

Stöhr, Annika; Budzinski, Oliver

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**The Dynamics of Market Boundaries and the Role of Systemic
Market Power**

Annika Stöhr & Oliver Budzinski

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Institute of Economics

Ehrenbergstraße 29
Ernst-Abbe-Zentrum

D-98 693 Ilmenau

Phone 03677/69-4030/-4032

Fax 03677/69-4203

<https://www.tu-ilmenau.de/iedp/>

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The Dynamics of Market Boundaries and the Role of Systemic Market Power

Annika Stöhr & Oliver Budzinski

Abstract: Identifying the boundaries of a market belongs to the important practices in most areas of antitrust and competition policy. While they are established practices for market definition and delineation, dynamic processes of competition and the new phenomenon of (digital) ecosystems of markets provide new challenges: market boundaries become (i) inherently dynamic and subject to evolutionary change, as well as (ii) subject to the deliberate design of powerful companies. Therefore, the prediction of post-event effects – e.g., competitive effects of a merger or such of an abuse of market power – may fail if they rely on a static or stationary market definition. If market boundaries change inherently through dynamic market competition, identifying these boundaries and their evolution becomes an integral part of a dynamic approach to competition policy – and not just preparatory work. Furthermore, if companies enjoying systemic market power in ecosystems (like e.g., cross-market power) and, thus, the power to shape market boundaries and deliberately change (previous) market delineations, then the identification of market boundaries cannot be viewed independent of the exploitation of market power. Both dynamics of market boundaries require a strongly different approach to market definition than the one of the Commission’s 2024 Market Definition Note.

Keywords: dynamic market boundaries, market definition, market delineation, antitrust, competition policy, industrial economics, dynamic competition, digital ecosystems, merger control, systemic market power, cross-market power

JEL-Codes: D40, K21, L10, L40, L86

1. Introduction

The identification of the boundaries of markets affected by potentially anticompetitive conduct and arrangements – the “relevant market” – is traditionally viewed as an important preparatory work for the effects analysis, which eventually establishes violations of competition rules.¹

In addition to its function as a fundamental instrument for deriving metrics such as market shares, the identification of market participants and the subsequent assessment of competition intensity and the nature of competitive relations, the identification of market boundaries also serves to pre-classify types of anticompetitive conduct and arrangements. For instance, a horizontal merger or acquisition (the companies are active on the same relevant market) is presumed to be potentially more harmful than a vertical merger (the companies are active on markets of different stages of the same supply chain) or a conglomerate merger (the companies are active on unrelated markets). Consequently, horizontal transactions generally receive more attention from competition authorities, while vertical and conglomerate transactions are required to meet more ambitious de facto standards of proof of anticompetitive effects. The same is true for other areas of competition policy, albeit to a lesser extent.

It is standard practice to identify market boundaries once and then adhere to these boundaries throughout the overall procedure. Thus, there is the tacit assumption that market boundaries remain constant in the course of anticompetitive conduct, or are not subject to alteration at the deliberation and power of market participants. Instead, market boundaries are generally

¹ See, inter alia, R. Pitofsky, ‘New Definitions of Relevant Market and the Assault on Antitrust’ (1990) 90(7) Columbia Law Review 1805, 1807; S. Bishop and M. Walker, *The Economics of EC Competition Law: Concepts, Application and Measurement* (3rd edn Sweet & Maxwell, London 2009) 107-111; M. Eben, ‘The Antitrust Market Does Not Exist: Pursuit of Objectivity in a Purposive Process’ (2021) 17(3) Journal of Competition Law and Economics 586; M. Eben, ‘A Renewed Vision of Market Definition’s Importance’ CREATE Working Paper 2024/9; L. J. White, ‘The Dead Hand of *Cellophane* and the Federal Google and Facebook Antitrust Cases: Market Delineation Will Be Crucial’ (2022) 67(1) The Antitrust Bulletin 113-129; European Commission, Communication C/2024/1645: Commission Notice on the definition of the relevant market for the purposes of Union competition law, 2024, ‘Notice’.

regarded as static or at least stationary.² While this may be a workable assumption for many traditional cases, we argue in this paper that, particularly in the context of the digital economy, two types of dynamics of market boundaries are important for antitrust cases and require attention.

- (I) Firstly, markets boundaries inherently change in the context of dynamic competition processes. While this evolution of market boundaries may typically be technology-driven and occur in the long-run, periods of heightened competition dynamics and disruptive innovations can render such changes into a relevant phenomenon for antitrust interventions into such processes. As we will further explore, the dynamic process of digitization goes along with a relevant frequency of changes of market boundaries.
- (II) Secondly, especially in the context of digital ecosystems, market boundaries may become subject to the deliberate design of powerful companies. Consequently, market boundaries (and thus the “market definition”) can become a strategic parameter of competition itself, which can be subject to anticompetitive abuse.

Market structures within digital ecosystems are characterised by a high degree of complexity and generate some novel as well as some known but intensified anti-competitive effects. These effects occur due to the so-called *ecosystem power*³, which has been a subject of considerable

² See, inter alia, J. S. Bain, *Industrial Organization* (2nd edn Wiley, New York 1968); G. J. Stigler and R. A. Sherwin, ‘The Extent of the Market’ (1985) 28(3) *Journal of Law and Economics* 555; Pitofsky (fn 1); D. W. Carlton, ‘Market Definition: Use and Abuse’ (2007) 3(1) *Competition Policy International*, 3; L. Kaplow, ‘Market Definition’ in: R. D. Blair and D. D. Sokol (eds), *The Oxford Handbook of International Antitrust Economics* (Oxford, OUP 2015) 345-363; *European Commission* (fn 1). These sources do not explicitly address the question of static or dynamic market boundaries; however, they implicitly assume their static character in the context of antitrust cases. Note that this does not imply that these sources claim that market boundaries never change over time; they merely assume them to be static within the time context of an antitrust case. For further insight into the dynamics of market boundaries in the antitrust context, see R. Podszun, ‘The Arbitrariness of Market Definition and an Evolutionary Concept of Markets’ (2016) 61(1) *The Antitrust Bulletin* 121.

³ See, e.g., M. G. Jacobides and I. Lianos, ‘Ecosystems and competition law in theory and practice’ (2021) 30 *Industrial and Corporate Change* 1199; P. Van de Waerdt, ‘Everything the Data Touches Is Our Kingdom’: Market Power of ‘Data Ecosystems’ (2023) 46 *World Competition* 65; I. Lianos, ‘A Law and Political Economy Approach to Ecosystems and Competition Law’ (2024) CLES Policy Paper Series 2/2024.

discussed in recent literature. It differs significantly from the traditional types of market power in terms of both the way it arises and its resulting effects (see section 3). The ecosystem-inherent interdependencies and novel type of market power pose considerable challenges for market definition as a conventional starting point of antitrust case analysis⁴, which are addressed in this paper. Here, we use the term *systemic market power* in lieu of the frequently used term *ecosystem power*. We believe this term more accurately captures the existing dependencies and interactions within a (digital) ecosystem and the resulting market power, which are highly relevant for the analysis of its causes and effects.

The European Commission's 2024 Market Definition Notice ('Notice') specifically addresses the mentioned challenges of identifying market boundaries on digital platform markets as well as in digital ecosystems⁵, whereby the Notice uses the definition of the term ecosystem based on the 2022 judgement of the General Court in Google and Alphabet vs. Commission: 'in a digital "ecosystem" [...] the products or services which form part of the relevant markets that make up that ecosystem may overlap or be connected to each other on the basis of their horizontal or vertical complementarity. Taken together, the relevant markets may also have a global dimension in the light of the system that brings its components together and of any competitive constraints within that system or from other systems.'⁶

The Notice first addresses the complexities of market definition inherent to multi-sided markets, where platforms facilitate interactions across different user groups. These multi-sided platforms give rise to interdependent demand, whereby the demand of one user group exerts an influence on, and is itself subject to influence by, the demand of other demand groups. This phenomenon

⁴ V.H.S.E. Robertson, 'Antitrust market definition for digital ecosystems' (2021) N° 2-2021 Concurrences; D. A. Crane, 'Defining Relevant Markets in Digital Ecosystems' (2024) 7 JLI 10; K. Stylianou and B. Carballa-Smichowski, "'Market" Definition in Ecosystems' (2024) JAE, <https://doi.org/10.1093/jaenfo/jnae046>.

⁵ *European Commission* (fn 1), para 4.4, 4.5.

⁶ Judgment of 14 September 2022, Google and Alphabet v Commission, T-604/18, EU:T:2022:541.

is exemplified by indirect network effects. It is not uncommon for platforms to take these effects into account when establishing the terms and conditions of their services. According to the Notice, in defining markets, the Commission may adopt a holistic or segmented approach, defining a single market that encompasses all user/demand groups or separate markets for each side. The selection of this approach is contingent upon the specific circumstances, such as the existence of distinct substitution options or the multi- or single- homing behaviour of users. The decision is influenced by factors such as the type of platform (e.g., transaction vs. matching platform). When evaluating competitive dynamics and market definition, indirect network effects shall always be considered. Pricing strategies are also distinctive in the context of digital platforms, where one side may be offered a monetary price of zero or even a negative price point with the objective of stimulating demand of another demand group. However, the Notice confirms that the presence of zero prices does not preclude the relevance of the market in question. Instead, the assessment of substitution is contingent upon the consideration of non-price factors, including product features, switching costs, and interoperability. In lieu of the SSNIP test, the Commission may utilize the SSNDQ test (small but significant non-transitory decrease in quality) as an alternative in zero-price markets.⁷

In combination with the discussion of ecosystems, the Notice addresses aftermarkets, which pertain to instances where primary products lead to the consumption of connected secondary products. These secondary products are often treated as part of a combined or "system market". The Notice offers an alternative approach to market definition of these markets by defining separate markets (dual or multiple) based on the degree of substitutability and lock-in effects. According to the Commission, a system market approach is preferable when consumers consider long-term costs across primary and secondary products, when secondary products possess high value, or when switching costs are low. Digital ecosystems are only addressed

⁷ *European Commission* (fn 1), para. 4.4.

shortly within the Notice and are therein defined as often consisting of a primary product linked with secondary digital products. In regards to market definition, according to the Notice, the Commission may apply similar principles as with aftermarkets, especially where interoperability and bundling of products occur. The relevant market boundaries should be informed by network effects, switching costs, and the multi- or single-homing behaviour of consumers, which are supposed to accommodate the unique characteristics of digital ecosystems and the potential for distinct, bundled, or integrated market definitions.⁸

Thus, the Notice does not consider any dynamics of market boundaries – in line with most of the literature. Going beyond this, our paper examines the nature and implications of dynamics of market boundaries, addressing its changing character and relevance especially in digital ecosystems. In doing so, we first discuss the nature of identifying market boundaries and propose, for analytical purposes, a differentiation between market definition and market delineation (section 2). We then portrait the economic characteristics of ecosystem markets (section 3). From an economic standpoint, competition policy should account for the broader economic power arising from cross-market interdependencies. Traditional approaches to identifying market boundaries often fall short in capturing market power within these complex structures. We emphasise the relevance of adapting the competition toolkit by discussing the power over market boundaries that might result from systemic market power of (digital) ecosystems (section 4). Based on this discussion, we propose recommendations for aligning the Notice and competition policy in general with the demands of this evolving landscape and conclude with recommendations to integrate systemic market power, focusing on cross-market effects, rather than impacts confined to narrowly defined markets (section 5). Expanding the scope to include systemic market power will enable competition analysis and enforcement to better address the broader economic implications of this novel form of market power, moving

⁸ *European Commission* (fn 1), para. 4.5.

beyond the limitations of conventional market definitions and delineations and addressing the ability of ecosystem companies to exert influence over the shaping of market boundaries.

2. The Role of Identifying Market Boundaries: An Economic Perspective

In modern economics, a market is a hypothetical place where supply and demand meet, i.e., sellers and buyers exchange goods. In (undergraduate) textbook economics, a market for a given good is assumed and the interaction of supply and demand is analysed in the famous perfect competition model, identifying market forces as a decentralized coordination device forcing supply and demand towards each other until equilibrium is reached. Forces external to this highly abstract model – such as (innovation) dynamics, heterogeneities of any kind, participants' strategies, environmental shocks, etc. – permanently drive supply and demand away from each other, renewing the coordination task and highlighting the importance of the decentralized, self-organizing coordination force of markets for the economy and the welfare of society.⁹ In this model world, there is no need for market definition or market delineation: the market boundaries exist by assumption.

However, in the (real) world of antitrust (cartel policy, abuse of dominance, merger control), several complications arise, which underscore the necessity of identifying market boundaries. While the terms 'market definition' and 'market delineation' are often used interchangeably in the literature, it makes sense for the purposes of our research to introduce a distinction:¹⁰

- Market delineation is the empirical identification of the boundaries of an analysed market at a given point in time. As such, market delineation relates to the degree of the substitutability of goods, i.e., how perfectly one good serves as a substitute for another good in the eyes of the user/consumer. As will be explained below, goods are usually

⁹ See for a modern discussion of these fundamental concepts O. Budzinski and A. Stöhr, 'Perfect Competition, Market Power, and Contestability' (2024) 29(189) Ilmenau Economics Discussion Papers.

¹⁰ To the best of our knowledge, there are no examples of similar distinctions in the literature.

imperfect substitutes to each other with strong variations of the degree of substitutability, often measured by cross-price elasticities. The question is which goods belong to the same market and which fringe goods are just outside the market (i.e. belong to a different market). In order to identify the boundaries of a market, some kind of artificial threshold needs to be employed, for instance, some minimum value of the pairwise cross-price elasticities or some exogenously defined threshold for whatever indicator is used (SSNIP-test, etc.).¹¹ These thresholds are artificial in the sense that they cannot be derived from economics; nevertheless, they may provide sensible orientation for the extent of the market. Ultimately, every good may become a substitute to any other good if, for instance, ability-to-pay is introduced into the analysis along with the standard willingness-to-pay.¹²

- In contrast to the empirical analysis of the status quo, a market definition – for our research purposes – is a purpose-built definition (= agreement, convention) of the extent of the market. A market is defined according to a purpose and its boundaries are determined so that certain interrelations can be focused on and demonstrated. In the field of business economics, defining markets is a standard practice and typically relates to companies determining strategic target groups which they want to attract as consumers/customers. Contrasting (empirical) market delineation with (purpose-built) market definition may then serve to readjust company strategies. For regulatory authorities, market definition may relate to defining a frame for company interactions where certain (pro- or anticompetitive) effects can be demonstrated or made visible.

¹¹ See for a guideline to the empirical task of delineating markets G. Werden, 'Four Suggestions on Market Delineation' (1992) 37(1) *The Antitrust Bulletin* 107. For a general economics-based analysis of market delineation, see, e.g., *Kaplow* (fn 2).

¹² At the end of the day, the income is spent on a basket of goods and c.p. adding one good requires giving up another. Joan Robinson emphasised this aspect. See J. Robinson, *The Economics of Imperfect Competition* (Macmillan, London 1933).

According to this distinction, which has definitory character and does not intend to constitute a theory in itself, market delineation may be preparatory work for an effects analysis, whereas market definition may be an integral element of the effects analysis. We will further explain this in section 4. To this end, our definition of market delineation corresponds to a classical economics-based identification of market boundaries (“economic market definition”), whereas our definition of market definition corresponds to a classical legal approach to market boundaries (“legal market definition”). Notwithstanding, and as explained in the definitions above, there may also be business (economic) applications of market definitions and legal applications of market delineation.

Both market delineation and definition may relate to three dimensions: delineating or defining markets

- according to goods characteristics: relevant product market,
- according to geographic reach: relevant geographic market, or
- (less frequently) according to the time of offer: relevant time market.¹³

Exercises regarding the first two are common to most antitrust analyses and relevant to most antitrust cases. The third dimension, however, is only invoked in exceptional cases.

Empirically delineating markets for subsequent antitrust analysis comes with (at least) two significant challenges: (i) heterogeneity of goods and markets and (ii) inherent dynamics of the competition process. First, market delineation will always be imperfect and subject to more or less arbitrary thresholds when goods are heterogeneous. In economics, goods are heterogeneous

¹³ For instance, in countries where regular shops are not allowed to operate 24 hours a day, but special shops in gasoline stations, train stations, or airports are permitted to do so, the intensity of competition may be subject to variation between regular opening hours and closing time. See on the German gasoline market, J. Haucap, U. Heimeshoff and M. Siekmann, ‘Fuel Prices and Station Heterogeneity on Retail Gasoline Markets’ (2017) 38(6) *The Energy Journal* 81. See for the possible interrelation of product and geographic market delineation N. Haldrup, P. Møllgaard and C. K. Nielsen, ‘Sequential versus Simultaneous Market Delineation’ (2008) 4(3) *Journal of Competition Law and Economics* 893.

as soon as customers have preferences about sellers, i.e., they care about from whom they are buying the good. Thus, heterogeneity may be rooted in product differentiation, i.e., different functions or characteristics of goods serving similar needs of customers, but also in brands and (other) subjective differences. A green shirt may meet a significantly higher willingness-to-pay from certain consumers when it is produced or sold by an *en vogue* brand than an otherwise identical green shirt by a lesser-known seller/producer. This alone is sufficient to constitute a heterogeneous good.¹⁴ Markets with heterogeneous goods differ from those described in undergraduate textbooks, as goods have different prices, margins above marginal costs are a natural outcome (and not necessarily an anticompetitive exploitation of market power¹⁵), and marginal price changes lead only a few consumers to switch to another supplier. Even more importantly, the pairwise competitive interrelations between companies in such markets differ: some are closer competitors to each other (displaying higher cross-price elasticities) than others.¹⁶ All the good variants in such markets are imperfect substitutes to each other with considerable differences in the substitution elasticity, i.e., the closeness of competition. Delineating the exact boundaries of such markets is extremely difficult and can hardly be done without ambivalence. However, it also does not help much for analysing economic effects because market-delineation dependent indicators, such as exact market shares, lose much of their meaning in such markets.¹⁷ By contrast, the relevant substitution elasticities may be

¹⁴ Homogenous goods are mostly upstream goods like raw materials. Because the identity of the seller does not matter for buyers, these goods are often also sold via stock exchange-style markets where trade is anonymous.

¹⁵ Note that in the green shirt case the higher price of the branded shirt comes with an additional utility for some consumers: belonging to the peers in fashion, prestige, showing up-to-date taste, etc.

¹⁶ A well-known application of this thinking is the unilateral oligopoly effects theory regarding mergers. See, inter alia, L. M. Froeb, S. Tschantz and G. J. Werden, 'Pass-through Rates and the Price Effects of Mergers' (2005) 23(4) *International Journal of Industrial Organization* 703; G. J. Werden and L. M. Froeb, 'Unilateral Competitive Effects of Horizontal Mergers' in P. Buccirossi (ed), *Handbook of Antitrust Economics* (MIT Press, Cambridge 2008) 43-104; B. Keating and R. D. Willig, 'Unilateral Effects' in R. D. Blair and D. D. Sokol (eds) *The Oxford Handbook of International Antitrust Economics* (OUP, Oxford 2015) 466-508.

¹⁷ See, inter alia, J. Farrell and C. Shapiro, 'Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition' (2010) 10(1) *The B.E. Journal of Theoretical Economics* 1; L. Kaplow, 'Market Definition and the Merger Guidelines' (2011) 39(1-2) *Review of Industrial Organization* 107; L. Kaplow, 'Market Definition: Impossible and Counterproductive' (2013) 79(2) *Antitrust Law Journal* 361; L. Kaplow, 'Market Definition, Market Power' (2015) 43 *International Journal of Industrial Organization* 148; L.

measured directly and without reference to an exact market delineation (using cross-price elasticities, diversion ratios, etc.). Therefore, many economists are sceptical about the role of (exact) market delineations in antitrust policy, especially if the unambiguous delineation of the fringe of a heterogeneous market becomes a decisive desiderate for a case decision. Or, in other words, “If market definition is the focus of the case, then something is wrong.”¹⁸

Secondly, the inherent dynamics of the competition process poses relevant challenges to market delineation.¹⁹ If competition is understood as a dynamic process of creative, innovative and adaptive/imitative forces²⁰ or as a process of discovery²¹, then market structure and market delineation become endogenous to this process. While the endogeneity of market structures is well-known in the tradition of the Schumpeter-style of economic thinking²², the endogeneity of market boundaries is less often discussed. However, disruptive innovation, for instance, does

Kaplow, *Rethinking Merger Analysis* (MIT Press, Boston 2024). Carlton calls it “a very crude tool” and concludes that “its best use is to provide safe harbors so that firms in relatively competitive industries are not harassed with senseless antitrust suits” (*Carlton* (fn 2) 4). – Note that the insight of the notorious imperfection of empirical market delineation does not preclude its normative value from a legal perspective (see *Eben* (fn 1)) or its practical value as a cost-efficient pre-structuring of economic interrelations (see *Podszun* (fn 2)).

¹⁸ Mike Walker (CMA chief economist) at the Concurrences Innovation Law and Economics Conference (Apr. 23, 2024); quoted from S. Dnes, ‘Defining AI Markets: Who is Afraid of Digital Ghosts?’ in A. Abbott and T. Schrepel (eds) *Artificial Intelligence and Competition Policy* (Concurrences, Paris 2024) ft. 12.

¹⁹ For (more recent) notions of competition as a dynamic process see, inter alia, W. Kerber, ‘Competition, Innovation, and Maintaining Diversity through Competition Law’ in J. Drexler, W. Kerber and R. Podszun (eds) *Economic Approaches to Competition Law: Foundations and Limitations* (Edward Elgar, Cheltenham 2011) 173-201; G. Federico, F. Scott Morton, and C. Shapiro, ‘Antitrust and Innovation: Welcoming and Protecting Disruption’ (2020) 20(1) *Innovation Policy and the Economy* 125; N. Petit and D. J. Teece, ‘Innovating Big Tech firms and Competition Policy: Favoring Dynamic over Static Competition’ (2021) 30(4) *Industrial and Corporate Change* 1168; W. Kerber, ‘Towards a Dynamic Concept of Competition that Includes Innovation’ (2023) DAF/COMP/WD(2023)42. Paris: OECD; P. Bougette, O. Budzinski and F. Marty, ‘In the Light of Dynamic Competition: Should We Make Merger Remedies More Flexible?’ (2024) *European Competition Journal*, <https://doi.org/10.1080/17441056.2024.2440228>; N. Petit and T. Schrepel, ‘Complexity-Minded Antitrust’ (2023) 33(2) *Journal of Evolutionary Economics* 541; O. Budzinski and A. Stöhr, ‘What effects-based Approach should guide future Article 102 guidelines? - Dynamic competition, exclusionary and exploitative abuses, and Article 102 TFEU: Towards a concept of systemic market power?’ (2024) 4-2024 *Concurrences Art.* N° 121365.

²⁰ J. M. Clark, *Competition as a Dynamic Process* (The Brookings Institution, Washington DC 1961).

²¹ F. A. von Hayek, ‘Competition as a Discovery Procedure’ in F. A. von Hayek (ed) *New Studies in Philosophy, Politics, Economics and the History of Ideas* (University of Chicago Press, Chicago 1968) 179-190.

²² Creative company actions bringing (disruptive) innovation to the markets tend to narrow market structures (in extreme cases down to temporary innovation monopolies), whereas imitative company strategies erode this advantage again, thereby broadening market structures again – and setting incentives for the next creative innovation.

not only change the goods and their characteristics: in doing so, substitution relations change and, thus, market boundaries may change as well. One of the most notable examples is the manner in which computers, digitisation, and the internet have transformed the delineation of numerous relevant product and geographic markets. Older examples include how markets for typewriters first broadened and then melted into personal computer markets (which contain much more goods than just the typewriting part) or markets for calculators changed with first the innovation of computational table calculators and later the innovation of tablets and smartphones. A delineation of pre-table and pre-smartphone markets for cell phones and personal computers looks as outdated from a modern perspective as a market definition of music and/or video distribution pre-streaming services or pre-TikTok. Generally, media content markets, which used to separate markets for newspapers, magazines, music, other audio-visual content, etc., and communication markets, which used to be delineated in telephone markets, postal services, etc., have been changed through dynamic competition. Today, media and communication companies that used to be on clearly different markets compete against each other, inter alia, for advertisers and for the scarce attention of consumers/users. To the best of our knowledge, the focus of the academic discussion, as well as within competition authorities, is predominantly on snapshot market delineation at a certain point in time and not on the evolution of market boundaries.²³

²³ Robertson discusses the manifold ways in which courts and competition authorities have attempted to include innovation-related considerations into market delineation controversies, covering, inter alia, innovation markets, future markets, innovation competition as potential competition, intellectual property rights, as well as innovation incentives on aftermarkets and platforms. She concludes that the role of market definition in dynamic contexts should focus on characterizing markets rather than on providing preparatory work for the measurement of market power. V. H. S. E. Robertson, *Competition Law's Innovation Factor: The Relevant Market in Dynamic Contexts in the EU and the US* (Hart, London 2021). In section 4 of this paper, we go beyond this excellent analysis by directly addressing the inherent dynamics and the evolution of market boundaries, and explicitly analysing the issue of power over designing market boundaries. Our conclusion does not stand in contrast to Robertson's, although we refine the role of market boundary identification further. Podszun sketches the relevance of evolutionary concepts of markets which is close to our understanding of the inherent dynamics of market boundaries but he, as well, does not refer to company power over designing market boundaries. Podszun's conclusion of a more open application of market delineation concepts and tools stands in line with our recommendations, although we further specify the use in dynamic contexts. See Podszun (fn 2).

It has been demonstrated that the identification of market boundaries should be approached with caution and not considered a decisive precondition for antitrust cases. Furthermore, the dynamics of market boundaries have been identified as playing a relevant role, especially in the digital economy. The following discussion will now turn to the phenomenon of systemic market power before a more in-depth analysis is provided of the implications of dynamic market boundaries for competition policy in such industries facing such competition dynamics.

3. Digital Ecosystems, Cross-Market Effects, and Systemic Market Power

The utilisation of the term and concept of ecosystems in competition law and policy has grown tremendously in recent years, both within academic discourse and practical application²⁴ - as most recently seen within the proposals and introduction of novel digital competition regulation in Australia, the U.K. and Brazil.²⁵ Nevertheless, despite the increasing utilisation of the term by policymakers and competition authorities, the precise interpretation of its meaning remains diverse.²⁶ In some cases, the term is used to describe business models, for example those employed by the so-called GAFAM firms; in other cases, it is used to refer to the companies themselves or even to entire markets (e.g., the market for app stores).

²⁴ Inter alia, J. Fuller, M. Jacobides and M. Reeves, 'The Myths and Realities of Business Ecosystems' (2019) MIT Sloan Management Review February 2019; *Jacobides & Lianos* (fn 3); *Robertson* (fn 4); P. Hornung, 'The Ecosystem Concept, the DMA, and Section 19a GWB' (2023) Journal of Antitrust Enforcement, <https://doi.org/10.1093/jaenfo/jnad049>.

²⁵ Australian Government, 'A new digital competition regime – Proposal paper' (2024); U.K. Government, 'Digital Markets, Competition and Consumers Act 2024'; Secretariat of Economic Reforms, 'Digital Platforms: Competition Aspects and Regulatory Recommendation for Brazil' (2024).

²⁶ Inter alia, Autoriteit Consument & Markt, 'Report: Market study into mobile app stores' (2019) <<https://www.acm.nl/sites/default/files/documents/2019-04/marktstudies-appstores.pdf>> accessed 7 November 2024; Eur. Comm., Final report – sector inquiry into consumer Internet of Things, COM(2022) 19 final, January 2022 <https://competition-policy.ec.europa.eu/system/files/2022-01/internet-of-things_final_report_2022_en.pdf> last accessed 7 November 2024; CMA, Mobile ecosystems – Market study final report, June 2020, <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1138104/Mobile_Ecosystems_Final_Report_amended_2.pdf> accessed 7 November 2024; Bundeskartellamt, Fusionskontrolle im digitalen Zeitalter – Herausforderungen und Entwicklungsperspektiven, September 2022, <https://www.bundeskartellamt.de/SharedDocs/Publikation/DE/Diskussions_Hintergrundpapier/AK_Kartellrecht_2022_Hintergrundpapier.pdf?__blob=publicationFile&v=3> accessed 7 November 2024.

From an economic perspective, the market structures encompassed by the ecosystem concept are characterised by increased complexity, manifesting as vertical, conglomerate, and lateral systems. Within these structures, one resulting element of systemic market power is the intermediation power that ecosystems possess. This intermediation power, which is present within and across these platforms, creates multiple economic dependencies which enable abusive behaviour such as self-preferencing, market power leveraging, strategic incompatibilities, and the creation of entry barriers – without the firm necessarily having a dominant position in any individual market, but with the firm being active across several parts of the system (vertical or conglomerate integration). Digital ecosystems typically comprise one or more digital platforms that facilitate the creation or strengthening of cross-market power through the internalisation of the complementary nature of their products and services as well as existing interdependencies.²⁷ Consequently, another element of systemic market power is this cross-market power, enabling firms being present on several markets (which may but do not have to be adjacent or connected in some way) to exploit their financial, data-related, or other forms of power on one market in order to gain a competitive advantage on another. These characteristics makes it challenging to address these issues using “traditional” market power theories.²⁸ The Notice does not include as much (economic) detail in its explanations (see section 1), but it mentions a so-called core product of an ecosystem, which is connected with several complementary goods (commodities, services, contents) through technological or economic links and/or interoperability, and proposes the application of similar principles as when defining aftermarkets and/or potentially bundled goods as a single market within ecosystem market definition.²⁹

²⁷ M. Bourreau, ‘Some Economics of Digital Ecosystems’ (2020) OECD DAF/COMP/WD(2020)89.

²⁸ Robertson (fn 4); Crane (fn 4); Stylianou & Carballa-Smichowski (fn 4).

²⁹ European Commission (fn 1), para 4.5, No. 104.

The specific type of market power occurring within digital ecosystems is different to traditional market power assessment and can be referred to as *systemic market power*. It can be considered as a fourth type of market power, alongside relative (i.e. superior bargaining power), absolute (i.e. single-firm dominance), and collective (i.e. collusive equilibria) market power, that needs to be particularly considered in digital ecosystems – in merger control as well as in abuse control.³⁰ In determining the market power of ecosystem firms, it is imperative to consider their role as an intermediary and a rule maker.³¹ This power originates from the aforementioned interdependencies between the products, services, and contents offered, which are frequently internalized by the firms in a deliberate manner. Consequently, both abuse and merger control must take into account not only the conditions of competition in narrowly defined markets, but also the economic power arising from these broader, cross-market interconnections and interdependencies.

In the context of abuse control, initial adaptations have been implemented or initiated at the EU and member state levels. Given their (economic) particularities, the Commission identifies the emergence of digital ecosystems (understood as a phenomenon of cross-market power; not necessarily using the specific term) as a contributing factor to the development of the guidelines for Article 102 TFEU.³² However, the term and aforementioned concepts remain absent from the draft Guidelines. The Commission has stated in a footnote that, in the context of multisided platforms where two distinct user groups are present, constraints on the market power of the platform operator with respect to one group can also arise from the other group of users on the

³⁰ O. Budzinski, S. Gaenssle and A. Stöhr, ‘Outstanding relevance across markets: A new concept of market power?’ (2020) 3-2020 Concurrences Art. N° 95888; O. Budzinski and A. Stöhr, ‘What effects-based Approach should guide future Article 102 guidelines? - Dynamic competition, exclusionary and exploitative abuses, and Article 102 TFEU: Towards a concept of systemic market power?’ (2024) 4-2024 Concurrences Art. N° 121365.

³¹ H. Schweitzer, J. Haucap, W. Kerber and R. Welker, ‘Modernising the Law on Abuse of Market Power – Summary of the Report’s Recommendations’ (2018) <<https://www.bmwk.de/Redaktion/DE/Downloads/Studien/modernisierung-der-missbrauchsaufsicht-fuer-marktmaechtige-unternehmen-zusammenfassung-englisch.html>> accessed 7 November 2024.

³² J. Crémer, Y.-A. de Montjoye and H. Schweitzer, ‘Competition policy for the digital era: Final report’ (2019) Publications Office of the European Union, Luxembourg, 2-3.

platform, also referring to the Commission's decision regarding Apples App Store.³³ Moreover, the draft asserts that in instances of the existence of aftermarkets, the presence of effective competition in the primary markets may limit an undertaking's market power in the secondary market.³⁴ The draft Guidelines do not make specific mention of cross-market power, intermediation power, and the relevance of interdependencies. However, it is imperative to consider these characteristics as well as the role of systemic market power in the context of abuse control in ecosystem markets, given the inherent challenges in grasping (this type of) market power in such structures using "traditional" concepts.³⁵

At the level of individual member states, this has been partially implemented, for example, by the introduction of Section 19a GWB (Gesetz gegen Wettbewerbsbeschränkungen; German Law against Restrictions of Competition) by German policymakers. The recently introduced instrument empowers the Federal Cartel Office (FCO) to identify undertakings that are of "paramount significance for competition across markets", a determination that extends beyond the conventional notions of market power. This determination is based on a non-exhaustive list of criteria, including the existence of a dominant position of the firm in one or more markets, the access of the firm to competition-relevant data, and the importance of the firm for the business activities of third parties, particularly with regard to their access to upstream and downstream markets. The aforementioned criteria are applied across all relevant markets, which means that relevant sources of power of digital firms are considered as a whole. To illustrate, a firm may hold a dominant or powerful position in market A, possess data resources in market

³³ See on the problem of identifying market boundaries in two- or multisided platform markets, inter alia, L. Filistrucchi, D. Geradin, E. van Damme and P. Affeldt, 'Market Definition in Two-sided Markets: Theory and Practice' (2014) 10(2) *Journal of Competition Law & Economics* 293. There is, however, no standard (tool) for deriving market boundaries in ecosystem-like structures; see, inter alia, *White* (fn 1).

³⁴ Communication from the Commission, 'Guidelines on the application of Article 102 of the Treaty on the Functioning of the European Union to abusive exclusionary conduct by dominant undertakings, Draft' (2024) ("draft Guidelines"), para. 24.

³⁵ *Budzinski and others* (fn 30).

B, and have relative power vis-à-vis upstream firms in market C. All of these factors can be taken into account in determining the firm's potential cross-market power. In the event that a firm is deemed to occupy such a position, the FCO is empowered to prohibit the firm in question from engaging in specific conduct deemed to be particularly detrimental to competition in digital (platform/ecosystem) markets.³⁶ A comparable approach to the identification of cross-market or systemic market power could also be considered for the purpose of regulating anticompetitive conduct under Article 102 TFEU. This approach would more effectively address the complexities of digital ecosystems.

Additionally, a consistent implementation of this concept necessitates the consideration of systemic market power within the context of merger control. Analogous to the aforementioned shortcomings in the enforcement of abuse control regulations – starting with the determination of market boundaries –, merger control suffers from enforcement deficits with respect to non-horizontal mergers and acquisitions with more systemic/conglomerate anticompetitive effects. Competition authorities have long expressed concern over this development, particularly in the context of digital ecosystems.³⁷ Ex ante merger control and ex post abuse control interact systematically: the former is designed to prevent the emergence of market power through external growth, while the latter is designed to sanction the exploitation of market power that has emerged nevertheless (e.g. through internal growth). The prevailing logic of competition rules necessitates that the consideration of systemic market power in the context of abuse control is accompanied by a corresponding adjustment in merger control, such that abuse control sanctions the exploitation of systemic market power, while merger control prevents the emergence of systemic market power through external firm growth. This extension would also

³⁶ A. Stöhr and J. Mendelsohn, 'Durchsetzung des § 19a GWB: Erste Erfahrungen und Verhältnis zum Digital Markets Act' forthcoming in B. C. Becker (ed) *Wettbewerb auf digitalen Märkten* (Nomos 2025).

³⁷ V.H.S.E. Robertson, 'Digital Merger Control: Adapting Theories of Harm' (2024) 20(2) *European Competition Journal* 437.

imply a (re)harmonisation of ex post and ex ante approaches within the competition rules, balancing the complementary concepts of abuse and merger control with regard to the concept of systemic market power.

4. Market Definition, Market Delineation, and Systemic Market Power

The well-known approaches to identifying market boundaries, as outlined in section 2 and forming the basis for the 2024 Market Definition Notice, are inadequate for fully capturing the economic characteristics of ecosystems. A significant limitation of the conventional substitutability approach is its inability to account for the deliberate internalisation of interdependencies and the creation of complementarities between commodities and services (or between different services), which are pivotal to firms' strategic decisions in ecosystem-based markets.³⁸ These internalised interdependencies are particularly evident in digital ecosystems, where firms deliberately organise and design their offerings in ways that encourage cross-product synergies and network effects (but they are, in principle, also existent in more traditional markets just with less frequency and relevance). Nevertheless, this does not imply that competitive pressures from substitute goods, whether within or outside the ecosystem, are an obsolete concept. In the context of mergers or other disruptive changes within a specific ecosystem market, it is essential to assess the ramifications for related markets within this ecosystem. This assessment should encompass the potential alterations in the degrees or types of competition and cooperation with firms situated in other markets of the ecosystem.³⁹ Consequently, rather than adhering exclusively to conventional market definition concepts (and their more or less successful adaptation to novel market phenomena), we propose an ecosystem-based approach to identifying market boundaries.

³⁸ *Stylianou & Carballa-Smichowski* (fn 4).

³⁹ *Ibid*; *Crane* (fn 4).

4.1. The Change of Market Delineation and the Power over Market Boundaries

The pivotal aspect, that it is not yet adequately addressed in the recent Market Definition Notice and that this paper seeks to emphasise is as follows: within digital ecosystems, market boundaries become endogenous and are subject to change and evolution. Our two central hypotheses to be examined in this section are:

- (1) Mergers and acquisitions, as well as other forms of anticompetitive conduct and arrangements in digital ecosystems, endogenously change the boundaries of the affected markets (*natural changes in market delineation*).
- (2) Systemic market power in digital ecosystems encompasses the power to re-design market boundaries to the (anticompetitive) advantage of the powerful company (power-based, *artificial changes in market delineation*).

If one of the distinct characteristics of systemic market power is the power to change/alter market boundaries within the digital ecosystem, this has severe implications for the role of market delineation. In accordance with economic theory concerning heterogeneous and/or dynamic oligopoly markets (see section 2), snapshot market delineation becomes largely irrelevant for the identification of anticompetitive effects. This is particularly evident when a potentially disruptive event, such as a merger within an oligopoly that alters the manner in which companies compete with each other and/or generates or enhances power over market boundaries, is part of the anticompetitive conduct. Another example would be an (exclusionary or exploitative) (ab-)use of systemic market power, forcing other companies within the ecosystem to adapt to new market boundaries and to adjust to the new market delineation. To illustrate this point, consider the impact of Google's dominance in the online advertising sector on the boundaries of the market. By integrating various distinct campaign markets (such as campaign planning, ad design, target group definition and identification, distribution across various digital media types, inclusion of third-party owned content and third-party content

distributors) into a single, interconnected ecosystem, Google effectively alters the market boundaries in a way that is difficult to unravel empirically.⁴⁰ Similarly, “winning” the market for relevant audience access – for instance through search and recommender systems (such as Google Search for general internet search, YouTube for audio-visual content, or the Amazon search and recommendation system for navigating the world’s biggest online marketplace)⁴¹ – enables the core company to re-design its ecosystem to integrate formerly separated services, such as “searching” and “online maps”, “searching” and “price comparisons”⁴², “media consumption” and “communication”⁴³, etc. An older example – before the term ecosystem became popular but with very similar properties – is the collection of Microsoft case from the 1990s and early 2000s, where dominance-based strategies (probably at least partly purposefully) altered the market boundaries of operating systems and application software goods.

Further examples include data markets, which may become more integrated or more separated by antitrust events such as mergers, cartels, or abusive conduct. For instance, markets that are identified as being conglomerate pre-merger by an empirical analysis of market boundaries – even with the most sophisticated methods and the conceivably best data situation – may become vertically or even horizontally interrelated post-merger. This transformation may occur organically through the emergence of options for combining data or the integration of additional

⁴⁰ See, for instance, *European Commission v. Google AdSense* [2019] AT.40411 – 2173 final; *European Commission v. Google Adtech* [2023] AT.40670.

⁴¹ See for the (competition) economics of (algorithmic) search and recommender systems O. Budzinski, S. Gaenssle and N. Lindstädt, ‘Data (R)Evolution – The Economics of Algorithmic Search & Recommender Services’ in S. Baumann (ed.) *Handbook on Digital Business Ecosystems: Strategies, Platforms, Technologies, Governance and Societal Challenges* (Elgar 2022) 349-366; O. Budzinski and M. Karg, ‘Algorithmic Search and Recommender Systems in the Digital Services Act’ (2022) 2(12) *CPI TechREG Chronicle* 1-9; O. Budzinski, ‘Algorithmic Search and Recommender Systems: The Brightside, The Darksides, and Regulatory Answers’ (2021) 0019 *Competition Forum*.

⁴² See in detail *European Commission v. Google Shopping* [2017] AT.39740 – 4444 final.

⁴³ See for Meta’s activities shaping the boundaries of communication markets inter alia E. Deutscher, ‘How to Measure Privacy-related Consumer Harm in Merger Analysis?’ in B. Lundqvist and M. S. Gal (eds) *Competition Law for the Digital Economy* (Elgar 2019) 173-211; A. Helmond, D. B. Nieborg and F. N. van der Vlist, ‘Facebook’s Evolution: Development of a Platform-as-Infrastructure’ (2019) 3(2) *Internet Histories* 123-146.

services and content into existing platforms or it may be the result of strategic actions by the firm post-merger with the goal of reaping rents from their inherent systemic market power. The mergers between Facebook and WhatsApp or Google and Fitbit represent illustrative examples. Acting as a market-internal regulator, the core company of the ecosystem designs and shapes the markets within its system, including establishing boundaries and defining the interrelations between them, which renders (empirical) market delineation inherently evolutionary and endogenous.

Whilst the role of preparatory input for the effects analysis is being lost, (empirical methods of) market delineation may assume a new and different role in analysing mergers and other disruptive conduct and arrangements in ecosystem markets. In his new role, it may become part of the effects analysis. Scenarios of post-merger market delineation evolution, for instance, can become tools to assess potential anticompetitive effects of mergers – and this may become part of the effects analysis itself. In the event of a merger creating power over market boundaries, it becomes relevant to the assessment of that merger to analyse the incentives of the post-merger firm to change market boundaries and the way/direction in which such changes might occur. Different strategic options to alter market delineations within the ecosystem are likely to come with different pro- and anticompetitive effects.⁴⁴

Unfortunately, economic research and economic theory on such phenomena, which ultimately relate to the role of core companies in ecosystems as market-internal regulators that set, enforce, and change the rules of the game – be it in digital marketplaces or within digital communication networks – is still rare. This includes theories of harm from the power-based change of market boundaries. While especially the deliberate integration of formerly separated goods (commodities, services, and contents) may, on the one hand, create customer advantages

⁴⁴ If merger control systems contain several stages with some of them being post-merger, the evolution of market delineation even becomes an effect in itself. See *Bougette and others* (fn 19).

through one-stop shopping, it may simultaneously, on the other hand, increase economic dependence of ecosystem complementors and the potential to exploit them (at the expense of their innovation capabilities and efficiency). Furthermore, dynamic effects must not be overlooked: is the one-stop shopping advantage for customers a permanent one or will it be eroded by a market power-rich (quasi-monopolistic) provider reducing innovation activities, replacing efficiency-orientation with a rent-seeking focus, and gradually turning to the easy way of making profits through the exploitation of consumers (the (in-)famous quiet life of the incontestable monopolist)? Therefore, it may be understandable that the Commission's 2024 Market Definition Notice does not comprehensively address these issues. Nevertheless, these issues are pertinent, and their disregard may result in substantial harm to the process of competition. Emphasizing a more instrumental role for empirical market delineation is also relevant to our understanding of the term market definition as a purposeful act (see section 2).

4.2. Market Definition as a Tool

As argued above, the possession of systemic market power by a firm within a digital ecosystem includes the power to re-design market boundaries to the advantage of the powerful core company. Through the strategic utilisation of this power, the core company may mask and obscure the anticompetitive effects of its strategic actions, for instance following a relevant acquisition, takeover, or merger, or in the context of an abuse of market power. While the concept of systemic market power shifts the focus away from traditional (empirical, snapshot) market delineation, market definition in the sense discussed in section 2 still has a role to play, albeit in a more nuanced way. The employment of a purpose-built market definition can now serve as a valuable instrument for conducting an effects analysis, particularly in the identification of the various components of a given ecosystem and the comprehension of the relationship between products and services within it. Similar to a model in science, market definition may deliberately focus on a certain set of ecosystem interrelations, independent of

and distinct from any empirical market delineation. This enables the isolation and identification of potentially relevant mechanisms for antitrust analysis that might otherwise be obscured by the complexity of the ecosystem. Like models in science that reduce complexity in order to gain knowledge and understanding of the core mechanisms of complex reality, market definition may be considered part of the toolkit for reducing the complexity of an ecosystem-related merger or other strategic action, thereby facilitating the assessment of otherwise too complex non-horizontal effects.⁴⁵ This leads to our third hypothesis:

- (3) Market definition can be an important tool for complexity reduction in order to identify and understand non-horizontal effects within complex ecosystems.

Nevertheless, when assessing systemic market power, it is imperative that market definition is sufficiently flexible to encompass cross-market relationships within the analytical framework. For instance, while market boundaries may still be relevant in highlighting the direct and indirect relationships between goods, the focus should be on the overarching power dynamics that emerge from these interdependencies. In the case of digital platforms such as Apple, Google, and Amazon, the various services offered (e.g., cloud computing, search engines, and digital advertising) are often deeply interwoven, allowing firms to leverage market power in one area (e.g., data) to influence or control others. These shifts necessitate a reconsideration of market boundaries, as the interactions within ecosystems render traditional market definitions less meaningful. Case examples at the EU level, such as the investigation into Google's integration of its shopping services or Amazon's competitive strategies in the cloud and retail markets (self-preferencing), demonstrate how ecosystems strategically challenge and even

⁴⁵ This reasoning stands in line with Podszun's concept of pre-structuring the economic interrelations of a case through market definition but applies this thinking to ecosystem degrees of complexity. See *Podszun* (fn 2).

change the possibilities for conventional (snapshot) market delineation – and therefore might undermine a timely and effective authority decision.⁴⁶

As has been argued here, the possession of cross-market systemic market power enables firms to alter market boundaries in ways that can disadvantage competitors and undermine the competitive process. Firms operating within ecosystems can strategically merge or integrate additional services to create new bundled offerings, effectively “melting” two or more distinct markets into one. This can be particularly harmful when the firm uses its control over one part of the ecosystem to distort competition in another (*within-ecosystem leveraging*). For example, a company that dominates both an operating system and an app store might use its control over app distribution to suppress competition from independent app developers,⁴⁷ even if the app market itself is considered being separate from the operating system market. Such non-horizontal integration strategies are common in digital ecosystems, where firms such as Apple and Google employ strategies to bundle hardware, software, and services, thereby creating challenges for competitors to compete in individual markets and ultimately leading to a reduction in overall competition.

The utilisation of market definition as a tool, with the objective of demonstrating effects, may facilitate the identification of anticompetitive effects and their underlying causes and roots within the ecosystem. Deliberately employing and contrasting diverse analytical market definitions (which may all be empirically un-supported, i.e. empirically “wrong”) can be instrumental in identifying the scenarios in which a certain anti- or procompetitive effect materialises. In other words, this approach can facilitate the identification of the circumstances in which incentives for anticompetitive conduct and arrangements emerge, and those in which

⁴⁶ C. Carugati, ‘How to implement the ban on self-preferencing in the Digital Markets Act’ (2022) Policy Contribution 22/2022, Bruegel.

⁴⁷ See P. Bougette, O. Budzinski and F. Marty, ‘Self-Preferencing and Competitive Damages: A Focus on Exploitative Abuses’ (2022) 67(2) The Antitrust Bulletin 190.

they do not. While the process of evaluating these different scenarios may initially appear intricate (and indeed is not trivial, as it rests on probabilities rather than bullet-proof evidence), it does pertain to the realm of both economic modelling and legal balancing.

The adjustment of the utilisation of market definition as a tool to account for ecosystems and systemic market power would not only render merger and abuse control more effective in the digital economy, but also in traditional industries where firms operate across multiple interrelated markets.⁴⁸ By focusing on cross-market effects, regulators can gain a more comprehensive understanding of how mergers and other potentially anticompetitive conduct and arrangements might reshape competition as a whole, rather than the naturally and dynamically changing markets in question.

5. Conclusion

Our fundamental recommendation, that forms the basis of the derived recommendations for the Market Definition Notice, is, in our opinion, simple and straightforward. In order to maintain the complementary nature of the traditional instruments for the protection of the competitive process, merger control and abuse control should embrace the same concepts of market power. Their complementary character as instruments of competition policy is twofold: on the one hand, (i) merger control as an instrument for the ex-ante prevention of the emergence of market

⁴⁸ A systemic market power approach, which emphasises the competitive dynamics within and across ecosystems, could address such concerns by highlighting the broader impacts of mergers that span multiple product markets. The incorporation of systemic market power and an ecosystem definition within the framework of merger control would render the distinction between horizontal (applied e.g., to the controversial Tetra/Laval merger, ‘beverage packaging’ constitutes the relevant market) and conglomerate mergers (applied to the example, glass, carton, and PET beverage packaging each constitute separate markets) largely irrelevant. In the former case, the traditional SIEC criterion would apply, while in the latter, systemic market power could be used. This example also illustrates that systemic market power phenomena are not limited to digital ecosystems but can also occur within traditional ‘offline’ value chains or conglomerate structures of multimarket industrial firms, where it can be difficult to detect dominance in a single delimited market, but the systemic market power within these firms is exploitable through market powerful positions in various related markets for complementary goods and/or services. Such a broad understanding of the cross-market power concept would improve the effectiveness of competition policy – both, for abuse and merger control – not only with regard to the digital economy. See *Budzinski and others* (fn 30).

power through mergers and acquisitions, i.e., *not* through competition on the merits (such as innovation-based internal growth), and, on the other hand, (ii) abuse control as an instrument for the monitoring of the (anti-)competitive behaviour of powerful companies and ex-post interventions against the abuse of this power. If – rightfully, from an economic perspective – abuse control adds new market power phenomena such as cross-market power in ecosystems or intermediation power in platform markets (both being forms of the broader concept of systemic market power; see section 3), then merger control should do the same. If systemic market power is likely to be abused, then not only the abuse but also the emergence of additional systemic power should be addressed by competition policy.

The phenomenon of digital ecosystems brings (back) more dynamic and evolutionary views of the competitive process to the attention of antitrust analysis. However, analyses in this sense often do not touch on issues of market boundaries, despite emphasising that they should not play any decisive role. This may well lead to insights such as those summarized by Andrew Swan at the 2024 Florence Dynamic Competition Initiative conference (paraphrased by the authors): everything interesting about market dynamics lies outside market definition. While we agree with the assertion that the role of traditional market definition is decreasing with respect to digital ecosystems (or even with respect to dynamic and heterogeneous oligopolies), we see new roles emerging for this tool in the context of the challenges posed by digital ecosystems. They can be visualized with the help of an analytical distinction between (empirical, positive) market delineation and (purpose-driven, normative) market definition (see section 2). The new roles of these tools and meanings of such an understanding against the background of digital ecosystems can be summarized through the three hypotheses we have discussed in this paper:

- (1) Mergers and acquisitions, as well as other forms of anticompetitive conduct and arrangements in digital ecosystems, endogenously change the boundaries of the affected markets (*natural changes in market delineation*) (see section 4.1).
- (2) Systemic market power in digital ecosystems encompasses the power to re-design market boundaries to the (anticompetitive) advantage of the powerful company (power-based, *artificial changes in market delineation*) (see section 4.1).
- (3) Market definition can be an important tool for complexity reduction in order to identify and understand non-horizontal effects within complex ecosystems (see section 4.2).

Overall, this shifts the role of market delineation and definition away from being preparatory work to derive the effects of an antitrust case towards understanding market delineation and definition as part of the toolkit to directly analyse the pro- and anticompetitive effects of mergers and other strategic actions of ecosystem firms. This requires a move away from static/stationary and past-oriented (“snapshot”) concepts and understandings of market boundaries. Instead, we need to embrace the idea of dynamic market boundaries that are subject to evolution, especially in digital ecosystems. When discussing post-merger markets and their boundaries, or the dynamic effects of an exclusionary or exploitative power-based strategy, there may be several scenarios with different probabilities. Rather than them being some kind of externally given fact, market boundaries become subject to the strategic tools used by companies – and as such, subject to systemic market power. Thus, the change and the evolution of market boundaries, and in particular the incentives and scope to change and re-design market boundaries after a merger, become relevant elements of the effects analysis and the assessment of the pro- or anti-competitive character of a given merger or acquisition. Purpose-driven market definitions can serve as complexity-reducing tools, with the capacity to identify pro- or anticompetitive effects, and thereby to support or refute theories of harm. Ultimately, they may be an important part of the toolkit and should not be regarded as a marginal element.

Our analysis of the role and meaning of market boundaries in the complex and dynamic world of digital ecosystems has expanded the issue well beyond the scope of the 2024 Market Definition Notice, which does not do much more than marginally open the tool of “market definition” to progressive understandings and uses (see section 1), albeit in a rather limited way. Nevertheless, we are convinced that our argumentation is necessary and relevant because it relates to an already existing reality and the damage to the process of competition caused by the persistence of pre-digitization ideas and concepts is already happening. Consequently, we advocate for the further opening of the Market Definition Notice to allow for innovative concepts and ideas – supported by further scientific analyses – to be introduced into competition policy. A productive and forward-oriented approach to the “different markets vs. complex product” controversy is relevant to capture and balance the effects of, inter alia, one-stop-shopping benefits (everything within one ecosystem) and anti-competitive effects (everything within one ecosystem under the power of one market-internal regulator firm). An explicit discussion of the implications of systemic market power would certainly be necessary to address the challenges posed by the next generation of digital ecosystem competition.