

THE COMPLEMENTARY ROLE OF COMPETITION LAW FOR SUSTAINABLE DATA-DRIVEN ECOSYSTEMS

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SUMMARY: 1. Data-driven Ecosystems in the Twin Transitions. — 2. The Two Challenges of Sustainable Data-driven Ecosystems. — 3. Beyond Regulation: The Complementary Role of Competition Law. — 3.1. The New Relevant Market Definition Notice. — 3.2. The New Direction of Digital Analytical Shortcuts. — 4. Conclusions.

1. Data-driven Ecosystems in the Twin Transitions

The European Union (EU) has identified digitalisation and sustainability as its priorities and has proactively established numerous strategies to pursue the “twin” transitions, namely the digital and green transitions. Although these operate independently, they are connected and impact each other (1). The regulatory initiatives linked with the digital transition strive to harness technologies for the benefit of citizens, businesses, and public administrations (2). The Digital Decade Policy Programme 2030 (3) and related strategies, such as the European Artificial Intelligence (AI) (4) and Data (5) Strategies, recognise the necessity of increased data availability to train AI systems and create value for the economy and society (6). On the other hand, the European Green Deal (EGD) (7) and associated green

(1) This chapter has benefited from a Visiting Fellowship at Sciences Po Law School in April 2024. The author would like to express sincere gratitude to Prof. Edoardo Chiti and Dominic James Stanley for providing valuable insights on this work.

U. VON DER LEYEN, *A Union that strives for more: My agenda for Europe. Political guidelines for the next European Commission 2019-2024* (2019), https://commission.europa.eu/system/files/2020-04/political-guidelines-next-commission_en_0.pdf, accessed 16 April 2024.

(2) Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030 (2022) OJ L 323/4, (Digital Decade Policy Programme 2030), Article 4; Commission Implementing Decision (EU) 2023/1353 of 30 June 2023 setting out key performance indicators to measure the progress towards the digital targets established by Article 4(1) of Decision (EU) 2022/2481 of the European Parliament and of the Council (2023) OJ L 168/48. To follow the digital transition initiatives see the webpage dedicated to *A Europe fit for the digital age*, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age_en, accessed 16 April 2024.

(3) Ibid.

(4) Commission, *Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions - Artificial Intelligence for Europe*, COM(2018) 237 final (Artificial Intelligence for Europe).

(5) Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - A European Strategy for data*, COM(2020) 66 final, (European Data Strategy).

(6) S. MUENCH, E. STOERMER, K. JENSEN, T. ASIKAINEN, M. SALVI, F. SCAPOLO, *Towards a green and digital future* (2022), Publications Office of the European Union, Joint Research Center, 9.

(7) Commission, *Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions - The European Green Deal*, COM(2020) 640 final, (The European Green Deal).

strategies, such as the EU Strategy on Adaptation to Climate Change (8), aim at achieving climate neutrality by 2050 (9) outlining a comprehensive pathway for sustainability in the EU's economy and society.

Digital technologies are at the foundation of both the Digital Decade Policy Programme 2030 and the EGD's effort to strengthen digitalisation and sustainability in the EU's competitive economy and society (10). To monitor the progress made towards sustainability through digitalisation, the Commission has adopted the indicator on Information Communication Technology (ICT) for environmental sustainability as part of its Digital Economy and Society Index. This indicator measures the percentage of enterprises that undertake medium or high intensity green actions through ICT (11). The level of intensity is determined by the number of environmental actions facilitated by the adoption of ICTs, such as the development of energy-saving, climate-neutral, high-efficiency and interconnected services as well as the reduced use of materials, equipment or consumables.

Within the twin transitions, the term "data-driven ecosystems" describes data assets available to a network of stakeholders, including suppliers, producers, competitors and consumers, that facilitate the leveraging of each other's actions to derive value from online and/or offline interactions (12). Although the concept of ecosystem originated in biology, it has gained increasing attention in management literature and has expanded into the social sciences (13). The precise meaning of "ecosystem" is still debated despite its growing use and popularity (14). This chapter will rely on Michael G. Jacobides and Ioannis Lianos' reconstruction, who described ecosystems as having common features such as the co-evolution of the

(8) Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change*, COM(2021) 82 final.

(9) Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) 401/2009 and (EU) 2018/1999 (2021), OJ L 243/1 (European Climate Law), Article 1.

(10) Digital Decade Policy Programme 2030 (n 2), Article 3(c)(e)(h); The European Green Deal (n 7), 4.

(11) Commission, *Digital Economy and Society Index*: (DESI 2022), 47-48.

(12) Compare with the ecosystem definition provided by M. G. JACOBIDES, C. CENNAMO, A. GAWER, *Towards a theory of ecosystems* (2018), in *Strategic Management Journal*, 2256.

(13) J. FULLER, M. G. JACOBIDES, M. REEVES, *The myths and realities of business ecosystems* (2019), in *Sloan Management Review*. The term "ecosystem" in management literature can be traced back to J. F. MOORE, *Predators and prey: A new ecology of competition* (1993), in *Harvard Business Review*, 75.

(14) M. G. JACOBIDES, I. LIANOS, *Ecosystems and competition law in theory and practice* (2021), in *Industrial and Corporate Change*, 1200.

collaborating actors under an aligned vision (15), modularity (16), interdependencies and non-generic technological complementarities that bind together ecosystem participants (17).

Building on the ecosystems approach in management literature, data-driven ecosystems are considered in this work as an alternative governance model that diverges from the usual full integration or arm's-length contracts (18). This governance allows participants to collaborate independently, exchange knowledge and resources, and engage in joint problem-solving, thus promoting greater agility, innovation, and competitiveness. For instance, the collaborative processing of personal and non-personal data can allow the meticulous tracking of consumer preferences and product supply chains. This, in turn, can provide credible and reliable information that empowers businesses, consumers and other stakeholders to make informed and sustainable choices, even in the absence of unified governance. With the capabilities to effectively integrate technologies and process data, participants can have a substantial impact on technological, economic and social changes by leveraging their data-driven ecosystems. This approach can yield significant benefits that extend beyond any single ecosystem and help achieve the desired outcomes (19). As a result, data-driven ecosystems should be viewed as a pivotal enabler in delivering the European Union's digital and green transformation.

The interplay between the digitalisation of the EU's economy and society and the green transition is of the utmost importance. Digitalisation serves as a catalyst in achieving sustainability, acting as a "key enabler" for the changes necessary to push forward the green transition (20). To this end, the free flow of data and the

(15) The authors mention JAMES F. MOORE's metaphorical use of the term ecosystem. According to Moore, business ecosystems can be opened up to the whole world and encourage potential contributions from participants to co-evolve and achieve "distributed creativity". The aim of the ecosystem organisational form is the achievement of distributed creativity. However, a market without direction is not enough to justify aligning players' organisations. J. F. MOORE, *Business ecosystems and the view from the firm* (2006), in *The Antitrust Bulletin*, 34.

(16) "Modularity" refers to the ability of dividing different stages of production and consumption chains. M. G. JACOBIDES, C. CENAMO, A. GAWER (n. 12), 2260.

(17) Interdependencies identify structural relationships between actors in terms of the connection of their offers for the value to be created. Non-generic complementarities require specific arrangements and investments to make ecosystem participants' activities complementary to the others. M. G. JACOBIDES, C. CENAMO, A. GAWER, *Distinguishing between Platforms and Ecosystems: Complementarities, Value Creation, and Coordination Mechanisms* (2020), Working Paper, London Business School.

(18) Ibid., 13; R. KAPOOR, *Ecosystems: broadening the locus of value creation* (2018), in *Journal of Organization Design*; R. ADNER, *Ecosystem as Structure: An Actionable Construct for Strategy* (2016), in *Journal of Management*, 39.

(19) M. IANSITI, R. LEVIEN, *The Keystone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation, and Sustainability* (Harvard Business Review Press, 2004), 211-224.

(20) Digital Decade Policy Programme 2030 (n. 2), Recital 6; The European Green Deal (n. 7), 4, 7 and 9; Commission, *Communication from the Commission to the European Parliament, the Council, the*

increased use of ICT, including data management systems and artificial intelligence (21), can significantly enhance the chances of success for policies that address environmental issues and climate change (22). However, digitalisation must prioritise sustainability while pursuing both the digital and green transitions (23). Indeed, the increased use of digital technologies, especially data management systems, carries the risk of higher energy and water consumption and greenhouse gas emissions (24). Therefore, digital and data-related practices should promote a circular and climate-neutral economy at the same time enshrining sustainability within.

To strengthen the interplay between the digital and sustainable transformations, the Digital Decade Policy Programme 2030 and the EGD call for the alignment of all EU policies, including competition (25). As a result, competition policy and law are currently undergoing an unprecedented revision process to complement the EU's transition initiatives through their implementation *lato sensu* (i.e., including enforcement) (26). The Commission has broadened the scope of pro-competitive disciplines to take into account digital and green benefits while improving privacy protections and sustainability. For instance, the Commission reviewed the horizontal and vertical agreements guidelines to emphasise the importance of pro-competitive agreements, under which any harm to competition is potentially outweighed by counterbalancing digital and sustainability benefits. Also on the State Aid front, the Commission has undertaken a review of the Block Exemption Regulations and State Aid Guidelines with the aim of directing private and public investments towards digital and sustainable infrastructures (27). This review process seeks to ensure that

European Economic and Social Committee and the Committee of the Regions - Shaping Europe's digital future, COM(2020) 67 final, (Shaping Europe's digital future), 11.

(21) European Parliament, *Provisional Agreement Resulting from Interinstitutional Negotiations - Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence and amending certain Union legislative acts* (2024), (Provisional Agreement on the Artificial Intelligence Act), Article 3(1), <https://www.europarl.europa.eu/news/en/press-room/20240212IPR17618/artificial-intelligence-act-committees-confirm-landmark-agreement>, accessed 16 April 2024.

(22) Digital Decade Policy Programme 2030 (n. 2), Recital 6; The European Green Deal (n. 7), 9.

(23) Ibid.; Shaping Europe's digital future (n. 20), 12.

(24) See Section 2 of this work.

(25) Digital Decade Policy Programme 2030 (n. 2), Recital 3; The European Green Deal (n. 7), 3.

(26) Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - A competition policy fit for new challenges*, COM(2021) 713 final, (A competition policy fit for new challenges). Furthermore, see Commission, *Annex to the Communication - A competition policy fit for new challenges*, COM(2021) 713 final/2.

(27) To gain a better understanding of the ongoing process of revising competition policy and law see K. MAJCHER, V. H.S.E. ROBERTSON, *The Twin Transition to a Green and Digital Economy*:

competition law is applied in a proactive manner that aligns with the EU's vision for the future.

This chapter analyses the role of competition law in ensuring the coherent and effective implementation of the digital and sustainable transformation in concrete cases. The research methodology is primarily doctrinal focusing on the AI and EU Data Strategies, and the complementary application of competition law in data-related challenges. The chapter explores the challenges of sustainable data-driven ecosystems (§ 2) and the complementary role of competition law in tackling these challenges (§ 3). Recently, the Commission published the revised Notice on the relevant market definition, which provides a clear example of boosting social and environmental goals in competition assessments (§ 3.1.). While the author recognises that social and environmental considerations in competition law are becoming increasingly apparent, there is still a need for further operationalisation. To address this need, the chapter investigates analytical shortcuts that can be considered by undertakings and competition authorities (§ 3.2.). Finally, the last section presents some concluding remarks on the new directions of competition law (§ 4).

2. The Two Challenges of Sustainable Data-driven Ecosystems

The European AI and Data Strategies acknowledge the importance of data as an essential resource for economic development and tackling social, climate and environmental challenges (28). Vast amount of high-quality data is fundamental for training AI systems and other ICT, as well as for monitoring and personalising productions (29). However, data-driven ecosystems face two significant and to an

The Role for EU Competition Law (2022), Graz Law Working Paper No 05-2022; E. FAZIO, *Adapting Competition Law to the Digital Transition. Two Challenges* (2022), European Papers, 981.

(28) Artificial Intelligence for Europe (n 4), 1-3 and 10-11; Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Empty - Fostering a European approach to Artificial Intelligence*, COM(2021) 205 final (Fostering a European approach to Artificial Intelligence); Provisional Agreement on the Artificial Intelligence Act (n 21), Recital 3; European Data Strategy (n 5), 2-3; European Parliament and Council Regulation (EU) 2023/2854 of 13 December 2023 on harmonised rules on fair access to and use of data and amending Regulation (EU) 2017/2394 and Directive (EU) 2020/1828 (2023) OJ L 2023/2854 (Data Act), Recital 1; Regulation (EU) 2022/868 of the European Parliament and of the Council of 30 May 2022 on European data governance and amending Regulation (EU) 2018/1724 (2022) OJ L 152/1, (Data Governance Act), Recital 2; Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (2022) OJ L 265/1, (Digital Markets Act), Recital 3.

(29) Provisional Agreement on the Artificial Intelligence Act (n. 21), Recitals 44 and 45; European Data Strategy (n. 5), 2-3; Shaping Europe's digital future (n. 20), 11; DESI 2022 (n. 11), 51; A. EZRACHI, M. E. STUCKE, *Digitalisation and its impact on innovation* (2020), R&I Paper Series Working Paper 2020/07, 5; P. K. YU, *Data Producer's Right and the Protection of Machine-Generated Data*

extent related challenges in aligning with the twin transitions. The first challenge concerns the environmental impacts of an increased consumption of energy and water, and higher greenhouse gas emissions. The second challenge regards the reluctance of businesses to openly share the data they have collected.

The first challenge arises from the ever more demanding computational processes and infrastructure requirements inherent in the management of rapidly expanding data volumes. The substantial energy consumption associated with data processing has the potential to significantly increase greenhouse gas (GHG) emissions, contributing to global warming. Of course, the final impact of this increase in energy consumption would depend heavily on the energy mix used to power data centres and other infrastructure. It is noteworthy that the Information and Communication Technology sector is responsible for approximately 5 to 9 per cent of global electricity consumption, generating more than 2 per cent of global GHG emissions. In the EU, data centres consumed 76.8 TWh of energy in 2018 and by 2030 this is expected to increase to 98.5 TWh. In relative terms, data centres accounted for 2.7 per cent of electricity demand in the EU in 2018, and on the current trajectory is forecasted to reach 3.21 per cent by 2030 (30).

Despite the escalating demand for data centre services, energy consumption and emissions have only increased moderately over the years, with the notable exception of crypto mining (31). This positive trend can be attributed to the replacement of coal and other fossil fuels with less emissive energy sources. In addition, innovative and energy-efficient solutions have been developed and implemented in IT hardware and cooling systems, along with a gradual shift towards more efficient clouds and hyperscale data centres (32). To promote this trend, the EU institutions are seeking to exploit the flexible mechanisms of experimentalist governance (33) and competition law (34), encouraging the adoption of standards, codes of conduct and other soft law and tertiary measures

(2019), in 93 *Tul. L. Rev.*, 860; M. FINCK, *Digital Regulation: Designing a Supranational Legal Framework for the Platform Economy* (2017), LSE Law, Society and Economy Working Papers 15/2017, 2.

(30) See Commission, *Commission takes first step towards establishing an EU-wide scheme for rating sustainability of data centres* (2023), https://energy.ec.europa.eu/news/commission-takes-first-step-towards-establishing-eu-wide-scheme-rating-sustainability-data-centres-2023-12-12_en, accessed 16 April 2024.

(31) V. ROZITE, E. BERTOLI, B. REIDENBACH, *Data Centres and Data Transmission Networks* (2023), IEA, <<https://www.iea.org/reports/data-centres-and-data-transmission-networks>>, accessed 16 April 2024; J. RIFKIN, *Green New Deal - Il crollo della civiltà dei combustibili fossili entro il 2028 e l'audace piano economico per salvare la Terra* (Mondadori 2021), 57-67; N. JONES, *The Information Factories* (2018), in 561 *Nature*, 163, <https://www.nature.com/articles/d41586-018-06610-y.pdf?pdf=button%20sticky>, accessed 16 April 2024.

(32) Ibid.

(33) C. F. SABEL, J. ZEITLIN, *Experimentalist Governance in the European Union - Towards a New Architecture* (Oxford University Press, 2010).

(34) A competition policy fit for new challenges (n. 26).

that incentivise the creation of greener data-driven ecosystems (35). In particular, the EU's vision foresees co-investments for the development of cloud-to-edge services, the interconnection of existing data-processing capacities and the creation of support centres for data sharing.

Issues regarding data sharing practices are also at the centre of the second challenge faced by sustainable data-driven ecosystems. Data sharing allows data recipients to innovate, reduce production costs, and personalise services and goods. Furthermore, it can contribute to the EU's goal of achieving climate neutrality by encouraging the reuse of data, improving the quality of services and goods, reducing CO2 emissions, and strengthening supply chain controls, among other benefits (36). Although the digital and sustainable benefits of access to data are evident, only a limited number of companies "share" or "pool" their data with others (37). This phenomenon is known as the "data-sharing paradox": on the one hand, data is becoming increasingly valuable to the EU's economy and society; on the other hand, undertakings are hesitant to share the data they have collected (38).

The data-sharing paradox affects business-to-business (B2B), government-to-business (G2B) and business-to-government (B2G) transactions (39). According to the AI and data regulatory frameworks, the goal is for data to be available to any private and public entity to foster innovation and competition and to realise the social and environmental benefits of data-driven ecosystems (40). The EU's approach to creating a single European data space, which includes several common EU data spaces (41), appears to have shifted from an individualistic human-centred perspective to a broader societal one. This broader perspective requires the support of all EU policies to stimulate data sharing, including competition policy.

(35) Artificial Intelligence for Europe (n. 4), 9; Fostering a European approach to Artificial Intelligence (n. 28); Provisional Agreement on the Artificial Intelligence Act (n. 21), Recital 85a and Articles 40 and 69; European Data Strategy (n. 5), 9, 10 and 16.

(36) See M. BOTTA, *Shall we share? The principle of FRAND in B2B data sharing* (2023), RSC 2023/30 Working Paper, 18-19; JRC Technical Reports, *Competitiveness and Sustainable Development Goals* (2016), 13.

(37) Annexes to *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Empty - Fostering a European approach to Artificial Intelligence*, COM(2021) 205 final (Annexes to Fostering a European approach to Artificial Intelligence), Section I.2.

(38) Botta (n. 36), 7-9; A. ALEMANNI, *Big Data for Good: Unlocking Privately Held Data to the Benefit of the Many* (2018), in *European Journal of Risk Regulation*, 185.

(39) Ibid.

(40) Provisional Agreement on the Artificial Intelligence Act (n. 21), Recitals 44 and 45; European Data Strategy (n. 5), 1; J. DREXEL, *Designing Competitive Markets for Industrial Data Between Proprietary and Access* (2017), in *JIPITEC*, 262.

(41) Commission, *Staff Working Document on Common European Data Spaces*, SWD(2022) 45 final.

Competition policy and enforcement can complement the regulatory frameworks to address the challenges of sustainable data-driven ecosystems. Its flexibility and case-by-case approach can send the right signals for investments to flow into the necessary technologies and collaborative practices to support the transitions' priorities. It can incentivise businesses to use data resources efficiently, avoid stranded assets, and innovate their production processes towards greater digitalisation and sustainability. However, to fully leverage the potential of sustainable data-driven ecosystems without distorting competitive markets (42), it is imperative that the transition initiatives take competition into account and that the competitive process includes the broader perspectives of the transitions.

3. Beyond Regulation: The Complementary Role of Competition Law

Seeking to ensure the successful realisation of the twin transitions and overcome the challenges of sustainable data-driven ecosystems, competition law is undergoing a comprehensive revision process that is challenging traditional characteristics (43). Given that competition is a dynamic process that lacks a universally agreed upon definition in legislative sources (44), scholars have debated the seemingly contradictory goals of competition law — adopting historical, textual and teleological methodologies (45). This section contributes to this debate by analysing the contemporary goals of competition law and its complementary role in favouring sustainable data-driven ecosystems.

To identify the goals and determine whether privacy protection and sustainability can be included, this chapter builds on the recent empirical analysis of Konstantinos Stylianou and Marios Iacovides (46). Their analysis shows a wide range of opinions among academics on the objectives of competition, particularly with regard to privacy protection and sustainability (47). This suggests that EU

(42) Consolidated version of the Treaty on European Union - Protocol (No 27) on the internal market and competition (2008), OJ C 115.

(43) See n. 26.

(44) M. LIBERTINI, 'Concorrenza', in *Enciclopedia del diritto, Annali*, III (Milano, 2010).

(45) The discussion on the goals of competition law is extensive and cannot be fully covered. See, however, D. J. GERBER, *Competition Law and Antitrust - A Global Guide* (Oxford University Press, 2020), 17-28; S. HOLMES, *Climate change, sustainability, and competition law* (2020), in *Journal of Antitrust Enforcement*, 354; N. DUNNE, *Public Interest and EU Competition Law* (2020), in 65(2) *The Antitrust Bulletin*, 256; A. EZRACHI, *EU Competition Law Goals and The Digital Economy* (2018), Oxford Legal Studies Research Paper No 17/2018,, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3191766, accessed 16 April 2024; L. M. KHAN, *Amazon's Antitrust Paradox*' (2017), in *The Yale Law Journal*, 710; G. AMATO, *Antitrust and the Bounds of Power: The Dilemma of Liberal Democracy in the History of the Market* (Oxford Hart Publishing, 1997), 95-129; R. H. BORK, *The Antitrust Paradox: A Policy at War with Itself* (Basic Books, 1978).

(46) K. STYLIANOU, M. IACOVIDES, *The goals of EU competition law: a comprehensive empirical investigation* (2022), in 42(4) *Legal Studies*, 620.

(47) *Ibid.*, 624-631.

competition law pursues multiple goals with fluctuating significance. In coherence with EU institutional practice, competition law does not prioritise a single objective at the expense of others but rather includes a variety of objectives without dismissing the relevance of others (48). The authors identified seven broad categories of traditional competition law goals: efficiency, welfare, fairness, freedom to compete, market structure, competitive process and European integration. Although all these goals are relevant in practice, protecting a market structure based on an effective competitive process is considered more frequently (49). In addition to the traditional objectives, the contemporary goals upheld by the new competition policy (50), *id est* privacy protection and sustainability, appear to be already part of the academic debate and institutional practice. These modern aims are gradually becoming part of EU competition law in their own right, as it is suggested by the latest case law from the EU Court of Justice (51).

To meet these multiple objectives, competition law is expanding beyond its traditional *ex post* and crime-tort model. As a result, the line between competition law and regulation is becoming blurred (52). Ultimately, competition law too now provides a “background regime” similar to those of AI and data regulations for guiding participants’ actions in data-driven ecosystems (53). In the past, competition law was perceived as a set of *ex post* negative provisions, *i.e.*, prohibitions, that could only be enforced after anticompetitive behavior had been detected (54). Regulations, on the other hand, were typically characterised by *ex ante* positive interventions that prescribed the practices to be taken by undertakings in specific markets (55). However, with regard to sustainable data-driven ecosystems this distinction has disappeared. Indeed, competition authorities can now intervene *ex ante*, *e.g.*, through commitment procedures, notices, guidelines

(48) Ibid., 636-639.

(49) Ibid. 639 and 641. The objectives of the market structure and competitive process appear more frequently in the Court of Justice and General Court’s decisions as well as Advocate Generals’ opinions.

(50) A competition policy fit for new challenges (n. 26).

(51) Case C-252/21, *Meta Platforms Inc and Others v Bundeskartellamt* (2023) ECLI:EU:C:2023:537; STYLIANOU, IACOVIDES (n. 46), 647.

(52) Y. SVETIEV, *Networked Competition Governance in the EU: Delegation, Decentralization, or Experimentalist Architecture?*, in C. F. SABEL, J. ZEITLIN (eds), *Experimentalist Governance in the European Union - Towards a New Architecture* (Oxford University Press, 2010), 97.

(53) Compare with the comprehensive analysis of competition law potentials and issues in data-driven markets provided by OECD, *Handbook on Competition Policy in the Digital Age* (2022), <https://www.oecd.org/daf/competition-policy-in-the-digital-age/>, accessed 16 April 2024; J. CRÉMER, Yves-A. DE MONTJOYE, H. SCHWEITZER, *Report for the European Commission: Competition policy for the digital era* (2019), European Commission, <https://op.europa.eu/en/publication-detail/-/publication/21dc175c-7b76-11e9-9f05-01aa75ed71a1/language-en>, accessed 16 April 2024.

(54) M. SIRAGUSA, F. CREMONA, *A reassessment of the relationship between competition law and sector-specific regulation*, in J. DREXL, F. DI PORTO (eds), *Competition Law as Regulation* (Edward Elgar, 2015), 153-162.

(55) Ibid.

and other tertiary measures; while regulators can act *ex post*, especially when regulatory bodies are entitled to competition authorities' powers. Moreover, the type of intervention has been reversed to ensure that the digital and green targets are met. Competition law has been assigned a more proactive role in facilitating the free flow of data, whereas regulation has been given the function of establishing prohibitions (56). The long-standing debate on competition and regulation in data-driven markets has been solved by the simultaneous and complementary application of both sets of rules when: (i) data regulations and competition law seek to achieve different objectives; and (ii) data regulations leave room for anti-competitive behaviour (57). Given that the data regulatory framework and competition law are “complementary”, they can be enforced cumulatively. Thus, competition law is increasingly used to prevent “potentially” harmful practices before they happen (58). In noting this approach scholars have used a variety of terms to identify it, such as ‘experimental competition law’ (59), ‘responsive competition law’ (60), ‘polycentric competition law’ (61), and ‘participatory competition law’ (62). The unifying principle among these approaches is the recognition that competition authorities must, and indeed do, intervene in a multifaceted and versatile manner to safeguard and promote competition (63).

(56) As part of the ongoing review of competition policy and enforcement, the Commission has proposed to relax the application of competition rules in order to facilitate access to data. This entails the adoption of a more flexible application of competition rules that complements the AI and data regulatory measures. With regard to antitrust and merger control, the Commission considers it necessary to favour pro-competitive agreements to the extent that potential harm to competition is outweighed by counterbalancing digital and sustainability benefits. On the State aid front, the Commission has revised State Aid Guidelines and General Block Exemption Regulations (GBERs) to encourage public and private investments in digital and sustainable infrastructures. See A competition policy fit for new challenges (n. 26); Fazio (n. 27).

(57) *Meta Platforms Inc* (n. 51), paras 49 and 51.

(58) For some national examples concerning data-driven ecosystems see S. MAKRIS, *Responsive Competition Law Enforcement: Lessons from the Greek Competition Authority* (2023), in J. RIVAS (ed), *World Competition Law and Economics Review*, 205; E. FAZIO, *Experimental Competition Enforcement: A Complementary Data Sharing Toolkit*, forthcoming in *Yearbook of Antitrust and Regulatory Studies*.

(59) Y. SVETIEV, *Experimentalist Competition Law and the Regulation of Markets* (Hart Publishing, 2020).

(60) S. MAKRIS, *EU Competition Law as Responsive Law* (2021), in *Cambridge Yearbook of European Legal Studies*; M. IOANNIDOU, *Responsive Remodelling of Competition Law Enforcement* (2020), in *Oxford Journal of Legal Studies*, 846.

(61) I. LIANOS, *Polycentric Competition Law* (2018), in 71 *Current Legal Problems*.

(62) V. KATHURIA, *The Rise of Participative Regulation in Digital Markets* (2022), in *Journal of European Competition Law & Practice*, 537. The term ‘participative competition law’ is attributed to the Nobel Prize-winning economist Jean Tirole, <http://qz.com/1310266/nobelwinning-economist-jean-tirole-on-to-regulate-tech-monopolies>, accessed 16 April 2024.

(63) MAKRIS (n. 58), 231.

Competition law has traditionally focused on the price and output costs of market power, disregarding businesses' broader social and environmental impacts (64). However, this approach is not appropriate for sustainable data-driven ecosystems. To fully address the interplay between digitalisation and sustainability of data-driven ecosystems, competition enforcement must consider individuals' interactions and the broader social and environmental effects of their behaviour. For instance, when companies exchange data they typically establish "data platforms" rather than providing access to data for monetary compensation (65). Participants in data platforms are rewarded with access to a common and larger pool of data. This data pool allows participants to innovate and improve the quality and maintenance of their services and goods in the long term. At the same time, it can satisfy the "energy efficiency first principle" (66) and accelerate decarbonisation by offering data insights on CO2 emissions of production and consumption processes. Therefore, the data-sharing practice serves not only the interests of the parties involved but also has broader social and environmental benefits (67).

Data platforms are a clear example of horizontal or vertical cooperation agreements that might be subject to competition law scrutiny under Article 101 of the Treaty on the Functioning of the European Union (TFEU) (68). While the traditional perspective would only consider the potential market distortions resulting from the agreement, contemporary interpretations of competition law, such as polycentric competition, recognise the intertwined dynamics and benefits of digitalisation and sustainability. Consequently, the contemporary competition perspectives allow for the consideration of both the internal and external advantages of fostering sustainable data-driven ecosystems in the context of the

(64) LIANOS (n. 61), 9-10.

(65) There are multiple models for sharing data, the most common of which are data platforms, data marketplaces, technical enablers, data philanthropy, data prizes, and data partnerships. BOTTA (n. 36); Commission, *Staff Working Document on Guidance on sharing private sector data in the European data economy*, SWD(2018) 125 final, Sections 3 and 4.

(66) The "energy efficiency first principle" refers to "taking utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end-use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions". Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast), Article 2(2).

(67) See the example of the data platform "Skywise" provided by Airbus, <https://aircraft.airbus.com/en/services/enhance/skywise>, accessed 16 April 2024.

(68) The Commission has recently published new Guidelines that outline criteria for evaluating horizontal and vertical cooperation agreements, decisions and concerted practices between undertakings ("agreements") under Art. 101 TFEU. Commission, *Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal cooperation agreements*, (2023) OJ C 259 (Guidelines on horizontal cooperation agreements); Commission, *Guidelines on vertical restraints*, (2022) OJ C 248 (Guidelines on vertical restraints).

specific case. Thus, it is also worth examining whether the ongoing revision process of competition law sufficiently takes these factors into account.

3.1. *The New Relevant Market Definition Notice*

Competition law follows a two-stage procedure to determine whether one or more undertakings have or would have market power (69). Firstly, although not mandatory in all competition assessments, it is important to identify the relevant market in which market power might exist. This stage requires defining the relevant product and geographical market (70). Secondly, it must be ascertained whether market power exists in the identified relevant market (71). It is apparent that the relevant market definition is an important analytical tool in determining whether undertakings have market power. Defining the relevant market becomes necessary, for instance, when considering whether an agreement has the effect of restricting competition under Article 101 TFEU (72) or whether an undertaking has a dominant position according to Article 102 TFEU (73).

The Commission's Notice on the Definition of Relevant Market provides useful guidance on defining the relevant product and the relevant geographical market (74). By disclosing the criteria and procedures adopted in the definition of relevant markets, the Commission aims to increase transparency in its competition policy and decision-making. This allows undertakings to consider the Notice when making their own decisions about their competitive strategies, such as entering into certain agreements or engaging in certain unilateral conduct (75).

Traditionally, the so-called "hypothetical monopolist" test, also known as the Small but Significant Non-transitory Increase in Price (SSNIP) test, has been used

(69) According to the Guidelines on horizontal cooperation agreements (n. 68), footnote 40, "market power" refers to "the ability to profitably maintain prices above competitive levels for a period of time or to profitably maintain output in terms of product quantities, product quality and variety or innovation below competitive levels for a period of time. The degree of market power normally required for a finding of an infringement under Article 101(1) is less than the degree of market power required for a finding of dominance under Article 102". See also R. WHISH, D. BAILEY, *Competition Law*, 10 edition (Oxford University Press, 2021), 22-25.

(70) The "relevant product market" refers to all those goods or services (products) that customers consider interchangeable or substitutable to the product(s) of the undertaking(s) involved, based on the products' features, their prices and their intended use; on the other hand, the "relevant geographic market" identifies the area in which the relevant products are supplied or demanded by the undertaking(s) involved, namely the area in which the conditions of competition are sufficiently homogeneous and can be distinguished from neighbouring ones. Commission, 'Notice on the definition of the relevant market for the purposes of Community competition law' (1997) OJ C 372 (1997 Notice on Market Definition), paras 7-8.

(71) WHISH, BAILEY (n. 69), 26-48.

(72) See e.g. Case C-234/89 *Delimitis v Henninger Bräu* (1991) ECLI:EU:C:1991:91, para 16.

(73) See e.g. Case 6-72 *Continental Can v Commission* (1973) ECLI:EU:C:1973:22, para 32.

(74) 1997 Notice on Market Definition (n. 70).

(75) *Ibid.*, paras 4-5.

to determine whether certain products belong to the same relevant market (76). This test focuses on the price of services and goods, as it is the most straightforward parameter to indicate market definition and thus establish the boundaries of competition. However, originally published in 1997, the Notice was recently revised to favour the digital and green transitions. This revision marks the first evidence of a re-orientation of competition law towards supporting the twin transitions.

On 8 February 2024, the Commission published the Revised Notice on the Definition of the Relevant Market to align the market definition with the EU courts' case law, the latest Commission practices, and new market realities, in particular digitalisation and sustainability (77). Notably, the 2024 Revised Notice on Market Definition highlights the importance of going beyond the price parameter to define the relevant markets. In particular, it emphasises the level of "innovation" and the "quality" of services and goods in various aspects, such as their privacy protection and sustainability (78). This is the first time that privacy protection and sustainability are explicitly named as factors in the "quality" parameter of competition (79).

When the competition assessment is based on the level of innovation or quality rather than the price parameter, the SSNIP test is difficult to apply; in particular, the SSNIP test does not work in data-related disputes which are highly innovative contexts of zero monetary price products as we have already seen. To address data-driven challenges, the 2024 Revised Notice on Market Definition suggests using the so-called Small but Significant Non-transitory Decrease of Quality assessment (SSNDQ test) (80).

The EU General Court has recently stated that a precise quantitative measure of the degradation of services and goods is not mandatory for the SSNDQ qualitative test, despite the risk of subjective evaluations (81). It is not feasible to require a precise standard of quality degradation for the SSNDQ test, as it would

(76) The SSNIP test requires verifying whether a Small but Significant Non-transitory Increase in Price (in the range 5% to 10%) could be raised profitably by the economic operator. If an undertaking can raise its price significantly and retain its customers, this means that the market is worth monopolising. On the contrary, if customers switch their purchases to other products, this suggests that the market is at least as wide as the other products and includes those products as well. 1997 Notice on Market Definition (n. 70), paras 15-17.

(77) Commission, *Notice on the definition of the relevant market for the purposes of Union competition law* C(2023) 6789 final (2024 Revised Notice on Market Definition).

(78) *Ibid.*, paras 15, 27, 50 and 90.

(79) Regarding the debate on the difficult assessment of "quality" of services and goods see G. COLANGELO, M. MAGGIOLINO, *Data Protection in Attention Markets: Protecting Privacy through Competition?* (2017), in 8 *Journal of European Competition Law & Practice*, 363; A. EZRACHI, M. E. STUCKE, *The Curious Case of Competition and Quality* (2015), in 3 *Journal of Antitrust Enforcement*, 227.

(80) 2024 Revised Notice on Market Definition (n. 77), para 30.

(81) Case T-604/18 *Google LLC and Alphabet, Inc. v European Commission* (2022) ECLI:EU:T:2022:541, paras 177-180.

render the test overly onerous and impractical to apply. The only requirement is that “the quality degradation remains small, albeit significant and non-transitory” (82). It must also be added that even the SSNIP test requires subjective assessments of the relevant market in certain sectors, particularly in cases where price information about substitutability is unavailable, such as in data-related cases (83). Thus, reductions or improvements in digitalisation and/or sustainability stemming from data-driven ecosystems are, in the view of this author, rightfully included in the 2024 Revised Notice and promise a useful addition to the toolbox of competition assessments.

3.2. *The New Direction of Digital Analytical Shortcuts*

To ensure the coherent (84) consideration of digital and sustainability impacts of data-driven ecosystems, special attention must be paid to their operationalisation. Although market definition is an important analytical tool to identify market power, it is not an end in itself (85). Competition law has to deal with the issue of “spontaneity” (86) to realise the digital and sustainability benefits without distorting the competitive process (87). Given the challenges arising from the complexities of spontaneous order, analytical shortcuts are available to assist individuals and authorities in their decision-making. “Analytical shortcuts” refer to the techniques implemented by competition authorities to accomplish objectives when enforcing competition by streamlining otherwise complex and spontaneous order of events (88). These need to be explored further to determine whether the interplay between digitalisation and sustainability is being properly operationalised.

Such shortcuts, often employed in legal contexts, serve as an alternative approach to time-consuming methods of analysis and decision-making. They encompass a diverse range of tools and procedures that have the capacity to rationalise and simplify competition enforcement (89). Competition enforcement includes a range of tools and procedures, such as notices, guidelines, block

(82) Ibid., para 180.

(83) WHISH, BAILEY (n. 69), 35.

(84) WOLF SAUTER, *Coherence in EU Competition Law* (Oxford University Press 2016).

(85) WHISH, BAILEY (n. 69), 46-48.

(86) Vincent Ostrom used the term “spontaneity” to mean that “patterns of organization within a polycentric system will be self-generating or self-organizing” in the sense that “individuals acting at all levels will have the incentives to create or institute appropriate patterns of ordered relationships”. P. D. ALIGIGA, V. TARKO, *Polycentricity: From Polanyi to Ostrom, and Beyond* (2012), in 25 *Governance*, 246-247.

(87) LIANOS (n. 61), 9-10.

(88) Compare with A. KALINTIRI, *Analytical Shortcuts in EU Competition Enforcement: Proxies, Premises, and Presumptions* (2020), in 16(3) *Journal of Competition Law & Economics*, 392-393.

(89) Ibid.

exemption regulations, commitment procedures, statements of objections and interim measures. These tools and procedures simplify the enforcement process using “premises”, “proxies” and “presumptions” (90). This following section investigates the extent to which analytical shortcuts operationalise the interplay between digitalisation and sustainability of data-driven ecosystems.

Regarding the recent guidelines on cooperation agreements, it is noteworthy that the EU’s approach consists of an increased relaxation of competition rules to strengthen the interplay (91). Specifically, dual distribution vertical agreements having been exempted from the usual prohibitions imposed by competition law in certain cases. Dual distribution typically involves suppliers selling services or goods both upstream and downstream, thereby competing with their independent distributors (92). In such cases, the potential negative effects of the vertical agreement on the competitive relationship between the supplier and buyer at the downstream level are deemed less significant compared to the potential positive impact on competition in general (93). Similarly, data-sharing between suppliers and buyers can enhance the pro-competitive effects of vertical agreements, particularly in optimising production and distribution systems. However, the exchange of certain information may raise concerns about horizontal competition (94). As a result, data-sharing between suppliers and buyers in a dual distribution scenario is exempted only when the exchange of information is directly linked to the implementation of the vertical agreement and is necessary for enhancing the quality of the production or distribution of services and goods (95).

(90) “Premises” refer to normative and positive assertions or propositions, which form the basis for a choice or a theory. They shape competition enforcement in many ways. For instance, the dominant premises steer administrative action and lead authorities to develop policy priorities. “Proxies” may be defined as metrics adopted to provide indirect and imperfect approximations of the investigated issues. They have two important roles in competition enforcement: adjudicators use them to draw inferences from the available evidence and to develop filters and screens with a view to demarcating lawful from unlawful conduct. Finally, “presumptions” allow for an unknown fact to be deemed as demonstrated based on proof of another fact. They enable the actor with the burden of persuasion concerning an issue to provisionally discharge it by providing proof of another issue to the standard of proof. Although premises, proxies, and presumptions are distinct, they are used in combination as well as in parallel. Moreover, they may well be replaced over time in line with developments in knowledge and shifts in the contextual environment within which competition is enforced, such as digital and sustainable contexts. See KALINTIRI (n. 88), 396-398.

(91) Guidelines on horizontal cooperation agreements (n. 68); Guidelines on vertical restraints (n. 68).

(92) Commission Regulation (EU) 2022/720 of 10 May 2022 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to categories of vertical agreements and concerted practices (2022) OJ L 134/4, (VBER), Recital 12.

(93) Guidelines on vertical restraints (n. 68), paras 8, 144 and 316.

(94) Guidelines on horizontal cooperation agreements (n. 68), Section 6.

(95) VBER (n 92), Recital 13.

The latest updates of State aid controls share similarities with the new direction of antitrust rules (96), advocating for the allocation of public and private investments towards digital and sustainable infrastructures. The aim is to enable breakthrough innovations and the necessary large-scale investments to meet the twin transitions' targets (97). This approach will facilitate the allocation of resources towards projects that favour innovation, digitalisation and sustainability, ultimately leading to the development of more sustainable data-driven ecosystems. Similar to the initiatives on cooperation agreements, the revision of State aid frameworks equates to an increased relaxation of prohibitions (98). For example, based on Article 107(3) TFEU, the Commission can approve public investments funding multi-purpose data infrastructures to support the interaction between digitalisation and sustainability (99).

Even though the tools and procedures mentioned above will be at the centre of the interplay between digitalisation and sustainability of data-driven ecosystems, the legal and economic reasoning must also evolve accordingly. Competition enforcement can help bring together the digital and sustainable impacts of data-driven ecosystems. This section has already delineated how the normative premises of competition enforcement are going to consider innovation, privacy protection and sustainability. Similarly, economic analysis regarding the pro- and anti-competitive effects of this interplay should be elaborated. In the author's opinion, neither economic analysis nor competition law are independent of normative influence (100). Therefore, economists should also consider the multiple goals of EU competition law, particularly the contemporary goals of data protection and sustainability that currently stand out in competition policy, regulations, and tertiary measures.

With normative and economic premises serving as cornerstones, it becomes imperative to delve deeper into proxies that gauge the potential for digital and sustainability degradation or enhancement by data-driven ecosystems. The enforcement of competition law relies on many general concepts that are difficult to establish directly, such as "restriction", "abuse", "indispensability", and others (101). For instance, the "indispensability" criterion of anti-competitive agreements necessitates a proxy that can effectively demonstrate situations where companies'

(96) For instance, see Regulation (EU) 2021/1153 of the European Parliament and of the Council of 7 July 2021 establishing the Connecting Europe Facility and repealing Regulations (EU) No 1316/2013 and (EU) No 283/2014 (2021) OJ L 249; Commission Regulation (EU) 2021/1237 of 23 July 2021 amending Regulation 651/2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (2021) OJ L 270.

(97) A competition policy fit for new challenges (n. 26), 17-18.

(98) Ibid.

(99) Regulation (EU) 2021/1153 (n. 96), Recitals 1 and 43, as well as Articles 8 and 9; Commission Regulation (EU) 2021/1237 (n. 96).

(100) Ezrachi (n. 45), 15-16 and 22-23.

(101) KALINTIRI (n. 88), 401.

incentives to innovate may be undermined (102). Within data-related disputes, an opportunity exists to interpret this requirement through the lens of digital and sustainable considerations, thereby fostering the interplay of sustainable data-driven ecosystems.

Finally, rebuttable presumptions imply that conducts are presumed to be anti-competitive unless the undertakings challenge this conclusion by providing “supporting evidence” (103). Obstacles to data-sharing practices that exert adverse effects on digitalisation and sustainability ought to be deemed unlawful, putting the onus on undertakings involved to provide an evidence-backed challenge justifying the conduct. In cases where the effect of data-related practices is uncertain, recourse to commitment procedures, statements of objections and interim measures can be helpful for implementing and monitoring ongoing solutions with the involvement of stakeholders and third parties (104).

4. Conclusions

In this chapter, data-driven ecosystems are investigated as a form of governance that empowers businesses, consumers, and other stakeholders to make informed and sustainable choices. These ecosystems operate without unified governance and are seen as crucial enablers in delivering the twin transition strategies for the EU’s digital and green transformations.

The EU’s approach is likely to lead to an increased use of data that provides solutions for economic development, social challenges, climate change and environmental issues. However, in line with the interplay between digital and green transformations, data-driven ecosystems must prioritise sustainability. Consequently, sustainable data-driven ecosystems face two challenges that can at times be interrelated: the first challenge concerns the environmental impacts of increased energy and water consumptions, as well as higher greenhouse gas emissions. The second challenge regards the reluctance of businesses to share the data they have collected.

The twin transitions require the alignment of all EU policies, including competition policy. Consequently, competition policy and enforcement are being revised to complement the EU’s regulatory initiatives. This chapter has reflected

(102) *Ibidem*, 402; WHISH, BAILEY (n. 69), 162-173.

(103) See e.g., Case C-413/14 P *Intel v. Commission* (2017) ECLI:EU:C:2017:632, para 138; see also Case 62/86 *AKZO v. Commission* (1991) ECLI:EU:C:1991:286, para 60.

(104) With regard to the procedures for the acceptance of commitments and adoption of interim measures, see Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (2003), OJ L 1, Recitals 11 and 13, as well as Articles 5, 8 and 9. For an example of implementation at national level, see the Italian Law of 10 October 1990, n. 287 - Norme per la tutela della concorrenza e del mercato, Articles 14-*bis* and 14-*ter*.

on the complementary role of competition law in tackling the two challenges of sustainable data-driven ecosystems and ensuring the transitions' targets. The revision process suggests that the flexibility and case-by-case approach of competition policy and enforcement can encourage investments in the necessary technologies and collaborative practices to support the transitions' priorities. Additionally, they can incentivise businesses to use data resources efficiently, avoid stranded assets, and innovate their production processes for greater digitalisation and sustainability. However, to fully leverage the potential of sustainable data-driven ecosystems without distorting competitive markets, it is necessary to consider competition in the transition initiatives and ensure that the competitive process includes the broader perspectives of the transitions.

It appears that the transitions are now being considered in EU competition law. This is particularly apparent in the 2024 Revised Notice on the Definition of the Relevant Market that considers sustainability and privacy protection as part of the "quality" of goods and services in competition assessments. Other analytical shortcuts have also been revised to take into account sustainability and digital considerations. For instance, guidelines and block exemption regulations have been revised to support individuals and authorities in their decision-making. However, the legal and economic reasoning affected by these analytical shortcuts must also consider the interplay between digitalisation and sustainability of data-driven ecosystems. The author suggests that economic premises, proxies, and rebuttable presumptions should evolve accordingly to fully consider the potential of sustainable data-driven ecosystems in competition enforcement.