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### Digital Cluster Markets

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# DIGITAL CLUSTER MARKETS

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Herbert Hovenkamp\*

## Introduction

This paper 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 how we can avoid them.

Many antitrust violations require proof of market power, or the power profitably to reduce output and raise price above cost. Historically the way antitrust litigants and courts have estimated power is by determining a market share of a properly defined “relevant market.”<sup>1</sup> The concept of a “market” is hardly limited to antitrust, however, and has been a feature of partial equilibrium analysis in microeconomics at least since the time of Alfred Marshall<sup>2</sup> and, before that, Cournot.<sup>3</sup>

One foundational requirement of markets in antitrust cases is that they consist of products that are either identical or at least very close substitutes for one another. As a result, it is meaningful to say that the products within a market compete with one another, while products inside the market do not compete with products located

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<sup>1</sup>See PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW*, Ch. 5 (5<sup>th</sup> ed. 2021) (in press).

<sup>2</sup>Alfred Marshall, *Principles of Economics* 385 (1890).

<sup>3</sup>AUGUSTIN COURNOT, *RESEARCHES INTO THE MATHEMATICAL PRINCIPLES OF THE THEORY OF WEALTH* ([1838] Nathaniel Bacon, trans. 1897) (hypothesizing discrete markets for undifferentiated commodities).

outside of it. Even though markets are nearly always porous, this principle is very robust in antitrust analysis and there are few deviations. 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 product space that their competition is slight and they should not be placed in the same market.<sup>4</sup> For example, are video cassette or DVD movies, theater-shown movies, and digitally streamed movies all in the same market simply because viewers can be observed switching among them?<sup>5</sup>

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). Complements generally behave in just the opposite way from the substitutes that form a market. For example, while 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. This is so because a buyer usually uses complements together and willingness to pay usually depends on the price of the combination.<sup>6</sup> If the price of one product goes up the price of the other must go down. For

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<sup>4</sup>Famously in *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377 (1956) (grouping cellophane, wax paper, tin foil, and common wrapping paper into a single market). See 2B PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶539 (5<sup>th</sup> ed. 2021) (in press).

<sup>5</sup>*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); *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) (similar: all movies: theatrical first- or subsequent-run, video rentals, and cable television).

<sup>6</sup>By contrast, if two goods are complements in in production output of the two will rise or fall together. As a result, increased output of one in response to increased demand may cause an excess of output in the other, and thus falling prices.

example, if the price of gasoline goes up people drive less, and this will put downward pressure on the price of cars.

The fact that complements are used together has fooled some courts into thinking that they are in the same market. For example, the Ninth Circuit once held that the fact that a photocopier requires all of its repair parts entailed that they should all be placed into an “all parts” market.<sup>7</sup> 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, and this forces the firms to compete to be her choice.

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 the *Microsoft* case the defendant was accused of monopolizing the market for operating systems for Intel-based computers. The accused product was the Windows OS, and not other products such as Microsoft Office, which it also manufactured.<sup>8</sup>

But suppose a firm is accused more generally of an antitrust violation involving a large range of products, many of which are non-competing. The issue has arisen in numerous contexts. One is the

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<sup>7</sup>*Image Technical Servs., Inc. v. Eastman Kodak Co.*, 125 F.3d 1195, 1203 (9th Cir. 1997), *cert. denied*, 523 U.S. 1094 (1998) (citing the “commercial realty” that a firm needs access to all of the replacement parts for a photocopier to include that there was a single all parts market).

<sup>8</sup>*United States v. v. Microsoft Corp.*, 253 F.3d 34, 51-52 (D.C. Cir. 2001) (relevant market must include all products “reasonably interchangeable by consumers for the same purpose,” and this limited the market to operating systems for Intel-based computers, thus excluding the MAC OS).

evaluation of hospital mergers.<sup>9</sup> 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. For example, abdominal surgery does not compete with brain surgery, which does not compete with a lab test or an ultrasound. One thing that all of these procedures have in common is that they are performed within the hospital. Clearly, however, that cannot be sufficient to put them into the same market. For example, Wal-Mart sells toasters and chainsaws in the same building, but that hardly justifies defining a "toaster/chainsaw" market.

Suppose, however, that numerous firms in a region offer only product *A*, numerous others only product *B*, and still others only product *C*. If only one firm offers all three products together, is that "cluster" a relevant market, of which it has 100 percent, or does the market include the other firms? The answer to that question could be critical in an antitrust case involving a firm such as Amazon, which has largely nondominant positions in most of the individual and noncompeting commodities that it sells. However, it aggregates more of different products together and sells them in a higher volume than almost any firm save Walmart.<sup>10</sup>

This process of aggregating noncompeting products or services leads to the creation of "cluster markets," which are markets that consist of noncompeting goods. It then becomes important to ask when it is sensible to locate power in the cluster itself rather than in

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<sup>9</sup>See *ProMedica Health Sys., Inc. v. FTC*, 749 F.3d 559, 566-567 (6th Cir. 2014), *cert. denied*, 135 S. Ct. 2049 (2015) (FTC correctly grouped noncompeting services that used similar facilities and assets).

<sup>10</sup>See Top 100 Retailers 2019, available at (showing Walmart as largest, with \$387 billion in annual sales; and Amazon as second, with \$121 billion). If the sales are limited to e-commerce, Amazon is the largest. See "Market Share of Leading Retail e-commerce Companies...", available at <https://www.statista.com/statistics/274255/market-share-of-the-leading-retailers-in-us-e-commerce/>.

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 rather than any single one,<sup>11</sup> *or*
- (2) economies of joint provision (economies of scope) make joint distribution of the cluster cheaper per good than distribution of each separately, *and*
- (3) entering into competition with the cluster is difficult.

Later we consider one additional rationale that the courts have not yet addressed but that could be relevant to the estimating the market power of platforms subject to network effects.<sup>12</sup>

Clustering nonsubstitutable goods is occasionally useful and frequently simplifies litigation, provided these limitations are followed.

Of these three criteria, the first and second refer to the nature of demand. The third refers to supply. A relevant market for antitrust purposes is a grouping of sales for which *both* the elasticity of demand and the elasticity of supply 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.<sup>13</sup> So what we are trying to identify is a cluster of products that is uniquely attractive to consumers, but also that is difficult to create and supply. As a result the inference is strong that the firm controlling this cluster

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<sup>11</sup> See Ian Ayres, *Rationalizing Antitrust Cluster Markets*, 95 YALE L.J. 109 (1985) (emphasizing role of transactional complements).

<sup>12</sup> See discussion *infra*, text at notes \_\_.

<sup>13</sup> See HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE §3.1 (6<sup>th</sup> ed. 2020).

could charge sustainable prices above the competitive level.<sup>14</sup>

Note that the two demand-side items, (1) and (2) are expressed in the alternative and distinguish two quite different situations. In the first, the cluster market exists because consumers want the cluster, or perhaps want some portion of the cluster that varies from customer to customer, or from visit to visit. Facebook very likely falls into this category. It offers a variety of noncompeting services, including photo posting, video posting, messaging, bulletin boards, discussion groups, timelines of other users, a dating service, and so on. 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, as is the ability of existing members to add or drop a particular service.

In the second category are situations where clustering results from joint costs or economies of scope, and thus the clustered seller can offer either lower prices or better results than the non-clustered seller. For example, a hospital may offer obstetrics, thoracic surgery, and radiology treatments. In this case the 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.<sup>15</sup>

For example, a customer going to Amazon to purchase a toaster will typically not purchase a chainsaw as well. Further, most of the time we can assume that the customer does not prefer Amazon for its toaster purchase simply because Amazon also carries Chainsaws. As a result, rationale (1) on the above list does not apply.

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<sup>14</sup> Cf. *Emigra group, LLC v. Fragomen, Del Rey, Bernsen & Loewy, LLP*, 612 F.Supp.2d 330 (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”).

<sup>15</sup> Cf. *Sharif Pharm., Inc. v. Prime Therapeutics, LLC*, 950 F.3d 911, 918 (7<sup>th</sup> Cir. 2020) (incorrectly limiting cluster market definition to situations where “the cluster is itself an object of consumer demand,” but then concluding that surgical services could be a cluster market).

That leaves rationale (2), which queries whether there are economies of scope that accrue to offering multiple products in the same facility. Here the answer is maybe.<sup>16</sup> We might require expert testimony to prove it, but it is certainly plausible that a firm can spread certain costs over a larger variety of products and that large sales volume in the aggregate, as opposed to a single product, will give it a cost advantage over a smaller firm that sells only one product. Note that this is *not* the same thing as saying that the firm is very large, but rather that the act of clustering multiple things together reduces costs.

That would then leave the third question, which is whether a firm currently providing a smaller range of products could readily expand to the larger range. Once again, the answer is maybe, and the question is factual and specific to each situation. If a store currently selling lumber could easily add plumbing and electrical components to its inventory, then clustering is not likely to increase power.<sup>17</sup>

### Cluster Markets in Antitrust Cases

Both the Supreme Court and lower courts have recognized antitrust cluster markets several times, often without expressly relying on these criteria. For example, in *United States v. Philadelphia Nat'l Bank*, the Supreme Court ruled that “commercial banking,” which was a cluster of various types of accounts, loans and other financial services constituted a relevant market although other financial institutions such as savings and loan associations provided many of these individual services.<sup>18</sup> Either or both of the first two

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<sup>16</sup>*Cf.* *FTC v. Staples, Inc.*, 190 F.Supp.3d 100 117-118 (D.D.C. 2016) (good discussion, recognizing the aggregation of diverse office supplies as a cluster market, but citing factors that this was analytically convenient and market shares for the individual products were similar).

<sup>17</sup>*Cf.* *Thurman Indus., Inc. v. Pay ‘N Pak Stores, Inc.*, 875 F.2d 1369, 1374, 1376 (9th Cir. 1989) (no distinct cluster market for stores that grouped building supplies and paint where any store could readily group them). *See* discussion *infra*, text at notes \_\_\_.

<sup>18</sup>*United States v. Philadelphia Nat'l Bank*, 374 U.S. 321, 356 (1963) (referring to the “cluster of products (various kinds of credit) and services (such as checking accounts and trust administration) denoted by the term ‘commercial banking’”).



conditions stated above were apparently satisfied. As the Court observed, consumers deposited funds in commercial banks though other institutions paid more interest, and for many users there was a “settled consumer preference” for commercial banks.<sup>19</sup> The third condition was also satisfied because at that time commercial banks alone provided checking accounts, they had certain cost advantages in other services, and entry into commercial banking was limited by law.<sup>20</sup>

Likewise, both economies of joint provision and consumer preference explained the cluster market found in the Supreme Court’s *Grinnell* decision involving central station property protective services. These included burglary alarms, fire alarm service, and flooding alarms.<sup>21</sup> A fire alarm service is not substitutable for a burglar alarm service, and so on. While some firms provided only one or a limited number of the various services, the central station offered economies of joint provision that would give a monopolist of the combination a decisive cost advantage over those who offered the services separately. Under the technology of the day, central station services connected covered homes by a wire to a central station, and sensors for motion, window breakage, smoke, fire, and so on were connected to the same phone line and monitored from a single center.

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<sup>19</sup> *Id.* at 356

<sup>20</sup> *See also* *United States v. Connecticut 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, 379–83 (1970) (“commercial banking” market though the main business of these merging banks resembled that of savings and loan associations excluded from the market).

<sup>21</sup> *United States v. Grinnell Corp.*, 384 U.S. 563 (1966). *See also* *FTC v. Wilh. Wilhelmsen Holdings, ASA*, 341 F.Supp.3d 27 (D.D.C. 2018) (agreeing with FTC that a cluster market existed for a variety of water treatment products and services). *Cf.* *Premier Comp Solutions, LLC v. UPMC*, 377 F.Supp.3d 506, 528-529 (W. D. Pa. 2019) (rejecting cluster market of cost containment services because the defendant appeared to be the only firm that offered the cluster, but that is hardly decisive and may have shown only that the defendant was a monopolist).

This was almost certainly cheaper than it would be for different firms to duplicate the network, each of them offering a single type of protection. The relevant questions would then be whether the offeror of the combined services could profit by charging a price significantly above its costs, while preventing other firms from offering a similar set of combined services. If the answer to both questions is yes, then the grouping is a relevant market.

Often the “clustering” problem serves to refocus our attention on the precise input that is being monopolized. Consider a relevant market for “surgical services.” Clearly, a heart bypass is not a substitute for an appendectomy, and neither one is a substitute for the surgical repair of a gunshot wound. But the problem of clustering nonsubstitutes vanishes when we realize that any source of monopoly power lies in the *facility*, in this case the hospital’s operating room, supporting equipment, and trained medical staff.

Thus, for example, a local telephone company may have monopoly power over its telephone network, which we can describe as a relevant market. This can be true notwithstanding that the various services dependent on the network, which include voice conversations, fax transmissions, and internet access, may not be good substitutes for one another. While in *Grinnell* the Supreme Court considered itself to be clustering noncompetitive products, such as fire and burglary alarm protection, the then-existing technology of the central station alarm protection industry indicates that the adopted grouping was not “clustering” at all so much as the simple provision of remote protective services and alarm connections through a single telephone line.<sup>22</sup>

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<sup>22</sup> On the technology, see *United States v. Grinnell Corp.*, 236 F. Supp. 244, 249 (D.R.I. 1964). See also *Rozema v. Marshfield Clinic*, 977 F. Supp. 1362, 1379 (W.D. Wis. 1997) (dicta: “physicians services” not an appropriate cluster market because buyers do not purchase all of them together, ultimately concluding that this finding did not undermine plaintiffs’ claim, for defendants had power even when the various services were considered separately); *Premier Comp Solutions, LLC v. UPMC*, 163 F.Supp.3d 268 (W.D.Pa. 2016) (denying motion to dismiss; cluster market for insurance services involving workers compensation); *Omni Healthcare, Inc. v. Health*

When these economies are less obvious, most customers want only one among many services, or the cluster is readily copied, the courts are much less likely to find a cluster market.<sup>23</sup> For example, one court rejected a proposed market of retail “home centers” selling electrical, plumbing and building supplies but excluding stores that sold only one or two of those items.<sup>24</sup> Another court rejected a proposed market of multiline restaurant equipment distributors allowing restaurants the convenience of “one-stop shopping” for equipment and supplies.<sup>25</sup>

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First, Inc., 2015 WL 275806 (M.D.Fl. Jan. 22, 2015) (denying motion to dismiss on claim involving an alleged cluster market of medical diagnostic services). *See also* Messner v. Northshore University HealthSystem, 669 F.3d 802 (7th Cir. 2012) (bundle of hospital services could be a product market). *Cf.* FTC v. Advocate Health Care Network, 841 F.3d 440 (7<sup>th</sup> Cir. 2016) (parties agreed to cluster market definition in hospital merger case).

<sup>23</sup> *See*, for example, the inconclusive discussion in Intellectual Ventures I, LLC v. Capital One Financial Corp., 280 F.Supp.3d 691, 702-704 (D.Md. 2017), over the existence of a cluster market for a patent portfolio covering a group of diverse financial services patents.

<sup>24</sup> *Thurman Indus., Inc. v. Pay ‘N Pak Stores, Inc.*, 875 F.2d 1369, 1374, 1376 (9th Cir. 1989) (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”).

<sup>25</sup> *Westman Comm’n Co. v. Hobart Int’l, Inc.*, 796 F.2d 1216 (10th Cir. 1986) (defendant’s alleged advantage in supplying multiple products not shown to prevent either (a) buyers from turning to others in the event of price increase or (b) suppliers from increasing their own lines relatively quickly). *See also* United States v. Ivaco, Inc., 704 F. Supp. 1409 (W.D. Mich. 1989), 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).

In these cases the courts properly focused on the facility providing the nonsubstitute goods, but they refused to find a relevant market because there was no evidence that the combinations could not readily be duplicated by other sellers in response to supracompetitive prices. For example, a customer searching for a hammer is not likely willing to pay a higher price for it from a store that also sells other types of building supplies. Even if the customer wants both a hammer and a saw, however, finding a cluster market would require evidence that it would be difficult for a store selling hammers to add saws.

A few courts have incorrectly found cluster markets where none of these conditions appears to have been met. For example, in *Image Technical Servs., Inc. v. Eastman Kodak Co.*, the Ninth Circuit found a cluster market of “all parts” for Kodak photocopiers, notwithstanding that there was no common facility in which the parts were produced and apparently no economies of scope in joint production.<sup>26</sup> Indeed, there was not even a single producer. Kodak itself produced about 30 percent of aftermarket parts for its photocopiers, and numerous other manufacturers produced the rest.

The only rationale that the court gave for grouping noninterchangeable goods into a single market is administrative convenience, which can certainly justify clustering if its limitations are carefully kept in mind. For example, in the *Brown Shoe* merger case the Supreme Court grouped men’s, women’s, and children’s shoes into the same market, but only because the defendant could not show any advantage to treating them separately. In fact, the relevant parties’ market shares for the various types of shoes were about the same, and as a result nothing would turn on separating them.<sup>27</sup> Likewise, in *Philadelphia Bank* the Court clustered noncompeting banking services such as checking accounts and business loans into a single market because the evidence indicated that the defendant had

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<sup>26</sup>125 F.3d 1195, 1203 (9th Cir. 1997), *cert. denied*, 523 U.S. 1094 (1998).

<sup>27</sup>*Brown Shoe Co. v. United States*, 370 U.S. 294, 327–28 (1962) (“whether considered separately or together, the picture...is the same”).

roughly equivalent positions in all.<sup>28</sup> It did not have, say, a dominant position in checking accounts but a nondominant position in commercial loans. Indeed, the Court also recited market shares in each of the separate markets that it found to be well above the then-existing thresholds for merger illegality.<sup>29</sup> At that point, it was administratively convenient to consider the markets together.

The *Kodak* decision spoke as if the alternative to clustering was to consider each of 5,000 parts separately, but that would hardly be the case.<sup>30</sup> As in any antitrust case, the plaintiff would have to allege which parts were subject to monopoly and which were not. That might be worth the effort with respect to only a small number of the parts. The rationale for clustering should have disappeared as soon as it was clear that the defendant's market position varied from item to item in the proposed cluster. To illustrate, suppose the aftermarket parts for a Chrysler automobile include a transmission, which is a heavy piece of specialized hardware made only by Chrysler, and also a paper oil filter, which is an easily duplicated item made by dozens of manufacturers. Adopting a cluster market containing both the transmission and the oil filter in such a case eliminates any possibility for addressing the fact that Chrysler's competitive position in its transmissions is significantly stronger than its competitive position in its oil filters.

### Network Effects and Cluster Markets

Large digital platforms often provide numerous products or services. Can these be clustered into a single relevant market for

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<sup>28</sup>United States v. Philadelphia Nat'l Bank, 374 U.S. 321 (1963).

<sup>29</sup>*Id.* at 331, noting that the post-merger bank would have 36 percent of the area banks' total assets, 36 percent of deposits, and 34 percent of net loans; *see also id.* at 360 n.36 (enumerating separate and significant market share figures for commercial and industrial loans, personal loans, real estate loans, lines of credit, personal trusts, time and savings deposits, and demand deposits).

<sup>30</sup>*Cf.* *Godix Equip. Exp. Corp. v. Caterpillar, Inc.*, 948 F. Supp. 1570 (S.D. Fla. 1996), *aff'd*, 144 F.3d 55 (11th Cir. 1998) (no relevant market for replacement parts made by Caterpillar for its own tractors when more than 90 percent of the parts could also be made by other firms).

purposes of antitrust analysis? The same criteria that delineate cluster markets in traditional technologies also apply to digital platforms, but there is also one additional one.

On the supply side, the extent to which network effects operate as a substantial entry barrier has been widely debated.<sup>31</sup> Many people have suggested that networks are “winner-take-all” markets, or natural monopolies. That is almost certainly not true, however, for the majority of networks.<sup>32</sup> Nevertheless, network effects can sometimes operate as a significant entry barrier, although mainly vis-à-vis new entrants attempting to enter with an identical product.<sup>33</sup> The FTC’s antitrust complaint against Facebook acknowledges this, alleging both that entry barriers into Facebook’s market are high,<sup>34</sup> but also that the biggest threat of entry is not from clones but rather from “differentiated products that offer users a distinctive way of interacting....”<sup>35</sup> 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. A firm can enter even if costs are declining.

On the demand side, significant network effects can sometimes provide an important rationale for cluster markets. Single side, or “direct,” network effects make a particular platform more

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<sup>31</sup>E.g., Yael v. Hochberg, Alexander Ljungqvist, & Yang Lu, *Networking as a Barrier to Entry and the Competitive Supply of Venture Capital*, 65 J. FINANCE 829 (2010); Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 84 CAL. L. REV. 479 (1998). Cf. Barry Nalebuff, *Bundling as an Entry Barrier*, 119 Q. J. ECON. 159 (2004). For skepticism, see Gregory J. Werden, *Network Effects and the Conditions of Entry: Lessons from the Microsoft Case*, 69 ANTITRUST L.J. 87 (2001).

<sup>32</sup> See Herbert Hovenkamp, *Antitrust and Platform Monopoly*, 130 YALE L.J. (2021) (forthcoming), available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3639142](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3639142).

<sup>33</sup> *Ibid.*

<sup>34</sup> See Facebook Compl., *supra* note \_\_, ¶¶65-68.

<sup>35</sup> *Id.*, ¶69.

valuable as the number of users increase, although that fact alone does not necessarily provide a rationale for clustering diverse services. For example, a telephone network is more valuable as a person can talk to a larger number of other participants, even if the only thing they do is talk. “Indirect” network effects can do the same thing on two-sided markets, making the platform more valuable as the number of participants on the other side increases. The Uber ride hailing platform becomes more valuable as the number of riders increases because this will attract more drivers. Conversely, a greater number of drivers will attract more riders. But these effects result without regard to the variety of services.

By contrast, economies of joint provision can result from common costs, or costs that can be distributed across two or more products or services, whether or not they are competing. For example, it is very likely less costly for Uber to expand into UberEats food delivery with its existing technology and network of drivers than it would be for a new firm to start food delivery on its own. At least some of the costs can be shared across both services. That then provides a rationale for grouping Uber rides and Uber eats into a cluster market.

When network effects are present, an important variation resulting from common costs is what might be called “scope” effects, 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. For example, suppose Uber has traditionally served only passengers but now adds UberEats, a food delivery service employing the same vehicles, drivers and management technology. The result is that the network of Uber users will become larger as it expands to include people who might use UberEats but were not using Uber. A single network that includes 1000 Uber ride customers and 500 UberEats 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 size or returns only by reducing its own costs or markup.<sup>36</sup> If it attempts to increase its user base by cutting fares, it will repel drivers. This results from the interdependent demand structure of two-sided markets: lower fares will attract riders but discourage drivers.

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: usually they are neither substitutes or 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. The result of two different demand functions is that adding food delivery enables Uber to enlarge its customer base 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 1000 fares to 1400 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.

By clustering different services, other platforms such as Amazon or Facebook do the same thing. For example, Facebook certainly becomes more valuable as it has more participants on all

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<sup>36</sup> On participation balancing on two-sided markets, see Erik Hovenkamp, *Platform Antitrust*, 44 J. CORP. L. 713, 722-724 (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) (more generally, factors that produce more participation on one side ordinarily lead to less participation on the other side).



sides. It also becomes more valuable to these participants, however, as it increases the range of activities that members can perform. This in turn will attract more users. These include the ability to chat with friends, to share photographs or videos, to form or join discussion groups dedicated to a particular subject, to promote a business, plan events, and so on.

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 other may be quite independent of one another. To the extent they are offered on the same platform and share some common costs they are all complements in production.<sup>37</sup> As a result Facebook's base of users gets larger as it offers more product diversity and this in turn attract greater advertising revenues.

In its antitrust complaint against Facebook the FTC alleges a relevant market of "personal social networking services."<sup>38</sup> The complaint at the time of this writing 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.<sup>39</sup> Second, what the services share is "features that many users regularly employ to interact" with others.<sup>40</sup> Third, these include "features that allow users to find and

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<sup>37</sup> On complements, *see* discussion *supra*, text at notes \_\_\_.

<sup>38</sup>Complaint ¶ 64, *FTC v. Facebook, Inc.*, 1:20-cv-03590-JEB (D.D.C. Dec. 9, 2020) [hereinafter *FTC Facebook Compl.*]. *See id.*, ¶52:

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.

<sup>39</sup> *Id.*, ¶53.

<sup>40</sup> *Id.*, ¶54.

connect with other users....”<sup>41</sup> In addition, the complaint explains why other services, including YouTube, Spotify, Netflix, and Hulu are not in this relevant market – mainly because they specialize in media for passive consumption and not in order to communicate with others.<sup>42</sup> The complaint also alleges that professional networking services such as LinkedIn, as opposed to social networking services, are not in the relevant market.<sup>43</sup>

Facebook’s motion to dismiss, which was filed in March, 2021, responds that the FTC “has not alleged a plausible relevant market, because it fails to allege “a market that includes all products that consumers consider acceptable substitutes.”<sup>44</sup> The motion also states that the 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.”<sup>45</sup> Further, “It 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.”<sup>46</sup>

These responses all ring true of a simple market limited to a single product. Things that are inside a market should be close substitutes, which is simply another way of saying that they have high cross-elasticity of demand. 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.

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<sup>41</sup> *Id.*, ¶55.

<sup>42</sup> *Id.*, ¶58.

<sup>43</sup> *Ibid.*

<sup>44</sup>Memorandum in Support of Facebook, Inc.’s Motion to Dismiss FTC’s Complaint 12, *FTC v. Facebook*, No. 1:20-cv-03590-JEB (D.D.C. March 10, 2021). Cf. Carl Shapiro’s Expert Report in the Staples case 13 (noting defendant’s objections that cluster market for consumable office supplies was “not consistent with Market Reality.” Expert Report of Carl Shapiro, *FTC v. Staples, Inc.*, No. 1:15-cv-02115 (EGS) (D.D.C. Feb. 15, 2016). The FTC eventually prevailed

<sup>45</sup> *Ibid.*

<sup>46</sup> *Ibid.*

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 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. Indeed, all of them may be complements in production to the extent that cost saving attach to performing them in a common facility. The relevant market exists, not because there is high cross elasticity of demand among the various offerings, but rather because there are significant customer conveniences and preferences that adhere in the aggregation or else economies of joint provision, and the aggregation is difficult to duplicate.<sup>47</sup>

Further, the criticism that the FTC's complaint falls to allege which features are in the market is a red herring. Clusters can differ from another, just as hospitals do. Further, in many cluster markets the precise aggregation of products and services changes over time. For example, a hospital may add heart transplants or third degree burn treatment or other critical care procedures to its menu, or a central station security service may add video monitoring. If Philadelphia Bank added internet-based bill pay, it would still be a cluster market, but one that offered one 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.

Which of the individual services is 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

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<sup>47</sup> See discussion *supra*, text at notes \_\_\_.

government suit, however, the only query is whether the cluster as a whole is a meaningful aggregation capable of exercising power.<sup>48</sup>

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.<sup>49</sup> There, the question is whether Facebook's market power in its position as 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.

### **Cluster Markets and Direct Proof of Power**

Clustering is one way to approach the market power problem in a cases involving multiproduct digital platforms such as Facebook. It is not necessarily the best way. To date, clustering has been used in the case law mainly for purposes of market definition, and thus applies to "indirect proof" by reference to a share of a relevant market.

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 market power, but only to draw a relatively general inference that it exists and some rough ideas about magnitude. 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, and even then

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<sup>48</sup> This is thy 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*, \_\_ Wash. Univ. L. Rev. (2021) (forthcoming), available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3771399](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3771399).

<sup>49</sup> See Hovenkamp, *Platform Monopoly*, *supra* note \_\_.

only in a market made up of undifferentiated products.<sup>50</sup> To the extent we lack good information about these variables, our assessment of power will be less accurate. To the extent a defined market includes differentiated products it will understate power because everything inside the market is regarded as perfectly substitutable.<sup>51</sup> By the same token, to the extent it excludes differentiated products that compete to any extent, it tends to exaggerate power.

By contrast, “direct” proof relies on estimates of firm elasticity of demand, evidenced mainly by firm output responses to individual firm price changes.<sup>52</sup> These methodologies are capable of giving more accurate measures of market power as it is best defined, which is the ability of a firm to profit by raising its price above its costs.<sup>53</sup> They are also able to take product differentiation into account by identifying residual demand elasticities facing individual firms. Under perfect competition with undifferentiated products a firm’s attempt at a unilateral price increase would be precisely offset by output increases by other firms, making the price increase unprofitable. Under differentiation this will not necessarily be the case, and the differences can be estimated.<sup>54</sup> For that reason, the methods tend to be preferred by economists. They have the additional advantage that in many cases they can slice through the

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<sup>50</sup>William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 937-938 (1981) (measuring power by reference to the Lerner Index, which expresses power as a relationship between marginal cost and the profit-maximizing price).

<sup>51</sup> See 2B PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶506c (5<sup>th</sup> ed. 2021) (forthcoming)

<sup>52</sup> See *Id.*, ¶521.

<sup>53</sup> See Louis Kaplow, *Why (Ever) Define Markets?*, 124 HARV. L. REV. 437 (2010).

<sup>54</sup> 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).

clustering problem by taking aggregated supply or demand as given. They are more technical, however, and virtually always require the use of an expert economist.

One interesting thing behind the identification of cluster markets 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, or economies of joint provision, or of the range of network effects by examining the economics of market demand and supply directly. As a result, there is already a great deal of “direct measurement” that goes on 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.

In the context of digital platforms, direct measurement has the advantage that the data that it relies on are usually 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 to place an ad on Facebook we would usually look at the residual elasticity of demand facing Facebook directly, without worrying about which components of that demand are due to video posting, message services, and the like. For example, once having identified the wide range of office supplies sold by Staples as a cluster market, the plaintiff’s expert in that case assessed the demand for these products overall.<sup>55</sup> Likewise, issues relating to whether “professional” social media services such as LinkedIn should be included in the same market would not detain us, 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

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<sup>55</sup>See Shapiro, Staples *Expert Report supra* note \_\_\_ at 3-4.

answering the same question. In merger cases the approach may also reflect that the case law is widely interpreted as requiring a market definition as a matter of law, even though direct measurement would be preferable under the circumstances. The expert may in fact be relying on direct measurement, but presents the evidence as bolstering a conclusion drawn from market definition.<sup>56</sup>

For example, in *Wilhelmsen* the FTC blocked a merger among two providers of water treatment chemicals and related services.<sup>57</sup> These included various boiler water products and services (BWT) as well as cooling water treatment and services (CWT).<sup>58</sup> The court properly rejected the objection that BWT and CWT were not substitutes for each other. 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. However, the court also relied on expert testimony to conclude that the output of the two firms was sufficient to warrant the conclusion that the merger would produce increased prices.<sup>59</sup>

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<sup>56</sup>See *United States v. H & R Block*, 833 F.Supp.2d 36, 84-85 & n.35 (D.D.C. 2011) (acknowledging this issue; then delineating a relevant market and also assessing residual demand directly which does not independently require a market definition).

<sup>57</sup>*FTC v. Wilh. Wilhelmsen Holdings, ASA*, 341 F.Supp.3d 27 (D.D.C. 2018).

<sup>58</sup>*Id.* at 48.

<sup>59</sup>*Id.* at 57-59 (relying on direct measurement – here, the hypothetical monopolist test – to include that BWT and CWT were within the same market). See also *FTC v. Advocate Health Care Network*, 841 F.3d 460 (7<sup>th</sup> 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.*, 2016 WL 4272164 (M.D. Fla. Aug. 13, 2016) (finding both a cluster market and accepting direct expert evidence on power). See Carl Shapiro & Howard Shelanski, *Judicial Response to the 2010 Horizontal Merger Guidelines*, 58 *Rev. Indus. Org.* 51 (2021)

In the *Staples* merger case the court defined a cluster market that covered a diverse and noncompeting group of office supplies, but then used expert testimony under the hypothetical monopolist formula to assess post-merger demand.<sup>60</sup> This enabled the expert to conclude “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.”<sup>61</sup> This issue did not turn on questions such as whether paper and staples were substitutes, complements in use, or simply separate products. Rather, it was the availability and convenience of the package that determine the power of the stores.

This direct measurement approach evades the cluster market problem by not requiring a market definition at all. because it involves estimating the transaction or perhaps other costs savings that result from clustering.<sup>62</sup>

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(approving this approach in *Wilhelmsen* case for products that are “sold together but not substitutes for each other”).

<sup>60</sup> *FTC v. Staples, Inc.*, 190 F.Supp.3d 100, 121-122 (D.D.C. 2016). On the hypothetical monopolist test in merger analysis, see Justice Department and FTC, Horizontal Merger Guidelines §§4.1.1, 4.1.3 (2010), available at <https://www.justice.gov/atr/horizontal-merger-guidelines-08192010>.

<sup>61</sup> *Id.* at 122. See also *In re McWayne*, 2014 WL 556261 (FTC, Jan. 30, 2014), aff’d, 783 F.3d 814 (11<sup>th</sup> Cir.) (FTC found a cluster market of numerous noncompeting pipe fittings, confirmed by expert’s hypothetical monopolist test).

<sup>62</sup> See Ian Ayres, *Rationalizing Antitrust Cluster Markets*, 95 *YALE L.J.* 109, 114-115 (1985) (cluster markets defined in terms of economies of scope and transactional complementarities). Accord Gregory J. Werden, *The History of Antitrust Market Delineation*, 76 *MARQUETTE L. REV.* 123, 166 (1992) (also noting the inconsistent rationales that courts have used for clustering). Contrast Jonathan B. Baker, *Market Definition: an Analytical Overview*, 74 *ANTITRUST L.J.* 129 (2007) (arguing against overuse of clustering to support traditional market definitions).



Another advantage of direct measurement is that it can also estimate the transactional or complementarity value of aggregating services. For example, Facebook is more valuable to customers than, say, five discrete sites that individually offered messaging, photo sharing, video posting, news, and discussion boards. This increased value from clustering will show up in any direct measure that takes Facebook as given and consider price and output responses accordingly. For example, when an advertiser determines its willingness to pay for a Facebook placement, that value reflects the size of Facebook's customer basis, which in turn reflects Facebook's success in creating demand by clustering diverse services.

### **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 offering increase. We might speak of this 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 economies of joint provision, consumer preferences for complementary features, or broad network effects, firms cluster when it is valuable. As a result antitrust enforcers should be very cautious about remedies that break up clustered platforms. The purpose of the antitrust laws is not to make products perform less well, to injure consumers, or to harm labor or other input suppliers who profit from high output. Remedies should be

designed to avoid these situations. 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.<sup>63</sup>

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<sup>63</sup> For exploration of the possibilities *see* Hovenkamp, *Platform Monopoly*, *supra* note \_\_.