



European Commission Public Consultation on “Shaping Competition Policy in the Era of Digitisation”

COMMENTS

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The author welcomes this opportunity to respond to the European Commission’s call for contributions on “Shaping Competition Policy in the Era of Digitisation”. Digital markets continue to pose formidable analytical difficulties and to generate debate and controversy across various jurisdictions as evidenced by recent high-profile cases,² sectoral inquiries,³ and enforcement authorities’ intensifying activity.

Academics have played a major role in enhancing the work of enforcers by identifying analytical weaknesses and by proposing new approaches. The following pages contain a number of points that respond to the theme of “Digital Platforms’ Market Power” and aim to expose unappreciated aspects of how market power accrues in digital platforms and how it is used by them and why. The arguments herein are not meant to upend the existing analytical framework; they simply enhance it.

1. The Systemic Nature of Online Ecosystems and the Cost of Breaking Them Up

Online platforms and ecosystems are known for their user-friendliness and intuitive interfaces. Apple famously goes to great lengths to ensure a smooth out-of-the-box experience for its users, and even firms that have traditionally been thought to take a more piece-meal and spartan approach, like Amazon, now focus on integrated user-centric solutions. What this sleekness conceals, however, is how complex the back-end of this experience is, and the necessary conditions that need to be in place to ensure the smooth operation of the entire system.

Digital platform ecosystems are often structured as large technical systems (LTS)⁴ that comprise multiple highly interconnected parts, so that changes in one part may have unanticipated consequences for other parts

¹ The author discloses that he has provided consultancy services to Google in 2016. The views expressed herein are personal and in no way affiliated with any public or private institution.

² See eg Case AT.39740 Google Search (Shopping), 27 June 2017; Case AT.40099 Google Android, 18 July 2018.

³ See eg Final Report on the E-Commerce Sector Inquiry, COM(2017) 229 final.

⁴ Also known as Complex Products and Systems (CoPS).



and the general operation of the system as a whole.⁵ Rich literature from the fields of management and science and technology studies (STS) documents how such systems are structured, how interdependencies emerge, why the value of the system grows bigger than the value of the separate constituent components, how optimising for individual components is not the same as optimising for the entire system, and why interference with individual components can potentially upset the entire system.⁶

This literature has yet to break into legal reasoning. It is imperative, however, that it be integrated, because without it, antitrust's response through structural or behavioural remedies for potentially anticompetitive conduct of online ecosystems is certain to miscalculate both the necessity and the effects of remedies. Among famous examples of digital ecosystems which failed to gain traction partly due to lack of cohesive control are *Symbian*, a mobile operating system and applications ecosystem that was popular in the late 2000s, and *i-mode*, a 3G-era method of accessing the Internet on mobile phones.⁷ Particularly in the case of *i-mode*, the contrast between its successful implementation in Japan under the tight control of NTT DoCoMo (Japan's mobile telecom incumbent), and its failed implementation in Europe due to a polyarchy of stakeholders, serves as a reminder that LTSs benefit from pervasive control over the system, which helps achieve the necessary amount of planning and coordination, otherwise the system risks collapsing under the weight of its own complexity.⁸

The recent Google Android case⁹ and the inquiry into Amazon's practices¹⁰ are good testbeds for the LTS literature to be applied. Doing so will increase enforcers' confidence that any antitrust action will be commensurate to the threatened harm and that it will be designed to respect the integrity of the systems in question, which has allowed them to achieve the kind of efficiencies, progress and innovation that made them successful among consumers so far.

2. Tying as Risk Mitigation

Many of the most popular digital market firms provide multiple products and services (the big five—Amazon, Apple, Facebook, Google, Microsoft—are good examples). It is not uncommon that they tie some of their

⁵ Konstantinos Stylianou, 'Systemic Efficiencies in Competition Law: Evidence from the ICT Industry' (2016) 12 *Journal of Competition Law and Economics* 557, 560–562.

⁶ Mike Hobday, 'Product Complexity, Innovation and Industrial Organization' (1998) 26 *Research Policy* 689; Andrew Davies and Mike Hobday, *The Business of Projects: Managing Innovation in Complex Products and Systems* (Cambridge University Press 2005); Hobday; Thomas Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (Johns Hopkins University Press 1983).

⁷ Takeshi Natsuno, *The I-Mode Wireless Ecosystem* (John Wiley & Sons 2005) 68; Richard Tee and Annabelle Gawer, 'Industry Architecture as a Determinant of Successful Platform Strategies: A Case Study of the i-Mode Mobile Internet Service' (2009) 6 *European Management Review* 217.

⁸ *id.* See also Richard N Langlois, 'Modularity in Technology and Organization' (2002) 49 *Journal of Economic Behavior & Organization* 19, 26; Carliss Young Baldwin and Kim B Clark, *Design Rules: The Power of Modularity* (MIT Press 2000) 260; Stylianou (n 5) 562–569.

⁹ See *supra* n 2.

¹⁰ Yun Chee, 'EU Regulators Want to Know If Merchants Hurt by Amazon Copies' *Reuters* (28 September 2018).



products and services together resulting in varying degrees of foreclosure of competing offerings. The effects-based approach to tying tells us that there may be procompetitive justifications to it and this is why it is not always considered anticompetitive. Of those procompetitive justifications one that is particularly relevant to digital markets remains unappreciated: tying as a risk mitigating factor.

Risk is inherent in business. However, a confluence of factors suggests heightened levels of risk in digital markets and lack of traditional ways to manage it, which makes tying a more obvious and/or necessary choice. One factor is that of the many markets in which tech giants are present, those that serve as the main profit source change, and therefore it is difficult to pinpoint the core business segment and safeguard it.¹¹ Indeed, if one takes the big five firms as an example, they are collectively present in more than 20 overlapping markets, but for all five of them their respective originating market is not the same as the most profitable one today (Table 1). This, coupled with the fact that digital firms routinely and rapidly expand into new markets, which creates additional risk and only little time to properly assess it, makes a case for developing ties between their offerings as a means of spreading the risk.

	Amazon	Apple	Facebook	Google	Microsoft
Advertising platform	• (2002)		• (2009/2012)	• (2003)	• (2006)
AI assistant app	• (2015)	• (2014)		• (2016)	• (2014)
AI assistant devices	• (2015)			• (2016)	
AI infrastructure	• (2015)			• (2015)	
App store	• (2011)	• (2008)	• (2007)	• (2008)	• (2009/2010)
Browser	• (2011)	• (2003)		• (2008)	• (1995)
Cloud services (businesses)	• (2006)			• (2011)	• (2010)
Cloud services (consumers)	• (2011)	• (2011)		• (2012)	• (2007)
Computer accessories		• (1977)	• (2016)	• (2014)	• (1982)
Content distribution	• (1998/2007)	• (2001)		• (2006/2011)	• (1996)
E-commerce	• (1994)		• (2007)		
Maps		• (2012)		• (2005)	• (2010)
Messaging/chat		• (2011)	• (2011)	• (2005)	• (1996/1999)
Office tools		• (1979)		• (2006)	• (1983)
OS (Desktop)		• (1978/1984)		• (2011)	• (1981/1985)
OS (Mobile)	• (2012)	• (2007)		• (2008)	• (2010)
Payment services		• (2014)	• (2015)	• (2011)	

¹¹ Konstantinos Stylianou, 'Exclusion in Digital Markets' (2018) 24 Michigan Telecommunications and Technology Law Review 181, 248–251.



PC		• (1978)			
Physical retail	• (2015)	• (2001)			• (2009)
Search (general)				• (1997)	• (1998/2005)
Search (specialized)	• (1994/2002)		• (2013)	• (2002)	• (2009)
Smartphones	• (2014)	• (2007)		• (2010/2016)	• (2010)
Social networks			• (2004)	• (2010)	
Tablets	• (2011)	• (2010)		• (2012/2016)	• (2012)

Table 1: Markets in which AAFGM are present, dates of entry, originating market (in light grey), main profit source today (dark grey). Source: Konstantinos Stylianou, ‘Exclusion in Digital Markets’ (2018) 24 Michigan Telecommunications and Technology Law Review 181.

Moreover, because in digital markets ecosystem competition is prevalent, firms are pressured to enter adjacent markets and promote their products as bundles (:ecosystems) for fear that, if a rival firm dominates one component of the system, dominance can easily spill over to the rest of the system as well (since the dominant component is part of an ecosystem), thereby quickly marginalizing rival firms in multiple markets. This is regardless of their respective originating market. A firm that remains absent from one of those component markets or keeps it isolated from the rest of its products and services is therefore a firm in disadvantage. Because it remains unknown which will become the most valuable component, firms have an incentive to enter as many markets as possible compared to their competitors, and spread risk among them by tying them together to the exclusion of rival components.

Lastly, the common way of dealing with risk, i.e. through the price mechanism, is not as obvious or practical in digital markets, because many of the products and services are offered for free. A firm that succeeds in one market but fails in another cannot necessarily be rewarded for its success if the market in which it succeeds is built around the free products/services business model. Linking markets together spreads over the cost and risk of development and experimentation when this cannot be fully recouped from the successful products ultimately rewarding the firm for its risky success.¹² While it is often assumed that as long as a firm generates value by offering its products, it will also appropriate that value, the link between doing business (i.e. providing products and services), and generating revenue is not always clear. As Teece has elaborately explained value appropriation is all but automatic, and it often requires firms to exercise control in

¹² Christoph Zott and Raphael Amit, ‘Business Model Design: An Activity System Perspective’ (2010) 43 Long Range Planning 216, 221–222 (where the authors discuss the NICE design theme on value generation: Novelty, Lock-In, Complementarities, Efficiency). They provide Apple as an example: “A prominent example is Apple, which used to be focused on the production of innovative hardware such as personal computers. Through the development of the iPod and the associated music download business iTunes, Apple was the first electronics company that included music distribution as an activity (content novelty), linking it to the development of the iPod hardware and software (structure novelty), and digitizing it and thereby pushing many subactivities of legal music downloads to its customers (governance novelty). That is, Apple expanded the locus of its innovation from the product to its business model.”).



various parts of the value chain (i.e. different markets) to prevent value generated by their products and services being appropriated by other firms in the value chain.¹³ Tying can provide this kind of control.

3. Vertical Competition as a Source of Competitive Pressure

When contemplating abusive behaviour enforcers first look for relative market power, that is the ability of firms to conduct themselves without regard to competitors and ultimately to consumers.¹⁴ They look for market power in the market in which the firm under scrutiny conducts business, because common wisdom suggests that firms that exist in a horizontal relationship are competitors, whereas firms that exist in vertical relationship are complements.¹⁵ Competitors exert competitive pressure, whereas complements add value. However, if the inquiry into market power is to determine all the factors that—one way or another—enable or constrain the ability of firms to amass and exercise market power, then any relevant force should be taken into account regardless of position in the market. As Porter has remarked the theory of competitive pressure and entry “has been limited unnecessarily by confining itself to the movement of firms from zero outputs to positive outputs. It becomes much richer—yet remains determinate—when set forth as a general theory of the mobility of firms among segments of an industry, thus encompassing exit and inter-group shifts as well as entry.”¹⁶

This more comprehensive view of competitive pressure takes into account not just horizontal competitors, but also firms along the vertical value chain. While this argument can be made for any industry, it becomes particularly relevant in digital markets for two reasons: firstly, because unlike physical product markets where the various layers in the value chain are usually separate in the sense that the design of products or services in one layer is not interlocked with the design of products and services in the other layers, digital markets rely on standards, interfaces, protocols and technologies that have to be taken into account from layer to layer and implemented uniformly across all layers. For instance, supermarket shelves have remained the same over the years, even though the packaging of the products sold on them and the trucks that transport those products have changed. But if an API or a QoS parameter changes in an unanticipated way by the other layers the relevant system breaks. This makes firms along digital value chains more interdependent, which in turn pitches them against each other as they all strive to capture a bigger share of the total producer surplus in the value chain.

¹³ David J Teece, ‘Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy’ (1986) 15 *Research Policy* 285, 292.

¹⁴ Case 27/76, *United Brands v Commission*.

¹⁵ See Robert L Steiner, ‘Vertical Competition, Horizontal Competition, and Market Power’ (2008) 53 *The Antitrust Bulletin* 251, 251–53. *See also* U.S. Non-Horizontal Merger Guidelines (1984), para. 4.0 (“By definition, nonhorizontal mergers involve firms that do not operate in the same market.”).

¹⁶ Richard Caves and Michael Porter, ‘From Entry Barriers to Mobility Barriers: Conjectural Decisions and Contrived Deterrence to New Competition’ (1977) 91 *The Quarterly Journal of Economics* 241, 241.



Secondly, various complementary STS theories highlight the enhanced potential for entry and vertical competitive pressure between firms in vertical relationship due to their technological proximity.¹⁷ Technological proximity suggests that in digital markets firms in vertical relationships can acquire the necessary expertise to expand vertically with greater ease than traditional non-digital markets. As Bresnahan and Greenstein have persuasively argued, the technological interdependence of firms along the value chain in the sense that the design of one layer is often affected by the design of another layer, and the ability of firms to accumulate technical knowledge from their surroundings enables them to more easily cross over to neighbouring layers upstream or downstream:

“Technically, there are no given and exogenous boundaries between the layers. The functions now performed by one platform component might instead be performed by another. Both software and hardware have shown this malleability. The firms supplying key components of the same platform often have broadly similar technical capabilities. Each would be capable of taking over the other’s position.”¹⁸

Cohen and Levinthal describe a similar process, which they call *absorptive capacity*.¹⁹ The absorptive capacity of firms increases with their familiarity with the new knowledge they acquire from another firm, and so the closer the firms are in terms of prior knowledge and activities the easier it is for them to cooperate or compete.²⁰

And even when firms in other parts of the value chain do not plan to or actually do enter a new layer in the value chain, they can still exert competitive pressure. Systems that consist of multiple components (a common feature of digital systems), are not necessarily locked in a fixed allocation of value and importance among their parts and components.²¹ The total value may remain the same, but the internal allocation and the actors representing each part can change due to the “vertical competition for control of a platform among the sellers of its various components.”²² In such contexts it is often unclear which standard, platform, function or

¹⁷ For a synthesis see Stylianou (n 11) 198–223.

¹⁸ Timothy Bresnahan, ‘New Modes of Competition’ in Jeffrey Eisenach and Thomas L Lenard (eds), *Competition, Innovation and the Microsoft Monopoly: Antitrust in the Digital Marketplace* (Springer Business Science & Business Media 1999).

¹⁹ Wesley M Cohen and Daniel A Levinthal, ‘Absorptive Capacity: A New Perspective on Learning and Innovation’ (1990) 35 *Administrative Science Quarterly* 128, 128. See also Joris Knobens and Leo AG Oerlemans, ‘Proximity and Inter-Organizational Collaboration: A Literature Review’ (2006) 8 *International Journal of Management Reviews* 71, 77–78.

²⁰ Cohen and Levinthal (n 19) 135–36.

²¹ See, e.g., Hemant Kumae Sabat, ‘The Evolving Mobile Wireless Value Chain and Market Structure’ (2002) 26 *Telecommunications Policy* 505; Joe Peppard and Anna Rylander, ‘From Value Chain to Value Network: Insights for Mobile Operators’ (2006) 24 *European Management Journal* 128.

²² See Timothy Bresnahan and Shane Greenstein, ‘Technological Competition and the Structure of the Computer Industry’ (1999) 47 *Journal of Industrial Economics* 1, 23.



component will become the strategically most important one, around which value and market activity will coalesce, and it is also entirely possible that none is actually sufficiently defined, in which case competition between and within them for one to emerge (temporarily) victorious is inevitable.²³ As this process unfolds the various components in a system are not only constrained by their counterparts in other systems, but also within the system itself by their own complements.²⁴

There are various examples of vertical relationships that function complementarily but also competitively as described above, e.g. Java and Windows, Google apps and iPhone, Netflix and Comcast. In all these examples, what were commonly seen as complements affected the behaviour of firms in other layers of the value chain in a way that limited their ability to act unconstrained. In that sense, these “complements” limited market power and therefore performed the same function as competitors under the traditional understanding.

²³ Pieter Ballon, ‘Platform Types and Gatekeeper Roles: The Case of the Mobile Communications Industry’, *Druid Summer Conference, Copenhagen Business School* (2009) 4; Kevin Boudreau, ‘Open Platform Strategies and Innovation: Granting Access vs. Devolving Control’ (2009) 56 *Management Science* 1849.

²⁴ See Joseph Farrell, Hunter K Monroe and Garth Saloner, ‘The Vertical Organization of Industry: Systems Competition Versus Component Competition’ (1998) 7 *Journal of Economics & Management Strategy* 143 (where the authors compare competition between systems as a whole and between components of systems).