ANTITRUST POLICY TOWARD INNOVATION COMPETITION: MEASURING DYNAMIC EFFICIENCY

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Economic analysis of dynamic efficiency is essential for antitrust policy. I argue that measuring dynamic efficiency is feasible for antitrust policy makers. I introduce the concept of the innovative delta as a measure of dynamic efficiency. The innovative delta measures the welfare effects of an observed technological change. In merger policy, a positive innovative delta could provide an efficiency defense for a merger, whereas a negative innovative delta could indicate harm. The innovative delta also supports a rule of reason approach to innovation competition.
I. INTRODUCTION

Antitrust policy makers are rejecting economic efficiency and economic analysis. The “Neo-Brandeisians” yearn for a time when big was bad, and many competitive activities were per se illegal. This policy shift would reject horizontal and vertical mergers for their market structure effects without efficiency considerations. This approach would reject the rule of reason that explains why certain competitive strategies could be efficient. Antitrust policy makers would ignore advances in economic analysis and overturn decades of legal precedents.

To make matters worse, the need for economic efficiency in antitrust policy is greater than ever before. This need arises from the explosion of innovation competition, as detailed in Spulber. Firms are increasingly engaged in competition through innovation, providing new products, production processes, and transaction methods.

The rise of innovation competition requires updating economic efficiency in antitrust policy. Traditional static efficiency based on an absence of technological change may not serve as a reliable guide for antitrust. However, antitrust policy must embrace dynamic efficiency to protect innovation competition. I introduce the concept of the innovative delta as a measure of dynamic efficiency. The innovative delta measures the welfare effects of an observed technological change.

Advances in Technology & Innovation Economics offer conceptual tools that are useful for analyzing dynamic efficiency. I argue that these tools are well within the reach of antitrust policy makers. I suggest that dynamic efficiency need not require speculative long-term analysis, but rather can be accomplished by simply considering a wider range of relevant economic data. I find that although technological change unfolds over time, the data needed for dynamic efficiency is readily available and easily understood.

In this article, I consider some of the implications of technological change for antitrust policy. I discuss the framework in Spulber that explains why antitrust policy requires economic analysis to address innovation competition. Antitrust policy should recognize dynamic efficiency explanations for competitive strategies in innovation competition. Antitrust policy should consider dynamic efficiency aspects of mergers, as discussed by Abbott and Spulber.

II. ECONOMIC EFFICIENCY IN ANTITRUST ANALYSIS

The underlying problem is that the Antitrust Laws are short on specifics. Congress passed the Sherman Act, for example, “[t]o protect trade and commerce against unlawful restraints and monopolies.” To avoid unintended consequences, antitrust policies should protect competitive conduct while limiting anticompetitive conduct. Policy makers, however, face the difficult task of distinguishing competitive from anticompetitive conduct.

This is where economic efficiency comes in. By considering economic efficiency, antitrust policy can better distinguish competitive conduct from anticompetitive conduct. Without economic analysis, antitrust policy itself risks restraining competition. Policy makers unfortunately may condemn efficient conduct that strengthens competition or support inefficient conduct that weakens competition.

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Some policy makers and academics advocate antitrust based on solely on market power, the size of firms, and market concentration without considering consumer welfare or social welfare standards.\(^8\) Marshall Steinbaum and Maurice Stucke maintain that “[a]ntitrust, historically, was never about promoting either allocative efficiency or consumer welfare. Instead, antitrust aimed to deconcentrate private power by protecting the competitive process.”\(^9\)

Economic analysis supports applying a social welfare standard to evaluate economic efficiency. In general, economists characterize efficiency in terms of Pareto Optimality, that is, an outcome is efficient if there is no other outcome that makes everyone better off. A measure of social welfare in many policy applications consists of total welfare, that is, the sum of consumers’ surplus and producers’ profit. Then, the efficient outcome under the social welfare standard maximizes total welfare.

Antitrust policy often applies a consumer welfare standard that typically is measured as total consumers’ surplus.\(^10\) Herbert Hovenkamp suggests that ease of use supports the consumer welfare standard: “a consumer welfare approach to antitrust’s goals is generally justified on administrative grounds. As Williamson’s original ‘welfare tradeoff’ model indicates, a total welfare approach to antitrust harm would require courts to routinely balance out consumer injuries from allocative inefficiencies against firm gains attributable to production efficiencies.”\(^11\) Christine Wilson notes that the consumer welfare standard “works because it is administrable, predictable, and credible. Injecting additional goals will undermine credibility and predictability while leading to subjectivity and politicization.”\(^12\)

Under the consumer welfare standard, efficiency would require choosing policy objectives to maximize consumers’ surplus. The consumer welfare standard can differ from the social welfare standard because it presumably does not consider the effects of policies on firm profits. Hovenkamp observes “[t]he system that we actually have requires one to show only higher prices resulting from the exercise of market power. It requires a complex calculation of the magnitude of resulting efficiencies only in a very few cases.”\(^13\)

There are limitations to the application of the consumer welfare standard because antitrust policies must be feasible. Antitrust policies are not feasible if they generate losses for firms. This suggests that the consumer welfare standard might be modified to require that firms be profitable. Consumer welfare can guide policy decisions although policy makers must take social welfare into account.\(^14\) More generally, if we recognize that consumers own firms and ultimately obtain their profits, a consumer welfare standard would address social welfare considerations.

Christine Wilson et al. examine the social welfare standard. They consider both differentiated and homogeneous products. Their analysis shows that the social welfare standard is feasible. The welfare tradeoffs between price increases and cost savings noted by Williamson can be estimated in practice. They observe that “adoption of the total welfare standard would give antitrust enforcers greater latitude to consider efficiencies.”\(^15\) They conclude that “[a] total welfare standard would be predictable, administrable, and credible.”\(^16\)

Under some conditions, the consumer welfare standard can provide a useful guide to economic efficiency. Consumer welfare and social welfare may be positively correlated. To illustrate how the consumer welfare standard and the social welfare standard can be related, consider a simple example. Suppose that there is one consumer and one firm that engage in a transaction. The consumer has benefit B

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8 Lina M. Khan, Amazon’s Antitrust Paradox, 126 Yale L. J. 710, 716 (“equating competition with ‘consumer welfare,’ typically measured through short-term effects on price and output – fails to capture the architecture of market power in the twenty-first century marketplace.”).


10 Christine S. Wilson, Thomas J. Klotz & Jeremy A. Sandford, Recalibrating the Dialogue on Welfare Standards: Reinserting the Total Welfare Standard into the Debate, 26 Geo. Mason L. Rev. 1435 (2019). At 1438. (“The prevailing consumer welfare standard seeks to maximize consumer surplus or, in economic terms, the difference between what each consumer actually pays and what he or she would be willing to pay.”)


12 Wilson, 2021, id.

13 Hovenkamp, 2012, id.


15 Christine Wilson et al. at 1466.

16 Christine Wilson et al. at 1467, italics and capitals removed.
from the exchange and the firm has cost $C$ from the exchange. Social welfare $W$ equals gains from trade that are the net benefit from the exchange, $W = B - C$.

Suppose that the consumer and the firm negotiate how they will share the net benefit from the exchange. Negotiation results in a fixed share $S$ for the consumer and $1 - S$ for the firm, where $S$ is a number between zero and one. Then, the interests of the consumer and the firm are aligned because both wish to maximize gains from trade $B - C$. When the share $S$ is a constant, the outcome is the same whether a policy seeks to maximize either consumer surplus $S(B - C)$, firm profit $(1 - S)(B - C)$, or social welfare $B - C$.

In this basic example, with a constant sharing rule, the exchange price is determined by equating consumer surplus to the consumer’s share of gains from trade, $B - P = S(B - C)$. So, the price equals the weighted average of the consumer’s benefit and the producer’s cost, $P = (1 - S)B + SC$. With the sharing rule, producer profit is $P - C = (1 - S)(B - C)$. Again, choosing gains from trade to maximize consumers’ surplus $B - P$ is the same as maximizing social welfare $B - C$.

If antitrust policy makers seek to change the sharing rule, then the interests of the consumer and firm may no longer be fully aligned. Then, antitrust policy shifts gains from trade between consumers and firms. If policy makers focus only on consumers’ surplus, the outcome can be inefficient if policies generate gains from trade that are less than optimal as a means of increasing the consumer’s net benefit.

As is well known, if producers increase their share of gains from trade, then Williamson’s welfare trade-off arises. Suppose that a merger improves efficiency by decreasing cost from $C_1$ to a lower cost $C_2$, which increases gains from trade. Suppose, however, that the merger decreases the consumer’s share of gains from trade from $S_1$ to a lower share $S_2$. Then, the consumer welfare standard depends on the trade-off between efficiency gains and harm, so it is necessary to compare $S_1(B - C_1)$ with $S_2(B - C_2)$. Consumers are made better off only if the efficiency gains outweigh the harm from changing the consumer’s share of gains from trade.

**III. ANTITRUST AND DYNAMIC ECONOMIC EFFICIENCY**

The consumer welfare or social welfare standards not only are consistent with dynamic efficiency but demand it. Because technological change drives the economy, the consumer welfare standard or the social welfare standard should be applied to innovation competition. If consumers are made better off by innovation, antitrust policy that protects innovation competition will benefit consumers. Conversely, antitrust policy that discourages innovation competition will harm consumers.

Antitrust policy should consider dynamic efficiency in evaluating mergers and competitive conduct. Antitrust policy should avoid discouraging economically efficient strategies in innovation competition.

Measuring dynamic efficiency is straightforward and achievable. Public policy makers and economists can evaluate dynamic efficiency by supplementing price data with information about technological change. Evaluating technological change should be based on comparing observed technological innovations with the relevant existing generation of technology.

The main thing is to determine if innovation makes a positive contribution to social welfare. This should not require extensive technical or scientific analysis of research and development (R&D). There is no need to extend the time horizon very far. There also is no need for detailed forecasts of uncertain future innovations. It is sufficient to determine the benefits of a new technology as compared to the best existing technology. Policy makers also can measure adoption and diffusion of the new technology.

To measure dynamic efficiency, I introduce the concept of the innovative delta. To illustrate this, consider antitrust policy toward mergers. Suppose that two companies propose a merger. Antitrust policy makers anticipate that social welfare without the merger is $W$ and social welfare with the merger is $W + \Delta$. Here, $\Delta$ represents economic analysis of the effects of competitive conduct on social welfare taking innovation into account. Antitrust policy makers should not presume that the innovative delta is positive or negative but should be willing to estimate its value.
The “innovation theory of harm” claims that mergers decrease incentives for innovation.\(^{17}\) This view is based on the idea that the merger will decrease innovation and reduce welfare. So, using my terminology, the “innovation theory of harm” predicts that mergers have a negative innovative delta. Antitrust policy makers may seek to block a merger with a negative innovative delta.

In contrast, I would suggest that what I term the “innovation theory of efficiency” would apply when mergers increase incentives for innovation. The “innovation theory of efficiency” predicts that mergers have a positive innovative delta. Merging firms should be able to defend the merger by providing evidence of innovative efficiency, that is, a positive innovative delta can be an efficiency defense of a merger.

There are several reasons that mergers and acquisitions (“M&A”) can generate innovation efficiencies. Horizontal and conglomerate mergers can have a positive innovative delta. The merged firms may have greater incentives to conduct R&D because they can cross-sell product innovations in their combined markets. Incentives to innovate are limited by the extent of the market, so a larger market can increase the returns to R&D.\(^{18}\)

There may be economies of scale in R&D, as Joseph Schumpeter understood, so that larger firms can realize efficiencies in producing inventions. By combining complementary R&D projects, merging firms can realize economies of scope by sharing equipment, facilities, and other assets across those R&D projects. Merging firms could bring together complementary scientific and technical knowledge that might generate better innovations. Merging firms could combine their portfolio of inventions with their various skills in implementing and developing innovative products based on those inventions.

Vertical mergers can have a positive innovative delta. The vertically integrated firm may obtain returns from combining invention and innovation, improving the design of new products because of better market information, and improving the commercialization of products due to better product designs. These returns to invention and innovation will generate more R&D.

Acquisition of startups and new entrants also can have a positive innovative delta. The incumbent firm can acquire a startup or entrant to expand its portfolio of technologies or to broaden its product range. The incumbent can develop and implement the newly acquired technology. The incumbent firm that acquires the startup or new entrant may have access to capital that allows it to grow the acquired firm. The incumbent firm may have complementary technological knowledge and intellectual property (IP) that can be combined with the newly acquired technology to generate better innovations.

Measuring the innovative delta also can guide antitrust policy toward innovation competition. A positive innovative delta supports application of the rule of reason. An efficiency defense for competitive conduct might apply if an innovation makes a positive contribution to products, production processes, or transaction methods. Just as anticompetitive conduct can harm innovation, competitive conduct can stimulate innovation.

The rule of reason should extend to innovation competition. For example, the innovative delta can measure consumer benefits from product improvements such as computers with greater memory, higher processing power, longer battery life, greater speed, or clearer screens. Also, the innovative delta can measure consumer benefits from new products that increase product variety so that consumer benefits after innovation are \(B + \Delta\). On the producer side, the innovative delta can measure improvements in production processes that lower costs of production or increase the speed of production so that producer costs are \(C - \Delta\). The innovative delta can indicate improvements in transaction methods can lower the costs of search or negotiation or improve the quality of matches, leading to greater gains from trade, \(B - C + \Delta\).

Consider Moore’s Law for semiconductors. It is not necessary to review the full sweep of improvements in semiconductors over the decades. It also is not necessary to hypothesize what may be future generations. It is sufficient for policy makers to identify what is the relevant new generation of semiconductors and evaluate its contribution against the existing generation of semiconductors. Policy makers can also review adoption and usage of the new and existing generations of microprocessors.

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\(^{17}\) For a critical discussion of this issue, see Nicolas Petit, Innovation Competition, Unilateral Effects, and Merger Policy, 82 Antitrust Law Journal, 873-920 (2019).

Then, antitrust policy can determine whether competitive strategies increase or decrease efficiency using the consumer welfare standard or the welfare standard. This analysis shows that examining the competitive effects of innovation does not require abandoning the consumer welfare standard or the social welfare standard. These standards can include the effects of innovation competition.

As Marshall Steinbaum and Maurice Stucke observe, “[c]ompetition agencies recognize that anticompetitive behavior can affect not just price and output but also privacy protection, quality, variety, services, and innovation.”19 Jonathan B. Baker notes “[i]f competition would be harmed on dimensions other than price, such as quality or innovation, it would also not matter whether the price (or the quality-adjusted price) exceeds a competitive level. The antitrust issue is whether the reduction in competition made the terms of trade adverse to buyers relative to the but-for world, regardless of the dimensions on which the firms compete or the absolute level of prices.”20

Defining dynamic competition and evaluating its welfare effects, however, continues to pose conceptual challenges to policy makers. The fundamental problem lies in interpreting the term “dynamic efficiency”. Examining dynamic efficiency, as opposed to “static efficiency”, suggests to some policy makers that they should track economic change over a long period of time, requiring extensive data gathering. This also suggests to some policy makers that they should make predictions about future economic events, which are necessarily uncertain, thus requiring substantial empirical analysis. These interpretations make the dynamic efficiency criterion unworkable.

For example, the U.K Competition and Markets Authority (“CMA”) recognizes the dynamic aspects of innovation competition: “The CMA views competition as a process of rivalry between firms seeking to win customers’ business over time by offering them a better deal. Rivalry creates incentives for firms to cut prices, increase outputs, improve quality, enhance efficiency, or introduce new and better products. This is because rivalry provides the opportunity for successful firms to take business away from competitors, and poses the threat that firms will lose business to others if they do not compete successfully.”21 So far so good, but then the CMA raises concerns that policy makers face uncertainty if they address innovation: “in dynamic markets, firms that may not compete head-to-head today might do so in the future. The threat of future disruption may inspire incumbent suppliers to improve their offer in the present, for the benefit of consumers. Fast-changing and evolving markets make predicting the future uncertain.”22

The U.K. Competition Appeal Tribunal (“CAT”) in Meta Platforms v. Competition and Markets Authority stated that “Competition, and impairments to competition, need to be understood as subsisting on a spectrum.”23 They suggest that the spectrum of competition ranges from static competition at one end, to potential competition in the middle, and finally to dynamic competition at the other end. Static competition is the market “as it is”, potential competition can “arise” from the market as it is, and dynamic competition “involves a far greater consideration of innovation and invention.”24 The CAT concludes that the legal requirement for antitrust is a “substantial lessening of competition” regardless of what type of competition we are addressing. The CAT argues that antitrust law applies without providing guidelines for evaluating what is dynamic competition.25

Antitrust policy makers in the EU make the same mistake in defining dynamic efficiency. For example, Novartis/GlaxoSmithKline addresses the potential effects of horizontal mergers on innovation competition.26 The decision states that the European Commission “considers

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19 Steinbaum & Stucke at 616. They suggest using a broader standard that includes distributive effects. (“The effective competition standard would require the courts and agencies to look beyond price effects in mergers, anticompetitive conduct, and monopolization and monopsonization cases, including effects on other important, nonprice parameters of competition (such as quality, choice, and privacy). In weighing these effects, courts should not offset harm to competition for one set of stakeholders with benefits for another when there is no mechanism for compensation, as is usually the case.”)


22 CMA, 2021, id. at .3


24 Meta Platforms, 2022, id.

25 Gabriele Corbetta & Joe Perkins: “Frameworks for Dynamic Competition”, Network Law, Review, July 4, 2023, https://www.networklawreview.org/frameworks-dynamic-competition/ (“the CAT’s framework is in our view insufficient. While the factors it raises will often be relevant to an assessment of the likely impacts of a merger involving dynamic competition, the link between these factors and consumer outcomes is currently insufficiently well-evidenced to place significant weight on them.”)

26 Case M.7275, Novartis/GlaxoSmithKline Oncology, 2015 E.C.R.
that when research and development ("R&D") activities are assessed in terms of importance for future markets, the product market definition can be left open, reflecting the intrinsic uncertainty in analysing products that do not exist as yet."27

The Department of Justice/Federal Trade Commission Draft Merger Guidelines follow a similar flawed approach: "[w]hen considering harm to competition in innovation, market definition may follow the same approaches that are used to analyze other dimensions of competition. In the case where a merger may substantially lessen competition by decreasing incentives for innovation, the Agencies may define relevant antitrust markets around the products that would result from that innovation, even if they do not yet exist. In some cases, the Agencies may analyze different relevant markets when considering innovation than when considering other dimensions of competition."28

Although antitrust policy necessarily requires some anticipation of market outcomes, antitrust policy makers do not have a crystal ball. The basic measures of innovation discussed here place dynamic efficiency in the realm of the possible because they consider observable technological change. Antitrust policies founded on speculative predictions of innovations not yet discovered are doomed to fail.

Public policy makers should not pick winners and losers among technological approaches that are not fully tested in the marketplace. Antitrust policy based on speculation about future products that do not exist will be arbitrary. Antitrust policies based on visions of technology in the future are likely to reflect policy biases, such as merger policies directed against size or market concentration.

IV. CONCLUSION

There is no conflict between dynamic efficiency and innovation. Rather, innovation is the foundation of dynamic efficiency. Efficiency in R&D depends on firms trying to create beneficial inventions and innovations. Efficiency in product development requires that firms apply new technologies that increase consumer benefits. Efficiency in production requires that firms implement new technologies that lower costs and improve productivity. Efficiency in markets requires that firms introduce new technologies that increase the convenience and effectiveness of transactions.

Antitrust policy that protects innovation competition requires economic analysis of dynamic economic efficiency. Companies that operate inefficiently will go out of business, reducing the number of competitors. Companies that are less efficient than their rivals also may be driven out of business. Antitrust policies that limit efficient competitive strategies may channel firms into calmer waters with less intense competition.

I have argued that measuring innovative dimensions of competition is feasible for policy makers. It is feasible because economic analysis can measure the incremental effects of observed technological change. Measuring the innovative delta can guide merger policy, providing an efficiency defense or an indication of harm. Measuring the innovative delta also can help determine whether some types of conduct are competitive or anticompetitive, supporting a rule of reason approach for some types of conduct.

Innovation increases the intensity of competition and benefits consumers. Firms that provide better inventions and innovations tend to outperform competitors. Creative incumbents and entrants displace rivals with obsolete technologies. The increasing importance of innovation competition suggests that antitrust policy makers should continue to recognize and measure dynamic efficiency.

27 Novartis/GlaxoSmithKline, at 6.

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