# DIGITAL CLUSTER MARKETS

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*One foundational requirement of markets in antitrust cases is that they consist of products that are close substitutes for one another. Even though markets are nearly always porous, this principle is very robust in antitrust analysis and there are few deviations. The principle is also important for ensuring that changes in substantive antitrust law are not made through the back door as a result of overly broad or narrow market definitions.*

*This Article considers the role of "cluster" markets, or markets for goods that are not close substitutes, in antitrust litigation, the minimum requirements for recognizing such markets, and the relevance of network effects in identifying them. Clustering noncompeting products into a single market for purposes of antitrust analysis can be valuable, provided that its limitations are understood. Clustering contributes to market power when (1) many customers prefer the convenience of receiving the defendant's grouping of products rather than any single one, or (2) economies of joint provision (economies of scope in production) make joint distribution of the cluster cheaper per good than distribution of each separately, and (3) entering into competition with the cluster is difficult.*

*When network effects are present, an important additional reason is what might be termed economies of scope in consumption, or increased value that accrues as a group of goods or services offered on the same platform becomes not only more numerous but also more diverse. Often the best way to address the cluster market problem is to avoid market definition altogether. Here, digital markets are particularly susceptible to direct measurements of market power that do not depend on a market definition. One limitation on their use,*

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*however, is that many of the methodologies require estimating demand changes in response to price changes, but several digital platforms engage with consumers at a price of zero. Here, however, changes in product quality can operate as an adequate (inverse) surrogate for changes in price.*

*Finally, the logic of cluster markets carries an implicit warning about antitrust remedies. Clustering occurs when it creates value, and for consumers as well as producers. As a result, antitrust enforcers should be wary about aggressive breakup remedies that serve to break apart components that were clustered for the very reason that clustering is valuable.*



## I. INTRODUCTION

This Article considers the role of "cluster" markets in antitrust litigation, the minimum requirements for recognizing such markets, and the relevance of network effects in identifying them. Finally, it considers alternative ways of assessing power over clusters of noncompeting goods.

Many antitrust violations require proof of market power, or the power profitably to reduce output and raise price above cost.[1] Historically, antitrust litigants and courts have estimated power by determining a market share of a properly defined "relevant market."[2] The concept of a "market" is hardly limited to antitrust, however, and has been a feature

[1] 2B PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 501 (Wolters Kluwer 5th ed. 2021).

[2] *See id.* ¶ 531.

of partial equilibrium analysis in microeconomics at least since the time of Alfred Marshall[3] and, before that, Cournot.[4]

One foundational requirement of markets in antitrust cases is that they consist of products that are roughly identical or at least very close substitutes for one another. As a result, products within a market compete with one another, while products inside a market do not compete with products located outside. Even though markets are nearly always porous, this principle is very robust in antitrust analysis, with few deviations.[5] It is crucial because an erroneous market definition can lead to disguised but unanalyzed changes in substantive doctrine. For example, an overly narrow market definition can result in an expansion of refusal to deal doctrine into situations where the substantive law would not permit it.[6]

To be sure, many markets consist of differentiated products, particularly for manufactured goods as opposed to commodities. Differentiation can give rise to difficult issues about whether two products are sufficiently far apart from one another in a product space that their competition is slight and they thus should not be placed in the same market.[7] For example, are video cassette or DVD movies, theater-shown

3 ALFRED MARSHALL, PRINCIPLES OF ECONOMICS 385–86 (8th ed. 1920).

4 AUGUSTIN COURNOT, RESEARCHES INTO THE MATHEMATICAL PRINCIPLES OF THE THEORY OF WEALTH 46, 50 (Nathaniel T. Bacon trans., New York, MacMillan Co. 1897) (1838) (hypothesizing discrete markets for undifferentiated commodities). On the relationship between partial equilibrium analysis and antitrust's relevant market, see Herbert Hovenkamp, *The Invention of Antitrust*, 95 S. CAL. L. REV. (2022) (forthcoming), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3995502 (on file with the Columbia Business Law Review).

5 *See* Hovenkamp, *supra* note 4 (manuscript at 50–51).

6 *See* discussion *infra,* text at notes 58–60.

7 This was famously so in United States v. E.I. du Pont de Nemours & Co., 351 U.S. 377, 400, 405 (1956) (grouping cellophane, wax paper, tin foil, and common wrapping paper into a single market); United States v. Cont'l Can Co., 378 U.S. 441, 456–57 (1964) (grouping metal cans and glass bottles into the same market). *See* 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 539.

movies, and digitally streamed movies all in the same market simply because viewers switch among them?[8]

The "hypothetical monopolist" test (HMT), sometimes called the "hypothetical cartel" test, approaches market definition by examining the relationship between pricing and substitution behavior.[9] The test identifies markets by trying to determine the smallest grouping of sales for which a hypothetical monopolist would be able to charge a sustainable monopoly price.[10] For example, consider an alleged market for coffee makers, which consists of four technologies: manual drip devices, electric drip, French press, and Italian espresso machines. All of them make coffee. Some people drink coffee made by two or more of them, and some may even be indifferent. Others may have strong preferences for one over the other. On the supply side, these devices use different raw materials and different technologies in their production.

Suppose that we observe from retail sales (scanner) data that when the price of manual drip makers increased by 10%, the sellers of those devices lost 4,000 sales. Three thousand of those diverted sales went to French presses, 700 went to electric drip machines, and 200 went to espresso machines. The final 100 simply exited from the market. That indicates that while all four devices compete to some degree, the competition between the manual drip and French press devices is much greater than that between manual drip makers and other technologies. As a result, while someone

8 *See, e.g.*, Cable Holdings of Ga., Inc. v. Home Video, Inc., 825 F.2d 1559, 1563 (11th Cir. 1987) (grouping diverse technologies for watching video content into the same market); *cf.* United States v. Syufy Enters., 712 F. Supp. 1386 (N.D. Cal. 1989), *aff'd*, 903 F.2d 659, 665 n.9 (9th Cir. 1990) (finding the district court's decision to group various methods of viewing film—including theatrical first- or subsequent-run, video rentals, and cable television—into one market to be erroneous but choosing not to overturn the ruling because of the sufficiency of alternative findings made by the district court using a narrower market definition).

9 On use of the HMT in antitrust market delineation, see 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 530a; Carl Shapiro, *The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years*, 77 ANTITRUST L.J. 49, 86–90 (2010).

10 *See* Shapiro, *supra* note 9, at 86–89.

controlling only manual drip makers would find the loss of business from this price increase unprofitable, a merger or cartel between manual drip makers and French press makers would enable 3,000 of the 4,000 lost sales to be "recaptured." Expressed differently, while a price increase of manual drip makers alone might not be profitable, a cartel (or monopoly) price increase of the manual drip and French press makers together might be profitable because when the two raise their prices together a smaller proportion of sales will be lost. Once we have identified the minimum grouping of products for which a significant price increase would be profitable, we have defined a relevant market.[11]

While application of this methodology is data intensive, we can use it to determine what range of products in a differentiated market are close enough competitors to belong in a single relevant antitrust market. When the data are available, this methodology is much more accurate than simple intuitions about whether two products that serve a common set of consumers, such as DVDs and streamed movies, are actually in the same market.[12]

Manifestly, however, markets do not consist of complements, which are goods that are either used together (complements in use) or produced together (complements in production).[13] For example, it is one thing to put a French press and a drip coffee maker in the same market; it is quite another to put a French press and coffee beans into one market. Complements generally behave in just the opposite way from the substitutes that form a market. Although all the products in the same market have prices that move up or down together, the prices of complements typically move in the opposite direction.[14] This is because a buyer uses complements together, so willingness to pay depends on the

11 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 530a, e.

12 *See* Herbert Hovenkamp, *The Looming Crisis in Antitrust Economics*, 101 B.U. L. REV. 489, 502, 513–17 (2021).

13 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565a, d2.

14 *Id.* ¶ 565a.

price of the combination.[15] For example, if the price of coffee beans rises, people will drink less coffee. That will reduce the demand for coffee machines, decreasing their price. As a result, the hypothetical monopolist test does not work for complements.

Because complements are used together, some courts have been fooled into thinking that complements occupy the same market. For example, the Ninth Circuit once held that the fact that a photocopier requires all of its repair parts that all individual repair parts should be placed into an "all parts" market rather than into their own individual markets.[16] But that states the relationship precisely backwards: The reason we put, say, four closely spaced gasoline stations into the same market is because the buyer does *not* need to go to all of them. Rather, she needs only one, which forces the firms to compete for her business. In order to make coffee, one needs both beans and some kind of coffee maker, but that does not mean that there is a single market for coffee makers and beans.

Many firms sell more than one product, and frequently the products are non-competing. When such a firm is accused of a market power antitrust violation, it is usually important to assign that power to a single product—or perhaps a small number of products where the threat of monopoly is occurring. For example, in *United States v. Microsoft Corp.*, the defendant was accused of monopolizing the market for operating systems for Intel-based computers.[17] The accused product was Windows OS only, not other software products

[15] By contrast, if two goods are complements, the production output of the two will rise or fall together. As a result, increased output of one in response to increased demand may cause excess output of the other, and thus falling prices. *Id.*

[16] Image Tech. Servs., Inc. v. Eastman Kodak Co., 125 F.3d 1195, 1203, 1220 (9th Cir. 1997) (citing the "commercial reality" that a firm needs access to all of the replacement parts for a photocopier to conclude that there was a single all parts market).

[17] United States v. Microsoft Corp., 253 F.3d 34, 45 (D.C. Cir. 2001) (per curiam).

that the defendant also manufactured, such as Microsoft Office.[18]

But suppose a firm is accused more generally of an antitrust violation involving a large range of products, many of which are non-competing. This issue has arisen in numerous contexts. One is the evaluation of hospital mergers.[19] The merger concern is the hospitals' exercise of market power; but hospitals provide a very large range of services, most of which do not compete with one another.[20] For example, abdominal surgery does not compete with brain surgery, which does not compete with a blood test or an ultrasound. Although all of these procedures are performed within the hospital, clearly that is not sufficient to include them in the same market. After all, Walmart sells both toasters and chainsaws, but that hardly justifies defining a "toaster/chainsaw" market.

Suppose, however, that some firms sell only product *A*, others only product *B*, and others only product *C*. Further, only one firm sells all three. Does this firm control a "cluster" in which its market share is 100%? Or does the relevant market include the other, single-product firms?[21] The answer to this question could be critical in an antitrust case involving firms such as Facebook or Amazon, which have largely nondominant positions in many of the individual and noncompeting services or commodities that they offer. Yet, both aggregate a large number of distinct services or products together. For example, while Amazon's individual shares in

[18] *Id.* at 51–52 (concluding that the relevant market must include all products "reasonably interchangeable by consumers for the same purposes," which limited the market to operating systems for Intel-based computers, thus excluding the Mac OS).

[19] *See* ProMedica Health Sys., Inc. v. FTC, 749 F.3d 559, 566–67 (6th Cir. 2014) (agreeing with the FTC's grouping of noncompeting services that used similar facilities and assets).

[20] *See id.* at 565–66.

[21] 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1.

most products are relatively small, its aggregation accounts for more sales than almost any firm save Walmart.[22]

This process of aggregating noncompeting products or services leads to the creation of "cluster markets," which are markets that consist of noncompeting goods.[23] It then becomes important to ask when it is sensible to locate power in the cluster itself rather than in the simple presence of any particular item. Clustering is not appropriate simply because a firm sells two or more noncompeting goods. Rather, there must be some reason for thinking that the act of clustering creates the power.

In general, clustering contributes to market power only when an antitrust court is satisfied that:

> (1) "many customers" need or at least "prefer the convenience of receiving the defendant's grouping of products"[24] rather than any single product,[25] or
> (2) "economies of joint provision (economies of scope)" make it cheaper to distribute the cluster rather than each good separately,[26] and
> (3) entering into competition with the cluster is difficult.[27]

Later, we consider the range of network effects as one additional rationale that the courts have not yet addressed

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22 *See Top 100 Retailers 2021 List*, NAT'L RETAIL FED'N (Sept. 27, 2021), https://nrf.com/resources/top-retailers/top-100-retailers/top-100-retailers-2021-list [https://perma.cc/39DY-6B8A] (showing Walmart as largest in sales, with $543 billion in annual sales, and Amazon as second, with $263 billion). If the sales are limited to e-commerce, Amazon is the largest. *See* Stephanie Chevalier, *Leading Retail Online Companies in the U.S. 2021, by Market Share*, STATISTA (Oct. 29, 2021) https://www.statista.com/statistics/274255/market-share-of-the-leading-retailers-in-us-e-commerce/ [https://perma.cc/VN6P-5QTY].

23 *See* 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1.

24 *Id.*

25 *See* Ian Ayres, Note, *Rationalizing Antitrust Cluster Markets*, 95 YALE L.J. 109, 114–15 (1985) (emphasizing role of transactional complements).

26 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1.

27 *Id.*

but that could be relevant to estimating the market power of digital platforms.[28]

When these conditions are satisfied, clustering is a useful tool. Further, using clustering is not simply a matter of administrative convenience. Rather, the act of clustering can itself create additional market power.

Of these three criteria, the first and second refer to the nature of demand. The third refers to supply.[29] A relevant market for antitrust purposes is a grouping of sales for which *both* demand substitution and supply substitution are sufficiently low to warrant the conclusion that a firm or cartel that controlled the sales could profitably reduce output and raise the price above cost.[30] Thus, we are trying to identify a cluster of products that is uniquely attractive to consumers but also difficult to create and supply. When both of these things are true, we can infer that the firm controlling this cluster could charge sustainable prices above the competitive level.[31]

Note that the two demand-side items, criteria (1) and (2) above, are expressed in the alternative and distinguish two very different situations. In the first, the cluster market exists because consumers want the cluster or perhaps some portion of the cluster that varies from customer to customer or from visit to visit. Facebook very likely falls into this category.[32] It offers a variety of noncompeting services, including photo posting, video posting, messaging, bulletin boards, discussion groups, timelines of other users, business services, a dating service, as well as the ability to formulate and preserve a

28 *See infra* notes 56–60 and accompanying text.

29 *See* 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1.

30 *See* HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE § 3.1 (6th ed. 2020).

31 *Cf.* Emigra Grp., LLC v. Fragomen, Del Rey, Bernsen & Loewy, LLP, 612 F. Supp. 2d 330, 354 (S.D.N.Y. 2009) ("If . . . buyers could and would respond to a price increase by a full line seller by shifting all or part of their business to partial line or single product sellers, or by making or providing the product or service themselves, then a cluster market would not be appropriate.").

32 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c2.

profile of personal data. Different subscribers use these things in differing proportions, and some may not use certain features at all. But the immediate and ongoing availability of the cluster is itself valuable to customers.[33] For many customers, it is much more valuable to have all of these things together on a common platform with a single subscription and the ability to move around among them, than to have individual sites for each function (i.e., one video posting site, one site for posting photos, a third for messaging, and so on).

The second category is composed of situations where clustering results from joint costs or economies of scope, allowing the clustered seller to offer either lower prices or better results than the non-clustered seller. For example, a hospital may offer obstetrics, thoracic surgery, and radiology. A typical patient does not visit the hospital for all of them. She may want only one, but clustering either reduces the cost of the individual services or permits individual services to take advantage of common technologies that reduce costs or improve quality.[34]

For example, a customer using Amazon to purchase a toaster does not typically purchase a chainsaw as well. Further, we can generally assume that the customer does not prefer to purchase a toaster at Amazon simply because Amazon also carries chainsaws. As a result, criteria (1) on the above list does not apply. That leaves criteria (2), which queries whether there are economies of scope that accrue to offering multiple products in the same facility. Here, the answer is maybe, making it a question of fact.[35] We might require expert testimony to prove it, but it is certainly plausible that a firm can spread certain common costs over a

[33] *Id.*

[34] *Cf.* Sharif Pharm., Inc. v. Prime Therapeutics, LLC, 950 F.3d 911, 918 (7th Cir. 2020) (incorrectly limiting cluster market definition to situations where "the cluster is itself an object of consumer demand," but then concluding that health care services could be a cluster market).

[35] *Cf.* FTC v. Staples, Inc., 190 F. Supp. 3d 100, 117 (D.D.C. 2016) (recognizing the aggregation of diverse office supplies as a cluster market but noting that this was analytically convenient because market shares for the individual products were similar).

larger variety of products. Further, firms with large sales volume in aggregated but diverse products may have cost advantages over smaller firms that sell only one product. Some services, such as billing, order processing, and warehousing, operate over all or at least many of the products.[36] Note that this is *not* the same thing as saying that the firm is very large; rather, the act of clustering multiple things together reduces costs. Most of these situations share common costs, or costs that are distributed across the diverse products. Even relatively small firms can benefit from clustering.

That leaves the third question, which is whether a firm currently providing a smaller range of products could readily expand to offering a larger range of products. Once again, the answer is maybe. The question is factual and specific to each situation. If any store currently selling lumber could easily add plumbing and electrical components to its inventory, then clustering likely will not increase power.[37] This particular grouping has too high an elasticity of supply to be a relevant market.

## II. CLUSTER MARKETS IN ANTITRUST CASES

Both the Supreme Court and lower courts have recognized antitrust cluster markets several times, often without expressly relying on the above three criteria. For example, in *United States v. Philadelphia National Bank*, the Supreme Court ruled that "commercial banking"—consisting of a cluster of various types of accounts, loans, and other financial services—constituted a relevant market even though other financial institutions such as savings and loan associations provided many of these individual services.[38] Either one or

[36] *See* 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c2.

[37] *Cf.* Thurman Indus., Inc. v. Pay 'N Pak Stores, Inc., 875 F.2d 1369, 1374, 1376–77 (9th Cir. 1989) (finding no distinct cluster market for stores that grouped building supplies and paint where any store could readily group them).

[38] United States v. Phila. Nat'l Bank, 374 U.S. 321, 356 (1963) (referring to the "cluster of products (various kinds of credit) and services

both of the first two conditions stated above were apparently satisfied. As the Court observed, consumers deposited funds in commercial banks even though other institutions paid more interest, and for many users there was a "settled consumer preference" for commercial banks.[39] The third condition was also satisfied because commercial banks alone provided checking accounts at that time, they had certain cost advantages in other services, and entry into commercial banking was limited by law.[40]

Likewise, both economies of joint provision and consumer preference explained the cluster market found in the Supreme Court's decision in *United States v. Grinnell Corp.*, which involved central station property protective services.[41] These services included burglar alarms, fire alarm service, and sprinkler monitoring services.[42] Ex post, a fire alarm service is not a substitute for a burglar alarm service, and so on. Ex ante, of course, burglars, fires, and malfunctioning sprinklers that cause flooding all create a risk of harm, and someone may not know in advance which harm she will suffer. The central station reduced the cost of joint provision, in the process advantaging a dominant firm that controlled the combination

(such as checking accounts and trust administration) denoted by the term 'commercial banking'").

39 *Id.* at 356–57.

40 *Id.*; *see also* United States v. Conn. Nat'l Bank, 418 U.S. 656, 660–66 (1974) (identifying "commercial banking" as a relevant market, although noting that future developments in regulatory policy might make it "unrealistic" to distinguish savings banks from commercial banks); United States v. Phillipsburg Nat'l Bank & Trust Co., 399 U.S. 350, 359–62 (1970) (finding a "commercial banking" market though the district court found that the main business of the merging banks resembled that of savings and loan associations excluded from the market).

41 United States v. Grinnell Corp., 384 U.S. 563, 566–67 (1966).

42 *Id.* at 566, 567 n.4 (1966); *see also* FTC v. Wilh. Wilhelmsen Holdings ASA, 341 F. Supp. 3d 27, 49 (D.D.C. 2018) (agreeing with FTC that a cluster market existed for a variety of water treatment products and services); *cf.* Premier Comp Sols. LLC v. UPMC, 377 F. Supp. 3d 506, 528–29 (W.D. Pa. 2019). In *Premier Comp Sols. LLC*, the court incorrectly rejected the cluster market of cost containment services because the defendant appeared to be the only firm that offered the cluster. This is hardly decisive and may have shown only that the defendant was a monopolist.

over ones who offered each service separately. Under the hard-wire technology of the time, these services were connected by a single phone line and monitored from a common center, which could monitor for all of the risks.[43] The important question was whether a firm that offered all of the services together would be in a position to charge a price significantly above its costs. If so, the aggregation is a relevant market.[44]

Often the "clustering" problem refocuses our attention on the exact input that is being monopolized by the offeror. This is demonstrated by the relevant market for "surgical services."[45] While individual surgical services are not substitutes for each other, an important source of market power lies in the surgical facility itself.[46]

When these economies are less obvious, most customers want only one service, or the cluster is readily copied, the courts are much less likely to find a cluster market.[47] For

[43] On the technology, see United States v. Grinnell Corp., 236 F. Supp. 244, 249 (D.R.I. 1964), *aff'd in part, rev'd in part*, 384 U.S. 563 (1966). *See also* Rozema v. Marshfield Clinic, 977 F. Supp. 1362, 1379–80 (W.D. Wis. 1997) (finding, in dicta, that "physician services" was not an appropriate cluster market because buyers do not purchase all of them together, with court ultimately concluding that this finding did not undermine plaintiffs' claim, for defendants had power even when the various services were considered separately); Premier Comp Sols., LLC v. UPMC, 163 F. Supp. 3d 268, 279–80 (W.D. Pa. 2016) (denying motion to dismiss concerning cluster market for insurance services involving workers compensation); Omni Healthcare, Inc. v. Health First, Inc., No. 6:13-cv-1509-Orl-37DAB, 2015 WL 275806, at *12–13 (M.D. Fl. Jan. 22, 2015) (denying motion to dismiss on claim involving an alleged cluster market of medical diagnostic services); Messner v. Northshore Univ. HealthSystem, 669 F.3d 802, 816–18 (7th Cir. 2012) (finding that bundle of hospital services could be a product market); 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1; *cf.* FTC v. Advoc. Health Care Network, 841 F.3d 460, 468 (7th Cir. 2016) (involving parties agreeing to cluster market definition in hospital merger case).

[44] 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1.

[45] *Id.*

[46] *Id.*

[47] *See, e.g.*, Intell. Ventures I LLC v. Cap. One Fin. Corp., 280 F. Supp. 3d 691, 702–04 (D. Md. 2017), *aff'd*, 937 F.3d 1359 (Fed. Cir. 2019) (inconclusive decision over the existence of a cluster market for a patent portfolio covering a group of diverse financial services patents).

example, one court rejected an alleged market of retail "home centers" selling electrical, plumbing, and building supplies.[48] Another court rejected a market for "one stop shopping" of a wide variety of restaurant goods by a common supplier because the aggregation was not obviously valuable to customers and, in any event, suppliers of one good could readily add the others.[49] For example, a customer searching for a commercial dish washer likely will not pay more for the appliance simply because the company also sells commercial refrigerators. Even if the customer wants both appliances, there must some indication that a firm selling one could not easily add the other to its product line.

A few courts have reached the wrong conclusion simply by confusing substitutes and complements. For example, in *Image Technical Services, Inc. v. Eastman Kodak Co.*, the Ninth Circuit found a cluster market of "all parts" for Kodak photocopiers.[50] The parts were not shown to have been

[48] Thurman Indus., Inc. v. Pay 'N Pak Stores, Inc., 875 F.2d 1369, 1374, 1376 (9th Cir. 1989) (finding that "do-it-yourselfers" on large projects might prefer the convenience of one-stop shopping does not suggest, for example, "that specialty stores selling house paint are unable through price reductions or other marketing strategies to lure significant numbers of do-it-yourself builders," especially those doing simpler projects, "into buying at a specialty store even if they purchase all their other supplies at a home center").

[49] Westman Comm'n Co. v. Hobart Int'l, Inc., 796 F.2d 1216, 1220–21 (10th Cir. 1986) (holding that defendant's alleged advantage in supplying multiple products was not shown to prevent buyers switching in the event of price increase or competing suppliers from increasing their own lines); *see also* United States v. Ivaco, Inc., 704 F. Supp. 1409, 1416–18 (W.D. Mich. 1989) (holding that where two merging suppliers of railroad track "tampers" claimed a broader market, including other "maintenance of way" equipment that neither competed with tampers nor reflected similar manufacturing technology; PBTM LLC v. Football Nw., LLC, 511 F. Supp. 3d 1158, 1180–81 (W.D. Wa. 2021) (holding that goods bearing the trademarked number "12" after the Seattle Seahawks is not a relevant cluster market); Multiple Energy Tech., LLC v. Under Armour, Inc., No. 2:20-CV-664-NR, 2021 WL 2661827, at *1, 3 (W.D. Pa. June 21, 2021) (dismissing but granting leave to amend complaint alleging a relevant market of diverse types of clothing containing "recovery enhancing bioceramics").

[50] Image Tech. Servs., Inc. v. Eastman Kodak Co., 125 F.3d 1195, 1200 (9th Cir. 1997).

produced together, and there was not even a single manufacturer that produced all of the parts.[51] Kodak produced about thirty percent of them, and other manufacturers produced the rest.[52] The only thing they shared in common was that Kodak distributed them.[53] The Kodak court offered administrative convenience as the rationale,[54] although it was hardly simple administrative convenience to order Kodak to supply numerous parts that could readily be obtained elsewhere. That amounted to a *substantive* conclusion that the antitrust laws required sharing of inputs that rivals could readily obtain on their own.

In other cases, a simple administrative convenience rationale may make more sense, but that leaves open the question of whether the court is really defining a cluster market at all. For example, in the merger case *Brown Shoe Co. v. United States*, the Supreme Court grouped men's, women's, and children's shoes into the same market after concluding that the market shares of each type were roughly the same.[55] As a result, nothing was lost by grouping them. In *United States v. Philadelphia National Bank*, the Court followed the same reasoning.[56] Further, for each grouping, market shares were well above the then-existing thresholds for merger illegality.[57] Notably, however, this is not really a

51 *Id.* at 1203, 1205.

52 *Id.* at 1205–06. In addition to the thirty percent of parts that Kodak produced for itself, an additional twenty to twenty-five percent were made by other manufacturers but subject to "tooling clauses." *Id.* at 1027. The court did not explain the significance of this. One explanation is that they were engineering design clauses that prohibited these manufacturers from using the same design in a part sold to someone else.

53 *See id.* at 1205–06.

54 *Id.* at 1205.

55 Brown Shoe Co. v. United States, 370 U.S. 294, 327–28 (1962) ("whether [men's, women's, and children's shoes are] considered separately or together, the picture . . . is the same").

56 United States v. Phila. Nat'l Bank, 374 U.S. 321 (1963).

57 *Id.* at 331 (noting that the post-merger bank would have "36% of the area banks' total assets, 36% of deposits, and 34% of net loans"); *see also id.* at 359 n.36 (enumerating separate and significant market share figures for

case for a cluster market but only for identifying multiple different markets in which the defendant has approximately the same share. The Court would have arrived at the same outcome in *Brown Shoe* had it simply identified one market for men's shoes, a second market for women's shoes, and a third for children's shoes.

The *Kodak* decision saw no alternative between clustering all of the 5,000 Kodak parts or considering each of them individually; but that is hardly a clear conclusion.[58] As in any antitrust case alleging an anticompetitive refusal to deal, the plaintiff needed to allege which parts posed the threat. That may have been true only for a few parts. For example, the patented image loop that captured the page was technically complex, but other parts, such as a flat glass surface, door handles, and assembly screws, came from multiple sources.[59]

One important consequence of *Kodak*'s approach is that it required dealing in parts that repair organizations could readily obtain from other sources. That was tantamount to using market definition as a tool for changing the substantive reach of antitrust law. Under the current law of unilateral refusal to deal, the duty is very narrow and limited to inputs that are essential to a competitor's survival.[60] Whether that duty should be expanded to include non-essential inputs as well may be worth debating, but the debate should not be foreclosed simply by defining a single "market" that includes both essential and non-essential goods.

commercial and industrial loans, personal loans, real estate loans, lines of credit, personal trusts, time and savings deposits, and demand deposits).

58 *Cf.* Godix Equip. Exp. Corp. v. Caterpillar, Inc., 948 F. Supp. 1570, 1580 (S.D. Fla. 1996), *aff'd,* 144 F.3d 55 (11th Cir. 1998) (finding no relevant market for replacement parts made by Caterpillar for its own tractors when more than ninety percent of the parts could also be made by other firms).

59 *See* Herbert Hovenkamp, *Post-Chicago Antitrust: A Review and Critique*, 2001 COLUM. BUS. L. REV. 257, 286–87 (noting the components of the Kodak photocopier).

60 *See* 3B PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 773b (Wolters Kluwer 4th ed. 2015).

## III. NETWORK EFFECTS AND CLUSTER MARKETS

Large digital platforms often provide numerous noncompeting products or services on a single website and allow users to freely select among them. Can these be clustered into a single relevant market for purposes of antitrust analysis? The same criteria that delineate cluster markets in traditional technologies also apply to digital platforms, with one addition.

The extent to which network effects operate as a substantial entry barrier has been widely debated.[61] Many people have suggested that networks are "winner-take-all" markets,[62] or natural monopolies. That is not true for the majority of networks.[63] Nevertheless, network effects can sometimes operate as a significant entry barrier, although mainly vis-à-vis new entrants attempting to enter with an

[61] *E.g.*, Yael V. Hochberg, Alexander Ljungqvist & Yang Lu, *Networking as a Barrier to Entry and the Competitive Supply of Venture Capital*, 65 J. FIN. 829, 831–32 (2010) (finding that, in venture capital markets, "strong networks among the incumbent[] [venture capital firms] in the target market reduce the likelihood of entry[]" but that a "[venture capital] firm is significantly more likely to enter if it has previously established ties to incumbents"); Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CALIF. L. REV. 479, 484–87 (1998) (acknowledging the viability of network theory, examining the integration of network theory into seven fields of law, and recommending "indicia" that "courts and legislatures may use in applying network effects theory to legal issues"); *cf.* Barry Nalebuff, *Bundling as an Entry Barrier*, 119 Q. J. ECON. 159 (2004). For skepticism, see Gregory J. Werden, *Network Effects and Conditions of Entry: Lessons from the Microsoft Case*, 69 ANTITRUST L.J. 87, 88–89 (2001) (noting that "[t]he mere presence of network effects does not imply anything important about conditions of entry").

[62] Daniel A. Hanley, *A Topology of Multisided Digital Platforms*, 19 CONN. PUB. INT. L.J. 271, 289–91 (2020); *cf.* Thomas Noe & Geoffrey Parker, *Winner Take All: Competition, Strategy, and the Structure of Returns in the Internet Economy*, 14 J. ECON & MGMT. STRATEGY 141, 141–43 (2005) (excluding companies that sell products with a positive marginal cost, such as Amazon, and those "whose value clearly depends upon network externalities," like eBay).

[63] *See* Herbert Hovenkamp, *Antitrust and Platform Monopoly*, 130 YALE L.J. 1952, 1969–2000 (2021).

identical product.[64] The Federal Trade Commission's (FTC) amended antitrust complaint against Facebook acknowledges this, alleging both that entry barriers into Facebook's market are high as a result of significant network effects[65] and that the biggest threat of entry is not from clones. Rather, the more realistic entry threat is from "a differentiated product that is able to gain scale quickly" by being distinctive.[66] To the extent that a differentiated entrant faces a different demand curve, the usual rules governing natural monopoly markets with declining costs do not strictly apply.

Even if the dominant incumbent's costs are declining, a differentiated firm can enter the market by appealing to distinct customer preferences. The FTC's amended complaint alleges that Facebook "lacked the business talent" to innovate adequately on its own, instead using the strategy of "buying up new innovators that were succeeding where Facebook failed."[67] More particularly, it alleged, Facebook lacked the wherewithal to keep up with the emergence of the smartphone, which promised greatly to increase the variety of uses in which customers with cellular phones engaged.[68] Because Facebook was unable to innovate to adjust to a customer base increasingly dominated by smartphone users,

64 *Id*. at 1996–2000.

65 *See* Amended Complaint ¶¶ 163, 211, FTC v. Facebook, Inc., No 20-3590 (JEB), 2022 WL 103308 (D.D.C. Jan. 11, 2022) (mentioning "direct network effects and high switching costs" as entry barriers) [hereinafter Facebook Amended Compl.]; *see also id*. ¶ 4 (Facebook's "personal social networking monopoly is protected by high barriers to entry . . . because a personal social network is more valuable to a user when more of that user's friends and family are already members, a new entrant faces significant difficulties in attracting a sufficient user base to compete[.]"); *id.* ¶ 211 (same).

66 *Id.* ¶ 66.; *see also id.* ¶ 127 (alleging that WhatsApp's distinctive approach to messaging and security created "an important form of product differentiation" that made it "an independent competitive threat[.]"); *id.* ¶ 5 (alleging that Facebook is protected from competitive threats "until a disruptive or innovative technology emerges to open up new ways for users to connect.")

67 *Id*. ¶ 5.

68 Id. ¶¶ 6–8.

it developed a strategy of acquiring other differentiated firms more adept at taking advantage of this new technology.[69]

On the demand side, significant network effects can sometimes provide an important rationale for cluster markets. Single side, or "direct," network effects increase a particular platform's value as the number of users increase, although that fact alone does not necessarily provide a rationale for clustering diverse and non-competing services.[70] For example, a telephone network is more valuable because it allows a person to talk to a larger number of other participants as users increase,[71] even if all they do is talk. "Indirect" network effects can have the same effect on two-sided markets, making the platform more valuable as the number of participants on the other side increases.[72] The Uber ride hailing platform becomes more valuable as the number of riders grows because this increase attracts more drivers. Moreover, a greater number of drivers will attract more riders. But these effects result without regard to the variety of services.[73]

Individually, the various services that Facebook offers consumers appear to be non-competing, much like the individual services that a hospital provides.[74] However, the availability of multiple services simultaneously and on the same platform is more attractive to customers to the extent that such customers make use of different services at different times, can access them immediately from within the platform, and the services complement one another. The amended FTC complaint against Facebook refers to this aggregation as a "social graph" that maps on the way that friends and families keep in touch with one another.[75] It provides the "backbone" to the "features" that Facebook offers[76] in much the same way

69 *Id.* ¶¶ 6–8, 53–61 (partially redacted, but providing further detail).

70 *See* 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 421h.

71 *Id.*

72 *Id.*

73 *Id.*

74 *See supra* note 19 and accompanying text.

75 Facebook Amended Compl., *supra* note 66, ¶¶ 166, 168.

76 *Id.* ¶ 166.

that a hospital operating room might provide the backbone for a wide variety of procedures that individually do not compete with each other. Once the operating room is in place, it can be used for a variety of services at relatively low incremental cost.

Economies of joint provision result from common costs, or costs that can be distributed across two or more products or services, whether or not they are competing.[77] For example, it is very likely less costly for Uber to expand into Uber Eats food delivery with its existing technology and network of drivers than it would be for a new firm to start a food delivery service on its own. For Uber and Uber Eats, most of the costs can be shared across both services, and the two services very likely operate over the same geographic range. To the extent the network itself creates an entry barrier, this would provide a rationale for grouping Uber rides and Uber Eats into a cluster market.

When network effects are present, they create an important variation on common costs called "scope" effects, or the increased value that accrues as a group of goods or services offered on the same platform becomes not only more numerous but also more diverse.[78] For example, suppose Uber has traditionally served only passengers but now adds Uber Eats, a food delivery service serving the same territory and employing the same vehicles, drivers, management, and technology. The result is that Uber's network of users will become larger as it expands to include people who might use Uber Eats but did not previously use Uber as passengers. A single network that includes 1,000 Uber ride customers and 500 Uber Eats customers will have significant cost and network advantages over two separate networks for each of these buyer groups.

When Uber's participation balancing between drivers and riders is in equilibrium, it will be able to increase platform

[77] 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1.

[78] The classic treatment is John C. Panzar and Robert D. Willig, *Economies of Scope*, 71 AM. ECON. REV. 268 (1981).

size or returns only by reducing its own costs or markup.[79] If it attempts to increase its user base above equilibrium by cutting fares, it will repel drivers. If it increases fares, it will repel riders. This results from the interdependent demand structure of two-sided markets. The equilibrium position maximizes the firm's revenue assuming that demand, cost, or other external factors do not change.[80]

A promising alternative way for Uber to increase its profitability is to expand into a new product or service that rides on Uber's existing investment. On the demand side, rides and food delivery have largely independent demand: They are usually neither substitutes nor complements. That is, at any particular point of market engagement, most customers want one or the other but not both, and one is not a good substitute for the other. Thus, this differentiation enables Uber to enlarge its customer base by adding food delivery without sacrificing fares and repelling drivers. To the extent that clustering ridership and food delivery increases the user base, Uber profits. For example, if the food delivery market is 40% of the rides market, Uber could enlarge its passenger base from 1,000 fares to 1,400 fares without cutting prices. On the other side of the market, the availability of drivers would increase to the extent that more fares are available, provided the drivers were able to transport both passengers and food. As a result, the market grows on both sides.

By clustering different services, other platforms such as Amazon or Facebook do the same thing. For example, Facebook certainly becomes more valuable as it adds participants on all sides. It also becomes more valuable to these participants as it increases the range of activities that

[79] On participation balancing on two-sided markets, see Erik Hovenkamp, *Platform Antitrust*, 44 J. CORP. L. 713, 722–24 (2019); Jean-Charles Rochet & Jean Tirole, *Two-Sided Markets: A Progress Report*, 37 RAND J. ECON. 645 (2006). *See also* E. Glen Weyl, *A Price Theory of Multi-Sided Platforms*, 100 AM. ECON. REV. 1642 (2010) (arguing that more generally, factors that produce more participation on one side ordinarily lead to less participation on the other side).

[80] *See* Hovenkamp, *supra* note 79, at 723 n.51.

members can perform. These activities include the ability to chat with friends, share photographs or videos, form or join discussion groups dedicated to a particular subject, promote a business, plan events, and so on. Adding additional activities in turn attracts more users.

Many of these services, such as photo sharing, video sharing, and messaging, are noncompeting. Some may function as complements in use (i.e., users use them together, such as photo posting and messaging), but others may be quite independent of one another. To the extent the services are offered on the same platform and share some common costs, they are also complements in production.[81] As a result, Facebook's user base grows larger as Facebook offers more product diversity, which in turn attracts greater advertising revenues.

In its amended antitrust complaint against Facebook, the FTC alleged a relevant market of "personal social networking services."[82] The complaint does not refer to these services as a cluster market. Rather, it mentions the facts that the services are collectively "built on a social graph that maps the connections between users" and other contacts.[83] The services share "features that many users regularly employ to interact" with others.[84] These include "features that allow users to find and connect with other users."[85] In addition, the complaint explains why other services, including YouTube, Spotify,

[81] On complements, see *supra* notes 15–16 and accompanying text.

[82] Facebook Amended Compl., *supra* note 66, ¶ 163. The complaint explains:

> Personal social networking services are a relevant product market. Personal social networking services consist of online services that enable and are used by people to maintain personal relationships and share experiences with friends, family, and other personal connections in a shared social space. Personal social networking services are a unique and distinct type of online service.

*Id.* ¶ 163.

[83] *Id.* ¶ 166.

[84] *Id.* ¶ 167.

[85] *Id.* ¶ 168.

Netflix, and Hulu, are not in this relevant market—mainly because they specialize in providing media for passive consumption rather than communication purposes.[86] The complaint also alleges that LinkedIn and other professional networking services, as opposed to social networking services, are not in the relevant market.[87]

Facebook's motion to dismiss the original complaint, which was filed in March 2021, responded that the FTC "[h]as [n]ot [a]lleged [a] [p]lausible [r]elevant [m]arket[,]" because it fails to allege "a market that includes all products that consumers consider acceptable substitutes."[88] The motion also stated that "[t]he FTC does not allege any facts that would permit the Court to discern which products (or even which features of Facebook) are in the alleged market and which are not."[89] Further, "[i]t does not and cannot define the market using the standard analysis of cross elasticity of demand, *i.e.*, the effect a change in price for one product would have on demand for another."[90]

In dismissing the original complaint,[91] the court did *not* conclude that the individual services must be substitutes for each other. However, it agreed on nearly everything else, citing the lack of detail about the extent to which Facebook was interchangeable with rivals.[92] Ultimately, the court found the alleged market to be at least minimally plausible although

86 *Id.* ¶ 174.

87 *Id.* ¶ 172.

88 Memorandum in Support of Facebook, Inc.'s Motion to Dismiss FTC's Complaint at 1, FTC v. Facebook, No. 20-3590 (JEB), 2021 WL 2643627 (D.D.C. June 28, 2021) [hereinafter Memorandum in Support of Facebook]; *cf.* Expert Report of Carl Shapiro at 13, FTC v. Staples, Inc., 190 F. Supp. 3d (D.D.C. 2016) (No. 15-2115) (noting defendant's objections that the cluster market for consumable office supplies was "Not Consistent with Market Reality"). The FTC eventually prevailed. *See* FTC v. Staples, Inc., 190 F. Supp. 3d 100 (D.D.C. 2016).

89 Memorandum in Support of Facebook, *supra* note 88, at 2.

90 *Id.*

91 FTC v. Facebook, Inc., No. 20-3590 (JEB), 2021 WL 2643627 (D.D.C. June 28, 2021).

92 *Id.* at *12.

"idiosyncratically drawn."[93] Further, the court found severe deficiencies in the way it measured market share.[94] The amended complaint was much better on this score,[95] and the court sustained it.[96] It also concluded that the FTC had adequately alleged market shares upward of eighty percent.[97]

When an alleged relevant market consists of a single and relatively well-defined product, things that are inside of it should be close substitutes, which is simply another way of saying that they have high cross-elasticity of demand among one another. As a result, the prices of one firm's good within a market and another firm's good in the same market will move up and down together. If the market is product differentiated, they may do this imperfectly, but they will do it nonetheless.[98]

Cluster markets are different, however. For example, the group of diverse services offered by a hospital, such as abdominal surgery, obstetrics, and anesthesiology, do not experience mutual high cross elasticity of demand, and prices do not necessarily move up and down together. Some of them are "complements in use," such as surgery and anesthesiology, which means that patients consume them together, as they would hot dogs and mustard. Others are "complements in production," such as different types of surgery performed in the same operating room and with at least some common costs.[99] Indeed, all of them may be complements in production to the extent that cost savings attach to performing them in a common facility. The relevant market exists, not because there is high cross elasticity of demand among the various

93 *Id*.

94 *Id*. at *13 ("The Court is thus unable to understand exactly what the agency's "60%-plus' figure is even referring to, let alone able to infer the underlying facts that might substantiate it."). The court then permitted the FTC to replead. *Id*. at *23.

95 *See* Facebook Amended Compl., *supra* note 66, ¶¶ 194–200.

96 FTC v. Facebook, Inc., No. 20-3590 (JEB), 2022 WL 103308, at *1 (D.D.C. Jan. 11, 2022).

97 *Id*. at *6

98 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565d1.

99 On the meaning and types of complements, see 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565a.

offerings, but rather because there are significant customer conveniences and preferences that adhere in the aggregation or economies of joint provision, and the aggregation is difficult to duplicate.[100]

Facebook's criticism that the FTC's original complaint failed to allege which features are in the market and which are not was appropriate, but in a dynamic setting such criticism can be pushed too far. In many cluster markets, the precise aggregation of products and services changes over time and, in any event, is not very important. For example, a hospital may add heart transplants or third degree burn treatment or other critical care procedures to its capabilities, or a central station security service may add video monitoring. As noted above, a ride-hailing firm such as Uber may add food delivery.[101] If Philadelphia Bank[102] added internet-based bill pay, it would still be a cluster market of banking services, albeit one that offered an additional service. The rationale for the market definition is the clustering of services in a way that increases consumer satisfaction or reflects economies of joint provision. The list of individual items in this cluster can easily vary in both directions without undermining the rationale.

The specific individual services contained in a firm's cluster could be relevant in a private competitor lawsuit alleging harm that is focused on a particular product or service. In a government suit, however, the only query is whether the cluster as a whole is a meaningful aggregation capable of exercising power.[103]

In two-sided markets, it is not uncommon that firms exercise power on one side while they obtain their revenue on the other side. That is true, for example, of Facebook and Google Search.[104] There, the question is whether Facebook's

100 *See supra* text accompanying notes 34–35.

101 *See supra* text accompanying notes 73–81.

102 *See* United States v. Phila. Nat'l Bank, 374 U.S. 321 (1963).

103 This is why the causation requirement in a private government antitrust action is much more specific and focused than in a government enforcement action. *See* Herbert Hovenkamp, *Antitrust Harm and Causation*, 99 WASH. UNIV. L. REV. 787 (2021).

104 *Id*. at 806.

market power as an offeror of social network services places it in a position either to charge anticompetitive prices or impose unreasonably exclusionary practices on advertisers or other businesses with whom it deals.

## IV. CLUSTER MARKETS AND DIRECT PROOF OF POWER

Clustering is one way to approach the market power problem in cases involving multiproduct digital platforms such as Facebook. However, it is not necessarily the best way. To date, clustering has been used in the case law mainly to provide a market definition. As a result, it applies to "indirect" proof of power.[105] By contrast, "direct" proof examines evidence indicating not that the defendant controls a given market share, but rather that it actually has power over price.[106] For example, this could be evidence that the defendant is able to obtain a higher price by reducing its output and that such a price increase would be profitable.

Proof of power by reference to a share of a defined market is usually termed "indirect" because of the number of inferences it requires. In most cases, estimating a market share of a relevant market does not permit us to quantify a firm's ability to profit by charging a supracompetitive price. Rather, it supports a rather general inference that such power exists, while also perhaps providing some rough ideas about magnitude.[107] Technically, market share can produce an accurate measure of market power only if we know the market elasticity of demand and the supply elasticity of fringe competitors. Even then, this measure is accurate only in a market made up of undifferentiated products.[108] If we lack

105 *See* 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1.

106 *Id.* ¶ 506c.

107 *See* Daniel A. Crane, *Market Power Without Market Definition*, 90 NOTRE DAME L. REV. 31, 33–47 (2014).

108 Richard A. Posner & William M. Landes, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 937–39, 944, 964–65 (1981) (arguing that technically market power depends on the elasticity of demand facing a firm, its market share, the market elasticity of demand, and the elasticity of supply of fringe firms).

good information about any one of these variables, our assessment of power will be less accurate. For example, to the extent a defined market includes differentiated products, it will understate power because everything inside the market is regarded as perfectly substitutable.[109] By the same token, to the extent a defined market excludes differentiated products that compete at all, it tends to exaggerate power.[110]

By contrast, "direct" proof relies on estimates of firm elasticity of demand, evidenced mainly by a firm's price-cost margins or output responses to price changes.[111] These methodologies are capable of giving more accurate measures of market power as it is best defined—the ability of a firm to profit by raising its price above its costs.[112] They are also able to take product differentiation into account by identifying residual demand elasticities facing individual firms.[113] Under perfect competition with undifferentiated products, a firm's attempt at a unilateral price increase would be completely offset by output increases by other firms, making any price increase unprofitable. Under differentiation, this will not necessarily be the case, and the differences can be estimated.[114] For that reason, direct methods tend to be preferred by economists. In many cases, such methods also have the additional advantage of slicing through the clustering problem by taking aggregated supply or demand as given. These methods are more technical, however, and virtually always require the use of an expert economist.[115]

In dismissing the FTC's original complaint against Facebook, the court observed that while the FTC had spent considerable space in its brief arguing that direct evidence

109 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 506c.

110 *Id.*

111 *See id.* ¶ 521.

112 *See* Louis Kaplow, *Why (Ever) Define Markets?*, 124 HARV. L. REV. 437, 444–45 (2010).

113 *Id.*

114 On this point, see Jonathan B. Baker & Timothy F. Bresnahan, *Estimating the Residual Demand Curve Facing a Single Firm*, 6 INT'L J. INDUS. ORG. 283, 285 (1988).

115 *See* Hovenkamp, *supra* note 12, at 513–14, 517.

showed Facebook's market power, the complaint was in fact thin on that issue and lacked supporting facts.[116] The FTC added considerable detail in its amended complaint,[117] even though it was working against the fact that Facebook is costless to users. This makes measuring demand responses to *price* changes impossible. However, quality operates as a surrogate for price; that is, a quality decrease should operate the same as a price increase and reduce consumer demand. Here, the FTC alleged that Facebook did not experience a reduction in usage despite implementing quality changes that reduced user satisfaction.[118] The FTC also alleged that certain restrictive contract practices Facebook imposed on application developers would not have succeeded without market power.[119] That claim, if factually supportable, should succeed. Certain types of conduct, but particularly contractual restraints, are plausible only on the premise that the firm imposing them has market power.[120] One warning, however, is that the conduct must be unprofitable to the firm upon whom it is imposed or undesired by consumers. For example, one could not infer market power from resale price maintenance or territorial restraints imposed on dealers if the dealers preferred it.[121]

In its second opinion, which sustained the FTC's amended complaint,[122] the District Court sidestepped the issue of direct proof entirely. Since it had already sustained the complaint on traditional market definition grounds, it held, the court did

116 FTC v. Facebook, No. 20-3590 (JEB), 2021 WL 2643627, at *14 (D.D.C. June 28, 2021).

117 Facebook Amended Compl., *supra* note 66, ¶¶ 204–10.

118 *Id.* ¶¶ 205–07.

119 *Id.* ¶¶ 209–10.

120 On inferring market power from conduct, see 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 520.

121 *See* 8 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 1604a (Wolters Kluwer 4th ed. 2015); *see also* Facebook Amended Compl., *supra* note 66, ¶ 210 (noting Facebook's own memoranda indicating that Facebook had become a must have application for some app developers).

122 FTC v. Facebook, Inc., No. 20-3590 (JEB), 2022 WL 103308 (D.D.C. Jan. 11, 2022).

not need to reach the issue of direct proof.[123] It did suggest that a case relying on direct proof would be "rare," perhaps indicating some discomfort with the approach.[124] Factually and historically, that is undoubtedly true, but the proof and reliability case for direct proof has been consistently growing stronger, and it has clear advantages in product differentiated markets such as the one in the case against Facebook. The use of such methodologies, which do not require a market definition, have become routine in unilateral effects merger cases—another area of the law in which the focus of inquiry is on product differentiated markets.[125] Indeed, between 1989 and 2014, the proportion of merger investigations in which the FTC used unilateral effects theories increased from roughly sixteen percent at the beginning of the period to seventy-six percent at the end.[126]

One interesting feature of the cluster market analysis is that the process uses many of the same tools that are used to assess power directly. We infer the existence and strength of complements, economies of joint provision, and the range of network effects by examining the economics of market demand and supply directly. As a result, a great deal of "direct measurement" already occurs in the determination of cluster markets. For example, products are complements when their demand functions are interrelated in the sense that an increase in demand for one will occasion increased demand for the other.[127]

In the context of digital platforms, direct measurement is advantageous because the data on which it relies are usually

123 *Id.* at *4.

124 *Id.*

125 On unilateral effects mergers and their assessment without the need to define a market, see IX PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶¶ 913–14 (Wolters Kluwer 4th ed. 2015).

126 Malcolm B. Coate & Shawn W. Ulrick, *Did the Transition to Unilateral Effects Affect Federal Trade Commission Merger Challenges?* 1–2 (Feb. 25, 2021) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2995679 (on file with the Columbia Business Law Review).

127 *See* 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565a.

aggregated so as to reflect the total value that customers place on a seller's offerings. For example, if the issue is an advertiser's willingness to pay for advertising on Facebook, we would usually look at the residual elasticity of demand facing Facebook directly, without worrying about weighting the individual components of that demand to account for the various services that Facebook offers (such as video posting, message services, and the like). Likewise, in *FTC v. Staples, Inc.*,[128] once the plaintiff's expert identified the wide range of office supplies sold by Staples as a cluster market, the expert assessed the demand for these products overall.[129] Issues relating to whether "professional" social media services, such as LinkedIn, should be included in the same market would not hinder our assessment, because direct measurement should be able to determine the extent to which they compete with one another.

In a few cases, courts have looked to both cluster market definitions and direct measurement in order to assess power. Typically, they regard these as alternative methodologies for answering the same question, just as the FTC's complaint against Facebook alleged. In merger cases, this approach may also reflect the fact that case law widely requires a market definition as a matter of law, even though direct measurement would be preferable under the circumstances. In fact, the expert may in fact rely on direct measurement but present the evidence as bolstering a conclusion about market definition.[130]

For example, in *FTC v. Wilh. Wilhelmsen Holding ASA*, the FTC blocked a merger among two providers of water treatment chemicals and related services.[131] These included various boiler water treatment and services (BWT) as well as

128 FTC v. Staples, Inc., 190 F. Supp. 3d 100 (D.D.C. 2016).

129 *See* Expert Report of Carl Shapiro, *supra* note 88, at 15–17.

130 *See* United States v. H & R Block, Inc., 833 F. Supp. 2d 36, 84–85, & 84 n.35 (D.D.C. 2011) (acknowledging this issue, then delineating a relevant market and also directly assessing residual demand, which does not independently require a market definition).

131 FTC v. Wilh. Wilhelmsen Holding ASA, 341 F. Supp. 3d 27 (D.D.C. 2018).

cooling water treatment and services (CWT).[132] The court properly rejected the objection that BWT and CWT were not substitutes for each other.[133] That would be true in the case of traditional market definition, but not when the query is whether a cluster of services should constitute a market.[134] However, the court also relied on expert testimony to conclude that the output responses of the two firms was sufficient to warrant the conclusion that the merger would produce increased prices.[135]

In the *Staples* merger case, the court defined a cluster market by reference to both methodologies.[136] The expert concluded "that a *monopoly* provider of consumable office supplies would charge significantly more to large customers than Staples and Office Depot today charge these same customers."[137] In order to do this, the expert did not need to address questions like whether individual items such as paperclips and staples were substitutes or complements.

132 *Id.* at 47–48.

133 *Id.* at 49 & n.2.

134 *Id.*

135 *Id.* at 57–59 (relying on direct measurement—here, the hypothetical monopolist test—to conclude that BWT and CWT were within the same market); *see also* FTC v. Advoc. Health Care Network, 841 F.3d 460, 473–75 (7th Cir. 2016) (finding cluster market for hospital services and permitting expert to use hypothetical monopolist test to estimate power); Omni Healthcare Inc. v. Health First, Inc., No. 6:13-cv-1509-Orl-37DAB, 2016 WL 4272164 (M.D. Fla. Aug. 13, 2016) (accepting direct expert evidence on the existence of a cluster market and power within that market); Carl Shapiro & Howard Shelanski, *Judicial Response to the 2010 Horizontal Merger Guidelines*, 58 REV. INDUS. ORG. 51, 63 (2021) (approving this approach in *Wilhelmsen* case for products that are "sold together but not substitutes for each other").

136 FTC v. Staples, Inc., 190 F. Supp. 3d 100, 121–22 (D.D.C. 2016). On the hypothetical monopolist test in merger U.S. analysis, *see* DEP'T OF JUST. AND THE FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES, §§ 4.1.1, 4.1.3 (2010), https://www.justice.gov/atr/horizontal-merger-guidelines-08192010 [https://perma.cc/VC8K-PHBL].

137 *Staples,* 190 F. Supp. 3d at 122; *see also In re* McWane, Inc., No. 9351, 2014 WL 556261, at *12–13 (F.T.C. Jan. 30, 2014), *aff'd*, 783 F.3d 814 (11th Cir. 2015) (FTC finding a cluster market of numerous noncompeting pipe fittings, confirmed by expert's hypothetical monopolist test).

Rather, a supplier of the aggregate package could exact a significant price increase if it was the only local offeror of that package.[138] This direct measurement approach evades the cluster market problem altogether by simply accepting the offered grouping as given.[139]

Another advantage of direct measurement is that it can also estimate the transactional or complementarity value of aggregating services. With its cluster of services, Facebook is very likely more valuable to users than several discrete sites that individually offer one service each. This increased value from clustering will appear in any direct measure that takes Facebook as given and considers price or quality and output responses accordingly. For example, when an advertiser evaluates whether to pay for a Facebook placement, its determination of value for that placement should reflect the size of Facebook's existing customer basis, which in turn reflects Facebook's success in creating demand by clustering diverse services.[140]

## V. CONCLUSION, AND A WARNING ABOUT REMEDIES

While cluster markets seem inconsistent with the general theory of relevant markets in antitrust, they nevertheless perform a useful function when either consumer preference or economies of joint provision justify grouping noncompeting products or services together. To this, network effects provide an additional rationale, particularly when the range of network effects increases as the variety of a firm's offerings

138 *See* 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1.

139 *See id*. ¶¶ 565c1 & d2; *see also* Ayres, *supra* note 25 (defining cluster markets in terms of economies of scope and transactional complementarities); Gregory J. Werden, *The History of Antitrust Market Delineation*, 76 MARQ. L. REV. 123, 165–66 (1992) (also noting the inconsistent rationales that courts have used for clustering). *Compare* Jonathan B. Baker, *Market Definition: An Analytical Overview*, 74 ANTITRUST L.J. 129, 157–58 (2007) (arguing against overuse of clustering to support traditional market definitions).

140 *See* 2B AREEDA & HOVENKAMP, *supra* note 1, ¶ 565c1.

increase. We might speak of these as economies of scope in consumption.

At the same time, the economics of clustering also carries a useful message about remedies. The very phenomena that explain why we cluster diverse products or services into a single "market" for antitrust purposes also explains why clustering occurs in the first place. Whether because of economics of joint provision, consumer preferences for complementary features, or broad network effects, firms cluster when it is valuable to consumers, producers, or both. As a result, antitrust enforcers should be very cautious about remedies that break apart clustered platforms. The purpose of the antitrust laws is not to make products perform less well, to injure consumers, or to harm labor[141] or other input suppliers who profit from high output. Remedies should be designed to make firms perform better, not worse. This suggests that in most instances, breakups—other than divestiture of acquired companies—should be avoided. Fortunately, a wide range of remedies are within the equitable powers of the courts.[142]

141 On harm to labor from reduced output, see Herbert Hovenkamp, *Worker Welfare and Antitrust*, U. CHI. L. REV. (2022) (forthcoming), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4015834 (on file with the Columbia Business Law Review).

142 For exploration of the possibilities see Hovenkamp, *supra* note 64, at 2001–39.