

Adding Dimension to Merger Analysis

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Abstract

Traditional merger analysis in the U.S. focuses on a single dimension, namely the combination of two or more firms that supply substitutable products. As such, merger analysis misses the fact that there are various types of mergers – e.g., hostile takeovers, friendly acquisitions, and mergers of equals – and that the differences among these types affect outcomes. Similarly missing is explicit consideration of merger-created synergies for future markets. We illustrate the effects of painting all mergers with the same brush on the propensity for firms to form beneficial mergers and we suggest means of changing merger analysis to reflect diversity in the natures of mergers and their future markets.

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I. Introduction

Two curious features of merger analysis are that while mergers are by definition about the future, historical data and contexts dominate the analyses, and that while there exists a rich body of empirical evidence regarding the diversity of firms engaging in mergers, the U.S. Department of Justice (DOJ) merger guidelines implicitly treat merging firms as generic entities. Both of these deficiencies matter because they raise firms' costs of merging, which is likely to diminish the number of beneficial mergers.

The DOJ developed merger guidelines to provide clarity for potentially merging firms as to how the Department would review their proposed merger. This goal resulted in a system of policies - applicable to all mergers - that relies upon concrete, quantitative analyses of known data from existing products and customers. We assert that this practice omits important complexities of current market realities, in particular with respect to the diverse natures of mergers and the options they create or foreclose for the future. In this paper we suggest policies that could remedy these deficiencies.

In the United States the possibility of a merger between two or more firms in an industry depends upon a body of law that includes the DOJ Merger Guidelines (hereafter, Merger Guidelines), which remain the primary legal guide for reviewing mergers and acquisitions, form the basis for case law on mergers,¹ and guide prosecutorial discretion (Pitofsky 1999). The most recent Merger Guidelines were developed by the DOJ and the

¹ Recent cases where courts have relied upon the merger guidelines to inform decision making include *United States v. H&R Block, Inc.* 833 F.Supp.2d 36 (D.D.C. 2011); *FTC v. Lab. Corp. of America* (C.D. Cal. Feb. 22, 2011); *United States v. Bazaarvoice Inc.*, 2014 WL 203966, 260 (N.D. Cal.); *ProMedica Health Sys. v. FTC*, 2014 WL 1584835 (6th Cir. 2014); *FTC v. OSF Healthcare Sys.*, 852 F. Supp. 2d 1069, 1095 (N.D. Ill. 2012); and *Saint Alphonsus Medical Center-Nampa v. St. Luke's Health System*, 2014 WL 407446 (D. Idaho).

Federal Trade Commission (FTC),² and are implemented through market analyses with an emphasis on evaluating market power.³ The Guidelines rely upon market definitions and critical loss analyses based on existing markets, assuming that each market affected by the merger is independent of other markets (except in the case of vertical integration). The Guidelines are the same for all mergers regardless of the actual nature of each transaction, although the Guidelines do not prohibit consideration of factors not specifically mentioned. These implicit assumptions, namely that all mergers are cut from nearly identical cloth and that primary impacts are on current markets, are inconsistent with actual business practices.

The issue of why mergers occur is critical to how they should be evaluated; mergers that occur to create market power, regardless of the potential impacts on technical efficiency, are different from and therefore should be evaluated differently from those that occur to take advantage of opportunities to diversify a product line, to take over a rival with incompetent management, or to develop a superior product in the future.⁴ As noted by Andrade et al. (2001), some of the reasons for mergers appear to be more relevant at some points of time than at others; for example, the 1980s were characterized by hostile takeovers as a result of poor management, while the 1990s were characterized by mergers in response to deregulation. Regardless, the fact remains that merger policy

² The Federal Communications Commission (FCC) also uses the DOJ/FTC guidelines, with the added criteria of public-interest concerns.

³ A firm is considered to have market power if it has some influence over the market price. Biggar (2011) summarizes the abuse of such market power as “practices by persons possessing market power that are unreasonably discriminatory or tend to unreasonably restrict, impair, or reduce the level of competition, including practices that tie unregulated products or services to regulated products or services or unreasonably discriminate in the provision of regulated services. Market power abuses include predatory pricing, withholding of production, precluding entry, and collusion.” (page 37). Possessing market power that results from superior skill, foresight, or industry, is not illegal (U.S. v. DuPont). A small degree of market power is common and the exercise of such market power by pricing a small degree above marginal cost, for example, is understood not to warrant antitrust intervention.

⁴ See Andrade et al. (2001) for a summary of academic literature concerning reasons for mergers.

is one-size-fits-all, while mergers are not. Additionally, merger policy explicitly emphasizes current markets, while the impacts of mergers not only occur in the future, but have the potential to create markets that exist only in the future.

We analyze these deficiencies in the Merger Guidelines as follows. First, we briefly review the history of the Guidelines to explain the motivations for their development and the analytical metrics used. We find that the Guidelines initially were developed to decrease uncertainty for merging firms regarding how the DOJ would analyze proposed mergers and were intended to be generic, not differentiating between different types of mergers. We show that the Guidelines have grown in their sophistication for analyzing potential impacts for existing markets, but largely omit considerations of potential future markets. In Section 3 we examine the empirical literature on mergers to illustrate how differences in the ways mergers are conducted affect outcomes. Based on the history and research to date, in Section 4 we offer modifications to the U.S. approach, recognizing diversity in merger approaches and the effects of intergenerational synergies between products, and show theoretically how the suggested approaches could improve outcomes. Section 5 is the conclusion.

II. Historical Development of Merger Guidelines

The DOJ's 1968 Merger Guidelines were the first such advices on how antitrust officials would review mergers.⁵ They appear to derive from Kaysen and Turner (1959), at least in part because Turner was head of the DOJ's Antitrust Division at the time of their adoption. Kaysen and Turner emphasized benchmarks, but the 1968 Merger Guidelines were more stringent, adopting market share limits based on recent merger decisions by the courts and a dislike for large enterprises (Shapiro 2010), and to a lesser

⁵ [1981] 1 Trade Reg. Rep. (CCH) ¶ 4510.

extent economic research. The reliance upon court cases biased the Guidelines towards analyses of current rather than potential future markets; however they succeeded in decreasing industry risk. (Williamson 2002)

Economic analysis began playing a more significant role in both court cases and DOJ guidelines in the 1970s and 1980s. Prior to the 1970s, the primary economic debates concerned Bain (1956) and Stigler (1942, 1964, 1968) with Bain stating that market structure created entry barriers that prevented new competition regardless of incumbent profits, while Stigler (1968) treated structure as endogenous and focused on government limiting competition. However, in 1974, the Supreme Court's decision in *United States v. General Dynamics Corp.*⁶ held that market share might not reflect a company's competitive position, emphasizing an economic bases for analyses rather than the structural basis. The 1982 Merger Guidelines followed this form and adopted the hypothetical monopolist concept that views supply and demand substitutability⁷ and entry as those factors that could constrain market power.⁸ The 1982 Merger Guidelines also introduced the Herfindahl-Hirschman Index (HHI), an index of market concentration still used by the DOJ and others.⁹

Although the Merger Guidelines have changed over time, the changes have expanded on the core of the 1982 version with its emphasis on current markets and its generic application. The 1984 Merger Guidelines merely offered clarification of points in

⁶ *United States v. General Dynamics Corp.* 415 U.S. 486 (1974).

⁷ Demand substitutability referred simply to customers' willingness to substitute one product for another. Supply substitutability and entry referred to the ability of producers not currently selling the particular product to begin doing so, with the difference between the two being that entry required more than one year for the new supply to occur because of the new investment needed for production and distribution.

⁸ Harkrider writes, "The hypothetical monopolist test is one of the organizing principles of the Horizontal Merger Guidelines, and it is a test increasingly applied to define markets, not just in merger cases, but throughout antitrust, and not just in the U.S., but throughout the world."

⁹ The HHI is the sum of the squares of market shares of all firms in a market. By squaring the market shares, the HHI gives relatively greater weight to larger firms in the market .

the 1982 version.¹⁰ The 1992 version introduced the idea of unilateral effects; i.e., the elimination of existing competition between merging suppliers.¹¹ It was the first set of Guidelines to be issued jointly by the DOJ and the FTC, and introduced a more sophisticated analysis of entry.¹² (Shapiro 2010; Scheffman, Coate and Silva 2002) In 1997 the Guidelines were modified further to incorporate explicit consideration of efficiency gains.

The 2010 Merger Guidelines provide tools for estimating competitive effects that do not require traditionally relied upon market definition; however, such market definition continues to dominate most DOJ/FTC analyses. The Guidelines acknowledge that defining markets is more difficult in differentiated product markets than in markets for fungible goods, and that results of market analyses can vary depending on the starting point of the analysis. Furthermore the Guidelines place additional emphasis on incentives for unilateral price increases and methods for measuring them.¹³ Finally, the Guidelines continue to recognize that customer options exist in both product characteristic and geographic space.¹⁴

The value of the Guidelines extends further than legal precedents or economic analyses. Of primary importance is the feasibility of the current Guidelines handling the

¹⁰ The clarification explained that a five percent price increase in the hypothetical monopoly test was not a rule, that price assumptions were to be calibrated to existing prices, that foreign competition would be treated like domestic competition, that efficiencies would be considered, and that standards for failing divisions would be similar to those applied to failing firms.

¹¹ More specifically, according to Section 6.1 of the 2010 Merger Guidelines, unilateral effects are as follows: “A merger between firms selling differentiated products may diminish competition by enabling the merged firm to profit by unilaterally raising the price of one or both products above the pre-merger level. Some of the sales lost due to the price rise will merely be diverted to the product of the merger partner and, depending on relative margins, capturing such sales loss through merger may make the price increase profitable even though it would not have been profitable prior to the merger.”

¹² U.S. Department of Justice, “1997 Merger Guidelines.” <http://www.justice.gov/atr/hmerger/11251.htm>. (Accessed May 13, 2013.)

¹³ U.S. Department of Justice & Fed. Trade Commission, Horizontal Merger Guidelines (2010), available at <http://www.ftc.gov/os/2010/08/100819hmg.pdf>.

¹⁴ Ibid.

way markets now operate; specifically, their ability to account for intergenerational synergies such as network effects that may drive and define future product markets, and the fact that the nature of a merger affects outcomes.

III. Empirical Studies of Mergers

Empirical research on mergers supports the notion that different types of mergers, or at least mergers in different contexts, have different outcomes. For example mergers based on stock transactions are more likely to harm shareholders than are mergers in which one firm acquires another using cash rather than stock (Chang and Suk 1998; Han, Suk, and Sung 1998). Also, firms with differing cultures are less likely to be successful than those with very similar cultures (Carey and Ogden 2004).

Andrade et al. (2001) state that economic theory has provided many reasons for why mergers might occur, and most theories have been found empirically to explain various mergers over the past century. The combination of theoretical and empirical studies supports our assertion that mergers differ with respect to intent as well as outcome. For example, more active antitrust enforcement slowed mergers to obtain market power that were typical prior to 1950s. In the 1960s, diversification drove most mergers, many of which ultimately were unsuccessful, and by the late 1980s through 1990s nearly half of all merger activity followed market deregulation. Jarrell, Brickley and Netter (1988) confirm that deregulation of a sector often prompts mergers, presumably because the decrease in control allows firms to reconfigure their products and production.¹⁵ This is consistent with later studies that find that take-over activity can be

¹⁵ Jarrell, Brickley and Netter (1988) also find that market globalization tends to offset any potential growth in market power.

driven by industry-wide shocks (Mitchell and Mulherin 1996, Andrade et al. 2001, Andrade and Stafford 2004, and Harford (2005)).¹⁶

Also with respect to the role of deregulation, Oytchinnikov (2013) finds that post-deregulation mergers serve a contractionary role, so that mergers represent a form of industry exit for poor performing firms prior to the deregulation. In this scenario, preventing a merger would result in industry exit of a poor-performing firm eventually, consolidating the market regardless; perhaps allowing a merger before performance actually suffers would lower transition costs, benefit employees, and allow the possibility of the consumers of those firms to enjoy better products or services.

More generally, research has found that industries tend to restructure in concentrated periods of time. Industry changes occur suddenly and are hard to predict (Andrade et al. 2001, Andrade and Stafford, 2004). Kaplan (2000) states "It is striking that most of the mergers and acquisitions were associated with technological or regulatory shocks," which is consistent with Pfeffer (1972), who argues that mergers are a means for dealing with uncertain operating environments. Jeziorski (2014) further confirms this understanding in observing the unprecedented wave of mergers in the U.S. radio industry following the lifting of ownership caps in 1996. Jeziorski's (2014) examination of the radio industry highlights the role of two-sided markets. He found that mergers benefitted listeners because of a decline in the amount of advertising and an increase in variety, but harmed advertisers because the mergers increased advertising prices.

¹⁶ These findings are also supported in the theoretical literature. For example, Hackbarth and Miao (2012) use an oligopoly model to show that mergers are more likely in more concentrated industries and in industries that are more exposed to industry-wide shocks, and that mergers are more likely and yield larger returns in industries with higher dispersion in firm size.

These studies support our assertion that technological industries are particularly important to analyze with market characteristics in mind due to the potential for intergenerational network effects and to the high value of research and development employees. Intergenerational effects are present when an old generation technology impacts the diffusion of a new generation of that technology and vice versa; e.g., the synergies that Microsoft created and benefitted from when it developed generations of Windows products and developed degrees of compatibility between them. In general customers who upgraded could read their old documents, use some of their old software and could exchange some, but not all, documents with customers who had not upgraded. This permitted network effects between the generations of products.

Desyllas and Hughes (2009), investigate the degree to which high technology firms engage in mergers and acquisitions to take over firms with superior innovation performance in order to obtain their products, or instead, if firms engage in acquisitions to turn around a poor-performing firm. They find evidence that acquirers seek out firms that have a superior past innovation performance, but that are failing in terms of recent productivity and financial performance. This may mean that firms are interested in salvaging a firm that can help it create future products as evidenced from the acquired firm's prior experience.

In technological industries, employees often are viewed as the asset to be gained (rather than a product or process),¹⁷ implying that proposed mergers focus on the means to innovate. Indeed some tech industry observers assert that most tech acquisitions are made not to have the product itself, but to obtain the talent behind those products.¹⁸ An

¹⁷ For example, see Eisenberger et al. (2002) and Erickson and Roloff (2007).

¹⁸ The Top Tech Companies with the Biggest Mergers and Acquisitions (2013).

example of this is Yahoo’s purchase of Rockmelt, a social news browser. According to Gigaom (2013), “One of the reasons the company got a rumored \$60 million price tag is because Rockmelt had an excellent engineering team and a lot of design talent, two areas that will be an immediate boost for Yahoo.”

Similar to our work, Blair and Sokol (forthcoming) suggest the need to change merger guidelines to impose an administrable system for measuring quality enhancing efficiencies. In particular, they consider one instance in which mergers should be considered under different guidelines, specifically, when costs increase but so do quality efficiencies. They state, “Without an economically sensible approach that can provide certainty as to when and how to structure potential quality enhancing mergers, businesses will be unable to identify lower risk antitrust mergers that enhance quality,” (page 5).

Our focus on future markets is supported by the 2001 decision of the European Union Competition Commission (EUCC) to deny the proposed merger of GE and Honeywell.¹⁹ One of the EUCC’s concerns was that GE’s aviation engines and financial capabilities, if combined with certain avionics products produced by Honeywell, would allow the merged company to develop product offerings that rivals could not match.²⁰ The Commission wrote that the merged company would “be able to offer a package of products that has never been put together on the market prior to the merger and that cannot be challenged by any other competitor on its own.” (§ 350) While we find it troubling that a competition authority would conclude that value-improving innovations

¹⁹ *General Electric/Honeywell*, Commission Decision, Case COMP/M. 2230, July 3, 2001.

²⁰ For example, the Commission concluded that the combination of GE Capital and the merged company’s aircraft engine business would allow it “to take more risk in product development programmes than any of its competitors.” (§ 108) Patterson and Shapiro (2001) provide an excellent analysis of the case, including the differences in approaches between U.S. and EU regulators.

that customers would like are harmful, the case nonetheless illustrates the relevance of mergers to future products and not just current products.

Companies that are able to generate future products may generate welfare-enhancing mergers. An example is the AMD / ATI merger. AMD produced processors, with Intel as its main rival. In 2006 AMD merged with graphics chipmaker ATI, and promised that the first computer systems that would take advantage of the strengths of the new combined company would be released in 2007. The merger allowed AMD to offer integrated processor and graphics solutions it otherwise could not have created, the result being a new market of smaller, more powerful computers.

IV. Analysis of the Relevance of Guidelines

Adoption of merger guidelines decreased uncertainty for merging firms, which should have increased the number of successful mergers relative to what would have occurred without the guidelines. We illustrate this with Figure 1. For ease of illustration, we assume that there are two homogenous firms, $i = 1, 2$, that can merge to form m .²¹ Firms 1 and 2 compete with other firms not shown in Figure 1. The inverse demand curves are shown by $Q_j(P)$, marginal cost curves by MC_j , and marginal revenue curves by MR_j , $j = 1, 2, m$. Post-merger demand faced by the merged firm is greater than pre-merger demand because of the loss of a competitor, but also might reflect the merged firm's ability to produce a higher quality product á la Blair and Sokol (forthcoming). Pre-merger prices and outputs are given by A_i and x_i respectively and post-merger prices and outputs are A_m and x_m . Pre-merger and post-merger profits are represented by the areas $\pi_i = A_i B_i C_i D_i$ and $\pi_m = A_m B_m C_m D_m$. The merger is profitable if $\pi_m - \pi_1 - \pi_2 >$

²¹ Assuming homogenous firms allow us to show demand, costs, prices and output for only one of the merging firms.

f , where $f = f_p + f_e$ is the fixed cost of planning and executing the merger. The merging firms incur planning costs f_p regardless of whether the merger is approved by the competition authorities and incur costs f_e only if the merger is implemented.

[INSERT FIGURE 1 ABOUT HERE]

The merging firms face the risk that the merger will not be approved. Let $1 > \bar{\rho} > 0$ represent the *ex ante* probability of a consumer welfare enhancing merger being approved and $1 > \underline{\rho} > 0$ represent the probability for a consumer welfare decreasing merger being rejected, both probabilities being from the perspectives of the merging firms. Both probabilities are increasing in the clarity and credibility of the Merger Guidelines. The *ex ante* expected profits are $E\pi = \bar{\rho}(\pi_m - f_e) - f_p + (1 - \bar{\rho})(\pi_1 + \pi_2)$ for a consumer welfare enhancing merger and $E\pi = (1 - \underline{\rho})(\pi_m - f_e) - f_p + \underline{\rho}(\pi_1 + \pi_2)$ for one that decreases consumer welfare. We assume that the merging firms know whether and how the merger affects consumer welfare. As would be expected, $E\pi$ is decreasing in the costs of merging, i.e., $\frac{\partial E\pi}{\partial f} < 0$. Furthermore the cost of planning the merger has a greater marginal impact on $E\pi$ than does the cost of executing the merger, i.e., $\left| \frac{\partial E\pi}{\partial f_p} \right| > \left| \frac{\partial E\pi}{\partial f_e} \right|$. Profit maximizing firms propose a merger if $E\pi > \pi_1 + \pi_2$, so it follows that increased clarity and credibility in the Merger Guidelines should increase the number of requested mergers that improve consumer welfare and decrease the number of proposed mergers that decrease consumer welfare, i.e., $\frac{\partial E\pi}{\partial \bar{\rho}} > 0$ and $\frac{\partial E\pi}{\partial \underline{\rho}} < 0$ for $\pi_m - f_e > \pi_1 + \pi_2$.

Based on our review of the literature on merger planning and impacts, we identify two potential areas for improvement in the Merger Guidelines. One area is in consideration of mergers in contexts that increase the likelihood that the mergers are efficiency improving. The efficiencies might be technical gains, such as cost decreasing, or dynamic, as in the quality improving case considered by Blair and Sokol (forthcoming). Although the Guidelines contain provisions for considering possible gains in technical efficiency as a result of a merger, we identify contexts where a greater presumption of improved efficiency appears to be in order. The other area for improvement relates to new products. We observe that certain types of mergers are more likely to result in new products, and thus new consumer welfare, than other types of mergers.

A. Efficiency Enhancing Mergers of Existing Products

Empirical studies show that mergers are more prevalent in industries undergoing deregulation and more rapid (than average) technological change. Both contexts – deregulation and rapid technological change – imply opportunities for efficiency-improving mergers. Regulation may hold industries in outdated market structures and operating practices (Jamison and Sichter 2010). As changes in technology enable cost decreases (Correa 2006, Jamison 2007, Jorgenson 2001, Jorgenson and Vu 2007), mergers can provide the merged firm with access to new combinations of capabilities (Desyllas and Hughes 2009, Eisenberger et al. 2002, and Erickson and Roloff 2007). It would be consumer welfare enhancing if antitrust authorities were to lower the burden of proof on firms seeking to merge, or allow a greater presumption of efficiency gains for such mergers that are proposed in the context of deregulation.

To demonstrate this result, consider a modification to our analysis. Let $1 > \varepsilon(\tau) > 0$ represent the antitrust regulator's *ex ante* belief about the probability that a proposed merger is efficiency enhancing, where $\tau = \{0, 1\}$ represents the merger type. We let $\tau = 1$ represent a merger type that is more likely to be efficiency enhancing than a merger of type $\tau = 0$. $\varepsilon(\tau)$ is increasing in τ . Easing the burden of proof for mergers of the more efficient type decreases f_p , which we have shown increases the number of proposed mergers. While this lower burden would apply to both consumer welfare increasing and welfare decreasing mergers, the greater probability of mergers of type $\tau = 1$ being cost decreasing justifies some amount of lower burden of proof. The optimal decrease in burden would be difficult to determine and may be beyond empirical estimation.

B. Future Products

Mergers by definition are about the future. Industries undergoing deregulation use their newfound freedoms to transform products and markets, including creating new ones (Chan-Olmsted and Jamison 2001). Technology change increases the propensity to merge in order to form new products in addition to possibilities to decrease costs (Chan-Olmsted and Jamison 2001, Jamison 2007).

That the Merger Guidelines omits consideration of two-sided markets is well known.²² A two-sided market is one in which a platform provides connections between buyers and sellers in a standardized way that creates value for both sides. Such markets disrupt traditional merger analysis that analyses markets individually, because the sides of the market are interdependent in that they exhibit network effects. Network effects

²² Evans (forthcoming) explains how Merger Guidelines could be modified to address two-sided markets for current products.

mean that a market participant's presence and/or activities create value for other market participants. In such markets a platform provider can be justified in charging a higher price in one side of the market because it enables a lower price on the other side. Such pricing may be welfare enhancing.

However, the network effect discussions to date largely omit consideration of intergenerational network effects. According to Liikanen et al. (2004) the diffusion literature has largely either ignored generational changes or taken them into account only as represented by associated changes in the price or quality of the generic technology being diffused. Their study finds that an existing base of mobile customers increases market penetration for the next generation, and that the next generation cannibalizes customers of the first generation technology. Intergenerational network effects have been considered in some antitrust literature, but cast in a negative light. Cremer, Rey, and Tirole (2000) examined how market concentration in the Internet backbone might impact the quality of connectivity. They based their model on the notion that customers join networks in generations and concluded that larger backbone providers were likely to degrade connectivity with smaller backbone providers to gain market share. Carlton and Waldman (2002) examined how a monopolist might leverage its existing monopoly into future markets where customers value intergenerational compatibility. Missing from Cremer et al. (2000) and Carlton and Waldman (2002) is an analysis of how opportunities for future markets might impact investments in today's markets and how such issues might impact merger guidelines.

Figure 2 illustrates our analysis of these issues by representing the demand and costs for an existing product and for a new product post-merger. The inverse demand

curve for the existing product is $Q(P)$ and for the new product is $Q_N(P)$, marginal cost curves are MC and MC_N respectively, and marginal revenue curves MR and MR_N respectively.²³ We expect demand to be greater for the new product than for the existing product, all else equal, because customers need to receive greater consumer welfare for the introduction to be successful. If customers do not receive greater welfare, then rivals can continue to supply the existing product and the new product fails.²⁴ We show marginal costs higher for the new product than for the existing product, but the opposite could be true. Prices and outputs, existing and new, are A and A_N , and x and x_N respectively. Respective operating profits are represented by the areas $\pi = A B C D$ and $\pi_N = A_N B_N C_N D_N$ respectively. There is a fixed cost f_N of developing the new product.

Introducing the new product is profitable if $\pi_N - \delta\pi > f_N$, where $\delta\pi$ is the amount of profit from the existing product that is displaced by the new product. The merged firm introduces the new product when $\pi_N - \delta\pi > f_N$. The merger can affect this condition in two ways. First, for firms in industries subject to deregulation, rapid technology change, or both, the merger may decrease f_N , thus lowering the fixed cost threshold for the product innovation. It might also be that the merger provides larger customer bases, i.e., x and x_N , which increases the merged firm's propensity to introduce the new product if some of the marginal production costs are customer acquisition costs. Furthermore, if there are intergenerational network effects, the merger having resulted in a larger x implies that there also will be a larger x_N because $\frac{\partial x_N}{\partial x} > 0$, which implies that the net change in profits $\pi_N - \delta\pi$ is weakly larger than without the network effects.

²³ Even though we use this graph to discuss network effects, we do not explicitly show them because we also analyze situations without network effects.

²⁴ It is also feasible that the new product has lower demand, but is still successful because its production costs are much lower than those of the existing product.

If profit-maximizing firms consider these future profits when deciding whether to merge, they are more likely to propose a merger. We express the firms' *ex ante* expected profits considering the potential for new products as $E\hat{\pi} = \bar{\rho}(\pi_m - f_e + \pi_N - \delta\pi - f_N) - f_p + (1 - \bar{\rho})(\pi_1 + \pi_2)$ for a consumer welfare enhancing merger and $E\hat{\pi} = (1 - \underline{\rho})(\pi_m - f_e + \pi_N - \delta\pi - f_N) - f_p + \underline{\rho}(\pi_1 + \pi_2)$ for one that decreases consumer welfare. Assuming that the new product is profitable, i.e., that $+\pi_N - \delta\pi > f_N$, considering new products unambiguously increases the number of proposed mergers, all other things being equal. However, because the new product must be consumer welfare enhancing to be successful in the marketplace, considering its impact also increases the number of possible consumer welfare enhancing mergers relative to those that are not, which implies that customers are better off.

V. Conclusion

The continually increasing number of technology-driven companies and associated products indicates that merger guidelines must adapt in order to allow consumer-welfare enhancing mergers to take place when appropriate.

We suggest that the Guidelines incorporate consideration of various natures of mergers such that the burden of proof is lightened for those types of mergers historically and empirically shown to benefit consumers. In this way, the Guidelines can continue to offer certainty for potentially merging firms, while allowing welfare-improving mergers greater consideration than currently afforded.

Figures

Figure 1. Graphical Depiction of Pre- and Post-Merger Firms

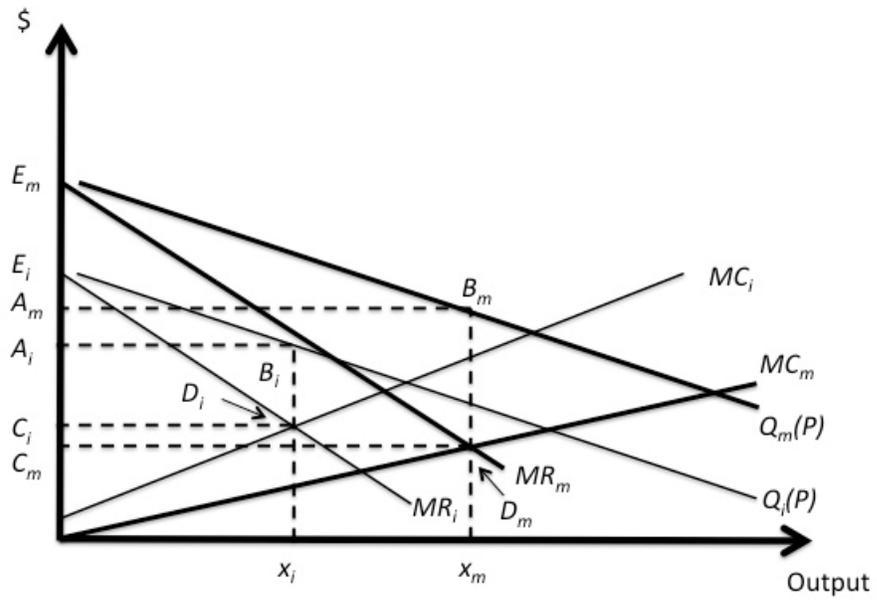
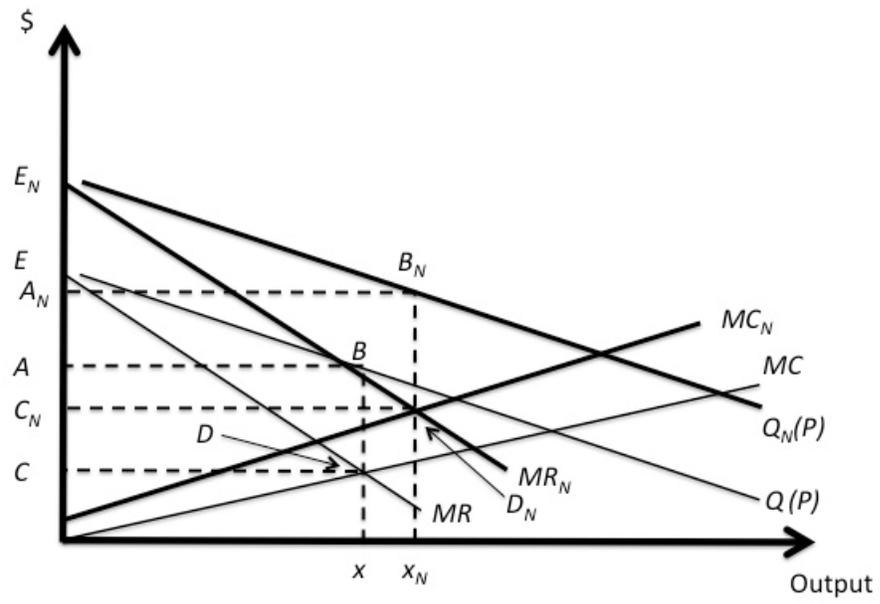


Figure 2. Graphical Depiction of Existing and New Product Post-Merger



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