
ARTICLE

INFORMATION, INNOVATION, AND
COMPETITION POLICY FOR
THE INTERNET

HOWARD A. SHELANSKI[†]

Antitrust agencies around the world are increasingly focusing on digital industries. Critics have justifiably questioned the ability of competition agencies to make beneficial enforcement decisions given the complexity and rapid pace of change in online markets. This Article discusses those criticisms and addresses the argument that, because the error costs of overenforcement of antitrust laws in digital markets would be much higher than the error costs of underenforcement, courts and antitrust agencies should presume against antitrust intervention in digital industries. While acknowledging that there is often good reason for such modesty in enforcement, this Article discusses several ways in which competition policy can adjust to better account for potential costs and benefits of enforcement in digital platform markets. It argues that nonprice effects related to information and innovation are particularly important to the performance of online platforms, and may hold the key to a better understanding of the costs of antitrust underenforcement and the assessment of the competitive effects of conduct and transactions in digital industries.

INTRODUCTION	1664
I. ANTITRUST ENFORCEMENT AND ERROR COSTS	1668
A. <i>Cautionary Tales</i>	1671
B. <i>Policy Responses to “Dynamic” Markets</i>	1673
1. <i>Reduced Emphasis on Market Definition and Market Structure</i>	1673

[†] Director, Bureau of Economics, Federal Trade Commission; Professor of Law (on leave), Georgetown University. The ideas and opinions expressed in this Article are the author’s and do not necessarily reflect those of the Federal Trade Commission.

2.	Increased Emphasis on Innovation	1674
II.	CHARACTERISTICS OF DIGITAL PLATFORMS.....	1675
A.	<i>Amplification of Market Power</i>	1676
B.	<i>Multisided Markets and Multiple Products</i>	1677
C.	<i>Customer Information as Critical Asset</i>	1678
1.	Customer Data as Input of Production	1680
2.	Information as a Strategic Asset	1680
3.	Customer Data as Commodity	1682
D.	<i>Entrenchment Through Network Effects and Switching Costs</i>	1682
E.	<i>Innovation</i>	1684
F.	<i>Implications for Antitrust Enforcement</i>	1685
III.	REFOCUSING ANTITRUST ON INFORMATION	
	AND INNOVATION EFFECTS	1686
A.	<i>Customer Information and Competitive Effects</i>	1686
1.	Information and Exclusion.....	1687
2.	Customer Information and Market Power over End Users.....	1688
B.	<i>Innovation Effects</i>	1692
1.	Innovation-Excluding Conduct	1693
a.	<i>Raising Rivals' Costs</i>	1696
b.	<i>Forced Free Riding</i>	1699
2.	Mergers and Innovation.....	1701
	CONCLUSION.....	1705

INTRODUCTION

The enforcement of competition and consumer protection laws has focused increasingly on industries related to digital content and the Internet. The landmark cases against Microsoft over a decade ago were just the beginning;¹ more recent investigations have addressed conduct by Google,² the merger of digital music giants EMI and Universal,³ Comcast's acquisition of NBC-Universal,⁴ the alleged e-books conspiracy by Apple and others,⁵

¹ United States v. Microsoft Corp. (*Microsoft II*), 253 F.3d 34 (D.C. Cir. 2001).

² See Press Release, FTC, Google Agrees to Change Its Business Practices to Resolve FTC Competition Concerns in the Markets for Devices Like Smart Phones, Games and Tablets, and in Online Search (Jan. 3, 2013), available at <http://www.ftc.gov/opa/2013/01/google.shtm>.

³ See Press Release, FTC, FTC Closes Its Investigation into Vivendi, S.A.'s Proposed Acquisition of EMI Recorded Music (Sept. 21, 2012), available at <http://www.ftc.gov/opa/2012/09/emi.shtm>.

⁴ See Press Release, U.S. Dept of Justice, Justice Department Allows Comcast-NBCU Joint Venture to Proceed with Conditions (Jan. 18, 2011), available at <http://www.justice.gov/opa/pr/2011/January/11-at-061.html>.

privacy and data security violations by Facebook and Twitter,⁶ IP portfolio acquisitions,⁷ and many other matters. The enforcement agencies' principal antitrust concern is with digital markets that are, or may become, dominated by firms that maintain their market power through anticompetitive conduct and acquisitions.⁸ This concern has been particularly salient for firms that serve as digital "platforms."

There is no consensus on exactly what constitutes a digital platform, although there are common elements to the definitions that commentators have offered. One early effort to describe a digital platform called it "intermediation activity linked with the 'assembly' of content and services onto a coherent technical and commercial access platform."⁹ A more recent popular definition describes "an audience-centric platform across different media and various business functions."¹⁰ David Evans describes platforms as entities that provide software and services on which other businesses rely to produce complementary products.¹¹ For purposes of this Article, I will define digital platforms as products or services through which end users and a wide variety of complementary products, services, or information ("applications") can interact. Platforms therefore include devices (e.g., phones and tablets), software (e.g., operating systems and browsers), and services (e.g., search engines, social networks, and e-commerce sites). The common

⁵ See Press Release, U.S. Dep't of Justice, Justice Department Reaches Settlement with Three of the Largest Book Publishers and Continues to Litigate Against Apple Inc. and Two Other Publishers to Restore Price Competition and Reduce E-book Prices (Apr. 11, 2012), available at <http://www.justice.gov/opa/pr/2012/April/12-at-457.html>.

⁶ See Press Release, FTC, Facebook Settles FTC Charges That It Deceived Consumers by Failing to Keep Privacy Promises (Nov. 29, 2011), available at http://ftc.gov/opa/2011/11/privacy_settlement.shtm; Press Release, FTC, FTC Accepts Final Settlement with Twitter for Failure to Safeguard Personal Information (Mar. 11, 2011), available at <http://www.ftc.gov/opa/2011/03/twitter.shtm>.

⁷ See Press Release, U.S. Dep't of Justice, Statement of the Department of Justice's Antitrust Division on Its Decision to Close Its Investigations of Google Inc.'s Acquisition of Motorola Mobility Holdings Inc. and the Acquisitions of Certain Patents by Apple Inc., Microsoft Corp. and Research in Motion Ltd. (Feb. 13, 2012), available at <http://www.justice.gov/opa/pr/2012/February/12-at-210.html>.

⁸ See *supra* notes 1-7; see also Edward Wyatt & Claire Kaine Miller, *Citing Logistics, F.T.C. Pushes Antitrust Inquiry Against Google Into January*, N.Y. TIMES, Dec. 19, 2012, <http://www.nytimes.com/2012/12/20/technology/ftc-pushes-antitrust-inquiry-against-google-into-january.html> (discussing the FTC's concerns over Google's maintenance of market power).

⁹ Laurence Meyer, *Digital Platforms: Definition and Strategic Value*, COMM. & STRATEGIES, 2d Quarter 2000, at 127, 128 (2000) (footnote omitted).

¹⁰ *Integrated Digital Platforms*, WIKIPEDIA, http://en.wikipedia.org/wiki/Integrated_digital_platform (last updated Feb. 15, 2013).

¹¹ David S. Evans, *Antitrust Issues Raised by the Emerging Global Internet Economy*, 102 NW. U. L. REV. 1987, 1989 (2008).

thread, in keeping with the other definitions cited above, is that the platform provides a gateway between consumers and many diverse applications well beyond the specific product or service that constitutes the platform itself. Platforms serve to expand and aggregate functionality and to enhance consumers' access to the aggregated applications. In addition, they serve as "enablers" of innovation by providing common interfaces through which entrepreneurs can connect their complementary products to critical masses of consumers.¹²

The rapid pace of change in the technology and economic structure of the Internet and associated markets raises an important question for competition policy: whether antitrust enforcement in digital industries can protect consumers without "causing harm from interfering in complex businesses that are both rapidly moving and not fully understood."¹³ One prominent set of commentators offers a strongly negative answer and argues that competition enforcement is likely to make costly errors when exercised in digital platform markets.¹⁴

Some who argue against antitrust enforcement in digital industries do so based on an unreflective claim that enforcement can never do anything but get in the way of beneficial economic conduct. Some more thoughtful and knowledgeable commentators criticize antitrust on grounds of the comparative economic costs of overenforcement and underenforcement errors: because digital platform markets have characteristics that make it particularly difficult for antitrust authorities to assess the effects of conduct in those markets, the likelihood of overenforcement is high.¹⁵ Moreover, the argument continues, the cost of such errors is high because overenforcement could deter investment and innovation and therefore have substantial, lasting consequences for economic welfare. In contrast, underenforcement will more likely lead to short-term harm that the market will correct as firms

¹² See Tim Wu, *Taking Innovation Seriously: Antitrust Enforcement If Innovation Mattered Most*, 78 ANTITRUST L.J. 313, 321 (2012) ("Platforms are critical to innovation because . . . they vastly cheapen market entry for a large number of firms (the developers), creating ultra-low-cost market entry. The platform owner, in effect, tees up the market for everyone else, providing both the tools and distribution necessary to reach customers.").

¹³ Evans, *supra* note 11, at 1989.

¹⁴ See generally Geoffrey A. Manne & Joshua D. Wright, *Google and the Limits of Antitrust: The Case Against the Case Against Google*, 34 HARV. J.L. & PUB. POL'Y 171, 244 (2011) (arguing that antitrust law should be applied cautiously against Google, because "a false positive" would chill Google's "innovation and competition" that is "currently providing immense benefits to consumers"); David McGowan, *Between Logic and Experience: Error Costs and United States v. Microsoft Corp.*, 20 BERKELEY TECH. L.J. 1185, 1189-90 (2005) (relying on *Microsoft II* to argue that—at least in new markets—a "mistaken condemnation of competitive conduct is costlier than mistaken acquittals of anticompetitive conduct").

¹⁵ See, e.g., Manne & Wright, *supra* note 14, at 188-89.

innovate and compete for their chance to reap the rewards of temporary dominance. Taking the high likelihood that antitrust authorities will make mistakes of overenforcement together with the relatively high costs of those errors, those who espouse the error-cost analysis argue for calibrating antitrust policy to favor underenforcement errors instead of overenforcement errors in digital platform markets.¹⁶

At the heart of the critiques of antitrust enforcement in digital industries is the mismatch between the conventional, price-oriented antitrust framework and the more innovation-based competition that characterizes markets for digital goods and services. Fast changing markets, such as those related to the Internet, might be hard to define and less subject to the structural presumptions of conventional antitrust analysis. More fundamentally, the usual price-oriented antitrust analysis may be irrelevant in markets where many consumers pay nothing for the services they use and in which firms compete more through technological advancements than through lower prices.

Both of the above criticisms have some merit. The critics of enforcement are right that market definition and structural presumptions are less relevant in fast changing markets and that it is important for antitrust analysis to adjust to the innovation-based competition that occurs in such markets.¹⁷ But those observations do not suffice to sustain the error-cost argument against enforcement for two reasons: First, antitrust enforcement has steadily moved away from reliance on market definition and structural presumptions even in “conventional” markets. Enforcement has also moved beyond static efficiency to focus on innovation effects. Second, digital platforms raise competitive concerns related to innovation and customer information that may warrant increased antitrust scrutiny of their conduct and merger activity. So, even if some aspects of digital industries render competition enforcement less appropriate, other aspects might make it quite important.

This Article examines the error cost arguments in light of several important characteristics of digital platforms and their market environment. It agrees that competition enforcement in the digital world requires particular caution on the part of antitrust agencies and courts. Nevertheless, it finds that the features that distinguish digital platforms from firms in “conventional”

¹⁶ See McGowan, *supra* note 14, at 1190-91 (describing three reasons advanced by Judge Easterbrook to accept that a high risk of error counsels underenforcement (citing Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1, at 15-16 (1984))).

¹⁷ See Manne & Wright, *supra* note 14, at 220-23 (describing the difficulties of defining Google’s market).

industries do not all weigh in favor of biasing policy toward underenforcement, the social costs of which could be at least as high as those of overenforcement. This Article therefore argues that competition policy for digital platforms should start with caution in its application of existing tools but should not end there. Competition policy should also examine the ways in which conventional competition analysis as applied to digital platforms falls short in an effort to better adapt to the economic environment of the Internet. The challenge for competition policy is to identify the characteristics that differentiate competition on the Internet from competition as conventionally conceived in antitrust law, and to determine if, and how, those differences translate into differences in antitrust enforcement. While this adaptation to digital platforms might sometimes take the form of less aggressive antitrust intervention, it might also take the form of new emphases, approaches, and remedies.

Further, this Article examines several directions in which competition policy might adjust to better account for the potential costs and benefits by better assessing the risks of enforcement in digital platform markets. Part I further describes the error-cost argument and its rationale. Part II examines several defining characteristics of digital platforms, including the importance of customer information and innovation, and discusses how those characteristics can affect competition and business conduct on the Internet. Part III discusses how competition enforcement might shift focus to issues related to customer information and innovation in order to better address the particular environment of the Internet. It explains how antitrust enforcement in digital industries can build on ongoing policy developments that diminish the need to rely on a market definition and that allow innovation effects a more prominent place in competition analysis. Finally, Part IV summarizes and offers several conclusions.

I. ANTITRUST ENFORCEMENT AND ERROR COSTS

There is much at stake in designing good competition policy for digital platform markets. Anticompetitive actions that preserve monopoly bottlenecks and exclude rivals will leave consumers and complementary product suppliers worse off. On the other hand, aggressive competition and innovation will bring consumers the benefits of new services and better terms. The key challenge for antitrust enforcers is to distinguish the bad anticompetitive acts from the aggressive but procompetitive acts.

Commentators have mainly given two reasons why this challenge is greater for digital platforms than for conventional types of markets. First, they argue that defining markets and making inferences about competition

based on market structure is much more difficult for digital goods and services,¹⁸ and posit that antitrust intervention based on such inferences may be unwarranted or counterproductive. Second, competition on the Internet is very often competition for the whole market through innovation, rather than competition for a share of the market through pricing.¹⁹ Pressure on a dominant incumbent comes from rivals innovating to supplant the incumbent over time rather than from current competitors trying to chip away at the incumbent's market share at a given point in time; competition is thus more sequential than simultaneous.²⁰ Antitrust enforcement based on a static view of market dominance runs the risk of missing the real source of competitive pressure on apparent monopolists and reducing the rewards for innovation by potential rivals. Proponents of this view conclude that the costs of overenforcement errors are sufficiently high that society should prefer errors of antitrust underenforcement in digital platform markets.

The error cost critique questions the relevance of the conventional antitrust framework in markets characterized by rapid technological change and in which prices are less important to consumers or to competitive strategy than are new products and capabilities. Conventional antitrust analysis focuses on the relationship between firms' conduct and market performance, as measured through prices and output levels of relevant products and services. Thus, merger enforcement under section 7 of the Clayton Act looks at markets in which a controlling firm could impose a "SSNIP," a "small but significant non-transitory increase in price."²¹ Collusion cases under section 1 of the Sherman Act hinge on the extent to which the joint activity of rivals is likely to restrain normal price competition.²² And

¹⁸ *Id.*

¹⁹ *Cf. id.* at 183-84 (explaining that "economists generally know much less about the relationship between competition, innovation, and consumer welfare than they do about standard price competition").

²⁰ *Cf. P.A. Geroski, Competition in Markets and Competition for Markets*, 3 J. INDUSTRY, COMPETITION & TRADE 151, 159 (2003) (arguing that the "main difficulty" with the traditional test for identifying market boundaries is that "it may not provide very reliable information on competitors who could launch a challenge for the market"); Michael L. Katz & Howard A. Shelanski, "Schumpeterian" Competition and Antitrust Policy in High-Tech Markets, COMPETITION, Fall/Winter 2005, at 47, 49 (explaining that "[a]t the heart of the Schumpeterian argument is the assertion that, in important instances, competition primarily occurs through cycles of innovation, rather than through static price or output competition," and that in such instances firms compete "sequentially for the market as a whole").

²¹ U.S. DEP'T OF JUSTICE & FTC, HORIZONTAL MERGER GUIDELINES § 4.1.1 (2010), available at <http://www.ftc.gov/os/2010/08/100819hmg.pdf> [hereinafter HORIZONTAL MERGER GUIDELINES].

²² *See* U.S. DEP'T OF JUSTICE & FTC, ANTITRUST GUIDELINES FOR COLLABORATIONS AMONG COMPETITORS § 1.2 (2000), available at <http://www.ftc.gov/os/2000/04/ftcdojguidelines.pdf>

monopolization cases under section 2 of the Sherman Act begin with proof of the element of monopoly power—essentially, the ability of the defendant to impose price increases on its customers.²³ In all of the above examples, antitrust law defines consumer welfare in terms of the prices and outputs of a given product.

Nonprice considerations are not absent from conventional antitrust analysis; concerns about how transactions or competitive strategies might affect innovation, product variety, or the availability of critical goods or services have factored into antitrust enforcement.²⁴ Innovation, in particular, has become an increasingly important focus—mostly in merger review, but also in conduct cases—over the past twenty-five years.²⁵ But such nonprice concerns have generally remained secondary to modern antitrust law's primary emphasis on price effects and static efficiency.²⁶

The error-cost critique of applying the conventional, price-oriented framework to technologically dynamic markets is two-fold. First, the structure of such markets at any point in time is likely to be in transition, so the elements of the competitive environment on which antitrust authorities base their decision to investigate are likely to become increasingly outdated and irrelevant as the investigation proceeds. What appear to be harmful effects at one moment may vanish the next, rendering any gains from enforcement minimal at best.²⁷ Second, temporary dominance is the prize for which firms in "dynamic" markets compete, so enforcement that limits firms' ability to achieve or profit from that dominance will have the counter-

("The central question is whether the relevant agreement likely harms competition by increasing the ability or incentive . . . to raise price[s] . . .").

²³ See Herbert Hovenkamp, *FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE* § 3.9b (3d ed. 2005) ("[T]he presence of persistent price discrimination is evidence that a seller has marker power . . .").

²⁴ See, e.g., *Microsoft II*, 253 F.3d 34 (D.C. Cir. 2001); HORIZONTAL MERGER GUIDELINES, *supra* note 21.

²⁵ See Michael L. Katz & Howard A. Shelanski, *Mergers and Innovation*, 74 *ANTITRUST L.J.* 1, 1 (2007) (discussing the dramatic increase in policymakers' concern with fostering innovation within the context of merger enforcement during the 1980s and 1990s).

²⁶ See Richard Gilbert & Willard K. Tom, *Is Innovation King at the Antitrust Agencies? The Intellectual Property Guidelines Five Years Later*, 69 *ANTITRUST L. J.* 43, 44 (2001) ("We conclude that innovation is not quite 'King' at the antitrust agencies, although its role has become increasingly important and has been decisive in several merger and non-merger enforcement actions that have potentially very significant impacts for consumer welfare.").

²⁷ Katz & Shelanski, *supra* note 20, at 52 ("[I]n the Schumpeterian view of the world, any profits and associated welfare losses due to unilateral practices or a merger are transitory . . .").

productive effect of slowing innovation to the detriment of economic growth and consumer welfare.²⁸

Taken together, these two observations lead proponents of the error-cost analysis to conclude that antitrust in technologically dynamic markets is likely to do more harm than good. Put differently, the error-cost argument implies that even when enforcement correctly identifies anticompetitive conduct in digital markets, it is likely to do little good because the effects of such harmful conduct will be short lived. When enforcement misses the mark, however, it is likely to cause enduring harm by deterring innovation that would have been of great social value. Because the costs of over-enforcement exceed the costs of underenforcement, proponents of this theory recommend calibrating antitrust enforcement to prefer underenforcement.

A. *Cautionary Tales*

Regulation and antitrust both supply cautionary tales about the consequences of intervention in markets undergoing technological change. A regulatory example is the Telecommunications Act of 1996, which Congress enacted to open local telephone monopolies to competition.²⁹ The Act required incumbent telephone carriers to provide new entrants with access to established landline networks at cost-based rates.³⁰

Within a decade of Congress's enactment of the Telecommunications Act of 1996, however, the local competition provisions of the statute had become an afterthought.³¹ The 1996 Act's central flaw was that it embodied too static a view of the market for "local" communications and did not take account of, or anticipate, imminent shifts in technology and consumer demand that made landline voice secondary to various kinds of mobile and broadband communications. The combined result of these shifts was that,

²⁸ Geroski, *supra* note 20, at 152-54, 166 (arguing that in certain markets, mainly high-tech markets, firms compete to set the "standard" of the market, and that this competition may incentivize innovation).

²⁹ Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (codified as amended in scattered sections of 47 U.S.C.).

³⁰ See 47 U.S.C. § 251(c)(2) (charging incumbent local exchange carriers with the "duty to provide, for the facilities and equipment of any requesting telecommunications carrier, interconnection with the local exchange carrier's network . . . on rates, terms, and conditions that are just, reasonable, and nondiscriminatory").

³¹ It had in fact become apparent reasonably soon after the 1996 Act's initial implementation that its competitive access provisions would become irrelevant. See Howard A. Shelanski, *A Comment on Competition and Controversy in Local Telecommunications*, 50 HASTINGS L.J. 1617, 1631 (1999) ("Although many of the 1996 Act's local competition provisions address competitors' access to incumbent carriers' networks and services, such provisions are irrelevant to a sizable proportion of local competition.").

only a few years after Congress passed the 1996 Act, its central provisions regarding local voice communications were obsolete. And it was not because the law had achieved its intended effect and launched a competitive local exchange market, but because innovations in technology and changes in consumer demand quickly bypassed the economic and technological assumptions underlying the statute's local competition provisions.³²

The FTC's 2010 review of Google's acquisition of AdMob is another cautionary tale.³³ Mobile advertising networks place advertisements on applications for mobile platforms like Android devices and, most notably at the time, Apple's iPhone, which was then the dominant mobile platform. At the time, AdMob was, by most measures, the leading mobile advertising network and Google was a significant and particularly fast-growing rival.³⁴ Initially, the FTC was concerned that the merger would inhibit future competition in the terms that mobile ad networks offered to advertisers and applications developers, and that Google would reduce its R&D in mobile advertising once it had AdMob's technology.³⁵ The FTC also found evidence that the merger might harm competition because the parties had viewed each other as primary competitors.³⁶

However, late in the investigation, Apple announced plans for mobile advertising on the iPhone platform that changed assumptions about the mobile advertising marketplace.³⁷ Apple had not only deployed its own mobile ad network, but also announced rules for Apple application developers that would make unavailable to third-party mobile ad networks key advantages that would be available to Apple's proprietary mobile advertising service.³⁸ Those rules would significantly limit third-party mobile ad services on the iPhone platform. This suddenly emerging set of circumstances made the merging firms' current market positions and historic trajectories poor predictors of their future competitive significance. The FTC thus changed course, closed its investigation, and allowed Google to acquire AdMob.³⁹ Had Apple announced its own mobile advertising plans

³² See generally Howard Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 YALE J. ON REG. 55 (2007).

³³ Google/AdMob, No. 101-0031 (FTC May 21, 2010) (statement of the Commission), available at <http://ftc.gov/os/closings/100521google-admobstmt.pdf>.

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.*

just months later, the course of the merger investigation might have been very different.

B. Policy Responses to “Dynamic” Markets

While examples like Google’s acquisition of AdMob counsel caution when defining relevant markets during periods of rapid technological change, antitrust law has become less static in two significant ways. First, while market definition remains very important, enforcement agencies have come to rely less on the exercise and its associated structural presumptions.⁴⁰ Second, antitrust has increasingly focused on innovation—both in terms of how innovation affects market structures and how enforcement might affect firms’ incentives to invest in new technology.⁴¹

1. Reduced Emphasis on Market Definition and Market Structure

While there is no panacea for the difficulties of competition analysis in technologically dynamic markets, regulators can avoid the basic difficulties of market definition in many cases by focusing first, and more directly, on the competitive effects of conduct and transactions. Recent scholarship has been increasingly critical of the market definition exercise that underlies much competition enforcement,⁴² and the FTC and DOJ’s 2010 revised U.S. Horizontal Merger Guidelines demonstrate a retreat from formulaic reliance on market definition.⁴³ The fundamental problem with an emphasis on market definition is that it diverts initial attention away from direct assessment of likely competitive effects—the key issue in merger analysis⁴⁴—

⁴⁰ See, e.g., HORIZONTAL MERGER GUIDELINES, *supra* note 21.

⁴¹ See Katz & Shelanski, *supra* note 25, at 64 (introducing cases that involved innovation considerations).

⁴² See Louis Kaplow, *Why (Ever) Define Markets?*, 124 HARV. L. REV. 437, 476-79 (2010) (reviewing academic criticisms of the traditional market-definition exercise); Katz & Shelanski, *supra* note 25, at 14 (noting that the concentration-competition welfare presumption is subject to criticism).

⁴³ HORIZONTAL MERGER GUIDELINES, *supra* note 21, § 4 (asserting that “[s]ome of the analytical tools used by the Agencies to assess competitive effects do not rely on market definition”).

⁴⁴ See, e.g., *United States v. Gen. Dynamics Corp.*, 415 U.S. 486, 498 (1974) (cautioning that information about competitive effects, not mere concentration data, was necessary for the government to prove a merger case); Joseph Farrell & Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, B.E. J. THEORETICAL ECON., Jan. 2010, no. 9, at 3-5, available at <http://faculty.haas.berkeley.edu/shapiro/alternative.pdf> (arguing that the “presumption that a merger which substantially increases market concentration is likely to be anti-competitive” may be mistaken).

and starts the analysis with a very indirect means of gauging post-merger market performance.

Because the facts and available evidence vary, there is no single formula for an effects-based analysis of conduct or mergers. In most conduct cases, it is easier than in merger cases to look directly at effects because the allegedly anticompetitive acts will have already occurred for some period of time. In merger investigations, where the effects analysis is more prospective, evidence of likely effects may be less obvious but still available. For example, evidence from past mergers, from past price changes by the merging parties, and from the parties' respective bidding and win-loss records can help enforcement agencies to understand the extent to which the merging parties compete with themselves and with other firms.⁴⁵ Comparison of markets in which the firms compete head-to-head with markets in which only one of the firms operates may also provide important insight into the merging parties' competitive importance to each other. This latter analysis served as the basis for the FTC's successful challenge to the proposed Staples/Office Depot merger in 1997. There, the FTC was able to show that prices for office supplies were lower in geographic areas where two office superstores competed than in local markets with just one superstore.⁴⁶ The point is that enforcement decisions based on direct evidence of effects may be more accurate than decisions based on less direct evidence from which effects might be inferred.

2. Increased Emphasis on Innovation

Antitrust authorities and scholars have long maintained that innovation is more important to economic growth and social welfare than price competition among existing products.⁴⁷ But there is somewhat less consensus on whether antitrust enforcement is at odds with such innovation.⁴⁸ One noted school of thought, often called the "Schumpeterian School" after the

⁴⁵ See, e.g., HORIZONTAL MERGER GUIDELINES, *supra* note 21, § 2 (noting that the agencies will "consider any reasonably available and reliable evidence" regarding the competitive effects of proposed mergers).

⁴⁶ See *FTC v. Staples, Inc.*, 970 F. Supp. 1066, 1077-78 (D.D.C. 1997) (observing that "evidence show[ed] that the defendants change[d] their price zones when faced with entry of another superstore").

⁴⁷ See, e.g., Jonathan B. Baker, *Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation*, 74 ANTITRUST L.J. 575, 601 (2007) ("[A]n antitrust enforcement program crafted to promote innovation would attack direct reductions in innovation competition . . .").

⁴⁸ Compare *id.* at 589 (asserting that contemporary competition policy's focus on enforcement effectively promotes innovation), with McGowan, *supra* note 14, at 1200 (arguing that government enforcement of antitrust policies has offered negligible social utility).

economist Josef Schumpeter, argues that competition in some markets occurs through dynamic cycles of technological change and innovation rather than through static price competition.⁴⁹ It further argues that antitrust enforcement based on conventional notions of competition will miss the importance of, and perhaps interfere with, cycles of innovation in a relevant market.⁵⁰ Antitrust authorities or courts might discourage innovation by impeding the possibility of monopoly returns that induces firms to engage in risky research and development in the first place.

Antitrust enforcement agencies have increasingly taken into account how enforcement might affect innovation and how, in turn, innovation might affect the economic assumptions underlying a particular enforcement action. In the 1990s, the agencies began to factor innovation more expressly into merger analysis.⁵¹ More recently, the FTC's investigations of Google and Intel focused in large part on how the conduct of those firms would affect the introduction of competing technology into the marketplace.⁵² And the 2010 Horizontal Merger Guidelines expressly refer to innovation as a central concern.⁵³ The important point is that antitrust enforcement has adopted an increasingly dynamic perspective that, like the reduced emphasis on market definition and structural presumptions, is better suited to digital industries than is the static framework.

II. CHARACTERISTICS OF DIGITAL PLATFORMS

The commercial Internet is still a relatively recent phenomenon. The Internet initially became available for private commercial use in 1991 but took several years to become integrated into daily life.⁵⁴ Several of the most important digital platforms like Facebook and Twitter are less than ten years old, and even "established" players like Google, Yahoo, and Amazon

⁴⁹ Katz & Shelanski, *supra* note 20, at 49.

⁵⁰ *Id.* at 49-50.

⁵¹ See Katz & Shelanski, *supra* note 25, at 67-69 (discussing developments in the 1990s).

⁵² See Motorola Mobility LLC & Google Inc., 78 Fed. Reg. 3427 (FTC Jan. 16, 2013) (proposed consent agreement), *available at* <http://www.ftc.gov/os/caselist/1210120/130103googlemotorola.stmtoftcomm.pdf> (defending its criticized settlement with Google as helping to ensure that consumers will "continue to see the benefits of competition and innovation in important technology markets"); Press Release, FTC, FTC Settles Charges of Anticompetitive Conduct Against Intel (Aug. 4, 2010), *available at* <http://ftc.gov/opa/2010/08/intel.shtm> (asserting that the settlement will allow Intel to "innovate and offer competitive pricing").

⁵³ See, e.g., HORIZONTAL MERGER GUIDELINES, *supra* note 21, at § 6.4.

⁵⁴ The U.S. Government opened the Internet for commercial use and established the National Research and Education Network through the High-Performance Computing Act of 1991, Pub. L. No. 102-194, 105 Stat. 1594 (codified as amended at 15 U.S.C. §§ 5501-5528 (2006)).

have not been around for much longer than that. Significant new firms are coming online every year, and new and established digital businesses are continuously introducing new technologies and services. Digital platforms are young and evolving, as are their consumers' preferences and usage patterns. Some digital platforms have become (at least for some period) large and possibly dominant, while others struggle for a foothold in the market. Notably, when platforms do possess market power, they have several characteristics that present competitive concerns of greater complexity and ambiguity than those related to other kinds of goods and services.

A. *Amplification of Market Power*

Suppose a particular device like a smartphone has become dominant because it provides some unique features. To the extent the device is a gateway to complementary applications, the device producer can extract profits not only from what the device can do itself, but also from the applications to which the device provides access. While the device manufacturer has to operate in a two-sided market and set prices to attract both users and complementary application providers, it can use its dominance to extract profits from both sides—profits that may grow with the number of subscribers and applications providers. Put simply, a bottleneck to everything can potentially take a share of, and exercise some control over, everything. While a typical monopolist controls its own products and services, a typical bottleneck monopolist both controls access to its own service and can affect access to some number of other products and services.⁵⁵ Thus, a digital platform monopolist controls its own product or service as well as access to a much broader universe of products or services; it affects the decisions of a much broader universe of users.⁵⁶ As one set of authors puts it, perhaps a bit overdramatically, “Google has become the main interface for our whole reality.”⁵⁷ A platform’s potential amplification of market power may differ more in degree than in kind from the leveraging power of a conventional bottleneck gatekeeper, but that difference can be substantial. The potential problem is captured by another description of Google in the trade press:

⁵⁵ See STUART MINOR BENJAMIN ET AL., TELECOMMUNICATIONS LAW AND POLICY 942-43 (3d ed. 2012) (defining “bottleneck” monopolies).

⁵⁶ See *infra* Section II.B.

⁵⁷ H. MAURER ET AL., REPORT ON DANGERS AND OPPORTUNITIES POSED BY LARGE SEARCH ENGINES, PARTICULARLY GOOGLE 16 (2007), http://www.iicm.tugraz.at/iicm_papers/dangers_google.pdf.

Google's search engine is, well, not just a search engine. . . . [T]his de facto internet gateway is also a place where Google can deliver its own services to netizens across the globe. YouTube, Google Maps, Google Product Search, and any other Google service—as well as any service Google might build in future years—all have an obvious advantage over competitors.⁵⁸

Whether Google's proprietary applications have an "obvious" advantage is debatable. Even putting aside possible bypass of Google through direct navigation or use of an "app" to reach a particular content or service provider, a firm's incentives to discriminate against unaffiliated providers of complementary products are complex⁵⁹—especially when that firm's business model hinges largely on selling advertising to those complementary producers. But the key point about bottleneck discrimination is that of ability: Google's scale and scope might appear to give it substantial power in a wide range of markets, even if Google would not use that power harmfully.

B. *Multisided Markets and Multiple Products*

Another central feature of a platform is that it interacts with more than one set of customers. Multisided markets are nothing new: conventional television broadcasters have for years been marketing programming to viewers, while also marketing those viewers to advertisers. Similarly, Internet service providers sell access to subscribers while also connecting those customers to upstream applications.⁶⁰ Platforms therefore act as intermediaries between different sets of consumers that might need to reach each other but cannot do so as efficiently without the platform.⁶¹ These different groups of consumers are all users of the platform's services and in turn relate to each other vertically as buyers and sellers. Platforms not only create a forum in which such market participants can connect with each other, they also provide scale and interfaces that raise the probability and efficiency of successful interactions.

The multisided nature of digital platforms creates several consequences for competition policy. A platform cannot set prices for one market facet

⁵⁸ Cade Metz, *We Probe the Google Antitrust Probe. Vigorously*, REGISTER (Dec. 1, 2010), http://www.theregister.co.uk/2010/12/01/google_eu_investigation_comment.

⁵⁹ See, e.g., Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age*, 17 HARV. J.L. & TECH. 85, 97-100 (2003) (explaining the logic behind integration).

⁶⁰ See David S. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20 YALE J. ON REG. 325, 337 tbl.1 (2003) (providing examples of multisided markets).

⁶¹ See Jean-Charles Rochet & Jean Tirole, *Two-Sided Markets: A Progress Report*, 37 RAND J. ECON. 645, 645-46 (2006) (defining two-sided markets).

without affecting supply and demand on other sides of the market.⁶² Market power on one side of the market, therefore, does not necessarily enable the platform to impose monopoly prices on consumers in that market segment because such pricing might diminish the prices the platform can charge to its customers on other sides of the market.⁶³ With major search and social networking platforms, consumers on one side of the market (end users) get the product for free while consumers on the other side (advertisers) pay. This feature can raise complicated issues for antitrust enforcement. What might appear to be dominance in the platform's core product market (e.g., search or social networking) may only translate indirectly, if at all, into pricing power in the revenue-generating market (e.g., advertising). These problems are not intractable, but the interdependency of the different market sides of a platform can make it much harder to determine what the "relevant market"⁶⁴ is for competition enforcement and what the competitive effects of conduct or acquisitions might be.

C. Customer Information as Critical Asset

While customer information is perhaps always valuable for a business, it is even more so for digital platforms. There are two main reasons for this: (1) digital platforms generally have much greater access than conventional businesses to a broad range of information about their consumers, and (2) digital businesses may be better able to process and use that data for a variety of purposes.

Any successful neighborhood merchant tries to ascertain the preferences of the local community and the tastes of repeat customers; such efforts tailor supply to demand while reducing transaction costs and waste. But even a large brick-and-mortar business gets a relatively narrow picture of its customers—likely limited to what customers have purchased from that particular business, how often they visit, what parts of the business they find appealing, their credit histories, and other personal data like the customers'

⁶² See *id.* at 664-65 (noting that in a two-sided market, "the platform can affect the volume of transaction by charging more to one side of the market and reducing the price paid by the other side").

⁶³ See Evans, *supra* note 60, at 339-40 (elaborating that optimal pricing in a multisided market is dependent on the "responsiveness of demand" on each side of the market).

⁶⁴ A "relevant market" is the set of products and the geographical area potentially affected by a merger or other business conduct. The concept of a relevant market, and what goes into deciding what constitutes such a market, are explained in section 4 of the 2010 *Horizontal Merger Guidelines*. See *supra* note 21.

home addresses.⁶⁵ This information is certainly valuable, but it misses many things a business might like to know. For example, if a business knew what products the customer had considered buying but ultimately rejected in favor of alternatives (from that particular business as well as from other sellers), it would have a better idea of what mix of products to offer and of who its competitors are. If a business could know how long the consumer had been considering the purchase or how important the purchase was to the buyer, it might be able to discern the intensity of a consumer's desire for a particular good. Finally, if a consumer and producer have more interaction surrounding a transaction, the producer could learn more about the consumer's needs, thereby enabling the producer to tailor the process and follow-up services to particular buyers.

Digital platforms can obtain much more of this information than conventional businesses. It is easier for a shopping website to see which products customers have clicked on than it is for a store to follow customers around to track their shopping behavior. A conventional business might never know whether a shopper turned away from the checkout line to replace something on the shelf, whereas an online business will know whether a potential buyer left something in his digital shopping cart, and will likely send reminders to the buyer about the product left behind or offer a better deal.⁶⁶ The broader the range of products and services a platform provides, the richer the picture the platform can paint of its customers.

One way to think of the value of customer data to Internet platforms is through three purposes this information serves. First, customer information can be an input of production that enables a business to improve its service offerings and increase its returns. Second, customer data can be a strategic asset that allows a platform to maintain a lead over rivals and to limit entry into its market. Third, customer information can be a valuable commodity, which the firm could sell to other businesses that cannot collect the data themselves.

⁶⁵ For an example of unusually extensive efforts by a brick-and-mortar business to collect more data regarding their customers' preferences, see Brooks Barnes, *The Digital Kingdom*, N.Y. TIMES, Jan. 7, 2013, at B1.

⁶⁶ See, e.g., Julie Weed, *Simple Tools Help Owners Sift Data for Eager Customers*, N.Y. TIMES, Dec. 13, 2012, at B6 (citing the example of Velvet Palate as a business adeptly narrowing its consumer base through the use of such techniques).

1. Customer Data as Input of Production

Customer information is an input of production when platforms use it to improve their services and make user interactions more efficient. More complete customer information allows a platform to better satisfy customer preferences. It allows platforms to serve customers more efficiently by targeting products to customers based on their individual profiles. If the platform sells advertising, this tailored matching makes advertising on the platform more efficient and valuable, in turn allowing the platform to charge more for advertising than it could with less effective matching. The following description of Facebook explains the payoff derived from such information: “[Facebook] is not a conventional business. It has a billion users, but its principal stream of revenue comes not from directly selling them goods and services, but by offering marketers a chance to target tailored advertisements . . . based on what [users] reveal about themselves.”⁶⁷

Customized offerings to consumers might, however, also raise the possibility of price discrimination. A platform might use customer data not only to discern individual preferences, but also to gauge individual consumers’ willingness to pay.⁶⁸ Therefore, the firm might price discriminate by offering products or services at higher prices to those who value the product highly and at lower prices to potential buyers on the margin who value the product less. Price discrimination harms consumers who value a product highly because they will pay more than they would if the seller had to set a single market price but benefits consumers whose willingness to pay is below that single price but still above the marginal cost of production. The net welfare effects of price discrimination for a particular product depend on a variety of conditions. While price discrimination is socially beneficial to the extent it expands output, it also shifts surplus from consumers to producers.⁶⁹

2. Information as a Strategic Asset

Customer information can also be a key strategic asset in a platform’s interactions with its competitors. When customer information is a useful

⁶⁷ Somini Sengupta, *Facebook Posts Largest Single Day Gain*, N.Y. TIMES BITS (Oct. 24, 2012, 5:03 PM), <http://bits.blogs.nytimes.com/2012/10/24/facebook-posts-largest-single-day-gain-after-third-quarter-earnings-call>.

⁶⁸ Editorial, *Frequent Fliers, Prepare to Pay More*, N.Y. TIMES, Mar. 3, 2013, at A20 (describing price discrimination plans by online travel services).

⁶⁹ See R. Preston McAfee, *Price Discrimination* (discussing the welfare effects of price discrimination), in 1 ISSUES IN COMPETITION LAW AND POLICY 465, 480-83 (ABA Section of Antitrust Law ed., 2008).

input for a platform and is not equally available to that platform's competitors, the informational advantage can help to entrench market power.

For example, if a given consumer relies primarily on a single platform for shopping, social networking, searching the Internet, or any other service, then each such platform will probably have more information about that consumer than its rivals will have. If a platform is the market leader, it will have more users than its rivals will and, accordingly, more overall customer information.⁷⁰ This larger information set might enable the leading firm to make information-dependent product improvements that smaller rivals will be unable to replicate. A good example of this in practice is FairSearch's complaint against Google. FairSearch (a coalition that includes Microsoft) has alleged that Google's increased volume of search queries creates scale advantages in proving and refining search results that a smaller search engine cannot match.⁷¹ FairSearch argues that Google's business strategies have been designed to hoard customer information for itself and stunt competition. Whether there is any merit to FairSearch's allegations is beyond the scope of this Article. To date, neither the FTC nor any other competition agency has found Google's conduct in obtaining customer information to be anticompetitive. There appears to be little disagreement, though, with the general proposition that 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.⁷²

Depending on the point at which returns to additional customer information begin to diminish, large volumes of such information can give a competitive advantage to a leading platform. The more modest the volume at which returns from additional information diminish, the more likely it is that multiple competing platforms can obtain the customer data they need to deliver a competitive product or service. If the benefits of additional information begin to decline only at a very high volume of information, and if relative differences in access to customer data matter, then control of the largest share of customer data could contribute to market dominance. Actions surrounding the use and acquisition of customer information can be important for understanding competition and thinking about enforcement in digital platform markets, as will be further discussed in Part III.

⁷⁰ See *infra* Section II.D.

⁷¹ See *FairSearch Principles for Evaluating Remedies to Google's Antitrust Violations*, FAIRSEARCH (Nov. 19, 2012) <http://www.fairsearch.org/uncategorized/fairsearch-principles-for-evaluating-remedies-to-googles-antitrust-violations> (referring to Google's "improperly acquired scale advantages").

⁷² Frank Pasquale, *Beyond Innovation and Competition: The Need for Qualified Transparency in Internet Intermediaries*, 104 NW. U. L. REV. 105, 147 (2010).

3. Customer Data as Commodity

Finally, the data a digital platform collects may be useful to enterprises willing to pay for information about consumers. At this point relatively little is known about online data brokerage, at least as compared to the analogous business of consumer credit data. It is known, however, that online businesses often compile data on their customers and then sell the data to brokers who assemble it into consumer profiles.⁷³ Such profiles can be of enormous value to prospective employers, insurance companies, and businesses looking to identify potential customers or product lines. In short, customer data can be a valuable revenue stream for digital businesses quite apart from their own use of that data as an input into production processes or as a strategic competitive asset.

D. *Entrenchment Through Network Effects and Switching Costs*

Digital platforms may become entrenched because of certain factors on the demand side of a given market. For example, some platforms benefit from “network effects” that arise because the platform’s value to each individual consumer grows with the number of other consumers who use the platform.⁷⁴ Such an effect is most likely to occur in communications or social media platforms like Twitter and Facebook, where increasing the number of users creates a larger universe of people with whom each user can communicate. Each user creates a positive externality for other users by enlarging the scope of the service.⁷⁵ Because the attractiveness of the platform grows with the number of users, it is possible for network effects to cause a market to “tip” to monopoly.⁷⁶ Such externalities are less likely to occur in other kinds of platforms, such as those for Internet search or online shopping, but these services may nonetheless benefit from less direct forms of network effects. A shopping network with a comparatively large number of users might be more appealing because of the greater number of available product and service reviews. Likewise, a more widely used search engine might provide greater confidence to a user because the results she is seeing are what many others are seeing and relying upon.

⁷³ Natasha Singer, *F.T.C. Plans to Examine Data Broker Practices*, N.Y. TIMES, Dec. 19, 2012, at B1.

⁷⁴ See generally Michael Katz & Carl Shapiro, *System Competition and Network Effects*, J. ECON. PERSP., Spring 1994, at 93 (discussing the economics of systems that rely on network effects).

⁷⁵ See *id.* at 96 (“In a communications network . . . the demand for a network good is a function of both its price, and the expected size of the network.”).

⁷⁶ *Id.* at 106 (enumerating “FM vs. AM stereo radio; color vs. black and white television; VHS vs. Beta; and typewriter keyboards” as “tipping” examples (internal citations omitted)).

In addition, popular platforms might benefit from feedback effects when third parties produce an array of complementary products. In turn these products attract more users to the platform. This cycle might repeat until no other platform can induce much competing complementary innovation.⁷⁷ Mobile networking devices like smartphones and tablets (and their underlying operating systems) have some utility in themselves, but their utility grows as the number of apps with which they are compatible increases. To the extent applications developers cannot easily move apps developed for one platform to another platform, most will develop apps for the more popular platform. This feedback effect could leave the other platform with relatively few developers of complementary products, thereby making the competing platform less attractive to consumers.⁷⁸

Network effects can be reinforced when consumers face costs in switching from one product to a substitute.⁷⁹ At the moment of initial choice, a potential customer might weigh all competing products neutrally according to price, quality, and other dimensions. For example, suppose that a customer considers two products, *A* and *B*, that are comparable for the customer's needs; and that the customer chooses product *A* because its price is \$10 whereas the price of product *B* is \$12. In the absence of switching costs, the customer would change to product *B* for subsequent purchases if the price of *B* fell to \$9 and the price of *A* remained at \$10. However, during the time the buyer uses product *A* she might become comfortable with it, might invest her time in mastering its use or customizing its features, and might make complementary purchases that work better (or exclusively) with *A*. If those things happen, then when the time comes for a new round of purchases, the decrease in the price of *B* might not be enough to attract the customer away from *A*; switching costs have developed and she might be "locked in" to product *A*. To "unlock" the customer, *B* (or some new market entrant) must be priced far enough below *A* to compensate her for the costs she would incur in switching. In other words, the competitor has to price more aggressively than it would have to if competing from a fresh start. Switching costs, therefore, can make market power more durable.

⁷⁷ *But see id.* at 94-95 ("Although it seems plausible that the inertia associated with network effects has somehow deprived us of valuable new technologies, it is abundantly clear that many new, incompatible technologies are in fact successfully introduced.")

⁷⁸ *See, e.g.,* David Goldman, *BlackBerry's Biggest Problem: The App Gap*, CNNMONEY (Aug. 5, 2010), http://money.cnn.com/2010/08/05/technology/killer_apps/index.htm.

⁷⁹ *See generally* Joseph Farrell & Paul Klemperer, *Coordination and Lock-in: Competition with Switching Costs and Network Effects* (discussing "switching costs" and their effects on competition), in 3 HANDBOOK OF INDUSTRIAL ORGANIZATION 1967, 1977-2007 (Mark Armstrong & Robert H. Porter eds., 2007).

The presence of network, feedback, or lock-in effects does not necessarily lead to increased market power. Network effects can be shared among rivals if those rivals interconnect with each other or in some other way share the source of the positive network externality; feedback effects can exist for multiple platforms simultaneously, as application development for both Apple and Android devices show; and technology and pricing can help to overcome switching costs. Each of these effects, however, can *contribute* to a platform's market dominance and, under the right conditions—where there is no interconnectivity between platforms or one platform has an early and large lead in complementary products—can contribute to the development and durability of platform monopolies.

E. Innovation

If there is any single force that best characterizes digital platform markets, it is probably the intensive and continuous investment in research and development to improve existing products and develop new platforms and applications. It is easy to find examples of companies quickly rising and falling on the Internet: AOL was once dominant in instant messaging and a major platform for content and applications, but it is now a much less significant enterprise;⁸⁰ MySpace entered to acclaim but was leapfrogged by Facebook;⁸¹ Altavista, Lycos, and Yahoo! led the market for online search engines in the mid-1990s before Google supplanted those incumbents.⁸² In 2006, Symbian was the dominant mobile operating system, and RIM had the largest share of smartphone device sales. Since Apple started selling the iPhone in 2007, it has captured roughly one-third of the smartphone market.⁸³ Google's Android operating system launched commercially in 2007 and now powers just over half of all smartphones.⁸⁴ Devices like tablets and smartphones have become important platforms for nonmobile access, disrupting the dominance of conventional computers. These devices have

⁸⁰ See, e.g., Jesse Singal, *Saying Goodbye to AOL Instant Messenger*, THE DAILY BEAST (Mar. 17, 2012), <http://www.thedailybeast.com/articles/2012/03/17/saying-goodbye-to-aol-instant-messenger.html>.

⁸¹ See, e.g., Felix Gillette, *The Rise and Inglorious Fall of Myspace*, BUSINESSWEEK.COM (June 22, 2011), http://www.businessweek.com/magazine/content/11_27/b4235053917570.htm.

⁸² See, e.g., Dominic Rushe, *Yahoo: The Rise and Fall of an Internet Pioneer*, GUARDIAN (Jan. 20, 2012), <http://www.guardian.co.uk/technology/2012/jan/20/yahoo-rise-fall-internet-pioneer>.

⁸³ Press Release, ComScore, ComScore Reports October 2012 U.S. Mobile Subscriber Market Share (Nov. 30, 2012), available at http://www.comscore.com/Insights/Press_Releases/2012/11/comScore_Reports_October_2012_U.S._Mobile_Subscriber_Market_Share (reporting the market shares for the top smartphone operating systems).

⁸⁴ *Id.*

also reduced the need for intermediary platforms, like search engines and shopping portals, by providing a direct gateway to applications.

Innovation is to some degree a component of any industry. The difference with digital platforms is that R&D is the central input of production, not merely an episodic activity that affects the production process. Put differently, the R&D process and the production process are essentially the same thing for many products and services related to the Internet and digital platforms. For example, search engines constantly revise and refine the algorithms that match consumers' queries to search results.⁸⁵ Social media platforms continually add features and make changes to optimize performance.⁸⁶ Shopping platforms regularly introduce new interactive features using the information customers provide through such interactions.⁸⁷ Even devices like smartphones and tablets regularly update themselves to improve performance and add capabilities before manufacturers introduce new models.⁸⁸ Such innovation in digital markets is sometimes incremental and sometimes a more fundamental break with anything that has come before. The key point is that it is rare to find a significant digital product or service that stays the same from day to day. Firms attract and retain consumers more by changing the features and functionality than by changing the price terms. Importantly, innovation also comes from the customer side, with consumers developing new ways to use digital platforms and applications to their own advantage. Innovation and R&D are therefore relevant not just to the next model or version of something a customer might buy, but also to the next use the customer might make of a given product or service.

F. Implications for Antitrust Enforcement

The characteristics of digital platforms make competition enforcement more challenging than usual. While often efficient, the aggregation of content and services to which a platform provides access can amplify its

⁸⁵ See, e.g., Claire Cain Miller, *Google Changes Search Algorithm, Trying to Make Results More Timely*, N.Y. TIMES BITS BLOG (Nov. 3, 2011, 1:23 PM), <http://bits.blogs.nytimes.com/2011/11/03/google-changes-search-algorithm-trying-to-make-results-more-timely>.

⁸⁶ See, e.g., Bianca Bosker, *With New News Feed, Facebook Tries to Become What It Once Was: A Social Network*, HUFF POST TECH (Mar. 7, 2013, 5:34 PM), http://www.huffingtonpost.com/bianca-bosker/facebook-new-news-feed_b_2832218.html.

⁸⁷ See, e.g., Rebecca Greenfield, *Amazon Is Changing the Future of Online Shopping*, ATLANTIC WIRE (Sept. 6, 2011), <http://www.theatlanticwire.com/technology/2011/09/amazon-changing-future-online-shopping/42107>.

⁸⁸ See, e.g., *Android Version History*, WIKIPEDIA, http://en.wikipedia.org/wiki/Android_version_history (last updated Mar. 31, 2013).

market power. The multisided nature of platform goods makes it harder to gauge a digital platform's incentives and abilities to engage in exclusionary conduct or exercise market power. 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. Finally, innovation is itself the production process for many digital goods and services and is thus a particularly continuous and integral aspect of platform competition. Taken together, these factors make it more difficult than in conventional product markets for competition agencies and courts to make judgments about how digital platforms' conduct and transactions affect consumers and markets. The next Part will explain why those characteristics do not, however, weigh entirely against antitrust enforcement, and will discuss two ways in which antitrust enforcement might better account for the effects of digital platforms' conduct and transactions.

III. REFOCUSING ANTITRUST ON INFORMATION AND INNOVATION EFFECTS

Two relatively recent trends in antitrust policy help to address some of the error-cost arguments against competition enforcement in dynamic markets: (1) the declining emphasis on market definition and structural presumptions,⁸⁹ and (2) the increasing incorporation of innovation effects and incentives in antitrust analysis.⁹⁰ While these general trends are helpful, there are two other ways by which antitrust analysis can further adapt to the particular characteristics and competitive implications of digital platforms. First, competitive analysis should focus on the roles of customer data in firm conduct; and second, it should examine how conduct and transactions might block the very innovation that antitrust critics invoke to argue against competition enforcement.

A. *Customer Information and Competitive Effects*

Information is a critical input into the production of digital platforms' products and services. Information, however, should also factor into the analysis of competitive effects for two reasons. First, information is a key input of production and a strategic competitive asset. Thus, significant effects of conduct or transactions may occur in the market for data rather

⁸⁹ See *supra* subsection I.B.1.

⁹⁰ See *infra* Section III.B.

than in the market for final goods and services. A focus on customer data, therefore, can reveal competitive effects that a focus on prices and outputs might miss.

Second, data may be a key commodity exchanged between platforms and end users. Customers reveal information to platforms in exchange for services.⁹¹ In return, platforms use that information for better or for worse from the standpoint of consumer welfare. Even in the absence of any conventional price or output effects, anticompetitive conduct or transactions could enable platforms to exercise market power to give customers less of the good things—improved service, innovative products, and good privacy and data security policies—for which consumers might implicitly barter their information. While increased competition, at least on its own, will not always cause firms to better use or protect customer information, any competitive effects analysis that misses these two nonprice dimensions of platform market performance will be incomplete and could be biased toward underenforcement.

1. Information and Exclusion

If customer information is both a necessary input of production and a “rivalrous” good—meaning that one user of information can exclude another—a platform’s acquisition of customer information may have an exclusionary effect on competition. A shopping portal that has a large share of online consumer purchasers could thereby acquire a larger base of customer data, giving it advantages over its rivals in marketing goods and selling advertising. If network effects, switching costs, or simple habits cause customers to adhere to the leading e-commerce site, then that site’s exclusive access to its large share of customer information could help maintain its market position.

A platform such as a shopping portal could further increase its access to customer data through mergers with other firms that also receive significant customer traffic. But such deals can create complexity, and perhaps confusion, about the markets relevant for analyzing the competitive effects of the transactions. For example, a social networking platform might acquire a photo-sharing business to integrate into its existing services. At first glance, the transaction is a vertical one, with an obvious horizontal element if the

⁹¹ See Natasha Singer, *Do Not Track? Advertisers Say ‘Don’t Tread on Us,’* N.Y. TIMES, Oct. 14, 2012, at BU 3 (describing “the barter system wherein consumers allow sites and third-party ad networks to collect information about their online activities in exchange for open access to maps, email, games, music, social networks and whatnot”).

acquiring platform already has a share of the photo-sharing market. The transaction might also, however, concentrate databases of valuable customer information and, through this combination, take on a horizontal dimension that could affect competition among platforms.

Similarly, a supply agreement through which a search engine provides a vertical website's internal search services would clearly implicate the market for custom search services, especially if the deal were an exclusive one. But, this arrangement might also possess horizontal elements, related to the customer data the search provider would gain from traffic on the vertical site. If the relevant foreclosure analysis focuses on the market for search syndication and ignores the market for customer information, it could miss important effects, which might in turn give rise to even more pronounced foreclosure effects.

These two examples suggest how, in digital industries, particularly those tied to e-commerce, advertising, and various end-user applications, a focus on customer information can reveal horizontal dimensions of facially vertical conduct and transactions. Recognition of the role of consumer data as an input in digital platform products could therefore show competitive effects that are unrelated to prices or other terms on which the platform provides services.

2. Customer Information and Market Power over End Users

When consumers do business with a digital platform, they inevitably disclose some personal information. This information may range from the relatively innocuous—for example, the state one lives in—to the intensely personal—such as medical history or sexual orientation. While people's preferences and practices for disclosing personal information vary,⁹² it seems reasonable to assume—all else being equal—that when faced with a choice about whether to disclose or withhold information, most consumers would prefer to withhold it absent some benefit in return. The benefits from sharing can be objective and tangible or subjective and intangible; but after a point, people will want a reason—or something in return—to reveal data about themselves.⁹³ In other words, holding price, service quality, and everything else constant, digital platform customers would rather reveal less

⁹² See generally Kay Connelly et al., *Do I Do What I Say?: Observed Versus Stated Privacy Preferences* (Ind. Univ., Unnumbered Working Paper, 2007), available at http://www.cs.indiana.edu/~connelly/Papers/C17_Interact-07.pdf (measuring individuals' varying privacy concerns in ubiquitous computing environments).

⁹³ See, e.g., Editorial, *supra* note 68.

information about themselves, and would prefer that those platforms maintain strong, rather than weak, privacy policies regarding the data that customers do disclose.

Firms, too, might differ in their preferences with regard to consumer data. If customer information is valuable to a platform's production process—for instance, if it is an input into the ongoing innovation and improvement of the platform's products—the platform would prefer to have more of it rather than less. And if relative volumes of consumer data affect competition among platforms, especially if consumers use only a limited number of platforms such that the quest for data is to some degree a zero-sum game, a platform might seek to obtain more data if for no other reason than to prevent its rivals from doing so. Similarly, if the platform has alternative ways in which to use the data it obtains from customers, it may want to adopt privacy policies that preserve the firm's flexibility to “repurpose” customer information.⁹⁴

Digital platforms may utilize customer information in ways that are more or less beneficial to consumers. They might use the information to improve offerings and make service faster and more individualized, or they might simply collect the data and hoard it for its option value or competitive advantage. Platforms might protect customer data through strong security measures and privacy policies, or they might invest little in data protection and instead use the information in ways that benefit the firm but that consumers do not like.⁹⁵ One measure of a platform's market power is the extent to which it can engage in the latter behavior without some benefit to consumers that offsets their reduced privacy and still retain users.

In theory, reductions in beneficial uses of consumer information and in the strength of privacy and security policies could correspondingly reduce the marginal cost of producing a platform's good or service. Suppose that in each transaction, a firm could analyze its existing database in order to customize the transaction to the consumer's benefit. If that data processing entails a cost, the firm's decision not to undertake the beneficial processing also reduces marginal costs, thereby expanding output. In theory, the

⁹⁴ See generally Joseph Farrell, *Can Privacy Be Just Another Good?*, 10 J. ON TELECOMM. & HIGH TECH. L. 251, 254 (2012).

⁹⁵ See, e.g., Fred Stutzman, Ralph Gross & Alessandro Acquisti, *Silent Listeners: The Evolution of Privacy and Disclosure on Facebook*, 4 J. PRIVACY & CONFIDENTIALITY, no. 2, 2012, at 7, 8-9, available at <http://repository.cmu.edu/cgi/viewcontent.cgi?article=1098&context=jpc> (finding that Facebook users continue to share more personal information on the social website, despite their increasing privacy concerns).

consumer should be compensated for the reduced benefit through a lower-priced service.

Similarly, as Joseph Farrell has demonstrated, a firm that chooses a weaker privacy policy may earn revenue through subsequent use of customer data that is analytically equivalent to a reduction in the marginal cost of the services the firm provides to consumers.⁹⁶ If, in providing its services to consumers, a firm incurs a marginal cost of X , but can then turn around and sell the data it gathers from each transaction for a profit of Y , the marginal cost per transaction with the original consumer is $X - Y$.⁹⁷ Marginal cost is therefore lower for a firm that has a weak privacy policy and resells consumer data than for a firm that has a strong privacy policy and refrains from repurposing that data. Consumers, or at least many of them, might not like the fact that the firm has weak privacy protections, but they are at least compensated by the higher output and lower prices that result from the weaker policy.⁹⁸

In each of the above cases, consumers benefit from lower prices if the platform neither uses customer information to improve service nor adopts stronger privacy policies. In theory, then, consumers might not be harmed by reduced processing or protection of the data they disclose to platforms. In practice, however, there may be two challenges in achieving this equilibrium. First, for some important platform services, there are no prices and thus no simple mechanism by which consumers can compensate the platform. Second, a platform's use and protection of customer data is often difficult for consumers to observe or understand. The consequence of free services is that there must either be some nonprice means by which consumers compensate platforms for incurring the higher marginal costs of beneficial data analysis and stronger data protection, or some manner by which the platform is able to recover the higher marginal costs on a different side of the market—for example, from advertisers. The second problem—observability—leads to potentially even more severe consequences. If consumers cannot tell whether a firm uses and protects data well or poorly, platforms will lack incentive to choose comparatively pro-consumer policies. A firm could disclose its policies to consumers, although there is substantial evidence supporting the contention that consumers rarely read or understand

⁹⁶ *Id.* at 254-55 (setting up an equation reflecting how privacy practices can affect consumers' willingness to pay).

⁹⁷ This is a simplification of Farrell's model. *See id.* (presenting a hypothetical case calculating demand for a book under two distinct privacy scenarios).

⁹⁸ *See id.* at 255 (explaining how customers can benefit from either stronger or weaker privacy protections).

such disclosures.⁹⁹ A platform could advertise its pro-consumer data protection policies, but such advertising would add greater incremental costs to the amount already spent on beneficial data analysis and strong privacy protections.

Competition can help solve these problems, even if it cannot solve them completely. Digital platform services are largely “experience” goods, the qualities and characteristics of which are difficult to assess in advance but relatively easy to judge upon actual use.¹⁰⁰ If consumers can experience competing platforms, they will be able to draw conclusions about which platform provides the better service and which makes better use of their data. Such comparative experiences can act as substitutes for quantitative data, but require some level of competition in the relevant platform market.

Privacy and data security policies may be harder for consumers to judge by experience unless the policies are so weak that the consumer becomes the victim of a security breach or obvious abuse by the platform. Competition, however, may drive platforms to adopt and adhere to stronger privacy policies, making it worthwhile for a platform to advertise such policies to consumers in order to differentiate itself from its competitors. And because compliance with such announced policies has proven to be an issue,¹⁰¹ consumer protection regulation may be necessary even in a competitive platform market. Although the problem of consumers’ failure to read or understand privacy policies remains a possible source of market failure, competition can at least help introduce better privacy and data security practices into the marketplace.

To the extent that competition promotes improved services and privacy policies, anticompetitive conduct diminishes both of these consumer benefits. In conventional antitrust terms, anticompetitive conduct can enable a platform to extract more information from customers without offering the level of quality a consumer could barter for in a more competitive market. While this information-related harm need not relate to price, it could nonetheless have a competitive effect in digital platform markets. An error-cost analysis of antitrust enforcement that does not take account of

⁹⁹ See FTC, PRELIMINARY STAFF REPORT, PROTECTING CONSUMER PRIVACY IN AN ERA OF RAPID CHANGE 26-27 (2010), available at <http://www.ftc.gov/os/2010/12/101201privacyreport.pdf> (explaining that privacy policies have become so long and incomprehensible to consumers that it is not possible to make meaningful decisions based on them).

¹⁰⁰ See Phillip Nelson, *Information and Consumer Behavior*, 78 J. POL. ECON. 311, 313-14 (1970) (explaining that consumers collect information—beyond readily available price data—from experience).

¹⁰¹ See *supra* note 6 and accompanying text.

information effects would overlook this important form of consumer harm and therefore be incomplete.

B. *Innovation Effects*

Innovation is a critical dimension of competition and one that antitrust law strongly protects. In the landmark case *Berkey Photo, Inc. v. Eastman Kodak Co.*, the Second Circuit established that firms may, without notice to competitors, introduce new products in a manner that gives them advantages over rivals.¹⁰² The court moreover declined to inquire into the quality of the innovation or its benefits to consumers.¹⁰³ In *Microsoft II*, the D.C. Circuit endorsed and expanded upon these principles.¹⁰⁴ Innovation inevitably leaves some firms behind and may confer market power on the innovating firm. Yet, under these courts' logic, innovation greatly benefits consumers and should not be viewed as any more harmful to competition than when a firm cuts price and thereby leaves its rivals without customers. There is thus nothing double-edged about innovation: it is not harm to competition, but rather competition itself. The only parties who might be "harmed" are those competitors that cannot keep up.

In addition to changing the analytic framework for enforcement from one that begins with market definition to one that begins with competitive effects, competition policy for digital platforms would benefit from further shifting its focus from conventional price and output effects to innovation effects. There are several reasons why this shift might improve the long-term performance of platform markets while reducing the overenforcement errors that some commentators have identified.

First, innovation is the main reason it is so hard to draw competitive inferences from current market structures in digital industries.¹⁰⁵ Thus, focusing on innovation can help competition authorities understand when they are dealing with a market in which it will be harder to pursue conventional antitrust concerns about price and output and in which caution in pursuing those conventional concerns is warranted.

Second, and more importantly, a focus on how conduct affects innovation fits logically with the principal objection lodged against competition enforcement in technologically dynamic markets: Competition in such

¹⁰² 603 F.2d 263, 281 (2d Cir. 1979).

¹⁰³ See *id.* at 286-87 (arguing that evaluations of product quality have little meaning because customers have idiosyncratic preferences).

¹⁰⁴ See 253 F.3d 34, 58 (D.C. Cir. 2001) (noting that mere harm to one or more competitors is insufficient to find a monopoly).

¹⁰⁵ See *supra* Section II.E.

markets may take the form of racing to introduce new or improved products rather than cutting prices on existing products. Such markets may therefore involve sequential monopolies that leapfrog each other, rather than simultaneous competitors that vie for market share.¹⁰⁶ If this “Schumpeterian” story is correct, then a focus on short-term price and output levels will miss the competition taking place through innovation. Such a mistake could be particularly costly to society because the welfare gains of long-run technological innovation can swamp the welfare losses from shorter-term price increases and output reductions.

If the Schumpeterian story is correct, however, then it is also true that *any* impediment to innovation will have social costs—whether it comes from government enforcement or from the conduct of incumbent firms. A natural implication of the Schumpeterian argument is that a firm with market power would, if acting in its own economic interests, have an incentive to interfere with the cycle of “creative destruction” by impeding rivals’ ability to develop new products or services that threaten its dominance. Sun Microsystems made such a claim against Microsoft’s efforts to impede Java’s cross-platform interface;¹⁰⁷ Microsoft leveled a similar accusation against Google for allegedly blocking search and indexing functions of rival search engines and mobile devices.¹⁰⁸

Enforcement that focuses on how a dominant firm’s conduct might exclude or deter innovation is, therefore, consistent with a Schumpeterian view of competition. It is less likely to make the error of prioritizing short-run prices over the greater benefits of innovation. The critical challenge is, as always, to identify conduct that has such harmful effects. The following sections discuss some ideas for recognizing monopoly conduct that harms innovation and for identifying mergers that will likely diminish innovation.

1. Innovation-Excluding Conduct

Any conduct that excludes rivals from the marketplace might harm innovation by eliminating potential sources of new products and technology. Not

¹⁰⁶ See Katz & Shelanski, *supra* note 25, at 4-5 (introducing the “Schumpeterian competition” argument).

¹⁰⁷ See *Microsoft II*, 253 F.3d at 74 (discussing actions Microsoft took after signing a Java distribution agreement that led a district court to find that Microsoft acted in an anticompetitive manner toward Sun Microsystems).

¹⁰⁸ Tiffany Kaiser, *Microsoft Shouts Antitrust over YouTube Snub*, DAILY TECH (Jan. 3, 2013, 10:11 AM), <http://www.dailytech.com/Microsoft+Shouts+Antitrust+Over+YouTube+Snub/article29542.htm> (reporting a Microsoft executive’s complaint about FTC inaction regarding Google’s anticompetitive conduct).

all such conduct is anticompetitive, however. As discussed in Part I, innovation itself excludes rivals by leaving them behind or by shutting them out of complementary product relationships, yet that innovation can still improve social welfare. United States law, as well as a body of economic thinking, strongly presumes that such innovation will be beneficial and should not be grounds for antitrust enforcement.¹⁰⁹ In theory, one can imagine a spectrum running from conduct that is purely exclusionary to conduct that is purely inventive. One might argue for introducing competition enforcement at the point in the spectrum where the costs of exclusion begin to outweigh the benefits of invention.

In practice, however, judging where that transition occurs is very difficult and is likely to lead to risky inquiries into either the value of an innovative effort or the motives for which it was undertaken. An example of such line-drawing problems involves Google's implementation of allegedly discriminatory search algorithms, which rank websites returned according to a proprietary formula that changes regularly. Google argues that its algorithm changes improve search results for consumers and weed out websites that game the ranking system to obtain artificially high placement in search results.¹¹⁰ But commentators and litigants have claimed that, regardless of the benefits that flow from some of Google's algorithm changes, other changes disable competitors regardless of the quality of those competitors' sites.¹¹¹

Assuming for the sake of argument that both claims are true—that algorithm changes improve matching of results but also harm some legitimate applications providers—there are several possible explanations for this mixed result. One explanation might be that algorithms are a constant work in progress and that some exclusion inevitably occurs when the algorithm, in its quest better to match answers to queries, reorders the ranking of search results. Another possible explanation is that algorithm changes

¹⁰⁹ See, e.g., *United States v. Microsoft Corp. (Microsoft I)*, 147 F.3d 935, 948 (D.C. Cir. 1998) (“Antitrust scholars have long recognized the undesirability of having courts oversee product design, and any dampening of technological innovation would be at cross purposes with antitrust law.”); *Berkey Photo, Inc., v. Eastman Kodak Co.*, 603 F.2d 263, 281 (2d Cir. 1979) (observing that the law encourages firms to compete aggressively); Richard Gilbert, *Holding Innovation to an Antitrust Standard*, COMPETITION POL'Y INT'L, Spring 2007, at 47, 60-61, 66 (describing the “no economic sense” test and noting that most courts that have dealt with cases alleging anticompetitive innovation have applied a standard that more closely agrees with such a test).

¹¹⁰ See Steve Lohr & Claire Cain Miller, *Living, and Dying, in Google's World*, N.Y. TIMES, Nov. 4, 2012, at B1.

¹¹¹ See Pasquale, *supra* note 72, at 157-58 (recounting an incident when Google changed its algorithm to prevent manipulation).

reflect a mix of corporate motives: to improve matching, but also to discriminate against particular rivals.

Competition enforcers could adopt a number of approaches to these mixed results depending on whether the changes are on balance more beneficial than harmful, or depending on whether the harms are intentional or not. Both inquiries, however, run the risk of calling into question a company's best judgment about how to engineer its own products. Finding that an innovation—say a new proprietary interface or product integration—is anticompetitive because the value of the innovation to consumers is deemed *ex post* to be outweighed by the costs of competitive exclusion will cause firms to hesitate to make beneficial product changes. Knowing that the firm could be punished for the effects the innovation has on rivals if the innovation does not turn out well (or perhaps turns out too well for competitors' tastes), the firm will raise the required *ex ante* probability of success and undertake fewer R&D efforts. Similarly, punishing a firm that has bad or mixed motives for undertaking innovation might harm consumers by deterring product changes that benefit consumers despite the firm's partly anticompetitive motives.

Absent compelling evidence, then, caution and modesty in enforcement are warranted in this area. This prescription comes not from a glib hope that competition or innovation will somehow eradicate any harm, but from the risk that intervention is as likely to make things worse as to make things better. Some have advocated for a government regulatory body to evaluate search algorithms and other intermediary behavior on the Internet.¹¹² There are compelling reasons to be very skeptical of interposing such a government review process into the ongoing and demanding process of private innovation. Algorithms change quickly and must adapt to gaming and manipulation by those seeking to profit from online search.¹¹³ Regulators are certain to know less about a new technology than those who invent and work with it daily. Moreover, regulatory processes and related litigation will inevitably become part of rivals' competitive strategy, distracting resources from competition and innovation in the marketplace. A much better course is for government to give a wide berth to innovation, even where the firm's intentions may not seem benevolent and where the conduct may appear to

¹¹² See, e.g., Oren Bracha & Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability in the Law of Search*, 93 CORNELL L. REV. 1149, 1167 (2008) (“[P]olicymakers should at least consider restrictions on the ability of search engines to manipulate their results.”); Pasquale, *supra* note 72, at 160 (describing the characteristics of search engines and carriers that “strongly militate” in favor of regulatory intervention).

¹¹³ David Segal, *The Dirty Little Secrets of Search*, N.Y. TIMES, Feb. 13, 2011, at B1.

harm competition at the same time that it benefits consumers. And where there is a compelling case for harm, ex post intervention on a case-by-case basis through antitrust law is preferable to general regulation in this context.

This wide berth does not, however, mean we should abandon enforcement or place all purportedly innovative conduct beyond the reach of antitrust law. *Microsoft II*¹¹⁴ gave significant deference to product innovation and integration, but clearly left open the door to a finding that such activity was a ruse or pretext for anticompetitive exclusion. It allowed for antitrust liability where a product innovation was not in some way different and better than what a consumer could do for himself, thereby preserving anticompetitive tying as a possible claim against a software platform.¹¹⁵

Generalizing from the *Microsoft II* decision, where innovation was clearly a pretext for harming rivals or for deterring rival innovation, competition enforcement should be available. Two kinds of conduct which digital platforms have been accused of undertaking would appear to harm innovation without constituting legitimate innovation: raising rivals' costs and forced free riding.

a. *Raising Rivals' Costs*

This first category of conduct comprises activities that impede rivals without benefitting consumers.¹¹⁶ It requires distinguishing innovation from activities undertaken to interfere with a competitor's product or service. In some contexts, this conduct may be justifiable. A producer whose product is reverse engineered might redesign the product to prevent rivals from free riding on the firm's technology. In other contexts, however, the free-riding defense does not apply. In *Microsoft II*, the court found that the defendant's commingling of Internet Explorer code with Windows code served no purpose other than to make it more difficult for consumers to use browsers other than Explorer.¹¹⁷ Such conduct had the effect of deterring competing browser innovation and of blocking new browser platforms that themselves could have supported complementary product development and threatened Microsoft's operating system monopoly. It created a barrier to competitors' efforts to innovate.

More recently, Microsoft accused Google of similar conduct: preventing rival search engines from fully searching and indexing YouTube, allegedly

¹¹⁴ 253 F.3d 34 (D.C. Cir. 2001).

¹¹⁵ See *id.* at 65-66.

¹¹⁶ See generally Steven C. Salop & David T. Scheffman, *Raising Rivals' Costs*, 73 AM. ECON. REV. 267, 267-69 (1983) (providing a general discussion of anticompetitive business practices that raise costs for consumers).

¹¹⁷ *Microsoft II*, 253 F.3d at 66-67.

constraining search rivals to video search results that were inferior to Google's. Similarly, the FTC investigated allegations that Google used proprietary interfaces (APIs) to make it harder for advertisers on Google's platform to move their ad campaigns to competing platforms. In the face of the FTC's investigation of such complaints, Google reversed its API policy. To the extent that a digital platform alters a product specifically to interfere with the competitiveness of rival platforms, it interferes with the growth of rivals and with the Schumpeterian cycle through which the currently dominant firm must innovate or be creatively destroyed.

The FTC's 2009 complaint against Intel focused on a different strategy for raising rivals' costs.¹¹⁸ In that case, the FTC charged, among other things, that Intel had engaged in a form of price discounting that effectively imposed a large tax on any computer maker that reduced its purchases from Intel and instead bought chips from Intel's competitor AMD.¹¹⁹ Customers received increasingly greater discounts as they bought larger shares of their chip needs from Intel.¹²⁰ From this, AMD experienced tremendous difficulty introducing advanced chips into the marketplace, allegedly allowing Intel to obstruct the growth of innovation-based competition in the microprocessor market.¹²¹ Intel settled the case with the FTC by entering into a consent decree prohibiting such market-share based discounting.¹²²

In the same investigation, the FTC examined complaints that Intel was designing certain of its chips deliberately to disable consumers from using rival Nvidia's leading graphical processors in tandem with Intel chips,¹²³ thereby blocking competing innovation in graphics technology.¹²⁴ As part of its consent order from the FTC, and without admitting liability, Intel agreed not to implement the disabling design change in the relevant class of microprocessors.¹²⁵ Neither aspect of the settlement was aimed at limiting Intel's competitive gains from innovation. Rather, the settlement focused on remedying Intel's alleged attempts to block disruptive innovation by competitors.

Enforcement actions taken against business conduct that raises rivals' costs face a number of objections. One possible objection is that design

¹¹⁸ Complaint at 8, *In re Intel Corp.*, No. 9341 (F.T.C. Dec. 16, 2009), available at <http://www.ftc.gov/os/adjpro/d9341/091216intelcmpt.pdf>.

¹¹⁹ *Id.* at 2.

¹²⁰ *Id.* at 3.

¹²¹ *Id.* at 5.

¹²² See FTC, *supra* note 52.

¹²³ See Complaint, *supra* note 118, at 4.

¹²⁴ *Id.*

¹²⁵ See FTC, *supra* note 52.

changes that appear to have the purpose of harming rivals could actually be genuine innovation efforts or procompetitive attempts to protect the firm's initial R&D investment. As such, some commentators have argued that antitrust law should not recognize predatory innovation or design change claims.¹²⁶ To require firms to interconnect their products or systems with rivals is a form of compulsory dealing that is disfavored in American antitrust law.¹²⁷ In this view, requiring Microsoft to write its operating system code in a way that makes it easier for Explorer's rivals to interoperate with Windows amounts to requiring Microsoft to deal with those rivals. Requiring a dominant search engine to allow rival search engines to return full results to their users from vertical applications owned by the dominant search engine is a similar example of compulsory dealing.

A pragmatic response to these objections is that the *Microsoft II* court found it possible to distinguish, for example, between Microsoft's commingling of browser and operating system code (anticompetitive) and Microsoft's embedding of a feature in Windows that sometimes overrode a user's choice of browser other than Internet Explorer (justifiable product design). Similarly, the court of appeals in *Microsoft I* was able to articulate and apply a distinction between technological integration that represents genuine innovation and product integration designed for anticompetitive foreclosure.¹²⁸ The court in *Microsoft II* stated that "[a]s a general rule, courts are properly very skeptical about claims that competition has been harmed by a dominant firm's product design changes," but nonetheless admonished that "[j]udicial deference to product innovation . . . does not mean that a monopolist's product design decisions are per se lawful."¹²⁹ Scholars have built upon *Microsoft II* to propose a variety of approaches to distinguishing innovation from exclusionary conduct.¹³⁰ A doctrinal response to these objections is that even U.S. law, which strictly limits refusal-to-deal or predatory innovation claims, does not entirely foreclose theories of harm based on exclusion of rivals from access to resources they need to compete.¹³¹ The *Microsoft II* court did not see the claims before it as pleas for mandatory dealing that would be barred by applicable refusal-to-deal cases. U.S. antitrust law recognizes claims where there is no business justification

¹²⁶ See, e.g., Gilbert, *supra* note 109, at 76.

¹²⁷ *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004).

¹²⁸ *Microsoft I*, 147 F.3d 935 (D.C. Cir. 1998).

¹²⁹ *Microsoft II*, 253 F.3d 34, 65 (D.C. Cir. 2001).

¹³⁰ E.g., Steven C. Salop & R. Craig Romaine, *Preserving Monopoly: Economic Analysis, Legal Standards, and Microsoft*, 7 GEO. MASON L. REV. 617 (1999).

¹³¹ See, e.g., *Trinko*, 540 U.S. at 408 ("Under certain circumstances, a refusal to cooperate with rivals can constitute anticompetitive conduct and violate § 2.").

for a change in an ongoing course of dealing, even when the claim demands that the dominant firm deal with its rival.¹³² Other jurisdictions, like the European Union, are more lenient and appear to recognize a somewhat broader duty to deal under an essential-facilities theory.¹³³

b. *Forced Free Riding*

Forced free riding occurs when a platform appropriates innovation by other firms that depend on the platform for access to consumers. For example, some online businesses have accused Google of “scraping” content from competitors—or potential competitors—in lines of business vertically related to Google’s search platform and using that content on its proprietary websites. Jeremy Stoppelman, the CEO of the review website Yelp, testified in a U.S. Senate hearing:

Websites typically allow search engines like Google to crawl and index their sites so that links to their sites can appear in response to relevant search engine queries. . . .

In 2010, Google began incorporating the content that it indexed from its competitors into Google Local without permission. Although Google had previously acknowledged that it needed a license to use Yelp’s content, it was now using it without permission to prop up its own, less effective product. In some instances, Google even presented this content to its users as if it were its own. . . .

In response to our objections, Google informed us that it would cease the practice only if we agreed to be removed from Google’s web search index, thereby preventing Yelp from appearing anywhere in Google web search results. This, of course, was a false choice. . . . [I]t is a choice between allowing Google to co-opt one’s content and not competing at all.¹³⁴

¹³² See, e.g., *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 604 (1985) (acknowledging that while a business has no duty to deal with its rival, attempting to exclude rivals on some basis other than efficiency is predatory anticompetitive conduct).

¹³³ See, e.g., James Turney, *Defining the Limits of the EU Essential Facilities Doctrine on Intellectual Property Rights: The Primacy of Securing Optimal Innovation*, 3 NW. J. TECH. & INTEL. PROP. 179, 179 (2005) (“For over fifteen years, the European Court of Justice . . . has accepted that in certain exceptional circumstances, a refusal to supply a potential competitor with an essential facility can amount to a [monopolistic act].”).

¹³⁴ *The Power of Google: Serving Consumers or Threatening Competition?: Hearing Before the Subcomm. on Antitrust, Competition Policy and Consumer Rights of the S. Comm. on the Judiciary*, 112th Cong. 247 (2011) (submission of Jeremy Stoppelman, Cofounder and CEO, Yelp! Inc.).

Mr. Stoppelman testified that Google was using Yelp's more developed service to fill Google Local's "relatively threadbare" site with content and reviews.¹³⁵ A similar complaint led to an episode in which Google acknowledged scraping the content of a website called Mocality, by both replicating its content and soliciting its customers.¹³⁶

Viewed through a conventional antitrust lens, the practice of content scraping appears to present more of an intellectual property issue than a competitive concern. But when viewed from the perspective of innovation, such conduct is damaging, even absent any intellectual property violation. This is because the process of appropriating the developments of downstream rivals disincentivizes future downstream innovation. Specifically, scraping sends the message that as soon as a firm develops a complementary product that is superior to the platform's proprietary complement, the platform will snatch the improvements for itself. This conduct also removes the platform's incentive to continue developing its own product, thus further magnifying the harm to competition.

The calculation for whether such forced free riding makes long-run economic sense for the platform remains complex. But there is reason to think that such "vertical arithmetic" is more favorable for scraping than for simple foreclosure of the downstream rival's access to the platform. A foreclosed vertical application is a potential loss for the platform in two ways: the absence of the application might make the platform less attractive to end users, and the application would be lost as a customer for advertising or other services the platform sells to complement providers. Therefore, while the platform might take some of the customers of the foreclosed application for itself, that gain might be offset by other losses. In contrast, with scraping, the platform might be able to drive some of the downstream rival's customers to itself without incurring the R&D costs it would otherwise take to gain those customers, all while keeping the rival as an attraction for end users and as a potential advertiser on the platform.

Raising rivals' costs and free riding are not "innovation," in that those activities do not contribute to the development and deployment of new or improved products. The raising-rivals-costs strategy is a product change, but one designed to harm competitors rather than to benefit consumers. Scraping and free riding involve the appropriation of others' investment in product development. Much conduct will not be easily classified as belonging

¹³⁵ *Id.*

¹³⁶ Jay Yarow, *Google Admits It Scraped the Database of a Kenyan Startup, Says It Was a Huge Mistake*, BUSINESS INSIDER (Jan. 14, 2012), http://articles.businessinsider.com/2012-01-14/tech/30626733_1_google-project-google-declines-business.

in one of those categories, or might appear to be simultaneously exclusionary and innovative. Antitrust agencies in those cases should tread lightly. But, as shown above, some “innovative” conduct is significantly more likely to harm competition. Antitrust enforcement should not shy away from addressing such conduct. Indeed, competition policy should take underenforcement errors as seriously as overenforcement errors. The goal here has been to identify conduct where reticent enforcement is likely to do more harm than aggressive enforcement, and to advocate a shift away from broad prescriptions of laissez-faire antitrust enforcement in digital platform markets.

2. Mergers and Innovation

Just as monopoly conduct can be examined for its effects on innovation, so too can mergers. A merger’s likely effects on innovation became an increasing focus in the 1990s.¹³⁷ While often mentioned as a factor in merger review, it was not until 2004 that a merger decision arguably rested solely on innovation considerations.¹³⁸ The FTC’s review of Genzyme’s acquisition of Novazyme focused on “whether the merged firm was likely to have a reduced incentive to invest in R&D, and also whether it was likely to have the ability to conduct R&D more successfully.”¹³⁹ The investigation did not address the usual horizontal merger issues of price or output effects and ultimately resulted in the FTC’s decision to allow the consummated merger to stand.¹⁴⁰ Most importantly, the analysis of innovation effects did not rely on the structural presumptions that usually apply to price effects, largely because the shaky presumptions that conventionally link price competition to concentration levels work even less well to link innovation to concentration levels.¹⁴¹ As a result, the FTC undertook a detailed, fact-intensive inquiry of the particular circumstances of the transaction to reach its determination that innovation would be helped more than hindered by the transaction.¹⁴²

Several features of an innovation-based approach to mergers are attractive for transactions involving digital platforms. For one, an analysis that

¹³⁷ See generally Katz & Shelanski, *supra* note 25, at 81.

¹³⁸ *Id.*

¹³⁹ Genzyme Corp./Novazyme Pharm., Inc., No. 021-0026, at 6 (FTC Jan. 13, 2004) (Statement of Chairman Timothy J. Muris) [hereinafter Muris Statement], available at <http://www.ftc.gov/os/2004/01/murisgenzymestmt.pdf>.

¹⁴⁰ *Id.* at 1.

¹⁴¹ Katz & Shelanski, *supra* note 25, at 16-24.

¹⁴² Muris Statement, *supra* note 139, at 2-6.

expressly takes into account how a merger might affect innovation expands the kinds of merger benefits an agency will consider. The FTC took this approach in the Genzyme/Novazyme merger¹⁴³ and has continued to do so in appropriate merger cases, as the discussion below of the proposed Thoratec/HeartWare merger will show. Where the necessary data is available, agencies can assess innovation effects of a merger through an effects-based approach that does not rely on the market definition—a difficult approach in technologically dynamic markets.¹⁴⁴ Such an examination looks instead at whether the transaction is likely to enhance or inhibit the merging firms' incentives and abilities to invest in developing and introducing new products. When available, the innovation-based merger analysis allows for welfare-enhancing enforcement even when there is significant uncertainty about what products will be relevant in the future and what their market structures will be. As the following example illustrates, however, the necessary evidence will not always be available for this analysis.

Thoratec's proposed merger with HeartWare, which the FTC blocked in 2009, provides a good illustration of how an innovation-based merger analysis might work.¹⁴⁵ Thoratec made the only government-approved left ventricular assist device (LVAD) in the U.S. market.¹⁴⁶ LVADs are surgically implantable blood pumps that sustain patients who suffer from end-stage heart failure.¹⁴⁷ HeartWare was a potential entrant whose own LVAD product was well into the FDA approval process and promised several advantages over Thoratec's LVAD.¹⁴⁸ A potential benefit of the merger was that Thoratec's experience and distribution channels might help overcome remaining regulatory and marketing hurdles and enable the merged firm to get HeartWare's LVAD to patients sooner. Against this potential efficiency benefit was the issue that Chairman Muris identified in *Genzyme*¹⁴⁹: Would a post-merger Thoratec have as strong an incentive as an independent HeartWare to bring the product to market? Weighing these competing

¹⁴³ See Katz & Shelanski, *supra* note 25, at 81-85 (discussing the FTC's analysis of the Genzyme-Novazyme merger).

¹⁴⁴ See *supra* Section I.B.

¹⁴⁵ Complaint, Thoratec Corp. & HeartWare Int'l, Inc., No. 9339 (FTC July 28, 2009), available at <http://www.ftc.gov/os/adjpro/d9339/090730thorateadminccmpt.pdf>.

¹⁴⁶ *Id.* at 1-2.

¹⁴⁷ *Id.* at 1.

¹⁴⁸ *Id.* at 2.

¹⁴⁹ Statement, *supra* note 139, at 6.

factors, the Commission issued a complaint to block the merger, which the parties subsequently abandoned.¹⁵⁰

The complaint alleged that (1) competition from HeartWare had already forced Thoratec to innovate;¹⁵¹ (2) no other firms working to develop LVADs posed as strong a competitive threat to Thoratec as HeartWare;¹⁵² and (3) upon receiving FDA approval, HeartWare would take significant market share from Thoratec.¹⁵³ Taken together, these allegations led to the conclusion that by acquiring HeartWare, Thoratec would face less competitive pressure to bring the new product to market. With information about prices, margins, and likely diversion ratio, one can quantify this effect and compare the pre- and post-merger incentives to bring HeartWare's product to market.¹⁵⁴

Section 6.4 of the 2010 *U.S. Horizontal Merger Guidelines* describes this general approach.¹⁵⁵ When an incumbent introduces a new product that rivals its preexisting product, some customers will abandon the incumbent's preexisting product for this new product. This "cannibalization" effect discourages incumbents from introducing new products. Suppose that Firm 1 produces product A and that a rival, Firm 2, is developing innovation B , which will compete with A . If introduced, product B will draw a fraction d of its sales from customers who would otherwise buy A (thus d is the diversion ratio). Let M_A be the profit margin that Firm 1 earns on incremental sales of A , and let M_B be the profit margin that (for simplicity) either firm would earn on sales of B once introduced.

Firm 2's profit from introducing B and selling Q units exceeds its cost, C_2 , of product introduction if $M_B Q \geq C_2$. But if the firms have merged and no other entry is imminent, the merged firm will find it profitable to introduce B only if $[M_B - dM_A]Q \geq C_M$, where C_M is the merged firm's cost of product introduction. If dM_A is not much less than M_B , then the merged firm may well find the introduction much less profitable than would an independent Firm 2, even if the merged firm's cost of introduction is considerably lower. This example illustrates how a merger can dramatically affect the incentives to introduce an innovative product—what we might call downward innovation pressure (DIP).

¹⁵⁰ Justine Varieur Cadet, *Thoratec Abandons \$282M Purchase of HeartWare After FTC Block*, HEALTHIMAGING (Aug. 3, 2009), <http://www.healthimaging.com/topics/diagnostic-imaging/thoratec-abandons-282m-purchase-heartware-after-ftc-block>.

¹⁵¹ Complaint, *supra* note 145, at 2.

¹⁵² *Id.* at 4.

¹⁵³ *Id.*

¹⁵⁴ *Id.*

¹⁵⁵ See HORIZONTAL MERGER GUIDELINES, *supra* note 21, § 6.4.

The DIP comes from the fact that, if a monopolist innovates (as previously discussed) it will cannibalize its own sales. This cannibalization deters innovation and narrows the conditions under which the monopolist will invest in a next-generation product. A monopolist might still innovate if it can increase demand by improving the product, reduce costs to improve per-unit profits, or reduce demand elasticity in order to charge a higher per-unit price. Under some conditions, a monopolist might also be able to coordinate prices of the new and incumbent products in such a way as to make the new product more profitable than if it introduced the product on a standalone basis.¹⁵⁶ A monopolist will not, however, undertake all innovations that a new entrant or a firm facing competition would find profitable to invest in, and therein lies a potential cost in allowing mergers that eliminate or substantially reduce competition where innovation is important.

This example—which can be generalized with some additional complexity beyond the case of merger to monopoly and can be extended to vertical mergers—demonstrates how a transaction can lead to very different pre- and post-merger probabilities of the introduction of an innovative product. Firms claiming the need for an emergency merger will emphasize the greater capability of Firm 1 than of the struggling Firm 2 to bring the new product to market. But claims about capability should not obscure a transaction's effects on incentives to exercise that capability.

It is certainly the case that the analysis described above will not be possible in all, or even many, cases. But experience has shown that where it is possible, this analysis provides a tool for the agencies to use in appropriate circumstances. Moreover, the Google/AdMob merger demonstrates that in some cases the relevant analysis can be undertaken using documentary evidence rather than quantitative economic data. It was widely reported, and Google itself acknowledged, that it was buying AdMob to accelerate the growth of its mobile advertising business—Google was acquiring technology it would otherwise have built itself.¹⁵⁷ Blocking the transaction would have forced Google to innovate, and would have left AdMob with further incentive to keep developing its own technology. It therefore became the parties' burden to show either that the merger would have offsetting efficiencies in the form of producing better technology sooner or that there were enough other sources of innovation in mobile advertising that the consolidation should not be viewed as reducing technological progress.

¹⁵⁶ Yongmin Chen & Marius Schwartz, *Product Innovation Incentives: Monopoly vs. Competition* 20 (Dep't of Econ., Georgetown Univ., Working Paper No. 09-02, 2010), available at <http://www8.georgetown.edu/departments/economics/pdf/902.pdf>.

¹⁵⁷ See *supra* notes 33-36 and accompanying text.

As with the innovation-based analysis of monopoly conduct, innovation-based analysis of mergers will not be feasible in all investigations. In some cases, the sources of innovation are simply too hard to discern and a transaction's effect on the parties' incentives to develop and deploy new technology cannot be judged. But in other cases, focusing on innovation is illuminating and could reveal anticompetitive effects that would be overlooked by traditional analyses or by erring on the side of underenforcement. The evidence of a merger's effects on innovation incentives could be quantitative, as in *Thoratec/HeartWare*, or documentary, as in *Google/AdMob*. When evidence of either kind is sufficiently strong, competition authorities should challenge a merger that would likely reduce innovation. Through such challenges, merger scrutiny can promote innovation even in technologically dynamic markets.

CONCLUSION

This Article has attempted to identify some of the important economic characteristics of digital platforms and to discuss their implications for competition policy. To date, the debate over antitrust enforcement on the Internet has been between those who argue for a systematic retreat from intervention because of the fast changing, technologically dynamic market environment, and those who argue for aggressive regulation of currently dominant platforms. I share many of the skeptics' concerns about the conventional competition enforcement against digital platforms, but I also think there can be significant and avoidable welfare costs from underenforcement errors in high-technology markets. I, therefore, agree that competition policy should be cautious in addressing digital platforms, but I argue that antitrust enforcement should also change in ways that make competition analysis more suitable to the characteristics of the Internet and its associated industries. I try to contribute to that process of change by discussing how a further shift in emphasis from price and output effects to information and innovation effects could alter the error cost balance and reduce costly mistakes of underenforcement. I have tried to explain why these changes are particularly important for competition policy in digital platform markets and to offer some preliminary, specific directions that those changes, and future research in competition policy, might take.