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CORE ANALYSIS

Value extraction and institutions in digital capitalism: Towards a law and political economy synthesis for competition law

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Abstract

The rise of digital capitalism was marked by significant changes in the processes of value generation and capture in the economy. However, its impact on competition has only been recently explored. Taking a Law and Political Economy perspective we analyse four central developments challenging the traditional competition law framework and raising important questions regarding the broader institutional environment for the protection of competition: the transition towards financialisation and the logic of futurity, in particular in the digital economy, which gives rise to new competitive strategies of undertakings, structured around the 'shareholder value' principle; the extraction of economic value through new types of labour, which fall outside traditional employment relationships and hence affect the scope of competition law in the digital economy; the emergence of digital value chains that rely on multi-sided platforms and the formation of digital ecosystems, which challenge the usual focus of competition law on markets; the generation and extraction of value in the digital economy through new types of commodities and natural and artificial scarcities, that shape new social relations of production in accordance with the logic of futurity and lead to the emergence of competitive bottlenecks. Based on this analysis, we emphasize the need for a comprehensive theory-building for competition law and regulation that engages with these new processes of value generation and capture. We highlight how the underlying theories of 'value' and the institutional set-up have led to inequality and reduced competition. Existing institutions could not respond to these changes, which led to the initiation of significant institutional reforms. The prevailing conception of competition law had to evolve in congruence with different regulatory alternatives (a 'toolkit' approach). The article concludes by analysing how the emerging competition and regulatory compass for the digital economy in the European Union (EU) contributes to this dialectic between value generation/capture and institutional choice.

Keywords: competition law; regulation; digital value chain; ecosystem; labour

1. Introduction

The current global economy is marked by diverging trends – on the one hand, rapid wealth and job creation, high return on investment and labour mobility; on the other hand, dwindling benefits, concentration of wealth and insecure employment and retirement for large parts of the population. The outcome of these diverging trends is a polarised economy, where the benefits of growth and innovation are reaped by a small number of firms and individuals, while pushing a large

percentage of people down the social hierarchy and hallowing out the middle class.[1] These developments have led to an ongoing discussion at the academic and policy circles in competition policy on the need (or not), for a drastic transformation of competition law.[2] The current mainstream in competition law, which is inspired by the paradigm of neoliberal law[3] and the separability thesis between matters of economic efficiency and distribution in neoclassical economics,[4] but also more broadly the legal system that has emerged from the so called 'Twentieth Century Synthesis'[5], is perceived as not providing an adequate response to the complex challenges of 'the world of the polycrisis'[6] and the disruptive transformations this brings to the current political and social order. Its emphasis on economic efficiency marginalises questions of power, failing to account for the multiple dimensions of power in the digital era and its multiple intersecting with socio-economic and political inequalities[7]. The 'objectivity' and 'neutrality' of the 'regulatory science'[8] it employs (neoclassical economics) does not pay sufficient attention, because of the separability thesis, to questions of equality (including 'complex equality'[9]). The apolitical (or 'anti-political') nature of its focus on consumer welfare maximisation[10] seems to underestimate the need to promote the mechanisms of democratic accountability and seems to disregard the

[1]In Europe this polarisation is also reinforced by geoeconomic disparities between the core industrial and services economic base and the economic periphery, a dimension that is not further explored in this paper: see, J Kapeller, C Gräbner and P Heimberger, 'Economic Polarisation in Europe: Causes and Policy Options, Research Report 440 (The Vienna Institute for International Economic Studies 2019) available at <https://wiiw.ac.at/economic-polarisation-in-europe-causes-and-options-for-action-dlp-5022.pdf>.

[2]For a recent discussion that takes simultaneously place both in the EU and the USA, see *inter alia* H Hovenkamp, The Text of the Antitrust Laws (2022) available at SSRN: <https://ssrn.com/abstract=4277914> or <http://dx.doi.org/10.2139/ssrn.4277914>; L Khan, 'The New Brandeis Movement: America's Antimonopoly Debate' 9 (2018) Journal of European Competition Law & Practice 131–2; L Khan, 'The End of Antitrust History Revisited' 133 (2020) Harvard Law Review 1655; I Lianos, 'Reorienting Competition Law' 10 (1) (2022) Journal of Antitrust Enforcement 1; I Lianos, 'Polycentric Competition Law' 71 (1) (2018) Current Legal Problems 161; J Padilla, 'Neoclassical Competition Policy without Apology (2022). Available at SSRN: <https://ssrn.com/abstract=4266176>; C Shapiro, 'Antitrust: What Went Wrong and How to Fix It' 35 (3) (2021) Antitrust 33; S Vaheesan, 'The Profound Nonsense of Consumer Welfare Antitrust' 64 (4) (2019) The Antitrust Bulletin 479; JD Wright, E Dorsey, J Klick and JM Rybnicek, 'Requiem for a Paradox: The Dubious Rise and Inevitable Fall of Hipster Antitrust' 51 (2019) Arizona State Law Journal 293.

[3]See, DS Grewal and J Purdy, 'Introduction: Law and Neoliberalism' 77 (2014) Law & Contemporary Problems 1.

[4]For a discussion, see I Lianos, 'Competition Law as a Form of Social Regulation' 65 (1) (2020) The Antitrust Bulletin 3.

[5]J Britton-Purdy, DS Grewal, A Kapcynski and S Rahman, 'Building a Law-and-Political-Economy Framework: Beyond the Twentieth-Century Synthesis' 129 (2020) The Yale Law Journal 1784.

[6]A Tooze, 'Welcome to the World of the Polycrisis (*Financial Times* 2022) available at <https://www.ft.com/content/498398e7-11b1-494b-9cd3-6d669dc3de33>.

[7]See, I Lianos and B Carballa-Smichowski, 'A Coat of Many Colours – New Concepts and Metrics of Economic Power in Competition Law and Economics' (2022) Journal of Competition Law & Economics. <https://doi.org/10.1093/joclec/nhac002>.

[8]S Jasanoff, *The Fifth Brand. Science Advisers as Policy Makers* (Harvard University Press 1990).

[9]M Walzer, *Spheres of Justice. A Defense of Pluralism and Equality* (Basic Books 1983).

[10]Although one should note that this term in Europe is usually broader and more pluralistic than in the United States (US), where it is often equated to economic efficiency and the total welfare standard, as it takes into account various parameters of competition, such as variety, quality, innovation and sustainability, and takes into account distributional concerns, to the extent that it puts more emphasis on the consumer surplus loss, rather than proceeding to a simple Kaldor Hicks cost-benefit-analysis. For a discussion, see I Lianos, V Korah and P Siciliani, *Competition Law: Analysis, Cases and Materials* (Oxford University Press 2019), Chapter 2; L Samuel and FS Morton, 'What Economists Mean When They Say "Consumer Welfare Standard"' (2022) Promarket available at <https://www.promarket.org/2022/02/16/consumer-welfare-standard-antitrust-economists/>. On the various parameters of competition in EU competition law see, European Commission, 'Draft Commission Notice on the definition of the relevant market for the purposes of Union competition law', para 12 ('Those parameters (of competition) may include the product's price, but also its level of innovation, its quality in various aspects – such as, for example, its durability, sustainability, the value and variety of uses offered by the product, the image conveyed or the security and privacy protection afforded –, as well as its availability, including in terms of lead-time, resilience of supply chains, reliability of supply and transport costs').

interests of various under-represented in the political process and vulnerable stakeholders.[11] In contrast to the traditional Law and neoclassical Economics synthesis, the Law and Political Economy (LPE) perspective instead revolves around issues of power, multi-level governance and pluralism, equality and democracy.[12]

Hence, in contrast to the traditional law and economics approach that starts from the goal of economic efficiency/wealth maximisation to explore any 'deviation' of the legal system from this ideal (moral imaginary),[13] this paper examines how the economic and legal institutions and processes of digital capitalism are like in reality[14], and aims to explore the underlying values that shape the process and outcomes of competition in the era of digital capitalism. To advance our understanding, we need to examine social and economic developments at the macro and meso levels in a cohesive and integrated manner, focusing both on value creation/extraction but also on value capture, and on the role the legal system plays in this context. This paper seeks to improve our understanding of these processes by exploring the simultaneous operation of various dynamics that shape the modern digital capitalist system and its broader socio-economic foundations. We first examine the issue of value generation and extraction in the digital economy. We consider four important developments that are of relevance for the proper understanding of the challenges currently faced by competition law and which have been ignored by the traditional competition law and economics framework:

> The acceleration of the transition of the economy towards financialisation and the logic of futurity, in particular in the digital economy, which gives rise to new competitive strategies of undertakings, structured around the 'shareholder value' principle.[15]
>
> The extraction of economic value through new types of labour, which fall outside traditional employment relationships and hence affect the scope of competition law in the digital economy.[16]
>
> The emergence of digital value chains that rely on multi-sided platforms, and the formation of digital ecosystems, where value is co-produced and exchanged between different categories of users, allowing platform owners to extract monopolistic rent, which challenge the usual focus of competition law on markets.[17]

[11]An example is provided by the recent debate about competition law and freelancers and workers' rights in the digital economy: N Countouris, V de Stefano and I Lianos, 'The EU, Competition Law and Workers Rights' in S Paul, S McCrystal and E McGaughey (eds), *The Cambridge Handbook of Labor in Competition Law* (Cambridge University Press 2022) 280–97. More generally, on the opposition between the 'Twentieth Century Synthesis' and the LPE approach, see J Britton-Purdy, D Singh Grewal, A Kapcynski and S Rahman, 'Building a Law-and-Political-Economy Framework: Beyond the Twentieth-Century Synthesis' 129 (2020) The Yale Law Journal 1784, 1818–32.

[12]A Harris and JJ Varellas, 'Law and Political Economy in a Time of Accelerating Crises' 1 (1) (2020) Journal of Law and Political Economy 1, available at <https://escholarship.org/uc/item/8p8284sh>; J Britton-Purdy, D Singh Grewal, A Kapcynski and S Rahman, 'Building a Law-and-Political-Economy Framework: Beyond the Twentieth-Century Synthesis' 129 (2020) The Yale Law Journal 1784; PF Kjaer (ed), *The Law of Political Economy: Transformation in the Function of Law* (Cambridge University Press 2020); I Kampourakis, 'Bound by the Economic Constitution: Notes for "Law and Political Economy" in Europe' 32 (1) (2021) Journal of Law and Political Economy 301.

[13]RA Posner, 'Law and Economics is Moral' 24 (1990) Valparaiso University Law Review 163.

[14]See, B Leiter, What Is a Realist Theory of Law? (2020), available at SSRN: <https://ssrn.com/abstract=3517589>. This realism should also embrace the learnings of work in economic sociology on the 'performativity of economics', which argues that 'economic technologies do not just describe the world, but are profoundly involved in shaping it—to the point of making real agents behave in the way theory says they should': M Fourcade and K Healy, 'Moral Views of Market Society' 33 (2007) Annual Review of Sociology 285.

[15]W Lazonick, 'The New Economy Business Model and the Crisis of U.S. Capitalism' 4 (2) (2009) Capitalism and Society 1–70.

[16]H Ekbia and B Nardi, *Heteromation and Other Stories of Computing and Capitalism* (MIT Press 2017).

[17]I Lianos, *I. Global Value Chains in Competition Law: A Conceptual Guide* (CLES 2017) (on file with the author).

> The generation and extraction of value through new types of commodities and natural and artificial scarcities, that shape new types of social relations of production in the digital economy in accordance with the logic of futurity, giving rise to new scarcities and thus leading to the emergence of competitive bottlenecks.

Based on these observations, we seek to emphasise the need for a comprehensive theory-building for competition law and regulation that addresses these new processes of value generation and capture, enables more opportunities of participation in the production process and allows for greater investment and influx of capital to the economic and social periphery, in line with the LPE focus on issues of distribution and inequality. These developments should also make us think more carefully, first in general, about the underlying theories of 'value' that provide to all these processes their inherent directionality, and second, more specifically, about the interplay of competition law with other fields of law, either old or emerging, that attempt to tackle the digital revolution phenomenon. We acknowledge the fact that existing institutions (including competition law) were unable to respond to these new changes. This has led to the initiation of significant institutional reforms in the EU, broadening up its remit to values other than consumer welfare maximisation and extending the kind of externalities (and market imperfections) competition law, or its regulatory alternatives, may take into account.

At the macro level, we start in Section 2 by discussing the financialisation of the economy and theories of value that are profoundly geared towards the interests of some stakeholders, as a major driving force behind the above trends. Then we turn in Section 3 to the meso level, where we analyse the extraction of economic value through new forms of labour and outside traditional work environments, as well the emergence of digital value chains and business ecosystems that serve as vehicles of value extraction from a more heterogeneous group of stakeholders (gig workers, users, customers, as well as waged labourers). We then return to the macro level and explore the development of new commodities on which specific 'market agencements' support the guiding frameworks for individual actions while channelling collective action towards the extraction of value.[18] We emphasise the fact that these 'market agencements' do not only rely on 'market devices' but also result from the contribution of the legal regime/coding that structures and prompts economic activity.[19] Taking a legal institutionalism perspective, Section 4 of the study explains how the processes of value extraction and capture in the digital economy have been facilitated or even enhanced by strategies of legal action or inaction. These diverse economic and technological mechanisms work in synch and intertwine. Therefore, they have to be analysed in an integrated/holistic way. Nevertheless, we leave the micro level, the psychosocial mechanisms of persuasion and participation in an increasingly computerised economy shaped by futurity to future studies in order to not exceed the scope of the Article.

The paper concludes in Section 5 by analysing how the emerging competition and regulatory compass for the digital economy in the EU contributes to the dialectic between value generation/capture and institutional choice, and how the current institutional architecture (the toolkit approach) breaks with the piecemeal approach of a narrowly focused consumer welfare oriented competition law (and its perceived tensions with regulatory alternatives), which has ultimately failed to take into account the complexity of the process of value extraction in digital capitalism. This LPE inspired reconstruction of the challenges of this regulatory field supports the development of a new *synthesis*, in some respects complementary to the traditional neoclassical approach, in some others substitutive, and calls for a greater engagement with new sources of learning and the methodological tools of the new 'regulatory science' of complexity studies.

[18]On the concept of 'market agencement', see *inter alia* F Muniesa, Y Millo and M Callon, An Introduction to Market Devices' 55 (2_suppl) (2007) The Sociological Review 1–12.

[19]M Callon, *Markets in the Making. Rethinking Competition, Goods and Innovation* (Zone Books 2021) 48.

2. The macro level: futurity, financialisation and shareholder value maximisation

Financialisation is one of the defining features of the current global economy. Broadly understood as 'the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies',[20] it has changed societies around the world, shifting the centre of economic activity from investment in production, infrastructure and job creation – the hallmarks of industrial capitalism well into the 20th century – to stock value maximisation, securitisation, and foreign exchange transactions.[21]

This development predates the emergence of digital capitalism. The transformation of corporate control since the 1970s has led to the development of the multiproduct firm, in which managers seek to spread risks across various product lines to achieve greater profitability and to grow through mergers financed by leveraged buyouts. This process led to a significant increase of the profits of the finance sector (finance, insurance and real estate), but also to a significant increase in the share of financial assets held by the non-financial sector of the economy and in the importance of financial revenue for non-financial businesses.[22]

The period coincides with the prevalence of the 'shareholder value principle',[23] which has dominated corporate governance discourse since the 1970s: disciplined by a corporate market for control dominated by financial interests, in particular institutional investors, corporate managers became increasingly aligned with the interests of shareholders. It became the ultimate goal of all corporate strategies to increase the price of the short-term value of corporate stocks (strategy of asset re-evaluation), in particular by creating an artificial scarcity of shares through extensive buybacks (share repurchase).[24] They also downsized their corporations (in particular by cutting labour costs through strategies of 'heteromation'[25]) and distributing the freed up corporate revenues to the shareholders (principle of 'downsize and distribute'), instead of re-investing them in the long-term productive potential of the corporation (principle of 'retain and re-invest').[26] Larger firms became increasingly focused on stock market performance, while smaller and medium firms that were not public slowly de-leveraged their balance sheets.[27] Financialisation has expanded in all sectors of the economy, from commodities to elaborate digital value chains.[28]

These developments hint at an important transformation of the value generation process in the economy, linked to financialisation. Industrial capitalism theories of value put emphasis either on value determined and generated, in the Jevons tradition, through a process of current exchange or spot markets for products, in which the factors of production are ideally priced according to their marginal or incremental productivity the economy being treated as an 'isolated system'.

[20]GA Epstein, *Financialization and the World Economy* (Edward Elgar, 2005).

[21]More generally, see, RJ Shiller, *The New Financial Order. Risk in the 21st Century* (Princeton University Press 2003); J Montgomerie and K Williams, Financialised Capitalism: After the Crisis and beyond Neoliberalism 13 (2009) Competition & Change 99–107; E Engelen, 'The Case for Financialization' 12 (2008) Competition & Change 111–9; N van der Zwan, Making Sense of Financialization' 12 (1) (2014) Socio-Economic Review 99–129; R Solow, 'How to Save American Finance from Itself – Has Financialisation Gone too Far?' (2013) *New Republic*, available at <http://www.newrepublic.com/article/112679/how-save-american-finance-itself>.

[22]See, for instance, for Big Tech, See, R Fernandez, I Adriaans, T Klinger and R Hendrikse, *The Financialisation of Big Tech,* SOMO (December 2020).

[23]W Lazonick and M O' Sullivan, 'Maximizing Shareholder Value: A New Ideology for Corporate Governance' 29 (1) (2000) Economy and Society 13.

[24]W Lazonick, 'Profits without Prosperity' (2014) Harvard Business Review, available at <https://hbr.org/2014/09/profits-without-prosperity>; L Palladino and S Buybacks, *Driving a High-Profit, Low Wage Economy* (Roosevelt Institute 2018), available at <http://rooseveltinstitute.org/stock-buybacks-high-profit-low-wage/>.

[25]See, Section 3.

[26]Lazonick, 'Profits without Prosperity' (2014), available at <https://hbr.org/2014/09/profits-without-prosperity>.

[27]LE Davis, 'The Financialization of the Nonfinancial Corporation in the Post-1970s U.S. Economy' 175 (2014) Doctoral Dissertations 44.

[28]I Lianos and A McLean, 'Competition Law, Big Tech and Financialisation: The Dark Side of the Moon' (2021), available at SSRN: <https://ssrn.com/abstract=3930565> or <http://dx.doi.org/10.2139/ssrn.3930565>.

Alternatively, in the Marxian tradition, value depends on social relations of production and/or income distribution that relate to socio-economic and institutional factors, for instance unequal distribution of property rights that spawns a system of unequal exchanges, which lead to exploitation.[29]

These approaches do not adequately describe the process of value generation in a financialized economy, which is marked by intangible property or ownership (eg IP rights, reputation, trade secrets, know how, data), the dominant role of futures markets and consequently the central position of financial markets. In this new economic setting, value is not determined and generated by *present* exchanges, or *present* social relations of production, but by an *expected* succession of events. John R. Commons coined the term 'futurity' to describe this reorientation of economies towards the future and its underlying theory of value.[30] This futurity is linked to the emerging practice of treating businesses as 'going concerns', measuring their value in terms of their anticipated future profits.[31]

In today's financialized digital economy, the most important driver of value creation is indeed related not to present scarcity but to *future expected scarcity* that will result from the control of bottlenecks which may become a source of expected monopolistic rents in the future. Digital platforms have seen their financial markets' valuation skyrocket in less than a decade. This valuation is, however, not justified by their current cash flow. Their tremendous value results from financial markets' expectations for high profits derived from their position as gatekeepers controlling important bottlenecks in the networks that power and shape the digital economy (eg operating systems, search engines, app stores, the cloud), as well as their ability to canalise the activity of their broader ecosystems and users for their own use.[32]

The underlying theory of value of the 'shareholder value maximisation' principle also almost uniquely focuses on the interests of the shareholders of the corporation. All other stakeholders such as workers, business partners (eg suppliers of inputs), consumers, the local community, citizens, are ignored in this process of value generation (for shareholders). At best, it is considered that they may benefit indirectly by the economic prosperity of the shareholders that would trickle down to them, for instance in the form of better job and trade opportunities or by additional tax income for the State and consequently higher levels of social welfare transfers. For this 'shareholder value' to also become 'consumer value', it has to be accompanied by a counter-movement,[33] focusing on consumer welfare, in which competition operates so as to bring down the 'price' to the consumer's willingness to pay. This explains the simultaneous development of the 'shareholder value maximisation principle' and 'consumer welfare' oriented approaches in competition law. The latter work under the assumption of a 'representative consumer',[34] although it is clear that 'consumers' are highly heterogeneous, in terms of tastes, financial resources, and other defining characteristics, for each type of trade.[35] The primacy of the 'shareholder value maximisation' remains the key determinant for value: efficiency gains may outweigh the price effects and avoid

[29]See, M Dobb, *Theories of Value and Distribution since Adam Smith – Ideology and Economic Theory* (Cambridge University Press 1973); G. Palermo, 'Competition: A Marxist View' (2017) 41(6) Cambridge Journal of Economics 1559.

[30]JR Commons, *Institutional Economics: its place in Political Economy* (University of Wisconsin Press 1934) Vol. I, Chapter IX.

[31]Ibid., 69.

[32]Already in 2017, there were articles about Big Tech firms being 'madly overvalued': See, for example, P Foulis, 'Are Technology Firms Madly Overvalued? Three Financial Sanity Tests for Whether There Is a Bubble' (*The Economist* 2017). The market value of Bitch Tech companies has multiplied, with, for example, Apple passing from $860.8 billion in 2017 to $2.9 trillion in 2021, and Amazon passing from $563.53 billion in 2017 to $1.6 trillion in 2021.

[33]K Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time* (Beacon Press 2001, originally published in 1944) (theory of the double movement). For a discussion, G Dale, 'Double Movements and Pendular Forces: Polanyian Perspectives on the Neoliberal Age' 60 (2012) Current Sociology 3.

[34]See, I Lianos, Polycentric Competition Law 71 (1) (2018) Current Legal Problems 161 (identifying how the price-based revealed preference approach of a representative consumer on a specific relevant market, does not factor in the analysis the action and interests of real individuals simultaneously active in various social spheres and why this is a problem for competition law).

[35]Michel Callon observes the singularisation of each 'bilateral trade' in a world in which digital technology enables us to harvest personal data and form specific bespoke products that satisfy the specific preferences of individual consumers (singularisation of goods), thus leading to the emergence of atomistic 'bilateral markets': M Callon, *Markets in the*

intervention by competition authorities when the value created for shareholders overcompensates the loss of consumer surplus. Corrective measures to compensate the 'losers' through social policies (corporate taxation, subsidies, the welfare state) operate as an afterthought.

This reductionist theory of value does not adequately describe the new processes of value generation in the digital economy. It does not integrate the development of broader communities of co-production of value, in the form of 'heteromated labor' and business ecosystems or broader alliances between the public and the private sector. This broad conception of value communities is not new. Acknowledging the various dimensions of value, and the various theories that have been put forward in order to tackle this complex issue, Pitelis suggests a broader definition of 'value', as 'perceived worthiness of a subject matter to a socio-economic agent that is exposed to and/or can make use of the subject matter in question'.[36] More than focusing on the subjective 'perception' of value, Pitelis' definition departs from the neoclassical approach that defines value as something that relies on the idea of 'willingness to pay' and thus either directly or indirectly (through hedonic pricing) presupposes the existence of market prices.[37] He puts instead emphasis on the 'organisation value' that might also exist for 'subject matters' (concepts such as reliability) that have 'value' 'even if there is no market and/or someone who is willing to pay for them'.[38] Indeed, as he explains, organisation value 'can be conjectured or realised'.[39]

One may conceive the stock market that appreciates the expected profits of a specific firm and through that arrives at a re-evaluation of its stocks (assets), as a process aiming to 'realize' that 'conjectured value'. In this context, organisation value is conjectured *and* realised. At the individual level value is 'created', and 'manifests itself as value captured'.[40] In neoclassical theory, 'capture' appears in the form of monopoly rents, 'given the potential value creation encapsulated by the cost and demand curves'.[41] However, value can also be captured from conjectured value, through the joint operation of innovativeness, firm-level infrastructure and strategy, and the use of (human) resources that build the competitive advantage of firms. In this case value at the individual level will be 'realised' by the calculation by the stock market of the 'anticipated future income streams of this advantage'.[42]

The development in the era of digital capitalism of organisations beyond the core corporation, such as supply chains, integrated value systems, value chains and/or business ecosystems, also enables firms 'to capture value created by others, such as suppliers, customers and distributors. These may help co-create value by appreciating (valuing) and/or improving and promoting the product or service in question',[43] as they develop investments in assets complementary to those of the organisation. By 'orchestrating' ecosystems and controlling 'industry architectures', firms essentially aim to reach some balance between organisational value generation/creation and individual value capture based on their 'architectural competitive advantage'.[44]

Making – Rethinking Competition, Goods and Innovation (Zone Books 2021) (noting how prices as simple qualities participated in the singularisation of goods, but also bespoke personalised pricing has become common practice in the digital age).

[36]CN Pitelis, 'The Co-Evolution of Organizational Value Capture, Value Creation and Sustainable Advantage' 30 (10) (2009) Organization Studies 1115, 1118.

[37]Ibid.

[38]Ibid.

[39]Ibid., 1119.

[40]Ibid.

[41]Ibid.

[42]Ibid., 1125.

[43]Ibid. 1129.

[44]M Jacobides, T Knudsen and M Augier, 'Benefiting from Innovation: Value Creation, Value Appropriation and the Role of Industry Architectures' 35 (2006) Research Policy 1201; E Autio, Orchestrating Ecosystems: A Multi-Layered Framework 24 (1) (2022) Innovation 96–109; I Lianos and B Carballa-Smichowski, 'A Coat of Many Colours – New Concepts and Metrics of Economic Power in Competition Law and Economics' (2022) Journal of Competition Law & Economics. <https://doi.org/10.1093/joclec/nhac002>, at 30 (on 'architectural power').

In conclusion, 'organisation value' cannot be limited to 'shareholder value' but should also include the 'value' generated by all the other socio-economic agents involved in the value creation/capture process. Such value may be 'realized', not because of any ownership rights the agents dispose on the assets/infrastructure, but through their participation in the process of value creation. As it is nicely put by Ben Letaifa, 'with the emergence of the new service- and knowledge-based economy, the concept of value is becoming more knowledge based, social, subjective, intangible, and complex and is shifting away from a post-industrial economic mantra (cost, efficiency, customer expectations)'.[45] Business ecosystems provide the 'experience space' in which 'socio-economic value' is co-created and 'co-captured' by the different actors involved. Hence, we need to embrace a broader 'ecosystemic mindset' that is very much based on the social relationships that develop between the ecosystems' actors (but also those outside it). This likewise leads to a multidimensional definition of 'value' recognising the subjective assessment of the various socioeconomic dimensions in play.[46] From this perspective, emphasising only shareholders' value would constitute an exceedingly reductionist view of 'organisation value' in digital capitalism.

3. The meso level: value generation and extraction in digital capitalism

The combination of financial capitalism with digital technology has given rise to new sources of value creation/extraction and capture. This increases the level of complexity in understanding the strategies of the various actors, as well as in designing appropriate public policies that promote the common good. To the extent that creating 'value' for all stakeholders, and not just for some of them (eg shareholders, consumers), may at least encompass the economic dimension of the common good, it is important to explore new sources of value that should be acknowledged when assessing the effects of alternative policy choices. This section examines three of these sources.

First, digitalisation engendered a profound transformation of labour relations and consequently of labour markets, with the development of new forms of 'work' but also, more generally, contributions to the co-creation of value in the digital economy. Financialisation enables the conceptualisation of each contributor to the value creation process as a would-be (small-scale) entrepreneur, making use of some personal 'capital' (eg an asset, time, specialised knowledge) in the context of a labour platform, generating rents through the coordination of the effort of other people or maximising conjectured value 'in use' through the operation of network effects. These relationships between the different actors are intermediated through data markets that are specifically constituted in order to translate into financial value the various features of human activity involved.

Second, digitalisation has accelerated the move towards modularisation of production, and the constitution of business ecosystems in which groups of autonomous firms and individuals take advantage of different sorts of complementary investments and capabilities to co-create value.[47] Not only value creation in the digital economy takes place across actors in ecosystems, but also this 'organisation value' is very much linked to the financialisation of the future prospects and the competitive advantage of each ecosystem to capture innovation rents.

Third, the logic of futurity and financialisation in digital capitalism drives an expansion of market ideology to (human) activities that either were not previously considered as commodities, or, if already commodified, were not subject to the process of commensuration that is intrinsic to

[45]SB Letaifa, 'The Uneasy Transition from Supply Chains to Ecosystems: The Value-Creation/Value-Capture Dilemma' 52 (2) (2014) Management Decision 278, 279 (citing the work of Pitelis).

[46]Ibid., 280, 283.

[47]M Holgersson, CY Baldwin, H Chesbrough and MLAM Bogers, 'The Forces of Ecosystem Evolution' 64 (3) (2022) California Management Review 5.

the development of markets and exchange.[48] This expansion of the market logic is facilitated by the development of technologies enabling the observation and, consequently, the measurement of various dimensions of human activity, which had previously escaped commodification, or which could not be conceived, because of expectations resulting from specific socio-economic conditions, as being wilfully exchanged in markets, these being translated into financial value. We should not also forget that the process of commensuration, which is key in the formation of financial markets,[49] is by essence a social process.[50] These new tools of observation and measurement expand the possibilities of creating new categories of intangible assets that are then valued by financial markets according to the logic of futurity. These new objects of valuation rely on natural or artificial scarcities that shape the value of exchanges in the present but also future, and consequently create expectations about future return on investments and consequently competitive strategies.

A. Heteromation and value generation

As mentioned earlier, engaging with value capture requires an understanding of what value is and how it can be measured. Classical economics and Marxist perspectives define value objectively, by analysing the costs of production of a commodity. According to the labour theory of value, 'the value of a commodity(is) strictly proportional to the amount of labor time needed to produce it'.[51] Where labourers work more than what is needed for restoring their labour power (eg their capacity to work, that is, the resources essential for their maintenance and reproduction), this generates 'surplus value'.[52] This surplus value enables the payment of wages to workers (covering the costs of their subsistence) and profits to the capitalists, the exact proportion of each being determined by bargaining. Hence, the social relations of power between these two groups affect the rate of profit. The rate of profit refers to the rate of return on the company's assets (its 'variable' capital, used to pay wages for workers, and 'constant' capital, which is employed to invest in other means of production). To these profits, one may also add 'surplus profits' or 'rents' derived from the control or ownership of scarce assets or essential resources (monopoly rents).

However, the labour theory of value does not fully account the process of value generation in modern digital and financialized capitalism, in particular considering the phenomenon of 'heteromation'.[53] Heteromation refers to the extraction of economic value, not only from the labour of others, or more narrowly from their waged work, but also from their simple *participation* in the process of production or by value generated from their simple use of the product(s) (value in use).

The changing nature of 'work' and the new economy business model (NEBM)

The predominance of the shareholder-value perspective leads firms and corporations to be largely accountable for maximising the short-term benefits of their shareholders through IPOs, collective ownership, stock buybacks, and other financial instruments. Starting in the 1980s, firms reversed from the allocation regime of 'retain and reinvest', where companies invested their revenues in job-creating innovations in organisation and technology, to a regime of 'downsize and redistribute' which focused on the allocation of revenues to shareholders. Lazonick traces these developments in terms of a shift from an 'old-economy business model' (OEBM) to 'new-economy

[48]See, on the problem of 'missing markets' see, GM Hodgson, 'How Mythical Markets Mislead Analysis: An Institutionalist Critique of Market Universalism (2019) Socio-Economic Review. <http://dx.doi.org/10.1093/ser/mwy049>.

[49]B Kuchler, 'Financial Markets as Commensurating Machines 58 (4) (2019) Social Science Information 539.

[50]WN Espeland and M Stevens, 'Commensuration as a Social Process' 24 (1998) Annual Review of Sociology 313–43.

[51]M Mazzucato, *The Value of Everything – Making and Taking in the Global Economy* (Penguin 2018) 41 (referring to David Riccardo) and 48 (referring to Marx).

[52]Ibid., 48–9.

[53]Ekbia and Nardie (n. 16).

business model' (NEBM).[54] This shift, according to Lazonick, took place at different levels and in various dimensions, including models and practices of technological innovation, corporate governance, and capital investment, particularly in the high-tech world of Silicon Valley. In brief outline, the adoption of open-systems standards by major players of the computer industry led to the weakening or abandonment of internal R&D within major corporations in favour of patenting, cross-licensing, outsourcing, and the takeover of startups. Technically, this was accompanied by the design and development of modular components that were manufactured by offshore companies and vertically integrated in niche markets. Financially, the shift was made possible through the rise of organised venture capital, cushioned by investment from large retirement and pension funds. These had important implications for the nature of work and led to changes in the patterns of employment in these large corporations from the late 1970s, a process that accentuated with the development of personal computing and the Internet in the 1980s and 1990s.

The most important shift was in the areas of employment, labour organisation, and labour benefits. The dismantling of life-long and secure employment built on mutual loyalty and commitment of employers and employees in favour of short-term and insecure employment of a mobile workforce that is always on lookout for new opportunities is a well-documented and well-understood story of labour in the latter part of the 20th century.[55] In a broad outline, this was a story of precariousness, the decoupling of benefits (health, retirement, etc.) from employment, and the turning of individuals and households into units of risk management and entrepreneurship.[56] In light of this story, the rise of platforms and the emergence of so-called gig economy in the first part of the 21st century can be considered 'natural' and 'logical' extensions of the developments of the earlier decades.

To this end, we observe that a great deal of value in the current economy is extracted outside of traditional work environments, where the dominant form of relationship between capital and labour are wages. While waged labour still remains a key form of work, it is increasingly supplemented and/or replaced by other types of labour such as alternative work arrangements (AWA) and gig work, as well as by various forms of labour contributed by uncompensated labour of users of modern technology. In order to account for the value extracted from these different varieties of labour, we have to draw distinctions among them from a political economy perspective.

Of particular interest is the development of alternative work arrangements facilitated by digital platforms, which create new digital marketplaces to supply labour for temporary use ('labor value platforms'),[57] eventually increasing precarious work.[58] This work may sometimes be categorised under the wide umbrella of Non-Standard and contingent work (self-employed own account workers not hiring other individuals, temporary or fixed term contracts, and part-time work), although the way the work is organised and the lack of alternatives, in view of the dominance of these platforms, may be compared to the relation between employer and employee in

[54]W Lazonick, 'The New Economy Business Model and the Crisis of U.S. Capitalism' 4 (2) (2009) Capitalism and Society.

[55]L Boltanski and E Chiapello, *The New Spirit of Capitalism* (Verso 2005); see also H Ekbia, 'Digital Inclusion and Social Exclusion: The Political Economy of Value in a Networked World' 32 (2) (2016) The Information Society 165–75.

[56]R Sennett, *The Culture of the New Capitalism* (Yale University Press 2007).

[57]V de Stefano and V Aloisi, *European Legal Framework for 'Digital Labour Platforms'* (European Commission 2018), available at <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC112243/jrc112243_legal_framework_digital_labour_platforms_final.pdf>.

[58]See, for instance, European Parliament, The Platform Economy and Precarious Work (2020), available at <https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652734/IPOL_STU(2020)652734_EN.pdf>; F Schmidt, *Digital Labour Markets in the Platform Economy: Mapping the Political Challenges of Crowd Work and Gig Work* (Friedrich Ebert Stiftung 2017), available at <https://library.fes.de/pdf-files/wiso/13164.pdf>.

traditional and long-term forms of employment.[59] An increasing number of people provide services through online intermediaries such as Uber, Lyft, TaskRabbit and Upwork.

In conclusion, the introduction of computing into work environments has profound implications on the nature of the working relation and requires a more functional perspective in envisioning the concept of 'work'. This should integrate the change from OEBM to NEBM, as well as the reality of the technological dependence of labourers to 'matching' platforms. Those involved in alternative work arrangements often find themselves in the role of entrepreneurs, drawing on their own personal assets, with all the attendant risks and rewards to this kind of economic activity.[60] Gig workers find themselves in the grip of the so-called platform economy, controlled by machines and managed by algorithms, into the working of which they do not have any access or insight, and with no recourse to legal labour protections.[61] These changes also affect labour in different ways: low-skilled workers are facing stagnant or declining wages with an increasing prospect of intensified work through computer-coordinated mechanisms, while high-skilled professionals might be cognitively augmented in carrying out their work, and mid-level workers face the risk of job loss through technologies of automation. The net effect of these developments on waged labour is the 'hollowing out' of middle class, as observed in various societies.[62]

Heteromation and users-value

A lot of value in the digital economy is extracted not from work, traditional or AWA, but from simple use. Digital platforms derive value from network effects, as the use of a product or technology by any user increases the product's or technology's value for other users (sometimes even all users). Therefore, a large installed base of users is positively valued by financial markets. These varieties of human activity do not only generate different forms of value that go beyond the traditional labour theory of value, but they also involve different social roles and different forms of relations to modern technology. We will separate the concept of 'use' from those of labour and consumption. The human activity of 'use' cannot only be characterised as productive, to the extent that the production of value involves some act of consumption for own purposes, as opposed to the consumption of an input in order to produce an output that is considered as a production activity. The fact that 'use' may generate value questions the idea that value may only be generated by a social relation of production. Similarly, 'use' cannot be confined to an act of consumption, precisely because it generates value.

One may distinguish between different forms of 'use'. The first consists in activities that were previously undertaken by waged workers, labourers with alternative working arrangements, or other types of value-creating labour, but were heteromated to the users by using modern computing technology and digitalisation. We will broadly refer to this as 'heteromated labor'.[63]

[59]C Codagnone, F Abadie and F Biagi, *The Future of Work in the 'Sharing Economy': Market Efficiency and Equitable Opportunities or Unfair Precarisation?* (Office of the European Union Institute for Prospective Technological Studies JRC Science for Policy Report 2016).

[60]J Berg, *Income Security in the on-Demand Economy: Findings and Policy Lessons from a Survey of Crowdworkers* (International Labor Organization 2016), available at <https://www.ilo.org/wcmsp5/groups/public/—ed_protect/—protrav/—travail/documents/publication/wcms_479693.pdf>. U Rani and J Berg, Digital Labour Platforms and the Future of Work: Towards Decent Work in the Online World (ILO, Research Department 2018); G Neff, *Venture Labor: Work and the Burden of Risk in Innovative Industries* (MIT Press 2012).

[61]K Hara et al., 'A Data-Driven Analysis of Workers' Earnings on Amazon Mechanical Turk' in *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (CHI'18) (2018); V DeStefano, 'Negotiating the Algorithm': Automation, Artificial Intelligence, and Labor Protection. ILO Employment Policy Department' (Working Paper No. 246 2018); SF Deakin and C Markou, *The Law-Technology Cycle and the Future of Work* (University of Cambridge Faculty of Law Research Paper No. 32/2018 2018).

[62]R Wike and B Stokes, *In Advanced and Emerging Economies Alike, Worries About Job Automation* (Pew Research Center 2018) <http://www.pewglobal.org/2018/09/13/in-advanced-and-emerging-economies-alike-worries-about-job-automation/>.

[63]Ekbia and Nardi (n. 16).

A classic example is that of the self-serving customer of an airline checking in for his flight online, instead of completing this at the airport assisted by airline staff. This self-check-in constitutes a moment of heteromation. The process cannot be compared to automation, as human intervention is still required. However, this human activity is that of the customer who auto-checks in. The customer offering this 'labor' remains uncompensated and the value generated is captured by the airline company.

The situation becomes more complex if the activity is new and there is no possibility to compare with an activity previously exercised by labourers. One may envisage the example of a 'You Tube' user, who produces and shares videos on 'You Tube' for everyone to watch. If this activity is compensated, it may constitute entrepreneurship, while if it is uncompensated, it can be characterised as heteromated 'labor' or 'heteromated use'. These activities are commoditised, in the sense that, before being heteromated, they were exchanged in a market for a price.

Another example are player versus player (PvP) online gaming platforms, where human players compete against each other. The use of the platform by different players contributes to the gaming service provided by the platform, as the PvP platform would have no use had there not be a sufficient number of players to play against each other. To the extent that the gaming platform charges for its services, part of this value is captured by the platform. However, the platform is also able to collect data on how players are using the games in real time, data harvested not only for the purpose of improving their gaming experience, but also in order to be monetised in various ways in data markets, thus constituting another example of 'heteromated use'. This surplus value is entirely captured by the gaming platform.

Finally, one may refer to the situation of a user of a search engine, such as Google Search. The user is not charged a price for the use of the search engine, but Google harvests the data of the user, not only with the purpose to improve the user experience but to sell predictions made on the basis of this raw data to advertisers at the other side of the platform. One may consider that this also constitutes an example of 'heteromated use', to the extent that the simple use of the search engine generates surplus value as well as network value, which is almost exclusively captured by the digital platforms and not by the users.

Figure 1 attempts to present a simplistic scheme of the sources of surplus value for each of the processes we examined.

The examples above illustrate, that the mechanisms of value extraction vary in each specific case – advertising on social media and search platforms, creative labour in gaming, and data capture and analysis in many of them. They raise important questions as to the qualification of such activity as 'economic', therefore enabling the application of competition law,[64] as well as possible strategies of exploitation and exclusion that may be adopted by the economic actors driving this process of 'heteromation'.

B. Value extraction in digital ecosystems – the new frontiers of exploitation?

Digital platforms may also capture a significant part of the value generated from the capital invested by independent firms that co-create value (with them) and form part of their business ecosystem. These are often technologically dependent on the platform for their access to the final consumers. The constitution of business ecosystems in which the (digital) platforms operate as the 'lead firm', to use the terminology of global value chains,[65] has become a distinct characteristic of

[64]Competition law applies to entities exercising 'economic activity' designed as offering products or services in a market (see, I Lianos, V Korah and P Siciliani, *Competition Law: Analysis, Cases and Materials* (Oxford University Press 2019) 277–87). This issue may indeed be relevant for contracts concluded between digital platforms and 'this heteromated labour' and 'heteromated users'.

[65]For a discussion, see G Gereffi, J Humphrey and T Sturgeon, 'The Governance of Global Value Chains, 12 (1) (2005) Review of International Political Economy 78–104.

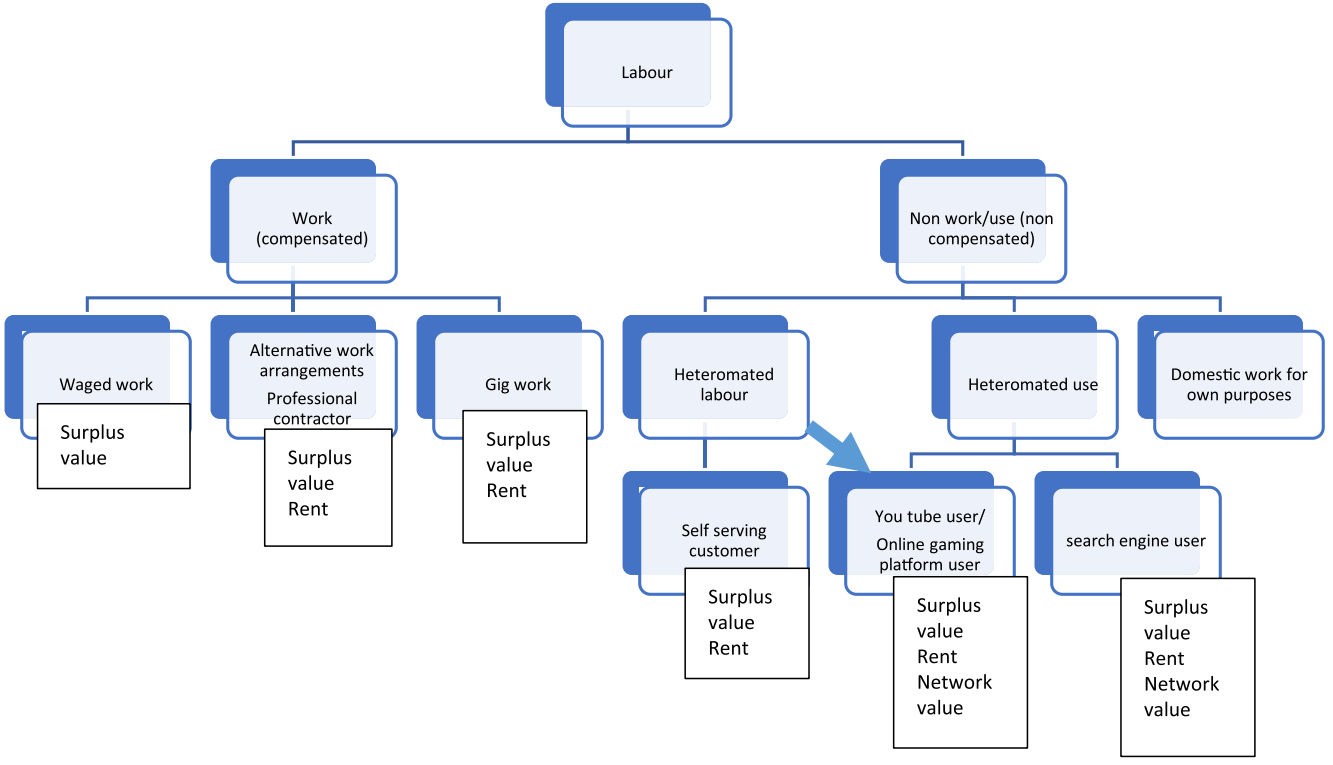

Figure 1. Sources of value in the digital economy and human activity.

modern digital capitalism. This shift from competition and value capture to more complex mixed strategies of value capture and value creation, involving strategies of competition, have added an additional 'field' of competition-related activity, the 'eco-system'.

Porter and Heppelmann take note of the development of these complementary capabilities, which widens the competitive boundaries of an industry 'to encompass a set of related products that together meet a broader underlying need', to argue that '(t)he basis of competition shifts from discrete products, to product systems consisting of closely related products, to systems of systems that link an array of product systems together', and in which 'the firm is just one actor' among others.[66] Ecosystems may be distinguished from supply chains or value chains, because the value of the ecosystem (the complements and the core functions) is greater than the sum of the values of the different parts and their development. There is a balance to achieve between the centripetal forces that push the firms exercising these various related activities toward integration because of greater complementarity and the centrifugal forces that pull the units of the ecosystem apart, because, for instance, of dispersed knowledge and the dominance of a logic of individual profit maximisation rather than ecosystemic profit maximisation.[67] Also, contrary to supply and value chains, there is not always the equivalent of the 'lead firm' in value chains,[68] as an ecosystem may be characterised by a looser structure, in which value is optimised internally through external interaction across the ecosystem,[69] and in which various firms may compete for dominance.

Developed in the early 1990s,[70] the concept of an 'ecosystem' has been defined in broad terms as 'a group of interacting firms that depend on each other's activities'.[71] Teece notes that a characteristic of eco-systems is their 'co-evolution' in the sense that the 'attributes of two or more organisations become more closely complementary', 'the system being typically reliant on the technological leadership of one or two firms that provide a platform around which other system members, providing inputs and complementary goods, align their investments and strategies'. Teece also notes that 'co-creation' is a characteristic of eco-systems as two or more organisations 'combine forces to pioneer new markets'.[72] Adner observes that 'the ecosystem is defined by the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize'. Holgersson and others emphasise the importance of 'organisation value': as in ecosystems, 'investments are complementary in the sense that their value as a system is greater than the sum of the values of the separate parts'.[73] Adner proceeds to define this 'alignment structure' as 'the extent to which there is mutual agreement among the members regarding positions and flows'.[74] The 'eco-system orchestator' determines the elements of the value chain that will need to be internalised and those which will be supported externally so as to capture value.

Most studies on eco-systems focus on the role of the eco-system as a 'hub' of inter-firm relations taking place within the context of a platform, often referred to as the 'lead firm' or 'ecosystem captain', which 'defines the hierarchical differentiation of members' roles and establishes

[66]ME Porter and JE Heppelmann, 'How Smart, Connected Products are Transforming Competition (2014) Harvard Business Review, available at <https://hbr.org/2014/11/how-smart-connected-products-are-transforming-competition>.

[67]M Holgersson, CY Baldwin, H Chesbrough and MLAM Bogers, 'The Forces of Ecosystem Evolution 64 (3) (2022) California Management Review 5.

[68]L Kano, EW Tsang and HWC Yeung, 'Global Value Chains: A Review of the Multi-Disciplinary Literature 51 (2020) Journal of International Business Studies 577.

[69]J Loonam and N O'Regan, Global Value Chains and Digital Platforms: Implications for Strategy 31 (2022) Strategic Change 161, 168.

[70]J Moore, 'Predators and Prey: A New Ecology of Competition' 71 (3) (1993) Harvard Business Review 75.

[71]M Jacobides, C Cennano and A Gawer, 'Towards a Theory of Ecosystems' 39 (2018) Strategic Management Journal 2255.

[72]D Teece, 'Next-Generation Competition: New Concepts for Understanding How Innovation Shapes Competition and Policy in the Digital Economy' 9 (2012) Journal of Law & Policy 105–6.

[73]M Holgersson, CY Baldwin, H Chesbrough and MLAM Bogers, The Forces of Ecosytem Evolution 64 (3) (2022) California Management Review 5 at 5.

[74]R Adner, 'Ecosystem as Structure – An Actionable Construct for Strategy' 43 (1) (2017) Journal of Management 42.

standards and interfaces, a number of formal mechanisms, such as the management of standards and interfaces, platform governance, IP rights etc. forming the 'key tools that hubs use to discipline and motivate ecosystem members'.[75] However, ecosystems may also be considered as 'value systems',[76] where different firms producing mostly complementary products cooperate in order to produce surplus value, by using their capital (including physical, human and organisational assets), and idiosyncratic capabilities in order to implement the ecosystem's strategy and achieve a sustainable competitive advantage that could constitute a source of abnormal profits. The contribution of each of the parties in the value system may be mapped by drawing a value chain in which all contributions to the input and output process can be included.[77] Such a map may provide a picture of the process of vertical competition of the various actors within the ecosystem for capturing the highest percentage of the surplus value generated by the ecosystem.

The capture capacity is determined by (i) *diminished horizontal competition* at a specific segment of the value chain, thus providing the ability to a firm to increase prices while squeezing the margin of its vertical competitors upstream and downstream (reducing horizontal competition), (ii) *the control of a bottleneck*, or of an indispensable asset or competence, outside the core competences of the other members of the ecosystem, or protected through ownership rights (including IP rights), which may provide this firm absolute or relational power vis-à-vis its partners in the ecosystem (thus limiting both horizontal and vertical competition), (iii) *the capacity to determine the architecture of the ecosystem*, enabling the industry architect to capture the largest percentage of the surplus value generated by the value chain for a considerable period of time (diminishing vertical competition).

The capture of value through suppression of vertical (intra-ecosystem or intra-platform) competition is to a certain extent a 'normal' dimension of the market economy.[78] Traditionally, it is considered that in the presence of strong horizontal (ecosystem or platform) competition, this should not be much of a concern, and may be considered as part of the normal risks of business cooperation. A more dynamic perspective will also view vertical integration as a way for firms to leverage their internal capabilities in related markets or to exploit their superior management capabilities.[79] These approaches emphasise horizontal competition as the main source of competitive constraint that merits to be preserved by competition law, to the extent that in case there is intense horizontal competition, vertical integration and vertical restraints are more likely to serve benign rather than malign objectives. Certainly, vertical integration or vertical restraints may limit vertical competition, but it is thought that vertical competition relates more to distributional effects (relating to the allocation of the surplus value) or 'pecuniary externalities' that, according to neoclassical price theory, should be ignored if one focuses on economic efficiency.[80] However, one may take a distributive justice perspective, in which case the 'fair' distribution of the total surplus value between the different segments of the value chain becomes an important issue. Focusing on vertical competition is also necessary if one adopts equality of opportunity as an important goal of competition law, or structural inequality as an important concern justifying some form of collective action.[81]

[75] M Jacobides, C Cennano and A Gawer, 'Towards a Theory of Ecosystems' 39 (2018) Strategic Management Journal 2255, 2258–9 and the literature review provided.

[76] Ibid.

[77] For a description and discussion of a data value chain, see L Taylor, H Mukiri-Smith, T Petročnik, L Savoilainen and A Martin, '(Re)making Data Markets: An Exploration of the Regulatory Challenges' (2022) Law, Innovation and Technology. <http://dx.doi.org/10.1080/17579961.2022.2113671>.

[78] For a description of the terms 'vertical intra-ecosystem' and 'inter-ecosystem' competition, see M Jacobides and I Lianos, 'Ecosystems and Competition Law in Theory and Practice 30 (5) (2021) Industrial and Corporate Change 1199, 1201.

[79] See, B Wernerfelt, 'A Resource-Based View of the Firm' 5 (2) (1984) Strategic Management 171.

[80] This is the main lesson of the so-called Coase theorem, which assumes a world of zero transaction costs and individuals that are able to bargain and internalise technological externalities, leaving aside pecuniary externalities: RG Holcombe and RS Sobel, Public Policy Toward Pecuniary Externalities 29 (4) (2001) Public Finance Review 304.

[81] For a general discussion in the area of competition law, see I Lianos, 'Competition Law as a Form of Social Regulation' 65 (1) (2020) The Antitrust Bulletin 3.

Certainly, substantial restrictions to vertical competition may impact productivity, as an overwhelming percentage of the total surplus value is captured by 'superstar' large firms that enjoy tremendous levels of profitability, without however these accumulated profits being always used for productive investments, that could ultimately generate value.[82] These abnormal profits are instead distributed to shareholders or used to buy back stocks in order to inflate corporate management compensation. They can also suppress the incentive and capacity of the other members of the eco-system to invest on R&D or increase their productivity. Checking who exercises power in the ecosystem and how this power may impact, not just on consumers, but also on all those that contribute socio-economic value to the ecosystem, requires the development of new approaches that do not only focus, as mainstream consumer–welfare competition law does, on the assessment of the outcomes of the exercise of power in terms of prices or output, but also, more pragmatically, emphasise the relational element of power, to the extent that ecosystems 'are based on social relationships that generate value through knowledge sharing and social experiences'.[83]

C. Value capture through the exploitation of 'fictitious commodities'

The expansion of market boundaries through the development of what Karl Polanyi calls 'fictitious commodities' provides a different source of surplus-value in the digital economy; these are embedded in wider social relations and have their own sovereign logic, which cannot be fully subsumed in them being treated as market commodities.[84] The discussion has so far focused on the harvesting and possession of personal and non-personal data. However, the emphasis of control over data can lead to overlooking the real competitive game in the platform economy. Of course, the development of data value chains, with a number of intermediaries, sometimes operating in the shadow of regulation through private stock markets for data, called 'dark pools', is a feature of the digital economy.[85] But data, as an input for production, may not be the core aspect of the business model, in particular for the leading digital predictive platforms (ie Google, Facebook).[86] We will focus here on the process of value extraction from attention markets and the development of 'behavioural surplus' through the commodification of the future behaviour of consumers, and more broadly human consciousness.

Extracting value in attention markets

Digital platforms aim to attract and hold the attention of the users, not only to harvest data, but also more generally to get insights that would enable them to engage in economic activity that may go from making predictions on the preferences of consumers: for instance, to place/design a specific product or to influencing and manipulating consumers' choice through some (insidious) process of choice architecture. In the classic multi-sided model of network economics, these platforms are thought of as matching, advertisers (the money side) and users (on the subsidised side). Data harvesting is indispensable for matching to work. However, digital platforms do not only sell access to raw user data, but may also sell insights from the data, that is *inferences* on the preferences of the users, or more generally their personality. Advertisers value these insights, as they enable them to offer targeted advertising, which is more likely to attract the attention of the users on the products/services they promote. From this perspective, data is an indispensable input for an output sold in these 'attention markets'.

[82]D Autor et al., 'Concentrating on the Fall of the Labor Share' 107 (2017) American Economic Review 180.

[83]SB Letaifa, 'The Uneasy Transition from Supply Chains to Ecosystems: The Value-Creation/Value-Capture Dilemma 52 (2) (2014) Management Decision 278, 283.

[84]K Polanyi, *The Great Transformation – The Political and Economic Origins of our Time* (Beacon Press 1944), Chapter 6.

[85]Taylor, et al. (n. 77).

[86]For a thorough description of this model, see, *inter alia*, CMA, Online platforms and digital advertising (2020), available at <https://assets.publishing.service.gov.uk/media/5fa557668fa8f5788db46efc/Final_report_Digital_ALT_TEXT.pdf>.

The real value of these insights becomes clear if one realises that attention is a scare and rivalrous resource. An individual has a limited attention span and the systematic use of smartphones, individuals being 'always connected' and receiving increasing amounts of information, may have also resulted in reducing their attention span even more.[87] Empirical research has documented the 'accelerating dynamics' of shorter attention cycles that has been mainly driven by 'increasing information flows' both in terms of content production and consumption rates through the use of smartphones.[88] Research has also noted the value of the scarce period of 'high' 'attention bursts' that are extremely valuable for advertisers and/or companies and other entities aiming to attract consumers' attention and influence consumer behaviour.[89] Some media may be more efficient than others in attracting this attention.

Following Sohlberg and Mateer's theoretical framework for analysing attention,[90] research has shown how overall, 'digital lifestyles have a negative impact on prolonged focus'.[91] As a result, consumers are trained to become better at processing and encoding information through these highly valuable 'short bursts of high attention'.[92] Digital lifestyles also have implications on selective attention. Multiple devices (PCs, smartphones, tablets, virtual assistants or combinations) have become the 'gatekeepers of an infinite number of distractions and sources of instant gratification', but also important gateways to consumers' attention. Users attempt to simplify their lives by disconnecting or switching off these devices, or by relying on these devices' suggestions, expressing their wish to filter out distractions.[93] This need for simplification leads to the finding that '(w)hat consumers can see in one glance has everything to do with what they'll do next'.[94] This research has important implications on companies' strategies to attract attention and indicates the existence of important leverage and tipping points for attention. These are usually ignored by neoclassical price theory which has a more linear understanding of consumer behaviour.

Attention can be captured in different ways, depending on the form of the 'attentional decision' of the user.[95] In reviewing the attention scholarship, Tim Wu distinguishes broadly between two different mechanisms for making these attentional decisions: the first is when attention can be seized in voluntary manner, and the second when attention is captured without a voluntary decision being made by the agent. He includes in the second category 'bottom-up' or 'stimulus-driven' attention 'activated by lower parts of the brain outside of conscious control', to the extent that our brains are 'involuntarily responsive to properties inherent in certain forms of information' or stimuli (eg food, familiar faces, sex targets). These different mechanisms to capture attention, sometimes involuntarily, are well known by the 'management of specific demand industry', whose purpose is to 'shift the locus of decision in the purchase of goods from the consumer where it is

[87] See, P Lorenz-Spreen et al., 'Accelerating Dynamics of Collective Attention' (2019) Nature Communications. <http://dx.doi.org/10.1038/s41467-019-09311-w> and the research cited; Microsoft Canada, Consumer Insights, Attention spans (2015), available at <http://dl.motamem.org/microsoft-attention-spans-research-report.pdf>. Research by Microsoft Canada indicates that the average human attention span went down from 12 seconds in 2000 to 8 seconds in 2012, less than the average attention span of a goldfish: Microsoft Canada, Consumer Insights, Attention spans (2015), available at <http://dl.motamem.org/microsoft-attention-spans-research-report.pdf> at 6.

[88] P Lorenz-Spreen, B Mørch Mønsted, P Hövel and S Lehmann, 'Accelerating Dynamics of Collective Attention 10 (2019) Nature Communications Art 1759, 6.

[89] Microsoft Canada, Consumer Insights, Attention spans (2015), available at <http://dl.motamem.org/microsoft-attention-spans-research-report.pdf> at 19.

[90] MM Sohlberg and CA Mateer, *Cognitive Rehabilitation: An Integrative Neuropsychological Approach* (Guilford Press 2001).

[91] Microsoft Canada, Consumer Insights, Attention spans (2015), available at <http://dl.motamem.org/microsoft-attention-spans-research-report.pdf> 23.

[92] Ibid.

[93] Ibid., 27.

[94] Ibid., 33.

[95] T Wu, 'Blind Spot: The Attention Economy and the Law' 82 (2019) Antitrust Law Journal 771 (defining attention as 'the decision of what stream of information to process').

beyond control to the firm where it is subject to control'.[96] This includes according to the description given to it by John K. Galbraith, not only the advertising industry but also 'a huge network of communications, a great array of merchandising and selling organisations', 'numerous ancillary research training and other related services'[97] in these economics of 'increasing affluence'[98] (but also of limited attention). What has changed with the emergence of digitalisation and personalisation is that the management of demand is no longer targeted to the mass, but to individual consumers by personalising not only the contact but also the product.

The business model of some of the leading digital platforms relies on advertising revenue, collected at the money side of the platforms, which partly subsidises the content received by users on the other side, to the extent that users do not pay a monetary price (free content).[99] Users nevertheless pay a price in a reduction of their privacy, as their personal data is harvested by the platform. The business model is particularly ingenious as the 'free' content from which the consumers may benefit, and which acts as bait (the 'honey') to attract their attention, at the same time adds to the information they receive and therefore narrows down their attention span. This makes the attention of the users even more valuable for advertisers, which are then ready to pay increasingly high amounts for their ads to be placed at a more valuable attention-grabbing position, or for benefiting from specialised advice on what would better attract a specific user's attention.

This process of value extraction is self-reinforcing as it contributes to the scarcity of attention that generates the surplus value captured by the various business actors involved in this process. Firms do not only compete for consumer expenditure, which may constitute the main incentive of firms present in advertising markets to be matched to consumers, but also for consumer attention.[100] This form of scarcity has its proper intermediaries: the so called 'attention merchants'.[101] The development of digital advertising markets attests of the value of the attention captured by the digital platforms, the market rising from $152 billion in 2015 to 521.02 billion in 2021.[102]

The discussion over the effects of digital platforms on attention markets also raises the potential for the exploitation of consumers and their broader socio-economic well-being.[103] First, harvesting personal data may affect privacy and produce consumer harm, privacy being an important parameter of competition in these markets. Second, by proceeding to frequent 'attentional intrusions' digital platforms may commit 'attention theft', defined as 'the non-consensual seizure of the scarce resource of attention, yielding cognitive impairment', thus producing consumer harm.[104] Thirdly, digital technology offers enhanced possibilities of personalisation, which may in turn lead to abuses, such as algorithmic discrimination and welfare-reducing personalised pricing.

Behavioural surplus and commodification of human consciousness in the surveillance economy

The manipulative dimension of targeted advertising hints to a process of value generation and capture in the digital era that is different from advertising in the era of industrial capitalism, what

[96]JK Galbraith, *The New Industrial State* (Princeton University Press 2007) 255.

[97]Ibid., 247–8.

[98]JK Galbraith, *The Affluent Society* (Houghton Mifflin 1976).

[99]CMA, Online platforms and digital advertising market study (1 July 2020), available at <https://assets.publishing.service.gov.uk/media/5fa557668fa8f5788db46efc/Final_report_Digital_ALT_TEXT.pdf>.

[100]A Boik, S Greenstein and J Prince, *The Empirical Economics of Online Attention* (NBER 2016).

[101]T Wu, *The Attention Merchants* (Atlantic Books 2016).

[102]Digital advertising spending worldwide from 2021 to 2026, available at <https://www.statista.com/statistics/237974/online-advertising-spending-worldwide/>.

[103]For a law and economics perspective, see the discussion in N Economides and I Lianos, 'Restrictions on Privacy and Exploitation in the Digital Economy: A Market Failure Perspective' 17 (4) (2021) Journal of Competition Law & Economics 765.

[104]T Wu, 'Blind Spot: The Attention Economy and the Law' 82 (2019) Antitrust Law Journal 771.

Zuboff explains by the expression 'surveillance capitalism'.[105] As previously mentioned, data constitute the raw material that are necessary for 'surveillance capitalism's novel manufacturing processes'. Digital platforms harvest a considerable amount of data, not always with the aim to recycle this for the benefit of their users with service improvements, but with the aim to constitute what Zuboff calls 'behavioral surplus'.[106] This is often camouflaged as 'digital exhaust', the equivalent of industrial waste for the digital economy. It is the leftover from the production process, which for efficiency reasons instead of being left into the 'atmosphere' is captured in order to be recycled in 'useful data'. Computer mediation is thus repurposed on 'extraction architecture', with various devices (fixed, portable or wearable technology) enabling and/or effectuating the harvesting.

From this harvesting emerges a 'full-blown logic of accumulation'. In the dynamic online advertising marketplace, digital platforms auction to advertisers, not the attention of the users as such, as these are still free not to click through the ad, but 'derivatives of behavioral surplus' on the basis of behavioural predictions made by Google as to the likelihood that a specific user will click through the ad and proceed to a purchase.[107] Digital platforms also share these 'surveillance assets' with the partners in their ecosystems, thus increasing the dependence of the latter on them. They may also commercialise the predictions in order to gather 'surveillance revenues' that are then accumulated in 'surveillance capital'.[108]

Zuboff notes that 'advertising is "the beginning of the surveillance project, not the end".[109] The data is used in order to develop the digital platforms' evolving AI capabilities, often protected by IP rights. These enable them to make better predictions about the individuals' future behaviour and to develop specific prediction products offered on new kind of markets trading exclusively in future behaviour, thus developing a superior competitive advantage to reach users.

In this surveillance capitalism era, monopolies and bottlenecks are not constituted with the aim to raise prices, as traditional neoclassical theory assumes, but to 'corner' 'user-derived raw material supplies' and protect 'critical supply routes for the unregulated commodity that is behavioural surplus'.[110] Competitive struggles are not just for market shares in delimited markets, but for dominance of the dispossession cycle and the generation of behavioural surplus that will itself be highly valued in behavioural futures markets. This 'dispossession cycle' relies on incursion practices into 'undefended spaces' (a laptop, an email to a friend, a web page, the street you live), undefended because of the expectations that these will be unobservable to a third party and therefore out of the commodification and market logic, in order to 'kidnap' behavioural surplus.[111] It then develops because of an 'habituation' process, in which, these practices of incursion become normal and are 'rapidly bolstered by growing ecosystems of stakeholders'.[112] The market frontier is pushed to the extreme, all predictable behaviour becoming a source of behavioural surplus.[113]

These 'behavioral futures markets' are personalised, to the extent that more than just personal data, the surveillance capitalists will trade 'human consciousness', which may well be the next territory of commodification, after that of land, labour, personal information and attention, the extraction architecture reaching further and deeper into 'new territories of human experience'.[114] The 'prediction imperative' pushes also the boundaries of what can be considered as a voluntary exchange to the

[105] S Zuboff, *The Age of Surveillance Capitalism* (Profile Books 2019) 65.
[106] Ibid., 81.
[107] Ibid., 83.
[108] Ibid., 94.
[109] Ibid., 96.
[110] Ibid., 133.
[111] Ibid. 139.
[112] Ibid., 140.
[113] Ibid.
[114] Ibid., 175.

extent that the digital platforms devise 'means of behavioural modification'[115] though nudging, herding and other forms of influence, a new 'execution architecture' with the aim to generate surveillance revenues by challenging the individuals' 'elemental right to the future tense'.[116]

In the era of 'machine learning' and artificial intelligence-assisted pricing the risks of 'digital' consumer manipulation increase at an industrial scale.[117] Digital markets exacerbate the above risks, in view of the possibilities they offer 'a vast psychological audit, discovering and representing the desires of society'[118] and of each individual separately, offering sophisticated evaluation methods that are closely linked to the direct observation of consumer preferences, but also more broadly of a whole range of preferences expressed in social, and private life, through the means of sociometric analysis.[119] Big data and AI enable us to observe, allegedly more accurately, the inner mental states of people and potentially influence the way these form their core preferences.[120] Emotion detection becomes possible through the emergence of 'affective computing', 'computing that relates to, arises from, or influences emotions', any conscious, or even unconscious emotion becoming observable behaviour for coding.[121] 'Emotion scanning' is in the process of becoming the new form of tracking to which are subject users,[122] in particular should their interactions with the digital platform multiply in the context of the 'metaverse' turn.

This suppression of the unpredictable enables the emergence of a computational economy in which humans (and their autonomous choice) 'are not essential to the market action'.[123] This economy is not driven by autonomous consumer choices, but is managed top-to-bottom by digital platforms and the extraction architecture they have put in place through a sophisticated mix of incentives, coercion, surveillance and prediction. This raises important questions as to the sufficiency of the consumer welfare oriented competition law, that takes revealed preferences as a given, to provide a good diagnosis of the formation of such preferences and the exploitative potential of digital platforms, let alone limit it.

It becomes however important to understand that these new spaces of commodification and different extractions strategies did not develop organically but are the result of institutional choices.

4. Back to the macro level: the institutional foundations of value extraction in digital capitalism

Examining the different sources of surplus value in the financialized digital economy provides insights on the socio-economic structures in which digital markets are embedded. What is missing from the picture is the *institutional* embeddedness of these markets.[124]

This section therefore aims to uncover the contribution of the institutional framework, or the absence of it, to the rise of Big Tech and other (digital) platforms. The control these platforms

[115]Ibid., 203.

[116]Ibid., 195.

[117]R Calo, 'Digital Market Manipulation' 82 (2014) George Washington Law Review 995.

[118]W Davies, *The Happiness Industry: How the Government & Big Business Sold Us Wellbeing* (Verso 2015).

[119]Ibid.

[120]Zuboff (n. 105) at 277.

[121]RW Picard, 'Affective Computing, M.I.T Media Laboratory Perceptual Computing Section' (Technical Report No. 321), available at <https://affect.media.mit.edu/pdfs/95.picard.pdf>.

[122]Zuboff (n. 105) at 352; J Nash, 'Scanning for Emotions Coming out of the AI Shadows' available at <https://www.biometricupdate.com/202204/scanning-for-emotions-coming-out-of-the-ai-shadows>.

[123]Zuboff (n. 105) at 328.

[124]Callon explains how markets are constituted through the operation of socio-technical 'agencements', which situate market transactions 'within the entire set of material and textual devices' (including the legal regimes) that structure and prompt commercial activities: M Callon, *Markets in the Making – Rethinking Competition, Goods and Innovation* (Zone Books 2021) 49. See also JE Cohen, 'The Biopolitical Public Domain: The Legal Construction of the Surveillance Economy' 31 (2017) Philosophy & Technology 213.

exercise over important digital infrastructures, gives rise to situations of economic or technological dependence. This transforms these ecosystems to 'idiosyncratic interfirm linkages', that may become the source of relational rents and lasting competitive advantage.[125] In the absence of regulation and an effective public governance regime enhancing the creation of socio-economic value (instead of pure shareholder value), these relational rents may become a sensitive political issue.

This is a possible reading of the recent emergence of the field of digital regulation, with the adoption of various proposals establishing an elaborate digital regulatory framework, whose impact is to yet to assess. A different take, which is that put forward by this paper, would be to focus on the paradigmatic shift of the policy framework as a by-product of the realisation that the issues raised require complexity thinking, with the development of new units of analysis, new metrics and a new imaginative but also relatively 'fuzzy', and thus flexible regulatory frameworks.

This section will first analyse how the intellectual 'baggage' from the era of the second industrial revolution has resulted in the development of the present 'disciplinary' boundaries between various fields of law. We will then assess how this institutional framework, developed for a simple economy, failed to account for the complexity of the digital revolution and the progressive dissipation of the old boundaries. The last sub-section engages with the pragmatic perspective of digital regulation for a complex economy. All sub-sections focus on the analysis of factors relevant for the regulation of competition in the digital economy. However, the analysis may be expanded to other fields of public interest.

A. Monopolies, competition, competition law and regulation

The recent emphasis on economic efficiency and 'consumer welfare', at first sight, limits the policy discretion of the competition law enforcers, in comparison to the previous situation, although in reality the interpretation of the concept of 'consumer welfare' in Europe provides a broader scope for the intervention of competition authorities than in the USA,[126] where it has been gradually interpreted by some as strictly limited to economic efficiency and 'consumer surplus'.

However, this progressive narrowing down of competition law to 'consumer welfare' and 'economic efficiency', which can be observed in both the EU and the USA, needs to be situated in the broader context of competition policy regulation. Competition law has never been an isolated legal instrument but interacts with other forms of direct economic regulation that have the aim to promote market contestability and the competitive process by opening markets. These other forms of competition regulation may eventually be inspired by broader conceptions of competition than 'consumer welfare' and also integrate other policy values (eg fairness) that take into account the specificities of the economic sector and its contribution to social welfare.

This interplay is not immediately visible to the bystander as competition law and economic regulation have traditionally been thought of as two alternative tools of market design. The legal 'code' applied in each context is different: Economic regulation denotes the government intervention in a sector to correct a market failure arising from, for example, a natural monopoly (telecom, energy) or asymmetric information. It acts *a priori*, requires continuous monitoring, may integrate broader concerns than competition law and is intrusive in the management of the undertakings (as it may constraint their freedom to set their prices and quantities). In contrast, competition law consists in a set of rules for market operation that mostly acts *a posteriori*, once

[125]JH Dyer and H Singh, 'The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage' 23 (4) (1998) The Academy of Management Review 660, 661.

[126]The concept of consumer welfare takes a broad perspective and assesses allegedly anticompetitive conduct from the perspective if this could lead to outcomes 'less attractive to consumers from the point of view of, *among other things*, price, choice, quality or innovation': AG Rantos Opinion, in Case C-377/20, para 44. Emphasis added. Similar descriptions of the 'goal' of consumer welfare in EU competition law can be identified in soft law: O Brook, 'In Search of a European Economic Imaginary of Competition: Fifty Years of the Commission's Annual Reports' 1(4) (2022) European Law Open 822.

behaviour has been observed, and relies on the dissuasive power of sanctions. From this perspective, it is a less intrusive tool for market management in comparison to regulation.

This dichotomy between competition law and regulation makes sense for the simple economy of neoclassical price theory, but it does not adequately take into account the complexity of modern digital economy. The digital economy gives rise to four difficulties in applying this analytical framework.

First, it is impossible to think of a but-for scenario marked by perfect competition, in order to make comparisons and determine which profits are 'abnormal', essentially due to the existence of network effects.[127] These ensure that perfect competition cannot be the optimal market structure in these markets. A market has network effects when, everything else being equal, a consumer's willingness to pay increases with the number of units sold or expected to be sold. In contrast, in markets not marked by network effects, the willingness to pay for the last unit of a good decreases with the number of units sold, thus violating the fundamental law of demand.[128] Network effects arise because of complementarities. These complementarities increase the value of the components (or the different sides) of the network through positive feedback loops, therefore by the same increasing economic efficiency. However, despite the cycle of positive feedbacks, the value of a component (or a side of the market) does not increase infinitely because the additional positive feedback is expected to decrease with increases in the size of the network.

Second, monopolistic positions and the control of essential assets is quite prevalent in the digital economy, in view of network effects, also learning by doing effects because of access to data, but also more generally the 'winner takes most' nature of digital competition. One may claim that such positions of monopoly were 'duly' earned through superior acumen and following intense competition for the specific monopolised market(s).

Third, the more traditional perspective on the competition/regulation dichotomy does not take into account the blurring of boundaries between markets as a consequence of digitalisation and the development of broader business ecosystems in which is structured most of the economic activity taking place worldwide nowadays.[129]

Fourth, contrary to the assumptions of the first theorem of welfare economics, there is no complete set of markets for some products (such as data and attention) which are demanded and supplied to be traded at publicly known prices.[130] Data is harvested by search engines for free, as users are not paid any compensation for the data they contribute, with the exception of the free use of the search engine, for which in any case the marginal costs are close to zero. In reality, the digital economy is characterised by missing markets, either because of the lack of property rights on data or because of the incomplete and ethically contested nature of commodification of some scarce resources, such as the attention of users. This brings forward the need to explore in more depth the institutional choices that frame the market agencements in operation in these spheres of economic activity.

[127]The network effects relate to consumption. For instance, in Facebook the more of your friends are on the platform the more valuable this is for you and vice versa. The more the users, also the more the advertisers at the other side. However, the boundaries between consumption and production are blurred in the digital economy. It is possible that the same fact, the large size of your network of friends, may be considered as an increasing return to scale or a learning effect, traditionally associated with production, to the extent that users can also be considered as providing inputs (content for Facebook, data, attention) in the input–output process of the digital economy.

[128]See, in general, N Economides, 'The Economics of Networks' 14 (1996) International Journal of Industrial Organization 673.

[129]M Jacobides and I Lianos, 'Ecosystems and Competition Law in Theory and Practice, 30 (5) (2021) Industrial and Corporate Change 1199.

[130]Taylor et al. (n. 77) at 3 noting the 'high degree of opacity' in data value chains.

B. A legal institutionalism perspective

One of the tenets of the emerging new legal institutionalism is the role of law as a 'constitutive part of the institutionalised power structure[131]' that provides the substratum on which a particular variety of capitalism develops, legal institutions framing the direction of such development. By defining and protecting property rights, ensuring the enforceability of contracts, allocating liability for harmful activities, imposing duties and burdens through regulation, law plays a central position in the organisation of economic and social life and therefore significantly affects the development of capitalism.[132] There is an increasing interest in the role of legal rights and obligations in shaping value generation but also the competitive struggles for value capture in the digital economy.

Legal institutionalism adopts a relatively narrow definition of 'law', as it recognises that 'law in complex societies depends on spontaneously evolved custom' but also 'typically requires the powers and institutions of the state'. Although 'distributional differences and power asymmetries' play a defining role in these various forms of competitive struggles, the monopoly of force from which the state benefits provides the overall framework in which these various struggles are shaped and therefore contributes to the rise and evolution of capitalism.[133] This emphasis on the active role of the state in shaping the conditions of success, but also the overall direction, of the development of capitalism, is reminiscent of some recent literature on innovation policy, which emphasises the determining role of the state, either in its traditional role of enforcing rights and obligations, or in the more 'entrepreneurial' role of funding innovation and R&D that led to the emergence of the digital economy.[134] Contrary to the classic Marxist idea of the legal system 'mirroring' the existing economic and social conditions of production (the superficial and lower order superstructure), legal institutionalists emphasise the constitutive role of law in empowering or taming actors, and therefore, highlight the influence of law on the distribution of power in the economy.[135] Legal institutionalism starts from the premise that '(c)apitalism is much more than material objects and forces, it is a complex system for processing information and allocating and protecting rights to tangible and intangible assets',[136] thus emphasising the centrality of the legal system in the structuring of the social and economic relations that shape capitalism.

We fully embrace this view on the constitutive role of law, but we further argue that it is not only the *active* contribution of the legal system in recognising and implementing rights and liabilities that is of importance, but also the lack of such, or, more generally, the *silence of the law*, that also plays an important role in shaping the balance of power in these competitive struggles. The fact that the legal system did not specifically address these challenges by adapting its existing scope or expanding it accordingly cannot be conceptualised as embracing neutrality or passivity. The state's monopoly of force is often replaced by private governance regimes based on relations of trust or power. This is an active choice made in favour of a new vision of the State or a new vision of its role (or the absence of it) in the markets in question.

The above becomes salient if one looks at the way the various legal systems have dealt with the important economic and social changes resulting from digitalisation and the emergence of AI technologies. Three main approaches can be identified.

[131]S Deakin, D Gindis, GM Hodgson, K Huang and K Pistor, 'Legal Institutionalism: Capitalism and the Constitutive Role of Law' (Cambridge Legal Studies Research Paper Series No. 26/2015 2015) 1.

[132]As this is put forward by the literature on 'varieties of capitalism' and that on 'legal origins': See, P Hall and D Soskice, *Varieties of Capitalism – The Institutional Foundations of Comparative Advantage* (Oxford University Press 2001); R La Porta, F Lopez-de-Silanes and A Shleifer, 'The Economic Consequences of Legal Origins' 46 (2) (2008) Journal of Economic Literature 285.

[133]S Deakin, D Gindis, GM Hodgson, K Huang and K Pistor, 'Legal Institutionalism: Capitalism and the Constitutive Role of Law' (Cambridge Legal Studies Research Paper Series No. 26/2015 April 2015) 4.

[134]See, M Mazucatto, *The Entrepreneurial State: Debunking Public vs. Private Sector Myths* (Penguin Books 2018).

[135]S Deakin, D Gindis, GM Hodgson, K Huang and K Pistor, 'Legal Institutionalism: Capitalism and the Constitutive Role of Law' (Cambridge Legal Studies Research Paper Series No. 26/2015 April 2015) 7.

[136]Ibid., 22–3.

First, a Schumpeterian approach that accommodates the vision of a State that actively promotes product, process, organisation and market innovation and that conceives its role as the enhancement of structural competitiveness of open economies to competition, what some have named 'the Schumpeterian workfare state'.[137] However, even a regime of 'permissionless innovation' would require at least a (state) system, that ensures the adjudication and enforcement of property rights.

Second, an approach inspired by the precautionary principle, with a pro-active intervention of the State in order to deter possibly harmful activities and to ensure that the principles and values of the Regulatory State, as it has emerged following the New Deal in the US and the post-War liberal and socio-democratic consensus in Europe, will not be jeopardised.

Third, an approach that would promote safe spaces for experimentation and personalised law, for instance through the constitution of sandboxes, the State keeping away from implementing the law to pre-selected partners in a specific context (defined in terms of time, space, field of activity), while using this experience as a source of learning that would shape normative activity and implementation of the law (in general but also bespoke regulation) in the future.[138]

Strategies of legal action/inaction

These regulatory strategies of action (or inaction) have of course important implications for the balance achieved between the interests of the various stakeholders and presumably the weight of their claims to capture a more significant part of the surplus value generated by digital innovation. The pre-eminent role of digital platforms in digital capitalism and the subsequent implications this had on the falling labour share and the resulting economic inequality may indeed be explained by a conscious choice to expand the scope of application of a specific area of law, while receding from implementing another, or even adopting policies that would completely exclude the specific field from the legal forms of adjudication of disputes in favor of some other forms of self-regulation or self-governance.[139] We will focus here on some examples.

Property rights and data. A good example of a strategy of legal inaction is the lack of a proper regime of property rights on (personal) data. This lack of a property regime for personal data has enabled digital platforms to harvest this valuable raw material, without any corresponding protection of the interests of the users, just relying on their consent to their terms and conditions in order to get access to services, often provided for free. The possession of this data does not rely on a properly defined property regime (hence the distinction between possession and property rights) but on the control by these digital platforms of important bottlenecks in the way consumers access the Internet and the various services this may provide them. Although the GDPR recognises some property rights-like entitlements on personal data, such as data portability,[140] or the right erasure or to be forgotten,[141] it still does not put into place a proper property rights regime for personal data, that would have granted formal rights sanctioned by a public authority, would have delimited the boundaries of these rights, or put in place a system to adjudicate disputes as to the ownership of these rights. Having possession of the item, in the sense of physically controlling it, constitutes just one of the bundle-of-rights provided by property and

[137]B Jessop, 'Towards a Schumpeterian Workfare State? Preliminary Remarks on Post-Fordist Political Economy' 40 (1993) Studies in Political Economy 7.

[138]On regulatory sandboxes, see FCA, Regulatory Sandbox (November 2015), available at <http://www.ifashops.com/wp-content/uploads/2015/11/regulatory-sandbox.pdf>.

[139]For a discussion, see MA Cusumano, A Gawer and DB Yoffie, 'Can Self-Regulation Save Digital Platforms?' 30 (5) (2021) Industrial and Corporate Change 1259. Note also that the role of digital platforms as 'regulators' or self-governed fields of economic activity was well recognised by the early economic literature on platforms: see, KJ Bourdeau and A Hagiu, 'Platform Rules: Multi-Sided Platforms as Regulators' (Harvard Business School, WP-09/061 2008), available at <https://core.ac.uk/download/pdf/7170083.pdf>.

[140]Art 20, General Data Protection Regulation (EU) 2016/679 ('GDPR').

[141]Art 17, General Data Protection Regulation (EU) 2016/679 ('GDPR').

ownership, but does not confer the ability to use and manage the property, the right to receive income from it, the possibility to use it as capital for the production of income, or finally the possibility to use it as security in order to borrow against it (eg as a collateral for raising debt).

While the fact that it is impossible to use (personal) data as a collateral may affect their characterisation as *capital*, and thus does not help for the conceptualisation of the activity of the user to provide this data as a form of entrepreneurship, it is also not conceived of as a form of *labour* that would ignite the possible application of labour law standards in order to protect the users'/digital value labourer's interests, nor as a form of *consumption* that would have led to the application of the consumer protection standards, for instance protecting the consumers from the asymmetrical bargaining power of digital platforms. This lack of legal protection may have motivated some competition authorities to intervene and bring some instances of unfair and exploitative conduct by digital platforms in the remit of competition law enforcement,[142] and more generally can be seen to argue for some form of complementary protection to the GDPR, which is a regime that does not take into account the power differential between digital platforms and their users.[143]

The complexity of the property arrangements in the digital economy, with consumers purchasing 'smart devices' that collect their data, also leads to the emergence of new conflicts between various stakeholders. Fairfield analyses the tensions that may arise between the ownership of the device (traditional tangible property) and the residual power of the creator of the software embedded in the device who benefits from IP rights on the technology and may use its power over the software embedded in the device in order to control the use of that device in ways that may be incompatible with the will or the long-term interest of the owner of the device.[144] Perzanowski and Shultz describe the 'end of ownership' in the digital economy, as technologies and the use of take-it-or-leave it contractual terms extend the manufacturers' power of control over assets that they have already sold in terms in license agreements and other contracts.[145] Contracts are indeed replacing/limiting property, by imposing conditions on its use and ensuring their enforcement, not through the traditional monopoly of the state, but through technological means of enforcement. These were spearheaded by digital rights' management and more recently by technological means of system incompatibility and 'smart' enforcement through 'boilerplate provisions[146]' or automatic processes of enforcement integrated in 'smart contracts' which made some commentators observe the emergence of 'regulation by machine'.[147]

Intellectual property rights on databases, algorithms and technology, contracts, including terms of service, and 'smart' enforcement technology enable digital platforms to force users to buy 'compatible' extras and add-ons from them but also to control the right of the users to sell or repair the product. The debate over the scope of the first sale doctrine and the possible limitation it may set to IP rights' holder ability to prohibit the future sale or re-use of the patented product[148]

[142]See, in particular, the Facebook decision of the German Antimonopoly Authority (BkA) where the BkA differentiated between user data that had been generated through users using the Facebook service and user data obtained from third-party sources that were either controlled by the Facebook corporate group, such as WhatsApp, Oculus, Masquerade, etc., or through the use of Facebook programming interfaces on third-party websites or mobile apps (via the Facebook developer platform and Facebook Business Tools), which formed part of the broader third-party Facebook ecosystem, mandating by way of a remedy, an 'internal unbundling' of personal data harvested by Facebook from its broader ecosystem considered as an unfair and exploitative commercial conduct: German Federal Cartel Office (Bundeskartellamt), Report of 15.2.2019 regarding the Facebook Decision of 6.2.2019 (B6-22/16) (available at <https://www.bundeskartellamt.de/SharedDocs/Entscheidung/DE/Fallberichte/Missbrauchsaufsicht/2019/B6-22-16.pdf?__blob=publicationFile&v=5>).

[143]For a discussion, see N Economides and I Lianos, 'Restrictions on Privacy and Exploitation in the Digital Economy: A Market Failure Perspective' 17 (4) (2021) Journal of Competition Law & Economics 765.

[144]JAT Fairfield, *Owned: Property, Privacy and the New Digital Serfdom* (Cambridge University Press 2017).

[145]A Perzanowski and J Shultz, *The End of Ownership: Personal Property in the Digital Economy* (MIT Press 2016).

[146]MJ Radin, *Boilerplate – The Fine Print, Vanishing Rights and the Rule of Law* (Princeton University Press 2012).

[147]MJ Radin, 'Regulation by Contract, Regulation by Machine' 160 (2004) Journal of Institutional and Theoretical Economics 1.

[148]See, The judgment of the United States Supreme Court in *Impression Products v Lexmark*, 137 S. Ct. 1523 (2017).

illustrates the tensions between the different legal regimes that may enter in collision course in the digital economy.[149] These legal regimes, as they are currently interpreted, constitute the default legal framework which in its turn determines the production of various 'value regimes', the transfer of value from some stakeholders to others occurring silently and naturally through the market process. However, this should not conceal the role of the State, which by enabling some legal options, while obstructing others, is *actively* involved in the process of value capture in the digital economy favouring certain interests over others.

Collective bargaining and labour in the digital economy. Labour law protections apply to workers in an employment relationship, labour law systems 'relying on a binary divide between subordinate or dependent employment on the one hand and autonomous or independent self-employment on the other'.[150] In contrast, competition law applies to self-employed, who are considered as undertakings, but not to employees, which are not considered as exercising an autonomous economic activity, in the sense of offering goods or services on a market and bearing the financial risk attached to the performance of such activity.[151] Hence, although employees are able to conclude trade unions and to collectively negotiate wages and their conditions of employment with the employers without infringing competition law, such collective bargaining would fall under the EU competition law prohibitions of collusive conduct restricting competition if it is done between the self-employed.[152] The dominant interpretation of EU competition law grants only some very limited exceptions to such prohibition of collusive activity between competitors (including the self-employed) when the restriction of competition is necessary for a legitimate regulatory purpose.[153]

These relatively restrictive interpretations of the respective scopes of labour law and competition law puts self-employed gig or crowd workers in an unfavorable situation, as they are not able to collectively bargain with the digital platforms, thus reinforcing the asymmetric bargaining power of the latter. Some recent adjustments of competition law in the EU,[154] but also in some Member States,[155] provide more flexibility to collective action by gig and crowd workers, and recognise that their economic dependence vis-à-vis the platforms puts them in an equivalent situation to that of an employed worker. There have also been some efforts to introduce hybrid protection regimes for quasi-subordinate dependent self-employed in labour law. However, the

[149]See, K Paul, 'Why Right to Repair Matters – According to a Farmer, a Medical Worker, a Computer Store Owner (*The Guardian*, 2 August 2021) available at <https://www.theguardian.com/technology/2021/aug/02/why-right-to-repair-matters-according-to-a-farmer-a-medical-worker-a-computer-store-owner>.

[150]See, N Countouris and V de Stefano, *New Trade Union Strategies for New Forms of Employment* (ETUC 2019) 19 (documenting the practice in all EU Member States).

[151]Case C-22/98 *Criminal proceedings against Jean Claude Becu, Annie Verweire, Smeg NV and Adia Interim NV* (1999) ECR I-5665.

[152]See, Case C-180-184/98 *Pavel Pavlov and Others v Stichting Pensioenfonds Medische Specialisten* EU:C:2000:428.

[153]See, Case C-309/99 *JCJ Wouters, JW Savelbergh and Price Waterhouse Belastingadviseurs BV v Algemene Raad van de Nederlandse Orde van Advocaten, intervener: Raad van de Balies van de Europese Gemeenschap* (2002) ECR I-1577. See also the possible application of Art 101(3) TFEU although this is mostly theoretical in view of the conditions required for the application of this provision. For a discussion, see I Lianos, N Countouris and V De Stefano, 'Re-thinking the Competition Law/Labour Law Interaction: Promoting a Fairer Labour Market' 10 (3) (2019) European Labour Law Journal 291.

[154]See, for instance the EU Commission initiative on Draft Guidelines on collective bargaining of self-employed (2022), available at <https://competition-policy.ec.europa.eu/public-consultations/2021-collective-bargaining-2_en> and before that the judgement of the Court of Justice of the European Union (CJEU) in Case C-413/13 *FNV Kunsten Informatie en Media v Staat der Nederlanden* ECLI:EU:C:2014:2411, recognising the possibility to 'false self-employed and 'fully dependent self-employed' the right to bargain collectively with employers in relation to working conditions and terms of employment, including pay rates.

[155]See, for instance the Amendment to the Irish Competition Law in 2017.

situation is still unsatisfactory and the competition law threat to collective bargaining has not yet been completely neutralised.[156] In parallel, there have been calls for reorienting competition law to also apply more rigorously in labour markets against conduct (M&As, horizontal and vertical practices) by employers and digital platforms that may restrict wages below the workers' or users' marginal revenue product (eg covenants not to compete, non-poaching arrangements, predatory hiring, vertical foreclosure, most favoured worker clauses).[157]

Ignoring intra-ecosystem competition. Competition law has so far focused on competition on relevant markets and eventually inter-platform competition, leaving the regulation of intra-platform or intra-ecosystem competition for other areas of law (eg contract law, transparency regulation[158]), or to the development of codes of conduct and soft law regulation.[159] The concept of 'market power' employed in competition law focuses on the relation between producers and consumers and does not take into account other dimensions of power than power over price and output, in particular in the context of the digital economy. It also ignores its impact on agents other than producers and consumers, which may also extract and/or capture value in business ecosystems,[160] these ecosystems, as previously explained, bringing together a heterogeneous group of agents. The lack of an appropriate framework has led to under-enforcement of competition law, or significant delays in competition cases against digital platforms, which was highlighted in various reports commissioned by competition authorities around the world.[161]

As a result of this lack of appropriate intervention, markets characterised by platform competition are horizontally concentrated, sometimes to such an extent that the second or third player may not offer a viable competitive alternative to an established platform. Inter-platform competition remains weak, and there is significant inequality in the distribution of market shares among horizontal competitors. Because of the presence of network effects and winner-takes-most competition, it is rather difficult to conceive that the situation may change with remedies such as targeted data access and data portability. In markets with strong network effects, once few firms are in operation, the addition of new competitors, even under free entry, does not change the market structure in any significant way. Although eliminating barriers to entry can encourage inter-platform competition, the resulting competition may not significantly affect market structure, Hence, it is possible that competition authorities may not be able to significantly affect market *structure* by eliminating barriers to entry.

Competition law did not embrace upfront the complexity of business ecosystems orchestrated by digital platforms but attempted instead to deal with the traditional tools of 'relevant market'

[156]See for a discussion N Countouris and V de Stefano, *New Trade Union Strategies for New Forms of Employment* (ETUC 2019) 44–6; N Countouris, V de Stefano and I Lianos, 'The EU, Competition Law and Workers Rights' in P Sanjukta, S McCrystal and E McGauphey (eds), *Cambridge Handbook of Labor in Competition Law* (Cambridge University Press 2022) 280.

[157]See, S Naidu, EA Posner and G Weyl, 'Antitrust Remedies for Labor Market Power' 132 (2019) Harvard Law Review 537, 595–600; I Marinescu and HJ Hovenkamp, 'Anticompetitive Mergers in Labor Markets' 94 (2019) Indiana Law Journal 1031.

[158]Such as Regulation 2019/1150, of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services 'OJL 186/57'.

[159]See, M Jacobides and I Lianos, 'Ecosystems and Competition Law in Theory and Practice 30 (5) (2021) Industrial and Corporate Change 1199.

[160]See, I Lianos and B Carballa-Smichowski, 'A Coat of Many Colours – New Concepts and Metrics of Economic Power in Competition Law and Economics' (2022) Journal of Competition Law & Economics. <https://doi.org/10.1093/joclec/nhac002>.

[161]See, among others, J. Furman, *Unlocking Digital Competition: Report of the Digital Competition Expert Panel* (UK Government Publication, HM Treasury 2019); J. Crémer, YA De Montjoye and H Schweitzer, *Competition Policy for the Digital Era* (Report for the European Commission, 2019); Stigler Committee on Digital Platforms, (Final Report 2020). <https://research.chicagobooth.edu/stigler/media/news/committee-on-digitalplatforms-final-report>; I Lianos and A Ivanov, 'Digital Era Competition BRICS Report' (2019), available at <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3901413>.

and 'market definition'.[162] One of the major public policy issues arising out of digital platforms was also the distributive politics of their power, this impact being ignored by the mainstream model of competition law, as opposed to approaches that re-conceptualise competition law as a tool of social regulation.[163]

Addressing complexity: flexibility and the toolkit approach

Digital platforms are often criticised because they capture the largest part of the surplus value brought by digital innovation.[164] However, the current tools of competition law seem to only focus on horizontal competition rather than 'vertical competition'[165] and the distribution of surplus value, thus excluding vertical fairness issues from the competition assessment. The only vertical issue explored is the allocation of surplus between consumers and producers. In neoclassical price theory this is perceived from the angle of Kaldor Hicks efficiency, which only focuses on the level and quality of output and does not account for real distributive impacts.[166] However, the complexity of value extraction/creation and capture in digital ecosystems, and more broadly in the digital economy blurs the distinction between consumers and producers, and also brings to the picture other stakeholders whose situation may be seriously affected. An approach that would take a 'simple economics' perspective and would focus, for instance, on output restrictions takes a limited perspective that from a descriptive standpoint, does not account for the process of value creation and extraction in the digital economy characterised by financialisation, futurity, network/learning effects and tipping points, and second, from a normative standpoint, does not account for the significant negative externalities (including pecuniary externalities/distributional effects) that this process of value creation has on some stakeholders in situations of economic and technological dependence. Although these contribute to this process of value creation, they do not capture a 'fair' share of it.

One way to solve this problem is to enhance intra-ecosystem competition, thus promoting both contestability (so that the ecosystem orchestrator's dominance may be challenged by other members of the ecosystem) *and* fairness (the members of the ecosystem may capture an adequate to some theory of justice share of the surplus value).[167] There are different strategies one may adopt for intra-ecosystem competition. Non-discrimination or neutrality enhancing policies, or policies against abusive removal from the platform may limit the risks of self-preferencing

[162]See the discussion of the difficulties of the relevant market framework to account for ecosystems in the Support study accompanying the Commission Notice on the evaluation of the definition of relevant market for the purposes of Community competition law – Final Report (2021), available at <https://competition-policy.ec.europa.eu/system/files/2021-06/kd0221712enn_market_definition_notice_2021_1.pdf,77-94>.

[163]I Lianos, 'Competition Law as a Form of Social Regulation' 65 (1) (2020) The Antitrust Bulletin 3.

[164]See the recent ACCC report on platforms and media [Australian Competition and Consumer Commission, *Digital Platforms Inquiry - Final Report* (2019)], or the EU reports on the digital economy and labour platforms: European Parliament, Economic and Societal Effects (European Parliamentary Research Service 2021), available at <https://www.europarl.europa.eu/RegData/etudes/STUD/2021/656336/EPRS_STU(2021)656336_EN.pdf>; European Commission, Study to gather evidence on the working conditions of platform workers – Final Report (March 13, 2020).

[165]Vertical competition is defined as competition between the members of an ecosystem for a higher percentage of the surplus value generated by the ecosystem. Vertical intra-ecosystem competition, refers to value captured through joint collaboration (between ecosystem participants, including the orchestrator): M Jacobides and I Lianos, 'Ecosystems and Competition Law in Theory and Practice 30 (5) (2021) Industrial and Corporate Change 1199, 1201.

[166]Kaldor Hicks or Potential Pareto emphasises the theoretical possibility of compensating the losers (from a change) but does not require their *effective/real* compensation. For a restatement of the mainstream approach in competition law, see H Hovenkamp, Antitrust's Borderline (2020). University of Peninsula, Institute for Law & Economics Research Paper No. 20–44, available at <https://ssrn.com/abstract=3656702>.

[167]The approach is based on equality of opportunity and competition on the merits (see RJ Arneson, 'Equality and Equal Opportunity for Welfare' 56 (1989) Philosophical Studies 77, 85–6 or some form of luck egalitarianism (for instance, see S Segall, 'In Solidarity with the Imprudent: A Defence of Luck-Egalitarianism' 33 (2007) Social Theory & Practice 177; GA *Cohen, On the Currency of Egalitarian Justice and Other Essays in Political Philosophy* (Princeton University Press 2011).

and foreclosure, while access duties to the parts of the platform that may be considered as 'essential facilities' could protect the ability of the platform's partners to develop competing offers (to those of the platform's subsidiaries) in the other segments of the digital value chain. One may also think of institutions with countervailing powers, such as unions of Google users, trade unions representing gig self-employed, such as Netflix artists and Uber drivers, or cartels of media companies, which would collectively bargain with the digital platforms thus taming their power. Another possible direction for competition law will be to enhance the exercise of this countervailing power by exempting horizontal cooperation promoting social sustainability goals.

In a complex economy setting, such as that of the value creation process in the ecosystem economy, the achievement of the joint objectives of contestability and fairness requires the mix and match of various institutional devices. This often transcends the boundaries of different fields of law and establishes a pluralistic legal order, what some have called 'the law of the platform economy'.[168] One may oppose this new paradigm to that of the 'platform law' developed during the first two decades of the digital economy, during which digital platforms and their ecosystems essentially were transformed, in the absence of other legal intervention, to non-state law-norm-generating communities.[169] The law of the platform economy needs to be pluralistic in essence, almost as if the complexity of the ecosystem economy needs be matched by the complexity of its regulatory scaffolding.

C. Regulatory complexity and the EU emerging framework for the digital economy

As traditional competition law interventions did not bring the expected results, the EU has turned to develop an elaborate regulatory framework for the digital economy. This includes, in addition to the General Data Protection Regulation,[170] the Platform to Business Regulation,[171] the ePrivacy Directive (soon to become the ePrivacy Regulation),[172] and following the promulgation of the European Strategy for Data,[173] a series of regulatory initiatives, including the Digital Markets Act (DMA),[174] the Digital Services Act (DSA),[175] the Data Governance Act,[176] the Artificial Intelligence Act[177] and the Data Act.[178] These provisions create a complex system of substantive rules and institutional structures, whose interplay is not yet easy to fully comprehend, as a number of implementing texts are still subject to the legislative dialogue, and the EU Courts will certainly also assess the way this regulatory system will interact with traditional competition law tools, at

[168]JE Cohen, 'The Law for the Platform Economy' 51 (2017) UC Davis Law Review 133.

[169]MK Land, 'The Problem of Platform Law: Pluralistic Legal Ordering on Social Media' in P Schiff Berman (ed), *The Oxford Handbook of Global Legal Pluralism* (Oxford University Press 2020) 974.

[170]Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, OJL 119/1.

[171]Regulation (EU) 2019/1150 of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business, OJL 186/57.

[172]Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications), OJL 101/37.

[173]Communication for the Commission, 'A European Strategy for Data', COM(2020) 66 final.

[174]Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act), COM/2020/842 final.

[175]Proposal for a Regulation of the European Parliament and of the Council on a Single Market For Digital Services (Digital Services Act) and amending Directive 2000/31/EC, COM/2020/825 final.

[176]Proposal for a Regulation of the European Parliament and of the Council on European data governance (Data Governance Act), COM/2020/767 final.

[177]Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonized Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts, COM/2021/206 final.

[178]Proposal for a Regulation of the European Parliament and of the Council on Harmonised Rules on Fair Access to and use of Data (Data Act), COM/2022/68 final.

the EU and national levels. It is not our aim to provide a detailed description of each of these frameworks, but to situate them in the broader categories of regulatory approaches available in this broader policy toolkit and analyse what that means for competition law.

Utilities-style regulation

If we accept that enhancing inter-ecosystem competition may not work in digital markets, because of the strength of network effects/economies of scale or scope and the existence of tipping points, which make these markets move to situations of dominance in a quicker pace than traditional markets, an argument may be made in favor of adopting a pervasive utilities-like regulation. There are different options depending on the understanding that, under certain circumstances, digital platforms may be considered as enjoying a natural monopoly, to the extent that entry into the industry requires high fixed costs; the industry also faces declining average costs, once the 'entry fee' (fixed costs of production) into the industry is paid.[179] Although fixed cost for digital platforms may be relatively low, compared to the creation of the railways and electricity networks, as it is possible to get access to computing and storage power relatively cheaply, and without upfront costs, one may envisage, at least theoretically, the possibility that these platforms may constitute natural monopolies, in view of the importance of upfront investments in innovation, forming a user base and conforming to regulatory requirements.[180] In the context of natural monopolies, the core issue is always the number of firms a powerful and omniscient planner would keep in the market. As the monopolist faces no competition, by definition it will have the incentive to reduce output, which may lead to deadweight loss. Note here that digital platforms not only consist in a network infrastructure, but often include in their business models other services they provide for a fee or which get subsidised by another side of the market (online advertising). More importantly, in digital platforms, 'the network is not neutral to the value being generated and exchanged through it; to the contrary, the network is a critical dimension in the production and exchange of value' as platforms 'can take different (and differentiated) decisions in relation to the core technology and interfaces' to facilitate and shape interactions among users and the creation of complementary services/products, which 'form the backbone of the digital platform and is at the core of platform value'.[181] As digital platforms manage the interactions among users and design new structures of relations between them, they create network effects, which unlike traditional utilities are not an 'exogenously given technological characteristic', but result from a 'conscious, design choice about how to connect users and build a scalable business model around it'.[182] Furthermore, in view of cross-side complementarities in platforms, network effects tend to be more indirect than direct, as is the case in traditional network industries.[183] A final 'key difference' is that digital platforms' value is built on an ecosystem of independent complementors who contribute to the value creation/extraction process, this process occurring essentially outside the traditional vertical integrated firm or vertically integrated value chain. As the ecosystem relies on co-creation of value propositions and coordination of different actors, this breaks with the unicity of the utility model.

Furthermore, even assuming that digital platforms are natural monopolies, they are unlike any other: in contrast to natural monopolies in the utilities' sector, they do not face a declining marginal revenue when they grow their production. The reason for that is the important

[179]For a thorough discussion of this possibility see, F Ducci, *Natural Monopolies in Digital Platform Markets* (Cambridge University Press 2020).

[180]Investments in infrastructure are also possible with some Big Tech companies heavily investing in proprietary Internet infrastructure networks: see, <https://restofworld.org/2022/google-meta-underwater-cables/>.

[181]Digital Markets Competition Forum, Value Preserving Platform Regulation, Network Effects, Platform Value, and Regulatory Remedies, Summary Report (16 July 2020) 14–16, spec. 14.

[182]Ibid.

[183]Ibid.

increasing returns to scale and learning-by-doing effects, as well as the incentives provided to them by their valuation by financial markets (financialisation) to grow eternally, to the extent that their rates and therefore their earning are not subject to any form of rate regulation. The type of 'output' produced by some of these digital platforms is also different from that of classic utilities. For matching platforms, the output can be determined as the number of matches effectuated (eg for dating platforms could be the number of dates, for search engines it would be the number of searches), but most of this 'output' is actually related to the facilitation of transactions. This may be considered as 'output' (transactional output) but again it is not clear how this intangible output may be factored in the framework of the natural monopoly framework. Could data be considered as the output? If this is the case, one may wonder if there would be reason to value such an increase in the harvesting of data, if this has negative effects on attention, a scarce resource, or produces externalities to other users (reducing their privacy etc.). However, the learning effects produced by the platform enable more accurate prediction for users who have only consented to a limited harvesting of their data and for whom data may be largely unavailable. Hence, there may be reasons for a policy maker to control the exercise of socially undesirable market power by the natural monopoly.

How could utilities-like regulation work for digital platforms? First, regulation may take the form of rate regulation. One may calculate the rate that would allow a digital platform to cover its total cost plus a fair rate of return on investments or can impose a price-cap or a revenue-cap regulation and ceilings on the increase in prices over the 'money' side of the platform. Such 'rate' or revenue regulation may also work in the context of the subsidised side, as platforms may be required to offer a positive price to the users when collecting their data or attention (eg rewards), or eventually forcing the digital platforms to adopt a different business model (eg move from an advertised-base model to a subscription or royalties-based model). This is quite difficult to work in practice, first for geopolitical reasons, as many of these platforms are based in the US, and thus it might be an important regulatory overreach for the EU to proceed to some form of rate of return regulation in this case; second, for practical reasons, as it would require the argument to be unveiled, often put forward by platforms, that users get an adequate reward through the use of their services for 'free' (not paying a monetary price).[184]

A second option is to choose non-price regulation to reduce externalities resulting from the incentive of the digital platforms to grow (and thus increase their market valuation) by harvesting even more personal data or capturing an even higher percentage of the attention of their users, or by siphoning an even greater part of the surplus value created by its complementors in the ecosystem. It would be theoretically possible in these cases to limit their output, in terms of data harvested or attention-grabbing advertising. One may possibly determine the socially optimal output (in the context of attention markets), for instance the number of ad-slots that should be available on a general search page. However, this type of regulation may also face important difficulties, in particular to determine the appropriate rate of return for the digital platform. Of course, there is the theoretical possibility of replacing competition in the market with competition for the market, by enabling the government to auction off monopoly franchise contracts to deliver the functionalities provided by digital platforms.[185] The boundaries of the markets to be auctioned are nevertheless notoriously vague and rapidly evolving in the dynamic context of digitalisation. As Richard Posner also noted a few decades ago, even if governments make the choice of an auction, the incumbent will have a cost advantage and in reality the auction will be a

[184]For this argument, see D Evans, *The Economics of Attention Markets* (2017), available at SSRN: <https://ssrn.com/abstract=3044858> 28. Who ventures that 'consumers receive surplus over and above what they pay in the form of time for consuming content'. For a critical discussion of this argument see, I Lianos, *Competition Law for the Digital Era: A Complex Systems' Perspective* (2019), available at SSRN: <https://ssrn.com/abstract=3492730,90-95>.

[185]For a classic discussion, see H Demsetz, 'Why Regulate Utilities?' 11 (1968) Journal of Law & Economics 55.

re-negotiation with the incumbent.[186] Historical experience teaches us that even if administered contracts (such as franchises) following an auction are the best solution, this often evolves towards full-fledged regulation.[187] Probably, for these reasons, among certainly others, no such output regulation was suggested in the context of the EU digital platforms regulatory initiatives.

The third type of concern to be tackled by a utilities-like regulation are potential exclusionary/leveraging practices/strategies, to the extent that the digital platforms may use their control over the network infrastructure to favor or promote their own activities in complementary services, thus benefiting from their role as both a platform and a merchant. This may enable them to enhance their ability to capture the largest part of the surplus value created or lead to higher evaluations of their stocks by financial markets. Leveraging concerns have always been an important concern for regulatory regimes in network industries[188] and have led to the development of specific remedies, either structural, such as various forms of break-up,[189] or unbundling and non-discrimination behavioural obligations.[190]

This approach seems to be followed by the recently adopted Digital Markets Act (DMA), which establishes a specific *ex ante* regulatory regime for certain large digital platforms, that can be identified as 'gatekeepers',[191] another term to express the idea of utilities of the digital era. This regulatory regime does not aim to regulate entry or rates/output, but to set some bright-line rules for behaviour that would be considered problematic from a contestability and fairness perspectives.[192] The regulation identifies some core platform services[193] to which are imposed certain obligations.[194] For instance, regarding leveraging-type practices, the DMA imposes specific obligations to gatekeepers, which can be either directly applicable or will require some specification.[195] This

[186]R Posner, 'Natural Monopoly and its Regulation' 21 (1969) Stanford Law Review 548.

[187]See, the discussion in GL Priest, 'The Origins of Utility Regulation and the "Theories of Regulation" Debate' 36 (1993) Journal of Law and Economics 289.

[188]See, N Economides, Public Policy in Network Industries (2006). NYU Working Paper No. 2451/26079, Available at SSRN: <https://ssrn.com/abstract=2284617>.

[189]For an insightful discussion, see O Andriychuk, 'Shaping the New Modality of the Digital Markets: The Impact of the DSA/DMA Proposals on Inter-Platform Competition' 44 (3) (2021) World Competition 261.

[190]For a discussion, see LM Khan, 'The Separation of Platforms and Commerce' 119 (4) (2019) Columbia Law Review 973.

[191]According to the Digital Markets Act (DMA) proposal (Art 3), gatekeepers are entities that (i) have a significant impact on the EU internal market, (ii) operate one or more important gateways to customers, and (iii) enjoy or are expected to enjoy an entrenched and durable position in their operations. The DMA definition is intended to apply to a particular dominant actor, where economic significance, scope, or size provide pragmatic grounds for concern about control over a significant part of the economy, and where the ecosystem in question is global rather than local or regional. See, Proposal for a Regulation of the European Parliament and of the Council on Contestable and Fair Markets in the Digital Sector (Digital Markets Act), SEC (2020) 437 final, available at <proposal-regulation-single-market-digital-services-digital-services-act_en.pdf (europa.eu)>.

[192]According to the Preamble of the DMA, para 32, 'to safeguard the fairness and contestability of core platform services provided by gatekeepers, it is necessary to provide in a clear and unambiguous manner for a set of harmonised obligations with regard to those services'.

[193]These include: (i) online intermediation services (incl. for example marketplaces, app stores and online intermediation services in other sectors like mobility, transport or energy), such as Online B2C intermediation services which include marketplaces such as Amazon Marketplace and app stores such as Apple App Store or Google Play store; (ii) online search engines, such as Online search engines such as Google search or Microsoft Bing; (iii) social networking, such as Facebook; (iv) video sharing platform services, such as YouTube; (v) number-independent interpersonal electronic communication services, such as WhatsApp, Skype or Gmail; (vi) operating systems, such as Google Android, Apple iOS, Microsoft Windows; (viii) Cloud computing services such as Amazon webservice or Microsoft Azure; (viii) advertising services offered by a provider of any of the core platforms services mentioned above including ad networks, ad exchanges and any ad intermediation services such as Google AdSense; and (ix) virtual assistants, assistants such as Siri, Alexa. See, A. de Streel, *The European Proposal for a Digital Markets Act: A First Assessment* (CERRE, 2021)

[194]Art. 5, 6 and 7 of the DMA.

[195]These include the following: (i) refrain from combining personal data sourced from CPS with personal data from other services of the gatekeeper or third-parties, and from signing in end-users to other services of the gatekeeper in order to combine personal data, unless the end-user has been presented with the specific choice and provided meaningful consent (Art. 5a); (ii) bundling the CPS for which the online platform has a gatekeeper position with ID services (Art. 5e); (iii) bundling several CPSs offered by the platform and for which the gatekeeper designation applies (Art. 5f); (iv) refrain

behavioural-focused regulation is very much competition law-like, the main difference being that the implementation of the DMA does not require individualised assessment of market positions and behaviour, including its likely effects and the precise scope of the prohibited behaviour, and does not provide for the possibility of undertakings to make efficiency and objective justification arguments for the behaviour in question.[196] It offers an effective in terms of market monitoring bright-line rules competition regulation approach, with the aim to accelerate the pace of public intervention in these markets, in comparison to the slow and heavy tool of competition law enforcement, which will also need however a change of course. 'Common carrier' type regulation,[197] such as that imposing duties on specific large digital platforms (the gatekeepers), in view of their systemic importance and the architectural power they dispose in their ecosystems but also more broadly to the whole economy, requires far-reaching duties and an elaborate institutional setting, both at the EU and national levels.[198]

Asymmetrical power regulation/contract law

The small number of gatekeepers within the scope of the DMA are not the only digital platforms subject to regulatory obligations. The proposed EU Data Act complements the DMA, by focusing on barriers to data sharing, and adapts rules of contract law with the aim 'to prevent the exploitation of contractual imbalances that hinder fair data access and use for micro or medium-sized enterprises'. It also provides some public law type regulatory obligations to promote contestability by enabling switching between data processing services; finally, it enhances the interoperability of data and data-sharing mechanisms and services.[199] By containing general access rules, whenever a data holder is obliged by law to make data available to a data recipient, the Data Act, also stipulates that such access rules should be based on fair, reasonable, non-discriminatory and transparent conditions.[200] Similarly, unfair contract terms imposed to small and medium-sized enterprises are also prohibited.[201] The Regulation also recognises the principle that all persons can have access to the data they generate.[202] Parts of the Data Act present a similar focus than specific initiatives in the food supply chains to balance the asymmetrical or relational power between market participants,[203]

from using, in competition with business users, any data not publicly available, which is generated through activities by those business users of its CPS or provided by those business users or their end-users (Art. 6(1)a); (v) allow end-users to uninstall pre-installed apps on its CPS Art. (6(1)b); (vi) allow the use of third-party apps and app stores using, or interoperating with the OS of the gatekeeper and allow these apps and app stores to be accessed by means other than the CPS of the gatekeeper (side loading) (Art. 6(1)c); (vii) refrain from technically restricting the ability of end-users to switch between different apps and services to be accessed with the OS of the gatekeeper (Art. 6(1)e); (viii) provide effective, continuous and real-time portability of data generated through the activity of a business user or its end-user, in particular with tools for end-users to facilitate the exercise of data portability (Art. 6(1)g); (ix) provide business users (or third parties authorised by them) free of charge, with effective, high-quality, continuous and real-time access to data, that is provided for or generated in the context of the use of the CPS by those business users and their end-users (Art. 6(1)i); (x) provide to any third-party providers of online search engines with access on FRAND terms to ranking, query, click and view data in relation to search generated by end-users on online search engines of the gatekeeper (Art. 6(1)j & 7(6)).

[196]DMA, Preamble para 9.

[197]For a discussion of this concept see CS Yoo, 'Common Carriage's Domain' 35 (2018) Yale Journal on Regulation 991.

[198]The DMA proposals were put forward by DG Competition and DG Connect, Directorate F: Digital Single Market – Unit F2: E-Commerce & Platforms. Its enforcement will involve National Competition Authorities, as well as number of National Regulatory Authorities.

[199]Data Act, preamble, para 5.

[200]Ibid., para 38.

[201]See, Art 13 of the Data Act.

[202]Ibid., Preamble, para 20.

[203]On the inclusion of substantive fairness norms in contract law and the development of special regimes dealing with relational power asymmetries, see I Lianos, B Smichowski, J Lindeboom and C Lombardi, 'Power in the Food Value Chain' in I Lianos, A Ivanov and D Davis (eds), *Global Food Value Chains and Competition Law* (Cambridge University Press 2022) 256.

often a topic of concern for contract law, but also for some national competition authorities, which employ the concept of abuse of economic dependence to deal with such situations.[204]

Light-touch transparency regulation

Another option is to adopt some light touch transparency regulation of how platforms organise their relations with their complementors within the ecosystem, eventually by adopting a code of conduct for specific digital platforms,[205] or some binding form of public regulation. This option was put forward by the European Commission in the recently adopted *Platform to business regulation*, where duties of non-discrimination and transparency were imposed to most digital platforms, irrespective from their market power.[206]

One may also refer to the discussion in the Furman Commission to impose on platforms with a 'strategic market status' the obligation to implement a code of conduct: this would result from a concerted effort of the digital platforms and unidentified 'stakeholders' and would complement antitrust enforcement with a clearer and more easily applied set of standards defining the boundaries of undesirable conduct in digital markets.[207] One may contrast this 'light touch' approach with the more 'hard law' implementation of the abuse of dominance or monopoly provisions to ensure that digital platforms do not limit intra-platform or vertical competition.

Risk regulation

The development of technological innovation makes it necessary to account for the wide array of economic and societal risks it may generate across the entire spectrum of industries and social activities. Legislative proposals to tackle high-risk Artificial Intelligence (AI) systems contribute to these efforts for risk regulation. The AI Act Proposal includes a list of prohibited practices, such as placing on the market, putting into service or use of an AI system that deploys subliminal techniques beyond a person's consciousness or that exploits any of the vulnerabilities of a specific group of persons due to their age, physical or mental disability, in order to materially distort a person's behaviour in a manner that causes or is likely to cause physical or psychological harm. Further regulatory obligations to 'high risk' AI systems include the creation of risk management systems to identify and analyse the known and foreseeable risks associated with each of these systems, systematic record-keeping and transparency, the training, validation and testing of data sets used according to appropriate data governance and management practices, human oversight aiming at preventing or minimising the risks to health, safety or fundamental rights, etc.[208] Although the AI Act does not explore the potential impact of such technology on competition, it might be possible to think of including such competition risks in the risk analysis as well.

[204]For a discussion, see I Lianos, V Korah and P Siciliani, *Competition Law: Analysis, Cases and Materials* (Oxford University Press 2019) 837–44.

[205]See here, Secretary of State for Digital, Culture, Media & Sport and the Secretary of State for Business, Energy and Industrial Strategy, A new pro-competition regime for digital markets (CP 489 2021), available at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1003913/Digital_Competition_Consultation_v2.pdf>, and the proposals by OFCOM & CMA, 'Platforms and Content Providers including News Publishers' (Nov. 2021), available at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1073411/Platforms_publishers_advice._A.pdf>.

[206]Regulation 2019/1150, of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services OJL 186/57.

[207]Furman Report, 57–63.

[208]Proposal for a Regulation of the European Parliament and of the Council Laying down Harmonized Rules on Artificial Intelligence (Artificial Intelligence Act) And Amending certain Union Legislative Acts, COM/2021/206 final, art. 5–6, 9–14.

Property rights on data (or attention)

A possible solution to the missing data markets issue may also be the establishment of property rights for data. The GDPR-based data portability right provides an example for the introduction of some property rights' logic in the current regulatory framework. However, one may push this further, for instance by treating the use of a search engine and the facilitation (active or passive) of data harvesting as either building a claim for the property over the data generated or as a form of labour contributing to the surplus value generated by the digital value chain that has to be compensated.[209] The State could thus organise the process of commodification of human consciousness that will enable all citizens to at least benefit from the value generated by their data. Such an approach may increase the resources available for the less well-off, who would have the possibility to use their own data as collateral.

However, in addition to the moral issues that this solution raises, the exchange will not be symmetrical/fair given the structural inequality between those controlling these digital platforms and the rest of the population, in particular if the digital platforms do not face effective competition and consumers are unable to switch easily and port their data or other data-related inputs to competing platforms. Such an approach may receive the blessings of prioritarians who are ready to give priority to the less well-off instead of caring about equal distribution itself, but it would certainly be considered problematic for egalitarians who put an intrinsic value on equality of distribution.[210] The proposed Data Act aims to create a trust regime for the sharing of data, by creating new rights, in particular of the users of IoT devices to get access to the data generated and to share it with other firms, thus empowering both the users and the wider digital ecosystem. However, some authors have noted the 'too far-reaching protection of the exclusive control of the data holders over this IoT data' which ultimately restricts the options available for the users to exercise this new right.[211]

Natural resources regulation

Some jurisdictions take this propertisation logic to the next level. For instance, the recent national e-commerce policy in India proclaims that the data that is generated in India belongs to Indians as do the derivatives there from. By taking a 'natural resources' perspective, the e-Commerce Policy notes that

> (t)he data of a country, therefore, is best thought of a collective resource, a national asset, that the government holds in trust, but rights to which can be permitted. The analogy of a mine of natural resource or spectrum works here' and that 'India and its citizens have a sovereign right to their data.[212]

This approach, not followed in the EU, may also lead the government to act as a countervailing power negotiating better conditions with digital platforms for the sake of preserving its citizens' 'sovereign rights' to their data.

Establishing countervailing powers

A light interventionism option, compared to the previous ones, is to accept that the structure of digital markets cannot be transformed to a more competitive structure, because of the bottlenecks

[209]For such a suggestion, see I Arrieta Ibarra, L Goff, D Jiménez Hernández, J Lanier and GE Weyl, 'Should We Treat Data as Labor? Moving beyond Free' 108 (10) (2018) AEA Papers and Proceedings 38–42.

[210]See, I Lianos, 'Competition Law as a Form of Social Regulation' 65 (1) (2020) The Antitrust Bulletin 3, 74–5.

[211]W Kerber, 'Governance of IoT Data: Why the EU Data Act Will Not Fulfill Its Objectives (Second Version)' (2022), available at SSRN: <https://ssrn.com/abstract=4080436>.

[212]See, Indian Draft National e-Commerce Policy (2019) 14–5.

platforms control, and there is reason to attempt instead to develop countervailing powers along the various segments of digital value chain and/or the ecosystem that may tame the power of digital platforms, thus leading to a fairer allocation of the surplus value between the participants to the ecosystem. This approach is inspired by that put forward by US economist John Kenneth Galbraith who was generally indifferent to concentrations of economic power, to the extent that government provides countervailing powers 'freedom to develop and to determine how it may best do so'.[213] Recent discussions about enabling users, self-employed gig workers, or even media companies to collectively bargain with platforms mutually efficient solutions, by accepting that such cooperation would not fall under the scope of the prohibition of competition law for collusive activity constitutes an example of what remains possible. The Commission's recent proposals to enable collective bargaining of self-employed persons vis-à-vis digital platforms to improve their working conditions,[214] as well as similar initiatives introduced in Australia for small and medium undertakings[215] provide additional examples.

The lack of antitrust enforcement in the US against Big Tech, particularly regarding monopolisation, and the withdrawal of net neutrality regulation, may be interpreted as advancing a *laissez-faire* programme. However, it may also be conceived as a way to engineer the emergence of countervailing powers along the digital value chain. Similar arguments were made for developing countervailing powers that would thwart the power of digital platforms through code, such as the ability of consumers to outsource purchasing tasks to algorithms, thereby minimising the direct role they play in purchasing decisions and overcoming biases 'to enable more rational and sophisticated choices'.[216] However, it is unclear if a countervailing powers approach, that would require a great degree of sophistication and prior design, could succeed.

Broadening competition law intervention – polycentric competition law

Another option would be to employ a broadened view of competition law enforcement, by abandoning the sole focus on consumer (or social) welfare for an approach that would account for the diversity of values or orders of worth in productive friction in society through the preservation or promotion of spaces of polycentricity (or polyarchy).[217] A possible justification for such an approach, at least the small scale problem of dealing with dominant digital platforms, has been put forward by the EU panel of experts Report, which insisted that (at least dominant) digital platforms 'play a form of regulatory role as they determine the rules according to which their users, including consumers, business users and providers of complementary services, interact, and, when they are dominant, have a responsibility to ensure that competition on their platforms is fair, unbiased, and pro-users'.[218] As noted in the EU report, '(d)ominant platforms have 'regulatory power' and have a responsibility to use that power in a pro-competitive manner'.[219]

Taking a social contract perspective, competition authorities should try to assess the broader social costs of economic power. They may also assess the consumer as a citizen who values privacy and other public values (eg informational self-determination, protection of the environment and sustainability),[220] and not focus almost exclusively on the price dimension of competition law.

[213]JK Galbraith, *American Capitalism: The Concept of Countervailing Power* (Mifflin Co. 1952) 143.

[214]See, European Commission, Draft Guidelines on the application of EU competition law to collective agreements regarding the working conditions of solo self-employed persons, C(2021) 8838 final.

[215]See, <https://www.accc.gov.au/public-registers/class-exemptions-register/collective-bargaining-class-exemption>.

[216]MS Gal and N Elkin-Koren, 'Algorithmic Consumers' 30 (2) (2017) Harvard Journal of Law & Technology 309.

[217]See, I Lianos, 'Polycentric Competition Law' 71 (1) (2018) Current Legal Problems 161.

[218]J Crémer, Y-A de Montjoye and H Schweitzer, *Competition Policy for the Digital Era* (Final Report, OPOCE 2019) available at <http://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf)> 6.

[219]Ibid., 16.

[220]See, M Novak, *The Spirit of Democratic Capitalism* (Simon & Schuster 1982), differentiating society into three power centres: a political sector, an economic sector, and a moral-cultural sector.

Competition law should move from a monocentric vision focusing on prices and output to a polycentric vision that perceives competition law as an important tool to preserve the plurality and autonomy of the various social spheres that may be affected by the rise of digital platforms. The recent Facebook case in Germany,[221] and efforts to bring in privacy considerations in competition law enforcement illustrate that effort.[222]

Enforcing competition law in a complex economy setting would require the development of a deeper understanding of the social structure of competition and of the various spaces on which competition tournaments take place.[223] Competition law may focus on 'ecosystems', either through expansive interpretation of the traditional concepts of dominance and abuse, or in the creation of new provisions that directly tackle ecosystems.[224] Different methodologies should also be developed to account for this complex reality, such as agent-based modelling and sophisticated computation or the use of simulation techniques, which better map the multi-functional strategies of actors in the various competition ecosystems and allow for computation.[225]

More importantly, polycentric competition law aims to connect the activity of competition authorities with other regulatory fields, the relation between competition and regulation not being seen as antagonistic but also as complementary. Our brief analysis showed the relative poverty of mainstream competition law to deal with the variety of social costs engendered by the emergence of digital platforms as the dominant players in today's digital economy and the need to adopt a toolkit approach. It also showed how important it is to make efforts to understand that modern economies and societies are complex systems of value creation/extraction in which heterogeneous agents interact, and that addressing the concerns they raise should mobilise a large array of competition-enhancing regulatory tools.

5. Conclusions

The discussion of the different processes of value creation/extraction and capture n digital capitalism has shown that traditional concepts of value employed by the classical and neoclassical traditions may not account for the complexity of the new socio-economic systems that emerge and structure productive activity, consumption and various other forms of contribution to the value generation process in the era of digital capitalism. Similar conclusions have also been reached with regard to the analysis and measuring of power.[226] We put emphasis on the constitutive role of law in empowering certain stakeholders, and dis-empowering others, in the competition for capturing the largest percentage of surplus value generated by (digital) business ecosystems.

Taking a LPE perspective, we have shown that it is in essence the legal framework, and in particular the interaction between the different fields of law that regulate economic activities (or the lack of such regulatory framework), has enabled some economic operators to acquire tremendous competitive advantage in this competitive game and to be in position to gain supra-normal profits, while others have captured less than what would have been the 'fair reward' for their contribution. We have also highlighted that, in contrast to the conception of the market as a

[221]Bundeskartellamt report (n. 144).

[222]N Economides and I Lianos, 'Antitrust and Restrictions on Privacy in the Digital Economy, Concurrences 2 (2020).

[223]RS Burt, *Structural Holes* (Harvard University Press 1992).

[224]An example is Art. 19a GWB, or the proposition for Art 2A in the Greek Competition Law Bill 2020. See, M Jacobides and I Lianos, 'Ecosystems and Competition Law in Theory and Practice' 30 (5) (2021) Industrial and Corporate Change 1199.

[225]See, I Lianos, 'Reorienting Competition Law' 10 (1) (2022) Journal of Antitrust Enforcement 1.

[226]I Lianos and B Carballa-Smichowski, 'A Coat of Many Colours – New Concepts and Metrics of Economic Power in Competition Law and Economics' (2022) Journal of Competition Law & Economics. <https://doi.org/10.1093/joclec/nhac002>.

natural order driven by merit and competitive acumen, the capture of surplus value depends in reality on the institutional arrangements in place, and in particular the various legal frameworks creating rights and obligations for the different actors competing for revenue and rents in the digital economy. To the extent that such legal frameworks may be 'shaped' through intensive lobbying activity, it is essential that we abandon the naïve natural order approaches still in vogue. These merely focus on the identification of market imperfections (eg externalities) employing a partial equilibrium perspective, that justify some corrective legal action that would maximise the chances of approaching an ideal, from an economic efficiency perspective, lost 'Garden of Eden' (that of perfect competition or some other standard such as consumer welfare maximisation). If we make a normative argument, we should instead fully engage with the fundamental question of the legal foundations of digital capitalism and frame the institutional dimension according to the 'provisions' of the social contract in each polity as to the process that would enable us to determine how the value generated by digital innovation should be shared. From this perspective, EU competition law will be one of the tools of legal action – competition values will be integrated in other legal fields but also regulatory interactions will be structured accordingly in order to promote complementarities and establishing a public ecosystem for the protection of competition in the era of digital capitalism (what has been called a 'Whole of Government Approach' (WGA).[227] This breaks with approaches that have viewed competition and regulation as substitutes.

Furthermore, in this toolkit approach, competition values play a primordial role in this new regulatory compass. As constitutional law provides broader directions for regulatory and administrative action, competition law could play a similar role in terms of promoting the principle of competitive markets among other principles and values that need to be catered for the public good. But competition authorities should also engage with other values (eg sustainability, fairness, security of supply) and make efforts to accommodate them, according to the social contract prevailing in the specific jurisdiction. The concept of competition as an institution should provide a clear direction in cases of goals' tensions. This process is already occurring with some regulations, such as the Open Banking regulations in the United Kingdom (UK) or the DMA, result from and implement competition principles in order to achieve a new balance between the need to cooperate so as to generate value in (digital) business ecosystems, but also to ensure systemic resilience and social sustainability. One may also design property rights and data markets so as to promote the value of competitive markets in the economy.

This toolkit approach may rely on different institutional devices in each jurisdiction, depending on the existing institutional capabilities and the relative efficiency of the various regulatory alternatives, any choice being between imperfect, if perceived in isolation, institutional alternatives. It should rely on a different conceptual and methodological framework, that of complexity science, that directly engages with the complexity of the various processes in operation and enables decision-makers to better understand the interactions and feedback loops between the different systems in action (economic, social, legal and political).[228] The next challenge will be to develop the global regulatory networks that would avoid the complete fragmentation of the digital economy, to ensure an appropriate level of accountability of digital giants across the globe, to establish regulatory interoperability between the bespoke regimes that are put in place for Big Tech and to monitor compliance of Big Tech to the emerging norms of this regulatory/competition compass.

[227]See, in the area of competition <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/07/09/executive-order-on-promoting-competition-in-the-american-economy/>.

[228]I Lianos, 'Competition Law for a Complex Economy' 50 (2019) IIC – International Review of Intellectual Property and Competition Law 643; I Lianos, 'Reorienting Competition Law' 10 (1) (2022) Journal of Antitrust Enforcement 1.

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