

Antitrust Enforcement for the 21st Century

By Marc Jarsulic*

Abstract: Market competition is faltering in important parts of the U.S. economy. Measures commonly used by economists to evaluate firm-level economic performance now indicate that many firms have market power and are earning profits above competitive levels. The expected response—the entry of new firms that want to earn a share of those higher returns in those markets—has not happened. This is a consequence of barriers to entry, arising from a variety of sources including increased market concentration, the increased use of intellectual property protection in the form of patents, the rise of business models dependent on network externalities, and the rising importance of digital data as an input in production. The principal conclusion of this paper is that antitrust policy must be reoriented to effectively limit the creation of barriers to entry. An example of how merger policy could be changed is developed.

Key Words: antitrust law, New Brandeis School, barriers to entry, market power

*Center for American Progress, 1333 H Street N.W., Washington D.C. 20005. This paper draws on results from a report, “Towards a Robust Competition Policy”, coauthored with Ethan Gurwitz and Andrew Schwartz and available at <https://www.americanprogress.org/issues/economy/reports/2019/04/03/467613/toward-robust-competition-policy/>. The views expressed in this paper, however, are my own and do not necessarily reflect the views of the Center for American Progress.

Introduction

By objective empirical standards, the U.S. economy has seen a remarkable expansion of corporate market power over the past four decades. The share of corporations earning profits above competitive levels has risen since the late 1970s. Large firms in many sectors—especially in communication services, health care, and information technology—now have market power that allows them to maintain prices above competitive levels. In this paper we argue that this is a result of reduced competition in relevant markets.

This has important implications for the U.S. economy, which is largely governed through market competition. When firms are earning supranormal profits — returns to capital beyond what a competitive market would deliver — income is redistributed upward to owners. The excess of profits above competitive levels, which following economic terminology we shall refer to as rents, are substantial. In 2015, for example, economic rent accounted for half the earnings of nonfinancial corporations – which means aggregate corporate rent was somewhat more than

\$600 billion for the year.¹ The economic rents that flow to these owners function like a tax on everyone else, lowering real wages and shifting overall income shares away from workers. If antitrust enforcement were effective, relevant markets would be far more competitive.

Moreover, because firms earn rent when entry by competitors is inhibited, the economy becomes less dynamically efficient. When there are no entry barriers, high rates of profit attract new firms, increasing supply and eventually reducing price. When barriers exist, investment capital does not flow to its most profitable use, and potential gains in productivity can be squandered.

Evidence suggests that several factors, apart from the development of non-replicable technical superiority, are creating entry barriers. These include the development of businesses where network externalities are significant; differential access to big sets of data on consumers; the increased importance of intellectual property rights; and the ability of firms to use mergers and acquisitions to increase market power and sustain barriers to entry, in large measure because of ineffective antitrust enforcement.

The evidence we develop supports the argument, advanced by the New Brandeis School, that existing antitrust authority needs to be redirected to effectively deal with high levels of market power.² The metrics developed in this paper, which provide a way to identify where barriers to entry are restricting competition, can contribute to that project. We suggest a change to merger policy as an example of how they might be used.

Evidence of significant barriers to entry and rising corporate rents

There is now significant evidence that the competitive environment in the U.S. economy has changed dramatically since the late 1970s, with a significant share of corporations earning returns that exceed competitive levels.

Under competitive conditions—in which capital owners with funds to invest maximize their profits, and there are no barriers that prevent these funds from flowing to the projects with the highest rates of return—it is expected that rates of profit on invested capital will converge across firms and industries to a common, equilibrium value. The logic behind this expectation is simple: Supranormal rates of return in any line of business create the incentive for their own elimination, since profit-maximizing investors will have extra incentive to enter that business, replicate the productive process used by incumbent firms, and earn some of the higher profits for themselves.

¹ In 2015 nominal profits of the nonfinancial corporate sector amounted to somewhat more than \$1.25 trillion. Since the average Q value for 2015 is two, the implication is that half of this value is economic rent. Data on nonfinancial corporate profits from the Federal Reserve Bank of St. Louis FRED database at <https://fred.stlouisfed.org/graph/?g=okzZ>.

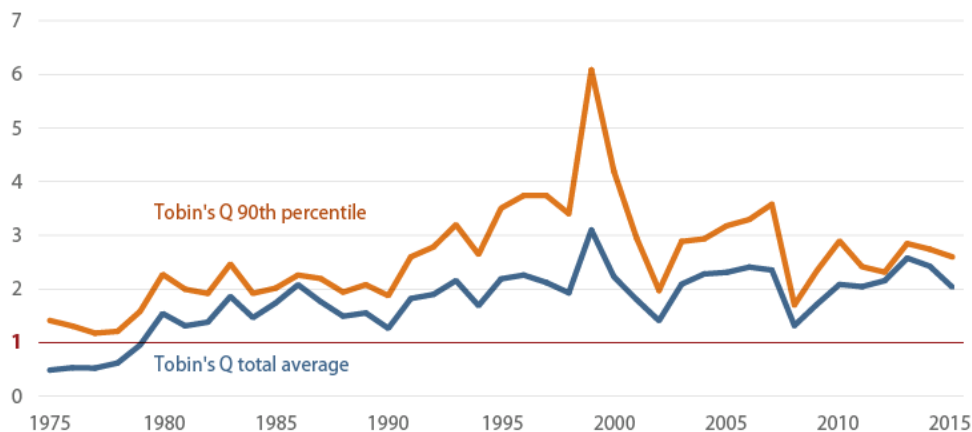
² The New Brandeis approach is described in Lina Khan, *The New Brandeis Movement: America's Antimonopoly Debate*, in 9 J. EUROPEAN COMPETITION L. & PRACTICE, 31 (2018); and Lina Khan and Sandeep Vaheesan, *Market Power and Inequality: The Antitrust Counterrevolution and Its Discontents*, 11 HARVARD L. & POLICY REV., 235 (2017).

Entry should continue until the effects of increasing supply reduce prices and eliminate rents—that is to say, the difference between competitive and supranormal profits.

However, there is now evidence that in the aggregate, the share of rents in corporate income is positive and has trended upward since the late 1970s. To visualize this, consider the ratio of the equity market value of corporations to the replacement cost of the physical and intangible capital stock that they employ. This ratio, called Tobin's Q, should be equal to 1 under competitive market conditions. (See Appendix for an explanation this metric.) However, Q values for many nonfinancial corporations have been trending upward since the late 1970s and are now significantly greater than 1. Using firm-level data from a large sample of publicly traded U.S. corporations for the period 1975–2015—excluding regulated utilities, financial firms, public service firms, and some others—economists Ryan H. Peters and Lucian A. Taylor construct measures of firm-level Q values. These measures include the replacement costs of both tangible and intangible capital.³ The average and 90th percentile values of the Peters-Taylor Q ratios are presented graphically in Figure 1.

FIGURE 1
Economic rents have grown as a share of corporate net earnings

Average and 90th percentile firm-level Tobin's Q values by year



Notes: Economic rents are earnings exceeding levels expected in a competitive market. Tobin's Q is the ratio between a firm's market value and the replacement cost of capital.

Sources: Ryan H. Peters and Lucian A. Taylor, "Intangible capital and the investment-q relation," *Journal of Financial Economics* 123 (2) (2017): 251–272, available at <https://www.sciencedirect.com/science/article/pii/S0304405X16301969>.

³ See Ryan H. Peters and Lucian A. Taylor, *Intangible Capital and the Investment-q Relation*, 123 J. FIN'L ECON. 251 (2017). The Peters-Taylor sample includes all Compustat firms except for regulated utilities (Standard Industrial Classification codes 4900–4999); financial firms (6000–6999); and firms categorized as public service, international affairs, or nonoperating establishments (9000+). They also exclude firms with missing or nonpositive book value of assets or sales and firms with less than \$5 million in physical capital. Q values have been top-coded at 20. Peters and Taylor generously shared their Q estimates with the author for which I am grateful. They are not, however, responsible for any of the content of this paper.

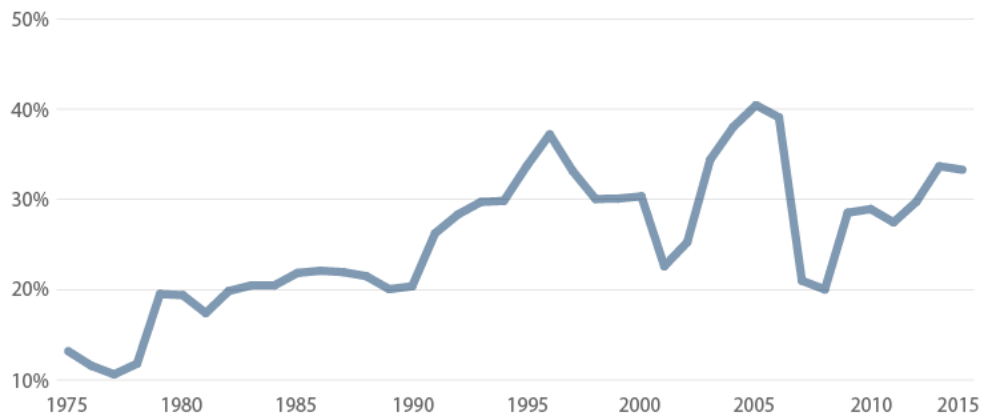
Q values greater than 1 suggest that the rent component, or excess profit, of total U.S. corporate income is now quite large. Applying a model-based approach to national income accounts data, economist Simcha Barkai reaches a similar conclusion for the nonfinancial corporate sector as a whole.⁴

Without the presence of barriers to entry, this change in Q values is difficult to explain. The existence of rents should provide a strong incentive for the entry of new competitors, and rising rents should provide increasingly strong incentives as well. However, the expected competitive mechanism does not appear to be functioning.

This interpretation of the data is supported by the fact that it has become easier for firms to earn rents in successive years. Figure 2 displays the share of firms in the Peters-Taylor sample with a Q greater than 1 in one year that maintained a Q greater than 1 in the next year. This number rises from around 10 percent of firms in 1980 to around 40 percent of firms in 2015, suggesting increased inertia around rent extraction. In other words, it has become more likely that a firm that earns measurable rent will be able to do so in a subsequent year. This is consistent with the expected effects of a decline in competition.

FIGURE 2
Firms have found it easier to sustain supranormal profits since the late 1970s

Percentage of firms that have a Q value of more than one that have maintained a Q value above one from the prior year



Notes: Economic rents are earnings exceeding levels expected in a competitive market. Tobin's Q is the ratio between a firm's market value and the replacement cost of capital.

Sources: Ryan H. Peters and Lucian A. Taylor, "Intangible capital and the investment-q relation," *Journal of Financial Economics* 123 (2) (2017): 251–272, available at <https://www.sciencedirect.com/science/article/pii/S0304405X16301969>.

⁴ Simcha Barkai, [Declining Labor and Capital Shares](http://home.uchicago.edu/~barkai/doc/BarkaiDecliningLaborCapital.pdf) (University of Chicago, 2016), available at <http://home.uchicago.edu/~barkai/doc/BarkaiDecliningLaborCapital.pdf>.

There are other data that point to reduced competition. For example: firm markups—the ratio of price to the marginal cost of production—have risen substantially since the 1980s;⁵ the rate of entry of new firms across the economy has been declining since the late 1970s;⁶ and overall market concentration has increased over the past several decades.⁷

There is, of course, heterogeneity in the relative market power of firms. While the mean value of Q has trended upward, Q values for many firms reflect competitive returns. Figure 3 shows the distribution of Q values for individual firms in the Peters-Taylor sample averaged across 1981–1985 and 2011–2015. Both mean and median values have shifted right, and the right-hand tail of the distribution is more heavily populated, although many firms have Q values at or below 1.⁸

⁵ International Monetary Fund, *World Economic Outlook, Challenges to Steady Growth*, 36 (October 2018), available at <https://www.imf.org/en/Publications/WEO/Issues/2018/09/24/world-economic-outlook-october-2018>; Jan De Loecker and Jan Eeckhout, *The Rise of Market Power and the Macroeconomic Implications* (2017), available at <https://www.nber.org/papers/w23687>; Robert E. Hall, *New Evidence on the Markup of Prices over Marginal Costs and the Role of Mega-Firms in the US Economy* (NBER, May 2018), available at <https://www.nber.org/papers/w24574>.

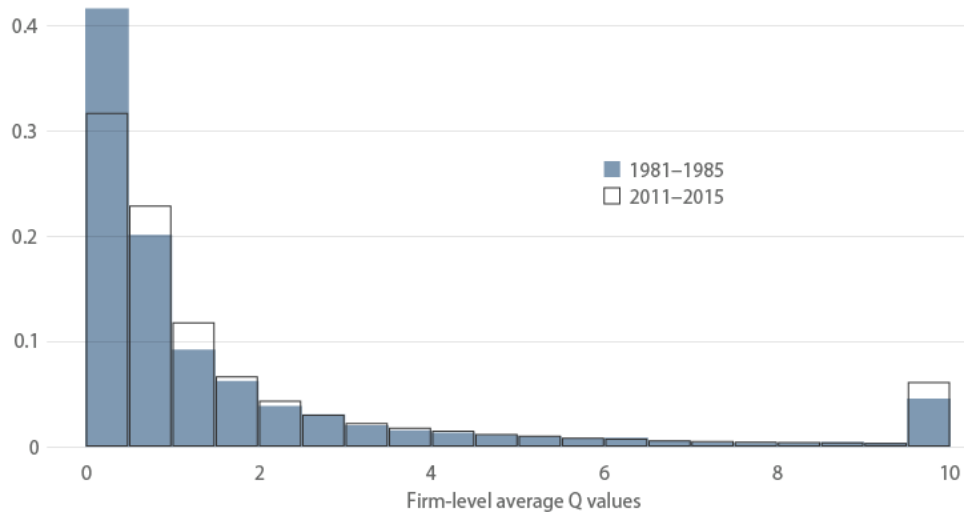
⁶ Since 1980, new firm entry has steadily declined by nearly half. Firm exit rates have also slowed, albeit less intensively, and today's firms are on average older. See Ian Hathaway and Robert E. Litan, *What's Driving the Decline in the Firm Formation Rate? A Partial Explanation*, (The Brookings Institution, 2014), available at <https://www.brookings.edu/research/whats-driving-the-decline-in-the-firm-formation-rate-a-partial-explanation/>; Ryan A. Decker et al., *Declining business dynamism: Implications for productivity?* (The Brookings Institution, 2016), available at <https://www.brookings.edu/research/declining-business-dynamism-implications-for-productivity/>.

⁷ See Gustavo Grullon, Yelena Larkin, and Roni Michaely, *Are U.S. Industries Becoming More Concentrated?*, in *REV. OF FINANCE* (forthcoming), available at <https://ssrn.com/abstract=2612047>; David Autor et al., *Concentrating on the Fall of the Labor Share*, 107 *AM. ECON. REV.* 180 (2017), available at <https://www.aeaweb.org/articles?id=10.1257/aer.p20171102>; Kathleen M. Kahle and Rene. M. Stulz, *Is the US Public Corporation in Trouble?*, 31 *J. ECON. PERSPECTIVES* 67 (2017).

⁸ Q values have been top-coded at 10 for the purpose of this figure.

FIGURE 3
The distribution of firms' Q values has shifted toward higher values since the 1980s

Distribution of Q values for individual firms in the sample, 1981–1985 and 2011–2015



Note: Tobin's Q is the ratio between a firm's market value and the replacement cost of capital. Average Q values greater than 5 were outliers; they were replaced with a value of 5 to aggregate them with the data.

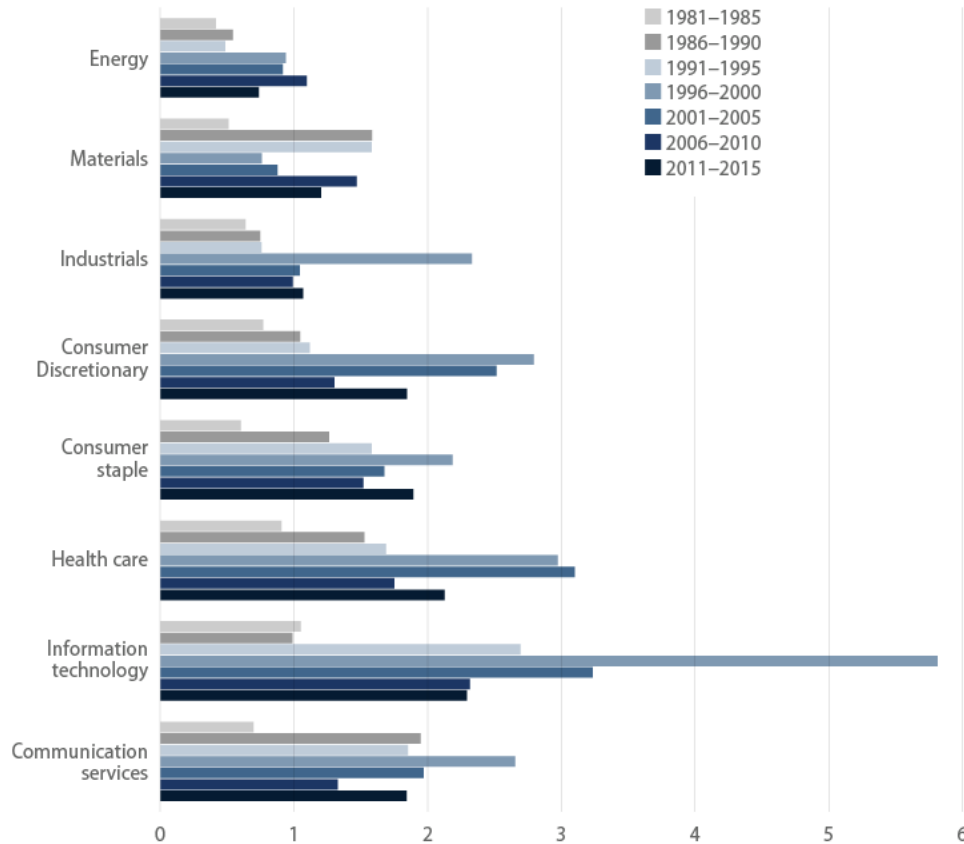
Sources: Ryan H. Peters and Lucian A. Taylor, "Intangible capital and the investment-q relation," *Journal of Financial Economics* 123 (2) (2017): 251–272, available at <https://www.sciencedirect.com/science/article/pii/S0304405X16301969>.

There is also evidence of differing degrees of market power across sectors of the economy. Figure 4 displays the average Q values for the 200 largest U.S. corporations by market capitalization in the Peters-Taylor sample, sorted into several broad Global Industry Classification Standard sectors.⁹ There was a general upward trend in Q values across most sectors during the years 1981–1985 and 2011–2015, with most but not all sectors maintaining values well above 1.

⁹ The Global Industry Classification Standard (GICS) is a taxonomy for grouping similar firms into sectors, industry groups, industries, and subindustries, developed by Morgan Stanley Capital International and Standard & Poor's. The taxonomy is described in *The Global Industry Classification Standard*, available at <https://www.msci.com/gics>.

FIGURE 4
The largest firms show increased Q values, led by communication services, information technology (IT), and health care

Average Q values for the 200 largest individual firms in the sample across five-year periods



Notes: Data include the 200 largest firms by the market value of their outstanding shares. Under the current Global Industry Classification Standard, the communication services sector includes the subindustry of companies that provide interactive media and services, including those with proprietary platforms where advertisements drive revenues.

Sources: Ryan H. Peters and Lucian A. Taylor, "Intangible capital and the investment-q relation," *Journal of Financial Economics* 123 (2) (2017): 251-272, available at <https://www.sciencedirect.com/science/article/pii/S0304405X16301969>; Standard & Poor, "Standard & Poor's Compustat (1960-2014)," available at <https://wrds-web.wharton.upenn.edu/wrds/> (last accessed January 2019).

In sum, the evidence for pervasive and persistent barriers to entry is quite striking. It certainly supports the concerns about high levels of market power, which are central to a wide variety of contemporary antitrust scholarship.¹⁰

¹⁰ See Lina M. Khan, *The New Brandeis Movement: America's Antimonopoly Debate*, 9 J. EUROPEAN COMPETITION L. & PRACTICE, 31 (2018); Tim Wu, *THE CURSE OF BIGNESS: ANTITRUST IN THE NEW GILDED AGE* (2018); Lina Khan and Sandeep Vaheesan, *Market Power and Inequality: The Antitrust Counterrevolution and Its Discontents*, 11 HARVARD L. & POLICY REV., 235 (2017); Jonathan B. Baker, *Market Power in the U.S. Economy Today* (Washington Center for Equitable Growth, March 20, 2017) available at <https://equitablegrowth.org/market-power-in-the-u-s-economy-today/>; Paul Krugman, *Challenging the Oligarchy*, N.Y. REV. OF BOOKS, December 17, 2015, available at <http://www.nybooks.com/articles/2015/12/17/robert-reich->

However, it should be noted that a decline in competition is very likely not the sole explanation for the rise in observable corporate rent. Many economists have recognized that worker bargaining power has also diminished since the 1970s, a result of the decline in union representation, weakening of workforce protections, the decline in the real value of the minimum wage, and increased wage competition caused by expanding global competition—all of which have contributed to the rise in corporate rent. A recent paper by Economic Policy Institute economists Josh Bivens and Heidi Shierholz summarizes this case nicely.¹¹ In an economy where competition is imperfect, the division of corporate net returns depends on how much power workers have to bargain for them.¹² Therefore, the observable rise in corporate rent may well reflect the concurrent decline in worker bargaining power.¹³ The fact that these rents have not been competed away, however, even as they rise measurably, means that competitive entry is frustrated. But we do not attempt to estimate the quantitative contribution of each factor to the measured rise in economic rents.

It should also be emphasized that persistent rents have important dynamic implications. When rents are significant, incumbent firms have good reason to defend them. This can lead these firms to take economic, legal, or political steps to prevent the entry of new competitors, which, as a consequence, may prevent innovative products and processes from disrupting the marketplace.¹⁴ High rents can also deter incumbents from focusing their own efforts on developing and investing in innovation. The marked decline in nonfinancial corporate capital investment relative to corporate net income since 2000 is certainly consistent with rising market power.¹⁵

challenging-oligarchy. Barry C. Lynn, *CORNERED: THE NEW MONOPOLY CAPITALISM AND THE ECONOMICS OF DESTRUCTION* (2010)

¹¹ Josh Bivens and Heidi Shierholz, *What labor market changes have generated inequality and wage suppression?*, (Economic Policy Institute, 2018), available at <https://www.epi.org/publication/what-labor-market-changes-have-generated-inequality-and-wage-suppression-employer-power-is-significant-but-largely-constant-whereas-workers-power-has-been-eroded-by-policy-actions/>.

¹² Alan B. Krueger, *Reflections on Dwindling Worker Bargaining Power and Monetary Policy*, (Jackson Hole Economic Symposium, August 24, 2018), available at <https://www.kansascityfed.org/~media/files/publicat/sympos/2018/papersandhandouts/824180824kruegerremarks.pdf?la=en>.

¹³ This point has been emphasized recently by Josh Bivens, Lawrence Mishel, and John Schmitt, *It's not just monopoly and monopsony: How market power has affected American wages*, (Economic Policy Institute, 2018), available at <https://www.epi.org/publication/its-not-just-monopoly-and-monopsony-how-market-power-has-affected-american-wages/>.

¹⁴ Luigi Zingales, *Towards a Political Theory of the Firm*, 31 J. ECON. PERSPECTIVES, 113 (2017), available at <https://www.aeaweb.org/articles?id=10.1257/jep.31.3.113>; Kiran Stacey, *Tech companies spent record sum on US lobbying in 2018*, FINANCIAL TIMES, January 23, 2019, available at <https://www.ft.com/content/7147935c-1f34-11e9-b126-46fc3ad87c65?segmentId=778a3b31-0eac-c57a-a529-d296f5da8125>.

¹⁵ Gutiérrez and Philippon, *Investment-less Growth*; Germán Gutiérrez and Thomas Philippon, *Declining Competition and Investment in the U.S.* (NBER, 2017), available at <https://www.nber.org/papers/w23583>.

Sources of entry barriers

We next turn to the issue of explaining the rise in barriers to entry. It is easy to think of ways in which normal competition can create barriers to entry that inhibit the equalization of profits. The development of a significant new product, or a more efficient production process for an existing product, could certainly do it. As long as production techniques cannot be replicated, new entrants are either totally excluded or forced to earn lower rates of return. Some economists have pointed to technical superiority as a potential explanation for the rise in rents and increases in concentration.¹⁶

However, these types of barriers to entry should often be transient. Human beings are very good at imitation and reverse engineering; there is no good reason to believe that we have become less capable since 1980. It is implausible to attribute widespread rising rents exclusively to new products and new processes that cannot be replicated. Hence, we must look for other factors that can help explain why barriers appear to have increased over time.

- **Network externalities**

Some goods produce network externalities, which exist when the benefits that an individual derives from a good increase when others decide to use it, in turn creating additional incentive for others to buy it.¹⁷ A classic example is the telephone network: The more individuals join the network, the more valuable a telephone network becomes, and the more incentive others have to join.

However, network effects can create barriers to entry. When an existing good succeeds in generating very high levels of externalities and that good is incompatible with competing goods, individual users will be reluctant to switch to the competitor, even when it is superior. This is the so-called lock-in effect. This lock-in effect can be overcome with coordinated action by the network adopters, but coordination can be costly and imperfect.¹⁸ As Howard Shelanski, a former FCC chief economist, put it: “The network, feedback, and lock-in effects that can arise in platform markets might provide real benefits to consumers but also entrench market power in a platform that gains the lead in its relevant markets.”¹⁹

¹⁶ Autor *et al.*, *Concentrating on the Fall of the Labor Share*, *supra* note 9.

¹⁷ Joseph Farrell and Paul Klemperer, *Coordination and Lock-in: Competition with Switching Costs and Network Effects*, in HANDBOOK OF INDUSTRIAL ORGANIZATION, VOL. 3 1970 (Mark Armstrong and Robert Porter, eds., 2007)

¹⁸ *Id.*

¹⁹ Howard A. Shelanski, *Information, Innovation, and Competition Policy for the Internet*, 161 U. OF PENN. L. REV. 1663 (2013), available at https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1025&context=penn_law_review.

The sources of network effects can be quite varied. When there are economies of scale—when firms’ average costs fall as their output increases—and those cost decreases are reflected in the price of the good, then the pricing creates a network effect. Network effects can also be enhanced when there are complements to the network—for example, software that is compatible with an operating system or type of computer hardware—or when there are significant transactions costs to switching to an alternative.

Silicon Valley veterans have emphasized the importance of increasing returns to scale for software and IT services. Peter Thiel and Reid Hoffman, well-known IT investors, argued that the central idea to most Silicon Valley companies is to hit “escape velocity.” As Thiel said, “[T]he benefit is that you’re achieving escape velocity from the black hole that is ... hyper competition.”²⁰ This theory, said Hoffman, is the central idea that has driven “nearly every successful scale company.”²¹

Scale, for instance, appears to have been an important factor in Microsoft’s acquisition of LinkedIn. LinkedIn, a company with a \$25 billion market capitalization, had been struggling with how to compete in light of what its CEO called “a redefinition of scale in the modern world.”²² As the entrepreneur and writer Tim O’Reilly later acknowledged, LinkedIn was not “big enough to be competitive as a standalone company in today’s market.”²³

Potential entrants also recognize the importance of scale, as in the ad technology market with the rise of Google and Facebook. According to Mary Meeker, of the venture capital firm Kleiner Perkins, Google and Facebook made up three-quarters of all new ad spending in 2016 and more than half of the U.S. digital ad market in 2017.²⁴ As venture capitalist Suranga Chandratillake noted, “Even if you manage to build a sustainable advantage for a few years, how do you scale to compete with Google or Facebook? That’s why traditional adtech does feel dead from a venture

²⁰ Masters of Scale Podcast with Reid Hoffman, *Escape the Competition: Peter Thiel, Co-founder & CEO of PayPal*, available at <https://mastersofscale.com/peter-thiel-escape-the-competition/>

²¹ Reid Hoffman termed “blitzscaling” as the practice of growing a startup company at such a rapid speed that it can “capture the market quickly and also outmaneuver potentially global competition.” See Reid Hoffman, *CS183C: Technology-enabled Blitzscaling: The Visible Secret of Silicon Valley’s Success*, (LinkedIn, September 14, 2015), available at <https://www.linkedin.com/pulse/cs183c-technology-enabled-blitzscaling-visible-secret-reid-hoffman>.

²² Kara Swisher, *Microsoft’s Nadella says LinkedIn will get the hands-off treatment: ‘We absolutely want to approach it differently’*, Recode, June 13, 2016, available at <https://www.recode.net/2016/6/13/11920902/microsoft-nadella-linkedin-acquisition-approach-different>; Andrew Ross Sorkin, *One Unspoken Reason Behind the Microsoft-LinkedIn Deal*, N.Y. Times, June 13, 2016, available at <https://www.nytimes.com/2016/06/14/business/dealbook/linkedin-stock-based-compensation.html>.

²³ Tim O’Reilly, WTF? WHAT’S THE FUTURE AND WHY IT’S UP TO US 28 (2017)

²⁴ Madhumita Murgia, *Adtech funding drops in face of Facebook-Google duopoly*, Financial Times, January 3, 2017, available at <https://www.ft.com/content/c4c358ca-c6af-11e6-8f29-9445cac8966f?segmentId=6a1a31f2-ec14-36da-2cf9-65bc949587d6/>; Alexandra Bruell, *Rivals Chip Away at Google’s and Facebook’s U.S. Digital Ad Dominance*, Data Show, Wall Street J., March 19, 2018, available at <https://www.wsj.com/articles/rivals-chip-away-at-googles-and-facebooks-u-s-digital-ad-dominance-data-show-1521457321>.

perspective.”²⁵

The importance of having complements to the network good is also well-established. The U.S. Department of Justice’s successful case against Microsoft argued that by taking steps against Netscape—a browser designed to work across operating systems—the company was illegally acting to preserve the barrier to entry created by the willingness of programmers to make Windows-compatible applications its first priority.²⁶

- **Access to data**

Data are crucial and valuable inputs to many digital businesses. Firms such as Google, Facebook, and Amazon are constantly updating information based on the behaviors and interests of their users. Data are frequently locked up in closed systems or limited through intellectual property protections—and for good reason. As lawyers Maurice Stucke and Allen Grunes wrote, “If personal data were as freely available as sunshine, companies would not spend a considerable amount of money offering free services to acquire and analyze data to maintain a data-related competitive advantage.”²⁷ A 2016 McKinsey & Company survey of U.S. auto industry executives found that firms prioritize “their R&D efforts and M&A [merger and acquisition] strategy on the basis of the expected growth in their data assets base.”²⁸ Yet even when data can be purchased, it is not always the case that a sufficient repository can be built from third-party data sets.²⁹ As economist Joshua Gans explains, “A firm’s monopolization of data could harm consumers if it confers an incumbency advantage—supported by barriers to entry—that reduces the incentives for competing platforms to enter a particular market.”³⁰

One particularly valuable use of data is in machine learning and the development of AI. The continuous and growing complexity of tasks that AI has to master requires large repositories of data on which to train algorithms.³¹ Professors Eric Posner and Glen Weyl argue that “the vast

²⁵ Murgia, *supra* note 26.

²⁶ *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001), available at <https://www.scotusblog.com/case-files/cases/united-states-v-microsoft-corp/>; Farrell and Klemperer, *Coordination and Lock-in*, *supra* note 19.

²⁷ Allen P. Grunes and Maurice E. Stucke, “No Mistake About It: The Important Role of Antitrust in the Era of Big Data,” *The Antitrust Source* (April, 2015), available at https://www.americanbar.org/content/dam/aba/publishing/antitrust_source/apr15_grunes_4_22f.authcheckdam.pdf.

²⁸ McKinsey & Company, *Monetizing car data: New service business opportunities to create new customer benefits* (Advanced Industries, Sept., 2016), available at <https://www.mckinsey.com/~media/McKinsey/Industries/Automotive%20and%20Assembly/Our%20Insights/Monetizing%20car%20data/Monetizing-car-data.ashx>.

²⁹ European Data Protection Supervisor, *Privacy and competitiveness in the age of big data: The interplay between data protection, competition law and consumer protection in the digital economy*, (March, 2014), available at https://edps.europa.eu/sites/edp/files/publication/14-03-26_competition_law_big_data_en.pdf; Eric A. Posner and E. Glen Weyl, *RADICAL MARKETS: UPROOTING CAPITALISM AND DEMOCRACY FOR A JUST SOCIETY* (2018).

³⁰ Joshua Gans, *Enhancing Competition with Data and Identity Portability* (Brookings Institution, June, 2018), available at https://www.brookings.edu/wp-content/uploads/2018/06/ES_THP_20180611_Gans.pdf.

³¹ Posner and Weyl, *supra* note 31.

data sets collected by Google, Facebook and others as a by-product of their core business functions became a crucial source of revenue and competitive advantage.”³² They make the case that data used for machine learning may have increasing returns to scale, in that more complex tasks that require deeper learning are often more valuable.³³

Data access leads to material product improvements, including personalization and algorithm optimization,³⁴ which result in efficiencies, increased productivity, and better customer targeting.³⁵ Such outcomes often benefit consumers,³⁶ but these dynamics can also make it harder for new entrants to compete.³⁷ As firms scale and bring in more and better data, they become better performers. If it is hard to access the data or an equivalent source, replicating existing firms’ performance becomes exceedingly difficult.³⁸ Because data are generated in part through the network effects of free services provided to users, other services are often unable to acquire the same information.³⁹ Economists Di He and others provide empirical support for this theory, finding that having more historical data improves search engine performance, as measured by ranking quality and learning speeds.⁴⁰ This data feedback effect ensures that incumbent firms extend their lead over new entrants over time.⁴¹

Data may also make it easier for dominant firms to enter adjacent markets.⁴² The European Commission has labeled this “concentric diversification,” wherein companies “expand their data collection & analytics into adjacent data areas where joint analysis of the existing and additional data gives them a comparative advantage over companies that separately analyze data in a particular area.”⁴³ Amazon, for example, has unique knowledge about not just supply chains, but also customers and the marketplace for goods.⁴⁴ Using its knowledge of customer locations from

³² *Id.*

³³ *Id.*

³⁴ Gans, *supra* note 32.

³⁵ As Howard Shelanski notes, “the more users garnered by an Internet platform like a search engine, the better it can optimize its services to be more efficient and profitable.” See Shelanski, Information, Innovation, and Competition Policy for the Internet, *supra* note 21.

³⁶ D. Daniel Sokol and Roisin E. Comerford, *Antitrust and Regulating Big Data*, 23 GEORGE MASON L. REV. 23, 1129 (2016), available at <https://scholarship.law.ufl.edu/cgi/viewcontent.cgi?article=1817&context=facultypub>.

³⁷ Shelanski, *supra* note 21.

³⁸ See Gans, *supra* note 32; European Data Protection Supervisor, *supra* note 31.

³⁹ *Id.*

⁴⁰ Di He *et al.*, *Scale Effects in Web Search*, WINE: International Conference on Web and Internet Economics (2017): 294–310, available at https://link.springer.com/chapter/10.1007/978-3-319-71924-5_21.

⁴¹ Gans, *supra* note 32.

⁴² European Data Protection Supervisor, *supra* note 31.

⁴³ Bertin Martens, *An Economic Policy Perspective on Online Platforms* (European Commission Joint Research Center, 2016), available at <https://ec.europa.eu/jrc/sites/jrcsh/files/JRC101501.pdf>.

⁴⁴ Olivia Solon and Julia Carrie Wong, *Jeff Bezos v the world: why all companies fear 'death by Amazon'*, GUARDIAN, April 24, 2018, available at <https://www.theguardian.com/technology/2018/apr/24/amazon-jeff-bezos-customer-data-industries>.

shipping addresses and purchasing patterns, the company is expanding its advertising business, now with an estimated worth of \$125 billion.⁴⁵ Amazon has also built a robust private label business using its proprietary sales and search data.⁴⁶ A similar example can be found in the health care industry. Google, which dominates the search engine market, is now applying its machine learning algorithms to health care markets, seeing the sector as holding “commercial promise.”⁴⁷

- **Increased use of intellectual property protection**

Intellectual property protection, a source of state-sanctioned monopoly power, is playing an increasingly important role in the U.S. economy. Because of changes to the patent system, since the 1980s, patents have become easier to obtain and enforce, and the rewards for enforcement claims have increased.⁴⁸ Beginning around 1980, there has been a significant increase in patent awards, both in absolute numbers and relative to total output. (see Figure 5) In addition, as economist Dean Baker has emphasized, the Bayh-Dole Act of 1980 made it possible for private actors to obtain patent rights for publicly funded inventions such as medicines that are based on science funded by the National Institute of Health.⁴⁹

⁴⁵ Karen Weise, *Amazon Knows What You Buy. And It's Building a Big Ad Business From It*, N. Y. TIMES, January 20, 2019, available at <https://www.nytimes.com/2019/01/20/technology/amazon-ads-advertising.html>.

⁴⁶ Julie Creswell, *How Amazon Steers Shoppers to Its Own Products*, N. Y. TIMES, June 23, 2018, available at <https://www.nytimes.com/2018/06/23/business/amazon-the-brand-buster.html>.

⁴⁷ Mark Bergen, *Google Is Training Machines to Predict When a Patient Will Die*, BLOOMBERG, June 18, 2018, available at <https://www.bloomberg.com/news/articles/2018-06-18/google-is-training-machines-to-predict-when-a-patient-will-die>; Andrew Burt and Samuel Volchenboum, *How Health Care Changes When Algorithms Start Making Diagnoses*, HARVARD BUSINESS REV., May 8, 2018, available at <https://hbr.org/2018/05/how-health-care-changes-when-algorithms-start-making-diagnoses>.

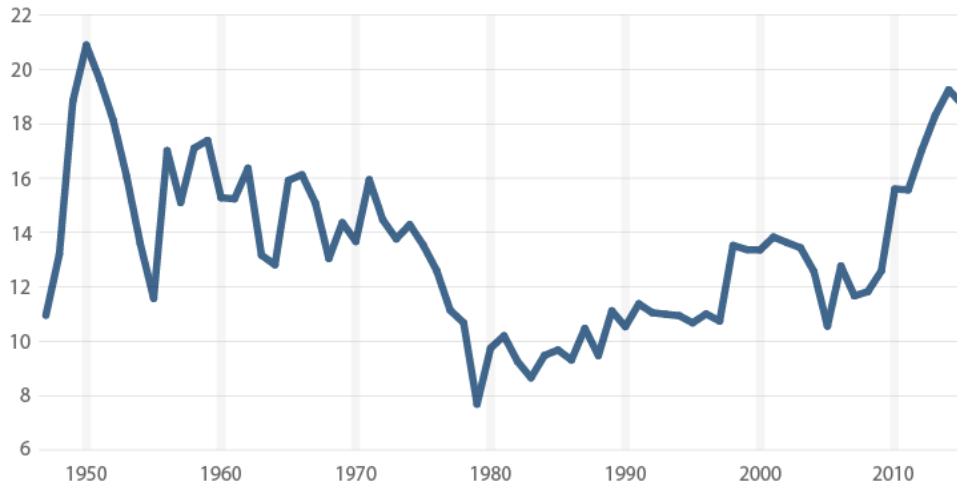
⁴⁸ Adam B. Jaffe and Josh Lerner, *Innovations and Its Discontents*, in INNOVATION POLICY AND THE ECONOMY, VOLUME 6, 27 (Adam B. Jaffe, Josh Lerner and Scott Stern eds.), available at <https://www.nber.org/chapters/c0204.pdf>.

⁴⁹ John R. Thomas, *March-In Rights Under the Bayh-Dole Act* (Congressional Research Service, August 22, 2016), available at <https://fas.org/sgp/crs/misc/R44597.pdf>; Dean Baker, *U.S. Drug Prices Started to Explode in the 1980s, Contrary to What the NYT Tells You*, (Center for Economic and Policy Research, November 13, 2018), available at <http://cepr.net/blogs/beat-the-press/u-s-drug-prices-started-to-explode-in-the-1980s-contrary-to-what-the-nyt-tells-you>.

FIGURE 5

Patent intensity has grown considerably since the 1980s

Total patents granted per every \$1 billion in real gross domestic product (GDP), by year



Note: Total patents include utility, design, and plant patents.

Sources: U.S. Patent and Trademark Office, "U.S. Patent Activity Calendar Years 1790 to the Present," available at https://www.uspto.gov/web/offices/ac/ido/oeip/taf/h_counts.htm (last accessed January 2019); U.S. Bureau of Economic Analysis, "Real Gross Domestic Product," Federal Reserve Bank of St. Louis, available at <https://fred.stlouisfed.org/series/GDPC1> (last accessed January 2019).

Patents, of course, can be imperfect entry barriers. A potential entrant can invent around, license, or dispute patents legally. However, there is evidence that patents create effective barriers in important parts of the economy. The pharmaceutical industry provides a clear example. Although the production of drugs requires technical expertise and the ability to meet rigorous standards set by the U.S. Food and Drug Administration, brand-name drugs can be copied relatively quickly by generic drug manufacturers. When patents expire and generic drugs are brought to market, the price of drugs typically drops dramatically once there is more than one generic competitor.⁵⁰ But while the patent is in force, many pharmaceutical companies earn substantial rents.

Patents are also crucial in complex technology areas, where so-called patent thickets—portfolios of patents with overlapping claims held by incumbent firms—create barriers to entry by raising the sunk costs that must be incurred by potential entrants. Entrants must either have their own patent portfolio to use as a bargaining chip to fend off infringement claims by the incumbent, or the resources for protracted litigation. For instance, in the U.S. software industry, as the number of patents relevant to the market held by incumbent firms rises, there is a statistically significant decline in the rate of entry by new competitors.⁵¹ Similarly an empirical study of patent

⁵⁰ U.S. Government Accountability Office, *Report to Congressional Requesters: Drug Industry Profits, Research and Development Spending, and Merger and Acquisition Deals* (2017), available at <https://www.gao.gov/assets/690/688472.pdf>.

⁵¹ Iain M. Cockburn and Megan J. MacGarvie, *Entry and Patenting in the Software Industry* (NBER, February 2011), available at <https://www.nber.org/papers/w12563>.

decisions by United Kingdom firms shows a substantial and statistically significant negative relationship between the density of patent thickets and the likelihood that a firm will patent in a new area.⁵² There is also concern that manufacturers of “biologic” drugs—which are synthesized using living organisms or tissues rather than through a chemical process—have successfully used patents filed after FDA approval of their drugs to extend the exclusivity period well beyond the initial patent protection and market exclusivity period.⁵³

- **Ineffective antitrust enforcement**

Although some barriers to entry are the consequence of a changed economic environment, rising market power is in part attributable to the declining effectiveness of antitrust enforcement. Beginning in the 1980s, intentional policy decisions have hindered antitrust enforcement. Regulators largely abandoned challenges of mergers where market concentration was below the upper threshold of what is considered to be competitive.⁵⁴ Similarly, they became increasingly reluctant to bring unilateral conduct cases, leading to an environment in which dominant firms could aggressively pursue anticompetitive conduct—such as foreclosure—without legal repercussions.⁵⁵

A recent empirical study by economist John Kwoka presents convincing evidence that merger enforcement decisions allowing increased concentration have often led to price increases.⁵⁶ A 2016 study by economist Robert Kulick, which looked at establishment-level data of cement producers from 1977 through 1992, also found “significant price increases due to horizontal mergers after a relaxation in antitrust enforcement standards in the mid-1980s, but no evidence of systematic price increases before.”⁵⁷

Firms enjoying the gains created by entry barriers have every incentive to maintain and expand them. One excellent way to do so, made possible by large flows of rent, is to acquire potential

⁵² Bronwyn Hall *et al.*, *A Study of Patent Thickets: Final report prepared for the UK Intellectual Property Office* (UK Institute of Economic and Social Research, 2012), available at https://eml.berkeley.edu/~bhall/papers/HHvGR_Patent_Thickets_FIN_29Oct12.pdf.

⁵³ See Initiative for Medicines, Access and Knowledge, *Competition and Consumer Protection in the 21st Century*, Comment Letter submitted to FTC Hearing #4 Industry Perspectives on Innovation and IP Policy (IMAK, December 21, 2018), available at <https://www.i-mak.org/wp-content/uploads/2019/01/I-MAK-Public-Comment-Competition-and-Consumer-Protection-in-the-21st-Century-21-12-2018.pdf>.

⁵⁴ Marc Jarsulic *et al.*, *Reviving Antitrust: Why Our Economy Needs a Progressive Competition Policy* (Center for American Progress, June 29, 2016), available at <https://www.americanprogress.org/issues/economy/reports/2016/06/29/140613/reviving-antitrust/>.

⁵⁵ U.S. Dept. of Justice, *Antitrust Division Workload Statistics, FY 2005–2014*, available at <https://www.justice.gov/atr/file/630706/download>

⁵⁶ John Kwoka, *MERGERS, MERGER CONTROL, AND REMEDIES: A RETROSPECTIVE ANALYSIS OF U.S. POLICY* (2014).

⁵⁷ Robert Kulick, *Horizontal Mergers, Prices, and Productivity: Job Market Paper* (2016), available at <https://pdfs.semanticscholar.org/a443/43620307afec3d4163ea6b6e3b7868d2d598.pdf>.

competitors before they can fully establish themselves.⁵⁸ There is evidence that pharmaceutical companies have used so-called killer acquisitions to discontinue innovations at target companies in order to pre-empt competition and preserve revenue from existing investments.⁵⁹ This same motive, along with a desire to provide complements to goods and services that already produce network externalities, appears to generate some acquisitions in the software and IT services industries. The acquisitions of Waze, YouTube, and DeepMind by Google⁶⁰ and Instagram and WhatsApp by Facebook⁶¹ all appeared to be at a large premium to existing revenue and to strengthen the dominance of the acquiring firms.⁶² These and other acquisitions have not been subject to antitrust challenges.

The contributing role of weak antitrust enforcement to rising rents is further supported by the fact that rising market power is disproportionately prevalent in the United States. Returns on

⁵⁸ Posner and Weyl, *supra* note 31; Dominique Guellec and Caroline Paunov, *Digital Innovation and the Distribution of Income* (NBER, November, 2017), available at <https://www.nber.org/papers/w23987>; Mordecai Kurz, *On the Formation of Capital and Wealth: IT, Monopoly Power and Rising Inequality* (Stanford Institute for Economic Policy Research, June 25, 2017), available at https://siepr.stanford.edu/sites/default/files/publications/17-016_0.pdf.

⁵⁹ Colleen Cunningham, Florian Ederer, and Song Ma, *Killer Acquisitions* (2018), available at http://faculty.som.yale.edu/songma/files/cem_killeracquisitions.pdf.

⁶⁰ Steven Davidoff Solomon, *Tech Giants Gobble Start-Ups in an Antitrust Blind Spot*, N. Y. TIMES, August 16, 2016, available at <https://www.nytimes.com/2016/08/17/business/dealbook/expect-little-antitrust-challenge-to-walmarts-bid-for-jet-com.html>; Data is giving rise to a new economy, THE ECONOMIST, May 6, 2017, available at <https://www.economist.com/briefing/2017/05/06/data-is-giving-rise-to-a-new-economy>. Facebook had access to extremely granular data on the adoption of competitors' apps through Onavo, a widely used security app acquired by Facebook. A similar app, which monitors smartphone usage at a system level, violated Apple's App Store developer rules, resulting in a brief ban on Facebook's ability to distribute internal apps for iOS devices. See Sam Dean, *Facebook paid kids to download app that monitors their online activity*, L.A. TIMES, January 30, 2019, available at <https://www.latimes.com/business/technology/la-fi-facebook-teens-20190130-story.html>; Deepa Seetharaman and Betsy Morris, *Facebook's Onavo Gives Social-Media Firm Inside Peek at Rivals' Users*, WALL STREET J., August 13, 2017, available at <https://www.wsj.com/articles/facebook-onavo-gives-social-media-firm-inside-peek-at-rivals-users-1502622003>; Nick Statt, *Apple restores Facebook's ability to run internal iOS apps*, THE VERGE, available at <https://www.theverge.com/platform/amp/2019/1/31/18206020/apple-facebook-internal-ios-apps-restores-enterprise-certificate>.

⁶¹ Kurt Wagner, *Facebook Paid \$19 Billion for WhatsApp, Which Lost \$138 Million Last Year*, RECODE, October 28, 2014, available at <https://www.recode.net/2014/10/28/11632404/facebook-paid-19-billion-for-whatsapp-which-lost-138-million-last-year>; Kurt Wagner, *Here's why Facebook's \$1 billion Instagram acquisition was such a great deal*, RECODE, April 9, 2017, available at <https://www.recode.net/2017/4/9/15235940/facebook-instagram-acquisition-anniversary>; Nick Wingfield, *With LinkedIn, Microsoft Looks to Avoid Past Acquisition Busts*, N. Y. TIMES, December 8, 2016, available at <https://www.nytimes.com/2016/12/08/technology/with-linkedin-microsoft-looks-to-avoid-past-acquisition-busts.html>; Michael J. de la Merced and Leslie Picker, *For Microsoft, LinkedIn Deal Could Be a \$26.2 Billion Time Machine*, N. Y. TIMES, June 13, 2016, available at <https://www.nytimes.com/2016/06/14/business/dealbook/for-microsoft-linkedin-deal-could-be-a-26-2-billion-time-machine.html>.

⁶² Luís Cabral, *Standing on the Shoulders of Dwarfs: Dominant Firms and Innovation Incentives* (2017), available at https://www.sauder.ubc.ca/Faculty/Research_Centres/Phelps_Centre_for_the_Study_of_Government_and_Business/Events/~media/Files/Faculty%20Research/Phelps%20Centre/2017%20IO%20conference/Cabral-innovationJune2017.ashx; *The techlash against Amazon, Facebook and Google—and what they can do*, THE ECONOMIST January 20, 2018, available at <https://www.economist.com/briefing/2018/01/20/the-techlash-against-amazon-facebook-and-google-and-what-they-can-do>.

equity among U.S.-based firms dwarf those of corresponding non-U.S. firms.⁶³ Similarly, since the mid-1990s, the United States has experienced highly irregular drops in the number of publicly listed firms—generally a country’s largest firms—relative to other developed countries, primarily driven by the United States’ unique and rapid increase in mergers and acquisitions.⁶⁴ In contrast, due to improved antitrust enforcement in recent decades, European markets have less concentration, lower rents, and fewer barriers to entry.⁶⁵ Finally, as Thomas Piketty and Gabriel Zucman’s 2014 data show, Q values in the United States have risen more intensively than in many other developed countries starting in the 1980s.⁶⁶

The relative ineffectiveness of U.S. enforcement is explained in part by successful rent seeking on the part of corporations. As economist Luigi Zingales has noted, “a firm’s size and the level of concentration within a market affect positively all the crucial factors that determine a firm’s ability to influence the political system.”⁶⁷ As firms grow, they work to protect their advantages; this leads to further political investment, and, in turn, more political power. The benefits of this political influence can include a sustained ability to extract rents. Recently economists Germán Gutiérrez and Thomas Philippon have made the case that corporate capture of U.S. antitrust enforcement explains much of the state of U.S. competition. Comparing the markets of the United States with those of Europe, the authors find that the European economy is more competitive.⁶⁸ They conclude that the most compelling culprit is not technology and efficient scale, but a form of corporate capture that is more prevalent in the United States than in Europe due to institutional choices.⁶⁹ In a related study, authors Mihir Mehta, Suraj Srinivasan, and Wanli Zhao looked at a sample of U.S. mergers between 1998 and 2010, examining how political connections affected antitrust outcomes,⁷⁰ and found evidence of corporate influence on mergers policy. Even under increased public and political scrutiny tech firms continue to spend

⁶³ *Too much of a good thing*, ECONOMIST, March 26, 2016, available at <https://www.economist.com/news/briefing/21695385-profits-are-too-high-america-needs-giant-dose-competition-too-much-good-thing>.

⁶⁴ The number of listed firms in the United States has declined by half since its peak in 1996, while the number of listed firms has increased in most other developed countries. See Craig Doidge, G. Andrew Karolyi, and René M. Stulz, *The U.S. listing gap*, 123 J. Fin’l. Econ. 464 (2017) available at <https://www.sciencedirect.com/science/article/pii/S0304405X1630232X>.

⁶⁵ Germán Gutiérrez and Thomas Philippon, *How EU Markets Became More Competitive Than US Markets: A Study of Institutional Drift* (NBER, June 2019), available at <https://www.nber.org/papers/w24700>.

⁶⁶ Thomas Piketty and Gabriel Zucman, *Capital is Back: Wealth-Income Ratios in Rich Countries 1700-2010*, 129 QUARTERLY J. ECON. 1255 (2014).

⁶⁷ Zingales, *supra* note 16.

⁶⁸ See Gutiérrez and Philippon, *supra* note 14; Gutiérrez and Philippon, *supra* note 66. This work is consistent with that of Doidge, Karolyi, and Stulz, who show that since the mid-1990s, the United States experienced highly irregular drops in the number of publicly listed firms relative to other developed countries. See Doidge, Karolyi, and Stulz, *supra* note 65.

⁶⁹ Gutiérrez and Philippon, *supra* note 66.

⁷⁰ Mihir N. Mehta, Suraj Srinivasan, and Wanli Zhao, *Political Influence and Merger Antitrust Reviews* (Sept. 13, 2017), available at <https://ssrn.com/abstract=2945020>.

significant amounts of money to lobby Congress and federal agencies. Facebook, Apple, Google, Amazon, and Microsoft spent a combined \$64.3 million on political lobbying in 2018 alone.⁷¹

Better use of antitrust authority

The evidence on the sources, scope and location of barriers to entry which we have developed suggests avenues for redirecting antitrust enforcement to increase its effectiveness. Merger policy provides a clear example. When network effects, patents, data access or other factors already protect an incumbent firm from competition, a seemingly harmless acquisition may have a significant effect on protecting or expanding entry barriers. For digital companies, the size of the target firm's user base, the speed at which the startup is growing, and the potential uses of its data are only a few of the indicators that may signal to the incumbent that the target is a potential competitive threat, or that incorporation of its product will help deter future competitors. But it has been difficult for antitrust enforcers to recognize the implications of acquisitions at important moments.

Facebook, for example, acquired Instagram and WhatsApp without challenge from U.S. antitrust agencies.⁷² EU antitrust enforcers determined that there were sufficient substitutes for advertisers and user data.⁷³ And yet, as others have noted, Facebook considered both companies to be existential threats to its business model.⁷⁴ With the benefit of hindsight, permitting these acquisitions foreclosed the entry of potentially powerful competitors. Instagram and WhatsApp are doing remarkably well, even as they continue to function largely independently of Facebook.⁷⁵ Instagram, for example, boasts 1 billion users, continues to experience rapid growth, and generates high revenue.⁷⁶ Moreover, Instagram users spend a similar amount of time on the

⁷¹ Ben Brody, *Google, Facebook Set 2018 Lobbying Records as Tech Scrutiny Intensifies*, BLOOMBERG, January 22, 2019, available at <https://www.bloomberg.com/news/articles/2019-01-22/google-set-2018-lobbying-record-as-washington-techlash-expands>.

⁷² Chelsey Dulaney, *Facebook Completes Acquisition of WhatsApp*, The Wall Street Journal, October 6, 2014, available at <https://www.wsj.com/articles/facebook-completes-acquisition-of-whatsapp-1412603898>; Alexei Oreskovic, *FTC clears Facebook's acquisition of Instagram*, REUTERS, August 22, 2012, available at <https://www.reuters.com/article/us-facebook-instagram/ftc-clears-facebooks-acquisition-of-instagram-idUSBRE87L14W20120823>.

⁷³ European Commission, Case COMP/M.7217 - Facebook/WhatsApp, Regulation (EC) No 139/2004 Merger Procedure (2014), available at http://ec.europa.eu/competition/mergers/cases/decisions/m7217_20141003_20310_3962132_EN.pdf.

⁷⁴ Solomon, *supra* note 62.

⁷⁵ Kurt Wagner, *Facebook's acquisition of Instagram was the greatest regulatory failure of the past decade, says Stratechery's Ben Thompson*, RECODE, June 2, 2018, available at <https://www.recode.net/2018/6/2/17413786/ben-thompson-facebook-google-aggregator-platform-code-conference-2018>; Mike Isaac, *Zuckerberg Plans to Integrate WhatsApp, Instagram and Facebook Messenger*, N. Y. TIMES, January 25, 2019, available at <https://www.nytimes.com/2019/01/25/technology/facebook-instagram-whatsapp-messenger.html>.

⁷⁶ Jamie Condliffe, *Instagram Now Looks Like a Bargain*, N. Y. TIMES, June 27, 2018, available at <https://www.nytimes.com/2018/06/27/business/dealbook/instagram-facebook.html>.

application as they do on Facebook.⁷⁷ These acquisitions have added measurably to Facebook's ability to gather user data, which in turn reinforces its already considerable network advantages.⁷⁸

In the pharmaceutical industry, there is good evidence that incumbent firms have executed “killer acquisitions”. There is also evidence that mergers and acquisitions generally reduce innovation in the merged entity and in non-merging rivals, undesirable competitive effects that antitrust authorities have not countered.⁷⁹ Industry participants clearly have become efficient at using mergers and acquisitions to expand the rent-extracting capacity provided by patent protection.

However, it is possible for antitrust authorities to adapt merger policy to this changed economic environment. A starting point would be to change the way enforcers approach mergers and acquisitions by large firms that already enjoy the protection of significant barriers to entry. Using the market-based metric discussed above, these firms are easy to identify. Because acquisitions by these firms pose significant risks that potential competition will be foreclosed, and that existing monopoly power will be reinforced or expanded, they should be reviewed under a presumption that they will have anticompetitive effects. The burden will then shift to the acquirer to show that the presumption does not apply.

In addition, whenever such a merger or transaction is cleared, the approving authority should be required to follow the effects of the transaction for a reasonable period to time, with the intent of requiring rescission of transactions which produce anticompetitive results. The legal authority to require rescission already exists under section 7 of the Clayton Act.⁸⁰

While there is a risk that more stringent standards of review may prevent some efficiency gains that can only be realized by allowing protected incumbents to support or expand existing barriers to entry, the high and sustained levels of rent extraction across the healthcare, IT, communications and other sectors suggests that we ought to lean more heavily on policy that is unambiguously pro-competitive.

⁷⁷ Rani Molla and Kurt Wagner, *People spend almost as much time on Instagram as they do on Facebook*, RECODE, June 25, 2018, available at <https://www.recode.net/2018/6/25/17501224/instagram-facebook-snapchat-time-spent-growth-data>.

⁷⁸ See Posner and Weyl, *supra* note 31

⁷⁹ Justus Haucap and Joel Stiebale, *How mergers affect innovation: Theory and evidence from the pharmaceutical industry* (Dusseldorf Institute for Competition Economics, Discussion Paper No. 218, April 2016) available at <https://www.econstor.eu/bitstream/10419/130193/1/856561223.pdf>.

⁸⁰ James. P. Montague, *Availability of Rescission in Redressing Clayton Act Section 7 Violations – United States v. Coca-Cola Bottling Company*, 12 LOYOLA OF L. A. LAW REV., 255 (1978).

Conclusion

There is now substantial empirical evidence that many large corporations have significant market power, raising their profitability above competitive levels. Data on firm-level Q ratios show this, and these data are consistent with a variety of other measures of competitiveness.

This has important implications for our economy, which is largely regulated by market competition. When firms are earning substantial economic rents, income is redistributed upward to owners. The rents that flow to them act like a tax on everyone else, lowering real wages and shifting overall income shares. Moreover, because firms earn rent only when entry by competitors is inhibited, the economy becomes less dynamically efficient. Investment capital does not flow to its most profitable use, and potential gains in productivity can be squandered.

We identify several factors that are creating entry barriers that sustain supracompetitive profits. They include the ability of firms to merge and create market concentration, the increased importance of intellectual property rights, the development of businesses where network externalities are significant, and differential access to big sets of data on consumers are among them.

We also show by example that changes to antitrust policy and enforcement -- which take into account the evidence of sources and locations of barriers to entry -- could help to reduce the high levels of market power which we observe.

It should be acknowledged, however, that antitrust policy alone is likely to be an inadequate instrument to confront existing levels of market power. The increased importance of intellectual property protection, and the rise of firms that appear to be effectively immune to competitive pressure, may well require other remedies. Nonetheless, a redirection of antitrust is an obvious and necessary first step toward reducing that power.

XX BEGIN APPENDIX XX

Appendix

The Q ratio: Using stock market valuations to determine when firms are earning monopoly profits

In a competitive stock market, the value of a firm will be equal to the present value of its net revenues. If the market value exceeds the replacement cost of a firm's capital, there is an obvious way for a new entrant to make money: A new entrant would gain from purchasing an additional unit of capital and using it to produce the same good as the incumbent firm. This is because the

new entrant would earn an immediate financial reward—the difference between the market value and replacement cost.

To put it another way, entry is encouraged by the existence of an arbitrage opportunity. Arbitrage opportunities exist when it is possible to buy a good in one market—in this case, the market for capital goods—and sell it for a higher price in another market. The arbitrage is between the capital goods market and the equity market—or buying a unit of capital goods at its current replacement cost and reselling it for more in the equity market by putting it to work in the appropriate line of business.

Of course, entry will increase the supply of goods. This should reduce the price of the firm's output and therefore also reduce the net revenue from every unit of capital used in that line of business. This phenomenon makes entry a self-limiting process. Entry will continue until net revenue per unit falls to the level of replacement cost per unit of capital. At this point, no incentive for additional entry exists, and the incumbent firm is then earning the competitive rate of return on its capital.

Thus, when there are no barriers to entry, the stock market value of a firm, V , will be equal to the replacement cost of its capital, RC .

However, entry barriers can make it possible for a firm to earn more than the competitive rate of return on its capital. The existence of such barriers means that the ability of new firms to increase supply can be imperfect, and the return to capital for an incumbent firm can remain above the competitive level. When its rate of return exceeds the competitive level, a firm is said to be earning an economic rent.

When a firm's net earnings include rent, those supranormal revenues will be included in the stock market valuation of the firm. After all, stock market participants do not care about the source of net revenues—only that they exist. This suggests a way to use stock market valuations and the replacement cost of capital stock to construct a measure that can signal when a firm is earning rent.

When there are no entry barriers, the market value of the firm will equal the replacement cost of its capital stock: $V = RC$. When $Q = V/RC$ is greater than 1, the firm is earning returns that exceed competitive levels. The ratio Q is referred to as Tobin's Q after the economist James Tobin who introduced its use in economics.

The excess of market valuation over replacement cost provides a quantitative measure of the rent component of net revenue. Conceptually, $V = V_k + V_r$, where V_k is the discounted value of the competitive return to capital and V_r is the discounted value of rents. Thus, it follows that $Q = V/RC = V_k/RC + V_r/RC = 1 + V_r/RC$. Hence, the excess of Q over 1 is then a measure of rents

Draft, 8/22/2019.

relative to replacement cost. If, for example, $Q = 2$, half of the earnings of the firm are from economic rent.⁸¹

XX END APPENDIX XX

⁸¹ For a discussion of the relationship among Q , competitive profits, and economic rent, see Eric B. Lindenberg and Stephen A. Ross, *Tobin's Q Ratio and Industrial Organization*, 54 J. BUSINESS 1 (1981) available at https://www.researchgate.net/publication/24102787_Tobin's_Q_Ratio_and_Industrial_Organization.