

Introduction: What are platforms and how do they create value?

Online platforms and their associated ecosystems are the new and dominant organizational form of the digital age: Online platforms play a prominent role in creating digital value that underpins current and future economic growth in the EU. This article uses the terms ‘platforms’, ‘online platforms’ and ‘digital platforms’ interchangeably, to mean digital services that facilitate interactions via the internet between two or more distinct but interdependent sets of users (whether firms or individuals). Examples of such online platforms include online marketplaces, app stores, search engines, social media and platforms for the collaborative economy. Despite the variety of sectors that they operate in and the diversity of activities they facilitate, online platforms share common economic, business, and governance characteristics in creating and capturing value. These include: the generation of economies of scale and scope; network effects, which can lead to winner-take-all monopolistic positions; business models involving cross-subsidisation across platform sides; pervasive data generation, and data capture and usage; and the fact that platforms act as private regulators of their ecosystems which include businesses and individual users, effectively running as private turfs the business relationships, data exchanges, and transactions that they facilitate.

Organisational forms emerge to take advantage of the specific technological and economic opportunities of the day. The ongoing digital revolution is significant in its scope and ramifications as the industrial revolution was around 150 years ago. It gives rise to new organisational forms that are uniquely positioned to create and capture value in the digital economy: platforms and their associated ecosystems. Over 150 ago, the industrial revolution brought about the rise of the modern corporation. Alfred Chandler’s (1990) explains in *Scale and Scope: The Dynamics of Industrial Capitalism* how the modern corporation was born and evolved to take advantage of production techniques made available by the Industrial Revolution. With its multi-divisional managerial hierarchies, the industrial firm created value. It generated a competitive advantage by harnessing the new technological infrastructures, such as electricity and railroads, to operate efficient production processes. Firms obtained, controlled, and coordinated resources to create products through increasingly integrated and automated manufacturing systems.

If the Industrial Revolution enabled massive economies of scale and scope, the digital revolution dramatically lowered the costs of rapid scaling on a global basis. The emergence of personal computers, the Internet, mobile devices, and Cloud servers allowed digital platforms to form and grow, sometimes exponentially. Digital technologies enable individuals to connect with other individuals and organisations with minimal friction. In addition, companies no longer need to do all their own innovation or own all the assets they provide to consumers. Resources that reside outside the scope of the firm can be exploited and monitored remotely.

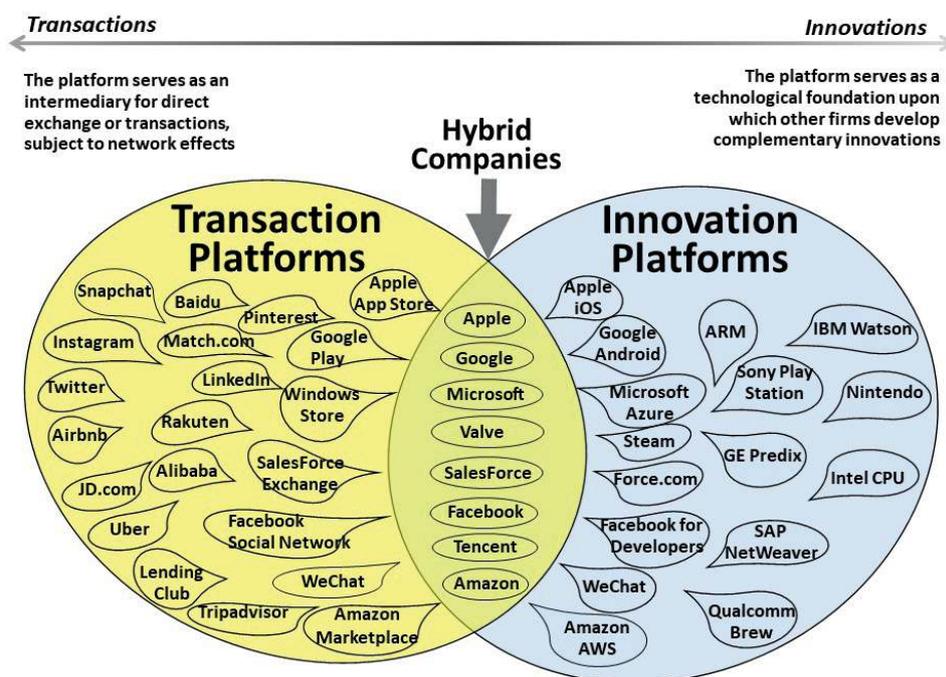
Digital platforms create value by facilitating exchanges or transactions and through fostering innovation. They provide a structure that can take advantage of digital technologies’ low search costs to generate efficient matches between globally connected users. Platforms also increase the efficiency of trade through lower search costs and low reproduction and verification costs. Digital platforms also

facilitate innovation by enabling third-party firms such as software developers to build enormous quantities of complementary products or services.

Cusumano, Gawer and Yoffie (2019) propose a simple typology of platforms that focus on how they create value, distinguishing two broad types and a combined hybrid type (See Fig. 1):

- **Transaction platforms:** they facilitate transactions between many individuals and organisations that otherwise would have difficulty finding or transacting with each other and that capture and transmit data, including personal data, over the internet (e.g., Tmall, Google Search, Amazon Marketplace, Mercado-Libre). These organisations reduce search and other transaction costs for billions of users, customers, and providers.
- **Innovation platforms:** they serve as a technological building block on top of which innovators can develop complementary products or services (e.g., iOS, Google Android, Linux).
- **Hybrid platforms:** they combine characteristics of innovation platforms and transaction platforms. Google, Amazon, Microsoft, Apple, Facebook are all hybrid platforms.

Figure 1: Types of Platforms



Source: Cusumano, Gawer, and Yoffie (2019)

Digital platforms are uniquely positioned to create and capture value in the digital economy. Platform services can bring substantial benefits to consumers while being provided free of charge to users. Yet digital goods generate a large amount of consumer welfare that is currently not captured in gross domestic product (GDP) measures. While GDP is often used as a proxy for well-being, consumer surplus is a better measure of consumer well-being. Research on this issue routinely demonstrates that consumers place a significant financial value on a range of online ser-

vices, assigning multiple thousands of dollars of value to search engines and digital maps (Brynjolfsson et al., 2018; Brynjolfsson et al., 2019).

Digital platform companies also make large investments in research and development. Amazon, Alphabet (the parent company of Google), Microsoft and Apple all feature in the top 10 companies for global spending on research. These high levels of investment in research and innovation are likely to deliver significant benefits for these businesses, their consumers, and society. In addition, innovation platforms such as Apple's iOS or Google's Android provide business opportunities for millions of application developers who innovate on new applications, facilitating the development of apps that they can then distribute globally through app stores.

Platforms thrive on pervasive and continuous data generation, capture, and processing

The ongoing global process of digitalisation supports an economy-wide redesign of value creation, delivery, and capture processes. The pervasive connectivity enabled by digital infrastructures such as the internet and mobile networks allows data to be shared, linking objects, individuals, and organisations who consume as well as generate data. Complementarities between the processes of data generation, connectivity, and aggregation help reduce transaction costs over time, which impacts the architecture of the global value chain.

The evolution of technology has made it possible for companies to collect, store, and use vast amounts of data. The capture and analysis of this data are critical to the business models of most digital platforms. The transition to always-on connectedness has fundamentally changed the way humans, organisations, and machines, as agents or resources, can be identified, monitored, and controlled. In internet-connected and digitalised contexts, resources can be controlled without formal ownership or employment. In fact, digitalisation allows assets and individuals to be monitored and controlled to the degree that was not previously possible. For example, individual drivers can be connected to the web via mobile devices such as smartphones or sensors embedded within a car or an engine. Drivers' movements can thus be tracked, and their behaviours monitored.

As Hal Varian, chief economist of Alphabet-Google, explains: 'Because transactions are now computer-mediated, we can observe behaviour that was previously unobservable and write contracts on it.'¹ This reduction in uncertainty helps reduce the need for ownership of resources, suggesting firms can narrow their scope boundaries if they can digitally connect to remote agents and resources to capture data from them, which they can analyse and exploit.

For example, users of social media platforms do not pay for using the service in that they do not part with money, but they 'pay' by giving their attention to the platform and by allowing the platform to collect data about them that assists in selling advertising that is targeted to the users.

Platform firms such as Google and Facebook that rely on advertising-based business models depend on user data capture and treatment. The proportion of their

¹ Varian, *Beyond big data*.

revenue derived from advertising dwarfs revenue from other business lines. The targeted ads that the Google presents to the consumer are derived from the data captured by Google when the consumer inputs a search query combined with other information about the user that is revealed by its online behaviour on or off Google Search. For Facebook, the targeted ads are derived from the user's behaviour such as which content he/she clicks on, which ad he/she clicks on, how long he/she stays on a particular content, that is, the user's behaviour on the platform and other online behaviour on other websites.

Notwithstanding the many benefits associated with digital platform firms, critics such as Lanier and Zuboff (2019) offer fundamental critiques of the logic of 'datification' of human activities and claim that it profoundly affects, for the worse, humans and society. These concerns, which can be regrouped under the umbrella term of 'surveillance capitalism',² have focused on the consequences for humans of engaging continuously and often unwittingly with organisations (the digital platforms) which appear to offer them 'free' services, whereas users are in fact enrolled into pursuing another goal, the platforms' goals, who aim to manipulate users' behaviours for the benefit of paying third-parties. Zuboff contends that these economic mechanisms can threaten core values such as freedom, democracy, and privacy.³

Digital platforms whose business models are advertising-based receive specific kinds of criticisms. The criticisms hone on the fact that such platforms capture and monetise user-generated data in ways that can generate huge profits, while end-users are not always aware of the role they play in a system that instrumentalises them and uses them and their behaviours as an input, in a business logic fuelled by strategies of data-extractive businesses. For example, Lanier called advertising-based social media platforms 'behaviour manipulation empires' and 'algorithmic behaviour-modification' systems,⁴ where 'everyone who is on social media is getting individualised, continuously adjusted stimuli, without a break, so long as they use their smartphones. What might once have been called advertising must now be understood as continuous behaviour modification'. He argues that 'what has become suddenly normal — pervasive surveillance and constant, subtle manipulation — is unethical, cruel, dangerous, and inhumane.' Lanier comments on the 'dopamine hits' that create users' 'addiction' with social media platforms and he assesses that it threatens free will.

Platforms as the new governors of the Digital Economy

Propelled by their deep reach into our lives, shaping how people work, communicate, shop and entertain themselves, digital platform companies have reached a place of centrality in the economy. That centrality to the economy has only deepened during the Covid 19 pandemic. Yet there is also a wide range of discussion

² Zuboff, *Big Other: Surveillance Capitalism and the Prospects of an Information Civilization* and *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*.

³ Zuboff, *ibid*.

⁴ Lanier, *You are Not a Gadget: A Manifesto* and *Ten arguments for deleting your social media accounts right now*.

around the ways in which the largest digital platforms have abused their power. These issues include anti-competitive practices, mass-harvesting of user data, and failure to tackle illegal or harmful digital content.

Most digital platforms act as *private regulators* of their ecosystems. They establish the rules through which their various users (be they individuals or organisations) interact, decide what behaviours to encourage or discourage on the platform, and choose how to enforce them.⁵

As such, they design the business environment and exercise significant control over members of their platform ecosystem. This rule-setting function is part of what some called ‘platform governance’, which also includes enforcement of such rules.^{6,7} This governance is an essential part of the platform companies do, and it can generate significant value for users of the platform. Good platform governance is a balancing act between creating value for multiple sides of the platforms, when these may have divergent incentives.

For innovation platforms, an important objective of governance is to ensure the quality of complements and clarify who can connect to and innovate on top of the platform. Good ecosystem governance encourages lots of innovation and allows complementors as well as users to benefit in a sustainable manner. Examples of such rule-setting include regulating access to and exclusion from a marketplace; regulating the ways in which sellers can present their offers; which data and Application Programming Interfaces (APIs) users and developers can access; setting up grading systems; regulating access to information that is generated on the platform; imposing standards for delivery and return policies; imposing price controls and so-called ‘Most Favoured Nation’ clauses.^{8,9}

Parker, Van Alstyne and Choudary (2016) indicate: *‘In the complexity of the governance issues they face, today’s biggest platform businesses resemble nation-states. With more than 1.5 billion users, Facebook oversees a ‘population’ larger than China’s. Google handles 64 percent of the online searches in the U.S. and 90 percent of those in Europe, while Alibaba handles more than 1 trillion yuan (162 billion US dollar) worth of transactions a year and accounts for 70 percent of all commercial shipments in China. Platform businesses at this scale control economic systems that are bigger than all but the biggest national economies.’*¹⁰ A fundamental difference of course between nation-states and platform businesses is that the rules of governance of digital platform ecosystems are set up by the platform firms which are private enterprises and are not subject to democratic governance processes.

The governance of platform ecosystems is not limited to hard rule setting. For platform companies, it also consists in sending credible commitments to ecosystem members so that they continue to be affiliated with the platform. This is especially important when platforms face competition from other platforms.

⁵ See Cusumano, Gawer, and Yoffie, 2019.

⁶ Parker, Van Alstyne, and Choudary, 2016.

⁷ Cusumano, Gawer, and Yoffie, *ibid.*

⁸ Crémer, De Montjoye, and Schweitzer, 2019: 60.

⁹ Most-favoured-Nation (MFN) clauses or best price clauses exist when, to protect their investment, platforms impose a requirement to sellers on their platforms that goods cannot be sold through other channels at lower prices. Crémer et al., *ibid.*, 5.

¹⁰ Parker, Van Alstyne, and Choudary, *ibid.*, 159.

When platforms are not dominant, users can choose to abandon the focal platform and migrate toward other platforms if the rules of the focal platform do not suit them. However, when a platform becomes dominant or monopolistic, the role of the platform as a private regulator can become problematic. For example, a dominant platform that allows buyers and sellers to transact and sells directly to buyers can have incentives to abusively apply self-preferencing, i.e., giving preferential treatment to its own products services.

The Competition Policy in a Digital Era report for the European Commission indicates that ‘because of their function as regulators – dominant platforms have a responsibility to ensure that their rules do not impede free, undistorted, and vigorous competition without objective justification. A dominant platform that sets up a marketplace must ensure a level playing field on this marketplace and must not use its rule-setting power to determine the outcome of the competition.’¹¹

Platforms’ effects on employment¹²

A variety of novel jobs have emerged in the digital economy. These different jobs can be categorised into (1) on-demand work and (2) crowdwork. These jobs are organised via digital platforms, including apps and websites, and all of them focus on short-term work (hence they are often called the ‘gig economy’). While organised digitally, on-demand work requires offline labour involving tasks such as cleaning, ride sharing, delivering, caring, maintenance, etc. that must be physically carried out in geographically specified locations. Crowdworkers use platforms to find clients who require their services, which are then provided virtually rather than in-person.

The most prominent element of platform work is how it often relies upon and expands a non-standard employment relation. Much platform work relies on contracts where workers are not defined as employees, but instead as (depending on the language of particular legal systems) ‘independent contractors’, ‘self-employed’, ‘contingent workers’, or simply ‘gig workers’. These employment contracts are flexible, temporary, or otherwise casual and the rights traditionally accorded to employees are largely or entirely absent.

Proponents of platform work argue that it allows many people who would otherwise struggle to find jobs to find one. In contrast, critics argue that it allows people to be fired without any recourse or explanation. The evidence suggests that both are right. For proponents, the ability to work from home, flexible working time, low barriers to entry, ability to skip unpaid training, and potential for avoiding social biases are all given as reasons why these platforms enable more people to find wage labour. The pathway into the labour force has indeed been eased for many, especially groups that traditionally struggle to find work. The flipside of this ease of hiring is that the non-standard employment relationship enables platforms to fire workers just as rapidly. The platform economy is truly on-demand for these workers, subject to consumer demand and management whims, and equally as likely to enable more work as it is to hastily remove workers.

¹¹ Crémer et al., *ibid*, 6.

¹² This section is derived from Gawer & Srnicek (2021).

In the gig economy, the vast majority of the work is low waged – with crowdwork typically being paid less than offline work. A handful of workers do manage to make a significant amount, but the overall distribution is vastly unequal as most struggle to make much. Despite the low wages, many workers do find the work useful for its flexibility. The work's flexibility can help some people accommodate other responsibilities, e.g. caring responsibilities, to work schedules. Yet in the end, flexibility is more often than not insecurity. The 'self-employed' status that workers supposedly chose is more the result of businesses evading their responsibilities towards workers. This evasion of responsibilities is most clearly expressed in the shift of responsibility for risks. Whereas the standard employment contract aimed to balance risks between workers, businesses, and governments, platform work instead transfers risk almost entirely onto individual workers.

Surveillance and control is another area that has undergone significant changes in platform work. Instead of concentrating a workforce in a single physical workplace, digital platforms have enabled decentralised control and coordination of a large and dispersed group of workers, enabling companies to both maintain an outsourced group of workers as well as a standardised service. This algorithm management, underpinned by changes in technology, has given rise to a new set of affordances for control (Gawer, 2020).

Another key feature of this work is that it is often difficult to organise workers into collective organisations such as trade unions. Most obviously, these platforms lack workplaces in any traditional sense. Workers are often incentivised and coerced into direct competition with each other – further hindering any sort of collective action. And significant legal hurdles presently exist to any incipient collective organisation. Yet, despite the challenges and in the face of new forms of digital surveillance, workers have been experimenting and learning new ways to organise and effectively voice their interests. So, while in many ways, platform workers have been blocked from traditional means of collectively organising and exerting pressure, they are nonetheless demonstrating significant innovation.

Platforms' effects on consumer and societal risks

Following their general approach to regulation, many platform companies have sought to evade regulations around public safety. Another issue for consumers is the lack of accountability that is common on many of these platforms. Customers often find it difficult to get assistance when something goes wrong.

Digital platforms' ever-increasing collection and analysis of quantified data also create privacy risks that can affect individual users and have implications for society. Concerns around these issues have focused on the consequences for humans of engaging continuously and often unwittingly with organisations (the digital platforms) which appear to offer them 'free' services, whereas users are in fact enrolled into pursuing another goal, the platforms' goals, who aim to manipulate users' behaviours for the benefit of paying third-parties.

In addition, the influence of the digital platforms on the news media has been under increased scrutiny and focus since the 2016 US presidential elections. Much of the focus has been on fake news and foreign governments' interference in elections through such platforms. But the influence of digital platforms on the news

and journalism ecosystem goes deeper than the spread of fake news. The rise of digital platforms has severely disrupted the business model of news and disintermediated news production and consumption. The business model disruption has reduced the incentive to produce original reporting, and the platform algorithms have rewarded the production of visceral and emotive content.

Another major public health concern has emerged in the form of Covid 19. This global pandemic has impacted nearly every aspect of work, but platform workers have been particularly hard hit due to their precarious position. As a result of their employment status as self-employed, these workers have been excluded from things like sick pay, unemployment benefits, and most government schemes related to coronavirus. While employees have seen extensions to sick leave and unemployment leave, as well as the widespread adoption of various short-time work schemes, platform workers have largely lacked access to these provisions. This lack of social protections means that workers have often had to choose between working or going into poverty.

The Covid-19 pandemic has also increased the reliance from individuals, businesses, and governments on online platforms. The pandemic also sharpens the focus on the trade-offs that policy-makers face when attempting to balance privacy protections with public health. This risk is increased by the extreme reliance on a small number of digital platforms. Contact-tracing apps, associated with systematic testing, have been touted as a promising solution to limit the spread of the virus. This type of surveillance raises serious concerns as it poses significant risks to privacy, civil rights, and civil liberties. The extent to which tracking can be performed in a way that would respect individual civil liberties is still unclear. This is another example of how various issues (limited competition, privacy, data sharing, civil liberties) interact.

EU regulation and main regulatory challenges

The European Commission has developed a regulatory agenda on online platforms to create a trusting, lawful and innovation-driven online platforms environment in the EU. While most applicable policies and regulations were not designed explicitly for online platforms, in 2019, the EU introduced a new EU regulation, the Platform-to-Business (P2B) Regulation. This P2B Regulation was specifically aimed to promote a better trading environment for online platforms' business users, resolve problems associated with unfair practices between online platforms and their business users, and promote transparency in these business relationships. The European Commission also created an Observatory of the Online Platform Economy in 2018, which monitors the platform economy's evolution to support the Commission's work on online platforms. In December 2020, the European Commission unveiled its proposals for a new Digital Markets Act (DMA) and a new Digital Services Act (DSA) as part of its new legislative initiative, the digital services acts 'regulatory package'.¹³

In terms of the regulatory challenges concerning platforms' effects on consumers, businesses, competition, and innovation, Gawer & Srnicek (2021) identify: the limits of traditional antitrust analysis and tools; the violation of privacy and competition by the accumulation of data; the platforms' systemic avoidance of sectoral regulations; and the difficulties in tackling illegal and harmful content online.

¹³ European Commission, *Digital Markets Act and Digital Services Act (2020)*.

On the issue of platforms' impact on labour markets, while there are various directives in matters around non-standard employment, until recently, there was little in the way of regulation directly oriented towards platform work. The European Agenda for the Collaborative Economy (2016) aims to set out principles for the digital economy and platform work. It is significant for several reasons. First, it sets out an EU definition of a 'worker'. Second, this communication argues that sectoral regulations should apply to platforms that are service providers and not mere intermediaries. The Directive on Transparent and Predictable Working Conditions is an updating of the 1991 Written Statement Directive, intending to increase the transparency around working conditions for those in non-standard contracts. It does so by mandating several new provisions for non-standard work. More recently, there is the Council Recommendation on Access to Social Protection for Workers and the Self-Employed. This proposal stems from the principles of the European Pillar of Social Rights and explicitly aims to tackle the issue of non-standard workers having difficulties accessing social protection.

The regulatory challenges that arise from platform employment include the mis-categorisation of platform employees; the disproportionate power of platforms over workers; and the low wages facing many platform workers.

Policy options

The consensus of the reports and studies conducted in recent years is that there is a need to strengthen the current law enforcement and regulation of the platform economy. Building on Gawer & Srnicek (2021), this article recommends, in the first place, an enforceable code of conduct for gatekeeper platforms. It is important to prevent harm, rather than relying exclusively on the current enforcement approach that focuses only on punishing harm after it has occurred. Platform firms with a high degree of market power should not abuse the power they derive from their monopolistic or dominant position to compete and should be prevented from using exclusionary practices, foreclosing markets or exploiting customers to the degree that they would not achieve under competitive positions.

The concerns expressed in the majority of reports on this topic indicate that competitive issues associated with digital platform firms' behaviours are so wide-ranging and self-reinforcing that existing legislative powers are not sufficient to address them.

I therefore welcome the proposals in the European Commission's proposed Digital Markets Act and the Digital Services Act, which take policy and regulation in the right direction in Europe. It broadly supports the DMA, the new ex-ante regulatory framework that aims to ensure that online platform ecosystems controlled by large online platforms benefitting from significant network effects remain fair and contestable, particularly in situations where such platforms act as 'gatekeepers'. It also broadly supports the DSA that aims to modernise and create an EU-wide uniform framework on the handling of illegal or potentially harmful content online, the liability of online intermediaries for third-party content, the protection of users' fundamental rights online and bridging the information asymmetries between the online intermediaries and their users.

Where the article differs from the DMA and the DSA proposals is in calling for (1) a stronger merger control regime for gatekeeper platforms; (2) that each gatekeeper platform should have its own tailored enforceable Code of Conduct; (3) greater scope for national authorities to intervene where there are country-specific issues; (4) a new users' right to reasonable inferences to curtail the generation of 'high-risk inferences', i.e., those that are privacy-invasive, reputation-damaging, and have low verifiability. In addition, one of the central issues raised in the DSA is the treatment of illegal content. The article does not offer alternative policy options on this topic, as the Commission's DSA proposals in this area appear broadly appropriate.

More specifically, in line with the proposed DMA, it is recommended that the European Parliament legislate to introduce a new regulatory ex-ante regime for platforms comprising both pro-competitive interventions and the development of an enforceable code of conduct for gatekeeper platforms. However, in contrast to the European Commission's approach, this article proposes that each 'gatekeeper' platform should have its own tailored enforceable code of conduct, in line with the United Kingdom Competition and Market Authority recommendations.¹⁴

It is also recommended that policies are put in place to ensure freedom of competition. Therefore, the article welcomes the DMA's proposals for ensuring openness, neutrality, interoperability, and on-platform competition. In terms of openness, platforms should not impose undue restrictions on users' ability to use other platforms or service providers that compete with the platform. For neutrality, platforms should not mislead users or unduly influence competitive processes or outcomes by employing means to self-preference their own services or products over competitors' services or products. The article recommends regulations to impose interoperability of systems and greater personal data mobility to increase competition and consumer choice.

Regarding merger control, based on Gawer & Srnicek (2021), the article suggests that the DMA proposal does not go far enough to address merger control for gatekeeper platforms, given that it only asks for *merger notification*. It recommends strengthening the current competition framework that assesses mergers. It proposes that the competition authorities should assess whether, on balance, a merger is expected to be beneficial or harmful, accounting for the scale of the impacts and their likelihood. The criteria to assess impact should go far beyond just impacts on prices and instead include aspects such as data monopolies, privacy risks, and impacts on innovation. This article concurs with the Vestager report proposal of a new set of questions to assess acquisitions that involve a dominant platform or ecosystem. These questions are: (1) Does the acquirer benefit from barriers to entry linked to network effects or data use? (2) Is the target a potential or actual competitive constraint within the technological/user's space or ecosystem? (3) Does its elimination increase market power within this space, notably through increased barriers to entry? And, (4) If so, is the merger justified by efficiencies? Given these criteria, especially the barriers to entry linked to data use, the article shares many experts' concerns over the European Commission's clearance of Google's acquisition of Fitbit.

¹⁴ UK Competition and Market Authority, *Market Study Final report on Online Platforms and Digital Advertising*, 23.

Regarding fairness vis-à-vis consumers, the article is in broad agreement with the DMA and the DSA and recommends strengthening legislation. The article suggests the following rules: non-discrimination, fair terms; controllability of algorithmic decisions, artificial intelligence, and reviews; and access to justice for users. **Non-Discrimination:** Platforms must not discriminate against individual suppliers or users seeking access to the platform. **Fair Terms:** Platforms must trade on fair and reasonable contractual terms, without exploitative pricing or behaviour. **Controllability of Algorithmic Decisions, AI, and Reviews:** Platforms must be transparent and fair about the working of their algorithms, and this needs to be controllable. This provision does not imply that companies have to disclose the algorithm to the regulator, but that case of infringement, liability must still be ascribed directly to the company. **Access to Justice:** Platforms must be answerable to an independent arbitration mechanism. Platforms should bind themselves to an arbitration system for disputes between the platform and users, be they individual consumers or business users.

In addition, users should not be reduced to sources of data or be deliberately manipulated by platform firms to prevent them from making legitimate decisions or making decisions contrary to their interests. In broad agreement with the DSA, the article recommends that platforms should not design interfaces and services that aim to manipulate users into restricting their choices, to mislead them, or to elicit addictive behaviour. Users' privacy should also be respected. In agreement with the DSA, it is recommended that platforms must offer users a real choice on the use of data, including which data for which application, from which sources, and related to the combination of data. The article extends the DSA proposals in suggesting that this should also extend to inferred data and platforms should offer users the right to reasonable inferences, and to curtail or eliminate the generation of 'high-risk inferences', that are privacy-invasive, reputation-damaging, and have low verifiability in the sense of being predictive or opinion-based.

As for enforcement, in agreement with Marsden and Podszun (2021), this article recommends that the regulation of platforms should also institutionalise a robust and adaptive set of enforcement mechanisms. This institutional design should aim to combine the advantages of regulation with its power to hold accountable and enforce and some degree of self-regulation. Specifically, this article agrees with Marsden and Podszun's suggestion for the European Commission to establish: (1) a Platform Compliance Unit (PCU) in DG-CONNECT, (2) an Early Alert Unit (EAU) in DG COMP, and (3) a Platform Complaint Panel (PCP) in DG-COMP.¹⁵

- The Platform Compliance Unit (PCU) in DG-CONNECT would be in charge of new and platform-specific regulatory obligations. It would be formed to be competent for the ex-ante regulation of platforms, for monitoring platforms, and for issuing compliance orders as well as forward-looking guidance.
- The Early Alert Unit (EAU) in DG-COMP's mission would be to investigate cases where platform-led 'unnatural tipping' of a market is suspected of developing. The Early Alert Unit would engage with the Platform Compliance Unit to ensure swift compliance in case of evidence of platforms contravening the rules.
- The Platform Complaint Panel (PCP) in DG-COMP would act as an adjudicator to private complaints.

¹⁵ Marsden and Podszun, *Restoring Balance to Digital Competition – Sensible Rules, Effective Enforcement*, 80–85.

The success of this institutional mechanism of enforcement would rely on the strong interplay of these units and the effective collaboration of DG-CONNECT and DG-COMP.

Regarding enforcement, there would appear to be an inconsistent approach between the DMA and the DSA in the role afforded to national regulatory bodies. Member States' involvement in the DMA regime looks set to be significantly less than that proposed under the DSA, which provides for direct enforcement at the national level.¹⁶ This could become a significant issue over time, as some Member States, including Germany, have more advanced national regulatory frameworks. These Member States must not be disadvantaged or undermined by these potential discrepancies. Greater scope for national authorities should be granted to intervene in a timely and effective manner where there are country-specific issues, while ensuring complementarity between the supranational and national levels.

Core to the discussions around the negative impacts of platform work on working conditions is the way in which the use of non-standard employment relationships (typically, self-employed status) blocks access to many or all of the social protections that come with full-time indefinite employment. To rectify this, based on Gawer & Srnicek (2021), this article recommends redefining the category of worker in such a way that it encompasses the new forms of platform work and non-standard work. At a stroke, those currently excluded from standard social protections would be brought back within their ambit. There are a variety of definitions that could be used to carry this out. Regardless of what definition is chosen though, an important aspect is that workers should, by default, be categorised as employees.

There are a number of areas where the nature of platform work means that some elements of traditional employment rights may need to be modified or extended. For example, the characteristics of this work – often infrequent, piecemeal, involving high overhead costs, and spread amongst multiple clients – can make setting a minimum wage more challenging. One significant step towards fixing this would be to prohibit piece wages in on-demand work and replace them with hourly wages. Allowances should be made to reflect the costs that typically go along with platform work. And insofar as platform workers have an app open and are available to work, they should be counted as working.

Given the pervasive nature of workplace surveillance in the platform economy, it is also necessary to establish a series of data rights for (all) workers. A first critical component of data rights is making data collection and algorithmic systems accountable – and to ban them where appropriate. In those cases where data on workers is collected, a second step is to make that data transparent and accessible to those workers. Lastly, there is the issue of ratings and their widespread use amongst platforms. At a minimum, ratings should be portable across platforms. Platform firms should be incentivised to design better rating systems that protect users' privacy and data rights.

This article also recommends giving workers a voice in their work by supporting platform cooperatives' creation and expansion. Whether local, regional,

¹⁶ Allen & Overy, *Global Antitrust: Digital Markets Act*, 5.

national, or supranational, governments have an important role in supporting these platform cooperatives that promise better working conditions, more secure employment, and local economic growth. In the first place, governments can take important steps in helping cooperatives overcome the challenges of starting up. As a second step, governments can help platform cooperatives to grow and compete. Governments should most importantly take regulatory actions to level the playing field between upstart platform cooperatives and cash-flush global competitors. Lastly, governments can assist platform cooperatives in consolidating their place in the economy. This can mean assistance in connecting various cooperatives together – both across regions and across industries. More boldly, governments could provide their own publicly owned and democratically accountable versions of platforms.

Conclusions

The article ends in suggesting that a new mode of regulation for the platform economy is needed, one that will combine ex-ante robust yet flexible regulation, stronger ex-post enforcement, and enrolling the active participation of online platform firms and their ecosystem members. It also calls for supporting fundamental research into platforms' and ecosystems' behaviour. Existing economic theories based on foundational notions of 'markets' and 'firms' (which lead to regulation) may not be sufficient to interpret the behaviour of online platforms correctly. As digitalisation enables the generation of data-driven complementarities across products, services, and sectors, a better unit of analysis than the market might be that of an ecosystem that can cut across markets or sectors.¹⁷ More research is needed on platforms' behaviour in ecosystems over time and on how ecosystems develop, coalesce, compete, and evolve. Further development and cross-fertilisation of economic theory, management theory, and social science theories will be needed.

¹⁷ Jacobides, Gawer, and Cennamo, *Towards a Theory of Ecosystems*.

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