PART I

ESTABLISHING DOMINANCE

1. Market definition

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I. INTRODUCTION

Monopolization, in the United States (US), and abuse of dominance, in the European Union (EU), embody different philosophies about how best to police single firm conduct in competition law. Surprisingly, their disagreements end at market definition. Both doctrines define relevant markets by similar processes and use relevant markets for similar purposes. In some contexts, this type of agreement would be a welcome sight. Here, it reflects a pocket of confusion in each area of law.

This chapter describes the confusion of current market definition practices and takes some initial steps toward a more coherent approach. It begins, in Section II, with a brief review of the common justifications for defining markets in single firm conduct cases, and a brief restatement of the common standards for defining markets. Section III then turns a critical eye to the assumed connections between current market definition practices and the substantive purposes the resulting markets are meant to serve. Sections IV and V sketch the outline of a more coherent approach to market definition in single firm conduct cases. The idea behind this approach is that markets should not be defined by rote application of omnibus standards, but should be defined by tests tailored to the specific purposes that relevant markets are meant to serve in a given application.

II. COMMON STANDARDS

Everyone knows the standards for defining markets in single firm conduct cases. Advocates in both the US and the EU have spent decades intoning the same familiar language about interchangeability and the substitutes to which consumers may turn. The stated reasons for defining markets, and the uses to which those markets are put, are also similar across jurisdictions.

A. Market Definition in Monopolization Cases

In the US, Section 2 of the Sherman Act makes it illegal for any person to 'monopolize, or attempt to monopolize, or combine or conspire … to monopolize' any trade within the scope of interstate commerce.[2] Interpreting this sparse language, the US Supreme Court has held that the offence of monopolization consists of two elements: '(1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business

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[2] 15 USC s 2.

acumen, or historic accident'.[3] The related offence of attempted monopolization edges away from the threshold requirement of monopoly power, replacing it instead with the firm's probable acquisition of monopoly power as a result of its anticompetitive conduct.[4]

Monopoly power, or its imminent acquisition, is thus a necessary element in proving any violation of Section 2 of the Sherman Act. So, what is monopoly power? The Supreme Court has described it as 'the power to control prices or exclude competition'.[5] But this is a very broad net. Nearly every competitor has some power to control prices, as well as some capacity to exclude at least certain types of competition.[6] Alternatively, monopoly power is sometimes defined as something like substantial market power.[7] This is a little more descriptive, but only a little. If market power is defined as the ability to price above a competitive level, then identifying monopoly power by this definition requires that two judgements be made, neither guided by clear standards. First, a determination must be made about what a 'competitive' price would be.[8] Second, another determination must be made about whether the current or predicted price is 'substantially' greater than this competitive price.

The practical difficulty of applying either of the above definitions of monopoly power drives most litigants to follow a different path when seeking to establish a violation of Section 2. Ever since the decision of *United States v Aluminum Company of America* in 1945, courts have endorsed an assumption that a large share of a relevant market – something in the order of 80 or 90 per cent – is evidence of a firm's monopoly power in that market.[9] This is not to say that a large market share is always indicative of monopoly power. But, according to conventional thinking, a large share is at least a necessary condition for possessing monopoly power.[10]

This, of course, requires the definition of relevant markets, and the Supreme Court has supplied several standards for the exercise. By one standard, the scope of a relevant market is to be 'drawn narrowly to exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn; in technical terms, products whose "cross-elasticities of demand" are small'.[11] By another standard, relevant markets are 'com-

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[3] *United States v Grinnell Corp* 384 US 563, 570–71 (1966).

[4] See *Spectrum Sports Inc v McQuillan* 506 US 447, 459 (1993) ('[P]etitioners may not be liable for attempted monopolization under [s] 2 of the Sherman Act absent proof of a dangerous probability that they would monopolize a particular market and specific intent to monopolize'); *Image Technical Services Inc v Eastman Kodak Co* 125 F 3d 1195, 1202 (9th Cir 1997) (observing that monopolization and attempted monopolization offences 'are similar, differing primarily in the requisite intent and the necessary level of monopoly power').

[5] *United States v E. I. du Pont de Nemours & Co* 351 US 377, 391 (1956) (*Cellophane* case).

[6] See *Northern Securities Co v United States* 193 US 197, 406 (1904) (Holmes J, dissenting) ('According to popular speech, every concern monopolizes whatever business it does, and if that business is trade between two states it monopolizes a part of the trade among the states. Of course, the statute does not forbid that. It does not mean that all business must cease').

[7] See *Eastman Kodak Co v Image Technical Services Inc* 504 US 451, 481 (1992) ('Monopoly power under [s] 2 requires, of course, something greater than market power under [s] 1').

[8] See Daniel A Crane, 'Market Power without Market Definition' (2014) 90 Notre Dame Law Review 31, 38–9.

[9] See *United States v Aluminum Co of America* 148 F 2d 416, 424 (2d Cir 1945) (*Alcoa*); *Grinnell* (n 3) 571 ('The existence of [monopoly] power ordinarily may be inferred from the predominant share of the market').

[10] See, eg, Duncan Cameron and others, 'Good Riddance to Market Definition?' (2012) 57 Antitrust Bulletin 719, 720–21.

[11] *Times-Picayune Publishing Co v United States* 345 US 594, 612 n 31 (1953).

posed of products that have reasonable interchangeability for the purposes for which they are produced – price, use and qualities considered'.[12] By another standard, relevant markets can be identified by the recognition of a product's 'peculiar characteristics and uses'.[13] By yet another standard, markets – or, at least, 'submarkets' – may be recognized by 'practical indicia' such as industry or public recognition of a market, the presence of unique production facilities, or the observation of distinct customers, distinct prices or other distinct features.[14]

Other tests supplement these standards. Initially developed for horizontal merger analysis,[15] the Hypothetical Monopolist Test (HMT) defines markets around groups of competitors who, if they were to band together as monopolists, would elect to raise prices by at least a small but significant amount for some period of time. In the merger context, the HMT is an iterative algorithm that starts from a candidate market as small as the merging parties and progressively expands the candidate market until the group of competitors it encompasses would have the joint market power and profit motive to exercise the hypothesized price increase.[16] The HMT can be used to define relevant markets in monopolization cases,[17] but sometimes requires modification to function usefully in this context – a point to which we will return shortly.

B. Market Definition in Abuse of Dominance Cases

In the EU, Article 102 of the Treaty on the Functioning of the European Union (TFEU) prohibits the 'abuse by one or more undertakings of a dominant position' within at least a substantial part of the internal market.[18] In contrast to the Sherman Act, Article 102 TFEU spells out several of the specific acts it aims to prohibit. It explains that abuse of a dominant position includes 'imposing unfair purchase or selling prices', 'limiting production … to the prejudice of consumers', and excluding rivals or otherwise distorting the competitive process, among other things.[19]

By its terms, Article 102 TFEU only applies to the conduct of an undertaking with a 'dominant position'.[20] So, what is a dominant position? In *United Brands*, the Court of Justice described dominance as 'a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by giving it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers'.[21] In guidance, the Commission has also contributed its view

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[12] *Cellophane* (n 5) 404.

[13] *United States v E. I. du Pont de Nemours & Co* 353 US 586, 593–4 (1957) (*du Pont-General Motors* case).

[14] *Brown Shoe Co v United States* 370 US 294, 325 (1962); see also *Grinnell* (n 3) 572 (endorsing, in dicta, the use of this test in monopolization cases).

[15] See Gregory J Werden, 'The 1982 Merger Guidelines and the Ascent of the Hypothetical Monopolist Paradigm' (2003) 71 Antitrust Law Journal 253.

[16] United States Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines* (19 August 2010) s 4.1.1.

[17] See, eg, *United States v Microsoft Corp* 253 F 3d 34, 81 (DC Cir 2001).

[18] Consolidated Version of the Treaty on the Functioning of the European Union [2012] OJ C326/47, art 102.

[19] ibid.

[20] ibid.

[21] Case 27/76 *United Brands Co v Commission* [1978] ECR 207, para 65.

that dominance occurs when 'competitive constraints are not sufficiently effective', such that an undertaking 'enjoys substantial market power over a period of time'.[22]

As in the case of US monopolization, these efforts to define dominance do little more than gesture at the concept. Again, the definitions fail to clearly separate dominant undertakings from the large mass of undertakings with at least some market power. Again, the effort to equate dominance with 'substantial market power' stumbles at the difficulty of identifying substantial market power. And, again, the cases have addressed these difficulties by interpreting large shares of relevant markets as the primary indicator of dominance.[23] Market shares of 70 to 80 per cent have been described as 'a clear indication of the existence of a dominant position',[24] with shares greater than this extending beyond dominance into something closer to monopoly.[25]

This places market definition in roughly the same position in abuse of dominance cases that it occupies in monopolization cases. The processes of market definition are also similar. For example, implementing regulation defines a relevant market by language similar to the US standard of reasonable interchangeability: 'A relevant product market comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use'.[26] The cross-elasticity standard is also used: 'Factors relevant to the assessment of the relevant product market include the analysis of … cross-price elasticity of demand'.[27] As explained by the Commission in the Notice on Market Definition, the goal of market definition is to identify the competitive constraints that act upon an undertaking: 'Basically, the exercise of market definition consists in identifying the effective alternative sources of supply for the customers of the undertakings involved'.[28] This recalls the HMT, which is also expressly adopted as a potential standard when defining relevant markets in abuse of dominance cases.[29]

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[22] Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings [2009] OJ C45/7, para 10.

[23] See Case C-62/86 *AKZO Chemie BV v Commission* [1991] ECR 3359, para 60 (stating that 'the Court has held that very large shares are in themselves, and save in exceptional circumstances, evidence of the existence of a dominant position', citing Case 85/76 *Hoffman-La Roche & Co AG v Commission* [1979] ECR 461, and holding that the inference of dominance applies 'where there is a market share of 50% such as that found to exist in this case'); Commission Notice on the Definition of Relevant Market for Purposes of Community Competition Law [1997] OJ C372/5, para 10 ('[A dominant position] would usually arise when a firm or group of firms accounted for a large share of the supply in any given market, provided that other factors analysed in the assessment (such as entry barriers, customers' capacity to react, etc.) point in the same direction' (internal footnotes omitted)).

[24] Case T-30/89 *Hilti AG v Commission* [1991] ECR II-1439, para 92.

[25] See *Hoffman-La Roche* (n 23) para 39 (distinguishing a dominant position from 'a monopoly or a quasi-monopoly').

[26] Commission Implementing Regulation (EU) No 1269/2013 of 5 December 2013 amending Regulation (EC) No 802/2004 implementing Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings [2013] OJ L336/1, Annex 1, sec 6.1; see also Commission Notice on the Definition of Relevant Market (n 23) para 9 (adopting this definition in other contexts).

[27] Commission Implementing Regulation (n 26).

[28] Commission Notice on the Definition of Relevant Market (n 23) para 13.

[29] ibid paras 15–17.

III. COMMON PROBLEMS

Much could be said about the various standards for defining relevant markets,[30] but the more intriguing puzzle is the assumption – common to both the US and the EU – that current market definition practices connect relevant markets to the underlying concerns of the substantive law. What makes a large share of a relevant market evidence of monopoly power or occupancy of a dominant position? What makes any of the market definition standards helpful in assessing allegedly exclusionary or abusive conduct? The conventional answers to these questions are not inspiring. They do, however, offer glimpses into the confusion that currently envelops market definition practice.

A. Markets as Threshold Tests

One conventional argument for defining markets in single firm conduct cases is the notion that only the conduct of a firm with a large enough share of a relevant market warrants special scrutiny. Consistent with this idea, market shares below about 50 per cent are treated as inadequate to establish monopoly power in US courts,[31] while something like 40 per cent or a little less gates enforcement of Article 102 TFEU in the EU.[32] This positions market definition, and market share analysis, at the threshold of the competitive effects inquiry,[33] with market shares below minimum thresholds ending inquiries before they get to competitive effects analysis.[34] That raises a question: why should low shares of a relevant market have this abortive effect?

One possible justification for the approach is the frequent suspicion that a firm without a large share of a relevant market cannot have the market power necessary to raise monopolization or abuse of dominance concerns. This might make sense if market definition controlled the price elasticity of market demand. But no current market definition standard except the HMT has any serious connection to market demand elasticity. The problem with this justi-

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[30] See Sean P Sullivan, 'Modular Market Definition' (2021) 55 UC Davis Law Review 1091.

[31] See, eg, *Bailey v Allgas Inc* 284 F 3d 1237, 1250 (11th Cir 2002) ('A market share at or less than 50% is inadequate as a matter of law to constitute monopoly power'); *Rebel Oil Co v Atlantic Richfield Co* 51 F 3d 1421, 1438 (9th Cir 1995) (collecting 'numerous cases' that hold 'a market share of less than 50 percent is presumptively insufficient'); see also Phillip E Areeda and Herbert Hovenkamp, *Antitrust Law*, vol 2B (4th edn, Wolters Kluwer 2014) para 532c (collecting other holdings).

[32] Guidance on the Commission's enforcement priorities (n 22) para 14 ('The Commission considers that low market shares are generally a good proxy for the absence of substantial market power. The Commission's experience suggests that dominance is not likely if the undertaking's market share is below 40% in the relevant market'); Commission, 'DG Competition discussion paper on the application of Article 82 of the Treaty to exclusionary abuses' (2005) para 31, https://ec.europa.eu/competition/antitrust/art82/discpaper2005.pdf, accessed 10 June 2021 (DG competition discussion paper) ('[A]lthough also undertakings with market shares below 40% could be considered to be in a dominant position. … [U]ndertakings with market shares of no more than 25% are not likely to enjoy a (single) dominant position on the market concerned').

[33] See William M Landes and Richard A Posner, 'Market Power in Antitrust Cases' (1981) 94 Harvard Law Review 937, 972 (describing the usual treatment of market power analysis in rule of reason cases as 'a threshold condition'); Guidance on the Commission's enforcement priorities (n 22) para 9 ('The assessment of whether an undertaking is in a dominant position and of the degree of market power it holds is a first step in the application of Article 82').

[34] See Frank H Easterbrook, 'The Limits of Antitrust' (1984) 63 Texas Law Review 1, 17–18 (advocating for the use of a market power 'filter' in antitrust analysis).

fication is thus that the relationship it posits is not a reliable product of current practice. As William Landes and Richard Posner observed – over 40 years ago – without controlling for demand elasticity, 'a given market share is neither necessary nor sufficient for a firm to be able to raise prices above the competitive level'.[35] While tests like the HMT offer one context where market share may have a consistent relationship with market power, the traditional practice of lumping together all different tests of market definition leaves Landes and Posner's critique as true today as it was back then.[36] A large share of a relevant market does not always indicate market power, and a small share does not preclude it.[37]

Another possible justification for the threshold-test interpretation is that a firm without a large share of a relevant market is not economically significant enough to warrant scrutiny under monopolization or abuse of dominance law. A focus on economic significance motivated the US Supreme Court in its articulation of the practical indicia standard,[38] and similar justifications have been offered for the size of a hypothesized price increase under the HMT.[39] This focus on economic significance might make sense if market definition did indeed reliably identify markets of significant economic importance. But current practice does no such thing. Markets defined by the HMT are often narrow[40] and bear no guarantee of economic significance.[41] Markets defined by substitutability inquiries similarly focus on the closeness of products, not the economic significance of those products as a class. The practical indicia test might capture markets of reliable economic significance[42] but, again, the typical practice of defining markets by lumping together different standards dilutes this relationship. In short, under current practice, a firm's large share of a relevant market says little to nothing about its size or importance in the local, national or global economy.

B. Markets as Sets of Substitutes

Another common argument for defining markets in single firm conduct cases is the idea that doing so helps to identify sets of reasonable substitutes for the products of the firm in question. The intuitive justification for this project appears to be a belief that markets are identifiable scopes of trade in the world, bounded by the similarity of products in serving particular

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[35] Landes and Posner (n 33) 952–3.

[36] See Commission Notice on the Definition of Relevant Market (n 23) para 52 (contemplating the definition of relevant markets by a combination of different factors); Sullivan (n 30) Section I (observing the apparently simultaneous application of different market definition standards in antitrust opinion).

[37] Franklin M Fisher, 'Diagnosing Monopoly' (1979) 19 Quarterly Review of Economics & Business 7, 18 (commenting on false belief that small market share shows the absence of monopoly power while large market share shows its presence and noting that what matters is what happens to market share when monopoly profits are sought).

[38] See, eg, *Brown Shoe Co v United States* 370 US 294, 325 (1962).

[39] See Areeda and Hovenkamp (n 31) para 537a.

[40] See Horizontal Merger Guidelines (n 16) s 4, para 9 ('Relevant antitrust markets defined according to the hypothetical monopolist test are not always intuitive and may not align with how industry members use the term "market"'); Sullivan (n 30) Section II.A (discussing the tendency of most modern market definition standards to identify narrow markets focused on particular concerns).

[41] See David Glasner and Sean P Sullivan, 'The Logic of Market Definition' (2020) 83 Antitrust Law Journal 293, 339–40.

[42] See Sullivan (n 30) Section I.B.

purposes or satisfying particular needs.[43] The current author and others have argued that it is a category error to think of relevant markets as constructs with any presence in the world or permanence outside of a given inquiry.[44] But, even setting aside this error, what relevance would identification of a given set of substitutes have for assessing monopolization and abuse of dominance concerns?

That question can be sharpened by the well-known *Cellophane* fallacy. As generations of students have learned, the US Supreme Court made a serious mistake in its market definition analysis in *United States v E.I. du Pont de Nemours & Co*.[45] Translating the error into HMT terms, the Court defined the relevant market by asking whether DuPont would have found it profitable to increase the price of its cellophane product. Finding this would not be profitable – since DuPont was presumably already pricing as high as its market power would allow – the Court expanded the relevant market to include products that were only realistic substitutes at DuPont's already elevated prices. This expansion of the relevant market reduced DuPont's share of the market – perversely allowing DuPont's exercise of market power to masquerade as evidence of DuPont's lack of market power.

The error of the *Cellophane* fallacy has been well aired in the scholarly literature,[46] and it now motivates cautionary qualifications in prescriptions of the HMT for use in monopolization and abuse of dominance cases.[47] For example, it is frequently said that a competitive price must be used as the baseline price when attempting to apply the HMT to single firm conduct analysis.[48] This is not exactly right. We will shortly return to this point with examples where the *Cellophane* fallacy does and does not apply in the single firm conduct context. First, however, a few additional points about current practice need to be addressed.

The underlying problem at issue in the *Cellophane* fallacy extends beyond the HMT. *All* efforts to define markets as sets of substitute products suffer from the same fundamental problem that beguiled the Court in *Cellophane*. Reasonable interchangeability, cross-price

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[43] See ibid 303–7 (discussing attempts to identify 'natural' market boundaries by reference to substitutability).

[44] ibid 307–12; Magali Eben, 'The Antitrust Market Does Not Exist: Pursuit of Objectivity in a Purposive Process' (2021) 17 Journal of Competition Law and Economics 586; Steven C Salop, 'The First Principles Approach to Antitrust, Kodak, and Antitrust at the Millennium' (2000) 68 Antitrust Law Journal 187, 188–9.

[45] *Cellophane* (n 5) 380–81.

[46] The earliest clear articulation of the error seems to be George W Stocking, 'Economic Tests of Monopoly and the Concept of the Relevant Market' (1957) 2 Antitrust Bulletin 479. For modern recitations, see Salop (n 44) 197–8; Richard A Posner, *Antitrust Law* (2nd edn, University of Chicago Press 2001) 150–51.

[47] Eg, Commission Notice on the Definition of Relevant Market (n 23) para 19 (noting the *Cellophane* problem); OECD, 'Abuse of Dominance in Digital Markets' (2020) 14, www.oecd.org/daf/competition/abuse-of-dominance-in-digital-markets-2020.pdf, accessed 10 June 2021 ('The core concepts of market definition in abuse of dominance cases are the same as those applied in merger cases. However, care must be taken when applying analytical techniques such as the hypothetical monopolist test in markets whose conditions may already have been shaped by market power'); DG Competition discussion paper (n 32) para 15 ('It is essential to take account of the fact that the SSNIP-test normally is based on the assumption that prevailing prices constitute the appropriate benchmark for the analysis. This assumption often does not hold in Article 82 cases').

[48] Eg, Patrick Massey, 'Market Definition and Market Power in Competition Analysis: Some Practical Issues' (2000) 31 Economic & Social Review 309, 323 ('The *cellophane* trap means that a different approach is required in abuse of dominance cases').

elasticity, the HMT – every substitution-based test of market definition is exposed to an interpretive problem known to economists since well before any of these tests were developed. As Fritz Machlup explained in 1952:

> [O]ne must have certain prices, price ranges, or price relations in mind when one speaks of particular demand elasticities. The cross-elasticity of demand may be of very different magnitudes at different price relations and, hence, when making an estimate of the elasticity, one obviously thinks of the currently existing price relations. If we now say that the cross-elasticity of demand between two products is zero, it may refer only to the given price relation, while at others the cross-elasticities may be positive. Where this is the case, the monopoly position exists only within certain price ranges and is therefore an imperfect one.[49]

Put another way, the very project of trying to identify a single set of substitute products is economically unsound. There is no *one* set of substitute products, only different sets of substitutes at different prices.[50] To focus on a useful set of substitutes, one must start from a clear understanding of what price range is relevant to an inquiry. That is possible – as addressed in more detail below – but it is not how relevant markets are defined or interpreted today.

C. Markets as Collections of Competitive Constraints

One last argument for defining markets in single firm conduct cases is that doing so helps to identify the competitive constraints acting upon the firm in question. Franklin Fisher was an early advocate of this understanding of market definition in antitrust cases. In 1979, he explained that, if market definition is to facilitate analysis, it needs 'to place in the relevant market those products and services and firms whose presence and actions can serve as a constraint on the policies of the alleged monopolist'.[51] Fisher contended that the breadth of a relevant market should be whatever was needed to embrace the 'significant constraints' on market power:

> [A] 'market' is something that can be monopolized. If you have left out significant constraints on power, the 'market' is too small. If you have kept in firms and products or services that are not significant constraints, the 'market' is too large.[52]

Something analogous to Fisher's constraints interpretation of market definition motivates enforcement practices in the EU. A 2005 DG Competition discussion paper states: 'The main purpose of market definition is to identify in a systematic way the immediate competitive constraints faced by an undertaking'.[53] This language parallels that of the Commission's 1997 Notice on the Market Definition,[54] which devotes an entire section to commenting on

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[49] Fritz Machlup, *The Economics of Sellers' Competition* (John Hopkins Press 1952) 547.

[50] See Franklin M Fisher, 'Economic Analysis and "Bright-Line" Tests' (2008) 4 Journal of Competition Law and Economics 129, 132 ('The relevant facts of *Cellophane* are undisputed. At a high enough price for cellophane, there was substitution of other flexible wrapping papers. At lower, still profitable prices, there was not. Once one has stated that (and specified the prices), one has said all there is to say').

[51] Fisher (n 37) 13.

[52] Fisher (n 50) 133.

[53] DG Competition discussion paper (n 32) para 12.

[54] Commission Notice on the Definition of Relevant Market (n 23) para 2.

the various competitive constraints that may be identified in the process of defining relevant markets.[55]

For abuse of dominance analysis, this focus on constraints is tethered to the substantive understanding of dominance itself. The Commission explains this point in the same 1997 notice:

> The concept of relevant market is closely related to the objectives pursued under Community competition policy. … Under the Community's competition rules, a dominant position is such that a firm or group of firms would be in a position to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers.[56]

Other Commission guidance explains dominance as a situation in which 'the undertaking's decisions are largely insensitive to the actions and reactions of competitors, customers and, ultimately, consumers'.[57] Insensitivity to customers and competitors is thus seen as a necessary condition for dominance and market power.[58]

There is undoubtedly something helpful in the constraints approach, but the usual articulation fails to capture what it is. To start, the simple equation of market power with the absence of competitive constraints is inconsistent with basic economics. All firms face competitive constraints. Even those with significant market power. Examples include workhorse models in industrial organization economics. A single-price monopolist facing a competitive fringe exercises durable market power despite the presence of competitive constraints.[59] In many oligopoly models, firms likewise exercise durable market power despite the presence of direct competition from other firms.[60] These examples illustrate a general point. As courts have intuited since the dawn of modern competition law, all market power is exercised within the bounds of some set of competitive constraints.[61]

A similar error underlies the notion that dominance over a market traces to the independence or insensitivity of a firm to the actions of others in the market. Consider the textbook single-price monopolist. No firm better captures the idea of dominance, yet the single-price monopolist is emphatically sensitive to, and dependent upon, the actions of its consumers. The monopolist raises its price until it is in the elastic portion of the demand curve, and the limit of its price is the threatened exit of the marginal consumer still willing to buy at the monopolistic

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55 ibid paras 13–24.

56 ibid para 10. This definition of dominance was articulated in *Hoffman-La Roche* (n 23) [38].

57 Guidance on the Commission's enforcement priorities (n 22) para 10.

58 ibid para 11 ('[A]n undertaking which is capable of profitably increasing prices above the competitive level for a significant period of time does not face sufficiently effective competitive constraints and can thus generally be regarded as dominant'); DG Competition discussion paper (n 32) para 23 ('For dominance to exist the undertaking(s) concerned must not be subject to effective competitive constraints. In other words, it thus must have substantial market power').

59 See, eg, Louis Kaplow and Carl Shapiro, 'Antitrust' in A Mitchell Polinsky and Steven Shavell (eds), *Handbook of Law and Economics*, vol 2 (Elsevier 2007) 1073, 1180–83.

60 See, eg, ibid 1083–6.

61 See, eg, *United States v Addyston Pipe & Steel Co* 85 F 271, 292 (6th Cir 1898) (observing that firms possessed a window of market power despite the presence of competitive constraints: 'Within the margin of the freight per ton which Eastern manufacturers would have to pay to deliver pipe in pay territory, the defendants, by controlling two-thirds of the output in pay territory, were practically able to fix prices'); *Alcoa* (n 9) 426 (similarly finding that 'within the limits afforded by the tariff and the cost of transportation, "Alcoa" was free to raise its prices as it chose').

price. The same point applies for competitors. Even a monopolist is typically sensitive to the prices of marginal substitute products and to changes like the expansion of firms in its competitive fringe.[62] Again, all market power is subject to constraints.

There is, of course, an important role for competitive constraints in single firm conduct cases. In any given equilibrium, the addition of a new constraint might depress a firm's market power while the elimination of an existing constraint might increase it. The identification of these competitive constraints can be helpful in evaluating potential *changes* in a firm's market power as a result of its conduct.[63] What the identification of these constraints does not do is shed much light on the thing it is commonly said to illuminate: whether a given firm is a monopolist, occupies a dominant position or is presently able to exercise substantial market power.

IV. A MORE COHERENT APPROACH

The single most reliable way to get market definition wrong is to try to define markets before deciding what questions need to be answered. Contrary to what seems to be standard practice today, market definition cannot usefully come before a determination of what exactly the competitive concern entails.[64] A single market also cannot generally serve every analytical purpose that might be needed. Helpful and reliable market definition starts from the questions that need to be answered and reasons backwards to the identification of markets responsive to those needs.[65] This may compel the definition of different relevant markets for different parts of the evaluative process.[66] All depends on what questions need to be answered.

So, what questions do need to be answered in single firm conduct cases? Let us focus, for now, on traditional market power concerns. Three categories of concerns could arise from the challenged conduct: (1) it could allow the firm to gain new market power, (2) it could allow the firm to maintain existing market power, or (3) it could reflect the firm's exercise of its existing market power. Within each of these broad categories of concern, subcategories could arise. Single firm conduct is not conventionally broken apart to this level of granularity – and we must save for another day a full exploration of all the possible permutations of concern – but this deconstruction helps to uncover some useful rules and guides to follow when defining relevant markets.

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[62] Lawrence J White, 'Market Power and Market Definition in Monopolization Cases: A Paradigm Is Missing' in W Dale Collins (ed), *Issues in Competition Law and Policy*, vol 2 (American Bar Association Section of Antitrust Law 2008) 913, 920 ('[D]emand for a monopolist's product should be expected to be sensitive (at the margin) to the prices of sellers of some substitutes … and thus the monopolist's price should be expected to vary as well').

[63] See Eben (n 44) 30 (suggesting something similar through a focus on the 'competitive constraints … most appropriate to the alleged conduct and theory of harm').

[64] See Glasner and Sullivan (n 41) 312–15 (describing the theory-dependence of market definition).

[65] See Sullivan (n 30) 33 (proposing a purpose-based approach to selecting between different methods of market definition).

[66] For specific discussion of defining multiple relevant markets, see Glasner and Sullivan (n 41) 330–33; Sullivan (n 30) 26–7.

A. Conduct that Increases Market Power (Results in Higher Prices)

To start, consider a firm not presently in possession of monopoly power or a dominant position, but which threatens to acquire that status through its challenged conduct. The concern is a substantial increase in the firm's market power: something that would allow it to raise prices relative to where they are now. Example fact patterns could include a merger from duopoly to monopoly or the acquisition of an essential patent by one of several current competitors. In the US, this type of conduct could be challenged as attempted monopolization.[67] In the EU, Article 102 arguably does not fit the facts – the conduct in question is creating a dominant position, not exploiting it – but a flexible enough interpretation of dominance could capture many of the interesting cases.[68]

Helpful market definition, in this context, can borrow from the standard practices of market definition in horizontal merger analysis. Where exclusionary conduct is used to obtain new market power, a helpful relevant market collects those competitors that currently constrain the firm, and thus whose exclusion could result in an increase in the firm's market power. Something analogous to the HMT, starting from the current price, would be an appropriate test for identifying this type of market. The problem of the *Cellophane* fallacy does not apply, since these markets are being defined to evaluate potential increases in market power relative to whatever market power the firm may already have. The HMT may, however, require a larger-than-average hypothesized price increase to approximate the concept of *substantial* market power, at least where the firm in question appears to have little market power at present.[69]

Next, consider a firm already in possession of monopoly power or a dominant position, but which threatens to obtain even more market power via the challenged conduct. In the US, this type of conduct could be challenged as simple monopolization.[70] In the EU, the dominant position of the firm would bring its conduct within the reach of Article 102. In either case, the inquiry involves two steps: (1) assessing whether the firm has monopoly power or a dominant position, and (2) assessing whether the firm's conduct is anticompetitive or constitutes an abuse of a dominant position. Each of these inquiries may be aided by a distinct relevant market.

As discussed above, large shares in a relevant market are often interpreted as proof of substantial market power. Without necessarily endorsing this practice, we can observe three properties of market definition necessary for a large share of a relevant market to support this interpretation. First, the market would need to be defined by a process that controls in some way for demand elasticity.[71] A process like the HMT does this indirectly through its hypothesized price increase: by construction, a monopolist in an HMT market has at least enough

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[67] See n 2 (prohibiting 'attempt to monopolize').

[68] See n 18 (prohibiting 'abuse … *of a dominant position*' (emphasis added)); Pınar Akman, *The Concept of Abuse in EU Competition Law: Law and Economic Approaches* (Hart Publishing 2012) 94 (tracing the original intent of Article 102 to the prevention of 'the dominant undertaking receiving advantages that would not be possible *but for* its dominance'). But cf n 32 (providing some flexibility for dominance to be found even at moderate share thresholds).

[69] See Glasner and Sullivan (n 41) 316–17 (explaining why the size of the hypothesized price increase in the HMT must match the magnitude of the anticipated exercise of market power).

[70] See *Grinnell* (n 3) 570–71.

[71] See generally Landes and Posner (n 33).

market power to implement a price increase of the hypothesized magnitude. Markets defined by abstract reference to substitutability or interchangeability offer no such guarantee. Second, the hypothesized price increase in the HMT would need to be large enough to equate a large market share with the possession of substantial market power.[72] Exactly what constitutes *substantial* market power may be a fact-bound question and has not been adequately explored to date. Third, the problem of the *Cellophane* fallacy emphatically *does* apply in this situation, so care must be taken not to assess patterns of substitution at already elevated prices. If something like the HMT is used, then it must be implemented as a hypothesized price increase above an estimate of a competitive base price.[73]

The above considerations apply only to the first inquiry in the challenge. Now consider the second inquiry. Even if the firm possesses significant market power, is its conduct reasonably capable of increasing that market power?[74] If market-based inferences are to be used in this second inquiry,[75] it will typically be helpful to define a different relevant market when doing so. The reason for this is that the purpose of the relevant market is now different. The point is no longer to establish the firm's market power – the purpose of the first relevant market – but to help evaluate the firm's ability to obtain additional market power through its challenged conduct. Intuitively, this second market definition exercise is analogous to that involved in the attempted monopolization challenge. Helpful market definition can again follow the pattern of horizontal merger analysis and the *Cellophane* fallacy again ceases to be a problem.[76]

As discussed above, the equation of monopoly power or a dominant position with a firm's possession of 'substantial market power' requires the hypothesis of an appropriately substantial price increase when using shares of an HMT market to assess the firm's possession of monopoly power or a dominant position. Does the same apply to HMT markets used to assess the firm's challenged conduct? How large must the hypothesized price increase be in this second market? These are difficult questions. While insignificant changes in market power may not warrant intervention, one would expect both monopolization and abuse of dominance to prohibit conduct which, though insignificant in isolation, may in aggregate have significant effects.[77] A reasonable minimum requirement is that the conduct 'relates' to the firm's current market power[78] or that it is reasonably capable of contributing to that market power.[79] Beyond this, some form of sliding scale may be appropriate, such that larger exclusionary effects

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[72] See n 69.

[73] ibid 320–21.

[74] See Salop (n 44) 195 (observing that a firm's ability to price above marginal cost 'does not mean that the firm can maintain or enhance its power by engaging in specific conduct alleged to be anticompetitive').

[75] See Herbert Hovenkamp, *Federal Antitrust Policy: The Law of Competition and its Practice* (5th edn, Wolters Kluwer 2016) 110–11 (citing predatory pricing, foreclosure, and tying as examples of conduct offences that only makes sense if the firm in question has a large market share).

[76] Here, the focus of concern is an increase in market power, and that may be appropriately modelled by a price increase over the current-price baseline.

[77] See Phillip E Areeda and Herbert Hovenkamp, *Antitrust Law*, vol 3 (4th edn, Wolters Kluwer 2015) para 651g ('Any single exclusionary act may seem trivial. … [Yet] it may be fitting to presume the exclusionary act 'significant' or 'causally related' to the monopoly power being challenged').

[78] ibid ('[I]t must at least appear plausible to an informed observer that the exclusionary act could have had, or would probably have, a significant relationship to the defendant's monopoly').

[79] ibid (rephrasing as restraints that 'reasonably appear capable of making a significant contribution to creating or maintaining monopoly power').

are demanded of firms with lower initial market power. This would smooth the distinction between monopolization and attempted monopolization in US law.[80]

B. Conduct that Maintains Market Power (Preserves Current Prices)

Now, consider single firm conduct that does not risk the creation of new market power, but instead risks entrenching, preserving or otherwise operating to maintain the firm's existing market power. Example fact patterns may include a dominant incumbent's acquisition of a nascent but potentially disruptive rival or a monopolist's adoption of contracting practices that limit the ability or incentive of customers to trade with its rivals. In the US, conduct which has the effect of maintaining existing market power can be challenged as monopolization under Section 2.[81] Recent cases have, however, narrowed the situations in which a monopolist may be obligated to allow its competitors to grow.[82] In the EU, conduct that would limit production or development in order to maintain a dominant position is proscribed by Article 102.[83] Indeed, undertakings which hold a dominant position are frequently said to have 'a special responsibility not to allow [their] conduct to impair genuine undistorted competition in the internal market'.[84] As in the previous discussion of monopolization challenges and their EU analogues, multiple relevant markets may be helpful in evaluating maintenance-of-market-power concerns.

The first relevant market to consider is a market defined and used to establish the firm's current possession of substantial market power. This is the same exercise discussed in relation to the first inquiry in an acquisition-of-market-power challenge and does not require repetition here.[85] It should, however, be noted that the effectiveness of some tools of exclusion may depend upon a firm's size and importance relative to its rivals. Examples include exclusion through volume discounts or exclusivity contracts, where the exclusionary potential of the conduct arises primarily because of the large size or importance of the firm. In some cases, the same relevant market used to establish the firm's present market power may double as a way of

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[80] See n 69 and accompanying text.

[81] See *Grinnell* (n 3) 570–71 ('willful acquisition *or maintenance* of [monopoly] power' (emphasis added)); *Aspen Skiing v Aspen Highlands Skiing* 472 US 585, 602 (1985) ('purpose to create *or maintain* a monopoly' (emphasis added)). See also Herbert Hovenkamp, 'The Monopolization Offense' (2000) 61 Ohio State Law Journal 1035, 1041 ('[A] great deal of strategic behavior is concerned with the "maintenance" rather than the acquisition of monopoly power').

[82] See *Verizon Communications Inc v Law Offices of Curtis V. Trinko LLP* 540 US 398, 415–16 (2004) ('The Sherman Act … does not give judges carte blanche to insist that a monopolist alter its way of doing business whenever some other approach might yield greater competition').

[83] See *Hoffman-La Roche* (n 23) para 91 (including in the concept of abuse, behaviour which 'has the effect of hindering the maintenance of the degree of competition still existing in the market *or the growth of that competition*' (emphasis added)).

[84] Case C-52/09 *Konkurrensverket v TeliaSonera Sverige AB* [2011] ECR 527, para 24; see also Eleanor Fox, 'Monopolization and Abuse of Dominance: Why Europe is Different' (2014) 59 Antitrust Bulletin 129, 135 ('[D]ominant firms have a special responsibility not to erect or maintain barriers that frustrate the access of nondominant firms to markets').

[85] See nn 71–73 and accompanying text.

establishing the firm's relative size and importance when evaluating this type of exclusionary conduct.[86]

Since a firm's current possession of substantial market power is no guarantee that its challenged conduct operates to maintain that power,[87] a separate inquiry is needed to identify which competitors may be limited or excluded by the challenged conduct and to assess whether these competitors would have more tightly constrained the dominant firm – eroding the firm's market power – but for the effect of the challenged conduct. As Lawrence White has explained, this aspect of maintenance-of-market-power challenges can itself be usefully deconstructed into two questions: (1) what would the relevant rivals' performance be (or have been) but for the exclusionary conduct of the dominant firm, and (2) what would the effect of this performance be (or have been) on the behaviour of the dominant firm and the options available to consumers?[88]

If market-based inferences are to be used in addressing either part of this inquiry, one market concept responsive to the maintenance-of-market-power concern would be something like a reverse HMT: a relevant market defined as a group of competitors who, if unrestrained by the firm's conduct, would likely expand or take other actions that would lead to a small but substantial depression of prices for some product sold by the monopolist or dominant firm. Note that this definition of a relevant market is easier to state than it is to operationalize. The hypothesis involves predicting both the future actions of firms *and* the effects of those actions on prices. Also, markets defined by this process may not be helpful in every case. Where only a single competitor is included in the relevant market, for example, the market adds nothing to a direct evaluation of White's two inquiries. But where multiple competitors are simultaneously constrained, or where future competitive constraints could arise from different sources, the above process of defining a relevant market may provide helpful context for the requisite analysis.[89]

Two additional observations about market definition are noteworthy. First, relevant markets defined for purposes of evaluating the firm's conduct may be quite different from relevant markets defined for purposes of evaluating the firm's market power. In *United States v Microsoft*, for example, Microsoft was found to have market power in the worldwide market for 'Intel-compatible PC operating systems'.[90] This would be the relevant market for the first inquiry above. But Microsoft's exclusionary conduct occurred in a broader scope of trade including 'middleware' products like Java and Netscape.[91] That broader scope of trade could be seen as the relevant market for the second inquiry. In *Microsoft*, the DC Circuit rightly

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[86] See Hovenkamp (n 81) 1041 ('Much monopolistic conduct is rational behavior only on the premise that the firm is already a monopolist, and frequently the conduct is designed not so much to create monopoly in a secondary market as to maintain the dominant firm's position in the primary market').

[87] See n 74; Thomas G Krattenmaker and others, 'Monopoly Power and Market Power in Antitrust Law' (1987) 76 Georgetown Law Journal 241, 255 (offering similar comments).

[88] White (n 62) 923.

[89] See Thomas G Krattenmaker and Steven C Salop, 'Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price' (1986) 96 Yale Law Journal 209, 255 ('[E]nough of the purchaser's actual and potential rivals must suffer the price increase so that remaining unexcluded rivals cannot or will not prevent the purchaser from exercising power over price').

[90] *Microsoft* (n 17) 52.

[91] See ibid 53–4 (discussing the future threat that middleware products posed for Microsoft).

rejected Microsoft's argument that the targets of alleged exclusion needed to be included in the relevant market – that is, the first relevant market.[92] The court rested this conclusion on a temporal distinction between nascent and present substitutes,[93] but it would have been clearer to observe that different relevant markets may be defined for different purposes. Here, the relevant market used to evaluate Microsoft's current market power simply involved a different set of competitors than the relevant market used to evaluate Microsoft's ability to maintain its market power against future erosion by middleware products.[94]

Second, a remaining consideration, applicable to most single firm conduct cases but especially important for maintenance concerns, is the role that the dominant firm's size can play in explaining its incentive to exclude rivals or raise their costs.[95] In many cases, the larger the dominant firm's base of existing sales, the more benefit it will extract from obstructing the competitive inroads of rivals. Intuitively, a 5 per cent market-wide price reduction may equate to a far greater profit loss for the dominant firm with an 85 per cent market share than it would for smaller competitors in the same market. The dominant firm may thus find it profitable to invest in forestalling future price decreases where smaller competitors would not.[96] When shares of a relevant market are used to assess the comparative incentives of firms to engage in exclusionary or cost-raising conduct, it seems intuitive that the relevant market for the second inquiry will often be the appropriate basis for share computations. This is only intuition, however, and exceptions may arise.

C. Conduct that Exercises Market Power (Sets Current Prices)

Finally, consider single firm conduct risking neither the creation nor the maintenance of market power but instead merely reflecting the exercise of market power. Examples of this type of conduct include a firm charging monopolistic prices or insisting upon terms of trade which could not be demanded if it did not already possess substantial market power. Under US law, this conduct falls squarely outside the reach of Section 2. Cases have long held that a monopolist commits no wrong if it obtains monopoly power without engaging in prohibited types of exclusionary conduct,[97] and recent cases have settled what little doubt may have

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[92] ibid. See also Case T-83/91 *Tetra Pak International SA v Commission* [1994] ECR II-00755, para 116 (rejecting the argument that abuse of dominance necessarily requires abuse to occur in the same market that is dominated).

[93] ibid 54 ('Because middleware's threat is only nascent, however, no contradiction exists. Nothing in [s] 2 of the Sherman Act limits its prohibition to actions taken against threats that are already well-developed enough to serve as present substitutes').

[94] See n 75.

[95] Franklin M Fisher, 'The IBM and Microsoft Cases: What's the Difference?' (2000) 90 American Economic Review 180, 180 ('An anticompetitive act by a single firm is one that is not profit-maximizing without the monopoly rents that it creates or maintains but is profit-maximizing with those rents included').

[96] See Krattenmaker and others (n 87) 259 ('The greater the disparity in market shares between the firm seeking to raise its rivals' costs and the rivals, the greater the firm's anticipated reward for achieving a higher price for its output. Hence, such a firm would be willing to spend more in attempting to exclude rivals to gain power over price').

[97] See *Grinnell* (n 3) 571 (distinguishing illegal monopolization from 'growth or development as a consequence of a superior product, business acumen, or historic accident'); *Alcoa* (n 9) 429 (inquiring whether a firm had 'monopolized' a market or whether 'monopoly [had] been thrust upon it').

remained about the legality of exercising monopoly power, lawfully obtained.[98] In *Pacific Bell v linkLine Communications*, the Supreme Court declared that 'antitrust law does not prohibit lawfully obtained monopolies from charging monopoly prices'.[99] For the same reasons, Section 5 of the Federal Trade Commission Act is unlikely to prohibit the mere exercise of market power today.[100]

Under EU law, dominant undertakings are less free to exercise their market power. Article 102 includes in its definition of abuse the act of 'imposing unfair purchase or selling prices'. Case law supports the obvious interpretation of this language as reaching something like monopolistic pricing. As the Court of Justice held in *United Brands*, 'charging a price which is excessive because it has no reasonable relation to the economic value of the product supplied would be [within the scope of the abuse of imposing an unfair selling price]'.[101] The Commission has also issued guidance identifying as illegal conduct which is 'directly exploitative of consumers, for example charging excessively high prices'.[102] At least in principle, this means that excessive pricing, or equivalent contracting practices, could be challenged as abuse of dominance under EU law.[103]

In evaluating exercise-of-market-power concerns, it is hard to find any analytical need for relevant markets or market definition.[104] The traditional inference of substantial market power from a large share of a relevant market could still be drawn. (And, if this inference *is* to be drawn, the relevant market should be defined subject to the practices discussed above.) But, unless something like excessive pricing is to be inferred from the possession of market power alone, evidence of the exercise of market power must still be produced, and whatever evidence is produced in that regard would seem better proof of the firm's possession of market power than the market definition exercise would support.[105] Perhaps this limits the role of market definition to the – presumably unusual – situation in which the challenged exercise of market power is not itself a maximal exercise of the firm's available market power.

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[98] Cf Areeda and Hovenkamp (n 77) para 650a ('[A]s the cases have clearly held, [s]2 is concerned not only with remedying monopoly power to which undesirable conduct has made a substantial contribution, but also with enjoining the conduct itself'); *Trinko* (n 82) 407 ('The mere possession of monopoly power, and the concomitant charging of monopoly prices, is not only not unlawful; it is an important element of the free-market system' … 'To safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive conduct').

[99] 555 US 438, 454 (2009).

[100] See, eg, *Official Airline Guides, Inc. v FTC*, 630 F 2d 920, 927–8 (2d Cir 1980) (acknowledging, in a Section 5 case, 'the long recognized right of trader or manufacturer … freely to exercise his own independent discretion as to parties with whom he will deal' and concluding that 'even a monopolist, as long as he has no purpose to restrain competition or to enhance or expand his monopoly, and does not act coercively, retains this right').

[101] *United Brands* (n 21) paras 248–54.

[102] Guidance on the Commission's enforcement priorities (n 22) para 7.

[103] For a discussion of apparent legal standards for the offence of excessive pricing, see Akman (n 68) 194–5.

[104] See Glasner and Sullivan (n 41) 336–9 (critiquing the possibility that market definition should be legally required even where not analytically helpful).

[105] See generally Louis Kaplow, 'Why (Ever) Define Markets?' (2010) 124 Harvard Law Review 437, 466 (providing a related but broader critique of market definition).

V. QUESTIONS OF SIZE

While the previous discussion focused on traditional market power concerns, monopolization and abuse of dominance are not necessarily so limited. Other concerns, and other aspects of what it might mean to dominate or monopolize trade, can be usefully collected under the heading of a firm's size. These, too, may influence how relevant markets should be interpreted and defined.

A. Does Size Matter?

As a thought experiment, suppose that fictional firm ZedCo has a 90 per cent share of a relevant market containing only it and one other competitor. This market was defined by the HMT with a current-price baseline and a hypothesized price increase of 5 per cent, so if ZedCo's rival were eliminated, ZedCo would be able to raise its prices by at least 5 per cent. Now suppose ZedCo pays a critical input supplier to refuse future deliveries to its rival, eventually driving the rival out of business. Does it matter, for monopolization or abuse of dominance purposes, that ZedCo is a single-employee business with market power limited to the isolated rural village in which it operates? Many would say yes: neither monopolization nor abuse of dominance feel like appropriate labels for the conduct of a firm this small,[106] even if the firm has substantial market power in its limited scope of operation.

Now change the facts. Suppose the same conduct presents only a 3 per cent chance of driving the rival from the market and suppose further that successful exclusion of the rival would only buy ZedCo the power to raise its prices by 0.001 per cent. Does it matter, for monopolization or abuse of dominance purposes, that ZedCo is a tech giant with yearly revenue greater than the GDP of many countries? Again, many would say yes. Indeed, there is an economic basis for this distinction. As Landes and Posner observed long ago, 'actual economic injury' is a function not only of the change in price 'but also the amount of economic activity over which the [change in price] occurs'.[107] Put another way, a modest market power gain could have disastrous welfare consequences when multiplied across a large enough base of transactions.

Our intuition in this thought experiment contrasts with the limited role that size plays in modern market definition practice. Relevant markets are not regularly defined by processes designed to capture economically significant scopes of trade.[108] Nor are they interpreted in these terms. True, consistent attention to market shares keeps the *relative* size of firms in focus. But an overemphasis on relative size may actually obscure the role that *absolute* size – amount of economic activity affected – also plays in explaining competitive harm.

Particularly with the growing attention being paid to large tech companies, matters of size may soon become a more important part of single firm conduct cases. This is no justification

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[106] White (n 62) 923 ('[T]here must be some de jure or de facto lower limit on a defendant's size and importance … Antitrust enforcement should not care if Joe (the owner of Joe's Unique Coffee Shop) insists that his manager Nora signs a "non-compete" clause when she decides to leave and start her own eatery …').

[107] Landes and Posner (n 33) 953; see also Louis Kaplow, 'On the Relevance of Market Power' (2017) 130 Harvard Law Review 1303, 1361 n 130 (noting the potentially countervailing concern that the costs of enforcement errors may also scale with firm size).

[108] Sullivan (n 30) Section II.A.

for changing market definition standards – making economic significance a necessary requirement of market definition, for example. But it is excellent justification for making economic significance a regular part of the interpretation of relevant markets and how the challenged conduct would affect them.

B. Does Size Alone Matter?

The previous discussion might undersell the role that size plays in monopolization and abuse of dominance concepts. One could take the position that size *alone* is a proper concern in single firm conduct cases. Under this view, firms too great in size are a danger themselves, separate from any market power concerns.[109] Markets dominated by large firms may similarly be seen as deficient themselves, separate from any specific connection between concentration and power in pricing or negotiation. Competition policy could simply prefer more and smaller competitors in important areas of trade. Here, again, growing agitation over large tech companies is surfacing many of these policy positions in debates about enforcement practices and priorities.

It is not obvious that market definition is needed to apply 'size *alone*' considerations. But, if relevant markets are to be used in evaluating single firm conduct under these policy goals, then new processes of market definition may be required. Markets defined by a process like the HMT, though potentially helpful in assessing the market power implications of different types of conduct, have no necessary relationship to these concerns. A firm's control of 99 per cent of a relevant market defined by the HMT is simply not reliable evidence that the firm is economically or politically significant, or that any other non-market-power objective would be furthered by reduced concentration in this market. Helpful relevant markets must be defined by processes matched to the concern to be addressed. For policy objectives not recently at the forefront of competition policy, there is little reason to suppose that previous market definition processes match the concern.

VI. CONCLUSION

The aspiration of this chapter is to take some initial steps toward a more coherent approach to market definition in monopolization and abuse of dominance cases. In brief, the proposed approach is to match market definition with the concerns to be addressed. If we want markets to be useful in evaluating potential wrongs, then we must define markets by processes that are sensitive to the wrongs we seek to avoid. For single firm conduct, this places the onus on the substantive law to clearly identify what specific wrongs it seeks to avoid. Greater clarity in substantive law is the most promising path to coherence in this area of market definition.

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[109] For a variety of arguments in this vein, see Tim Wu, *The Curse of Bigness: Antitrust in the New Gilded Age* (Columbia Global Reports 2018).

2. Understanding market power: an economics perspective

Nicolas Petit

I. INTRODUCTION

Antitrust laws are concerned with undue market power. In an economic conception of the law, antitrust rules of liability strike down anticompetitive business conduct or mergers that represent illegitimate market power strategies. Throughout history, the antitrust literature has been an ebb and flow of commentary on antitrust laws' costly and ineffective checks against undue market power.[1]

Part of the controversies owes to misconceptions about market power. Antitrust lawyers lack a common understanding of market power.[2] The result is a great deal of confusion about what antitrust laws achieve. At a time of concern towards rising levels of market power in the past decades, empirical evidence suggests that high prices have been localized in the United States (US), and that a stronger approach to antitrust law and economic regulation in the European Union (EU) has supplied welfare gains to consumers on the old continent.[3] However, when European antitrust lawyers think about market power, they do not direct their attention to consumer prices. They think about corporate size and industrial concentration, see giant American firms, and deduce that they have a domestic market power problem.

Different concepts of market power additionally shape conflicting views about what antitrust laws can achieve. According to one school, excessive market power produces economic inefficiency in the form of missing output at positive rates of return as well as distributional harms through transfers from consumers to managers and owners of firms which are arguably wealthier.[4] Consequently, antitrust law can be an uncostly instrument of choice to address economic inequality. Stronger antitrust rules and enforcement policies against weaker forms of market power are desirable. On the other side, a conception acknowledges that market power produces inefficiency as well as diverse distributional harms and benefits. But antitrust law should treat distributional effects as indifferent because they involve hard-to-resolve trade-offs for antitrust courts and agencies.[5] Instead, the selection of a value choice criterion and the col-

[1] Eleanor M Fox, 'The Battle for the Soul of Antitrust' 75 California Law Review 917.

[2] And antitrust lawyers do not realize this.

[3] Thomas Philippon, *The Great Reversal: How America Gave Up on Free Markets* (Belknap Press 2019). On concentration and rising market power, see also Chapter 3 in this volume.

[4] Lina M Khan and Sandeep Vaheesan, 'Market Power and Inequality: The Antitrust Counterrevolution and Its Discontents' (2017) 11 Harv L & Pol'y Rev 235.

[5] Oliver E Williamson, 'Economies as an Antitrust Defense: The Welfare Tradeoffs' (1968) 58 The American Economic Review 18.

lection of data on relative income distributions among consumers, workers, and firm owners fall more clearly within the province of taxation, expenditure, and transfer payment activities.[6]

The state of affairs never ceases to surprise economists. For them, market power is a term of art. However, judges and agencies are not economists. And statutory law, judicial interpretation, the constraints of antitrust practice, and the influence of ideology combine to produce diverse market power conceptions. Besides, the market power story is not always uniformly told by economists. Subtle definitional differences that matter get overlooked in favour of 'simplistic notions',[7] and all the more if lawyers are in the audience.

A review of the economics of market power can therefore help to shed preliminary light on how to evaluate what US and EU antitrust laws do to control undue market power, and what can be done better. Put differently, an economic perspective can be a first step towards the development of a unified and coherent theory of market power control in antitrust.

The issue is approached in three steps. The chapter starts with the basic definition of market power as power over price (II).[8] Because, however, nearly every economist accepts that a concept of market power as power over price is too simplistic, the chapter surveys more technical definitions of market power in use in the literature (III). Last, the chapter describes economists' common understanding of classes of pricing phenomena that do not constitute market power problems (IV).

II. POWER OVER PRICE

When there is market power, one (or more) firm(s) can raise prices above the cost of production. Customers that would benefit from buying units at the cost of production – including at an ordinary rate of return to the firm – are not served. And units that would be profitable to sell are not produced. Sales are missing, even though benefits to buyers exceed the cost to sellers. That outcome, called a 'deadweight loss', is inefficient from a social perspective. Some wealth, value, and prosperity are lost.[9] Buyers direct their expenditure to 'less satisfactory purchases' without this being compensated by gains to the seller with market power.[10] Sellers of less valuable commodities increase their output. But the aggregate size of the economic pie remains smaller than without market power, because the worth of these trades is inferior.[11]

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[6] Joseph Farrell and Michael L Katz, 'The Economics of Welfare Standards in Antitrust' (2006) UC Berkeley: Competition Policy Center, available at https://escholarship.org/uc/item/1tw2d426, 26 October 2022.

[7] Franklin M Fisher, 'Diagnosing Monopoly' (1927) 27 J Reprints Antitrust L & Econ 66 (noting 'economists often use words which are in common use and whose everyday meanings are not in fact the same as their technical definition' and adding: 'the legal profession and the economist (not to mention competitors of the alleged monopolist) all have something different in mind').

[8] Chad Syverson, 'Macroeconomics and Market Power: Context, Implications, and Open Questions' (2019) 33 Journal of Economic Perspectives 23, 25.

[9] It cannot be observed in the GDP statistics.

[10] Abba P Lerner, 'The Concept of Monopoly and the Measurement of Monopoly Power' (1934) 1 Review of Economic Studies 157.

[11] What should happen is that the resources (ie the capital and labour) used in lower profit industries where purchasers now buy would be more optimally reallocated to the high-profit industry, to supply the output not furnished by the monopoly firm. For an exposition of this idea, see Arnold C Harberger, 'Monopoly and Resource Allocation' (1954) 44 The American Economic Review 77.

The cost, efficiency, or innovation constraints bearing on firms with market power are also laxer. Market power, simply put, is inefficient. Harberger lumped all this under a concept of 'malallocative' or 'misallocation' effects of monopoly.[12]

Now, *why* do firms with market power leave profits from additional transactions on the table? Economics explains that when firms have no rivals,[13] profit maximization leads monopoly firms to choose to reduce output as the privately efficient equilibrium.[14] The logical implication is that deviations from competitive conditions engender market power exploitation. Private and social benefits are misaligned. The policy implication is that lost output constitutes a pecuniary externality from rational profit maximization that stands on equal footing with other market failures addressed by public intervention (or private ordering), like information asymmetries, free riding, missing markets, regulatory distortions, and so on.[15]

III. TECHNICAL DEFINITIONS OF MARKET POWER

In the economics literature, several technical definitions of market power exist. They arose in response to the classical economists' initial understanding of monopoly and competition as government privilege. These are reviewed in turn.[16]

A. Classical Economics

Classical economists envisioned monopoly as a problem caused by the government. Interference with markets through royal privileges, licences, patents, and tariffs was the main source of monopoly power.[17] The problems besetting free markets were different. The

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[12] ibid.

[13] Economics adds another condition, which is that firms cannot price discriminate, meaning that they cannot charge each user with a distinct reservation value an individual price.

[14] Note though, that another privately and possibly even socially efficient equilibrium would arise if the firm was able to perfectly price discriminate, and charge each consumer the maximum price he or she is willing to pay. Yet, the conditions for this to be possible are difficult to fulfil, and seldom encountered in practice.

[15] In some economic works, the externalities that are mediated by markets are called pecuniary externalities. Some consider that pecuniary externalities are not market failures, or at least not as problematic from a welfare standpoint. For the concept of pecuniary externalities (an externality manifest in a change in prices), see Martin Shubik, 'Pecuniary Externalities: A Game Theoretic Analysis' (1971) 61 American Economic Review 713.

[16] Estimation techniques are not discussed. Before estimating, one needs a definition, to know what is measured. Market power estimation techniques are a field of economics of their own, and involve statistical, accounting, and data techniques beyond the scope of this chapter.

[17] During the 1890s, despite the passing of the Sherman Act, US economists showed overall little interest in pursuing the analysis of monopoly. Cournot's pivotal study on duopoly, although being published in 1838, would be recognized only posthumously, having had before only limited influence. The reasons are probably to be found in a mathematical approach which was uncommon at the time, together with the focus on output as a key variable, disregarded as unrealistic. See Irving Fisher, 'Cournot and Mathematical Economics' (1898) 12 The Quarterly Journal of Economics 119; JM de Bornier, 'The "Cournot-Bertrand Debate": A Historical Perspective' (1992) 24 History of Political Economy 623; TAB Corley, 'Emergence of the Theory of Industrial Organization, 1890–1990' (1990) 19 Business and Economic History 83.

opposite of competition was not a monopoly, but 'cooperation'.[18] Concerted action amongst independent firms came first from agreements, congers, guilds, pools, trade associations, and trusts (sometimes supported by governments).

More generally, classical economists understood competition as an 'active process of jockeying for advantage', that is, the race to get the best deal on the market. Prices above costs were signs of lively competition, not its elimination. When high prices were observed, potential competition was deemed a disciplining force. There was no discussion of monopoly in terms of a falling demand curve, price above costs, or reduced output.

B. Falling Demand Curve

Augustin Cournot, a French (late classical) economist of the nineteenth century, was the first to offer a technical treatment of the issue. Cournot considered that market power stemmed from the falling demand curve. With help of the now familiar 'demand curve',[19] Cournot established that the units of a good that are demanded (D) are a *continuous* function of its price (p).[20] The functional relation F(p) between p to D is, 'in general' that a price increase will be followed by a corresponding decrease in demand.[21]

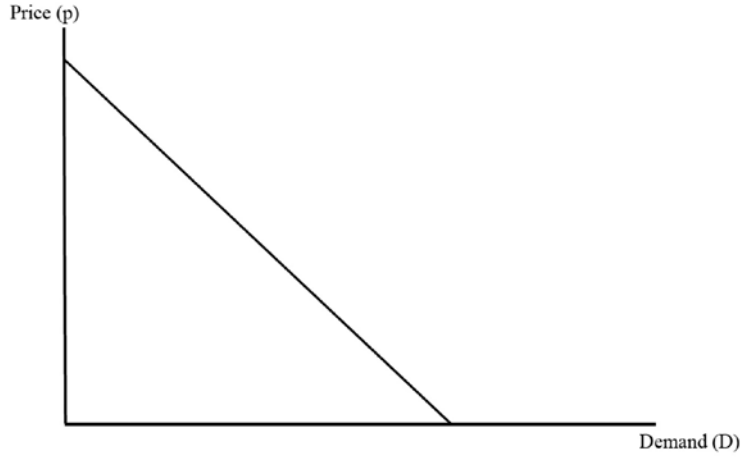

Figure 2.1 Demand curve

[18] Mark Blaug, 'Is Competition Such a Good Thing? Static Efficiency versus Dynamic Efficiency' (2001) 19 Review of Industrial Organization 37. FA Walker, later the first president of the American Economic Association, wrote in the main textbook of the time that 'Competition signifies the operation of individual self-interest among the buyers and sellers of any article in any market. It implies that each man is acting for himself solely, by himself solely, in exchange, to get the most he can from others, and to give the least he must himself.' See Francis Amasa Walker, *Political Economy* (3rd edn, Macmillan 1982) 91–2.

[19] In Chapter IV of Antoine-Augustin Cournot, *Recherches Sur Les Principes Mathématiques de La Théorie Des Richesses* (Hachette 1838). See also Fisher (n 17).

[20] Actually, Cournot talked more of a law of falling demand or a law of falling sales (débit), than of the falling demand curve; Cournot (n 19).

[21] Cournot was careful to stress that the relationship needed not to be proportional, and constant, at all levels of prices; ibid, para 23.

Table 2.1 Example of supply point with falling demand

Price (p)	Units F(p)	Total Revenue pF(p)	Direction
0	10	0	↑
1	9	9	↑
2	8	16	↑
3	7	21	↑
4	6	24	↑
5	5	25	=
6	4	24	↓
7	3	21	↓
8	2	16	↓
9	1	9	↓
10	0	0	↓

So the law of demand means that a firm can sell more by lowering the price. But how can this ever create market power or, in the popular saying, 'power over price'? The seminal demonstration of Cournot is counterintuitive, but compelling. Each firm, Cournot hypothesized, wants to maximize the 'total value', revenue or profit from its 'things' or 'labour'.[22] Now, when the demand curve is negatively sloped, it is *wrong* to assume that maximizing sales maximizes total value.[23] Of course, a firm can sell more units by lowering p. However, the theoretical price that maximizes sales is 0, and at p = 0, the revenue to the firm is null. In addition, another property of the falling demand curve must be that an 'infinite' price also gives a demand of 0.[24] With this background, total value, revenue, or profit maximization requires a firm to pick a price point on the demand curve between zero and a high price.

Cournot established another continuous function pF(p) that can be derived from the falling demand curve and that shows that revenue (not demand) tends to increase with p moving away from 0, until a point where it decreases.[25] This particular pricing point is the supply point that any firm, including a monopolist, will select on the demand curve (see Table 2.1, for an example).

Now, in what sense is the falling demand curve a source of market power? There are at least two ways to see this. The first requires focusing on the differences between the demand curves faced by a monopolist and by a firm operating under perfect competition. In perfect competition, which Cournot also studied, the demand curve faced by a firm is horizontal, because there are multiple alternative sellers of goods. A high price is impossible because it means an absence of sales. By contrast, when the demand curve is falling, a high price means

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[22] Cournot indistinctly uses terms like value or profits; ibid.

[23] Lawyers usually struggle to capture the depth of this idea, because they implicitly assume that, to sell more, you need to lower the price, and make the hidden assumption that profit maximization means selling more.

[24] Cournot said that demand 'vanishes' when p becomes infinite. He remarked that a mineral water monopoly can indeed impose an unrealistic price of 100 francs a litre. But soon enough, the mineral water monopolist will face a scarcity, if not a disappearance, of buyers due to the negative slope of the demand curve; Cournot (n 19), paras 24–6. Robinson, in stricter terms, once said that infinite elasticity was an 'absurdity'; Joan Robinson, *The Economics of Imperfect Competition* (Springer 1969).

[25] The total value function expresses the total value of quantities demanded and sold, which can be noted as pF(p).

serving fewer customers, but more revenue than selling to all customers. Relative to perfect competition, the monopoly firm has more power over demand.

The second approach consists in reading the falling demand curve as an aggregate population of 'varied' consumers who enjoy distinct utility from consumption, itself dependent, said Cournot, upon 'customs', 'norms', and the 'scale' and 'distribution' of 'wealth' in society.[26] Simply put, the falling demand curve means that some customers are ready to pay higher prices than others.[27] The firm faces an environment different from one with a flat demand curve where not one customer will accept a higher price. The firm with a falling demand curve can extract a 'rent' by selling to some customers, but not to all, says Cournot. The magnitude of that rent will only depend on the 'nature' – the slope – of the falling demand curve.

A conventional economics presentation is to discuss the falling demand curve as a constraint on monopolists, not as a profit maximization opportunity.[28] Lawyers often struggle with this idea. But it has a kernel of truth. The proposition that a monopoly is constrained by demand makes sense if understood as the idea that a monopoly firm is 'only' constrained by demand, nothing else. The monopolist maximizes profit *given* the falling demand curve. This explains that Cournot literally discussed the problem in terms of how the monopoly firm 'fixes' a price (this relates to the contemporary concept of 'price setter'). This is unlike consumers, who 'bear' the price set by the monopoly firm.[29]

C. Price Above (Marginal) Cost

Another definition characterizes market power as prices exceeding production costs. This definition is the work of neoclassical economists.[30] Enlightened, but half-fed by Cournot's positive theory of monopoly, neoclassical economists had just figured out that monopoly was endogenous.[31] Something could be done to address the welfare effects of monopoly. Unfortunately, Cournot's work was frugal in insights about how to rearrange markets in ways more beneficial to society. In addition, Cournot had described abstract functional relations, not algebraic 'determinations' that would have been more directly useful to practitioners. Neoclassical economists, who also understood that market power was a question of degree, needed a more

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[26] Cournot (n 19) paras 21–2.

[27] Compared to a situation in which the firm must sell all the output that is demanded by all consumers at the lowest price point. The monopoly firm that faces a falling demand curve no longer needs to sell all the output demanded.

[28] It is truly a constraint, because the firm, even a monopoly, cannot both select price and output, just one of them.

[29] A mainstream account of market power is that the monopoly firm '*sets*' prices, while consumers '*take*' prices. To avoid confusion here, it is worth recalling the contrast with Cournot's oligopoly model where firms set quantities.

[30] This idea was already in Ricardo, a cornerstone of classical economics. See David Ricardo, *On the Principles of Political Economy and Taxation* (John Murray 1817).

[31] In this regard, Giocoli writes: 'Shockingly, American economists discovered that market power could well be the natural product of competitive markets and that, under certain conditions, the inevitable outcome of free competition was monopoly, i.e. the demise of competition itself'; Nicola Giocoli, 'Free from What? Classical Competition and the Early Decades of American Antitrust' (2021) 26 New Political Economy 86, 91.

operational procedure to estimate both its magnitude and welfare effects.[32] They attacked the problem of the 'determination' of the output of the individual firm head-on.

Building on Cournot's insight that the monopolist would proceed by 'trial and error', neoclassical economics formalized the process of setting prices as a marginalist thought experiment.[33] Assuming profit maximization, the monopolist grows output and lowers prices up to the level where marginal revenue ('MR') equals marginal cost ('MC') (see Table 2.2 and Figure 2.2).[34] Put differently, the monopolist decides to produce an extra quantity of output if (and only if) this yields a revenue increment greater than the costs incurred to produce a marginal unit.[35] The neoclassical redux of market power emphasizes the role of two constraints, not just one, on the monopoly firm.

The first constraint is the falling demand curve, with a tweak.[36] The falling demand curve must be read as meaning that as served buyers experience less satisfaction through consumption, they derive marginally less benefit from extra units, and are thus willing to pay less for them. Importantly, MR is lower than the price at each level of output, because all previous units sell at a lower price too.

The second constraint is the existence of increasing (or constant) costs that, neoclassical economists believe, is a good empirical generalization of a firm's decisional context.[37] Costs increase with quantity because the labour force becomes less productive as the scale of production expands,[38] and the opportunity cost of leisure increases. There is a declining marginal product of labour. Most supply curves are drawn with an upward slope to show this. The implication is that to produce one more unit, a monopolist must spend more.[39]

Now, the joint consideration of MR and MC allows a prediction about the level of output of the monopoly firm. The level of output lies at the intersection of MR and MC. It is an equilibrium point, because, under this condition, the level of output will not be altered.[40]

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[32] Piero Sraffa, 'The Laws of Returns under Competitive Conditions' (1926) 36 The Economic Journal 535.

[33] Cournot used the French word 'tâtonnement'; Cournot (n 19).

[34] This is not true for a firm in a competitive market, which sets price equal to marginal cost without considering marginal revenue. The firm in a competitive market is said to be a 'price taker', whereas the firm in a monopoly market is said to be a 'price setter'.

[35] Here is an untechnical example to help the non-economist understand the monopolist's thinking: do marginal returns on producing ten additional pages in a long working paper compensate for the marginal costs of writing them? In this example, marginal returns are the reader's interest, downloads, or citations to the paper. In both the metaphor and the model, marginal returns tend to decrease when more pages are added to the paper, at least when the reader is a journalist or policymaker.

[36] Lerner (n 10).

[37] Robinson writes that 'in general, it may be supposed that in the short period marginal costs begin to rise at a fairly low level of output'; see Robinson (n 24) 50.

[38] The earnings of a worker tend to be equal to the net product due to the additional labour of the relevant worker (assuming the marginal product of capital is constant).

[39] Sraffa discussed the idea that 'each competing producer necessarily prices normally in circumstances of individual increasing costs'; see Sraffa (n 32) 543.

[40] In Robinson's terms, there is equilibrium when output is not altered, when there is no tendency to contract or expand its output; Robinson (n 24) 57.

Table 2.2 Monopoly equilibrium

Price (p)	Units F(p)	Total Revenue pF(p)	Marginal Revenue (MR)	Marginal Cost (MC)
0	10	0	0	4
1	9	9	9	3
2	8	16	7	2
3	7	21	5	1
4	6	24	3	2
5	5	25	1	3
6	4	24	(1)	4
7	3	21	(3)	5
8	2	16	(5)	6
9	1	9	(7)	7
10	0	0	(9)	8

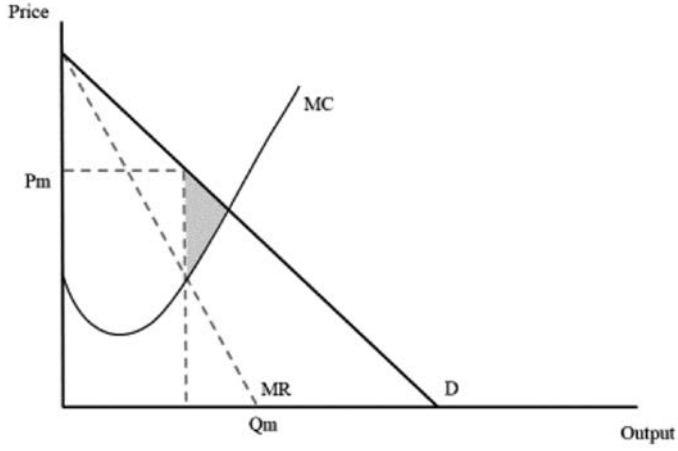

Figure 2.2 Monopoly equilibrium

The neoclassical perspective on market power is 'artificial'.[41] In real life, monopolists do not practice the marginalist thought experiment.[42] The process requires unattainable precision in demand estimation.[43] Neoclassical economists have overcome this objection by advancing, quite reasonably, that firms behave 'as if', balancing ballpark estimations of MCs and receipts.

More fatal to the neoclassical perspective is its arbitrary baseline assumption of decreasing returns. Pietro Sraffa, in a 1926 paper, established a functional connection between cost and quantity, and showed that in a large dimension firm, a greater division of labour is possible,

[41] ibid 107.

[42] What is meant here is that firms do not undertake the marginal computation that is described here, but may iteratively discover the profit-maximizing price.

[43] If they had this information, the monopoly firm would not set a single price, but instead, price discriminate perfectly by charging each customer its own reservation price. Robinson herself said that 'even the most up-to-date businesses have only the vaguest notion of what kind of demand curves they have to deal with'; Robinson (n 24) 55.

leading to increases in output. Sraffa appeared to lament that a consideration of decreasing costs 'was entirely abandoned, as it was seen incompatible with competitive conditions'.[44] The problem is that disregard of supply curves showing decreased costs risks overpredicting monopoly power.[45]

Aware of this problem, neoclassical economics developed a 'more reasonable procedure' that consists in considering the 'actual conditions of the monopoly equilibrium' to study the 'excess of price over marginal cost'.[46] Lerner stated that 'the loss involved in monopoly can be seen in the divergence between price and this marginal cost'. His famous index,[47] which is a ratio of profit (P – MC) to price (p), gives algebraic expression to the 'degree of monopoly power'.[48]

The definition of market power as price above MC is equally questionable. Market power has nothing distinctive under the definition. Firms in the real world ordinarily set price above marginal costs.[49] Pricing above cost is necessary for every economic activity, to cover the cost of capital, insurance against loss, and managerial earnings.[50] Acknowledging this constraint, Marshall conceded that only the revenues above earnings necessary for economic activity would be the 'exceptional gains' that are 'the nature of monopoly'.[51] But one may find very legitimate gains in the higher strata of profits reaped by monopoly firms. For accounting or fiscal reasons, firms may decide to 'price in' substantial expenses, rather than capitalizing them (like research and development and advertisement).

A rebuttal to this issue has consisted in focusing analysis on market power that is 'substantial', not trivial (an idea that has been embedded in antitrust law frameworks). Much literature states that market power exists only when deviations from competitive levels are 'important' or when a 'degree of monopoly power' is reached.[52] These qualifications are unhelpful. First, there is the question of whether substantial market power is what is at play in differentiated

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[44] Sraffa, who had noted that external economies in a growing industry also create increasing returns, remarked that the importance of 'external economies' was more and more emphasized – that is, of the advantage derived by individual producers from the growth not of their individual undertakings, but of the industry in its aggregate; Sraffa (n 32) 537–8.

[45] Cournot, who had considered different cost patterns (increasing, decreasing, or constant) in his Chapter V, maintained that the falling demand curve was the main explanatory factor of monopoly power because costs can go in any direction; see Cournot (n 19). By contrast, Robinson, and many other neoclassicals based on the assumption that marginal costs would in general increase, considered that costs were at least equally important in determining output levels as the falling demand curve; see Robinson (n 24).

[46] Marshall, for example, said that artificial monopoly price is a price 'determined with little direct reference to cost of production'. He added 'but chiefly by a consideration of what the market will bear'; Alfred Marshall, *Principles of Economics* (8th edn, Macmillan and Co 1920) 274.

[47] Invented by Italian economist Luigi Amoroso; see Nicola Giocoli, 'Who Invented the Lerner Index? Luigi Amoroso, the Dominant Firm Model, and the Measurement of Market Power' (2012) 41 Review of Industrial Organization 181.

[48] Lerner (n 10) 168.

[49] Benjamin Klein, 'Market Power in Antitrust: Economic Analysis after Kodak' (1993) 3 Supreme Court Economic Review 43, 72.

[50] Marshall (n 46) 396. Marshall added that the amount produced under a monopoly is not necessarily less than the amount produced under competition or no monopoly, because often the monopoly will have economies of scale; see ibid 400–401.

[51] Marshall (n 46) 396.

[52] Kurt W Rothschild, 'The Degree of Monopoly' (1942) 9 Economica 24, 26.

goods markets where suppliers compete for demand at prices substantially higher than marginal costs. Even more fatal is the methodological objection. The economic literature seldom formulates an explicit threshold of substantiality.[53] Subjectivity, not the 'scientific' exactitude called for by Lerner, feeds back into the definition (and later estimation) of market power.

A major contribution of the neoclassical economics perspective lies in an understanding of monopoly power in terms of outcome (compared to the process view of the classical economists). But short of a counterfactual, deviations from MC pricing are uninformative. And because it defies human ingenuity 'to compare the monopoly position with the competitive position',[54] neoclassical works often end up falling back on the idea that a firm's market power depends on the elasticity of the demand, which itself is chiefly influenced by 'the number of other firms selling the same commodity and the degree to which substitution is possible'.[55]

In sum, the neoclassical characterization of market power as price above marginal cost helped raise the legitimacy of welfarist government interventions against monopoly. At the same time, however, it increased the costs of decision-making by creating insuperable measurement issues.

D. Control of Output

The growth in applied economics research in the twentieth century has steered the economic literature towards a more actionable understanding of market power. The definition avoids the Charybdis of over-inclusiveness characterizing the 'P above MC' definition. It also escapes the Scylla of abstraction found in the classical definition.[56] Economics has no academy to standardize terminology, thus, there is no official version of the definition. However, regularities encountered in the market power literature allow the identification of some building blocks, and the construction of a mainstream definition that corresponds to the one that economists use when they speak about market power.

Broadly, the market power definition can be stated as follows: market power consists of one (or more) firm(s)'s freedom purposefully to influence the price by the control of market output and by benefitting from constraints on industry supply.

Every element of the formulation matters. The definition starts with the firm, because the market power that matters (to the observer that accepts its endogeneity) lies in the firm. This eliminates the concept deviations from competitive conditions caused by market-, industry-, or economy-wide events. This happens when the demand or supply curve shifts upwards due to a temporary shock. Trade wars, inflation, or environmental hazards are common examples.[57] The definition also covers collective action by several firms.[58]

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[53] Richard Schmalensee, 'Another Look at Market Power in Antitrust' (1982) 95 Harvard Law Review 1789.

[54] Lerner (n 10) 476. See also, Jonathan B Baker and Timothy E Bresnahan, 'Empirical Methods of Identifying and Measuring Market Power' (1997) 27 J Reprints Antitrust L & Econ 743, 454: 'it is rarely if ever possible to know what the competitive equilibrium would look like'.

[55] Robinson (n 24) 50.

[56] Marshall (n 46).

[57] All firms, not just monopolies, see their supply curve shift upwards when there is inflation.

[58] Marshall talks of monopoly through agreement: 'monopoly values, that can be traced with more or less distinctness in every case in which a single person or association of persons has the power of fixing

The concept of freedom is important, because it insists on the idea that the market power firm's choices are independent of other firms, unlike in oligopoly or perfect competition.

The emphasis on 'purposefully' should not be overlooked. As Hicks noted, a monopolist incurs 'subjective costs of securing a close adaptation to the monopoly output'.[59] It is not inconceivable that the private costs of constructing a demand curve sufficiently close to reality outweigh the benefits of supra-competitive prices. Market power may not be exercised even under monopoly conditions. When market power is unused, it can be ignored.[60] Moreover, in the case of a tax increase, a firm with monopoly power will only decrease output if it adopts a deliberate decision to pass on the surcharge to users, instead of booking it on its profits. A deliberate course of action by the firm is required.

Focus on purpose additionally allows filtering out market power that results from external events, accidents, luck, or legacy investments over which the firm has no choice. If the firm operates under exogenous constraints, no government policy can change firm behaviour in ways which are more beneficial to society without great expense and friction.

Economists discuss market power in terms of 'influence over price' to avoid using rigid concepts like 'setting' or 'raising' prices. The idea of price-setting wrongly suggests that the monopoly fixes a price. This is not the case in all industries where firms set quantities first, like airlines, hospitals, or steel. Transaction prices remain indeterminate until demand clears. Plus, 'influence' over price captures the economic case of the market power of buyers, which consists of price going down, not up. It also covers all cases in which a firm may find it strategically beneficial to lower its short-term price, while pursuing longer-term monopoly profits.

The requirement of 'control of market output' is decisive. A firm can only confidently raise (or decrease) prices if it enjoys some control over other market participants' output.[61] Otherwise, any output lost to a price increase will be replaced by an expansion of the output of other firms. Often, people define market power as pricing power by reduction of output, and assume that it is enough that the monopoly firm decreases its own output to raise prices above costs. The idea is intuitive. Reduced output increases the competition between buyers against scarcity. While this is a necessary condition, it is not a sufficient one. There is no scarcity if rival output can flood the market. Some 'control' of other firms' output is also required. A case in point is when a monopoly firm controls market output by securing preferential access to most or all the input supply in the market. Or, when a monopolist invests in excess capacity to deter competitors from expanding.

Last, the idea of the benefit of constraints on industry supply means that suppliers of other goods or services that are at best remote substitutes must be prevented from repositioning their resources in response to missing output. 'Benefit' denotes that the constraints are not imposed by the firm. It can be conjectured that the costs involved in active entry deterrence towards the vast population of suppliers of other products by far outweigh the gains from reduced

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either the amount of a commodity that is offered for sale or the price at which it is offered'; Marshall (n 46) 275.

[59] JR Hicks, 'Annual Survey of Economic Theory: The Theory of Monopoly' (1935) 3 (1) Econometrica 1, 8. This was already in Robinson too, who talked of 'a maldistribution of resources as between different use'; Robinson (n 24).

[60] Lerner (n 10) 170.

[61] Even more clearly, John Hicks wrote that if entry into the industry is free, it is 'impossible to earn more than normal profits'; see Hicks (n 59) 1, 9. Before him, Lerner had talked of 'protection of competition from rest of supply'; Lerner (n 10) 482.

output. Exogenous constraints must be present to give confidence to the firm that it is protected against potential competition from industry participants.

IV. NON-MARKET POWER

Observable increases in prices or above cost prices do not necessarily implicate market power. Economics allows drawing a line between what constitutes usage of market power, and what does not.

A. Demand and Supply Shifts

Prices can increase as a result of upward shifts in the demand or supply curves. Such shifts in the demand curve occur when benefits from consumption increase. For example, heavy rainfall raises the utility of umbrellas. Shifts in the supply curve arise when the marginal costs of production increase. For example, shortages of chipsets raise the manufacturing cost of personal computers.

Upward shifts in the demand or supply curve that raise prices do not necessarily involve the exercise of market power. Economics captures this idea by distinguishing movements *of* the demand/supply curve from movements *along* the demand/supply curve. A monopolist will typically raise prices by selecting a higher price point on the demand curve. By contrast, a monopolist (and its competitors without market power) will both benefit from an upward shift in the demand curve.

A firm with market power can internalize a shift of the supply curve on its own profits, and limit price increases to buyers. This will not happen with firms operating under perfect competition. Firms in perfect competition make zero profits. Increases in costs must be passed on through a price increase. In this case, evidence of increased prices to consumers denotes more a competition case than a market power one.

The cause of the change in demand and supply can be exogenous or endogenous to the firm. Endogenous changes are particularly confusing because it is tempting to equate them with monopolistic practices. The issue of an endogenous shift in the supply curve can be left aside as an anomaly. By contrast, demand shifts can also come from a firm deciding to add a new line of complements to existing products (including those of rivals), thereby raising utility levels for the whole market, or from a decision to increase marketing expenditure to raise users' willingness to buy. Even more problematic is the case in which a firm decision will cause an uncertain risk of increased market power concomitant with a shift in the demand curve. Figure 2.3 shows the effect of a horizontal merger in a concentrated industry that leads to (i) a probability of increased market power and (ii) a probabilistic innovation (new product) with high marginal benefits for users. Both effects can materialize cumulatively or alternatively.

The post-merger shift in the demand curve produces at least three times the value of the deadweight loss arising from a post-merger usage of monopoly power. If the examiner gets the market power prediction wrong, and post-merger prices are competitive (Pc), a substantial value will be destroyed. Now, the picture below shows a movement of the demand curve that might be extreme in the real world. But it gives a sense of the general orders of magnitude. Even if we halved the shift in the demand curve, the gains in value would still remain above

the monopoly losses. And it is only reasonable to use a shift of such magnitude, which corresponds to the small base of the deadweight loss triangle. In addition, if there are plausible cost efficiencies from mergers (see Figure 2.4), the gains are even higher.

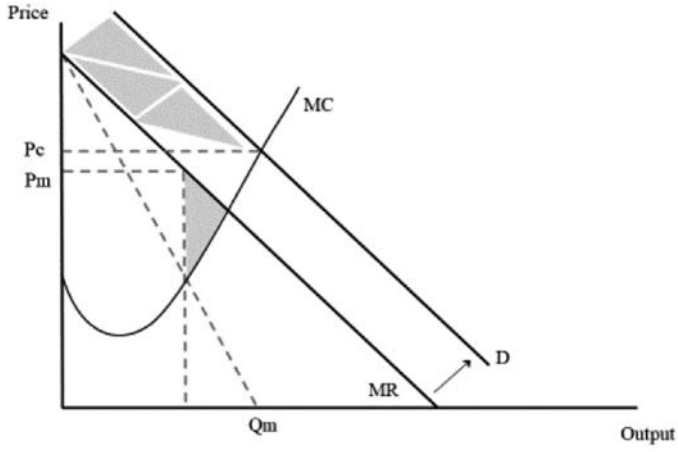

Figure 2.3 Horizontal merger in a concentrated industry

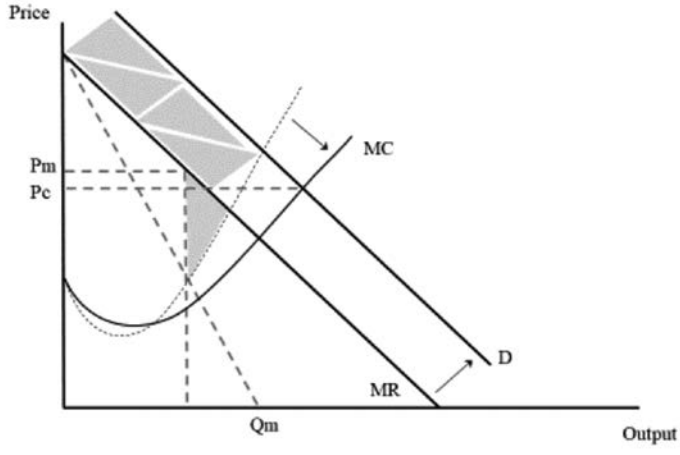

Figure 2.4 Horizontal merger in a concentrated industry with cost efficiencies

B. Profits

Profits entail prices above costs. But economics does not treat profits as market power. Economists 'like' to 'count' the return that a firm gets from its services as a 'cost' rather than

as a profit.[62] The reason for this convention is that returns earned on capital invested (including capital goods, physical labour, and human capital), as well as on other expenditure like research and development or marketing, constitute the 'normal profits' that reward competitive activity.[63] If profits are less than normal, 'firms will tend to leave the industry'.[64]

Economists interested in market power are concerned about profits 'beyond' these.[65] Excess profits that add up to the normal rate of return cannot persist in the long term. They disappear in the short term with the entry or expansion of new firms. The short term is the time before which the firm earning profits can reinvest in new capacity (or the time during which its productive equipment, and costs, are fixed).[66] The long term is when the technique of production can be altered.[67]

If long-term profits are observed, an inference can be drawn that 'something blocks entry'.[68] A restriction of entry becomes a condition to consider profits 'abnormal'. In some cases, 'abnormal' profits are legal. For example, laws granting firms a legal monopoly lay down entry restrictions towards third parties. The point is to give the protected firm the opportunities to earn rents beyond the normal rate of return and incentivize investments.

In other cases, firms will earn differential rates of return, and it will be wrong to consider that the firm earning the highest profits holds market power. Ricardian rents arise from productivity differences amongst the resources under the control of firms. They will not be dissipated by entry. A firm with better land, well-positioned estate, or a superior method of organizing production, providing services, or establishing buyer confidence will produce at a lower cost 'than can be obtained by newer or smaller firms'.[69] Productivity differentials between energy generation between nuclear, coal, and renewables cause producers to display large discrepancies in profitability.[70] Sometimes, new entrants themselves provide services that command higher Ricardian rents, because old firms cannot expand as cost effectively to satisfy new demand as new entrants. For example, entrants in digital advertisement services might command higher profits than incumbent sellers of display, TV, or classified advertising, because of higher productivity differentials, that is a higher sales conversion rate.[71]

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[62] Hicks (n 61). In his famous 1954 paper, Harberger did just this, 'build[ing] a 10 per cent return into the cost curve'; Harberger (n 11) 78. Robinson also includes in the costs of production what she calls the 'minimum reward of the entrepreneur'; Robinson (n 24) 47.

[63] Hicks (n 61).

[64] Robinson (n 24).

[65] Also known as 'exceptional' profits, supernormal profits or superprofits.

[66] Robinson (n 24) 47. Robinson draws a difference between the short period, the quasi-long period, and the long period.

[67] ibid 48

[68] Fisher (n 17). Also remember that Hicks writes: 'if entry in industry is free, it is impossible for firms to earn more than "normal profits"'; Hicks (n 61) 9.

[69] Harold Demsetz, 'Two Systems of Belief about Monopoly' in Harvey J Goldschmid and others (eds), *Industrial Concentration: The New Learning* (Little Brown 1974).

[70] See Roger G Noll, '"Buyer Power" and Economic Policy' (2005) 72 Antitrust Law Journal 589. In particular, he takes the example of productivity differentials in natural gas extraction among wells and fields, where 'competitive pricing causes most producers to earn very large Ricardian rents, while the market price equals the average cost of the most costly well in production'.

[71] Ricardian rents need not attract, or discourage entry. A firm might enter or expand, on the view that some customers are ready to pay lower rents for a product of lower quality.

Economists' approach to profits has two practical implications. Accounting profits are poor proxies of market power. This is because accounting profits comprise the normal rates of returns required to induce firms to do business. In recent years, these 'imperfections' have not prevented a strand in the macroeconomic literature from using accounting data to produce evidence of increased markups across the US economy.[72]

The second is that inferring market power from cost benchmarks might be attempted, but is fallacious. Joan Robinson laid out a very important, but subtle distinction.[73] Average costs determine whether a firm enters an industry and continues in business. Average costs do *not* determine price or output. Marginal costs do. This conception has led to the belief that market power can be observed by tracking deviations from marginal costs. The problem is not that it is impossible (as Robinson conceded) or wrong. It is that it is fallacious, because this convention sweeps away the necessary return that was embedded in the cost function, and that is the predicate for business activity without which competition would not exist. This return would be seen with an average cost definition.

C. Bargaining Power

It is inappropriate to discuss all economic transactions at prices above costs in terms of market power. Buyers (and sellers) on markets happen to make bad deals. Paying too much for a good or service is not a market power problem. It is an income redistribution one. As long as the price a buyer pays remains below her marginal benefit, there is no inefficiency. No gains from trade are lost. Economists look at the 'excessive' price paid to a seller as a transfer of resources. Economic theory supplies no consequential or moral reason to deem increases in sellers' utility less socially worthy compared to increases in buyers' utility.

Unequal prices or terms between parties to economic exchange occur when both sides do not have similar bargaining power. Differences in opportunity costs, and knowledge of these differences, create asymmetries in bargaining power. Bargaining power means that negotiating parties do not stand to lose equally if one walks away from the transaction.[74] In general, the party that least needs the agreement gets the majority of the proceeds.[75] This might have to do with information asymmetries, incomplete contracts, risk aversion, transaction costs, or asset-specific investments.[76] These market imperfections, which can exist independently of market power, are determinants in outcomes often confused with market power, like holdup, consumer exploitation, lock-in, and economic dependence.

Of course, the existence of competition decreases the bargaining power of the seller. However, the existence of competition does not imply the absence of bargaining power. For example, sellers in a competitive industry might lose less from a negotiation breakdown than

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[72] Syverson (n 8). Note that in the past, Harberger had done this himself, saying 'it is only reasonable to identify monopoly power with high rates of profit'; Harberger (n 11) 84.

[73] Robinson (n 24) 48.

[74] 'The power to withhold from making a transaction is probably the most general content of the term "bargaining power"'; John T Dunlop and Benjamin Higgins, '"Bargaining Power" and Market Structures' (1942) 50 Journal of Political Economy 1, 2.

[75] Preston McAfee, *Competitive Solutions: The Strategist's Toolkit* (Princeton University Press 2005).

[76] Benjamin Klein and others, 'Vertical Integration, Appropriable Rents, and the Competitive Contracting Process' (1978) 21 The Journal of Law and Economics 297.

their buyers who operate in a concentrated market. In the gasoline industry, competitive suppliers meet highly inelastic demand from airlines.[77] Absence of competition on the buying side can also bring prices closer to marginal costs.

The practical implication is that charging what the market can bear is not a market power problem. Conversely, even under conditions of monopoly, the existence of supra-competitive prices charged on the units supplied is not a market power problem. It is just bargaining power exerted on the share of demand that is served. Those 'inframarginal' customers that pay units at a monopoly price do not divert expenditure to less satisfactory channels.[78] The same is true of perfect price discrimination. When a monopoly seller can charge each consumer her maximum reservation price, all surplus is absorbed, but the output is similar to the level that obtains under perfect competition.

V. CONCLUSIONS

With all their imperfections, the above definitions are small steps towards a better understanding of what makes markets competitive or not. The robustness of the above definitions has, however, come under heavy stress in the contemporary economic context. The falling demand curve or rising supply curve are both weak descriptors of the situation of firms in network industries where individual users register growing marginal benefits as the demand served by the network monopolist increases, as well as substantial economies of scale and scope due to decreasing or zero marginal costs. Network industries display, at least to some extent, an upward-sloping demand curve and a downward-sloping cost curve. More generally, the digital age of today features costs and demand conditions different from the agrarian or industrial age described above.

Faced with this issue, some antitrust scholars have advanced simpler definitions of monopoly power. One popular idea is to define it as the absence of alternatives, a bit like the classical economists' view of government privileges. Another popular definition of monopoly is in terms of bigness. The definition has several variations. It alternatively treats large size, scale, share, breadth, and/or growth of the business corporation as signs of monopoly. An influential example is Lina Khan's discussion of monopoly in terms of structural dominance, used to 'connote that the company controls a significant share of market activity in a sector'.[79]

It might be questionable to use such a broad and amorphous concept of market power because it says nothing of its determinants. Bigness is a symptom, not a cause. How can effective policy against market power ever be designed absent a good understanding of its determinants?[80]

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[77] Kenneth Hendricks and R Preston Mcafee, 'A Theory of Bilateral Oligopoly' (2010) 48 Economic Inquiry 391, 406.

[78] Lerner (n 10) 158. Even though it might be objected that they enjoy fewer resources to purchase in other markets, where production is efficient. For instance, a customer of milk that pays a monopoly price enjoys fewer resources for pizza night.

[79] Lina M Khan, 'Amazon's Antitrust Paradox' (2017) 126 The Yale Law Journal 710.

[80] Unless, of course, direct regulation of prices is the preferred option.