

BENEFITS OF COMPETITION AND INDICATORS OF MARKET POWER

Introduction

This issue brief describes the ways in which competition between firms can benefit consumers, workers, entrepreneurs, small businesses and the economy more generally, and also describes how these benefits can be lost when competition is impaired by firms' actions or government policies. Several indicators suggest that competition may be decreasing in many economic sectors, including the decades-long decline in new business formation and increases in industry-specific measures of concentration. Recent data also show that returns may have risen for the most profitable firms. To the extent that profit rates exceed firms' cost of capital—which may be suggested by the rising spread on the return to invested capital relative to Treasury bonds—they may reflect economic rents, which are returns to the factors of production in excess of what would be necessary to keep them in operation. Such rents may divert resources from consumers, distort investment and employment decisions, and encourage firms to engage in wasteful rent-seeking activities.

The causes underlying a possible decrease in competition and corresponding increase in market power are not clear, but candidate explanations include efficiencies associated with scale, increases in merger and acquisition activity, firms' crowding out existing or potential competitors either deliberately or through innovation, and regulatory barriers to entry such as occupational licensing that have reduced the entry of new firms into a variety of markets. Government action can help reverse this trend. Antitrust authorities, namely the Department of Justice (DOJ) and the Federal Trade Commission (FTC), are charged with enforcing antitrust laws, challenging anticompetitive mergers, anticompetitive exclusionary conduct, and collusion by competitors. Their enforcement actions can block consolidation that reduces competition in a market,

sanction anticompetitive behavior, and help define the contours of antitrust law through court decisions. These measures not only have immediate effects on the behavior that is challenged but also may help deter anticompetitive abuses in the future.

Promoting competition extends beyond enforcement of antitrust laws, it is also about a range of other pro-competitive policies. Several U.S. departments and agencies are actively using their authority to advance pro-competition and pro-consumer policies and regulations. For example, in several cases the Federal Aviation Administration (FAA) of the Department of Transportation (DOT) has sought to provide competitive airline carriers with greater access to take-off and landing slots at capacity constrained "slot-controlled" airports. The Federal Communications Commission (FCC), in its most recent design of a spectrum auction, established a market-based spectrum reserve designed to ensure against excessive concentration in holdings of low-band spectrum. Other recent examples include government actions on cell phone unlocking, net neutrality, standards-essential patents, and defense acquisition and procurement.

This brief argues that consumers and workers would benefit from additional policy actions by the government to promote competition within a variety of industries. In addition, more work is needed to understand how policies that promote competition should be applied in the digital economy and other technologically dynamic sectors.

Benefits of Competition and Potential Harms from Market Power

A long line of economic literature argues that competition among firms benefits consumers via lower prices (for an overview, see Kovacic and Shapiro (2000)).¹

¹ While in theory these benefits can accrue even when there are only a few firms or a single firm in the marketplace, provided that the monopolist faces a credible threat of entry by other firms (Spence 1977,

Dixit 1980), the benefits are more certain when there is vigorous competition among existing competitors. Tirole (1988) and Cabral (2000) provide useful overviews of the

Competition can benefit consumers in other ways as well: competition may lead to greater product variety, higher product quality, and greater innovation, which drives productivity growth and helps lift living standards (Hotelling 1929; Aghion et al. 2005; Shapiro 2012).²

When there is little or no competition, consumers are made worse off if a firm uses its market power to raise prices, lower quality for consumers, or block entry by entrepreneurs. A firm with market power recognizes that if it reduces price to gain more customers, it loses revenue on the existing customers it already has. Thus, it may set a higher price and provide a lower quantity of its product than would maximize societal welfare. Competition pushes firms to reduce price below this level, both to gain share from rivals, and in recognition that higher prices can be profitably undercut by competitors who are similarly trying to increase their sales. Alternatively, monopolists may choose not to upgrade quality or variety, which would also leave customers worse off than if the market had competitors. And monopolists may be less rigorous in pursuing efficient cost reductions, for as Sir John Hicks (1935) famously wrote, “the best of all monopoly profits is a quiet life.”

Competition between firms may also help workers. In the same way that two firms might compete against one another and lower prices to entice consumers to purchase a product, firms competing to hire from a specialized labor market may raise wages to attract and retain workers. In addition, small businesses and entrepreneurs can benefit, for example, when upstream firms compete against each other for the opportunity to supply a product to a downstream small business or entrepreneur. If an entrepreneur sells its products to downstream firms rather than to end-users, it would benefit from there being a greater number of downstream firms to which it can sell products—the greater the number of downstream firms, the better the ability to negotiate a good price for the products it sells. Thus, whether the business model of an entrepreneur is business-to-business or business-to-consumer, competition among upstream firms and among downstream firms helps the entrepreneur grow his or

theoretical conditions, assumptions, and extensions needed for these benefits to accrue.

² The link between competition, innovation and productivity growth is covered in greater detail in

her business by creating and capturing value in the marketplace (Brandenburger and Stuart 1996).

A firm that has market power when purchasing inputs or hiring workers may be able to exploit its market power, at least in the short-run. “Monopsony power” in the labor market may lead a firm to restrict employment, reducing wages below what they would be in a competitive market. In the classic example of isolated “company towns” in the late 19th and early 20th centuries, workers only had one option to which to sell their labor and hence could be exploited by this company, at least in the short run. [Boal](#) (1995) finds some evidence of monopsony power in the short run on the part of coal mining firms that owned company towns in the early 1900s. But over the longer run, it appears that workers move to find better paying jobs if wages are too low. This dynamic highlights how the mobility of assets—be they human, capital, or even digital—may help to mitigate against market power.

Firms can move from exercising their market power to the point where they are abusing it. Standard Oil at the turn of the previous century helped establish the impact and importance of antitrust laws. Before the implications of the Sherman Antitrust Act were clarified in early court decisions, Standard Oil had engaged in a variety of predatory tactics to weaken competitors (exclusionary conduct), purchased most of its direct rivals (horizontal integration) as well as a substantial portion of firms involved in other aspects of the oil industry (vertical integration), eventually gaining control over nearly 90 percent of U.S. oil production. Standard Oil used its size to obtain better terms on transportation and other ancillary transactions than its smaller competitors could command. These deals in turn made it easier for Standard Oil to undercut smaller rivals, softening them for purchase or forcing them out of business, reducing capacity in the industry. In 1911, the Supreme Court found for the Department of Justice, and ordered that Standard Oil Company be dissolved on the grounds that it violated the Sherman Antitrust Act’s prohibition on trusts and other business activities that restrained trade and commerce.

Chapter 5 of the 2016 *Economic Report of the President*; available: https://www.whitehouse.gov/sites/default/files/docs/ERP_2016_Chapter_5.pdf.

More recently, in *United States v. Microsoft Corporation*, a case originally brought in 1998 by DOJ and twenty State Attorneys General, the United States Court of Appeals for the D.C. Circuit found that Microsoft had abused its monopoly power, upholding the United States District Court for the District of Columbia's original findings of fact (even though it overturned the District Court's ultimate verdict). Microsoft was found to have violated the Sherman Antitrust Act by a variety of exclusionary acts it used to maintain its PC operating system monopoly. Specifically, Microsoft sought to disadvantage the growth of non-Microsoft Internet browsers that developers could have used to compete with the Microsoft operating system monopoly. Through the resulting settlement, Microsoft was required to take steps to end its unlawful practices and restore competition, helping to create the conditions that have led to greater competition, innovation, and diversity in internet browsers. The Microsoft and Standard Oil cases are just two high-level examples of the types of investigations, enforcement, and remedies that DOJ Antitrust and FTC undertake every year.

While high levels of market power can sometimes allow for abuses, it is important to note that consumers are not necessarily worse off when a firm's market share increases. Sometimes, a firm's market share increases because of innovations by the firm, which result in products and services valued by customers. In fact, the U.S. Patent and Trademark Office (USPTO) grants patents—exclusive rights to use or license a technology or product—to inventors of innovations that exhibit both “novelty and non-obviousness.” Allowing firms to exercise the market power they have acquired legitimately can maintain incentives for research and development, new product introduction, productivity gains, and entry into new markets, all of which promote long term economic growth.

Market share may increase as a firm realizes economies of scale, or efficiencies created by larger operations, resulting in lower costs that are passed on to consumers

³ Furthermore, some industries, such as power transmission, water, and other utilities, may be “natural” monopolies, which occur when fixed costs are very high, and marginal costs are low and approaching zero; these conditions imply that it is more efficient to have one firm supply the market.

⁴ Economists have engaged in an active debate about the conditions under which lower prices, higher quantity, or

in the form of lower prices.³ Some newer technology markets are also characterized by network effects, with large positive spillovers from having many consumers use the same product. Markets in which network effects are important, such as social media sites, may come to be dominated by one firm, because the “network externalities” in these markets tip to one provider of the network product or service.

Sometimes even when there is a monopolist serving a market, the threat of entry by new competitors can, in theory, keep prices low and quality high, benefiting consumers. In theory, the mere presence of these potential entrants helps to set a cap in terms of the rents that can accrue to the monopolist. It is important to acknowledge, however, that there is little empirical evidence of potential entry having a substantial impact on monopolists' behavior, except in certain specific cases (e.g., Dafny 2005, Goolsbee and Syverson 2008, Seamans 2012, Tenn and Wendling 2014).⁴

The presence of many firms in a market does not ensure competition. Under certain conditions, firms may be able to collude with each other to create and abuse market power, for example by agreeing to raise prices or by restricting output (thereby raising prices) to consumers or by restricting wage growth for workers. In the United States, price-fixing agreements among competitors are illegal and may be subject to criminal prosecution, including possible prison sentences for individuals who engage in this collusion. Detecting and prosecuting collusive cartels is an important priority for the antitrust agencies, both to eliminate the specific conduct in question and for its value as a deterrent in other settings.

higher quality might actual deter or delay entry (see Tirole 1988 and Cabral 2000). For example, while the pricing argument is intuitively appealing, it turns out that theoretically, and practically, such a strategy likely only works when the incumbent monopolist has some information about the market that the potential entrant does not also share—a condition termed “asymmetric information” by economists (Milgrom and Roberts 1982).

Table 1: Change in Market Concentration by Sector, 1997-2012

Industry	Revenue Earned by 50 Largest Firms, 2012 (Billions \$)	Revenue Share Earned by 50 Largest Firms, 2012	Percentage Point Change in Revenue Share Earned by 50 Largest Firms, 1997-2012
Transportation and Warehousing	307.9	42.1	11.4
Retail Trade	1,555.8	36.9	11.2
Finance and Insurance	1,762.7	48.5	9.9
Wholesale Trade	2,183.1	27.6	7.3
Real Estate Rental and Leasing	121.6	24.9	5.4
Utilities	367.7	69.1	4.6
Educational Services	12.1	22.7	3.1
Professional, Scientific and Technical Services	278.2	18.8	2.6
Administrative/ Support	159.2	23.7	1.6
Accommodation and Food Services	149.8	21.2	0.1
Other Services, Non-Public Admin	46.7	10.9	-1.9
Arts, Entertainment and Recreation	39.5	19.6	-2.2
Health Care and Assistance	350.2	17.2	-1.6

Note: Concentration ratio data is displayed for all North American Industry Classification System (NAICS) sectors for which data is available from 1997 to 2012.
Source: Economic Census (1997 and 2012), Census Bureau.

Indicators of Declining Competition

While there are many benefits of competition for consumers and workers, competition appears to be declining in at least part of the economy. This section reviews three sets of trends that are broadly suggestive of a decline in competition: increasing industry concentration, increasing rents accruing to a few firms, and lower levels of firm entry and labor market mobility.

The U.S. Census Bureau tracks revenue concentration by industry, and one measurement it provides of such concentration is the share of revenue earned by the 50 largest firms in the industry. Table 1 shows that the majority of industries have seen increases in the revenue share enjoyed by the 50 largest firms between 1997 and 2012. Several industry-specific studies have found consistent results over longer periods of time. In financial services, [Corbae and D’Erasmio](#) (2013) find that loan market share (measured on a national level) of the top 10 banks increased from about 30 percent in 1980 to about 50 percent in 2010, and deposit market share of the top 10 banks increased from about 20 percent in

1980 to almost 50 percent in 2010. A [study](#) by the Congressional Research Service (Shields 2010) shows that, between 1972 and 2002, industry concentration—as measured by the share of revenues held by the top four firms—increased in eight of the nine agricultural industries that it tracks, while [Fuglie et al.](#) (2012) find that global revenue concentration among upstream agricultural supply industries has increased as well.

The statistics presented in Table 1 are national statistics across broad aggregates of industries, and an increase in revenue concentration at the national level is neither a necessary nor sufficient condition to indicate an increase in market power. Instead, antitrust authorities direct their attention to concentration at the relevant market level for each product or service. Those data are not readily available across the economy. But in a few industries, more heavily studied due to an availability of disaggregated public data, there is some evidence of increasing market level concentration. For example, [Gaynor, Ho, and Town](#) (2015) report that between the early 1990s and 2006, the average Herfindahl-Hirschman Index (HHI)⁵ for hospital markets increased by about 50

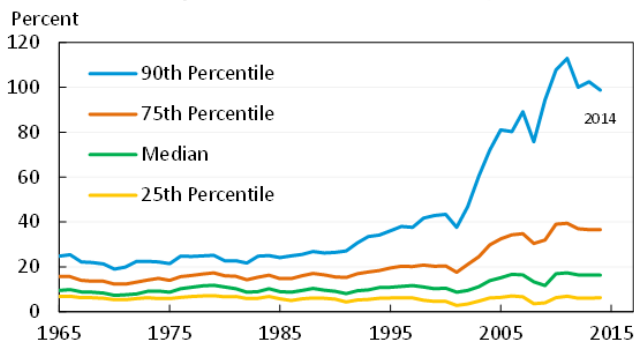
⁵ The Herfindahl-Hirschman Index (HHI) is a commonly used measure of market concentration that is created by summing up the squared shares of firms in a market. Higher values of the HHI indicate higher market

concentration; it can be close to zero when a market is comprised of a large number of firms of small size and reaches a maximum of 10,000 when a market is controlled by a single firm. Antitrust agencies generally

percent to almost 3,200. This would be the level associated with just three equal-sized competitors in a market.⁶ The FCC (2015) reports that the average HHI for wireless providers in a market increased from under 2,500 in 2004 to over 3,000 in 2014. Prater et al. (2012) document an increase in railroad market concentration between 1985 and 2007.

Returns on invested capital for publicly-traded U.S. nonfinancial firms have also become increasingly concentrated within a smaller segment of the market. Figure 1 indicates that the 90th percentile firm sees returns on investments in capital that are more than five times the median. This ratio was closer to two just a quarter of a century ago.

Figure 1: Return on Invested Capital Excluding Goodwill, U.S. Publicly-Traded Nonfinancial Firms, 1965–2014



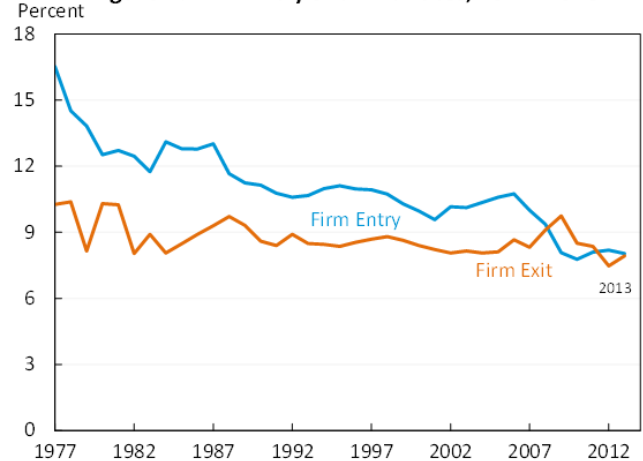
Note: The return on invested capital definition is based on Koller et al (2015), and the data presented here are updated and augmented versions of the figures presented in Chapter 6 of that volume. The McKinsey data includes McKinsey analysis of Standard & Poor's data and exclude financial firms from the analysis because of the practical complexities of computing returns on invested capital for such firms.

Source: Koller et al. (2015); McKinsey & Company; Furman and Orszag (2015).

There is also evidence of a decline in the number of new firms each year. Numerous academic papers have highlighted a long-term downward trend in business dynamism—the so-called churn or birth and death rates of firms—since the 1970s (e.g., Decker et al. 2014a). Figure 2 below, which uses data from the U.S. Census

Bureau's Business Dynamics Statistics for 1977-2013, indicates that firm entry rates have declined over time, whereas firm exit rates have been more or less steady. Moreover, recent research finds that whereas in the 1980s and 1990s, declining dynamism was observed in selected sectors, notably retail, the decline was observed across all sectors in the 2000s, including the traditionally high-growth information technology sector (Decker et al. 2014b).

Figure 2: Firm Entry and Exit Rates, 1977–2013



Source: U.S. Census Bureau, Business Dynamics Statistics.

Labor market dynamism—which refers to the frequency of changes in who is working for whom in the labor market—has also declined since the 1970s.⁷ Lower rates of labor market dynamism may be due to multiple factors including lower rates of new firm entry, greater restrictions on a worker's ability to move—such as in the case of non-compete agreements or occupational licensing described below—or even collusion between firms not to hire each other's workers, which has occurred in Silicon Valley.⁸ The fact that both business and labor market dynamism have been in decline since

consider markets in which HHI is between 1,500 and 2,500 to be moderately concentrated, and consider markets in which the HHI is in excess of 2,500 to be highly concentrated (see <https://www.justice.gov/atr/herfindahl-hirschman-index> for more detail).

⁶ The authors also report that in 2006 more than 77% of MSAs were classified as highly concentrated (i.e., having HHIs > 2,500).

⁷ The decline in labor market dynamism was covered in greater detail in Chapter 3 of the 2015 *Economic Report of the President*; available:

https://www.whitehouse.gov/sites/default/files/docs/2015_erp_chapter_3.pdf.

⁸ Several well-known technology firms in Silicon Valley allegedly engaged in collusive “no-poaching” arrangements. More information available here: <https://www.justice.gov/opa/pr/justice-department-requires-ebay-end-anticompetitive-no-poach-hiring-agreements> and here: <https://www.justice.gov/opa/pr/justice-department-requires-six-high-tech-companies-stop-entering-anticompetitive-employee>

the 1970s could suggest that competition may be on the wane as well.

The reasons for declining firm entry rates are not well understood, but a partial explanation is that barriers to entry may have increased in many industries. These barriers could be in the form of Federal, State, or local licenses or permits, including occupational licenses discussed below. While such regulations serve a valuable role in protecting public well-being, they can also add fixed costs to an entrepreneur wanting to open a new business. Barriers to entry may be related to various advantages that have accrued to incumbent firms over time. For example, economies of scale may mean that incumbent costs are far below those of new entrants, making it difficult for entrants to compete. Or demand-side network effects may tip the market to a single provider of the network good. But incumbent advantages could also be political in nature; for example, if existing firms successfully lobby for rules protecting them from new entrants.

In summary, there is evidence of 1) increasing concentration across a number of industries, 2) increasing rents, in the form of higher returns on invested capital, across a number of firms, and 3) decreasing business and labor dynamism. However, the links among these factors are not clear. On the one hand, it could be that a decrease in firm entry is leading to higher levels of concentration, which leads to higher rents. On the other hand, it could be that higher levels of concentration are providing advantages to incumbents which are then used to raise entry barriers, leading to lower entry. Or it might be that some other factor is driving these trends. For example, innovation by a handful of firms in winner-take-all markets could give them a dominant market position in a very profitable market that could be difficult to challenge, discouraging entry. Even though it is not clear whether or how these three factors are linked, these trends are nevertheless troubling because they suggest that competition may be

decreasing and could require attention by policymakers and regulators.

Causes of Market Power

There may be multiple reasons for the apparent increase in firm concentration, including deliberate behavior by firms, mergers and acquisitions activity, or State or local occupational licensing, among others.

Firm Behavior

Firms have for centuries engaged in behavior to expand their market. Pursuing the acquisition of market power by offering consumers greater value than rivals is a form of competition that benefits consumers, and is not itself problematic. Indeed, U.S. law recognizes the societal benefits of innovation by providing for government awards of temporary monopolies for inventions under the patent system. This potential to earn monopoly profits can provide an incentive to invest in research and development, facilitating innovations that drive technological progress. In some cases, however, the temporary monopoly afforded by a patent may not be socially productive, as may happen if a firm's business model is to earn profits by asserting royalty rights to patents it knows to be invalid under a threat of costly patent litigation.⁹

However, when firms attempt to increase their profits through anticompetitive means—colluding with rivals, purchasing competitors, erecting barriers to entry to insulate their incumbency from competition, or other actions—society suffers. As a consequence, legislators, regulators and courts have directed a substantial amount of effort towards curbing such activities. In the United States, the Sherman Antitrust Act, Clayton Antitrust Act, and Federal Trade Commission Act provide front-line defenses against these abuses.¹⁰

⁹ While there are still patent litigation abuses, recent executive, judicial, and legislative actions have helped the U.S. patent litigation landscape. More details are available in an issue brief titled “The Patent Litigation Landscape: Recent Research and Developments” available here: https://www.whitehouse.gov/sites/default/files/page/files/201603_patent_litigation_issue_brief_cea.pdf

¹⁰ The Sherman Antitrust Act of 1890 focused on curbing restraints on trade, including overtly anticompetitive behaviors such as price fixing. The Clayton Antitrust Act adopted an incipiency standard, designed to prevent acquisition of market power, including through anticompetitive mergers and acquisitions.

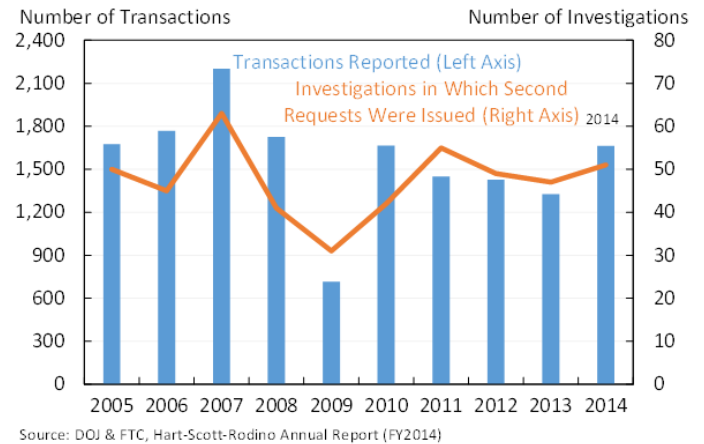
Mergers and Acquisitions

Increased industry concentration may in part result from an uptick in merger and acquisition activity. The objective scale of takeover activity in recent years is substantial. Global activity in mergers and acquisitions surpassed \$5 trillion in 2015, about \$2.5 trillion of which is in the United States, the highest amount in a year on record.¹¹ Deals surpassing \$10 billion account for 37 percent of global takeover value, almost double the average of 21 percent for the last five years. However, it is important to note that the academic literature on takeover activity suggests that “merger waves” occur when stock market valuations are high, and the S&P 500 has risen almost 60 percent over the past five years during the continued recovery from the Great Recession (Maksimovic and Phillips 2001; Rhodes-Kropf and Viswanathan 2004). Thus, while merger activity is at an all-time high, there is some reason to believe that part of this recent trend may be due to cyclical factors rather than changes in business practices or enforcement behavior. Nevertheless, such merger activity could leave the economy with more large firms and potentially less competition. Preventing reductions in competition from mergers falls squarely within the law enforcement mission of the antitrust agencies.

Proposed mergers and acquisitions that meet certain thresholds are [reported](#) to the DOJ and FTC under the Hart-Scott-Rodino Antitrust Improvements Act of 1976. While merger and acquisition values have spiked in recent years, the number of transactions reported to antitrust authorities has been more or less flat over the past decade, except for a notable drop in 2009 (Figure 3, left axis). In addition, during the past decade, the number of second requests issued by antitrust authorities—indicating that additional information and investigation is needed to determine whether the merger is likely to harm competition—has been relatively stable each year (Figure 3, right axis). In FY2014, 3.2 percent of mergers (51 out of 1,683 mergers) were issued a second request. The rest of the mergers were cleared within 30 days, as per 15 U.S. Code § 18(b)(1)(B).

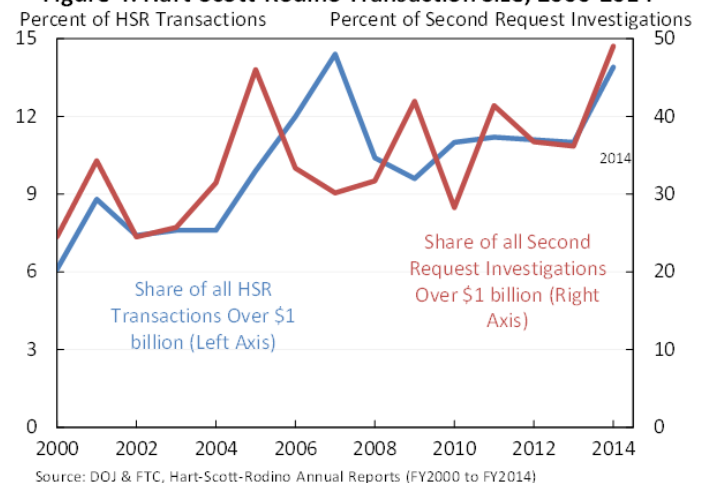
¹¹ These figures are according to Dealogic’s data (<http://www.dealogic.com/media/market-insights/mastatshot>).

Figure 3: Hart-Scott-Rodino Transactions and Investigations, 2005-2014



From 2000 to 2007, the proportion of reported mergers with a value greater than \$1 billion increased from 6 percent to close to 15 percent and then, after falling off during and just after the recession, has again begun to increase (see Figure 4, left axis). In addition, these larger transactions accounted for an increasing share of the investigations that the antitrust authorities subjected to second request (see Figure 4, right axis); in 2014, nearly half of the second requests issued were for these larger transactions.¹²

Figure 4: Hart-Scott-Rodino Transaction Size, 2000-2014



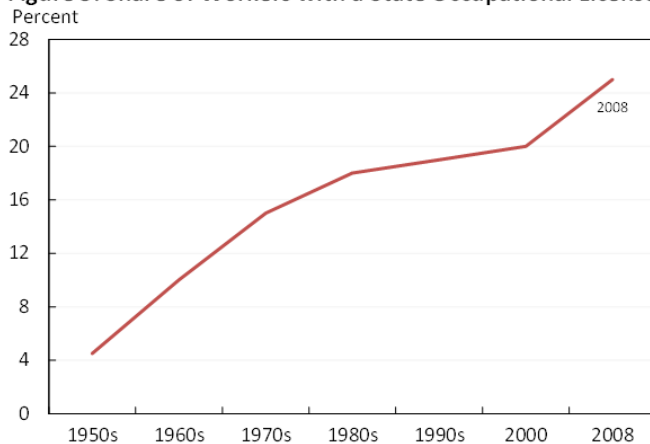
Occupational Licensing and Other State Laws

As highlighted in a recent White House report (CEA et al. 2015), the share of workers in occupations requiring

¹² However, a portion of this increase is due to the fact that transaction size is reported in nominal dollars and so naturally increases over time.

some sort of State license grew fivefold over the last half of the 20th century (Figure 5), which fundamentally creates entry barriers for firms and workers. Though they are in some cases merited, such licensure requirements have the potential to make it more difficult for workers to move across State lines or between jobs, thus imposing a drag on the productivity of local economies. Importantly, some State occupational license requirements can be thought of as anti-competitive policies that protect labor market incumbents to the detriment of other workers and society as a whole.

Figure 5: Share of Workers with a State Occupational License



Source: Council of State Governments (1952); Greene (1969); Kleiner (1990); Kleiner (2006); and Kleiner and Krueger (2013). Westat data; CEA calculations.

Occupational licensing is but one example of a type of State law that may favor incumbents at the expense of new competitors. Other State and local examples include “certificate of need” laws that may make it difficult for new hospitals or health care providers to enter the market or provide new services, restrictions on direct-to-consumer automobile sales that may favor established automobile dealerships, and local taxi medallions that have historically been limited by the local government in many cities. In the latter case, the 2016 *Economic Report of the President* [discussed](#) several ways in which competition between incumbent taxi firms and newly entering on-demand ride-for-hire platforms are benefiting consumers in multiple cities.

Recent Federal Government and Agency Actions

DOJ, FTC, and other Federal government agencies have undertaken a range of efforts designed to promote competition and reduce market power abuses. These

actions include more than just antitrust enforcement, though such enforcement is critical.

Antitrust Enforcement

The antitrust agencies—the Department of Justice Antitrust Division and the Federal Trade Commission—influence competition through their enforcement of antitrust (DOJ and FTC) and consumer protection laws (FTC), and their competition advocacy work. The primary antitrust enforcement mandates are: 1) to detect, punish, and deter agreements by independent firms that replace competition with collusion; 2) to challenge exclusionary behavior by firms that is intended to acquire, maintain, or extend monopoly power; and 3) to prevent the unlawful acquisition of market power through mergers and acquisitions where the effect “may be substantially to lessen competition, or to tend to create a monopoly.” In evaluating mergers and business practices other than collusion, the courts call on the agencies to distinguish between anticompetitive mergers and practices and those that are competitively neutral or even beneficial, such as efficiency-enhancing mergers that are likely to reduce consumer prices as merger efficiencies are passed on to customers, or vertical contracting agreements that may reduce retail prices or increase investments in customer service.

Mergers that exceed certain thresholds (roughly \$78 million in 2016) must be notified in advance to the FTC and DOJ. These agencies’ initial screens reveal no competitive issues in the vast majority of cases, and those mergers are permitted to proceed without delay. Those that raise potential competitive concerns are investigated to determine whether the transaction poses a real risk to competition, with problematic ones selected for in-depth review through what is called a “second request” for more extensive data and documentation. These investigations can result in clearance, if the detailed review suggests that initial competitive concerns are unfounded. Mergers that are determined to substantially lessen competition may be challenged by the agency. In some cases, when firms are informed that the agency has determined a challenge is likely they choose to abandon the transaction. If a

problematic merger is not abandoned, a challenge will then be filed in court.¹³

For example, in 2011 DOJ filed an antitrust lawsuit to block AT&T's proposed acquisition of T-Mobile, arguing that the merger would reduce competition between mobile carriers, leading to higher prices, worse service and less innovation, all of which would hurt consumers.¹⁴ AT&T eventually dropped the proposed acquisition. Recent robust competition between carriers as well as innovative contract types and improvements in services may in part stem from competition that was preserved by DOJ's action. As another example, in 2015, the FTC filed an administrative complaint outlining how the proposed \$8.2 billion merger of Sysco and US Foods would violate antitrust laws by reducing competition for foodservice distribution, both countrywide and in specific markets. The Commission successfully obtained a preliminary injunction from the U.S. District Court for the District of Columbia, at which point the parties abandoned the merger.

In 2009, Thoratec, a monopoly provider of FDA-approved left ventricular assist devices, proposed to acquire HeartWare, a potential entrant into the market whose competing product was rapidly moving through the FDA approval process. Among other efficiency arguments, one potential benefit was that Thoratec's experience and existing distribution channels may have helped provide HeartWare's product to more customers (Farrell, Pappalardo and Shelanski 2010). However, the FTC determined that following the merger, Thoratec would face less competitive pressure to innovate. The FTC filed a complaint to block the merger; and the parties subsequently abandoned their proposed merger.¹⁵ The case is one example of the FTC taking action to block a merger that posed a potential risk to innovation. HeartWare subsequently gained FDA approval for its device in 2012, and over 9,000 patients have used the device.

¹³ The FTC process is somewhat different at this stage, though the standards for challenging a merger are similar across the two enforcement entities.

¹⁴ DOJ's actions are described here: <https://www.justice.gov/opa/pr/justice-department-files-antitrust-lawsuit-block-att-s-acquisition-t-mobile>

Merger Remedies

In some cases, the antitrust authorities determine that concerns about competitive harm can be addressed without blocking the entire merger. Sometimes antitrust authorities will allow a merger to proceed conditioned on specified structural remedies, such as the divestiture of a part of the merged business to a third party. DOJ's 2013 settlement of its challenge to the American Airlines/US Airways merger included divestiture of slots (take-off and landing rights) to low-cost carriers at Reagan National and LaGuardia airports, as well as gates at Dallas Love Field and several other capacity-constrained airports. The Division reasoned that post-merger competition would be best preserved by facilitating low-cost carrier entry at capacity-constrained airports dominated by these legacy carriers.

There is ongoing debate over the effectiveness of merger remedies in preserving the competitive pre-merger conditions. Some observers have praised the increased use of remedies in recent years as aggressive and creative, while others question the government's ability to craft such remedies, monitor compliance with them, and whether they actually promote competition (Kwoka and Moss 2012, Kwoka 2013, Shughart and Thomas 2013). The FTC is presently updating its 1999 study of merger remedies with a study of merger orders that took place between 2006 and 2012, using its compulsory process authority to collect information as necessary. This analysis may provide the agencies with additional guidance on what characteristics make potential remedies more or less effective.

Anticompetitive Conduct

Anticompetitive conduct may be challenged under Section 2 of the Sherman Antitrust Act (monopolization) or Section 5 of the Clayton Act (enforced by the FTC against "unfair methods of competition" and "unfair or deceptive acts or practices"). For example, a number of conduct challenges have sought to preserve competition in health care markets. These include FTC challenges to

¹⁵More information available here: <https://www.ftc.gov/news-events/press-releases/2009/07/ftc-challenges-thoratecs-proposed-acquisition-heartware>

“pay for delay” schemes in which a brand drug manufacturer compensates another producer to delay introducing their generic version of the drug when the brand patent expires, enabling the branded product to continue to earn monopoly rents past patent expiration. DOJ challenged most-favored-nation contract clauses used by the dominant insurers in Ohio and Michigan, arguing that they raise hospital reimbursement rates to their rivals, discourage entry and innovation, and increase the price of healthcare to consumers.

In 2015, the U.S. Supreme Court affirmed the FTC’s ability to challenge the North Carolina Board of Dental Examiners’s ability to block entry of unlicensed teeth whitening firms.¹⁶ The FTC argued that the Board members, primarily dentists, viewed entry by the teeth whitening firms as detrimental to their business and used their power on the State Board to block competition. (Balan et al. 2015). This case is notable given the rapid increase of licensing over the past several decades (see Figure 5 above). This decision could have pro-competitive effects going forward, as licensing boards across States adjust their behavior.

Collusion

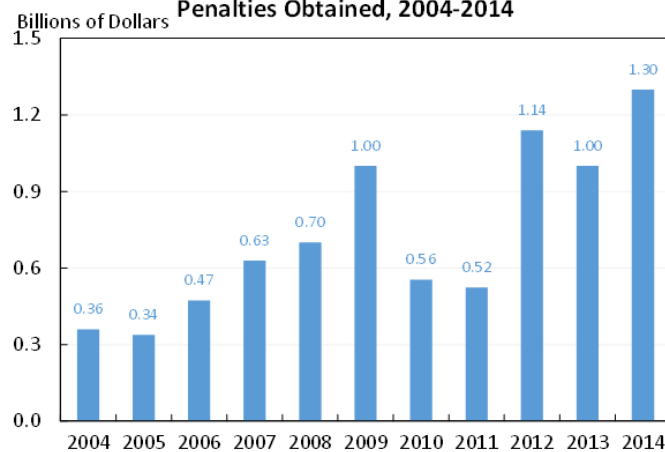
Price-fixing, bid-rigging, and market-allocation agreements among firms harm competition and increase prices for consumers. The Sherman Antitrust Act prohibits “every contract, combination..., or conspiracy, in restraint of trade or commerce,” and provides DOJ with the authority to prosecute entities and individuals who conspire to fix prices, rig bids, or allocate markets, so as to combat cartels, which the Supreme Court has deemed “the supreme evil of antitrust” (Baer 2014b). For those found guilty of these offenses, DOJ can recommend the imposition of various sanctions, including prison time and fines, as a way to hold wrongdoers accountable and punish and deter their harmful acts.

For example, DOJ uncovered a conspiracy among the world’s top manufacturers of liquid crystal display (LCD) panels to fix the prices for panels used in computer monitors, notebook computers, and televisions. Their price fixing of these inputs directly affected the prices of

these consumer products. DOJ’s economic expert estimated that the conspirators’ average per-panel margin was \$53 higher during the four years that they regularly met to coordinate their price fixing. The expert also testified that the conspirators’ overcharges on the panels that came into the United States were in excess of \$2 billion. DOJ’s LCD panel investigation led to 13 executives being convicted and \$1.3 billion in criminal fines, in addition to more than \$1 billion in damages recovered by States and private plaintiffs.

DOJ’s criminal prosecution of corporations and individuals and the sanctions resulting from those prosecutions have increased over time. Between 2009 and 2014, DOJ filed about 340 cases—a more than 60 percent increase over the prior five years—and charged more than 310 individuals and 110 corporations (Baer 2014a). This increased number of prosecutions has resulted in increased criminal fines. Between 2009 and 2014, DOJ obtained more than \$5.4 billion in criminal fines and penalties, including a record \$1.3 billion in 2014 (see Figure 6 below).¹⁷

Figure 6: Criminal Antitrust Fines and Penalties Obtained, 2004-2014



Source: U.S. Department of Justice, Antitrust Division

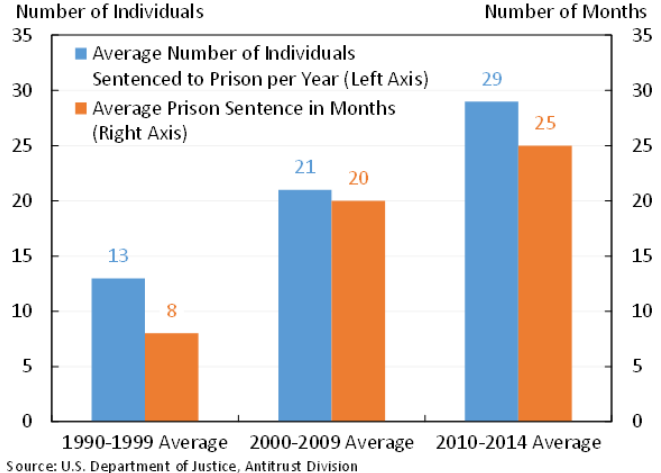
In addition to increased fines, DOJ has sought prison sentences for more individuals, and also longer prison sentences. Since 2010, the average number of individuals sentenced to prison each year for criminal antitrust violations has increased 38 percent and the average sentence has increased from 20 months in 2000-

¹⁶ The decision can be read here: http://www.supremecourt.gov/opinions/14pdf/13-534_19m2.pdf

¹⁷ DOJ’s criminal enforcement program update is available at: <http://www.justice.gov/atr/division-update/2015/criminal-program-update>

2009 to 25 months in 2010-2014.¹⁸ The average number of defendants sentenced to jail has also increased, from 21 in the 2000s to 29 in 2010-2014 (see Figure 7 below).¹⁹ Over time, these enhanced criminal enforcement activities could have a deterrent effect.

Figure 7: U.S. DOJ Antitrust Criminal Enforcement, 1990-2014



Antitrust law also prohibits agreements to fix wages or limit competition for workers. For example, DOJ has successfully challenged—through civil enforcement—agreements that limited competition for nurses in both Arizona and Utah. Registered nurses (RN) in a number of areas of the country have filed private antitrust suits alleging that hospitals colluded with their local competitors to avoid recruiting each other’s workers, thus depressing wages (Blair and DePasquale 2010).

Agency and Sector Specific Actions

Many other government agencies also have the ability to engage in sector-specific regulation and rule-making to affect pro-competitive outcomes. There have been multiple examples of such actions over the past several years, often in collaboration with competition advocacy efforts by the antitrust agencies.

- *Airport Access.* The DOT has in some proceedings successfully sought divestitures of airlines’ “slots”—the right to fly in and out of a capacity-constrained airport at a given time—to allow new competitors

access to this critical resource. These actions can facilitate entry by new competitors. For example, the FAA recently changed the designation of Newark Liberty International Airport from a “slot-controlled” to a “schedule-facilitated” airport. With this change in designation, any airline currently holding slots at the airport will need to use them or relinquish them to other airlines. The FAA’s action therefore potentially gives more airlines access to the airport, potentially increasing competition between airlines, which could ultimately lead to lower prices and/or higher quality services for travelers.

- *Net Neutrality.* The FCC’s 2010 Open Internet order, and its subsequent 2015 action, were aimed at ensuring that broadband providers do not exploit their “terminating access monopoly” over consumers to privilege their own vertically integrated content or discriminate against others’ content or force content providers to pay fees for access or preferential access to customers. In other words, broadband providers who have a monopoly over service to their individual customers may not provide faster or better access to their own content versus content provided by others. This action represents regulatory intervention targeting not just potential for anticompetitive behavior in the consumer market for Internet service providers, but potential competitive harms for other markets (video content, social media platforms, etc.) that depended on potential access to all online consumers regardless of their Internet service providers.
- *Wireless Spectrum.* The FCC has taken a number of steps to promote competition through ensuring competitive access to radiofrequency spectrum, a limited resource that allows telecommunications equipment like cellular phones and televisions to function. In its most recent design of a spectrum auction, the FCC established a market-based spectrum reserve designed to ensure against excessive concentration in holdings of low-band spectrum, and updated its bidding credit rules to

¹⁸Assistant Attorney General Bill Baer’s Testimony before the Oversight of the Antitrust Enforcement Agencies – House Judiciary Committee, Subcommittee on Regulatory Reform, Commercial and Antitrust Law, May

15, 2015, <http://www.justice.gov/atr/congressional-testimony>.

¹⁹ Also available from the criminal program update: <http://www.justice.gov/atr/division-update/2015/criminal-program-update>

provide meaningful opportunities to *bona fide* small businesses and rural service providers to participate in auctions. In 2015, the FCC also updated its spectrum screen used for competitive reviews of proposed secondary market transactions.

- *Cell Phone Unlocking.* Historically, when a consumer purchased a cellphone and signed a contract with a telecommunications service provider, he or she was often unable to switch networks (and thus service providers) while still using the same device. Because of certain software that resided on the device, this constraint was present even when the new network and the device were technologically compatible. The device could thus be said to be “locked” to this original network. In light of the fact that cell phone locking impedes consumer choice in the marketplace, the FCC worked to secure voluntary commitments from the wireless industry so that new policies could be adopted to reduce the scope, incidence, and impact of this practice. As of February 2015, all nationwide mobile service providers adopted six standards that had been laid out in 2014 by CTIA-The Wireless Association, an industry group.²⁰
- *Defense Acquisition and Procurement.* As part of its Better Buying Power [initiative](#), begun in 2010 and now in its third iteration, the Department of Defense (DoD) has focused more intensively on promoting competition among contractors that provide the military with goods and services. This initiative was undertaken in recognition of the fact that competition not only reduces prices and increases the quality and variety of goods and services but also spurs innovation and affords small businesses the opportunity to enter new markets, potentially boosting overall productivity of the defense industrial base. Importantly, because innovations in defense technologies often also have civilian applications, this form of innovation has the potential to impact the overall economy positively as well.
- *Standard-Essential Patents (SEPs).* Voluntary consensus standards set by standards-developing

²⁰ FCC provides a list of frequently asked questions about cell phone unlocking on its website as well as the list of the exact standards laid out by CTIA and subsequently

organizations (SDOs) have paved the way for innovation that allows consumers to use the many innovative features of today’s smart phones and computers, from e-mailing and texting to making video calls and watching videos. Often participants in a standard-setting process will voluntarily commit to license their patents that are essential to such standards, called SEPs, on fair, reasonable, and non-discriminatory (F/RAND) terms, in exchange for the benefit of being included in the standard. The International Trade Commission (ITC) was asked to issue an exclusion order in Samsung’s case against Apple for infringing its SEPs. During the ITC’s investigation, DOJ and the U.S. Patent and Trademark Office (USPTO) released a Joint Statement that outlined circumstances where the issuance of an exclusion order might fail to satisfy the ITC’s public interest standard. It said that a credible threat of an exclusion order, which would ban an alleged infringer’s competitive products from the market, could allow SEP owners to renege on their F/RAND commitment and extract supra-competitive royalty payments. This, in turn, could harm consumers through higher prices and stifle innovation by increasing the risks for companies seeking to implement standardized technology. In reviewing the ITC’s exclusion order, the U.S. Trade Representative (USTR) shared the concerns of the Joint Statement and disapproved the order issued by the ITC against Apple and in favor of Samsung. At the same time, the executive agencies all strongly supported the protection of intellectual property rights and the ability of SEP holders who make F/RAND commitments to receive appropriate compensation. The Joint Statement and USTR’s disapproval demonstrate how agencies of the executive branch can work together to promote and protect competition and consumers while protecting intellectual property rights.

Potential Areas for Future Consideration

Looking forward, as more and more sectors of the economy are digitized, departments and agencies may need to consider how digitization is impacting competition and whether additional regulation is

adopted by all nationwide wireless service providers: <https://www.fcc.gov/consumers/guides/cell-phone-unlocking-faqs>

needed. Thus potential areas for further exploration to enhance competition include the use of big data and the role of price transparency. Other areas for consideration include the role of common ownership of stock and the role of an evolving supply chain. All these areas present opportunities and challenges, and more research is needed.

Big Data

As indicated in the FTC’s 2016 “Big Data” [report](#), firms now routinely collect and trade customer information, including history of websites visited, prices observed, and products purchased. There are benefits to both firms and customers to having this information collected. Online merchants are able to carefully tailor their prices and products to each customer. As highlighted in CEA’s 2015 [report](#), “Big Data and Differential Pricing,” knowledge about individuals’ preferences, characteristics, and purchasing histories can allow firms to extend discounts, package deals, or other special offers to consumers in ways that make both firms and consumers better off. There may, however, also be costs, especially to consumers, including but not limited to loss of privacy or identity theft.

Regulators may want to consider whether this “big data” is a critical resource, without which new entrants might have a difficult time marketing to or otherwise attracting customers.²¹ Even if big data is considered a critical resource to which entrants need access, it is not clear whether or how it should be provided. One option might be to make some of the data portable, such that customers could take this data, and their business, to whichever seller they want. On the one hand, one might imagine that businesses would then compete with one another to offer better prices and higher quality services so as to win or retain a customer’s business. On the other hand, one might also imagine that businesses might adjust their businesses models, and become more selective in their initial customer acquisition strategy, which might leave some sets of customers worse off than before. Thus, more research is needed to better

²¹ In fact, in a December 2015 speech, FTC Commissioner Terrell McSweeney concluded “Can one company controlling vast amounts of data possess a kind of market power that creates a barrier to entry? It may be that an incumbent has significant advantages over new entrants when a firm has a database that would be difficult,

understand the costs and benefits of data portability. However, as noted above, mobility of assets—be they human, capital, or digital—may help to mitigate against market power abuses.

Price Transparency

Another area for further research by regulators and policymakers is price transparency. Greater transparency with regard to prices, in both offline and online markets, as well as ease of searching for these prices, could also be beneficial to consumers. If a customer can easily compare prices across multiple storefronts or websites, then the customer can make a well-informed decision, and businesses could be incentivized to compete for the customer’s business via lower prices (Brown and Goolsbee 2002; Brynjolfsson and Smith 2000; Zettelmeyer, Scott Morton and Silva-Russo 2001). However, other research has shown that price transparency can in some settings facilitate tacit collusion by enabling firms to see what other firms are charging, and hence easily detect any deviation from agreed-upon high prices (Stigler 1964; Kyle and Ridley 2007, Schultz 2005).

Governments and non-profit organizations have worked in the past to increase price transparency in some cases. For example, Education Superhighway allows school districts to compare broadband pricing and other contract terms across hundreds of other school districts (Education Superhighway 2015). Policymakers may want to consider additional ways to encourage greater transparency of prices, while recognizing and working to address the potential ways this service may aid firms’ attempts to collude.

Common Ownership

Common ownership of stocks by large institutional investors may also lead to anti-competitive effects (O’Brien and Salop 2000). A recent [paper](#) by Azar, Schmalz and Tecu (2015) argues that institutional investors, who are large owners of the biggest firms in an

costly, or time consuming for a new firm to match or replicate.”

https://www.ftc.gov/system/files/documents/public_statements/903953/mcsweeney_cra_conference_remarks_9-12-15.pdf;

industry, implicitly encourage the firms they own not to compete with each other, thereby raising profits. Further study of the anti-competitive effects of common ownership is warranted given that many U.S. industries are oligopolies and that the role of institutional investors has grown over the last 30 years—according to the Boston Consulting Group, 61 percent of assets under management worldwide in 2014 came from institutions (Shub et al. 2015).

Supply Chain

A final area for further examination and research is how to address market structure changes throughout the supply chain. A natural question is whether increased concentration in one area of the supply chain leads to increased concentration in other parts of the supply chain. One might imagine that consolidation could improve a firm’s bargaining position with upstream suppliers and downstream customers. More generally, economists are beginning to model and better understand empirically how consolidation in one part of the supply chain affects market outcomes and consumer welfare in other parts of the supply chain (e.g., Crawford and Yurukoglu 2012; Gowrisankaran, Nevo and Town 2015). The results of this effort and future research in this area will continue to be of use to antitrust authorities and regulators, ultimately helping to benefit consumers.

Conclusion

Competitive markets promote economic efficiency and growth. Their benefits can include lower prices and better products for consumers, greater opportunities for workers, and a level playing field for entrepreneurs and small businesses that seek to enter new markets or expand their share. When firms take action to impede competition, through anticompetitive mergers, exclusionary conduct, collusive agreements with rivals, or rent-seeking regulation to restrict entry, their profitability may increase, but at the cost of even greater reductions in consumer welfare and societal benefits.

Recent indicators suggest that many industries may be becoming more concentrated, that new firm entry is declining, and that some firms are generating returns that are greatly in excess of historical standards. In addition, the dollar volume of merger and acquisition activity is at record levels. There are also numerous barriers to entry at the State and local levels in the form

of occupational licensing and other restrictions that can effect workers as well as entry by small businesses and entrepreneurs.

Over the past several years, antitrust authorities have focused on mergers and acquisitions and have pursued criminal sanctions, in the form of historically high fines and long prison sentences, aimed at achieving more robust levels of deterrence. Antitrust authorities have also considered the important goal of promoting innovation.

Departments and agencies, including the FCC, USPTO, DOT, and others, have been using their regulatory authority to foster beneficial competition between firms. There may however be scope for additional actions to be taken by departments and agencies to promote competition through rulemaking and regulations and by eliminating regulations that create barriers to or limit competition.

Free markets have the potential to provide great improvements in living standards, channeling resources to productive uses and providing consumers with quality and choices. Sometimes, though, abuses of market power by firms can undermine many of these potential benefits. As this issue brief demonstrates, competition between firms can generate many benefits to consumers, workers, and small businesses. Yet, as this brief also discusses, some indicators suggest there is more market concentration, higher profits for a few firms, and declining entry, all of which could result from less competition. Competition policies and robust reaction to market power abuses can be an important way in which the government makes sure the market provides the best outcomes for society with respect to choice, innovation, and price as well as fair labor and business markets.

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