Antitrust and High-tech: Regulatory Risks for Innovation and Competition

By Ronald A. Cass*

I. Target Selection in an Innovation Economy

A. Regulatory Power, Regulations' Problems, and Antitrust

While government regulators almost inevitably are chastised for doing too much or too little, antitrust officials generally have escaped the harshest reviews from regulatory critics and often have garnered a measure of praise even from regulation skeptics. The widely held assumption that antitrust laws serve to protect competition and consumers has provided cover to antitrust regulators, whose basic mission (if not all the particular applications and initiatives) generally was applauded by academic observers, businesses, and politicians.

Yet the authority enjoyed by antitrust regulators—to pick regulatory targets, investigate their business activities, initiate antitrust prosecutions, and, if successful (winning a case or securing a settlement), generate substantial fines plus on-going regulatory constraints—is an awesome, largely unconstrained, and dangerous power.[1] Wrongly exercised, it can encourage investments in rent-seeking (manipulating government) and undermine economic growth, competition, and innovation, especially where the focus of the antitrust inquiry is whether an individual firm has abused its position as a market leader ("monopolization" cases in the United States and "abuse of dominance" inquiries in Europe and much of the rest of the world).[2] The problems are most acute where the potential target's business is in fields such as high-technology, which has several features that exacerbate difficulties with government investigation and prosecution of leading firms.

Increasing attention has been paid to the divergence between conjectures that unchecked behavior of market leaders can harm consumers and the reality that government interventions most often serve the interests of rival firms. The most important reasons for the disconnect trace to regulators' failures to appreciate the breadth of competitive activity, the speed with which changes can occur (particularly in rapidly evolving sectors such as high-technology), and the damage that untoward government interventions can do to incentives to innovate and to compete.

B. Innovation Economy: Characteristics and Consequences

America's economy, like that of much of the developed world, increasingly is tied to the fortunes of innovators and of entrepreneurs running innovation-based businesses. The U.S. Department of Commerce reports that intellectual property-intensive industries (those based on rights to innovative and creative work) have been growing at a rate 60 percent faster than all U.S. industries, that they account for more than a third of the U.S. economy, and that they also generate more than 60 percent of all U.S. merchandise exports.[3] Although these industries represent only about one-quarter of the American workforce, they have a much larger impact on the economy and are important drivers of economic growth.

They also have an outsized effect on our lives, accounting for an amazing transformation of the way we do so many things over the past century.[4] An array of new products are envisioned, designed, engineered, and marketed by high-technology firms has changed the way we communicate with one another, the way we spend our leisure time, the way we access information, do our work, travel, and much more. We've gone from the days of communicating by hand-written notes delivered after days or months of travel by sea or overland, to a time of instantaneous communication across continents by e-mail and cell-phone, from mental arithmetic to slide rule to room-sized computers with minimal memory and modest calculating power at astronomical cost to nearly ubiquitous computing power at minuscule cost. Compare the Univac (the first notable, commercial computer) with today's smartphones. When first offered for sale, Univac weighed between 7 and 8 tons, was the size of a room, cost roughly $7 million in current dollar terms, had a memory of 1,000 words, and could make fewer than 2,000 calculations per second.[5] A smartphone today weights 3 to 5 ounces, fits in a pocket or purse, costs between $100 and $500, stores up to 64 gigabytes of information, performs 100 million operations per second—and also doubles as a still and video camera, phone, GPS locator, calculator, Internet connection, game player, music and movie player, and much more.[6]

The nature of high-technology industries where high investment in innovation, substantial economies of scale or network effects,[7] and rapid change in what consumers prize leads to individual companies growing rapidly and dominating particular sectors until the next big thing comes along. These "winner-take-all" or "winner-take-most" markets are common in high-technology sectors. This may explain why the most valuable public company in America today—and the most valuable ever—is technology titan Apple, with a market capitalization in excess of $620 billion as of August 2012. That figure passed the record set by another tech giant, Microsoft, in 1999 (though, adjusting for inflation, Microsoft's high-water mark would come out ahead).

Yet just as this sector can be characterized by rapid rises, it also can see rapid falls from the top. Facebook, which has now passed the billion user mark, may still be the dominant social network, but its stock value fell by half in just a few

*President, Cass & Associates, PC; Chairman, Center for the Rule of Law; Dean Emeritus, Boston University School of Law; senior fellow, International Centre for Economic Research. *The author appreciates helpful comments from participants at George Mason University's Second Annual Conference on Competition, Search and Social Media, as well as research support from the Center for the rule of Law and the International Centre for Economic Research.*

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months after a much-anticipated public offering in the spring of 2012. Other high-tech businesses offer starker illustrations of the volatility of the sector:

These markets attract enormous attention from innovators and entrepreneurs: the opportunity to leap to the front of the line with a new idea attracts competition to replace market leaders – competition that explains why a host of once-thriving companies have left the high-tech stage. Atari was once the leader in personal computing; so was Compaq. Wang led in word processing, as did MicroPro (WordStar) and SSI (WordPerfect). Some companies run fast enough to stay ahead of the pack, at times for a good while, but turnover in market leaders – even those that seem well-positioned to stay in front – is characteristic of these innovation-driven markets.[8]

Entry into these innovation markets is much easier than in markets that depend on traditional manufacturing or similar inputs; innovators can be rewarded for ideas at early stages; and the public obviously benefits from the new concepts and new companies that emerge from a relatively open competition taking place over time and across traditionally-recognized market boundaries. Mostly, the very characteristics that generate high concentrations at the top of the market for a time and high returns to the most successful firms also attract investment in trying to come up with the innovation that will replace the leader, perhaps by establishing a new, successor market sector.[9]

C. Applying Antitrust to High-Tech

Antitrust authorities need to exercise special care in making enforcement decisions respecting high-technology industries. Well-known problems of centralized decision-making (a common feature of regulatory schemes, including public antitrust enforcement) are rooted in limited information available to the decision-makers along with difficulties of analysis and prediction (attributable in part to changeable personal value judgments, in part to complexity, and in part to the extremely large range of potential paths that business, social trends, and technology can take).[10] High-technology cases involve technical issues that are not readily understood by non-specialists and business directions that are not obvious even to the best-informed insiders.

The mismatch between hope and change in using antitrust to regulate the leading high-tech firms is more pronounced because, while the concerns over network effects are dynamic, the principal tools for antitrust analysis—especially respecting definition of the relevant market—are static. These tools almost inevitably orient enforcers' decisions toward excessive concern with one part of what, rightly understood, is a much larger competitive picture, even though the composition of the larger picture is difficult to predict. Theories have emerged that, if embraced by the courts, could give antitrust enforcers much greater scope for restraining aggressive competition from market-leading individual firms, but these depend on assumptions about the limits of market competition that seem ill-suited to high-tech markets where new ideas allow one firm to replace another and one technology to replace another in unpredictable fashion.[11]

Rather than demonstrating special caution in venturing into this set of cases, however, antitrust enforcers seem anxious to engage the leading high-technology firms while markets are evolving at a rapid pace. Among the companies publicly identified as actual or potential antitrust targets in recent months are Facebook, Apple, Yahoo, Google, IBM, AT&T, Microsoft and Intel. How the government handles decisions respecting these firms has important implications for the economy and for innovation.

Antitrust inquiries can exact extraordinarily high costs from target firms, both in direct expenditures and in distraction from core business operations.[12] Even inquiries that do not result in suits can be costly and disruptive. And in fields characterized by dynamic competition, there generally is little reason to expect that inquiries into individual firm conduct on dominance grounds will be socially beneficial—at least if pursued beyond an initial, cursory review; not only is it unlikely that there single-firm conduct will generate serious harm to consumers (as opposed to competitors), but whatever benefit in expanded competition might be produced by litigation is apt to be largely attained from market forces in any event. In other words, the incremental remedial benefit from investigation and litigation is apt to be modest when it exists at all.[13]

Further, the expected costs of antitrust inquiries and prosecutions by enforcement authorities will influence behavior of prospective targets before any specific investigation is begun—largely in ways that will not be socially beneficial. As the expected costs associated with antitrust investigations and litigation rise, incentives decline for investment in the activities that generate potential enforcement actions, including investments in initial innovation, follow-on improvements, and aggressive competitive conduct (often exactly the sort of conduct that results in lower prices, improved products, and reduced costs of acquisition, access or operation for consumers).

"Aggressive competition" may sound bad to antitrust enforcers and antitrust-enthusiast academic theorists, but aggressive competition tends to deliver benefits to consumers, whether from a business offering the lowest prices, most or most convenient store locations, longest hours, most extensive and extensively integrated set of product features, or any other "most" that sets a business apart from its rivals.[14] Excessively vigorous antitrust enforcement activity inevitably translates into insufficiently vigorous competition in exactly the markets the enforcers and theorists want to make competitive.[15] Looking at some examples of past government investigations and prosecutions suggests lessons for future decisions.

II Antitrust's Past Misses

Four notable antitrust enforcement initiatives targeting iconic American enterprises—IBM, Microsoft, General Motors, and AT&T—provide a window onto the way that government enforcement efforts function and the sorts of considerations and information available to enforcement officials when they are making their decisions. These four episodes include three long-running antitrust actions and one instance in which the government, after years of investigating and gearing up for a prosecution, ultimately decided against litigation.

A. The IBM Case

The paradigmatic case for ill-conceived antitrust enforcement may be the action filed against IBM as President Lyndon Johnson's administration departed in 1969. This was the Ramsey Clark Justice Department's signature antitrust enforcement action. The Department accused IBM of illegally monopolizing the market for computers, contending that IBM violated Section 2 of the Sherman Act by bundling sales of its mainframe computers with sales of software and maintenance services.[16] There is a great deal to criticize in the concept at the heart of the IBM case, given the almost universal use of similar bundling practices, even in the most aggressively competitive markets, and the evidence that these practices often benefit consumers.[17] Even for those who are not entirely sold on the arguments against tying theory in general, the central assertions in the *IBM* case seem questionable.[18]

Even more problematic, however, was the government's definition of the market IBM assertedly monopolized. This encompassed only general purpose electronic digital computers, excluding a large number of other computers that, if not individually providing the same computational heft as IBM's mainframes, nonetheless offered computing options that in combination could certainly substitute for mainframes.[19]

DOJ's view of the market was demonstrably too narrow to capture the actual competitive conditions among those providing and utilizing computing equipment, but even more, it seriously misjudged the way the computer market more broadly conceived was evolving. Mini-computers, micro-computers, and distributed (as opposed to centralized) data processing would soon turn the computing industry on its head.[20] From the vantage of twenty years after the government's capitulation in the *IBM* case, it's clear the development of smaller computers was able to replace functions formerly performed by mainframes,[21] despite the supposition that there was not real competition between them. The problem with the government's case is not that it failed to see the ultimate impact of developing technologies, many of which lay just over the horizon, but that the regulators thought they knew enough to see that the market would continue to be essentially as it was in the late 1960s.

In addition to the weakness of the underlying allegations, from an economic perspective, those who have studied the *IBM* case have reported the toll the case took on the company.[22] Simply on the financial side, the case was a significant drain on the company, costing IBM something on the order of $1 billion (a figure that would be equivalent to between $4 and $5 billion today).[23] As Don Waldman observed, "[t]he opportunity costs of spending $1 billion on antitrust defense are astounding."[24] Beyond the direct financial cost, the antitrust litigation affected IBM's fortunes by distracting its executives from planning and executing functions necessary to the company's long-term business interests and by discouraging decisions that would have benefitted the business but risked triggering further antitrust action.[25] The government collected more than 750 million documents, pried into every aspect of the firm's operations, and threatened to impose severe sanctions on the firm for practices that seem indistinguishable from what competitors normally do —an inquiry that "paralyzed IBM."[26] Bill Kovacic noted both the inhibition on aggressive competition and the distraction from focusing on the core business considerations, saying "The diversion of firm personnel to support the case, as well as the time employees spend in casual conversation or mental speculation about the status of the case, silently bleeds the company's creative resources and blurs its competitive vision."[27]

Given the rapid change in the market for computing—an evolution the Department of Justice lawyers who designed the antitrust suit plainly did not foresee—the government ultimately decided to abandon the case.[28] In the end, the case stands for the proposition that government officials, even with the benefit of extensive investigation and expertise, often will not appreciate the most important sources of competition to enterprises that dominate a particular market and are prone to ill-advised interventions based on theoretical objections to market structure.[29]

B. The Microsoft Case

Like its case against IBM, the government's case against Microsoft challenged the then-dominant technology company in the area of computing technology that seemingly would be the dominant means of computing for the foreseeable future. Like *IBM*, the government's case viewed Microsoft's conduct largely through the lens of its impact on competitors, with assertions of consumer harm developed as derivative of the limitations on competing businesses. Like *IBM*, the government's case rested on a relatively narrow market definition, looking only at operating systems running on IBM-compatible personal computers (a definition that, for instance, excluded Apple's operating system). And, like *IBM*, the *Microsoft* suit asserted a violation of the Sherman Act through bundling—in this case, by including an Internet browser in its operating system and by offering the browser at no charge. In *Microsoft*, the government more fully rested its arguments on the concept that network effects explained both the motivation for Microsoft's conduct and the harm done by it to competition in the market.[30]

While the case had a number of twists and turns, culminating in a nominal win for the government, the most far-reaching conclusions were not upheld and in particular the test the government argued for on tying was rejected by the U.S. Court of Appeals for the D.C. Circuit.[31] The appeals court's decision crafted a special rule for tying in computer software cases, one that created a substantially higher hurdle for the government than prior precedents suggested and certainly far higher than the rule urged by the government and accepted by the District Judge.[32] Argument over the proper test continues, but the government has not won a major tying decision in the aftermath of *Microsoft* and no doubt will face an uphill battle on that front in any high-technology case, not simply cases involving computer software.

Above all, *Microsoft* stands as another illustration of the difficulty of predicting market changes and the strong likelihood that government antitrust enforcers will take too limited a view of the scope of market competition (reflected in too narrow a definition of the relevant product market). As Bob Crandall and Chuck Jackson explain, the government's market definition artificially omitted features routinely included in operating systems from Microsoft, Apple, GNU/Linux, and other major sources of PC operating system software.[33]

The government's market definition also failed to capture

the dynamic nature of the market. Crandall and Jackson point to the roles that tablets and smartphones play today, functioning in ways that overlap with PCs; the operating systems running on those devices necessarily are competitive in significant measure with the operating systems running on PCs.[34] In fact, recent studies show that the majority of time spent on smartphones now is devoted to activities other than telephone conversations.[35] The same point on market evolution holds for other products, such as servers, and for cloud computing as well, which increasingly offers an alternative to the PC and to a variety of features typically included in the PC operating system. The smarter the cloud and the more consumers rely on it, the less they need in a PC or its operating system.

While the government drew a picture of Microsoft as a company without serious competition, the company's leaders recognized that the next generation of high-tech firms – companies like Google – had the potential to turn the Internet into a substitute for much of what was being done by the PC and the systems that make it run.[36] Everyone can now see what Microsoft's officers knew at the time: the real competitive threat to the company came from innovations that lay outside the market defined and examined by government officials.

C. General Motors—The Case That Wasn't

Well before Microsoft was under antitrust scrutiny—in fact, before it was incorporated—antitrust enforcers were taking a long, serious look at another seemingly unstoppable colossus benefitting from network effects. The company was General Motors (GM). From the mid-1930s to the mid-1970s, GM was the dominant automobile firm in the U.S. and, at least for most of this period, the world.[37] General Motors accounted for between 40 percent and 50 percent of automobile sales in the U.S. during this forty-year stretch.[38]

GM's success was attributed, among other things, to what are often termed indirect network effects—effects dependent on the number of people using a product or service but not necessarily on the ability of those people to interconnect directly with one another.[39] General Motors had a large network of dealers, including dedicated after-purchase service expertise, which was a critical consideration for many consumers in choosing which automobile to buy. Not surprisingly, when buying a car, consumers want assurance that there will be sufficient quantities of parts available for repairs far into the future and that repairs services will be available at locations convenient to them. The larger the number of cars sold by a given company, the easier it is to support a repair network; conversely, the larger the repair network, the more valuable the car (other things equal) and the easier it is to make additional sales.[40]

Those who were thinking about the economics of the car market in the 1950s, 1960s, and 1970s did not conclude that network effects in the automobile business led inevitably to a tipping point that would send all or almost all the purchasers to the company with the most sales and service franchises. But commentators did conclude that economies of scale affecting service availability and related matters helped limit the number of car companies that could compete effectively.[41] In the mid-1960s and again in the mid-1970s, federal antitrust enforcement authorities (first in DOJ, then in the FTC) were concerned enough with the concentration of the automobile industry among the "Big Three" U.S. auto makers, and with GM's dominance in particular, to reach at least tentative decisions that they should file charges against GM for unlawful monopolization and seek to break up the company.[42]

The cases were prepared after decades of GM dominance during which the Big Three (GM, Ford, and Chrysler) American car companies' sales accounted for 80 to 90 percent of the U.S. market. But, as Former FTC Chairman Tim Muris notes, the antitrust enforcers' concerns about enduring market dominance were oddly timed, to say the least.[43] The issue here was not one of market definition but of understanding the dynamics of the market. One of the key assumptions behind the move to break up GM was that foreign auto makers would not provide significant competition to domestic products in the U.S. market. The assumption was based on retrospective evaluation of the U.S. automobile market and personal experience of a small number of government officials based on the East Coast.

The information needed to throw cold water on the foreign-cars-don't-matter assumption, however, was readily accessible; as the last round of charges was being prepared, import shares in the U.S. car market were rising rapidly, and would continue to rise steadily over the next decade before pausing, then rising again. Imports accounted for an average of less than one percent of U.S. car sales between 1946 and 1955 and roughly six percent between 1956 and 1965, but that figure rose to more than 10 percent between 1966 and 1970, more than 15 percent between 1971 and 1975, over 20 percent between 1976 and 1980, and more than 25 percent between 1981 and 1985. By 2009, non-American brands accounted for over half the U.S. automobile market; GM, Ford and Chrysler (which had been bought and sold by German auto maker Daimler Benz and in 2009 was acquired by Italian auto maker Fiat) together accounted for the same share of the market that GM alone had commanded 30 years earlier, with Honda's U.S. sales exceeding Chrysler's and Toyota's surpassing Ford's.[44]

This massive case that almost was is another illustration of government's too narrow and too static vision of market competition. By the time the antitrust authorities were making their final effort to end what they saw as GM's long-run dominance, its run was coming to an end.

D. The AT&T Case

Another major government enforcement case was the DOJ's action against AT&T, asserting that the nation's dominant telephone company had suppressed competition in the long-distance and terminal equipment markets. The suit, filed in 1974, resulted in AT&T's break-up in 1984, separating "Ma Bell's" operations into regional holding companies that oversaw local telephone services and a core set of long-distance and research functions.[45]

After the break-up, AT&T's share of long-distance revenues fell from more than 90 percent in 1984 to less than 40 percent in 2000.[46] How much of this change can be connected to the antitrust case and its remedy, however, is questionable. As Eli Noam has argued, similar changes very well could have

occurred for other reasons.[47] Changes in the technology for delivering communications services and the nature of demand for those services were important driving forces, independent of the legal structure in this market. Indeed, within a few years, pieces of the broken up system began recombining, and twenty years on, one of the original "Baby Bell" regional operating companies acquired what remained of AT&T (changing its name to keep the iconic label). And, as in other cases discussed above, the government regulators did not see these changes in either technology or business coming.

The AT&T case exceptional, though, because pricing in the telephone services market targeted by antitrust officials was controlled to a substantial degree by other government officials. AT&T was a regulated monopoly; its prices and practices were subject to government supervision; and the conduct at issue in the antitrust suit cannot be understood apart from decisions of the Federal Communications Commission. For decades, the FCC had pushed telecommunications providers to provide "universal service" at relatively uniform rates, regardless of geography and actual costs. In response, telephone companies used funds provided by higher charges for long-distance services to subsidize services for rural and other higher-cost users.[48] Without protected markets in long-distance, such cross-subsidies were not possible.

When the technology of long-distance service began to change in the 1950s and 1960s, AT&T naturally resisted steps that would have facilitated competition. Increased competitive provision of long-distance services would have the effect of eroding the revenue source for the subsidies without limiting the obligation to subsidize high-cost users. The typical regulatory response against such "cream-skimming" (real or perceived) is to restrict competition.[49] But the FCC and the courts permitted competitive entry in relatively high-revenue facets of the market, setting up the steps taken by AT&T to protect its revenue stream.[50]

In a real sense, the antitrust suit was the product of sharply differing views of antitrust enforcement officials and officials charged with regulating the telecommunications industry. The technology of the industry was changing, and within a generation the seemingly inevitable and indestructible monopoly of AT&T had ended, victim of shifts to cellular telephony, enhanced data communications, and changing cost structures for communication as well as a dramatically changed regulatory environment. Whether the regulatory authorities did well or poorly, it is doubtful that antitrust authorities had better information or better legal basis for endeavoring to remake the industry.

III. Lessons and Suggestions for Enforcers

The four antitrust cases discussed here illustrate difficulties with regulatory interventions intended to restrain conduct of leading firms in industries that can change rapidly and unpredictably. All four cases targeted firms suspected of trying to extend or expand their leading positions by disadvantaging competitors. Of course, firms constantly try to succeed in part by conduct that disadvantages competitors, and regulatory agencies commonly are responsive to concerns of competitors.[51] In all but one of the antitrust cases discussed here, the conduct at issue looked a great deal like ordinary competitive conduct.[52] Using network relationships for business promotion is neither nefarious nor confined to monopolies, and bundling features or products together is a nearly ubiquitous practice, utilized by businesses in the most highly competitive fields as well as by dominant firms.[53]

Much like any other government official reviewing arguments opposing regulatory intervention, antitrust enforcement officials commonly are skeptical of assertions by enforcement targets that challenged conduct increases efficiency, reduces cost, or raises value to consumers (the explanations that generally defeat antitrust claims). But arguments *against* the efficiency or consumer benefit of the targets' actions should be viewed with equal skepticism, as they are pushed principally by people with every bit as great an interest in slanting the argument.

The overarching caution to antitrust enforcers that emerges from the cases reviewed above is against presuming that the obvious, common-sense boundaries around a market—what led to the description of IBM as dominating the market for computing or Microsoft the market for PC operating systems or GM the U.S. auto market or AT&T the market for telephone services—appropriately set the field of vision for antitrust enforcement (much less the artificially circumscribed market definitions that enforcers will urge when a case has been initiated). The market boundaries that so often are taken for granted frequently fail to capture the most important sources of competition.[54] That is true even in markets as "old-line" and seemingly simple as the auto market, but it is even more likely to be true in high-technology industries where, almost by definition, new innovations will revise established assumptions about how things are done.

The market definition problem reflects more than the fact that officials so frequently cannot see changes coming that will dramatically alter competitive conditions in an industry. Almost no one, even those most intimately engaged in the industry itself, is apt to make good predictions about which technologies will succeed or what the ultimate scope of a new technology will be. The more trenchant flaw in antitrust enforcement is the difficulty for government officials to discern the critical factors that explain what actually makes a particular firm dominant, the factors that affect the durability of dominance, or the kinds of change in the market (either on the demand side or the supply side) that could dramatically erode that dominance.[55] Those who were pushing for antitrust restraints on IBM, Microsoft, GM and AT&T viewed network effects as the primary source of dominance. This supposedly explained why each company would continue to dominate a particular market segment and be able to increase its presence in that segment or spread its dominance across different products and services. As already noted, however, network effects also can have just the opposite effect: they can be the reason that a firm's dominance comes to an end, as the success of a dominant firm is a spur to investment in competing technologies, including technologies that will tap network effects to replace the successful product or service based on established technology.

In this respect, the current high-technology focus of Section 2 antitrust enforcement is especially striking. The list of potential enforcement targets includes an array of firms that

were not in existence when the Department of Justice was suing IBM. Facebook, which is just taking its stock public as this is written, was launched in 2004; Google dates from 1998; Amazon was founded in 1994; Apple, though started in the mid-1970s, was on the brink of bankruptcy in 1997 before its resurgence (making this a reasonable date to think of it as being re-born). Each one has a business that arguably benefits greatly from network effects.[56] At the same time, these businesses also are built on technologies that have evolved rapidly, generating new markets or replacing older technologies once considered durably dominant.[57]

Despite the networks they have established, each of these businesses also is notable for the relative ease with which consumers can switch from one provider (or one technology) to another—allowing consumers to substitute one product or service for another or, in many cases, to add products or services from multiple providers at minimal or zero cost. Just as consumers can add new browsers at the touch of a button and can use multiple browsers on their PCs, they can easily switch among search engines and social media. Search is especially easy to diversify, and consumers frequently use different search engines when seeking different types of information (for example, switching to a specialized search engine for music or travel)[58]; similarly, if less obviously, consumers also can be connected to more than one social network.[59] Unlike computer hardware (IBM's principal domain and the focus of the DOJ suit), consumers do not need to make huge investments in equipment or in special tailoring of goods and services for most of the products and services that are currently holding antitrust enforcers' attention. Even more than with the firms challenged before, these are markets in which new firms and ideas come along quickly and take hold fast. Facebook, for example, in only eight years went from a concept that didn't make sense to many people over the age of 40 to a business with more than a billion users.[60]

So, what should officials do when asked to look at claims against leading firms in arenas where evolving market conditions might make intervention unnecessary at best and counterproductive at worst? Both Democrat and Republican administrations have endeavored to incorporate dynamic analysis (of sorts) into evaluation of markets and calculation of appropriate government action.[61] But these efforts have been partial and incomplete. They have not focused primarily on dynamic analysis as a commitment to looking systematically at—and seriously crediting—the ways in which broader competitive forces and innovations constrain dominant firms and modulate the impact of their behaviors. Much of the analytical effort has been directed to finding reasons for doubting static indications that markets are competitive rather than identifying ways in which dynamic changes will increase competition and correct perceived distortions.[62]

Yet the dominant effects of dynamic market forces, especially those aligned with innovation, is toward greater constraints on market leaders than a static analysis will perceive.[63] The critical question for enforcement officials generally will be the effects' *magnitude* (not their *direction*), something for which analytical tools are still lacking. The most important problem is not recognizing the possibility of dynamic constraints on market leaders but the relative impenetrability of serious analysis of what the dynamic effects will be.

Enforcement officials should be open to the notion that they have missed something in looking at the market, should be skeptical of the need for investigation and for litigation, and should be sensitive to the possibility that market forces on their own will adequately limit any perceived ill effects of questionable dominant firm conduct. The largest lesson of past antitrust cases is that officials often see a market that is either static or sufficiently stable over time that it seems unlikely to change in ways that will significantly alter the fortunes of a dominant firm or the options for price and quality enjoyed by consumers – and that officials see this even when investments already made will produce technologies that will upset current market realities and expectations. That was born out in each of the cases discussed above. A good practice is to find out which technologies or enterprises have been identified by leaders in the target firm as threats to the firm or its industry and what leaders in other firms say has the potential to replace the product or service at issue. Officials should take those concerns and hopes seriously; these often will turn out to be more instructive than carefully crafted extrapolations from industry trends and published forecasts.

Finally, when looking at high-technology industries, where significant investments are made in research and development, where new products can suddenly emerge that alter perceptions of what is possible (or enjoyable), and where consumer tastes can shift rapidly, officials should be especially cautious. These are markets where it is particularly difficult to maintain dominance, where sustained leadership over some time frame most likely indicates strong efficiencies (strong consumer value), and where innovations that are not yet recognized as significant can offer the strongest constraints on dominant firm behavior and the most important challenges to crafting a meaningful remedy that does more than disadvantage an individual contestant in a changing world.

The ghosts of antitrust past do not have to be mirror images of the future. But they send a strong caution signal to officials contemplating single-firm enforcement actions, in high-technology markets most of all. Antitrust officials ignore the lessons of the past at their peril – and ours.

Endnotes

1 *See*, *e.g.*, Frank H. Easterbrook, *The Limits of Antitrust*, 63 Tex. L. Rev. 1 (1984) (*Limits*).

2 *See generally* The Causes and Consequences of Antitrust: The Public Choice Perspective (Fred S. McChesney & William F. Shugart II eds., Univ. of Chicago Press 1995).

3 *See* U.S. Department of Commerce, Intellectual Property and the U.S. Economy: Industries in Focus (March 2012).

4 For a selection of some of the changes tied to intellectual property and related innovative and creative contributions, *see, e.g.*, Ronald A. Cass & Keith N. Hylton, Laws of Creation: Property Rights in the World of Ideas 1-2, 32-35 (Harvard Univ. Press 2012).

5 *See, e.g.*, *Univac: The First Mass-Produced Commercial Computer*, Pingdom, available at http://royal.pingdom.com/2012/03/30/univac-computer-infographic/ (March 30, 2012). *See also* David P. Anderson, *A Million Years*

of Computing, Space Sciences Laboratory-Univ. of Calif.-Berkeley, available at http://boinc.berkeley.edu/talks/singapore_public.pdf.

6 *See, e.g.*, Karen Bartlett, *The Scientists Getting Truly Smart with Your Phone*, (Feb. 9, 2012).

7 Network effects include the results of greater value accompanying rising numbers of users for a given product or service, a concept distinct from (but often conflated to) economies of scale. *See, e.g.*, Nicholas Economides, *The Economics of Networks*, 14 J. Int'l J. Indus. Org. 675 (1996).

8 Ronald A. Cass, *Don't Throw the Flag: How the FTC Acts Like Replacement Refs*, Forbes, Sep. 28, 2012, available at http://www.forbes.com/sites/ciocentral/2012/09/28/dont-throw-the-flag-how-the-ftc-acts-like-replacement-refs/.

9 *See* Ronald A. Cass & Keith N. Hylton, *Preserving Competition: Economic Analysis, Legal Standards, and Microsoft*, 8 Geo. Mason L. Rev. 1 (1999) (discussing the side of network effects not emphasized by antitrust enthusiasts) (*Preserving Competition*).

10 *See, e.g.*, Alfred E. Kahn, The Economics of Regulation: Principles and Institutions xvi (MIT Press 1988) (summarizing the learning of several decades of investigation of regulatory programs). Related problems concern the expenditures made to influence government decisions on regulation, largely regulation of competing firms. *See, e.g.*, Anne O. Krueger, *The Political Economy of the Rent-Seeking Society*, 64 Am. Econ. Rev. 291 (1974); Richard A .Posner, *The Social Costs of Monopoly and Regulation*, 83 J. Pol. Econ, 807 (1975); Fred McChesney, *Rent Extraction and Rent Creation in the Economic Theory of Regulation*, 16 J. Legal Stud. 101 (1987); Douglas Ginsburg, *A New Economic Theory of Regulation: Rent Extraction Rather Than Rent Creation*, 97 Mich. L. Rev. 1771 (1999) (review of Fred McChesney, Money for Nothing: Politicians, Rent Extraction, and Political Extortion (Harvard Univ. Press 1997)).

11 *See, e.g.,* Cass &. Hylton, *Preserving Competition*, *supra*; Frank H. Easterbrook, *Vertical Arrangements and the Rule of Reason*, 53 Antitrust L.J.135 (1984); Frank H. Easterbrook, *Allocating Antitrust Decisionmaking Tasks*, 76 Geo. L.J. 395 (1987); Kenneth G. Elzinga & David Mills, *Predatory Pricing and Strategic Theory*, 89 Geo. L.J. 2475 (2001); William H. Page, *Microsoft and the Limits of Antitrust*, 6 J. Competition L. & Econ. 33 (2010).

12 As discussed in the following section, IBM is an example of both of these points: responding to the litigation brought by the United States in the late 1960s cost the firm over $1 billion, which would be the equivalent of approximately $4-5 billion in 2010, and led to management decisions that cost the firm even more, out of concern over their effect on both the immediate and potential future antitrust litigation.

13 *See, e.g.*, Richard A. Epstein, Antitrust Consent Decrees in Theory and Practice: Why Less is More (American Enterprise Inst. 2007); Richard A. Posner, Antitrust Law 266-86 (Univ. of Chicago Press, 2d ed. 2001) (Antitrust II); Robert Crandall & Charles Jackson, *Antitrust in High Technology Industries* (Technology Policy Inst., Jan. 2011), available at http://www.techpolicyinstitute.org/files/crandalljackson%20antitrust_in_high_tech.pdf'; Joshua D. Wright, *Does Antitrust Enforcement in High Tech Markets Benefit Consumers? Stock Price Evidence from FTC v. Intel*, 38 Rev. Indus. Org. 387 (2011).

14 See, e.g., Ronald A. Cass & Keith N. Hylton, *Antitrust Intent*, 74. So. Cal. L. Rev. 657 (2001); Wright, *supra*.

15 Not only will potential target firms behave in ways that are less conducive to providing lower prices (and other benefits) to consumers; so will other firms. Similar strategic interactions are observed in many aspects of behavior addressed by antitrust law. *See, e.g.*, Frank H. Easterbrook, *Predatory Strategies and Counterstrategies*, 48 U. Chi. L. Rev. 263 (1981); Keith N. Hylton, Antitrust Law: Economic Theory And Common Law Evolution 223–226 (Cambridge Univ. Press 2003).

16 See generally Franklin M. Fisher, John J. McGowan, & Joen E. Greenwood, Folded, Spindled, And Mutilated: Economic Analysis and *U.S. v. IBM* (MIT Press1983).

17 See, e.g., Robert H. Bork, The Antitrust Paradox: A Policy at War with Itself 375-81 (Basic Books 1978); Ronald A. Cass & Keith N. Hylton, *Tying Doctrine: Changing Views*, Nat'l L.J. (Jun. 28, 2004) (*Tying Doctine*); Fisher, McGowan, & Greenwood *supra*; Hylton, *supra*, at 279-301; Posner. Antitrust II, *supra*, at 205-07; J. Gregory Sidak, *Bundling in Software Industries*, 18 Yale J. Reg. 1, 8-9 (2000). But see Einer Elhauge, *Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory*, 123 Harv. L. Rev. 397 (2009); Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 Am. Econ. Rev. 837 (1990).

18 See, e.g., William E. Kovacic, *Failed Expectations: The Trouble Past and Uncertain Future of the Sherman Act as a Tool for Deconcentation,* 74 Iowa. L. Rev. 1105 (1989) John E. Lopatka, *United States v. IBM: A Monument to Arrogance*, 68 Antitrust L.J. 145 (2000).

19 *See, e.g.*, Fisher, McGowan & Greenwood, *supra*, at 61-75.

20 *See, e.g.*, Michael Boudin, *Book Review: Forensic Economics*, 97 Harv. L. Rev. 835, 838 (1984) (footnote omitted).

21 This occurred both through rapid increases in the computational power and date storage capacities of the smaller computers and through developments such as linked-distributed computation that changed the way computers are used.

22 *See, e.g.*, Paul Carroll, Big Blues: The Unmaking of IBM (Crown 1993); Crandall & Jackson, *supra*; William E. Kovacic, *Designing Remedies for Dominant Firm Misconduct*, 31 Conn. L. Rev. 1285, 1289-90 (1999) (*Designing Remedies*); Don E. Waldman, *The Rise and Fall of IBM*, in Market Dominance: How Firms Gain, Hold, or Lose It and the Impact on Economic Performance, at 131, 140-41 (David I. Rosenbaum ed., Praeger 1998) (Market Dominance).

23 *See* Waldman, *supra*, at 141 (citing Neil B. Niman & Manley R. Irwin, *Computers*, in The Structure of American Industry at 157 (Walter Adams & James Brock eds., Prentice Hall 1995) (calculation of current value, based on inflation rate, by author).

24 Waldman, *supra*, at 141.

25 *See* Carroll, *supra*, at 57.

26 *See* James P. Pinkerton, *Government Rides Roughshod Over the Bills*, LA Times, Oct. 22, 1998, available at http://articles.latimes.com/1998/oct/22/local/me-34999.

27 Kovacic, *Designing Remedies*, *supra*, at 1289.

28 *See* Boudin, *supra*, at 839-40.

29 *See* Ronald A. Cass, *Competition in Antitrust Regulation: Law Beyond* Limits, 6 J. Competition L. & Econ. 119, 134 (2010).

30 For discussion of the case and its main economic and legal arguments, *see, e.g.*, Microsoft, Antitrust and the New Economy: Selected Essays (David S. Evans ed., Kluwer 2002); Stan J. Liebowitz & Stephen Marolis, Winners, Losers & Microsoft: Competition and Antitrust in High Technology (Independent Inst. 1999); William H. Page & John E. Lopatka, The Microsoft Case: Antitrust, High Technology, And Consumer Welfare (Univ. of Chicago Press 2007); Cass & Hylton, *Preserving Comptetition*, *supra*; Nicholas Economides, *The Microsoft Case: A Case Study for MBA Students* (Apr. 2003); Salop & Romaine, *supra*; Trial and Error: United States v. Microsoft (Paul Beckner & Erick R. Gustafson eds., Citizens for a Sound Econ. Found. 2000).

31 See United States v. Microsoft Corp., 253 F.3d 34 (D.C. Cir. 2001) (en banc), cert. denied, 534 U.S. 952 (2001).

32 The District Court's opinion is at United States v. Microsoft Corp., 87 F.Supp 2d 30 (D. D.C. 2000).

33 *See* Crandall & Jackson, *supra*, at 26-30.

34 Crandall & Jackson, *supra*, at 37-38.

35 *See, e.g.*, Geetika Rustagi, *Women Talk More on Phone Than Men: Nielsen Survey*, May 15, 2012, available at http://www.livemint.com/2012/05/15231401/Women-talk-more-on-phone-Niel.html (Indian men spend 80 percent of time on smartphones on other activities, women spend 75 percent); European Travel Commission, *New Media Trend Watch - Canada*, available at http://www.newmediatrendwatch.com/markets-by-country/11-long-haul/45-canada?showall=1 (Canadian smartphone users spend more than half their time on uses other than talking).

36 Bill Gates' widely-discussed 1995 memo to others in the company about the potential the Internet posed to up-end traditional models of computing was seen as a plea for taking over the Internet browser market, and thus a piece of the picture being put together by antitrust enforcers and Microsoft competitors depicting a monopolist bent on eliminating rivals through tie-ins and other means. In fact, it is more evidence of prescience that the threats to PC-based software would come from outside the market for those products as drawn by antitrust enforcers. As with IBM, seeing the sources of competitive perils is not the same as being able to address them effectively, especially when confronted with serious legal risks.

37 *See, e.g.*, Lawrence J. White, *The Rise and Fall of Ford and General Motors in the U.S. Automobile Industry: A Tale Twice Told*, in Market Dominance, *supra*, at 109, 120-21.

38 *See* White, *supra*, at 119.

39 For discussion of different network effects, *see, e.g.*, Stanley M. Besen & Joseph Farrell, *Choosing How to Compete: Strategies and Tactics in Standardization*, 8 J. Econ. Perspectives 117 (1994); Jeffrey Rohlfs, *A Theory of Interdependent Demand for a Communications Service*, 5 Bell J. Econ. & Mgt. Sci. 16 (1974).

40 This is the essence of the First Circuit's decision in Grappone, Inc. v. Subaru of New England, Inc., 858 F.2d 792 (1st Cir. 1988), discussed in Max Schanzenbach, *Network Effects and Antitrust Law: Predation, Affirmative Defenses, and the Case of* U.S. v. Microsoft, 2002 Stan. Tech. L. Rev. 4, ¶¶ 57-58 (2002).

41 *See, e.g.*, John S. McGee, *Economies of Size in Auto Body Manufacture*, 16 J. L. & Econ. 239 (1973); White, *supra*. The decline of alternatives to the leading U.S. automobile makers over much of the period seemed to be a continuation of a trend that held from the early 1920s, when there were roughly 90 U.S. auto makers.

42 *See* Timothy J. Muris, *Improving the Economic Foundations of Competition Policy*, 12 Geo. Mason L. Rev. 1 (2003); William G. Shepherd, *Antitrust Repelled, Inefficiency Endured: Lessons of IBM and General Motors for Future Antitrust Policies*, 39 Antitrust Bull. 203 (1994).

43 Muris, *supra*, at 4-5.

44 *See, e.g.*, *U.S. Market Share for the Top Five Auto Makers: Closing in on Europe's 18-18-18 Model?*, Motor Trend, available at http://www.motortrend.com/features/auto_news/2011/1202_u_s_markets_share_for_the_top_five_automakers/.

45 *See* United States v. American Telephone & Telegraph Co., 552 F. Supp. 131 (D. D.C. 1982). For an overview of the case, see, e.g., Breaking Up Bell: Essays on Industrial Organization and Regulation (David Evans ed., North-Holland 1983); Changing the Rules: Technological Change, International Competition and Regulation in Communications (Robert Crandall & Kenneth Flamm eds., Brookings Inst. 1989).

46 *See* Crandall & Jackson, *supra*, at 15.

47 *See* Eli M. Noam, *Did AT&T Die in Vain? An Empirical Comparison of AT&T and Bell Canada,* 61 Fed. Comm. L.J. 119 (2008).

48 *See, e.g.*, Kahn, *supra*, vol. II, at 147-52; Mitchell & Vogelsang, *supra*, at 162-63.

49 *See, e.g.*, Kahn, *supra*, vol. II, at 7-10.

50 *See, e.g.*, In re Applications of Microwave Communications, Inc., 18 F.C.C.2d 953 (1969), *aff'd*, 21 F.C.C.2d 190, (1970); *In re* Specialized Common Carrier Services in the Domestic Public Point-to-Point Microwave Radio Service, *First Report and Order*, 29 F.C.C.2d 870, *reconsideration denied*, 31 F.C.C.2d 1106 (1971), *aff'd sub nom.* Washington Utils. & Transp. Comm'n v. FCC, 513 F.2d 1142 (9th Cir. 1975).

51 *See, e.g.*, Milton Friedman, Capitalism and Freedom 138- 160 (Univ. of Chicago Press 1962); Krueger, *supra*; George J. Stigler, *The Theory of Economic Regulation*, 2 Bell J. Econ. & Mgt. Sci. 3-21 (1971).

52 The one exception is AT&T, which was acting not in a manner that looks like ordinary competition, but in a manner that seems responsive to special constraints and inducements of regulation.

53 *See, e.g.*, Bork, *supra*, at 375-81; Cass & Hylton, *Tying Doctrine*, *supra*;. Hylton, *supra*, 279-301; Posner, Antitrust II, *supra*, at 205-07; Sidak, *supra*, at 8-9. In fact, such practices at times are responses to competition, not evidence of its absence. *See, e.g.*, Hal R. Varian, *Market Structure in the Network Age*, in Understanding the Digital Economy: Data, Tools, and Research 137, 140 (Erik Brynjolfsson & Brian Kahin eds., MIT Press 2000).

54 *See, e.g.*, Raymond S. Hartman, David J. Teece, Will Mitchell & Thomas M. Jorde, *Assessing Market Power in Regimes of Rapid Technological Change*, 2 Indus. & Corp. Change 317 (1993); Christopher Pleatsikas & David J. Teece, *The Analysis of Market Definition and Market Power in the Context of Rapid Innovation,* 19 Int'l J. Indus. Org. 665 (2001); Michael L. Katz & Howard A. Shelanski, *"Schumpeterian" Competition and Antitrust Policy in High-Tech Markets*, 14 Competition 47 (2005).

55 This follows from the broader observation that it is far easier to describe what behavior succeeds in markets than to explain why it succeeds. See, e.g., Easterbrook, *Limits*, *supra*, at 4. Even then, when behavior is complex, it generally will be difficult even to explain the exact contours of the successful behavior.

56 For less technical presentations of this point, *see, e.g.*, Phil Simon, The Age of the Platform: How Amazon, Apple, Facebook and Google Have Redefined Business (Motion Pub. 2011); Fred Vogestein, *Network Effects and Global Domination*, Wired, May 17, 2012, available at http://www.wired.com/business/2012/05/network-effects-and-global-domination-the-facebook-strategy/.

57 The electronic search market, for example, was modest and relatively little-known outside specialized areas (for example, as adjuncts to other research tools in the legal or medical profession) prior to Google, and use of the Internet for an encompassing social network was almost completely undeveloped prior to Facebook. In each case, technological innovations provided critical impetus for the establishment of widely recognized and utilized markets.

58 *See, e.g.*, Matt Asay, *Why Grill Google Over Web Dominance? It Has None*, The Register, Oct. 4, 2011, available at http://www.theregister.co.uk/2011/10/04/google_anti_trust_yesterdays_news/ ("Google may own the "index search market," but think about where people go to search for people (Facebook or LinkedIn), facts (Wikipedia), restaurants (Zagat - now owned by Google), Yelp, OpenTable, travel (Kayak, Travelocity, Expedia, Orbitz) and property (Zillow, Realtor.com) to name just a few.")

59 For example, think of the Facebook user who also is connected through Linked-In for business associates. If moderately technologically oriented, that user additionally could turn to Twitter for sharing some spur-of-the-moment thoughts more directly or immediately, Flickr for photos, and so on.

60 *See, e.g.*, Shai Ahmed, *Facebook a Passing Fad? 900 Million People Can't Be Wrong: CEO*, CNBC, May 15, 2012, available at http://www.cnbc.com/id/47425068/Facebook_a_Fad_900_Million_People_Can_t_Be_Wrong_CEO .

61 *See, e.g.*, US Dept. of Justice, Competition and Monopoly: Single-Firm Conduct Under Section 2 of the Sherman Act, chap. 2 at 24-27 (Sep. 2008), available at www.usdoj.gov/atr/public/reports/236681.htm (Single-Firm Conduct), withdrawn, May 2009; US Dept. of Justice & Federal Trade Comm'n, Horizontal Merger Guidelines at 27-29 (Apr. 2010) (Horizontal Merger Guidelines), available at http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf .

62 *See, e.g.,* Single-Firm Conduct, *supra*, at 26; Horizontal Merger Guidelines; *supra*, at 23-24; Jay Ezrielev & Janusz Ordover, *The 2010 Horizontal Merger Guidelines: Static Compass in a Dynamic World?*, Antitrust Source (Oct. 2010), available at http://www.americanbar.org/content/dam/aba/publishing/antitrust_source/Oct10_Ezrielev10_21.authcheckdam.pdf .

63 *See, e.g.*, Hartman, Teece, Mitchell & Jorde, *supra*; J. Gregory Sidak & David J. Teece, *Dynamic Competition in Antitrust Law*, 5 J. Competition L. & Econ. 581 (2009); David J. Teece & Mary Coleman, *The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries*, 43 Antitrust Bull. 801 (1998).