Applying Antitrust in Digital Markets: Foundations and Approaches

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This paper analyzes the conflicts that arise when trying to apply traditional antitrust principles in the context of digital markets. Antitrust has both political and economic foundations. The political approach emphasizes populist themes that ultimately harm economic development, while economic approaches focus on characterizations of and remedies for market power. Digitization of markets thwarts current antitrust tools by adding complexity and rapid change. A number of authors suggest populist approaches for antitrust in digital markets, but these lack rigor and fail to address central challenges. This paper suggests that antitrust should return to its earliest roots and directly address features in the economy that create market power.

Keywords: Digital markets, antitrust, monopoly, technology

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Digitization of information is affecting all aspects of life. A growing number of college graduates have never stepped foot on their alma maters' campuses. Business-to-business e-commerce in the US totaled more than $1 trillion in 2018[1] and PWC Global reports that 80 percent of US CEOs expect that artificial intelligence will significantly change the way they do business by 2024.[2] Although retail e-commerce made up only 10 percent of US retail sales in 2018, it was up nearly 70 percent over five years earlier.[3] The United Nations scores 58 percent of countries as high or very-high in their e-government development.[4]

These changes are affecting business regulation and antitrust. The growing use of unprecedently large and constantly updated databases – called big data – to study behavior has led to concerns that the lowering of computing and data storage costs will result in consumer harms. People worldwide were startled by the revelation that Cambridge Analytica used information collected about Facebook users in violation of Facebook's policies.

The US Congress and the US Federal Trade Commission (FTC) have responded to big data, data security, and privacy concerns with hearings and investigations, which may result in greater enforcement of existing laws or the creation of new laws. The European Union (EU) recently adopted a General Data Protection Regulation (GDPR) that creates "digital rights" for EU citizens, requiring companies that collect or use personal data to ask for user consent.

[1] Don Davis, *B2B U.S. Ecommerce Market Report*. DIGITAL COMMERCE 360 (Mar. 22, 2019), https://www.digitalcommerce360.com/2019/03/22/b2b-ecommerce-sales-surpass-1-trillion-with-more-growth-to-come/

[2] PWC GLOBAL, *22nd Annual Global CEO Survey*, https://www.pwc.com/gx/en/ceo-agenda/ceosurvey/2019/us (last visited Dec. 21, 2019).

[3] *E-commerce share of total retail sales in United States from 2013 to 2021,* STATISTA, https://www.statista.com/statistics/379112/e-commerce-share-of-retail-sales-in-us/ (last visited Dec. 21, 2019).

[4] UNITED NATIONS E-GOVERNMENT SURVEY 2018: GEARING E-GOVERNMENT TO SUPPORT TRANSFORMATION TOWARDS SUSTAINABLE AND RESILIENT SOCIETIES (2018), *available at* https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/E-Government%20Survey%202018_FINAL%20for%20web.pdf.

Digitization has also given rise to technology backlashes and new inter-industry rivalries. This has been evident in the debates over net neutrality. What apparently began as a desire to retain traditional telephone regulations in an internet age morphed into a competition in the regulatory arena between internet service providers and content providers over how regulation might be used to affect how these different types of companies might or might not get into each other's business.[5]

Digitization has also enabled the emergence of what has become known as Big Tech: Google (whose parent company is Alphabet), Facebook, Apple, Microsoft, and Amazon. The sizes and perceived influence of these companies has prompted populist calls for antitrust action to decrease their size and scope. Adherents to this populist approach refer to it as neo-Brandeis and apply the approach to all sectors, not just digitized industries. One of the adherents, Wu[6], advocates expanding the role of antitrust in the US to limit business size and scope, a view echoed by US Senator Elizabeth Warren.[7] Focusing on Amazon, Khan[8] argues for greater antitrust enforcement or common carrier-like regulations. Following similar themes, Furman et al. call for more aggressive antitrust and suggest imposing a code of conduct and data sharing regulations on digital businesses.[9]

[5] Mark A. Jamison, *Net Neutrality Policies and Regulation in the United States*, 17(3) REV. NETWORK ECON.151 (2019) (hereinafter "Jamison 2019a").

[6] TIM WU, THE CURSE OF BIGNESS: ANTITRUST IN THE NEW GILDED AGE (2018).

[7] Elizabeth Warren, *Here's How We Can Break Up Big Tech: It's Time to Break Up Amazon, Google, and Facebook.*, MEDIUM (Mar. 8, 2019), ttps://medium.com/@teamwarren/heres-how-we-can-break-up-big-tech-9ad9e0da324c.

[8] Lina M. Khan, *Amazon's Antitrust Paradox*, 126(3) YALE L.J. 710 (2017).

[9] JASON FURMAN ET AL., UNLOCKING DIGITAL COMPETITION: REPORT OF THE DIGITAL COMPETITION EXPERT PANEL (2019)

These authors are correct that digitization creates problems for accepted antitrust tools, but their analyses and remedies are based on a simplified view of history and of the challenges of digitization. Today's antitrust approach emphasizes identifying market power by analyzing specific markets and firms' abilities to raise prices, and advises remedies when the exercise of market power might harm consumers.[10] Khan argues that firms like Amazon seek market control rather than profits and so frustrate traditional views of firm conduct.[11] Eisenach identifies dynamics, systems competition, and network effect characteristics of the information technology sector that present challenges for antitrust.[12] Hauge and Jamison explain that constant change in digital markets causes the validity of antitrust market analysis to rapidly decay, calling into question both the bases for decision making and the propriety of antitrust action.[13]

Neo-Brandeis adherents hold that antitrust was built on anti-bigness views and had meaningful success until the 1980s when a more economics-oriented approach took hold and turned antitrust to emphasize consumer welfare. They are correct that Brandeis's anti-bigness view shaped the initial practice of antitrust, but are wrong in their views of the roots of consumer welfare. The scholarly emphasis on how

[10] *See* Jonathan B. Baker, *Market Definition: An Analytical Overview*, 74(1) ANTITRUST L.J. 129 (2007); Joseph Farrell and Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, 10(1) THE B.E. J. OF THEORETICAL ECON. ARTICLE 9. (2010), *available* at http://www.bepress.com/bejte/vol10/iss1/art9.

[11] Khan, *supra* note 8.

[12] Jeffrey A. Eisenach, *US Merger Enforcement in the Information Technology Sector, in* THE CAMBRIDGE HANDBOOK OF ANTITRUST, INTELLECTUAL PROPERTY, AND HIGH TECH, CAMBRIDGE 445-466 (Roger Blair & Daniel Sokol eds 2017); Jeffrey A. Eisenach, *Broadband Competition in the Internet Ecosystem*, AMERICAN ENTERPRISE INSTITUTE. (Oct. 18, 2012), *available at https://www.aei.org/research-products/journal-publication/broadband-competition-in-the-internet-ecosystem/*.

[13] Janice Hauge & Mark Jamison, Identifying Market Power in Times of Constant Change, (Univ. of Florida, Warrington Coll. of Bus., PURC Working Paper, 2016), *available at* https://bear.warrington.ufl.edu/centers/purc/docs/papers/1607_Jamison_Identifying%20Market%20Power%20in%20Times%20of%20Constant%20Change.pdf.

monopoly affects consumers dates back to Smith[14] and Mill[15] and was a central theme in economic analysis of antitrust as early as 1934.[16] Furthermore, Stigler[17] and Crandall[18] show that early antitrust cases based on anti-bigness were ineffective.

This paper assesses current calls for more extensive application of antitrust by examining the foundations of antitrust, reviewing the challenge of digitization, and assessing recent proposals for change. It also extends Hauge and Jamison (2016) to suggest that the challenges that digitization creates for antitrust are best addressed by returning to the roots of the economics of monopoly and market power. This paper proceeds as follows. The first section describes the political, legal, and economic debates that led to current antitrust policies and how these policies are reflected in current practices. The second section describes the natures of digital markets and the conflicts with current antitrust practices. The third section examines some recent proposals for applying antitrust to digital markets. The fourth section describes a way forward for antitrust in the presence of digitization. The last section is the conclusion.

[14] Adam Smith, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS (1776).

[15] JOHN STUART MILL, PRINCIPLES OF POLITICAL ECONOMY (1848).

[16] Abba P. Lerner, *The Concept of Monopoly and the Measurement of Monopoly Power*, 1(3) REV. OF ECON. 157 (1934).

[17] George Stigler, *The Economic Effects of the Antitrust Laws*, 9 THE J. OF L.& ECON. 225 (1966).

[18] Robert W. Crandall, *The Dubious Antitrust Argument for Breaking Up the Internet Giants*, 54(4) REV. OF INDUS. ORG. 627 (2019).

I. Foundations and Practices in Antitrust

This section begins with the political motivations and economic foundations for antitrust, and then examines the economic investigations into monopoly and market power. It ends with a description of current practices.

A. Impetuses for Antitrust

The purpose of antitrust has been debated in the US at least since the inception of the associated laws and policies. Gordon[19] and Demsetz[20] explain that the debate is largely between political motivations for antitrust and economic analysis. The work of Louis Brandeis provided much of the energy and many of the notions stirring the political motivations. His ideas appear to have carried sway in the early years of antitrust and animate a current populist movement.[21] But Brandeis's economic arguments were often poorly formed and contradictory.[22] Early antitrust activities had little positive impact for the economy.[23]

Two primary drivers for Brandeis's antitrust views were his preference for autonomous individualism and his animosity towards large institutions, both business and government. He advocated for an economy comprised of small businesses because he viewed individualism as important for personal development and that it is lost if people work in large businesses rather than run their own.[24] In

[19] RICHARD L. GORDON, ANTITRUST ABUSE IN THE NEW ECONOMY (2002).

[20] Harold Demsetz, *Two Systems of Belief About Monopoly*, *in* INDUSTRIAL CONCENTRATION: THE NEW LEARNING 161–184 (Harvey J. Goldschmid, H. Michael Mann, and J. Fred Weston eds., 1974)

[21] *See* Wu, *supra* note 6.

[22] *See* THOMAS K. MCCRAW, PROPHETS OF REGULATION. (1984).

[23] Stigler, *supra* note 17, (1966).

[24] Whitney v. California 274 U.S. 357 (1927); *See also* McGraw, *supra* note 22.

his private law practice and in his political activities, Brandeis pursued large business with aggressive personal attacks. This ad hominem approach to law and regulation carried into his political roles with Presidents Woodrow Wilson and Theodore Roosevelt, and into his writings, where he villainized large banks and other businesses.[25] This appears to be part of a larger theme for Brandeis, namely that he was generally suspicious of other people's motives, but not his own.[26]

Brandeis's economic reasoning was flawed in part because he believed that breaking up large businesses lowers costs. He thought that small businesses are inherently more efficient than large businesses because business management must ultimately be overseen by a single person, and no one has the mental capacity to oversee a large enterprise. Although he recognized that there are economies of scale, he thought they are quite limited, making large businesses generally wasteful. In his view the only way a business can become large and endure is by buying rivals, colluding with rivals, or dropping prices to drive out rivals that cannot be bought or bought off. But he did allow for rare exceptions, such as in the cases of public utilities. He viewed customers as being duped into being attracted to low prices because prices rise once rivalry is gone.[27]

But concern over prices was not a primary motivation for Brandeis wanting to break up large firms. Indeed, he viewed low prices as a problem and pressed for laws that would exempt small businesses from antitrust so they can collude. Price

[25] Louis D. Brandeis, *Cutthroat Pricing: The Competition that Kills*, 58 (2969) HARPER'S WEEKLY 10-12 (1913); LOUIS D. BRANDEIS, OTHER PEOPLE'S MONEY AND HOW THE BANKERS USE IT (1914); LOUIS DEMBITZ BRANDEIS, OSMOND K. FRAENKEL, AND CLARENCE M. LEWIS, THE CURSE OF BIGNESS: MISCELLANEOUS PAPERS OF LOUIS D. BRANDEIS (1934); McGraw, *supra* note 22.

[26] Letter from Harold J. Laski to Justice Holmes (September 30, 1930) *in* HOLMES-LASKI LETTERS: THE CORRESPONDENCE OF MR. JUSTICE HOLMES AND HAROLD J. LASKI, 1916 TO 1935 (Mark DeWolfe Howe ed., 1953).

[27] Interstate Commerce Committee, Hearings on Control of Corporations, Person, and Firms Engage in Interstate Commerce S. Rep. No. 62- (2nd Sess. 1912) U.S. Senate. 1912. *Report of the Committee on Interstate Commerce, Pursuant to Senate Resolution 98: Hearings on Control of Corporations, Person, and Firms Engage in Interstate Commerce,* 62nd Cong., 2nd sess. Washington, D.C.: Government Printing Office. Brandeis et al., *supra* note 25, (1934); Brandeis, *supra* note 25, (1913)

competition is wasteful, in his view, because it hurts small company profits, and customers have more important things to do than compare prices.[28]

Although the political motivations for antitrust are generally associated with populist sentiments and fears[29], economists such as Mason[30] and Bain[31] provided economic arguments for the political view with case studies and models of monopoly that argued that the fundamental economics of certain industries and consequent firm behaviors made the industries bend towards monopoly and market power. Based on a paradigm that industry structure drives firm conduct, which in turn drives sector performance, Mason and Bain emphasized scale economies, barriers to entry, and collusion. While Mill was one of the first to identify barriers to entry as a source of monopoly, he held that barriers need to be absolute, such as the case where uniquely situated land was necessary for supply of particular products. Mason and Bain took more expansive views than Mill of entry barriers.[32]

Many economic scholars have been skeptical of politically motivated antitrust policies, holding that economic incentives make markets naturally arc towards competition. Two founders of modern economics, Smith and Mill, view competition as emerging naturally from people's normal tendencies and identify government barriers to competition as primary causes of monopoly or market power.[33] Smith and Mill write of situations where consumers suffered because political power was used to protect enterprises from competition. They also describe how collusive agreements can harm consumers by allowing firms to avoid

[28] Brandeis, *supra* note 25, (1913); McCraw, *supra* note 22.

[29] McCraw, *supra* note 22.

[30] EDWARD S. MASON, ECONOMIC CONCENTRATION AND THE MONOPOLY PROBLEM (1957).

[31] Joe S. Bain, *A Note on Pricing in Monopoly and Oligopoly*, 39(1) AMERICAN ECON. REV. 448 (1949); JOE S. BAIN, BARRIERS TO NEW COMPETITION: THEIR CHARACTER AND CONSEQUENCES IN MANUFACTURING INDUSTRIES (1956); JOE S. BAIN, INDUSTRIAL ORGANIZATION. (2nd ed., 1968).

[32] Mill, *supra* note 15.

[33] Smith, *supra* note 14; Mill, *supra* note 15.

competition, but this strategy requires that the colluding businesses prevent other firms from entering in response to supranormal profits. Government protections were often key to enabling collusion. Stigler explains that economists continued to favor markets and remained skeptical of many forms of regulation from the times of Smith and Mill to the time of Stigler's article.[34] He explains that economists were concerned about monopoly, but later adds that antitrust had done little to decrease industry concentration, although it did appear to decrease instances of collusion and of horizontal mergers.[35]

Implicit in the dispute between political and economic views on antitrust is the disagreement over purpose. Smith explains that the purpose of a market economy is to serve customers and warn against government interventions to satisfy businesses.[36] This view was carried by many economists over the years and eventually became the driving force behind US antitrust in the 1980s. But long before the 1980s, Lerner emphasizes consumer harm as central to defining market power and his approach has dominated economic analyses.[37] Simon agreed that the population's economic welfare is a primary concern of economic policy, but was troubled that the large firms of his day might become permanent fixtures with market power that would threaten democracy.[38] The emphasis on consumer harm as the motivating factor for antitrust grew over time and is now the primary school of thought. As Shapiro (2018) explains, modern "*antitrust is about protecting the*

[34] George Stigler, *The Politics of Political Economists*, 73(4) Q. J. ECON. 522 (1959)

[35] Stigler, *supra* note 17, (1966).

[36] Smith, *supra* note 14.

[37] Lerner, *supra* note 16.

[38] HENRY C. SIMON, A POSITIVE PROGRAM FOR LAISSEZ FAIRE: SOME PROPOSALS FOR A LIBERAL ECONOMIC POLICY. (Harry D. Gideonse ed., 1934).

competitive process so consumers receive the full benefits of vigorous competition."[39] (emphasis in original)

Despite economists' emphasis on the need for economic foundations for antitrust, political motivations persist for some people and perhaps drive some antitrust cases. Gordon argues that political motivations explain some aspects of the US antitrust case against Microsoft in the 1990s.[40] Recent populist views of antitrust reflect political motivations in that they replicate the theme that business success reflected in the size of a business, and especially enduring business success, are problems for the economy and for democracy.[41] Shapiro counters that nothing in legitimate empirical analyses of market power in the US supports the notion that the goal of antitrust should be expanded beyond concern for consumer welfare.[42]

B. Sources of Monopoly

The economic views of antitrust rest upon ideas of monopoly and market power. Demsetz explains that two schools of thought in economics have battled to explain monopoly: The interventionism theory – which holds that monopoly power largely derives from government interventions that protect companies from competition – and the self-sufficiency theory, which holds that monopoly power emerges from the fundamental economics of an industry or the behavior of the market participants.[43] The theories are not mutually exclusive, so the disagreement is over which theory better explains the majority of market power that people believe they observe over time. Indeed Smith and Mill reflect both of these ideas. Both authors

[39] Carl Shapiro, *Antitrust in a Time of Populism*, 61 INT'L J. INDUS. ORG. 714 (2018).

[40] Gordon, *supra* note 19.

[41] Wu, *supra* note 6.

[42] Shapiro, *supra* note 39, (2018).

[43] Demsetz, *supra* note 20.

identify government barriers to competition as primary sources of monopoly, but they also describe how collusive agreements can allow firms to avoid competition.[44]

According to Stigler, economic scholars since the founding of modern economics have been skeptical of the idea that markets naturally arc towards monopoly and market power.[45] Smith and Mill viewed competition as emerging naturally from profit motives. Simon was concerned with enduring monopoly in the self-sufficiency sense, but his concern was largely on how monopolists might gain political power that would then protect their economic interests.[46] Demsetz holds that the interventionism theory has a better intellectual foundation than the self-sufficiency theory because it is consistent with empirical evidence and is able to explain how economic rents can be used to benefit the government officials that restrict competition.[47] He states that the self-sufficiency theory doesn't provide adequate explanation of how existing firms are able to restrict entry absent government help or control of an essential supply input.[48]

Tullock expands on the idea of government as a primary source of monopoly by describing how people seek benefits for themselves in the political arena, leading to government-created barriers to competition.[49] This might take the form of seeking a subsidy or a tariff on something the businesses produce, or by obtaining regulations that hamper competitors. Krueger (1974) provides the term "rent seeking" and explains that it is a major hindrance for economic advancement in

[44] Smith, *supra* note 14; Mill, *supra* note 15.

[45] Stigler, *supra* note 34, (1959).

[46] Simon, *supra* note 38.

[47] Demsetz, *supra* note 20.

[48] *Id.*

[49] Gordon Tullock, *The Welfare Costs of Tariffs, Monopolies and Theft*, 5(3) W. ECON. J. 224 (1967).

developing economies.[50] Peltzman and Posner identify rent seeking as a major motivation behind the regulation of business.[51]

In support of the self-sufficiency theory, Mason and Bain argue that the fundamental economics of certain industries and firm behaviors in those industries made the industries tend towards monopoly and market power.[52] Mill was more skeptical and held that barriers must be absolute, such as situations where essential skills or supply inputs are subject to natural limits.[53] This parallels with the grain warehouses in the 1876 case *Munn v. Illinois*[54] in which the U.S. Supreme Court found that competition was physically impossible where certain Illinois grain elevators were situated uniquely between a river harbor and railroad tracks. This case was critical in the formation of the concept of public utility in the US.[55]

In contrast to Bain's structure-conduct-performance paradigm, Stigler finds government intervention as a major determinant of limited competition.[56] He challenges common assumptions about capital market imperfections, identifies practices previously thought to hinder competition as actually indicating healthy competition, and explains how competition is constrained by regulation, patents, and tariffs.

Natural monopoly and entry barriers became the standard economic explanations for monopoly. Natural monopoly is thought to arise out of production economies

[50] Anne O. Krueger, *The Political Economy of the Rent-Seeking Society*, 64(3) AM. ECON. REV. 291 (1974).

[51] Sam Peltzman, *Toward a more general theory of regulation*, 19(2) J. OF L. & ECON. 211 (1976); Richard A., Posner, *Theories of economic regulation*, 5(2) BELL J. OF ECON. 335 (1974).

[52] Mason, *supra* note 30; Bain *supra* note 31, (1949); Bain, *supra* note 31. (1956); Bain, *supra* note 31, (1968).

[53] Mill, *supra* note 15.

[54] *Munn v. Illinois*, 94 U.S. 113, 130-132 (1876).

[55] Mark A. Jamison, *Applying Public Utility, Common Carrier, and Essential Facility Policies to Google*, 9(2) J. L. ECON. & POL'Y 223 (2013).

[56] GEORGE J. STIGLER, THEORY OF COMPETITIVE PRICE (1942); George J. Stigler, *A Theory of Oligopoly*, 72(1) J. POL. ECON. 44 (1964); GEORGE STIGLER, THE ORGANIZATION OF INDUSTRY (1968).

in which a single firm is the least-cost means to provide a product. Baumol establishes that this occurs if production costs are subadditive,[57] but Jamison adds that a firm must have dominant cost subadditivity.[58]

There are at least four challenges in applying the technology-based natural monopoly concept. One is that it does not explain why there are no close substitutes. A second is that the theory fails to explain why a firm should be defined by technology. Coase holds that firm boundaries are determined by the economics of contracting.[59] A third problem is that empirical analyses of production economies can only be done on existing firms. Sharkey points out that firms often organize themselves in ways that give appearance of such economies, but that does not mean that the chosen technologies are those that would be used in a different market structure.[60] Finally, production economies are measured in terms of products and markets for which antitrust authorities can obtain data. This means that application of the concept is inherently backwards looking.

Rohlfs launches a body of economic literature that addressed demand-side scale economies, i.e., situations where customers add value to other customers, either directly or indirectly.[61] These are now called platform markets and the synergies are called network effects. His work and subsequent research find that such markets tend to tip, resulting into a monopoly or near monopoly and customer lock-in.

[57] William J. Baumol, *On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry*, 67(5) AM. ECON. REV. 809 (1977); *See also* WILLIAM W. SHARKEY, THE THEORY OF NATURAL MONOPOLY (1982) (Costs are subadditive when it is less costly for a firm to produce a given level of output than for all possible combinations of two or more firms to produce that output).

[58] MARK A. JAMISON, INDUSTRY STRUCTURE AND PRICING: THE NEW RIVALRY IN INFRASTRUCTURE (1999) (Dominant cost subadditivity exists when a firm's economies of joint production are greater than the economies that could be provided by all other forms of organization that might produce some portion of the output of the monopoly in conjunction with products and/or markets that the monopoly does not supply).

[59] R. H. Coase, *The Theory of the Firm*, 4(16) ECONOMICA 386 (1937).

[60] Sharkey, *supra* note 5757.

[61] Jeffrey Rohlfs, *A Theory of Interdependent Demand for a Communications Service*, 5(1) BELL J. ECON. & MGMT. SCI.16 (1974).

C. Practices

The US Department of Justice (DOJ) began formally following economic-based considerations in its thinking on antitrust in 1968 when it developed its first merger guidelines, but the roots are much earlier as the guidelines appear to derive from Kaysen and Turner.[62] Turner was head of the DOJ's Antitrust Division at the time. Shapiro notes that although these first guidelines reflected primarily a dislike for large enterprises, the notion of delineating markets has a longer history in both economics and law.[63] The early economics literature defined markets as boundaries within which pricing arbitrage was possible.[64] Bain holds that substitutability defines market boundaries and Machlup adds cross-elasticity of supply as a delineating factor.[65]

The merger guidelines have evolved so that now assessing a firm's market power generally occurs in two steps: Defining "market" and then finding "power". Baker observes that market definition is the critical step because, throughout history, that issue has determined case outcomes more than any other.[66] The U.S. approach for defining the market – the "relevant market" in antitrust jargon – has remained essentially the same for several years, but it is not without controversy.[67] The DOJ and FTC 2010 Merger Guidelines also offer methods for assessing market power

[62] CARL KAYSEN & DONALD TURNER, ANTITRUST POLICY (1959).

[63] Carl Shapiro, *The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years*, 77(1) ANTITRUST L.J. 49 (2010).

[64] Stigler, *supra* note 56, (1942); *See also* ALFRED MARSHALL, PRINCIPLES OF ECONOMICS (1920).

[65] JOE S. BAIN, PRICE THEORY (1952); *See also* Fritz Machlup, THE ECONOMICS OF SELLERS' COMPETITION (1952).

[66] Jonathan B. Baker, *Market Definition: An Analytical Overview*, 74(1) ANTITRUST L.J. 129 (2007).

[67] *Id,*

without first defining markets, such as Upward Pricing Pressure Analysis.[68] All of the approaches currently being practiced rely upon boundaries of firms and markets being sufficiently stable and understandable to guide antitrust decision making.[69] As the next section explains, this belief is unsupportable for digital markets.

II. The Challenge of Digitization

Digitization causes some economic features of markets that used to receive scant attention to now rise to such prominence that they appear new and surprising. For example, seaports have existed for centuries and often exhibit the characteristics of platforms, but these features failed to attract scholarly interest until Rohlfs encountered them when trying to specify demand functions for telecommunications services. This section identifies some features of digital markets and how these features impact antitrust.[70]

Platforms are economic environments that bring together two or more groups who value each other in some way. Examples include Uber (bringing together riders and drivers), Facebook (bringing together users and advertisers), and the Windows system (bringing together PC users, software developers, and device manufacturers). It might be that similar users value each other, such as in the case of communications networks, or different types of users do so, such as game producers and game users. The platform brings the participants together and enhances the value of the relationships by, for example, applying artificial intelligence to improve matching.

[68] U.S. DEP'T OF JUSTICE & FEDERAL TRADE COMM'N, HORIZONTAL MERGER GUIDELINES (2010), *available at* https://www.ftc.gov/sites/default/files/attachments/merger- review/100819hmg.pdf; *See also* Farrell & Shapiro, supra note 10.

[69] Mark Jamison & Janice Hauge, *Lessons From the Evolution of Merger Guidelines in the United States*, 4(2) J. CONTEMP. MGMT 59 (2015).

[70] Rohlfs, *supra* note 61; This section is not comprehensive in its description of digital markets and how they affect antitrust. *See* Mark A. Jamison, *Towards a Theory of Market Power*, (Digital Mkt. Initiative, Pub. Util. Research Ctr., Warrington Coll. of Bus., Univ. of Florida, Working Paper 2019). (hereinafter "Jamison 2019b").

Demand side scale economies can create tipping effects – the situation where a single platform serves all or most of a market. Tipping is more likely when the platform also exhibits supply side scale economies. This seems likely in digital markets when the platform is largely software and the cost of adding a user is nearly zero. The Windows operating system is like this in that, once the software is produced, the only costs of an additional user are those of having sufficient network capacity for downloads.

The nearly zero marginal production costs do not mean that the cost for 100-member platform and a 100 million-member platform are the same. In many situations creating software for a platform that provides a sufficiently high-quality experience so as to attract 100 million users is likely to be more costly to produce than on that is only able to attract 100 users. So, while the marginal cost of attracting the additional users looks like a fixed production cost, it is not truly fixed unless the higher and lower quality software are the same product.

Network effects can lead to user lock-in, which is a situation where platform participants would have to incur costs – called switching costs – to move their platform activities to another platform. Lock-in can also occur when users would need to engage in costly coordination to move to another platform and retain the network value. Users can reduce lock-in by engaging in multihoming, which is the situation where individual platform participants use more than one platform for similar things, such as particular social media users utilizing Facebook, Snap Chat, and Twitter to share content.

Evans explains the complications that multisided markets create for traditional antitrust.

> The economics of two-sided markets differ from the economics of one-sided markets in important respects. First, the individual prices charged on either side of the market do not track costs or demand on that side of the market. Indeed, the fact that benefits and costs arise jointly in the two sides of the market means that there is no

> meaningful economic relationship between benefits and costs on either side of the market considered by itself. It takes two to tango. Second, one cannot talk about the individual prices in isolation. Any change in demand or cost on either side of the market will necessarily affect both prices along with the sum of those prices. Third, products in two-sided markets cannot come into existence and cannot remain in existence unless firms in those markets get "both sides on board." This gives rise to pricing and investment strategies that differ from those taken in one-sided markets and seem odd unless considered in the context of competition in a two-sided market. Fourth, any analysis of social welfare must account for the pricing level, the pricing structure, and the feasible alternatives for getting both sides on board. It must also account for the extent to which not-for-profit institutions manage those aspects of the network that could give rise to supra-competitive profits.[71]

He further explains that these features affect market definition, the examination of how and whether firms can hold prices significantly above marginal cost, the existence of barriers to entry, and how getting and keeping both sides on board affects ideas of predation.

Modularity is the situation where there are strong complementarities between services. For example, there is strong complementarity between the Android operating system, devices designed to use it, and apps that are built for the Android platform. As Eisenach explains, complementarity creates demand for compatibility.[72] And competition occurs within platforms, such as between some apps on the Android platform, as well as between platforms, such as between Android and Apple's iOS.

Digitization also allows firms to undergo rapid change. Substantial change is normal in a market economy. As Bourne shows, four of the ten largest US

[71] David S. Evans, *The Antitrust Economics of Two-Sided Markets*, 73(2) YALE J. REG. 325, 355-56 (2003).

[72] Jeffrey A. Eisenach, *US Merger Enforcement in the Information Technology Sector*, *in* THE CAMBRIDGE HANDBOOK OF ANTITRUST, INTELLECTUAL PROPERTY, AND HIGH TECH 445-466 (Roger Blair and Daniel Sokol eds., 2017).

companies (in terms of market capitalization) in 1980 were not in the 1990 list of the ten largest US companies. This trend continued: six of the 1990 list did not make the 2000 list, six of the 2000 list did not make the 2010 list, and five of the 2010 list did not make the 2019 list.[73] Digitization increases the rate of change because of: (1) Modularity; (2) Moore's law[74], which states that the number of transistors in a dense integrated circuit doubles approximately every two years; and (3) Bell's law[75], which states that a new computer class forms roughly each decade establishing a new industry. The lists of ten largest US companies illustrates this greater rate of change: In 2000, three of the top ten firms were focused on digital markets (Cisco Systems, Microsoft and Intel), four of the top ten in 2010 were digital (Apple, Microsoft, Google and IBM), and the top five in 2019 were digital (Microsoft, Amazon, Apple, Google, and Facebook). Only Microsoft persisted through the 20-year period.

Gilder argues that the business models of many of today's large tech firms have run their course.[76] The reasons include an over reliance on artificial intelligence, the diminishing returns to big data and the rise of distributed data with blockchain and similar technologies, the reliance on zero prices for key services, and an antiquated security architecture. Business models that rely heavily on artificial intelligence fail to leverage the non-sequential qualities of the human mind; rely on big data, whose economics are changing; and are overly deterministic, which makes

[73] Ryan Bourne, *Is This Time Different? Schumpeter, The Tech Giants, and Monopoly Fatalism*, CATO INSTITUTE (Jun. 17, 2019), https://www.cato.org/publications/policy-analysis/time-different-schumpeter-tech-giants-monopoly-fatalism#null

[74] Gordon E. Moore, *Cramming More Components Onto Integrated Circuits*, 38(8) ELECTRONICS (1965), *available at* http://www.monolithic3d.com/uploads/6/0/5/5/6055488/gordon_moore_1965_article.pdf.

[75] GORDON BELL, BELL'S LAW FOR THE BIRTH AND DEATH OF COMPUTER CLASSES: A THEORY OF THE COMPUTER'S EVOLUTION, TECHNICAL REPORT MSR-TR-2007-146 (2007), *available* at https://www.microsoft.com/en-us/research/wp-content/uploads/2007/11/tr-2007-146.pdf.

[76] GEORGE GILDER, LIFE AFTER GOOGLE: THE FALL OF BIG DATA AND THE RISE OF THE BLOCKCHAIN ECONOMY (2018).

their conclusions vulnerable to factors outside the system. The reliance on zero prices limits the enterprises' abilities to learn from consumers expressing their willingness to pay because the businesses are essentially relying on barter and the cost and value of what consumers are giving up – primarily information about themselves – is not front of mind when consumers engage in the barter. Also the barter makes the economic relationship between the tech firm and the user unclear because arguably the firm may be under no specific obligation with at least some aspects of its service since the consumer has not explicitly paid for them. Lastly the server farms that make up the cloud computing that large tech firms use centralizes data storage and processing. The economics of cloud computing is being challenged by distributed systems like blockchain, which have security built into their architectures and alter the opportunities for big data analytics.

The vulnerability of some companies' value propositions and the demand side economies make head-to-head competition with similar products a quickly passing phase at best. For example, in 1998 Fortune ran an article entitled, "How Yahoo! Won the Search Wars".[77] But Google formed in 1997 and by the end of 1998 was attracting accolades for the quality of its search results. Seeing this, Yahoo! made Google its default search engine two years later, but dropped the relationship in 2004. But by then Google was surpassing Yahoo! in consumer use. Although Google has maintained its lead in search for over a decade – US consumers use Google 700 percent more than they use Bing and Yahoo! combined – these consumers value Bing and Yahoo! only 10 percent less than they do Google in consumer satisfaction scores.[78] This implies a quality elasticity of demand of 70,

[77] Randall E. Stross, *How Yahoo! Won the Search Wars*, FORTUNE, March 2, 1998.

[78] *U.S. Customer Satisfaction With Internet Portals and Search Engines in 2019 (index score)*, STATISTA, https://www.statista.com/statistics/273900/user-satisfaction-with-us-internet-portals/ (last visited Dec. 27, 2019).

which is substantial relative to price elasticities, and would imply intense quality competition and a fragile market share.

Because of this difficulty in profitably competing in markets where products are nearly identical, companies compete aggressively to create the next generation of product. The dynamism occurs within a system of complementary products and between competing systems. For example, companies making hardware and software for PCs in the 1980s and 1990s engaged in dynamic competition within the overall system whose standards were largely overseen by Microsoft and Intel. This system competed with Apple's Macintosh system. Some manufacturers and developers competed in both systems, but had different rivalries within the systems. Evans illustrates the dynamism in today's digital markets by showing how companies' market mixes evolve quickly.[79]

The competition through innovation and vulnerability of some tech business models make it futile to base antitrust on market definition and price sensitivities.[80] The practices used to define markets and to examine upward pressure on prices rely upon stable products and demand, and historical data that is directly relevant to making decisions about the future. This reliance is misplaced as rapid change makes the present and past poor representations of the future. Hauge and Jamison call this decay, by which they mean that as time passes, facts about the past decline in relevance for regulatory action.

Even if antitrust were able to define "market" in a digital world, many firms are rivals even if they are not in the same markets. Marketline finds that Amazon provides competitive pressure to Microsoft even without market overlap.[81]

[79] David S. Evans, *Why the Dynamics of Competition for Online Platforms Leads to Sleepless Nights But Not Sleepy Monopolies* (2017), *available* at https://ssrn.com/abstract=3009438.

[80] Eisenach, *supra* note 12, (2012); Eisenach *supra* note 12, (2017); Gilder, *supra* note 76; Hauge & Jamison, *supra* note 13, (2016).

[81] MARKETLINE, https://www.marketline.com/ (last visited Dec. 27, 2019).

Facebook and Alphabet provide competitive pressure to each other for online advertising, but also for next generation uses of artificial intelligence.[82]

Gordon explains that the complexities of information industries demands that economic models used to examine antitrust issues also be complex.[83] This makes the analytical results sensitive to the modeling assumptions. For example, assumptions about information providers' business models and the demand for information products caused some economic papers to find that net neutrality regulations are valuable to consumers, while other papers found that the regulations would harm consumers.[84] Not only are the analytical findings sensitive to model design, there is no assurance that the critical features are stable in the real world.

Another challenge for traditional antitrust is that market power is hard to observe with validity, and traditional definitions of market power seem to not fit. Antitrust analysts and writers in the populist antitrust tradition often look for supranormal accounting profits as indicators of market power. Shapiro explains why accounting profits are at best deceiving as indicators of economic profits.[85] Jamison explains that focusing on a particular firm's profits to find market power is inappropriate in digital markets because relatively high current profits for highfliers are needed to attract capital to the sector.[86] Indeed the returns to the sector overall appear normal taking into consideration the high number of failed ventures and early financial losses.[87]

[82] For further explanation, see Mark A. Jamison, *Competition in Tech (Part 1): Will the Real Tech Companies Please Step Forward?* AMERICAN ENTERPRISE INSTITUTE, (Jul. 9, 2018), http://www.aei.org/publication/competition-in-tech-part-1-will-the-real-tech-companies-please-step-forward/.

[83] Gordon, *supra* note 19.

[84] Jamison 2019a, *supra* note 5, (2019).

[85] Shapiro, *supra* note 39, (2018).

[86] Jamison 2019b, supra note 70, (2019).

[87] Mark A. Jamison, *How Much Profit is Too Much? Tech Companies and the Surprising Truth About Their Returns*, AMERICAN ENTERPRISE INSTITUTE, (Feb. 27, 2015), http://www.aei.org/publication/much-profit-much-tech-companies-surprising-truth-returns/.

III. Recent Proposals for Antitrust in Digital Markets

A number of people and groups have made proposals for changing antitrust to address digitization. This section examines some of these proposals.

One of the proposals to make the academic literature is Khan.[88] She holds that digitization affects the profit motive. Focusing on Amazon, she argues that the company's years of financial losses imply that it has predatorily subsidized its business line expansion. She holds that these acts contradict the profit maximization assumption of the economic approach to antitrust. She also holds that Amazon built an e-commerce infrastructure that is a barrier to entry and that can be used for anticompetitive purposes.

Khan's argument that digitized businesses are not profit maximizing is flawed in its premises and in its logic. Her core evidence of Amazon's indifference is a letter from the Amazon CEO to its shareholders. The letter is undated but appears to be written in 1998 as its focus is on Amazon's 1997 financial results.[89] Khan quotes Bezos as saying:

> We believe that a fundamental measure of our success will be the share- holder value we create over the *long term*. This value will be a direct result of our ability to extend and solidify our current market leadership position . . . . We first measure ourselves in terms of the metrics most indicative of our market leadership: customer and revenue growth, the degree to which our customers continue to purchase from us on a repeat basis, and the strength of our brand. We have invested and will continue to invest aggressively to expand and leverage our customer base, brand, and infrastructure as we move to establish an enduring franchise.

[88] Khan, *supra* note 8.

[89] Letter from Jeffrey P. Bezos, CEO, Amazon.com, Inc. to Amazon.com, Inc. Shareholders (undated letter). http://media.corporate-ir.net/media_files/irol/97/97664/reports/Shareholderletter97.pdf (last visited Dec. 27, 2019) (1997 financial and business results).

The quote is incomplete, as evidenced by the ellipsis. The missing text is:

> The stronger our market leadership, the more powerful our economic model. Market leadership can translate directly to higher revenue, higher profitability, greater capital velocity, and correspondingly stronger returns on invested capital. Our decisions have consistently reflected this focus.[90]

The missing text clearly states that Amazon's focus on growth is a step to achieve profitability. So rather than being the evidence of "Amazon's lack of interest in generating profit" as Khan claims, the quote actually supports the standard assumption of profit maximization.[91]

Even if Khan had not committed this factual error regarding Amazon's priorities, she committed an error in logic: If Amazon was in effect buying customers using money from shareholders who didn't care that they would not get their money back, there is nothing that would stop another company from competing by losing money for investors that seek to do so.

Khan's concern that Amazon is behaving predatorily in adding lines of business and building an ecommerce infrastructure to economically serve multiple lines is misplaced. That a company combines formerly separately produced lines of business onto a common platform that is more economical than separate production processes is simply an example of economies of scope. If Khan and Amazon are right that this is a way of improving productivity, then it should be applauded. If they are wrong, then once the subsidizing shareholders run out of money or decide to move on, the system will fold.

Lastly, Khan believes that Amazon has used profits from some lines of business to subsidize others. She argues that this is de facto predation that would be missed under traditional antitrust analysis. Her mistake is that she believes that economic

[90] *Id.*

[91] Khan, *supra* note 8.

analysis requires that losses from below-cost pricing be made up from the same product. This isn't true.[92]

Wu, Jarsulic et al., and Lande argue that firms are becoming larger, that antitrust is rooted in an anti-bigness philosophy and that the adoption of a consumer welfare standard for antitrust was part of a conspiracy by corporate interests and libertarians, and that antitrust was successful in controlling market power prior to adoption of the consumer welfare standard.[93] This is an incorrect reading of history. Section I of this article describes the historical debate regarding antitrust. Consistent with Stigler's finding, Crandall explains that the cases that the neo-Brandeis adherents cite as antitrust success stories – Standard Oil, American Tobacco, AT&T, and Microsoft – are far from that.[94] In general these antitrust cases did not result in more competition, lower profits, or lower prices. Standard Oil did lose market share a few years after its antitrust case, but that result came from new oil discoveries in the Midwest and Gulf states. The three-firm oligopoly that emerged after the breakup of American Tobacco maintained its market position after the breakup, real cigarette prices did not decline, and the return on assets for the three companies did not decline. The AT&T breakup resulted in years of costly court and regulatory proceedings. Furthermore, the industry boundaries assumed in the breakup proved to be uneconomic, resulting in costly regulations, mergers, and divestitures.[95] The Microsoft case did not increase competition in computer operating systems and internet browsers.

[92] For summaries of the literature on inter-product cross subsidies, *See* Sharkey, *supra* note 57; Jamison, *supra* note 58, (1999).

[93] Wu, *supra* note 6; Marc Jarsulic, Ethan Gurwitz, Kate Bahn, & Andy Green, *Reviving Antitrust: Why Our Economy Needs a Progressive Competition Policy*, CTR. FOR AM. PROGRESS. (Jun. 29, 2016), https://www.americanprogress.org/issues/economy/reports/2016/06/29/140613/reviving-antitrust/; Robert H. Lande, *The U.S. Needs Conglomerate Merger Legislation* (Univ. of Baltimore – Sch. of L., Working paper, 2019), *available* at https://ssrn.com/abstract=3310228.

[94] *See* Stigler, *supra* note 17, (1966); *See also* Crandall, *supra* note 18.

[95] Mark Jamison &James Sichter, *Business Separation in Telecommunications: Lessons from the U.S. Experience*, 9(1) REV. NETWORK ECON. (2010).

Wu, Jarsulic et al., and Lande hold that antitrust regulators should place arbitrary limits on firm size, mergers, and vertical relationships[96]. Their remedies are arbitrary because their concerns lack rigor and so provide no foundations for decision making. They also fail to appreciate that, absent government imposed restrictions on competition or physical limits on access to the means of production, firms are large because customers choose to buy from them. Customers do so because they believe that it is in their best interests. It can be argued that customers make errors in these choices, and the arguments are certainly correct in some instances as all people make mistakes. But the argument fails to be persuasive for at least four reasons. One is that there is no evidence that government regulators are less error prone than customers, which would be necessary for it to make sense to transfer decision making authority from customers to regulators. Also, customers know more about their individual circumstances than do government regulators, and so are in better positions to make optimal decisions all other things being equal. A third reason is that consumers are highly motivated to make optimal decisions, but government regulators have conflicting motivations, including career considerations.[97] Finally, if government regulators know something that customers do not, they can make that information available to customers so that they can give it the appropriate weight in their decision making.

Wu, Jarsulic et al., and Lande fail to demonstrate that giving greater government control of business would not empower greater rent seeking.[98] Rent seeking is a plausible outcome because, once a regulatory mechanism is in place that can bound some firms, the cost of risk seeking is lower for these firms' rivals. And as Kahn

[96] Wu, *supra* note 6; Jarsulic et al., *supra* note 93; Lande, *supra* note 93.

[97] Alfred E. Kahn, *The Deregulatory Tar Baby: The Precarious Balance Between Regulation and Deregulation, 1970±2000 and Henceforward*." 21(1) J. OF REG. ECON. 35 (2002).

[98] Wu, *supra* note 6; Jarsulic et al., *supra* note 93; Lande, *supra* note 93.

observes, once regulatory institutions are in place, regulatory practitioners sustain them in order to pursue their own ideological and economic interests.[99]

Addressing antitrust in the UK, Furman et al. make similar errors.[100] They suggest that the government form a digital markets unit that would specialize in the application of antitrust to digital businesses. The unit would develop a code of conduct that would apply to large businesses, but not small ones. It would also adopt and enforce two types of rules – rules for individuals to port data about themselves between platforms and for open, non-personal data – to weaken the effectiveness of companies building unique databases. The unit would also promote open standards for platforms, presumably to promote more intra-system competition and a platform ladder of investment, such as was done in telecommunications networking by requiring network unbundling. In addition to forming the digital markets unit, Furman et al. recommend implementing more restrictive merger policies.

There are three fundamental weaknesses in the Furman et al. recommendations. One is that they are based on questionable premises, namely that artificial intelligence and big data represent the key to enduring success in platforms, that the value of each increases monotonically with scale, and that the value of distributing these assets to those who did not build them is more important than providing incentives to create them. Section II explains the vulnerability of current data-based business models: There is no doubt that these businesses have created value for billions of people, but believing that they represent enduring, unassailable advantages appears to be an end-of-history illusion.[101] Taking this together with the

[99] Kahn, *supra* note 97.

[100] Furman et al., *supra* note 9.

[101] Jordi Quoidbach, Daniel T. Gilbert, and Timothy D. Wilson, *The End of History Illusion*, 339(6115) SCIENCE 96 (2013).

understanding that most innovation comes in recombining known technologies rather than creating new technologies,[102] and the understanding that new computing architectures are poised to remake the tech sectors,[103] it is highly probable that the current tech leaders will be replaced by firms that use entirely new approaches to information technology services.

This leads to the second weakness, namely that the proposals favor rivalry within the current platform structures. If the regulations are successful in helping companies that rely upon current big data models and that, in some sense, represent plug and play approaches to the current platform architectures, then the entrepreneurs will find competing within the current systems less risky and costly than challenging them. This would tend to protect current platform leaders.

Finally, the proposals seek to extend the use of today's merger analyses, which data decay and other aspects of dynamism make quite problematic.

Feld takes a different approach.[104] He proposes that such regulations should come into play when the value of the service being provided is sufficiently high relative to the next best alternative that consumers or businesses suffer greatly if they do not obtain the service in question. He calls this the cost of exclusion. He rejects breaking up tech companies as being too costly and impractical, and instead suggests a regulatory toolkit that would be at the disposal of a specialized regulatory agency. The toolkit would include at least nine items, such as consumer rights to data portability and data deletion, open software for application programming, licensing of essential intellectual property, limits on firm size and diversification, and unbundling.

[102] Gilder, *supra* note 76.

[103] Id; Bell *supra* note 75.

[104] Harold Feld, *The Case for the Digital Platform Act: Market Structure and Regulation of Digital Platforms*, PUBLIC KNOWLEDGE (May 2019), *available at* https://www.publicknowledge.org/assets/uploads/documents/Case_for_the_Digital_Platform_Act_Harold_Feld_2019.pdf.

Feld essentially recommends utility-style regulation, although he does not use that term: His "cost of exclusion" parallels the belief that utility services are essential, and his recommendations resemble utility obligations to serve and utility regulators' attempts to open some utility markets to competition.

Feld's proposal suffers from the same deficiencies of Furman et al., and adds another problem: He fails to solve contradictions that utility regulators have long struggled with, namely that the tools of utility regulation assume the utility is a government-sanctioned monopoly and the tools of opening markets to competition assume that the government is opposed to monopoly. Kahn explains that regulators and policymakers are unsuccessful in resolving the contradiction.[105] He shows through case studies that regulatory efforts in such contexts are biased toward producing immediate results and towards favoring new competitors. He explains that genuine deregulation is needed to produce real competition, and that it takes time, which means that it takes strong political will. He holds that regulation should establish preconditions for efficient competition and then get out of the way. Absent doing so, the regulatory system's "inbred tendency to micromanage everything and to proclaim great consumer benefits, publicly, while doing everything they can to conceal the costs" will cost consumers and the economy.[106]

IV. A Way Forward

To address the challenges of digitization, antitrust and other forms of market regulation should return to their roots, focusing on limits on competition, encouraging business development, and encouraging firms to create competitive advantages that benefit consumers.

[105] Kahn, *supra* note 97, (2002); ALFRED E. KAHN, LETTING GO: DEREGULATING THE PROCESS OF DEREGULATION, OR: TEMPTATION OF THE KLEPTOCRATS AND THE POLITICAL ECONOMY OF REGULATORY DISINGENUOUSNESS (1998).

[106] Kahn, *supra* note 105, (1998).

A. Returning to the Roots of Monopoly Analysis

Since Lerner (1934), most antitrust work appears to assume that market power exists when a firm faces downward sloping demand resulting in profits exceeding zero and when prices exceed marginal cost.[107] But this was not the approach of two founders of modern economics, Smith and Mill.[108] They focused on resources for production rather than on firms, understanding that firms are the consequences of resource availability, laws and regulations, human decision making, and demand over time. These determinants are exogenous at any point in time, but endogenous over time as firms' decisions affect resources, institutions, the economics of production, product evolution, and buyer preferences. Indeed, the more dynamic a sector, the more its resources are endogenous.

Thus a primary focus of antitrust should be exogenous constraints on resource flow, such as government created barriers to entry – such as the exclusive privileges described by Smith – or natural features of economy – such as Mill's uniquely situated land – that limit the ability to create and expand businesses. There are several regulatory initiatives that are create barriers to competition. Peirce et al. and Bordo and Duca show that Dodd-Frank banking regulations following the 2008 recession decreased lending to small businesses.[109] This limited financing options for tech startups. Jia et al. demonstrate that Europe's GDPR has slowed the development of small digital businesses in Europe,[110] implying that the laws are

[107] Lerner, *supra* note 16.

[108] Smith, *supra* note 14, Mill, *supra* note 15.

[109] Hester Peirce, Ian Robinson, & Thomas Stratmann, *How Are Small Banks Faring Under Dodd-Frank?* (GMU Working Paper in Economics No. 14-49, 2014); Michael D. Bordo & John V. Duca, *The Impact of the Dodd-Frank Act on Small Business*, CATO RESEARCH INSTITUTE, (Sept. 5,2018), https://www.cato.org/publications/research-briefs-economic-policy/impact-dodd-frank-act-small-business.

[110] Jian, Jia, Ginger Zhe Jin, & Liad Wagman. *The Short-Run Effects of GDPR on Technology Venture Investment.* (2019), *available* at https://ssrn.com/abstract=3278912.

protecting incumbents. Similar effects are likely to be felt in the US as US regulators adopt similar regulations (as in the case of California) and as smaller US firms find it costly to expand into Europe.

Regulations like Dodd-Frank and GDPR make it more likely that startup firms will seek to merge with larger, established digital businesses than to compete with the larger firms. The larger businesses will have lower financing costs (because of Dodd-Frank) and will have greater regulation-induced scale economies (because of GDPR), which are artificial economies of scale resulting from a larger firm being able to spread costs of regulation over more units of sale.

B. Encouraging Investment and Business Formation

Many antitrust practitioners and many of those suggesting antitrust reform misunderstand the nature and roles of profit. Both allow themselves to be misled by considering profits only when a firm is successful. This encourages an end-of-history illusion that the future will be much like the present. It also encourages regulatory and rival opportunism in that investors had provided capital and endured periods of negative returns without being warned that the regulator would take action against the firm to confiscate through fines or redistribute through regulations the positive returns that they had anticipated. And it encourages regulatory naïveté in that the regulator is incented to act against this firm without consideration as to how the confiscatory policy affects competition.[111]

Figure 1 illustrates how profits affect decisions to invest in startups.[112] In Figure 1 about 90 percent of startups fail (a typical estimate for Silicon Valley) and the red triangle represents their losses. The black triangle represents the profits of the ten percent of startups that succeed. The profits and losses in Figure 1 are not the firms'

[111] Jamison 2019b, *supra* note 70, (2019).
[112] *Id.*

actuals, but rather the expectations of investors based on their experiences with firms of these types, current and expected laws, anticipated demand, and other economic factors.

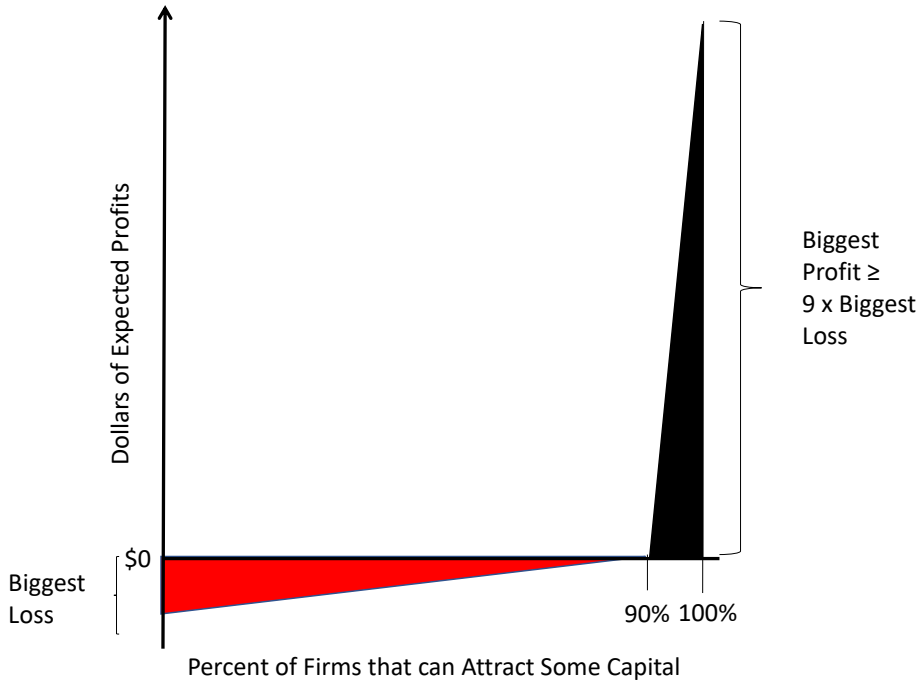

Figure 1. Expected profits and losses from pool of firms that investors are willing to fund, but that cannot identify ex ante which will be profitable over its lifetime beginning at the current time period.

Investors are unable *ex ante* to identify which firms will be successful and which will not, but develop beliefs about how a portfolio of startups that are potentially profitable is likely to perform. Figure 1 represents such a portfolio.

In order for an investor to fund startups, the area of the black triangle must be greater than or equal to the area of the red triangle. So if indeed the expected profits and losses are triangles, the expected profit of the most profitable firm must be nine times the expected loss of the biggest loser. Again, these are investor expectations, not achieved profits and losses. But for investors to have such expectations, they

need experiences that support them. So observed profits of established, successful firms must be of sufficient magnitude to create such expectations. If investors observe that profits of the magnitudes in the black triangle attract attacks from antitrust regulators or politicians, they will adjust their expectations for the area of the black triangle downward and, as a result, fund fewer startups.

To appreciate the dynamics of startups, it is important to understand that innovation is a multistep process and few firms can accomplish all of the steps. The steps include creating an idea, designing a product based on the idea, and taking the product to market. The steps are complex and blur together in practice. Isaacson observes that for information technology businesses, innovation requires the work of scientists, psychologists, and sometimes artists, generally working in teams.[113] Turning the idea into an actual product is generally the work of engineers, who would normally have back-and-forth interactions with the creators. Successfully taking the product to market is the work of marketers, operations managers, financial managers, and the like. Often startups bring in professional business managers to conduct this work.[114]

But even then, not all startups can make it. As Cusumano et al. observe, developing a successful platform is complex and subject to timing and chicken-and-egg challenges, and a successful business model emerges only with experimentation.[115] When the innovation, design, and business phases are completed for an idea, the idea has a chance to become successful, but only a chance: The new product must still provide customers with a better value proposition than do existing and emerging products. So many startups that develop

[113] WALTER ISAACSON, THE INNOVATORS: HOW A GROUP OF HACKERS, GENIUSES, AND GEEKS CREATED THE DIGITAL REVOLUTION (2014).

[114] *Id*.

[115] MICHAEL A. CUSUMANO, ANNABELLE GAWER, & DAVID B. YOFFIE, THE BUSINESS OF PLATFORMS: STRATEGY IN THE AGE OF DIGITAL COMPETITION, INNOVATION, AND POWER (2019).

good ideas and products may never develop the right business model. Established firms can sometimes provide the product synergies and expertise that are needed for success. This could be why Instagram had success as stand-alone products but achieved greater and more sustained success once it was purchased by Facebook.[116] Proposals such as those by Furman et al., Jarsulic et al., and Lande that would make it more difficult for new firms to be bought by established firms would necessarily decrease the financial prospects of small firms and decrease their creation.[117]

C. Encouraging Building New and Valuable Competitive Advantages

Some current proposals for antitrust actions against information technology companies seek to neutralize competitive advantages that these companies have built and that benefit customers. These advantages include possession of big data, temporal and intertemporal network effects, so-called first mover advantages (although often moving first is often a disadvantage), and brand recognition. These advantages make it hard for others to compete in the same business space, but a hands-off antitrust approach benefits consumers because it encourages creating new product space. For example, platforms such as Google and Facebook have diminished the profitability of traditional news organizations.[118] But the platforms did not do so by entering the market for news. Rather they attracted consumers' time and attention by providing a new, richer and more economical experience than do the providers of broadcast and print news, whose traditional business models also depend on occupying people's attention. So the platforms and traditional media compete for advertising revenue, but by being in different product markets rather than the same markets.

[116] Instazood.com, *The History of Instagram* (August 10, 2018) *available at* https://instazood.com/blog/the-history-of-instagram/.

[117] Furman et al., *supra* note 9; Jarsulic et al., *supra* note 93, Lande *supra* note 93.

[118] *See* Save Journalism *available at* https://savejournalism.org/.

This understanding of how liberal markets incentivize creating new product space contrasts with the overly static views demonstrated in some antitrust investigations of the large tech companies. These cases appear to fixate on a present moment. The EU has explicit policies that a firm must adopt less profitable business models once it is labeled as dominant, which means it has achieved a 40 percent market share as defined by the EU regulators.[119] The EU regulators have fined US tech companies billions of Euros based on this policy.[120] As of this writing a number of state attorneys general are launching investigations of large tech companies. In press statements the state officials hold a tautological view that the companies have reached such prominence that they affect innovation, marketing, and the like of companies that use the large companies' platforms.[121]

These EU and state perspectives reflect a flawed view of the industry. The firms' platforms are influential because people choose to use them. Just as people entering a courtroom are required to behave in accordance with certain protocols to facilitate the functioning of the legal system, a platform provider creates conventions and rules that it hopes will create value that will attract and retain participants. As Cusumano et al. explain, this is complex, involves trial and error, and often ends in failure when platforms do not get the features, balance of interests, timing, and other business decisions right.[122] The antitrust authorities see none of this. They only see the business at a point in time when it is successful and with rivals struggling to provide customers a better value proposition. This leads to illusions, such as: (1) The end-of-history illusion that the future is a lot like the present; (2)

[119] European Commission *Antitrust Procedures in Abuse of Dominance* (August 16, 2013) *available at* https://ec.europa.eu/competition/antitrust/procedures_102_en.html.

[120] *See for example* Wall Street Journal *Google Is Fined $5 Billion by EU in Android Antitrust Case* (July 18, 2018).

[121] *See* Wall Street Journal *Attorneys General Launch Probe of Google* (September 9, 2019); and Mark A. Jamison *State AGs Investigate Big Tech, and Threaten to Wreck the Internet* AMERICAN ENTERPRISE INSTITUTE, (September 18, 2019) *available at* https://www.aei.org/technology-and-innovation/state-ags-investigate-big-tech-and-threaten-to-wreck-the-internet/.

[122] Cusumano et al., *supra* note 115.

A simplification illusion that is ignorant of the narrow differences between business models that provide large success and those that provide failure; (3) A closed-system illusion that antitrust actions have no impacts beyond the entities involved in the immediate case; and (4) An engineering illusion that persons with no particular expertise in business can design a business model that creates more value than what investors, innovators, business managers, and customers jointly develop through competitive processes. Falling for these illusions threatens the value current platforms provide and the creation of new platforms that could in the future replace the current ones by providing superior value.

Two papers relating to tech antitrust cases illustrate these illusions. Crémer, Rey, and Tirole examine market power in the internet backbone and conclude that embedded customer bases are a source of market power leading to discrimination in connectivity.[123] Carlton and Waldman examine generations of software and conclude that an embedded customer base provides a software provider with a competitive advantage that can lead to market power.[124] These analyses assume that customer bases are endowed and so neglect consideration of how regulation might affect incentives to create valuable product space that then provides network effects. If policies extract value once it is created, then service providers will learn and likely limit their investments for the future.

D. Addressing Unearned Advantages

Rather than attack firms for business practices that are at best difficult to understand because the antitrust view lacks context, antitrust regulators should look

[123] Jacques Crémer, Patrick Rey, & Jean Tirole, *Connectivity in the Commercial Internet*, 48(4) J. INDUS.ECON. 433 (2000).

[124] Dennis W. Carlton & Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, 33(2) RAND J. ECON. 194 (2002).

for and address unearned barriers or advantages that prohibit or distort the flow of economic resources that firms need to compete. There are several government actions that limit competitive processes and should be of interest to antitrust regulators. One is the grant of monopoly. The telecommunications industry in the US was allowed to operate as a government-endorsed monopoly through most of the 20th century even though experiences in the late 1800s and early 1900s had demonstrated that competition was workable, even if messy. The regulated monopolies were often inefficient, lacked innovation, and discriminated against rivals, and breaking up the monopoly was costly and time consuming.[125] Antitrust regulators should have opposed the sanctioning of monopoly instead of participating in it.

Because the government had encouraged the monopoly, extraordinary measures were taken to undo it, including breaking up AT&T, imposing business line restrictions on the monopoly remnants of AT&T, and forcing network access and unbundling for competitors.[126] Researchers have struggled to demonstrate that these regulatory actions resulted in consumer benefits. But at the time the actions were being taken, they appeared necessary for overcoming the entrenched monopolies that the government had a hand in creating.

Antitrust should also address government subsidies that benefit some companies to the harm of consumers. The numerous subsidies given out in the wake of the 2008 recession provide examples as many of these were targeted to specific companies that then used the money to advantage themselves over rivals. That these advantages were undeserved is evidence by the lack of voluntary investor interest and the number of subsidy recipients that eventually failed.

[125] Jamison & Sichter *supra* note 95.
[126] *Id*.

Favorable access to government resources would be another example. Historically governments have granted radio spectrum rights, for example, based on political considerations. This has been partially resolved in the US with the introduction of radio spectrum auctions, which enable firms to obtain limited government resources based on their ability to pay for them from future profits. It could be argued that the Coase Theorem would resolve such access gifts because the recipients could sell the rights to the highest bidder. But the FCC's recent incentive auction demonstrates that the effect of the Coase Theorem has been limited by market frictions: The FCC's incentive auction released millions of dollars of value by moving scarce radio spectrum into the hands of businesses that could use it more efficiently than could those that had received the gift.[127]

Governments sometimes hinder efficient competition by forming their own enterprises and giving them an economic advantage over rivals.[128] For example, state-owned and partially state-owned telecommunications providers in Europe were given favorable terms for interconnecting their networks with rivals.[129] City-owned telecommunications networks in the US rarely make positive economic impacts and often fail financially, but not before causing harm to consumers and privately-owned rivals.[130]

In investigating barriers to resource flow, antitrust regulators should focus on the key resources that firms need to arise and compete. A digital economy relies largely upon energy, manufacturing, construction and transportation, and talent as basic

[127] Evan Kwerel, Paroma Sanyal, Katja Seim, Martha Stancill, & Patrick Sun *Economics at the FCC, 2016–2017: Auction Designs for Spectrum Repurposing and Universal Service Subsidies* 51(4) REV. OF INDUS. ORG. 451 (2017).

[128] Janice Hauge, Mark A. Jamison, & R. Todd Jewell *A Consideration of Telecommunications Market Structure in the Presence of Municipal Provision: The Case of U.S. Cities* 34(2) REV. OF INDUS. ORG. 135 (2009).

[129] Geoff Edwards & Leonard Waverman *The Effects of Public Ownership and Regulatory Independence on Regulatory Outcomes: A Study of Interconnect Rates in EU Telecommunications* 29(1) J. OF REG. ECON. 23 (2006).

[130] Christopher S. Yoo & Timothy Pfenninger *Municipal Fiber in the United States: An Empirical Assessment of Financial Performance* Univ. of Penn. (2017) *available at* https://www.law.upenn.edu/live/files/6611-report-municipal-fiber-in-the-united-states-an.

inputs drawn from other economic sectors, with capital being the critical resource for importing these basic inputs. Digital businesses also need knowledge, ideas, critical masses of users and suppliers, and business acumen, but these are developed within the digital economy rather than imported by it. Indeed, these intermediate digital goods and institutions are often created by the digital businesses that ultimately use them. For example, Amazon has created knowledge for managing a transaction e-commerce platform and developed a critical mass of consumers and uses both in providing its retail services.

A legitimate area for antitrust investigation is whether there are restrictions to capital availability. The Dodd-Frank restriction is one example. The rise of the token economy is another. It came about in part because some entrepreneurs found traditional, regulated capital markets too costly and rigid for their business ideas. Antitrust should have taken a leadership role in investigating how traditional capital markets – that were designed for non-digital businesses – made it hard for new business models to emerge and challenge the status quo. The lack of a legal framework enabling a token economy for low-cost business creation provided opportunities for illegitimate enterprises to imitate the honest firms and engage in scams that triggered regulatory backlashes, raised capital costs, and increased risk.

V. Conclusion

This paper analyzes the application of antitrust in digital markets. It explains how digitization thwarts some premises of antitrust practices and how current proposals – mostly emanating from neo-Brandeis adherents – intellectually collapse because of weak foundations and failure to address the features of digital markets, their rapid pace of change. It is no longer legitimate to: (1) Use historical data to define markets or determine firms' abilities to raise prices; (2) Analyze firms' current situations as indicators of market power; (3) Consider mergers as largely about

changing the number of rivals in a market; and (4) Consider competitive advantages that firms have developed as barriers to competition rather than assets that improve the economics of current and future products. The study of monopoly and market power should return to its roots of examining causes and differentiating between those that are legitimate, those that improve economic performance, and those that do neither.

Further research is needed. One area of focus should be how to identify barriers to resource flow. Another area would be legal avenues for providing remedies, especially when the entity creating the barrier is government. A third area would be to develop new economic tests for market power.