

Public value and platform governance

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Mariana Mazzucato^a Josh Entsminger^b and Rainer Kattel^c

Abstract

The market size and strength of the major digital platform companies has invited international concern about how such firms should best be regulated to serve the interests of wider society, with a particular emphasis on the need for new anti-trust legislation. Using a normative innovation systems approach, this paper investigates how current anti-trust models may insufficiently address the value-extracting features of existing data-intensive and platform-oriented industry behaviour and business models. To do so, we employ the concept of economic rents to investigate how digital platforms create and extract value. Two forms of rent are elaborated: 'network monopoly rents' and 'algorithmic rents'. By identifying such rents more precisely, policymakers and researchers can better direct regulatory investigations, as well as broader industrial and innovation policy approaches, to shape the features of platform-driven digital markets.

Keywords: Public value, value, anti-trust, algorithms, platforms, platform economics, data, economic rents, digital rents, network effects, industrial policy, innovation policy

JEL codes: A13, B40, B50, B52, D40, K21, L10, L50, L52, O31, O33

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1. Introduction

Capitalism has always excelled at creating new desires and cravings. With digital platforms and algorithms, however, tech companies have both accelerated and inverted this process. Rather than just creating new goods and services in anticipation of what people might want, they already know what we will want and, more than simply catering to future desires, are attempting to sell us our future selves (Mazzucato 2019; Zuboff 2019). To change this will require focusing directly on the prevailing business model, and specifically on the source of economic rents, which have been naturalised as pro-consumer mechanisms and features, while disadvantaging supplier and content producers (O'Reilly 2019). Rather than simply assuming that economic rents are all the same, economic policymakers should be trying to understand how platform algorithms allocate value among consumers, suppliers and the platform itself. While some allocations may reflect real competition, others are being driven by value extraction rather than value creation.

Creating an environment that rewards genuine value creation and punishes value extraction is the fundamental economic challenge of our time. Rather than talking about regulation, then, we need to go further, embracing concepts such as co-creation and market shaping towards value creation. Governments can and should be shaping markets to ensure that collectively created value serves collective ends. Likewise, competition policy should not be focused solely on the question of size of platform. Breaking up large companies would not solve the problems of value extraction and will remain insufficient for addressing rights or building innovation for consumer welfare.

We propose that policymakers should focus on understanding how platforms create and extract value, and how policymakers could conceive and build a digital economy which rewards platform value creation and marginalises or removes value-extractive behaviour. We will look at the relationship between the economic power of platforms and new theories of how platform value is created — and the implications of contemporary framings of regulation and anti-trust. We do so by first unpicking the embedded nature of innovation, and how its direction depends on the governance of the relationship between the public and the private sector, as well as governance relationships within both.

We do not intend to provide an exhaustive technical definition of what is and is not a platform; indeed, a core issue in anti-trust and platform governance remains the lack of a singular accepted definition of platforms (Coyle 2018, p. 3). Rather, for our purposes a platform is a general market mechanism for building two-sided and multi-sided markets. As such, our concern is not with platforms per se, it is with the specific characteristics, conduct, strategies, ecosystems and business models of the firms who have leveraged platform economics to their advantage in digital environments.

2. Politics of innovation in platform economy

Innovation is cumulative process embedded in institutions and contractual relationships (Nelson 1993). This assumes that the value created through innovation is collectively generated by a range of stakeholders, including the private sector, the state and civil society (Polanyi 1944; Mazzucato 2018). In other words, the market and the economy itself are an outcome of the interactions between these sectors.

This embedded nature of innovation and value helps us understand how platforms evolve. Platforms are increasingly taken to be hallmarks of innovative societies and entrepreneurial ecosystem development — not least because modern platforms are online ecosystems, implying a wide digital capacity in the social and corporate base to effectively use these platforms. Over the last two decades, firms which leverage aggregation and platform features have come to take a predominant place in the corporate landscape. The most commonly referenced of these firms, described as the tech giants relative to US-based firms — Alphabet/Google, Amazon, Apple and Facebook — have gained established market positions, consolidating search, e-commerce, operating systems and digital advertising markets internationally. While these are the key firms currently under debate, the scope of this article concerns the features of both existing dominant platforms and future models of platform dominance — where, beyond the existing theory of platform benevolence, or neutral agentive relationship to the ecosystem a platform supports, the dominance of a platform has both internal and external constitutive effects.

While the economics of platforms are well understood and capitalised upon, we cannot begin from the position that our relationships to platforms, and the transactions mediated by them, are without political implications or substantive information asymmetries. Whether subject to consolidated private ownership or peer production and cooperative frameworks, platform approaches are shaped by particular regulatory and legal environments, corporate governance models, user sentiments, market segmentation and technological constraints, as well as variations in the relationships among all such elements. In other words, platforms, like markets, are embedded in how we govern them. The key differentiation is that platforms serve as both agents and essential mechanisms, and how platforms not only exist in, but shape and compose the nature of, modern digital markets renders them a unique analytic problem.

Modern digital capitalism is following the direction of extractive data capitalism (Zuboff 2019)¹ where platforms, as the primary agents enabling both primary data extraction and the demand for data-extractive and data-continent business models, are involved in an ecosystem of innovation to empower and improve such models. Modern platform varieties do not provide a neutral base for firm behaviour; rather, we pose that merchants in platform ecosystems increasingly comport to the requirements and means of best leveraging the tools provided by platforms, establishing a direct link between platform service provision, the larger market for data, and how merchants can

¹ Platforms' data-driven function relative to the current advertising business model remains a primary concern. However, suppose data capture incentives exceed advertising-driven business models. The concern is not simply with the violation of privacy, but the incentives by which privacy violations occur. Tech giants are single, individuated entities only in name; functionally, they are predicated on the consolidation of agency from both the larger ecosystem of innovation and the collective input of users and citizens.

feasibly build competitive strategies in platform driven markets. Therefore, the scope of market shaping exceeds the primary extractive behaviour of platforms and involves the primary relationship between the aggregate impact of platform incentives for data extraction, and the market reliance and demand for such modes.

The embedded nature of platforms begs the question of what is the real distribution of risk and reward relative to the power and scale of such innovations? Credit card companies, as Harold Feld notes, achieved scale and monopoly potential through the publicly funded telecommunication networks (Feld 2019, p. 33). In parallel, the current platforms derive their advantage from the collective effects enabled by broad internet access from public investment and continued development. In turn, we can attune the idea to the question of advancements in GPS and publicly funded intelligent infrastructure, relative to their exceptional usage by digital firms (Mazzucato 2013; 2018, p. 182).

There are three main arguments concerning the regulation of platform giants. The first poses that the platform giants have accrued too much market power, requiring anti-trust measures (Warren 2019). In this analysis, anti-trust metrics are suitable for evaluation and are warranted in the scenario. The second poses that while platform giants have gained broad strategic capacity and economies of scale, anti-trust analysis may under-evaluate or mis-evaluate the problem, leaving alternative regulatory tools and considerations as more viable (O'Reilly 2019; Furman 2019, p. 4). The third poses that while platform giants have exceptional economies of scale and capacity, anti-trust analysis effectively shows that regulatory intervention is not warranted and improved self-regulatory action from the market can suffice (Bourne 2019).

While all three positions recognise the complexity and importance of platform governance and regulatory discussions, all rely upon a common theoretical framework of market failure theory for designing, legitimising and critiquing government interventions (Kattel et al 2018; Mazzucato 2013). Rather than acting as a functional model of analysis, market failure extends to serve as a theory to legitimise government intervention, framing a broader position on the identification of the desirable relationship between government and the market. The central idea here is that the point of regulation is to get markets to perform correctly, where this means to approach as closely as possible 'competitive markets'. This approach emphasises the idea that, given certain assumptions, individuals pursuing their own self-interest in competitive markets gives rise to the most efficient outcomes (Samuelson 1947; Mas-Colell et al 1995, pp. 539–40). Efficiency is understood in a utilitarian sense, whereby an activity is efficient if it enhances someone's welfare without making anyone else worse off (so-called Pareto efficiency). As already indicated by Arrow (1962), while a market failure approach can be utilised to understand why, for example, private firms underinvest in R&D, it is not so useful for guiding policy choices for public investment in R&D, because of the inherent uncertainty involved in the outcomes of such investment.

Under these conditions, the role of government intervention (such as regulation) is in practice often limited to addressing instances where the market is unable to deliver Pareto-efficient outcomes. Such 'market failures' arise when there are information asymmetries, transaction costs and frictions to smooth exchange, or non-competitive markets (e.g. monopolies) or externalities, whereby an activity harms another agent not directly connected with the market transaction (e.g. pollution), or coordination and information failures that hamper investment (Rodrik 1996).

We argue that all prevailing approaches to platform governance referred to above aim to promote market efficiency without anti-competitive pricing, and to utilise data reintegration for service improvement without third party manipulation. In our view, this does not satisfy the need to understand positive public value creation, which is left under-theorised and under-described in prevailing approaches. The starting point of analysis should not be the market condition relative to legitimate state intervention, but the nature of the state-market relationship, as this shapes the behaviour of market participants. In the context of the platforms, the problem is the limited restriction of the behaviour of a given platform, or a change in the system by which platform behaviour emerges, is incentivized and spreads.

Platform governance concerns both the behaviour of specific market agents and the role of these agents in shaping the business models of a larger ecosystem of online players; to shape the business models of platforms is, by extension, to reshape the potential incentives for using and acquiring data from thousands of other firms. The remit of government questioning and investigation of these business models cannot be limited to the concern over short-run, anti-competitive pricing models. It must extend to asking what kind of digital economy do we want? What kinds of market characteristics of future digital economy are desirable and which are not.

3. From market power to platform power

A primary issue facing the platform anti-trust debate is whether, or to what extent, the nuances of platform economics and platform behaviour are effectively captured under existing analytic models and conventions for effective regulatory assessment. While improvements to market power analysis and anti-competitive behaviour assessments can help to improve the health of the digital economy as well as the market-shaping role of platforms in driving and building the future market characteristics of digital economies.

Platforms exhibit multiple functions and there is function-oriented competition between them. LinkedIn often functions as an employee-employer matchmaking service; however, it functionally serves as a social network, micro blogging and content distribution platform, news and information dissemination platform, skill aggregation platform, and advertising distribution platform (Feld 2019, p. 38). These functions are reciprocally reinforcing to improve the amount of time a user spends on the platform, as well as the intensity and variety of engagement, improving overall data collection and platform development. Yet the question of function yields a deeper concern over potential misapprehension of competition by policymakers (*ibid*).

The main platforms are branching out beyond conventional improvements to the direct online service. In relation to the concern over data extraction and data hoarding, the question is the increasing scope of these firms' involvement in the otherwise offline elements of our daily lives through a new generation of smart devices and new models of interaction with them. The question regarding competition and development concerns improvements to the scope of the means for data collection — with increasing numbers of interactions, types of interactions and interaction intensity — and the increasing oligopoly of data hoarding, both relative to and independent of primary service improvement, where the stakes concern the increasing remit of domains of viable

consumption and information-gathering driving an exhaustion potential for the scope of digital intermediation. Platforms compete not simply over how much time you spend online, but the increasing scope of including otherwise offline moments, practices and institutions in digital domains; platforms compete over the creation of new markets for the total digitalisation of everyday life.

Furthermore, we can consider the reinvestment of data into interface and user experience for stickiness by design. As Christine Tucker notes relative to network effects, the strategic equation is not simply scale, but scale and stickiness (Tucker 2018). The drivers of stickiness are user-contingent and focus on the reinvestment of behavioural data into the nuances of user design. However, such addiction by design is not exhaustive for user behaviours relative to repeated use. The concern over stickiness is drivers of preferences relative to alternatives, and the non-existence of true alternatives. Facebook has function-similar competitors, but it does not have a direct English language competitor per se. This matters when considering the heterogeneous nature of network effects, as well as the nature of product- or service-specific assessment of competitive behaviour relative to firm size. In designed environments, it is increasingly unclear what counts as a free market.

Platforms are engaged in increasing verticalisation of core digital services. Google is not simply a search engine, but provides video chat, email and web browser services, among others. This means an increasing data collection remit and an increasing reliance on primary services, as well as the provision of public value through safety, privacy and efficiency. The relative scope of digital services involved in such verticalisation serves two additional concerns. The first is the friction of user experience across functions, helping to improve stickiness. The second is the consolidation of power over metafunctions, such as the privacy and security which all these services demand, thus increasing the power of the decisions Google makes relative to these features.

The specifics of platform features create unique challenges for assessing how competitive effects serve as countervailing forces to check the market power, as well as the prominence, of specific market characteristics. Two-sided markets do not compete with one another in the same fashion as one-sided markets. Improvements to specific market power metrics may help to improve how regulators understand the competitive dynamics of platform-driven markets, as well as the theoretical suitability of anti-trust. Such metrics, however, will remain non-advantageous for assessing the additional functions which platforms maintain.

The features posed in this section were selected to show that while market power and strategic market status help to distinguish potential anti-competitive behaviours in the classic sense, multi-sided market-attuned versions of analysis are in need of a more progressive analysis to better assess the nuances and implications of how platform features relate to desirable market states and evolve independently. This latent concern over the suitability of existing analytic tools has generated a division between appealing to market power and appealing to platform power (Khan 2017; Lynskey 2017, p. 7), wherein platform power is a distinct formulation of the competitive and social attributes of modern platforms relative to the nuances of digitally literate and platform-reliant markets and users, which themselves suffer from inconsistent framing (ibid, p. 4). The question of power holds a double usage, as the concern is not simply market manipulation

through the properties listed above, but the social and political implications of the increasing consolidation of function and usage in these platforms (ibid, p. 28).

The issue can be extended further, for even if we accept that Google, Facebook or Amazon can be displaced, what will be more difficult to displace is the reliance on platform intermediaries, for which the verticalisation of services and the increase in size hold increasing returns and high value for consumers. So, just as the power concern is for market analysis and socio-political implications, the latter demands further consideration of the power of existing platforms, as well as the power of the platform model independent of the current set of platform giants. Firms which leverage platform economics in their favour can enable value creation while also interacting more directly with the direction of the digital economy – the behaviour of modern platforms composes a disproportionate amount of the value created in direct digital economic environments, serving to shape how business models of other firms in such environments relate to directionality of markets.

Market power is intended to call attention to consumer harm as well as anti-competitive behaviour, causing market inefficiencies leading to decreasing aggregate welfare. Market power theories and tests tend to be user- and consumer-focused. However, such theories tend to under-define the specific problems and properties of platform-mediated user behaviour and different kinds of digital harms. Like market power, platform power helps to attune attention to precise anti-competitive elements, such as arguments on the nature of the verticalisation of seemingly non-competitive services in the case of Google and Facebook. More directly, multi-sided markets are insufficiently described and assessed by competition tools built on considerations of single-sided markets and firms (Evans 2013; Feld 2019).

The competing critiques from market power and platform power approaches to one another show both the promise and the limits of expanding analysis within those frameworks. A more attuned model of market power can reduce ad hoc considerations of conventional and unconventional market dynamics; improvements to platform power can retool understandings of platform behaviour and multi-sided market-specific considerations for potentially unique anti-competitive behaviour and incentives, as well as the constituent features of innovation within platform moderated ecosystems. Each theory can be approached as a mutually exclusive concept, or they can be considered as analytic lens, which, by layering, can help to further differentiate competing claims on the nature of platform impact on market and innovation dynamics.

However, both market power and platform power theories are insufficiently descriptive of how value is created, extracted and distributed, as well as the role of platforms in collective value creation processes among public, private and civic sectors. Such a value theory can help to attune not only whether platform regulation might shape innovation relative to platform-driven ecosystems, but also the kind of innovation that can enable the kind of positive market ecosystems deemed desirable. Where in many policy arenas the concern for policymakers is to improve the rate of digital economic development and investment, the question of platform governance must concern both the rate and direction, as the model of platform behaviour currently shapes how market characteristics in digital environments emerge, evolve and become dominant.

4. Value creation and value extraction

Platforms have consolidated enormous wealth and valuations by improving allocative efficiency through the reorganisation of information asymmetries (Feld 2019, p. 22). The value-creating capacity invites parallel concerns that any such dominant position in resolving these informational problems provides disproportionate opportunity and means for value extraction. The consolidation of decision-making power in allocative mechanisms influences what users see when they search, when they perform online purchases and pursue online services (O'Reilly 2019). While technology changes frequently and is therefore difficult to establish as the primary focus of regulatory concern, the function which technology performs may serve as a focal point of attention. In this case, the question of value creation relative to the dominance in allocative functions derived by multi-sided markets at scale can help to reorganise regulatory attention in terms of potential value extraction from suppliers and consumers. As such, to help expand such a position, we intend to leverage a theory of rents to help improve the differentiation between value creation and value extraction.

Value creation is our primary concern, but each generation of economists has a different relationship to the assessment and analytics of value. For classical economists the question of value concerns three separate categories of income: these concern profits for capitalists derived from production, wages distributed to labour by virtue of production and rents distributed to owners of assets critical to production (Mazzucato et al 2020). The latter points to the idea that such assets often had little to no cost of production and thereby marginal or non-existent opportunity costs. The classic example concerns the ownership of land and natural resources, for which an individual can achieve natural monopoly, charging a price for use without adding anything to the essential productive value of the resource itself.

Modern capitalist systems are encumbered by rent and value extraction activities (Mazzucato 2018). The two most noted cases remain the executive pay gap and the increasing financial allocation of resources away from the real economy towards unproductive activities. Yet the real economy, beyond the housing sector, is not inexperienced with rents. Network monopolies in telecoms, monopolies in natural resources, natural and artificial monopolies in pharmaceuticals and knowledge-driven enterprises, and increasing reward for share buy-back schemes represent critical issues facing modern competitiveness agendas (Mazzucato et al 2020).

Such concerns over value go to the heart of inequality analysis as well as deeper concerns over how to assemble accurate theories of why some kinds of distributive arrangements succeed and others fail — either in aligning value creation with appropriate models of risk and reward, or with direct improvements to value and social surplus redistribution mechanisms. In turn, we pose that an awareness of a modern theory of rents, building out a model of digital economic rents, can help to improve the reasoning of policymakers on the kinds of value and allocative capacity which function to resolve fundamental social problems.

For our purposes, we will treat rents for the rest of this chapter under the following hypothesis — that rent is income earned in excess of the reward corresponding to the contribution of a factor of production to value creation (Mazzucato et al 2020), wherein rent generally corresponds to a specific price-cost margin. However, in the context of platforms this conventional price-cost

margin exercise can be insufficient and probably even misguided for assessing how value is extracted. Rather, a more careful awareness of risk and reward relative to their matchmaking systems helps to elicit just how value is created and destroyed among platforms (Mazzucato 2019). A platform which defers risk to suppliers while leveraging a demand-side economy of scale can multiply rewards without the comparable investment into risk reduction – a claim brought on by concerns against the policies of Uber and Lyft, which defer car ownership, maintenance and benefits to individual suppliers. While such platforms privatise collectively generated rewards, the question is how risks are distributed and socialised relative to the distribution of those rewards.

Just as different rent practices exist, the conditions and models of rent extraction vary among sectors, industries and even among firms. While we cannot deal here with a full treatment (see Mazzucato et al 2020), we intend one further clarification relative to the Schumpeterian rent and monopoly apologists. In this view rents and monopolies are productive when temporary – with rents being exceptional profits derived from increasing returns to technological innovation (Burlamaqui 2011). For instance, how platforms defer risk to their suppliers relative to the conservation of a demand-side economy of scale demands continuous attention (O'Reilly 2019). Such a problem is heavily tied to evaluations of major tech firms such as Google, Amazon and Apple. For the purposes of this chapter, however, we can focus on two models of digital economic rents: network rents and algorithmic rents.

Network rents, although not unique to platforms, are profits derived from artificial monopoly creation and monopoly-independent gatekeeping functions through network effects (Mazzucato et al 2020). Rather than monopoly advantages, network effects in digital markets mean platforms can more feasibly experience increasing marginal returns, at least in early to mid stages of scaling (Langley and Leyshon 2017; Srnicek 2017; Zuboff 2019). As exhibited by telecommunications, modern network rents concern the domination of e-commerce and search, and online distribution more broadly. These rents and monopoly phenomena are well understood – although the specific anti-competitive pricing and predatory pricing models pursued by platforms exhibiting monopoly conditions is a different concern (see Khan 2017, p. 791). In digital environments, network effect and heterogeneous network effect, contingent on monopoly status, create and extract rents differently than parallel offline agents. This uniqueness can be minimally attributed to the marginal cost properties and low-cost advantage of network creation in digital environments and with digital products. However, what is more interesting relative to our present concerns is the algorithmic form of rents.

Algorithmic rents concern profits derived from the allocative power exercised by matchmaking systems (Mazzucato et al 2020). Uber's surge and dynamic pricing, as Lina Khan notes, has normalised a perception of varying price to match supply and demand. However, Uber likely manipulates the in-app availability of both riders and users, while simultaneously selectively distributing coupons to users, effectively creating a differential charging scheme (Khan 2017, p. 763, 786). Yet more notably, the concern over algorithmic rents is expressed by search and display functions, and platform-produced product beneficence. This includes concern over whether Google, Amazon and Apple uniquely privilege their own services to the detriment of suppliers, as well as exercising pricing over top positions (O'Reilly 2019). There are similar

concerns over how Facebook and Google exert non-transparent algorithmic capacity in the allocation of advertising budgets for merchants. The concern is the distribution of risk and reward; the distribution of value-creating power relative to the valued feature of products, given the centralisation of data capability as well as flows of consumer attention.² While the question of allocative power invites concern, allocative power is not in itself negative nor undesirable. However, when that power is non-transparent, or blatantly distributes rewards according to rent maximisation, regulators should be more concerned and attentive. As such, the first concern from algorithmic rents for platforms is the embedding of such allocative power as an inherent, invisible mechanism.³

While this behaviour is well-known, the suitability of existing regulatory tools and market heuristics to respond to non-Schumpeterian rents remains underdetermined. Rent helps to crystallise the concern over extractive practice relative to this allocative function, whereby the decisions by which value and income are allocated among users, merchants and the platform itself becomes critical (O'Reilly 2018). In the decision process itself, these decisions are increasingly non-transparent – for instance, the relative opaqueness of value to small firms with a given advertising budget leveraging an advertising service such as Google or Facebook, as well as the real value to consumers. With the increasing feasibility of rent derivation from accrued allocative and algorithmic power, the distribution of platform and merchant incentives relative to improving means for further rent extraction, and relative to primary service improvement, needs awareness and more careful attention. Yet such potential rents are non-exhaustive with regard to the harm and undesirable scenario for social relations. We pose that the stakes of such centralisation of allocative power are not simply the allocation of value among users, with potential platform beneficence. Rather, we should concern ourselves with the precise nature and variety of power as it derives from the control of markets and non-market information asymmetries.

We can consider the more troubling position of behavioural reinvestment of data for profiling and predictive analysis (Zuboff 2019). The irony of this position is that the models which function to perform this analysis are powered by collective user-driven activity, from individual searches to photo labelling to mechanical turk functions, and related improvements to machine learning systems. While this collective user activity is centralised in platforms, the question emerges as to the distribution of benefits from this activity. Zuboff poses a clear divide between firms which leverage data for investment into service improvement as opposed to firms which divide incentives for data use from service improvement to advertising improvement or data aggregation for sale (Zuboff 2019).

This position can be further extended to consider precise questions of how alternative algorithmic models relative to business models establish the incentives for what, precisely, platforms tend to

² The counter push to such centralisation has been the position that, absent such rents, alternative models of marketplace as essential digital infrastructure should be further considered

³ The difference, as Lina Khan notes, is the 'scale and sophistication of data collection. Whereas brick-and-mortar stores are generally only able to collect information on actual sales, Amazon tracks what shoppers are searching for but cannot find, as well as which products they repeatedly return to, what they keep in their shopping basket, and what their mouse hovers over on the screen" (Khan 2017).

optimise for; a position which Larry Page and Sergey Brin infamously noted in their 1998 paper, stating, 'We expect that advertising-funded search engines will be inherently biased towards the advertisers and away from the needs of the consumers' (Brin and Page 1998).

Advertiser incentive-driven divergence is one category of a larger problem of algorithmic governance which rents serve to help expose, where mixed motives in outcome optimisation can establish incentives for a broader range of self-servicing activities, rather than expanding benefits in favour of consumers (O'Reilly 2020). The parallel position is that while algorithmic rents currently exist by virtue of the centralisation of allocative and algorithmic power, the redistribution of such power, while desirable, may not be inherently free of rent-seeking behaviour. Breaking up prior Google and Facebook mergers, as well as more extensive internal division of data and service ownership, may help to drive positive selection effects to reduce pricing, as well as dropping the cost of being excluded from any one platform. However, this does not automatically imply that the model of competition is not data- and value-extractive, or that such platform competition cannot give way to further concentration. Rather, it defers the problem to market selection, while ignoring the fundamental association between rent extraction and data-driven platform business models.

The power and de facto authority to set the outcomes for which algorithmic capacity is optimised is now one of the most important platform governance questions (O'Reilly 2020), as the concern is both whether the centralisation of reward from collective user behaviour is served by the existing governance model, as well as whether the outcomes can be effectively shaped to be, or become, dedicated to improving human capacity and flourishing (O'Reilly 2020). It is unclear whether, in terms of trust and conservation of asymmetric agency, there is any such thing as a neutral allocative decision-making system.

When allocative and automated decisions become entrenched in non-transparent algorithmic conditions, we should consider what kinds of decisions we are actually deferring to the platform leveraging that power. We should not simply pose these as economic harms, rather as extraction of value underdetermined by competition assessment. To build a more competitive economy predicated on data extraction, or to merely improve the avoidance of the anti-competitive practices of existing data-extractive business models, is not to build an economy free of rents; rather it is to decentralise and diffuse rent extractive features.

5. Governing platforms as innovation systems

Public values are expressions of the properties of social, political and economic relations that we prefer.⁴ Our concern for public value in this context is not simply the improvement in aggregate welfare from allocative efficiency gains, but the change in the kinds of social relations we want embedded in market characteristics or enabled by market characteristics.

As digital environments are increasingly consolidated into private hands, there are few positions on public value more important than the need to understand that such value is not produced by the public sector alone (Bozeman 2002). Indeed, as calls for Facebook and Twitter to monitor the quality of information in their feeds grow, we should better understand these calls are implying not only the means, but also the functional demand that private actors bear the primary responsibility in delivering such value, independent of concurrent regulatory action or public sector delivery. From the market side, we can rephrase the position in terms of what kinds of functions should not be subject to competition or what kinds of competition over online privacy and security best enable the creation of public value? More directly, does having a market, or the current market structure, for social data count as a public value failure overall? What kind of relationship between data creation, allocative decision-making and ecosystem behaviour constitutes a healthy system, and which does not?

As such, to effectively govern platforms to deliver public value, policymakers need to maintain a clear awareness of the mechanisms and incentives shaping how value is allocated among users, the platform and merchants (O'Reilly 2019). Such allocative decisions involve a wide distribution of actors and data-gathering among those actors. As such, the structural problem of the distribution of data and the rights regarding its access, ownership and the transparency of analytics thus inform this primary allocative concern as well as the broader consolidation of decision-making on how relations, social and economic, are mediated (Feld 2019, p. 202). Platforms organise an ecosystem of related actors to effect broad changes in how information is arranged in society. However, the initial relationship of platforms being shaped by users has, as predicted, established a world where the conditions of using platforms means that users and firms comport to the model and structure of a platform-driven economy (O'Reilly 2020, p. 20). This extends to a continual demand to understand platforms on the terms of the ecosystem they create by virtue of the mix of unique mechanisms leveraged, and, as such, to understand the varieties of different ecosystem-level relationships which could exist — so, for instance, the

⁴ The first concerns public value theory as articulated by Mark Moore, wherein, just as private agents yield private value when capturing market opportunities in their interest, public agents or civil servants can yield public value when managing regulations, services, laws and public resources in the collective, public interest (Moore 2013). Such a theory primarily serves as a legitimisation of the increased scope for neutral civil servants to act as public entrepreneurs (Bryson et al 2014, p. 449). The second concerns public value theory as articulated by Barry Bozeman, wherein he states that public values are those: 'providing normative consensus about (a) the rights, benefits and prerogatives to which citizens should (and should not) be entitled; (b) the obligations of citizens to society, the state and one another; and (c) the principles on which governments and policies should be based' (Bozeman 2007, p 132). Bozeman further poses that public value does not correspond to a theory of public policy, nor does it hold that a normative consensus is demanded for public values to be realised (Jorgensen and Bozeman 2007).

relationship between Google and content providers by virtue of a change in ad placement and direct answers could improve consumer gains, but at the expense of content producer business models (ibid, p. 19).

We pose that just as platform power diverges in nuance from market power, a corollary theory of value creation relative to allocative scenarios is needed to better attune regulatory attention to the extractive behaviours and harms that exist both within and independent of economic and income implications. Such a theory is needed to help differentiate between the kinds of scenarios which yield not only market failures from the complex relationship with platforms, but also the kinds of public failures that can ensue from under-developed and inappropriate visions. This is not simply to understand effectively and curtail the power of dominant platforms, but to better articulate the alternative domains of practices that we want public and private sector to co-create. Such concerns are embodied less in the ethical approaches of various institutions, and more in the different kinds of structure and infrastructure by which digital rights are made integral and basic to all platforms.

In effect, beyond regulating platforms from the perspectives of anti-trust and competitiveness, governments face the daunting task of building countervailing power and innovation dynamics into the digital economy. Particularly in the European context, there is an emerging discussion around technological sovereignty. We propose that this should be largely an innovation and industrial policy agenda. For this we need a positive theory of public value that begins with a notion of the public good not as a correction to a failure, but as an objective in itself.

This public-value approach, however, does not presume a single model of market shaping, nor indeed that markets are always the necessary mechanism. As data trusts show, non-market mechanisms for management may satisfy a number of desirable governance scenarios. Directionality and public value are inherently normative claims. As such, with multiple distinct contexts regarding public sector capabilities, the agency and ecosystem assessment relative to the distinct data capitalism model, and the distribution of platform business models impose a unique analytic demand on each scenario relative to assembling both a coherent analysis of the direction and the specific policy tools to shape it.

One such problem regarding directionality concerns the expanding scope of data activities. Platforms are increasingly predicated on further reaches for data capture and creation, where the increasing digitalisation of everyday life and the intermediation through platforms establish a universal scope of concern to any given business or individual leveraging online resources (Zuboff 2019). The reach of digital infrastructure and improved means of data capture are further contingent on additional legal conditions regarding data management, research and development for infrastructure, research and development for analytics, and the increasing market absorption of analytic demand by firms. The distribution of agency in the operational model of data capitalism, the data-extractive predicate of platform business models, and the increasing operational incentives for data-engagement from platform merchants establishes the primary problems facing the future of platform-driven economies.

Platform giants advance allocative efficiency in their respective sectors and cross-sector activities. By controlling the mechanisms by which allocative efficiency and market intelligence for a large number of firms are maintained, however, they shape the predominant business models of competitors and entrants. By extension, they shape the distribution of technology relative to operational models of use. Our concern is not simply with dominant platforms and giants, but platforms as technology model diffusers, validators and maintainers — the way the model of dominance translates into shaping the model of user and firm behaviour in the digital economy through fear of exclusion and the dependency on platform-offered services. The nature of the relationship between platform business models and the prominence of data-extractive business models needs to be denaturalised as the only, or best, operational framework for digital economic growth.

We have intentionally over-focused on data-extractive or data-intensive questions of platform behaviour, relative to their prominence in privacy, security and power concerns in the digital economy. However, this normative position enables a consideration of alternative directions relative to the identification of different sets of public values — where, for instance, the deference of data governance to private sector may in some contexts be more desirable. In each, the question of the characteristics of the desired market in question and the distribution of agency involved in shaping that market should be the key focus of policymakers. The question is, what kind of (sub-) innovation system should public policies foster and co-create?

A targeted policy needs to be investigated, which fully addresses the unique distribution of agency for collective value creation in a given context of governance, so an appropriate model of coordinated policy and the requisite public sector dynamic capabilities can be built. The value creative opportunity that a platform-driven economy can provide when disassociated from data-extractive business models is what needs clarification and elaboration. This should be where the parallel investment and incentivisation of an ecosystem of actors to support an alternative model, as well as the disincentivising of platform and firm behaviour relative to the extractive model, establishes a joint demand on ecosystem creation and funding, infrastructure assessment and assembly for technical provision of privacy coherent models, among other features.

6. Conclusion

Any exhaustive analysis of the economic, political and social implications of big tech that does not account for the extractive behaviour will provide limited, and potentially misguided, policy. We can accept that such policies may improve the level of innovation of the system, but will likely not improve the direction of such innovation, although as algorithmic rents proceed, the likelihood that improvements to services balance with improvements to the extractive features of those services and drive innovation may be a dubious proposition. The target of policymakers needs to be bolder, aiming towards a transformative approach to the nature of the platform-dominated online environments.

Our concern is not simply to effectively and precisely leverage anti-trust, but to orient broader coordination among policy programmes to reward a platform innovation ecosystem which prioritises value creation and marginalises or removes value extraction. However, the scope of such a move exceeds regulatory improvements, as it demands rethinking an industrial policy approach to the digital market features which platforms create and diffuse, such as data-extractive business models. Such an approach considers platforms less as monopoly agents in one sector or for one product, but as horizontal market agents. Data portability, interoperability and social graph portability arguments extend to these features. However, the concern remains that targeted changes may effectively reduce lock-in effects, but may be insufficient to reorganise incentives regarding data-extractive and rent-seeking features, or fail to assess them entirely.

Targeted anti-trust moves, such as opening up the data use to third-party players through splitting advertising from search or analytic functions within Google and Facebook, while attempting to minimise anti-competitive data use within Google, or at least the availability of such opportunities, demands further focus and attention on reorganising algorithmic capacity ownership and reshaping means of access to that capacity. The ultimate consideration is whether such improvements constitute an adjustment to a data-extractive norm, or an opportunity to shape how a market can marginalise the extractive features of modern advertising-driven economies. This struggle between such reformist and revolutionary visions of digital economy growth directions is growing, but the question is whether the discursive relationship among these visions can move the window of viable policy considerations and the domain of feasible options. Platforms are not simply allocative agents, working to organise market participants to resolve a number of information asymmetries, among other things; they function as primary controllers of data aggregation and data flows.

The features of multi-sided platforms demand more scrutiny over supplier or merchant health, where the nature of internal competition dynamics among merchants within a given platform, as well as between the platform and merchants, requires more regulatory scrutiny (O'Reilly 2019). This scrutiny extends to the allocative power exercised over how value is distributed among users, merchants and the platform itself. While the requirements for this allocation and its monitoring are data-intensive, the concern must extend beyond existing big tech to platforms more generally — as well as the nuances of platform-mediated digital economies. This implies both the need for a dedicated assessment agency, as well as a consideration of the institutional remit of regulatory oversight for assessing the relationship between platform growth, and other digital economy features and practices. However, as the scope and reach of platforms extend, the remit of assessment demands a larger consideration of the direction of digital economy growth as a collective policy and research agenda.

Policymakers have the larger burden of considering how to cultivate and incentivise a privacy-coherent digital economy relative to the barriers to scale provided by the existing centralisation of data, as well as the relationship between broader digital business models and the data-extractive, rent-pursuing models which are currently predominant.

Anti-trust measures against monopolies will under-determine a change in market characteristics. As such, we are not opposed to anti-trust; rather we are opposed to anti-trust without both the additional coordinated policy programmes to crowd in investment, reshape standards and identify

appropriate institutional mixes for enabling innovation ecosystems, as well as the capacity to effectively target and assess a number of value-extractive behaviours at the algorithmic and ecosystem level. We pose that such approaches demand a parallel expansion to a broader industrial policy and innovation policy approach to consider not only the rent-extractive features of platforms, as well as their economic harms, but the kind of system which could effectively replace those behaviours.

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