“Suite dreams”: Market definition and complementarity in the digital age

Complementarity and the digital age

In both merger control and conduct investigations, European competition authorities traditionally begin by defining the relevant product market. This exercise centres on identifying substitution patterns on the demand and supply sides, on the premise that firms constrain one another primarily when they offer close substitutes.

Yet economists have long recognized that not all competitive interactions take this form, as many goods are complements rather than substitutes, i.e. products whose value increases when used together. While discussions of economic complementarities date back at least to the 19th century, the concept remains very much under scrutiny today. In particular, the growing prominence of digital ecosystems in modern economies has renewed attention as to how complementarities shape competitive dynamics.

This raises fresh questions about the analytical frameworks used in practice to assess competitive dynamics in these industries, and particularly to delineate digital markets. For example:

> *When complementary pieces of software are sold within a suite, under what conditions should they be seen as a bundle of separate products, a single “system” competing with other suites, or a combination of the two?*
>
> *In digital ecosystems that combine hardware devices and software, where should market boundaries be drawn? Should hardware devices, their operating systems, and ancillary software services (e.g. stores, cloud storage, AI assistants, etc.) be treated as part of the same “system” market?*
>
> *Are the tools currently at our disposal fit for purpose? In particular, is the traditional HMT logic able to factor complementarities into the assessment of competitive dynamics within digital ecosystems and product suites?*

These questions can have significant practical repercussions for conduct and merger review cases. For example, when platforms develop complement services, or acquire these from third parties, are the platforms merely adding new features to an existing product, or are they expanding into an adjacent market?

Like many aspects of modern antitrust, the answers to these questions will differ on a case-by-case basis and a general approach is still being developed by ongoing cases. In this paper we explore the economics underlying recent merger and abuse of dominance cases involving complementary products or services and highlight several common themes.

Problematic cases will hardly involve single markets for wide suites, bundles, or secondary and primary markets, but rather focus on "where the line is drawn."[1] It is not a surprise that most high-profile antitrust matters where market definition played a pivotal role (*Microsoft/Activision, Booking/eTraveli, Facebook Marketplace, Microsoft Teams*,[2] *etc.*) all concluded that the complementary products at hand belonged to different relevant markets. Using traditional theories of harm to assess antitrust and merger cases, agencies will have to identify at least one narrow market for a suite functionality, a secondary product, or a bundle component to be the subject of a potentially anticompetitive strategy or merger-specific effects. Indeed, very few decisions have identified a single "system" or "cluster" market. Instead, most, if not all, attempt to draw a line on where agencies believe the core suite or bundle ends and the market for other complements begins.

To draw the line, agencies are likely to investigate both demand and supply aspects of integration efficiencies and transaction complementarities. Recent cases show how significant consideration has been given to, on the demand side:

The heterogeneity of consumer demand across multiple combinations of different products, functionalities, and services often offered in a bundle or suite;

- The existence of mix-and-match behavior; and
- The benefits (and costs) of product integration.

While on the supply side, agencies considered:

- The heterogeneity of product ranges and functionalities – including whether they are characterized by similar types of network effects or regulatory constraints; and
- The degree of supply side substitutability across different components of a suite or across different secondary products for the same durable good; and
- The degree of interoperability across products and "lock-in" effects for consumers who pick a certain platform or durable good before adopting secondary or ancillary products.

---

1 The focus of this paper is primarily on competition concerns involving conglomerate or leveraging theories of harm.

2 The European Commission published no official decision for its investigation in Microsoft Teams at time this manuscript is being written, but as we argue below, the commitment is consistent with the Commission having identified a separate market for Teams and its competitors.

The HMT can still be implemented in the context of complementary goods, but standard SSNIP-based approaches require specific adjustments. The HMT asks what consumers would do if a hypothetical monopolist of product A were to increase the price of product A above the competitive level. By doing so, the HMT aims to elicit the strength of the "cross product" price elasticity of demand to establish whether product A competes with other products and if so which ones. However, naively applying this logic to two complementary products, A and B, would always suggest that they belong to separate markets because there is (by definition) no demand-side substitution between complements. This answer cannot be right. Some complementarities are so strong that complements become part of a single "system," as is the case of perfect complements (e.g. a right shoe and left shoe) or integrated systems (e.g. many components of a smartphone). In these cases, the HMT needs to be amended.

The logic laid out in recent decisions indicates that an "adjusted HMT" should aim at identifying whether a bundle, a suite, or combination of complementary products constitute a single relevant market. Assuming the presence of a monopolist provider of the full set of products considered, the HMT's question becomes: what would buyers consider after an increase in price (SSNIP) or a decrease in quality (SSNDQ) for the overall set? Would buyers switch to a combination of point products – a sign of separate relevant markets – or would they rather endure the worsened offering, indicating that competition operates between (eco)systems?

In the remainder of this paper, we discuss the underlying economic concept of complementarities (section II), the analytical frameworks used recently by the European Commission ("the Commission") as well as National Competition Authorities ("NCAs"), including the UK Competition and Markets Authority ("CMA") that have engaged with our questions above (section III), and our concluding remarks (section IV).

The economics of complementary products

Today economists live by two ways of defining goods as complements – one based on prices, the other based on utility.

Two goods, A and B, are complements if the cross-elasticity of demand of good A relative to prices of good B is negative, which means that an increase in prices of good B leads to a fall in demand for good A.[3]

Two goods, A and B, are also complements if the increase in consumption of good A increases the marginal utility derived from consumption of good B.[4] This means that consumption of good B becomes more valuable when exercised in combination with consumption of good A.

These seemingly intuitive definitions cover a surprisingly broad spectrum of situations and industries. At one end of the spectrum are "perfect complements" and complex systems, which only have value when used together – think of a pair of shoes or the many components of a

[3] Hal R. Varian, "*Intermediate Microeconomics: A Modern Approach*" (7th ed., Chapter 6, page 115).

[4] Economists usually characterize this definition as demand "super-modularity." See, e.g. Milgrom, Paul, & John Roberts, "*Rationalizability, learning, and equilibrium in games with strategic complementarities*" Econometrica (1990) and "*The economics of modern manufacturing: Technology, strategy, and organization*" The American Economic Review (1990).

smartphone. At the other end are goods sold to different users – like credit cards and payment terminals for merchants – but which still need to be used in tandem to generate value for their respective users. Between these extremes sit a long list of everyday examples, from hammers and nails to coffee machines and pods, or even movie libraries. For a more detailed discussion of how complementarities operate in practice, see Berry et al. (2014).[5]

What analytical frameworks have agencies used in recent cases?

Competition authorities around the globe have laid out analytical frameworks to think about market definition for complement products. The European Commission ("the Commission") has published three documents informing its approach to market definition: an initial market definition notice in 1997,[6] a Support Study accompanying the Commission's evaluation of the market definition notice in 2021 ("the Support Study"),[7] and a revised market definition notice in 2024 ("the Revised Notice") – which acknowledges digital platform market definition specifically.[8] Two general frameworks result from these documents and associated decisions by the Commission and NCAs. These are the **cluster (or ecosystem) markets framework** for bundles and product suites, and the **aftermarkets framework** for durable goods that require the use of ancillary products or services.

The Cluster (Or Ecosystem) Market Framework

The cluster markets framework asks whether products or services sold in bundles or "clusters" can form a single relevant product market, distinct from the markets in which each individual component is traded.

The framework was first introduced in the United States by the Supreme Court[9] and later acknowledged by the European Commission in the Support Study which notes that products part of a suite may belong to different product markets when "*transactional complementarities are such that consumers do not consider unbundling as a suitable alternative to purchasing the bundled products.*"[10] This may be the case for instance if there is simply no "separate" demand for each part of the suite, or if low levels of interoperability indicate limited competition between the bundle and the supply of individual products or services. In the context of digital bundles and suites, cluster markets are often referred to as "ecosystem" markets.

---

5 Steve Berry et al. "*Structural models of complementary choices*." Marketing Letters (2014). Additional instances include, among others, "aftermarkets" – durable goods that require the use of secondary consumables (e.g. printers and cartridges) – and "dynamic complements" – goods that may be substitutes in a static environment but become complements in a dynamic setting (e.g. TV series on a subscription service or hospital prescriptions and follow-on pharmacy sales).

6 European Commission Notice on the Definition of Relevant Market for the Purposes of Community Competition Law (97/C 372/03).

7 European Commission, DG Comp, *Support Study accompanying the evaluation of the Commission Notice on the definition of relevant market for the purposes of Community competition law, Final Report*.

8 European Commission, Commission Notice on the definition of the relevant market for the purposes of Union competition law (C/2024/1645).

9 See *United States v. Philadelphia National Bank* (1963)

10 See Support Study, supra, note [7], at page 12.

Recent decisions show that one of the criteria used by competition authorities to assess the existence of a cluster/ecosystem market, is whether consumers can substitute an integrated suite with a combination of point solutions from different providers, and whether they do so in practice. In a series of commitment decisions adopted in the first half of 2025, the German Federal Cartel Office ("FCO") illustrated how demand-side substitution patterns can be assessed to determine whether a digital ecosystem constitute one or multiple markets.

In its Commitment Decision B7-25/22-GAS[11] dated April 9, 2025, related to in-vehicle "infotainment" services provided within the Google Automotive Services suite ("GAS"),[12] the FCO concluded that "*each of the services contained in GAS constitutes a stand-alone service, not a non-standalone component of an integrated GAS product.*"[13]

This finding was motivated by the presence of separate demands for each part of the bundle[14] and widespread mix-and-match strategies by car manufacturers.[15] Interestingly, the FCO confirmed that the preference of some users for pre-integrated systems was not sufficient to define a single market for the suite, due to the lack of interoperability constraints between services offered by other suppliers.[16]

In its companion Commitment Decision B7-25/22-GMP[17] also dated April 9, 2025, the FCO reached similar conclusions regarding the services provided to software developers within the Google Maps Platform.[18] The FCO supported its finding of distinct services based on the existence of: (i) demand from buyers (software developers, in this context) for a combination of services from different providers, and (ii) heterogeneity of consumer needs and preferences.[19]

---

11 See full text of the decision on the **FCO website**.

12 See Decision B7-25/22-GAS at paragraph 6 where the Decision describes in-vehicle infotainment systems (IVI systems) which combine mapping services, a voice assistant and an app store (among other services).

13 *Ibid.* at §36.

14 *Ibid.* at §36: "*the types of services in question (map services, app stores and voice assistants) are generally offered and sourced separately on the market*"

15 *Ibid.* at §36: "*Google intentionally deviates from the mix-and-match approach prevailing in the market, which allows vehicle manufacturers […] to choose between services from a number of providers and […] compose an IVI system using several services.*"

16 *Ibid.* at §36: "*The fact that some vehicle manufacturers prefer to source IVI systems as a whole does not negate the presumption that there is a demand for stand-alone services. […] When combining comparable services of different providers in an IVI system, as has so far been the prevailing approach in the market, interoperability between such services is already possible (for example when combining a voice assistant with a map service).*"

17 See full text of the decision in the **FCO website**.

18 See Decision B7-25/22-GMP at §5: "*With its Google Maps Platform (in the following: "GMP"), Google offers access to a range of different map services through interfaces (APIs) or software development kits (SDKs).*" At §10, Decision B7-25/22-GMP distinguishes four categories of services offered by GMP, including maps services, routes services, places services and "environment" services.

19 *Ibid.* at §21 to §25: "*With an increasing number of functionalities offered by an application, there is usually increasing demand to use not only map services from one single provider, but a combination of map services from several providers. In particular, there is a demand to use both GMP services and third-party map services in applications. […] All map services offered differ with regard to at least some details, so that depending on the individual application, one service can be more suitable than the other. It can thus be assumed that apart from the services from the "Places" category, there is also a general demand to integrate both a GMP service and third-party map services into an application.*"

By contrast, the CMA took the opposite view further to its in-depth inquiry into Adobe's (later abandoned) acquisition of Figma. In its Provisional Findings, the CMA defined a relevant market for "all-in-one product design software," excluding point tools delivering only specific product design features.[20] According to the CMA, the evidence collected indicated that the main competitive constraint faced by Adobe and Figma came from other "all-in-one" tools ("*most customers considered all-in-one tools to be the best alternatives to Adobe XD and Figma Design*"[21]) whereas combinations of point tools exerted weaker competitive constraints due to e.g. lower convenience and higher costs.[22]

A second criterion emerging from recent practice is the presence of supply-side substitutability and synergies. Competition authorities have considered whether, even in situations without demand-side substitutability, different functionalities or services offered by the same platform present sufficient heterogeneity to warrant defining separate relevant markets. Three recent precedents stand out in this context.

In its decision to block Booking's acquisition of eTraveli,[23] the Commission concluded that different categories of online travel agents ("OTAs") specializing in flights, hotels or other types of accommodations belong to separate relevant markets despite these services being used as close complements by consumers, and in some instances, being offered by the same provider on the same website. Specifically, the Commission notes that OTAs are not present or equally successful across verticals, that existing OTAs tend to segment their brands across verticals (referring for instance to the segmentation of the Airbnb and HotelTonight brands), and face barriers to expansion due e.g. to differences in regulations.[24] The Commission found that even if some OTAs compete across multiple verticals, competitive dynamics are narrower, and operate at the vertical-level.[25]

Likewise, in its 2025 decision sanctioning Meta for abusing its dominant position in social networking services (*the Facebook Marketplace Decision*), the Commission defined separate markets for personal social networking and online classified advertising services ("OCAS"), despite the two services being offered within the same platform (Facebook.com). This decision relied on considerations focusing on the supply-side, e.g. due to the differences in terms of features offered, and purposes served by, the two categories of services.[26] Specifically,

---

20 UK CMA Adobe/Figma merger inquiry, Provisional Findings report at §7.79.

21 *Ibid.* at §7.77.

22 *Ibid.* at §7.76.

23 Case M.10615 – BOOKING HOLDINGS / ETRAVELI GROUP (2023).

24 *Booking/eTraveli* Decision at §92 to §108. The decision also covers demand-side substitution: §109 to §116 discuss a lack of demand-side substitution between hotel and private accommodation OTA due to differences in prices, duration of stay, generational preferences, etc.

25 In its recent 25-D-06 decision sanctioning Doctolib, the French Competition Authority made similar observations regarding the delineation of separate relevant markets for online medical booking services and remote medical consultation solutions. While the full text of the decision is not available at time this manuscript is being written, the FCA's press release suggests that only the former is characterized by strong network effects while the latter faces specific regulatory constraints.

26 The *Facebook Marketplace* Decision notes at §762 the distinct purposes served by Facebook's OCAS features and social networking features: "*there are significant differences between Facebook's personal social network services and Facebook Marketplace's OCAS for users. While Facebook's personal social network services offer users the possibility to stay in contact and maintain personal relationships with people they know (…), Facebook Marketplace is a platform*

the Commission concludes that, "OCAS and personal social networking services are usually offered separately. Indeed, no other providers of OCAS offer personal social netowkring services to users and there is no other personal social network that offers OCAS."[27]

By contrast, before referring the joint venture project between Pon Netherlands BV and NS Groep N.V. to the national Dutch Competition Authority, the Commission concluded that the different modes of transportation available on Mobility-as-a-service ("MaaS") services (such as Citymapper, Voi, or Uber Transit) are part of the same relevant market. Specifically, the Commission concluded that "*because of the apparent supply-side substitutability of these services […], the retail distribution of (MaaS) transport services through an app is the appropriate product market.*"[28]

A related question is how to delineate the market boundaries for a suite of products and its "add-ons" given the functionalities offered to consumers. In instances of services combining many features, a competition authority might define a single relevant market for a "core" subset of features which users frequently procure as a bundle, and wouldn't substitute for point solutions, and separate markets for "add-on" features.

However, the decisional practice around this question is less revealing. In two recent investigations into tying allegations against Meta and Microsoft, the Commission may have engaged with the question of what constitutes a "core" set of digital services. However, the public documents available do not investigate consumer purchasing behavior in detail.

In *Facebook/WhatsApp*, the Commission defined different relevant markets for Meta's social networking services Facebook and its consumer communication app Facebook Messenger, which spun off the social networking services in 2011. The Commission reached this conclusion despite the two products' historical integration, and despite finding that consumer communication apps "*offered certain elements that were typical of social networking services, in particular sharing of messages and photos.*" Ultimately the Commission focused on product functionalities rather than demand patterns, finding that social networks "*tended to offer a richer social experience and a larger number of functionalities.*"[29]

---

which allows users to find goods they want to buy or list goods they want to sell (…) without pursuing the purpose of maintaining relationships to friends." The decision also knowledges demand side aspects such as the "fact that consumers use those standalone OCAS shows that they choose to obtain such OCAS separately from a personal social network."

27 *Ibid.* at §768.

28 See the Support Study supra, note 5, page 90. Interestingly the Dutch NCA took a narrower approach, and while it agreed with the wide MaaS market definition, it also defined distinct relevant markets for transport service providers based on mode of transportation. See the **ACM Decision** in case ACM/20/038614 at §126 and §127: "*The ACM considers it plausible that providers of integrated MaaS apps […] are currently not only subject to competitive pressure from each other, but also from the apps of other transport/ mobility providers, which only offer the services of that provider (so-called unimodal providers). […] However, the ACM also notes that the results of its market research provide starting points that the provision of integrated (MaaS) transport and mobility services should be considered a separate market, or could be considered a separate market in the foreseeable future.*" (authors' translation from the Dutch decision).

29 See *Facebook/WhatsApp Messenger* Decision at §21. In principle, the Commission has left this definition open but has strengthened and confirmed this view in later cases including Facebook/Kustomer and Facebook Marketplace.

On the contrary, while no public decision was published at time this manuscript is being written, the *Microsoft Teams* settlement agreement seems consistent with the Commission drawing a line between an underlying "core" suite and add-on features. During its investigation, the Commission investigated whether Microsoft was unlawfully tying Teams to its wider productivity suite. The case was settled under the agreement that Microsoft would unbundle Teams from the wider suite and offer it at a standalone price.

Yet, Microsoft's suite (M365, O365) continues to be offered as a bundle and has been for many decades. This is consistent with the Commission having considered Teams and its competitors to belong to a different market compared to the "*SaaS productivity applications for professional use" referred to in the press release – which also acknowledges how "productivity applications Word, Excel, PowerPoint, Outlook [are] included in [Microsoft's] Office 365 and Microsoft 365 suites for business customers.*"[30]

Prima facie, this approach seems consistent with the Facebook Messenger decision – albeit the conclusion is based on different grounds – as enterprise solutions such as Microsoft Teams may arguably cater to different needs than text or number processors. But is this approach one that can be sustained long term? In the late 1990s, Microsoft Outlook was not part of the main Microsoft Office suite – today it would be unthinkable to procure the suite without an email application. Workflows have evolved and so has demand. A consumer demand-centric approach may be more suitable to capture the nuances of digital suites.

The aftermarket framework

The aftermarkets framework questions whether the sale of a primary durable good generates lock-in effects that are so extreme that competition dynamics for its aftermarkets cannot be considered independently of those at play for the primary product.

Competition authorities have usually considered three distinct approaches to aftermarkets.

First, when there is strong interoperability between the primary and secondary goods, such that consumers' choices regarding the secondary product face limited constraints from their behavior in the primary market, competition authorities have adopted a "dual markets" approach consisting of two distinct relevant markets, one for primary products and a separate market for secondary products.

The Commission for instance adopted a "dual markets" approach during its assessments of Microsoft's acquisitions of gaming distributors ZeniMax31 and Activision[32]. In these cases, the Commission defined a primary relevant market for the development and publishing of video

[30] Press Release, European Commission, Commission accepts commitments offered by Microsoft to address competition concerns related to Teams (September 12, 2025).

[31] Case M.10001 (*Microsoft/Zenimax*).

[32] Case M.10646 (*Microsoft / Activision*).

games (leaving open any further segmentation between e.g. PC and consoles) and a separate secondary market for gaming distribution.[33]

By contrast, when lock-in effects are strong and interoperability between secondary and primary goods is limited, competition authorities have usually defined "multiple markets," i.e. a relevant market for the primary products and distinct markets for the secondary products associated with each "brand" of the primary product. This approach is more suitable than the "dual markets approach" if the sale of the primary product is likely to confer market power to the firm over the secondary market, e.g. due to high switching costs, or to significantly constrain user choice on the secondary market due to limited interoperability.

The Commission and NCAs have adopted this "multiple markets" approach when assessing potential abuses of dominance in mobile ecosystems. In its *Google Android* (2018)[34] and *Apple/Spotify* (2024)[35] decisions, the Commission defined a primary market for mobile smartphones[36] and distinct secondary relevant markets based on smartphones' operating systems. The Commission argued that the distribution of apps to iOS[37] and Android[38] devices constituted distinct relevant markets due to, among other reasons, the lack of interoperability between app stores designed for specific operating systems[39] and barriers to switching between primary devices or operating systems.[40] The French Competition Authority ("FCA") reached similar conclusions in its decision related to Apple's App Tracking Transparency framework.[41]

Finally, competition authorities may adopt a "systems market" approach and define a single relevant market that encompasses sales of both primary and secondary goods. This approach is deemed more suitable than multiple markets or dual markets when there is competition between "systems" comprised of the primary product and its complements. Like in cluster markets, conditions supporting a systems market approach include transactional complementarities (i.e. when consumers consider the life-cycle of the durable product and its complements, or cases where increasing prices in the aftermarket may negatively impact sales of the primary good).

---

33 See the Commission Decision in *Microsoft/Activision* at §93, based on the Commission Decision in Microsoft/ZeniMax at §20 and §40.

34 Case AT.40099 (*Google Android*).

35 Case AT.40437 (Apple – App Store Practices (music streaming)).

36 The definition of the primary market in the *Google Android and Apple/Spotify* decisions differ due to their different focus on mobile OEMs (Google Android) and music app developers (*Apple/Spotify*). The primary market in the former is for the licensing of smart mobile operating systems to OEMs whereas the primary market in the latter is for smart mobile devices. However, in both decisions, the primary market spans across operating systems.

37 *Apple/Spotify* Decision at §260: "*The Commission considers that the relevant product market is the market for the provision to developers of platforms for the distribution of music streaming apps to iOS users.*"

38 *Google Android* Decision at §284: "*The Commission concludes that app stores for other licensable smart mobile OSs do not belong to the same product market as Android app stores.*"

39 *Ibid.* at §285: "From a demand-side perspective, once an OEM has decided to install Android on its devices, it cannot, for technical reasons, pre-install an app store that has not been developed for AndroIbid."

40 *Ibid.* at §286 to §05.

41 See e.g. the FCA's Decision 25-D-02 regarding practices implemented in the sector for mobile application advertising on iOS devices at §399 to §409.

The Commission Revised Notice sets out four criteria where competition between systems may be appropriate.[42] These criteria include (i) whether consumers consider life-cycle costs when acquiring the primary good, (ii) whether the amount spent on secondary purchases are large compared to primary acquisition costs, (iii) whether the primary good is characterized by low barriers to switching and there is interoperability between secondary products and (iv) whether suppliers are usually active on both the primary and secondary markets.

This is the approach that was adopted by the CMA regarding gaming consoles and gaming (digital) distribution, during its review of Microsoft's acquisition of Activision. Specifically, the CMA concluded that "*competition happens at a platform level from both a supply and demand side (ie the console and associated console game distribution combined)*" and therefore "*consider[ed] it appropriate to treat console hardware and associated game distribution as part of the same product market.*"[43]

The aftermarkets framework appears particularly relevant to digital ecosystems characterized by a combination of hardware products and software services (e.g. mobile ecosystems including terminals, operating systems, app stores, cloud storage, etc.). For instance, in a note for the OECD,[44] Fletcher makes the case that digital ecosystems can be seen as "multiple markets" where the use of multiple secondary services generate high-switching costs between ecosystems, citing the example of mobile ecosystems where certain secondary services such as iCloud storage or proprietary app stores creates switching costs across terminals. Likewise, Jacobides & Lianos[45] argue that the aftermarkets framework may be suitable for one-sided digital ecosystems where the ecosystem structure limits the compatibility/interoperability and generates customer lock-in.

The Commission and the economic literature suggest however that ecosystems, especially two-sided platforms, have characteristics that raise additional questions that these frameworks may fail to address. Jacobides & Lianos[46] for instance argue that the aftermarkets framework cannot properly capture the type of lock-in effects generated by the multi-sided nature of some ecosystems, where consumer "lock-in" results from network effects rather than from barriers to switching on a primary market.

The Commission appears to have accepted these arguments as the Revised Notice acknowledges that "*not all (digital) ecosystems fit an after-market or bundle market approach*"[47] and adds to the above frameworks an additional section related to market definition for multi-sided platforms. Specifically, the market definition notice explains that one may either define a broad relevant market encompassing both sides of the market, or distinct but interrelated markets on each side, depending on the differences in substitution patterns on both sides,

---

42 See the Revised Notice, supra, note [8], at §101.

43 UK CMA *Microsoft/Activision* merger inquiry, Final Report at §5.54.

44 Amelia Fletcher, *Digital competition policy: Are ecosystems different? OECD Roundtables on Competition Policy Papers* (2020).

45 Michael G. Jacobides & Ioannis Lianos. *Ecosystems and competition law in theory and practice. Industrial and Corporate Change* (2021).

46 *Ibid.*

47 The Revised Notice, supra, at note [6], at §104.

degrees of product differentiation, or behavioral factors of each group of users. In practice, however, the Commission seems to have rarely, if ever, defined a single market including all interrelated products offered by a supplier.

In the Revised Notice, the Commission also notes the relevance of non-price parameters for the assessment of substitution – such as product features or barriers to switching (interoperability and data portability) – and mentions the small and significant non-transitory decrease in quality tests ("SSNDQ") as a relevant alternative to small and significant non-transitory increase in price tests ("SSNIP") tests, and acknowledges the challenges associated with network effects and demand interdependence.[48]

While the Commission does not explicitly set out how these criteria may lead to either outcome, the economic literature offers potential ways to approach this question. Filistrucchi[49] for instance suggests that market definition in two-sided markets should depend on whether platforms offer transaction or non-transaction services. In the case of transaction-based platforms (e.g. online marketplaces), defining a single relevant market spanning both sides can take into account cross-side complementarities. On the contrary, in the case of non-transaction-based platforms, two distinct (but related) relevant markets may better accommodate distinct substitution patterns on each side.[50]

Concluding remarks

In the sections above, we have discussed how recent decisional practice by the European Commission, the CMA, and NCAs, have highlighted key themes on the assessment of cases involving digital complements.

While traditional "theories of harm" require establishing that complement products belong to separate relevant markets, agencies have focused on where to draw line between a single market composed of multiple functionalities/products and other markets offering related and complementary products and services.

The approaches adopted to draw the line itself are largely consistent across decisions. However, the diversity and interpretability of analysis suggest that the market definition approach will differ on a case-by-case basis, while focusing on clear demand- and supply-side considerations.

Within this context, standard tools like the HMT can still be implemented in the context of complementary goods and provide helpful evidence in the delineation of the right boundary of a suite or a system of product. The cases reviewed above suggest that, to do so, SSNIP/ SSNDQ-based approaches should aim at identifying whether buyers of a bundle, a suite, or combination of complementary products would consider a combination of point solutions as a

---

48 Ibid.

49 Filistrucchi, Lapo. A SSNIP test for two-sided markets: the case of media. Net Institute Working Papers. (2008).

50 See also Ioannis Lianos, Despoina Mantzari, Stavros Makris & Giorgio Monti. *Dynamic effects in merger control*. CLES Policy Paper Series (2025) and M. Batra, P. de Bijl, T. Klein, *Ecosystem theories of harm in EU merger control: analysing competitive constraints and entrenchment*, Journal of European Competition Law & Practice (2024).

suitable alternative in response to an increase in quality-adjusted prices above competitive levels, or if they would instead endure the worsened offering.

Looking ahead, the assessment of competitive dynamics between digital complements is likely to fuel further debates in the context of the move from *ex post* competition law enforcement towards more *ex ante* regulation of digital markets. There are already signs of this happening. To illustrate, the delineation of complementary digital services appears to remain a central feature of the implementation of the Digital Markets Act. The Commission appeared to pay particular attention to product integration in its "digital gatekeeper" designation decisions, which explicitly mention product integration as a relevant characteristic to account for when considering whether a digital service constitutes a "core platform service."[51]

Contacts

Matteo Foschi
Vice President
mfoschi@crai.com
+44 20 7664 3671

Romain Bizet
Director
rbizet@crai.com
+32 2627 1400

[51] European Commission's Alphabet Designation Decision (5 September 2023) at §16: "*undertakings shall not identify CPSs that belong to the same category of CPSs […] as distinct mainly on the basis that they are provided using different domain names*" and "*undertakings shall consider as distinct those CPSs that either (i) do not belong to the same category of CPSs […] even if they are offered in an integrated way; or (ii) are used for different purposes by either their end users or their business users, or both, […] even if they are offered in an integrated way.*"