finance (Guttmann, 2017). Small platforms have become financial infrastructure to assemble and package value generated in massive platform transactions as the new targets of financialisation. The relative valuation methods that predict the market value of platforms based on the potential and speed to scale up, as conventions in a context of fundamental uncertainty, subject platform companies to short-term financial interest (Crotty, 1994; Damodaran, 2018).

Second, both big tech and small platforms are largely becoming financial institutions or fintech companies, and different platforms have rushed to build an ecosystem with a financial service. Platforms can increase the utilisation of temporary deposit funds by providing loan brokerage or directly offering personal or business loans and investment services. At the same time, financial transactions on the platform provide rich user behavioural data, which becomes a tool to control and discipline producers. In this sense,

platforms serve the interests of financial capital as their 'shareholders' and increasingly become financial capital and benefit from financial activities dependent on platforms. It is worth noting that the participation of platforms in financial activities reflects the fact that successful platforms tend to climb up a 'value chain' and get rid of financial dependence by participating in financial activities.

Third, big tech platforms tend to develop their venture-capital arm, investing their massive cash in other platforms, such as Amazon's Alexa Fund, Google's Google Ventures, Alibaba Capital Partners. The aim of venture-capital arms is to maintain and strengthen the power of big tech, but it is reinforced with financialised aims, that is the pursuit of financial gains. Big tech platforms use their reach and digital prowess to become financial giants, intertwining with each other, leading towards further platformisation. By investing in other tech start-ups or unicorns, big tech can monitor market competition and directly share the financial gains from venture investments. For example, despite the price wars between Didi and Meituan, Alibaba and Tencent both invested heavily in them and benefited by pushing up the high valuation and gaining market share in the mobile payment market (Kharpal, 2020).

These tendencies resemble the rise of maximising stockholder value as a principle for corporate governance. The latter has led to a transformation of the US corporate strategy from an orientation towards the retention of corporate earnings and reinvestment in corporate growth since the 1970s, to downsizing of corporate labour forces and distribution of corporate earnings to shareholders over the past two decades (Lazonick and O'Sullivan, 2000). Platform monopolisation is also promoted by financial interests thus leading to a financialised growth dynamic of the platform economy. This dynamic contributes to the platformisation of traditional sectors and the increasingly dominant role of both finance and big tech over the macroeconomy.

The formation of the hierarchy among financial capital, platforms, producers and consumers has shaped the nature of the macroeconomy and brought broader macroeconomic and societal implications. The cash-burning circle, if anything, should remind people of a similar process right before the internet bubble in the late 1990s. Except this time, most tech-enabled platform companies, unlike their earlier internet counterparts, are highly integrated with real-world resources such as labour, small business and public infrastructure.

Beginning around 2000, theorists in the monopoly capital tradition began to develop the notion of a new phase of monopoly capitalism, or monopoly-finance capital, in which monopolisation, stagnation and financialisation operated as simultaneous and mutually reinforcing trends (Foster, 2018). Following the tradition of the monopoly capital school (Baran and Sweezy, 1966), we argue that monopolisation has led to a close, though not always stable, alliance between big tech and big finance. Against this backdrop, we stress the continued relevance of the insights from monopoly capitalism and contend that these macroeconomic tendencies can be better understood as the social cost of monopoly power.

First, platform monopolisation and financialisation has weakened the power of labour vs. capital and contributed to the deteriorating inequality (Khan and Vaheesan, 2017; Schwartz, 2020). This process has pushed the informalisation of employment, created massive numbers of gig workers living under precarious conditions and increasingly concentrated income and wealth into the hands of big tech and big financial institutions. The mobilisation of surplus labour to carry out tasks on a piecework basis done by fewer full-time employees tends to create a relative labour surplus,

leading to the intensification of competition among workers (Standing, 2016). The dominant narrative of flexibility and freedom in the 'sharing economy' also deviates from the reality in which labourers feel compelled to work long hours to compensate for the low hourly income and precarious position (Fleming et al., 2019). This further intensifies the competition in the labour market that only benefits the platform capital. For example, the net profit of Meituan in the second quarter of 2020 increased by 95.5% from last year, primarily due to lower delivery costs induced by a massive influx of delivery workers during the Covid-19 pandemic.[9] Among 2.95 million delivery workers associated with Meituan, 1.39 million are new, as their previous jobs were suspended or eliminated by the pandemic (Xu, 2020). Autor et al. (2020) provide both micro- and macro-level empirical evidence to argue that 'superstar firms', increasingly characterised by a 'winner takes most' feature, contribute to increasing market concentration in most sectors and industries and the decline in the labour share in the USA and globally.

Second, platform expansion has tended to exacerbate overcapacity since the 1970s. This process contains two interrelated aspects. The first aspect is about the nature of competition in the platform economy. The second aspect concerns the impact of a higher profit share on capacity utilisation in the macroeconomy.

Governed by the 'external coercive law' of competition, small platforms seek to occupy a significant market share and acquire critical resources. The relentless expansion of small platforms has gained enormous support from financial capital in the macroeconomic background of excess liquidity. Big tech platforms also expand aggressively to maintain their monopolisation with retained earnings. Strong external or internal financial support tends to prolong competition and significantly postpone the realisation of winner-takes-all, leading to overcapacity not only in platformed sectors but also in sectors relevant to critical resources. This financialised growth and competition result in platform companies prioritising scale over profitability and trapped in repetitive and wasteful production. When multiple platform companies in China made efforts to push into the bike-sharing business in 2016 and 2018, they overproduced and overdistributed bikes that soon became idle, directly against the initial goal of achieving low-carbon environmental transportation (Financial Times, 2019A). Recently, a similar 'gold rush' has emerged in the electric vehicle market as many big tech companies attempt to capture the newly emerging intelligent end device.

The second aspect of overcapacity in the era of big tech is based on post-Keynesian or Kaleckian theories on demand regimes. Empirical evidence suggests that a wage-led demand regime or a stagnationist regime can be observed in major economies (Onaran and Galanis, 2012). The monopolisation and financialisation of the platform economy will lower capacity utilisation because it leads to a higher profit share. Another mechanism is based on the animal spirit in the investment behaviours; (the relentless expansion of platforms implies a high level of such spirit. In a classic post-Kaleckian model,

[9] Despite significant growth, Meituan's size of profits was small compared to the loss it made in earlier years.

an increase in animal spirit will exacerbate the negative impact of a higher profit share on capacity utilisation (Bhaduri and Marglin, 1990; Lavoie, 2014, p. 373).[10]

Finally, coercive competition of small platforms and its valuation-driven financialisation process increase financial risks and the bubble tendency. The weak profitability of small platforms results from both the lack of and the pursuit of (strong) power. The lack of power puts small platforms into continuous challenges. The pursuit of power compels small platforms to engage in price wars. The reliance on financial capital has reinforced the growth-over-profit model, making power-seeking platforms further sacrifice their profitability for higher financial valuation. However, the coexistence between weak profitability and high financial valuation is highly dependent on speculative expectations of investors and the liquidity conditions in the macroeconomy, thus it is highly unstable. This tension will sooner or later limit small platforms' ability to attract financial capital at some point (Financial Times, 2019B; The Economist, 2020). The stock prices of Uber and Lyft both fell rapidly below the IPO price level, reflecting the problems associated with runaway valuation. WeWork's expansion and IPO failure is also a clear example. Monopolisation-driven platforms can become the targets of financialisation in the short run but may also fail to materialise the financial imagination and be abandoned by the financial market (The Economist, 2020).

6. Conclusion and discussion

Platform monopolisation and financialisation reflect the pursuit of platform power in the era of big tech. While this technological innovation empowers large platforms to develop dominance, discipline and governance, there has been intense competition in price wars, M&A and ecosystem building. The 'expand-or-die' model for small platforms forces many to rely on financial capital or big platforms to sponsor their struggle. This finance-dependence tends to subject platforms to the interest of finance and big tech by prioritising valuation over profitability. The growing tension between the dual processes of monopolisation and financialisation and the intensifying precariousness of employment is arguably one of the key drivers behind the fall in labour share. While platforms have become the new outlet for financial investment and speculation after the 2008 crisis, their financialised expansion also contributes to the salient long-term overcapacity since the late 1970s and the new emergence of financial instability. As argued in the United Nations report in 2018, the attempts of big companies to enhance their market position only make the broader economic system more fragile and vulnerable, since together they lead to more inequality, underconsumption, debt and, consequently, macroeconomic vulnerability (UNCTAD, 2018, p. 21).

Apart from the empirical side, our study has also demonstrated and highlighted the methodological advantages of the monopoly capital school compared to orthodox economics in analysing monopolisation in the platform-economy era. With a narrow focus on efficiency and pricing, orthodox economics tends to attribute changes brought by

[10] In classic post-Kaleckian model, investment is depicted as a linear function of profit share (π) and capacity utilisation (u). The function is: $g = \gamma + \gamma_1 u + \gamma_2 \pi$. An increase in animal spirit implies a higher γ. Let s_p and v be the saving rate out of profits and capital-capacity ratio, respectively. The impact of π on u is $\frac{du}{d\pi} = \frac{-(\gamma_1\gamma_2 v + \gamma s_p)v}{(s_p\pi - v\gamma_1)^2}$.

big tech on income, employment and distribution to technological changes and personal preference. Despite the concern about market power in horizontal relations, orthodox economics falls quite short of adequate recognition and analysis of the hierarchical power dimension. Therefore, it has largely ignored the relevant theoretical and empirical developments in other disciplines (e.g. legal studies, sociology and communication). On the contrary, the monopoly capital school has consistently recognised the broader socio-political problems associated with capital accumulation and emphasised the roles of wide-ranging social factors underpinning the process of monopolisation; thus, it has greater potential to cross the disciplinary boundary and provide a fuller picture of the platform economy. Another advantage of the monopoly capital school is that it contains both a micro-level and macro-level analysis and, more importantly, their interactions. Hence it has more explanatory and predictive power to analyse the macro-economic implications of an increasingly platformed macroeconomy.

Finally, our critical analysis and evaluation are not to deny or dismiss the great potential of the platform innovation for economic development and social progress. Instead, we stress the crucial importance of adequate institutional arrangement to guide and monitor the business practice of platform companies in their desperate pursuit of power. To regulate the relationship between the platform economy and social resources, it calls for alternative policy designs that are more inclusive and participatory (Cowling and Tomlinson, 2011). Based on our analysis of platform power and the hierarchical structure, we argue that effective policy designs should aim to dismantle the platform-economy hierarchy and allow all stakeholders to participate in a more diffuse development process. In addition, expansion by finance may not be the only possible model for platforms. A good alternative should take the platform economy as a public good benefiting the public without creating high risks in all social aspects.

Acknowledgments

We thank anonymous referees, the editors, Jennifer Huberman, Haruka Nagao, and Tyler Arons for their helpful comments and suggestions that greatly improved previous versions of this manuscript. The usual disclaimers apply. This research is supported by the 'fund for building world-class universities (disciplines) of Renmin University of China' and the 'Beijing municipal fund for building world-class universities (disciplines) of Renmin University of China.'

Conflict of interest statement. None declared.

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