LOUIS KAPLOW

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Rethinking Merger Analysis

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Rethinking Merger Analysis

Louis Kaplow

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For Jody, Irene and Dave, Leah and Jared

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Preface

Why *rethink* merger analysis? Merger policy is unquestionably one of the most consequential domains of competition regulation throughout the world, and it has advanced greatly over the past half-century due in large part to advances in industrial organization economics. Merger analysis is thus quite important, and its broad features seem to be well settled.

But are they? And should they be?

When I contemplated launching this project in 2017, I had already written about fundamental defects in the market definition paradigm that underlies the so-called structural presumption (with recent efforts to reinforce and extend it) and other key features of modern merger guidelines and court precedents. But many of these ideas have not fully penetrated economic research, policy advocacy, and everyday merger practice, in part because it was not appreciated just how the key criticisms fit in and what their implications were. Hence the need to rethink, or at least to think some more. It turns out that the problems are worse than most imagine. An illustrative ΔHHI challenge threshold in a prominent, recent article would change by more than two orders of magnitude simply by varying the posited elasticity of demand within the range consistent with the HMT ratifying a narrow, homogeneous goods market. The pertinent formula also contradicts the use of the ΔHHI in the "relevant" market whenever the homogeneous market is broadened. Moreover, existing protocols can misorder mergers—presumptively challenging one and giving a pass to another—even when the latter merger would raise prices dozens of times more than would the former. Because defects in the market definition process are logical and absolute—market definition analysis can only degrade inferences, regardless of the information set—continued reliance on it,

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much less doubling down, has to be a mistake, and the errors can be large.

Existing analysis of efficiencies needs rethinking because so much has never been analyzed in the first place. Merger efficiencies must be merger specific, which usually means that they cannot be achieved through contractual arrangements short of a merger. Yet relevant research in industrial organization economics, including that applied to merger analysis, is almost entirely divorced from literature on the theory of the firm, contract theory, and organizational economics that directly addresses such questions (and, incidentally, is associated with several Nobel Prizes). Nor is relevant business and industry expertise consulted in analyzing merger efficiencies. Lacking an analytical framework and hence not examining much of the pertinent evidence, it is no wonder that efficiencies seem inscrutable.

Efficiencies (and entry) are also sequentially siloed in official merger protocols, relegated to the end of the inquiry, if one gets that far. But, taking a decision analytic formulation and using for concreteness the odds ratio formulation of Bayes' rule, how can one form the likelihood ratio for updating one's priors when there is no denominator? (Here, the likelihood ratio is the probability that the merger is anticompetitive given all the evidence divided by the probability that the merger is efficient given all the evidence.) Moreover, inferences from the merging parties' rationality constraint require an assessment of efficiencies even if one cares only about whether anticompetitive effects, in a vacuum, exceed some threshold. In this way and others, standard protocols are patently irrational.

Entry is also fundamentally misanalyzed. Inquiries into whether an otherwise anticompetitive merger will induce fully corrective entry are misguided except in extreme cases (some of which exist) because higher profitability, caused by higher equilibrium prices, is usually required postmerger to induce entry that was unprofitable beforehand. Instead, the prospect of (partially mitigating) entry may indicate that a merger motivated by anticompetitive considerations is unprofitable ex ante, shifting the appropriate inference to efficiencies—again reasoning from the merging parties' rationality constraint. Ex post entry also has important welfare consequences of its own, as established by famous but now neglected literature (associated with additional Nobel Prizes) from half a century ago.

Perhaps more importantly, entry that may be induced by the prospect of a subsequent buyout has been neglected until recently. And much

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contemporary analysis that does address such acquisitions takes entrants' existence and capabilities as given, whereas the most important impact of a merger regime in this domain involves effects on ex ante investment incentives. Reduced incentives from a more stringent regime can greatly reduce welfare—because many forms of innovation are undersupplied—but sometimes welfare rises because imitative investment and entry are often socially excessive. Hence, the direction of ex ante innovation is a first-order consideration in setting the relative stringency of merger regulation in important classes of cases.

In these ways and others, merger analysis needs substantial rethinking. This book seeks, often relentlessly, to ask all relevant questions without regard to where the answers may lead or whether they can directly be implemented in merger review. This course of investigation is the appropriate way to set research agendas, formulate policy, and determine how best to analyze proposed mergers. Proxies and shortcuts are necessary, but much contemporary policy debate puts the cart before the horse: How can one determine which protocols are better than others without first performing the underlying analysis correctly for broad classes of cases? That is, how can we know what counts as a good shortcut if we have not figured out where we should be going or checked whether the proposed shortcut takes us over a cliff?

This book also departs from much merger policy advocacy by analyzing how optimally to order mergers, from the most dangerous to the most beneficial, rather than advocating for more or less stringency. If we know, for example, that a certain population is underserved by the medical system, pulling out all the stops to give more drugs and perform more surgery on this population is not merely a blunt prescription but a truly dangerous one: additional, intrusive medical treatment on people who don't need it does not help offset but instead seriously adds to the harm from the failure to treat those who would actually benefit. The first-order problem is to figure out which mergers are more harmful or more beneficial, and to what degree. To address that problem, we need to rethink merger analysis.

* * *

When I started this project, I had not yet formulated a third of the questions addressed in this book. And for some of the questions already on my mind, I did not yet know the answers or even how best to go about

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finding them. Unsurprisingly, therefore, some of the results I present here modify or overturn notions I had previously accepted. Such is the nature of research, particularly when the focus is on rethinking that aims to identify relevant foundations and build afresh.

My inclination to start with foundations, focusing on central concepts and deriving their implications, was undoubtedly reinforced by my early education in economics. I was especially influenced by Hugo Sonnenschein, with his focus on microeconomic theory and welfare economics, and Michael Spence, whose teaching and writing emphasize core principles and clear connections between theoretical analysis and essential features of the world that one seeks to illuminate. In industrial organization, and antitrust in particular, I learned initially from Mike Scherer, Richard Caves, Michael Porter, Phillip Areeda, and, again, Michael Spence. My collaborators over the years—more recently, Aaron Edlin, Scott Hemphill, and especially Carl Shapiro—have deepened my engagement in the field and sharpened my thinking on many fronts. And, as always, my colleague Steven Shavell has provided a steady flow of criticism and encouragement that has contributed to this effort.

I am also indebted to myriad peers who have discussed various topics and my prior writing in ways that have illuminated and helpfully corrected my thinking on many issues addressed in this book. They include: Dale Collins, Mihir Desai, Joseph Farrell, Matthew Hammond, Oliver Hart, Michael Katz, John Kwoka, Francine Lafontaine, Robin Lee, Josh Lerner, Ulrike Malmendier, Leslie Marx, Douglas Melamed, Nathan Miller, Ariel Pakes, Joseph Podwol, Devesh Raval, Raffaella Sadun, Howard Shelanski, Daniel Sokol, Kathryn Spier, Michael Whinston, Abe Wickelgren, reviewers for the MIT Press, and conference and workshop participants at the Department of Justice Antitrust Division, the Federal Trade Commission, Harvard University, the Northwestern University Conference on Antitrust Economics and Competition Policy, the University of Southern California, and the USC-Cambridge Virtual Antitrust Workshop. I have also benefited substantially from the efforts of many talented research assistants (with apologies to any accidently omitted): Sebastian Becker, Alex Blutman, Samantha Carvalho, Angie Cui, Sumeet Dang, Niki Edmonds, Will Feldman, Dustin Fire, Ayako Fujihara, John Graham, Arka Gupta, Molly Gupta, Caitlin Hird, Peter Jen, Nick Juan, Kevin Lie, Betsy Lin, Jessica Ljustina, Andre Manuel, Kolja Ortmann, Matthew Pick, Bryan Poellot, Dina Rabinovitz, Ivan Reidel,

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Disclaimer: I have consulted on antitrust matters, for both the government and private parties. As it happens, my work on mergers, all of it decades ago, was entirely for government agencies. In addition, my wife is a lawyer who has mostly represented the financial services industry.

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1 Introduction

Why rethink merger analysis? Everyone appreciates that some methods (notably, market definition) are problematic and key subjects (efficiencies, entry) are underdeveloped. As I began to rethink these and other matters, I discovered some unsettling properties of conventional analysis and additional issues in need of attention. Further analysis identified encouraging directions for improvement and promising pathways for research.

Rethinking begins with foundations, the reexamination of which reveals deficiencies in basic elements of conventional analysis. Merger guidance from agencies, courts, and commentators often advances sequentially siloed protocols that contradict basic teachings of decision analysis and implicitly attempt to formulate likelihood ratios without denominators. If one uses the few formulas that are advanced to microfound merger guidelines' widespread use of changes in the Herfindahl-Hirschman Index (ΔHHIs), one finds that the relevant challenge threshold can vary by more than two orders of magnitude for homogeneous goods markets, even when confined to those consistent with merger guidelines' hypothetical monopolist test (HMT). And the HMT in these settings, when combined with U.S. Merger Guidelines' thresholds, would presumptively allow a merger that raises prices by one to two orders of magnitude more than another merger that would presumptively be challenged. Such properties are not mere rough edges or rounding errors.

Efficiencies need to be merger specific to count in favor of a proposed merger, which often requires that they cannot be achieved by alternative contractual arrangements. Yet neither the literature nor modern guidelines make use of the central ideas in the field of economics that directly address merger versus contract, those developed in research on the theory of the firm, which is associated with multiple Nobel Prizes.

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Standard analysis of entry induced by otherwise anticompetitive mergers fails to leverage implications of market equilibrium and ignores direct social welfare effects of entry as such, which can reinforce or reverse the apparent undesirability of otherwise anticompetitive mergers. Moreover, guidelines and much analysis largely omit the most direct channel of relevance of such entry: inferences from the merging parties' rationality constraint—the reasons that the proposed merger is expected to be profitable—by contrast to whether postmerger entry would fully reverse price increases, which it generally would not. Additionally, another type of entry, that induced by the prospect of a subsequent acquisition, has been largely ignored until recently. Much policy discussion, particularly regarding large technology companies' acquisitions of nascent entrants, has begun to address this subject but typically takes entrants' presence and capabilities as given. Yet the most important effects of merger policy in this domain concern ex ante incentives to enter and for other investment, consideration of which reverses some suggested proscriptions but strengthens others.

Regarding overall methodology, merger review generally takes a short-run, partial equilibrium perspective for practical reasons. Yet long-run impacts and general equilibrium effects are sometimes of opposite sign and often are quite important for determining the overall social welfare impact of merger regulation. Merger protocols need to reflect these phenomena even if they cannot routinely be assessed in investigations of particular mergers. Doing so, however, does not uniformly favor more permissive merger review, as some have suggested.

These ideas illustrate what this book investigates and how it goes about doing so. When I began to rethink merger analysis, I was aware of some of these questions but more broadly was uneasy about much conventional wisdom because central foundational work had never been undertaken. Some of the conclusions presented here surprised me and conflict with my own prior writing and teaching. But often, before I began digging into a subject, I was unaware of the significance of some of the key questions, much less of what answers would emerge.

A guiding principle in this enterprise has been not to be deterred from asking hard questions by the possible lack of immediate, practical answers. I aim throughout to advance knowledge as far as I can, sometimes covering a good distance but other times coming up short. On some fronts, there are fairly direct implications for policy and practice. On others, research agendas are outlined.

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Another guiding principle has been to choose subjects in light of my own comparative advantage. Mostly, the analysis here is theoretical and conceptual, the realm of my prior work. On subjects where I could make progress, I did. On ones where I did not expect to have much new to say or that would have taken me too far afield to pursue, I abstained. Hence, even though this investigation covers most major questions relevant to the analysis of horizontal mergers, including many outside the conventional canon, the book is not comprehensive. Much of the analysis presented here is novel or involves significant excavation of mostly forgotten ideas, as well as cross-fertilization from other fields.

These two principles reflect a belief that better understanding will, in the present and in the future, inform research agendas and improve policy. We cannot answer questions we never ask. We cannot fix problems we have not identified. And we cannot design sound shortcuts and proxies to guide the everyday practice of merger review if we do not appreciate what a more complete analysis looks like and hence what the long-run effects of different protocols are likely to be.

The analysis in this book is complementary to an increasingly sophisticated body of applied research in industrial organization. That work has taught us much and, in combination with scholarship in related fields, can educate us even more going forward. Deploying valuable methods to address a broader set of questions can be expected to bear significant fruit. In recent years, this has begun to happen with respect to some of the topics explored here. The present investigation seeks to boost these efforts and instigate new ones. It proceeds as follows.

Chapter 2 presents the framework for merger analysis. Merger review poses important inference and prediction challenges associated with decision-making under uncertainty. It is important to make explicit the requisite analytical steps because some have been underutilized or skipped entirely in research and especially in practice. Proper analysis formulates concrete competing hypotheses, makes use of the merging parties' rationality constraint (which holds that only profitable mergers will be proposed), and triangulates across relevant factors and types of evidence.

Official protocols deviate from the correct approach by instead specifying sequential, siloed analysis of anticompetitive effects, efficiencies, and entry, although agency analysts no doubt may proceed in a more integrated fashion. At many points in the book, we will see how analysis of each of these issues informs the others, but how could it be otherwise? If we take

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the simple view that a merger is proposed because it is profitable, and that its profitability depends on anticompetitive effects and efficiencies, it is generically true that information about each of these components bears on correct inferences about the other. Under the odds ratio formulation of Bayes' rule, the ratio of the priors (the probability that the merger is anticompetitive versus efficient) is multiplied by the likelihood ratio associated with the relevant hypotheses to generate a ratio of posteriors. But if one considers anticompetitive effects in isolation, one is in a sense forming a likelihood ratio without a denominator. More broadly, basic teachings of decision analysis—and, where appropriate, mechanism design—are in tension with standard protocols and merger assessments.

This framework chapter also broaches the subject of competition policy's objectives and raises broader methodological issues. Key choices include those between consumer and total welfare, short- and long-run analysis, and partial and general equilibrium analysis. Pragmatic considerations and current practice tend to favor the former choice in each pair, whereas a more complete economic analysis and social welfare calculus point to the latter ones. The interim chapters highlight important differences along these axes, with more complete analysis deferred to chapter 8.

As a preliminary matter, it is worth recalling that long-run general equilibrium thinking, with free entry and exit, is central to the welfare properties of a market economy. Long-run effects often have the opposite sign of short-run effects. Cross-sector general equilibrium effects in the presence of imperfect competition in many sectors can significantly modify or reverse standard partial equilibrium prescriptions. Hence, although long-run general equilibrium analysis is infeasible in the review of particular mergers, broad contours of policy as well as practical protocols should be developed with these effects in mind.

Chapter 3 examines price effects and market definition. It begins with the market definition paradigm, which presents many conundrums for the economic analysis of mergers. To begin, the construct does not really exist in industrial organization economics. Moreover, when one attempts to examine the procedure carefully, fundamental defects become apparent: Any sensible attempt to define markets implicitly assumes that one already has a best estimate of market power in hand because such an estimate is needed to determine which market definition is superior. Hence, the process is unavoidably circular. Worse, short of crass reverse-engineering, market

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definition discards or distorts much of the information under consideration, introducing needless inaccuracy. No models or analysis have ever been offered that make use of market shares in redefined (broadened) markets, and no method exists to adjust interpretations of market shares in the manner that courts, analysts, and commentators have purported to do for over half a century.

Even basic questions of quantification have never been asked, much less answered. Suppose that a merger results in a postmerger HHI of 3000 and a ΔHHI of 300 in a properly defined HMT market—a merger regarded to be clearly in the danger zone. In whatever is imagined to be the benchmark, typical case, is such a merger thought to increase price by 18%? 1.8%? 0.18%? Do we know within an order of magnitude?

The bulk of chapter 3 directly analyzes the price effects of mergers in standard settings. Unilateral effects in homogeneous goods markets are typically examined using a Cournot model. This is the one setting where formulas containing the HHI or ΔHHI exist, but those formulas are applicable only in the homogeneous goods market, which is to say that market (re)definition undermines the ability to conduct the analysis. Furthermore, these simple formulations yield results that upend standard merger protocols. Under highly simplified assumptions, the combination of the HMT and the HHI/ΔHHI thresholds in the 2010 U.S. Merger Guidelines would safe harbor a merger that raises prices by *more than thirty-five times as much* as would another merger that would be presumptively challenged (an error that more than doubles under the 2023 guidelines). Using a more sophisticated analysis from the literature (but still for a simple, special case), in basic examples the critical ΔHHI threshold for challenging a merger varies by *more than two orders of magnitude* for market elasticities of demand consistent with the HMT being satisfied in the narrow, homogeneous goods market. The theoretical arguments that challenge the market definition paradigm are revealed to be not mere subtleties; rather, they indicate huge divergences from correct analysis—all in simple cases that abstract entirely from complications understood to be outside the standard market definition framework.

The Cournot model is also examined for its usefulness in merger assessment. Well-understood but often unmentioned limitations are highlighted. Notably, the best motivation for this model assumes capacity constraints, but these render problematic standard Cournot merger analysis, which in

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a sense compares two different long-run equilibria. Dynamic analysis is required to account for how a merger would change subsequent investment, with the result that horizontal mergers in this setting may be more profitable, and more anticompetitive, than they appear to be under static analysis.

The analysis of unilateral effects with differentiated products is the best developed and most often deployed technique in modern merger analysis. It has long been understood that the correct methodology does not employ market definition. Instead, mergers' price effects are determined primarily by the diversion ratios between the merging firms' products and by the firms' price-cost margins on those products. To be sure, the former are related to market shares in some standard models of demand, but the question to be analyzed is which if any of those models is applicable to a proposed merger. Any proper use of market shares is determined by that analysis, not by a generic formula using HHIs or ΔHHIs. Even in special cases in which equilibrium, endogenous, premerger market shares turn out to be probative of diversion ratios, the correct analysis uses those shares differently from their appearance in the HHI or ΔHHI and, moreover, necessarily employs additional information (about substitution) that is ignored in conventional market share tests of all kinds but is highly consequential for predicted price effects.

Coordinated effects require qualitatively different analysis. The greatest challenge is prediction of the extent to which a proposed merger will facilitate successful coordination. Unfortunately, little progress has been made on this difficult task. Usual market share measures are largely irrelevant, with one exception being that, for a given remaining number of significant firms, a larger postmerger HHI may indicate that coordination would be more (not less) difficult because, ceteris paribus, the HHI rises as firms are more asymmetric and greater asymmetry is typically thought to impede cooperation. In predicting coordinated effects, it is also necessary to determine how much prices would rise conditional on success. Here, standard tools of economics are quite helpful, but, again, they do not involve use of the market definition paradigm.

Chapter 4 turns to merger efficiencies. As a matter of logic and the law, proffered efficiencies must be merger specific if they are to serve as justifications for a proposed merger. Often this means that the efficiencies are not achievable by contract short of merger. Yet the economics

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literature on mergers and modern merger guidelines make essentially no reference to work on the theory of the firm that addresses precisely the question of the difference between bringing activities inside the firm versus relying on external contractual relationships. Also largely ignored is the work of organizational economists and others, mostly at business schools, that addresses related questions. A central aim of this chapter is to undertake cross-fertilization in order to generate new analysis of the subject as well as to apply that analysis to standard types of merger efficiencies: economies of scale, economies of scope, and the sharing of assets between competitors.

Another underdeveloped question concerns the nexus between a merger's anticompetitive effects and efficiencies. It is well understood that if, say, a retail merger promises significant economies in distribution but has some geographic overlap, a targeted spinoff may be appropriate, eliminating the anticompetitive effects but sacrificing little of the efficiencies. More broadly, however, this nexus question has not been examined systematically. For example, if an industry has ten symmetric firms of minimum efficient scale and technological change doubles that scale, it is generally regarded that mergers that pair off the firms (leaving only five) should be disallowed, relying instead on internal expansion and exit to solve the scale problem. Yet the latter also leaves the industry with only five firms, on the surface generating the same anticompetitive effects as when pairs of firms are permitted to merge. Many contractual alternatives to merger in other settings, such as ones involving the sharing of assets through a joint venture, may risk significant anticompetitive effects in the absence of intrusive regulatory oversight that is unlikely to be forthcoming. The chapter considers these issues and explains why some traditional instincts, such as that favoring internal expansion, may be correct after all but for more subtle reasons—in this instance, because disallowing mergers creates an endogenously exercised real option for society when scale economies are uncertain. In other settings, however, it is the efficiencies that may be merger specific whereas the anticompetitive effects are not.

The analysis of merger efficiencies also raises practical challenges due to difficulties of assessment. But this should not discourage best efforts, leaning instead on a one-size-fits-all efficiency credit. Efficiencies are quite heterogeneous, and the implicit current use of a rather high credit may inappropriately excuse many anticompetitive mergers. To address the informational

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challenges, competition agencies should enhance their reliance on in-house and on-call expertise of the sort held by individuals with significant experience advising, financing, or working in the industry. Their skills and knowledge bases would complement those of industrial organization economists at the agencies.

Chapter 5 analyzes entry, another underdeveloped subject in merger analysis. Merger guidelines focus on ex post entry, that induced by a merger's anticompetitive effects, and ask whether such entry would be sufficiently likely and rapid to nullify most or all of the price increases that would otherwise occur. Yet, short of fairly extreme cases (some of which exist), equilibrium analysis suggests that this is improbable because significant postmerger entry arises only when there will be increased postmerger profits that require sustained postmerger price elevation. Moreover, the direct social welfare consequences of induced postmerger entry are broadly ignored. Because entry tends to be socially excessive in homogeneous goods industries and in other settings with little benefit from product variety or spillovers, merger-induced entry may actually make a merger worse than if such entry did not occur. That result reverses, however, when entry brings highly valuable variety or other benefits that are external to prospective entrants.

The central relevance of postmerger entry to a proposed merger's price effects, however, lies elsewhere: in making inferences from the merging firms' rationality constraint. The prospect of significant postmerger entry, even when insufficient to restore the premerger price level, nevertheless reduces potential profits from anticompetitive price increases. This prospect shifts proper inferences toward efficiency explanations for the proposed merger because, the more that entry would suppress any price increase, the lower are predicted anticompetitive effects and hence the higher is the conditional expectation regarding efficiencies. Proper triangulation interactively considers evidence bearing directly on anticompetitive effects, efficiencies, and prospects for postmerger entry, in contradiction to conventional protocols that prescribe sequentially siloed analysis.

The chapter then examines ex ante entry, that induced by the prospect of a subsequent merger. Until fairly recently, this subject has received only modest attention in industrial organization research and even less in merger analysis and modern merger guidelines. The prospect of an acquisition raises the ex ante incentives for investment by entrants and other

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potential targets, and it also rechannels their activity in ways that can be socially beneficial or detrimental, depending on the context.

Because entry is socially excessive in homogeneous goods industries and others where entrants bring little value except their competition, acquisitions of such entrants—undertaken by dominant firms to extinguish their competitive threats—tend to be inefficient. The reason is not primarily the loss of competition, which may never materialize if the entry itself is discouraged by anticipation of a tough merger regime, but instead the wasted investment costs from excessive entry. By contrast, entry that adds variety, creates potential complementarities, or generates other positive spillovers tends to be undersupplied. Here, a permissive policy toward acquisitions of such entrants may be desirable due to the ex ante incentives it creates.

The central message is that ex ante entry and investment incentives are of first-order importance in the analysis of a significant subset of mergers that are subject to increasing attention, particularly regarding acquisitions by leading technology and pharmaceutical firms. Many current discussions take the nascent entrant's presence and capabilities as given, whereas the most important effects of merger policy in this setting are likely to be on ex ante incentives regarding activity earlier in the relevant timeline. Hence, it is important to undertake a dynamic analysis that accounts for the magnitude and direction of ex ante investment as a function of anticipated merger review, including its relative stringency across different types of acquisitions.

Chapter 6 shifts attention from methods of analyzing proposed mergers, the subject of the preceding chapters, to the empirical and practical challenges of predicting the effects of proposed mergers. Taking the prediction perspective that is associated with a decision-analytic approach, pertinent information consists of prior probabilities and the information in the case at hand, from which likelihood ratios are formed. In practice, these notions are not entirely distinct, and both are difficult to come by for many proposed mergers.

Because of these difficulties, the so-called structural presumption has had much allure. However, in light of chapter 3's analysis of market definition and its contrast with the correct ways to analyze price effects, this allure is really an illusion. Structural presumptions require the use of market shares, and one cannot determine market shares without defining markets. However, because market definition always destroys information and

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thus degrades inferences, this approach cannot help. For early screening, when information is particularly scarce, it is all the more important to use correctly whatever information an agency has. Analyses that might seem to lend some support to the use of the structural presumption do not, on inspection, actually do so. This failure should not be surprising because such attempts cannot escape the problem of defining markets—except by a form of reverse engineering that entirely eliminates any use of market shares as independent variables in triggering a presumption.

Most of chapter 6 addresses the main sources of information that may guide merger policy and the review of particular mergers. Internal and comparative assessments are offered for each type of information, both for purposes of forming prior probabilities and for understanding particular mergers under investigation. Industry studies of past mergers are the most useful but exist for a sufficiently large number of mergers in only a few settings. Also, caution is required because the market shares that appear in such studies generally are not those in the markets that are required under merger protocols (which, ironically, helps explain why these miscreant market shares can be useful for inference). Individual merger retrospectives sometimes illuminate particular settings, but their usefulness is often limited by difficulties in finding proper comparison firms for difference-in-differences analysis, brief time frames required for plausible identification and given data availability, and the idiosyncratic character of many mergers. Merger simulations are often a promising technique for prediction but typically require untestable modeling assumptions and are difficult to validate given the degrees of freedom in choosing specifications and performing subsequent analyses of mergers' effects. Stock market event studies potentially suggest broader patterns, but most such investigations do not isolate horizontal mergers, and they all require additional efforts to plausibly identify mergers' causal competitive effects and efficiencies. Industry expertise, from the merging parties themselves and other industry participants, provides valuable insights and helps place other information in context. Despite the limitations of each of these sources, they tend to be complementary and thus, taken together, can enhance predictions. Suggestions are offered for future research as well as how agency practice can, over time, enhance the ability to predict mergers' effects.

Chapter 7 considers the institutions that conduct merger review. The task of competition agencies is particularly difficult in light of resource

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constraints. The focus here is on the breadth of staff expertise, which currently is greatest regarding the assessment of anticompetitive effects, including empirical methods for estimating demand and conducting merger simulations. However, the analysis in the preceding chapters highlights issues, notably efficiencies, where the most relevant expertise may lie elsewhere: in understanding the theory of the firm, organizational economics, and contractual practices. And most issues, including the analysis of ex post and ex ante entry, would benefit greatly from industry-specific expertise of the sort that agencies only sometimes accumulate through experience. Broadening the scope of in-house and on-demand expertise is an important way to enhance agencies' capabilities, including when screening and investigating merger proposals. In complementary ways, reviewing courts might employ expert magistrates and court-appointed expert witnesses to increase their ability to adjudicate battles of experts and assess the credibility of business witnesses and other evidence. In addition to improving decision-making directly, the anticipation of more sophisticated assessments would induce agencies and merging parties to present more thoughtful analyses for courts' consideration and lead firms contemplating merger proposals to make more socially desirable decisions.

Agencies might also contemplate making greater use of ex post merger review in light of the challenges of prediction, which tend to be particularly great when nascent entrants are acquired. Although hindsight is often better than foresight, there are important limitations in reviewing consummated mergers, including the perverse incentives that may be created in the interim and the difficulties of unscrambling the eggs. The merging parties also have incentives to exacerbate these problems as well as to behave in ways that obscure subsequent assessments of what would otherwise have become of the target's assets and opportunities. Finally, brief attention is given to competition agencies' appropriate domains in light of their comparative advantages relative to other government entities that often employ other policy instruments and focus on different problems.

Chapter 8 addresses the appropriate objective of a competition regime as a matter of optimal policy, exploring a number of dimensions implicitly set to the side in conventional thinking. It recasts the familiar and much-debated choice between consumer and total welfare standards as one of optimally matching instruments to policies. Drawing on literature in public economics, it explains how, for any distributive target, a consumer welfare

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standard is Pareto dominated by a total welfare standard: one can move from the former to the latter in a manner that makes every income group better off. An important and intertwined choice concerns whether to focus on short- or long-run effects of merger decisions and of merger policy as a whole. This question is pressing because long-run welfare ultimately matters most. Moreover, consumer and total welfare prescriptions tend to converge in the long run, casting that choice in a different light. Relatedly, many important effects of mergers—on competition, efficiencies, and both ex ante and ex post entry—do not arise immediately. Therefore, a short-run focus omits important anticompetitive effects as well as other welfare consequences of merger regulation. Another largely neglected dimension involves the use of a single-sector partial equilibrium approach in most industrial organization research as well as in scholarship on competition policy and in agency practice. Accounting for multisector general equilibrium effects of competition enforcement may substantially amend or upset conventional enforcement protocols and priorities in light of the presence of significant competitive imperfections in many sectors of the economy.

Considered next is the notion that competition rules should aim to protect competition as a process rather than seeking directly to obtain good outcomes. This objective points to important ways that competition regulation can influence welfare, but it cannot directly be made operational in the context of merger review. Finally, brief attention is given to some other objectives that have been advanced as appropriate goals of competition regulation, including with regard to horizontal mergers.

As discussed in the concluding chapter, the aim throughout this book is to improve the analysis of horizontal mergers in order to better guide overall policy and the practice of merger review. I advance no broad argument that current merger review in one jurisdiction or another is too lax or too stringent. To take a medical practice analogy: Some procedures—whether surgery, chemotherapy, or drugs—may be used too often or not enough, but the most important task is to make accurate diagnoses so that the right patients get the right care. Providing unnecessary and dangerous treatments to some patients does not offset but rather compounds the harm of failing to provide needed treatment to others. Likewise for merger review.

Better understanding must be our guide. Many ideas developed here involve the identification of ways in which anticompetitive mergers may now be missed, and others suggest respects in which some mergers may be

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beneficial due to unrecognized or misunderstood effects. A number of these considerations are new or are cast in a different light, and many would benefit from further study. Researchers should ask hard questions, begin to answer them as best as they can, identify where further work appears promising, and present findings along the way, wherever they may point. We cannot know the best policy a priori. And we cannot design sensible proxies and protocols that embody the unavoidable simplifications required for merger review without appreciating the relevant effects of our choices.

* * *

As this book was being finalized, the U.S. Department of Justice Antitrust Division and the Federal Trade Commission issued draft, and then final, revised Merger Guidelines (2023). This book retains numerous references to the 2010 U.S. Merger Guidelines along with the 2023 Guidelines, which are offered primarily for concreteness. The 2010 U.S. Merger Guidelines also are more similar to those in the rest of the developed world than is the 2023 revision. But most important in light of this book's focus on analysis rather than the law, the 2023 guidelines do not substantially advance or amend the proffered means of economic analysis of most of the issues addressed here. Adjustments to the text and additional footnotes throughout the book note many similarities and highlight the most relevant differences.[1]

1. A notable change is the Merger Guidelines' (2023) introduction of legal analysis, in the process advancing bases for merger challenges that do not purport to be tightly grounded in the economic analysis of mergers' likely effects on welfare. The 2023 guidelines also address subjects not in the 2010 guidelines, particularly vertical mergers, which are not considered in this book.

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