A History of Mergers: Theory and Regulations

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1 Introduction

During the late 1970s and 1980s, the federal courts transformed antitrust rules and the federal enforcement agencies altered their case selection criteria in response to theories developed by industrial organization economists. These developments in economic thinking, often associated with the Chicago school, led current antitrust law and practice toward a greater skepticism about the relationship between market concentration and market power, and greater recognition of the possible efficiency-enhancing role of mergers than was present in the 1950s and 1960s.

Many of these developments are reflected in the Department of Justice (DOJ) and Federal Trade Commission (FTC) Horizontal Merger Guidelines. These guidelines describe enforcement policy and have been influential in the courts, although judges are not required to follow them. The guidelines have been revised 4 times since originally introduced in 1968, and have grown in economic application sophistication with each revision.

Early analysis of mergers was heavily driven by structural presumptions based on market shares and market concentration. The strength of these presumptions led the U.S. Supreme Court in early merger cases, such as Brown Shoe, to regard protection of competition and the pursuit of efficiencies as directly conflicting objectives. Even the Chicago School during the 1960s and 1970s took a highly structural approach to merger law. While Chicagoans argued that the early merger guidelines set the market share/concentration thresholds for mergers too low and warned that concentration could actually reflect underlying efficiencies of large scale enterprises that would be sacrificed by overly aggressive antitrust enforcement, they supported the Court’s structural approach but advocated higher thresholds for illegality.

Over time the U.S. courts and antitrust agencies have made substantial progress in learning how to integrate efficiencies into their evaluation of potentially anticompetitive mergers. The courts and agencies have been able to refine the tools they use to review efficiency claims and have become more comfortable with their ability to balance any likely efficiencies against any potential increase in market power as they have gained experience evaluating efficiencies. Figure 1 plots United States merger activity throughout the last half century. It shows significant merger volume increase within last 20 years. Even though these changes cannot be solely attributed to the developments of merger enforcement guidelines, this graph gives a good reference point for analysis and fuller understanding

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1 Brown Shoe Co v United States was the first Supreme Court case to address the merger policy implications of Congress’s 1950 revision of Section 7 of the Clayton Act.
of merger history. This paper provides an overview of the evolution of merger guidelines and their effect on merger activity, specifically focusing on the evolution in industrial organization research and highlighting shortcomings of frameworks used to construct older guidelines.

2 The Early Case Law

Modern merger law in the United States began with the passage of the Celler-Kefauver Act in 1950, which amended Section 7 of the Clayton Act to substantially broaden its reach. The first cases under the amended Section 7 reached the Supreme Court during the peak of structural antitrust jurisprudence in the early 1960s. During this period, the court showed a strong bias toward developing per se rules whenever possible. However, the need to have merger guidelines more consistent with the economic theory was maturing, and that is what led the DOJ to develop 1968 merger guidelines.

\[\text{In the U.S., illegal per se often refers to categories of anticompetitive behavior in antitrust law conclusively presumed to be an "unreasonable restraint on trade" and thus anticompetitive. Traditionally, illegal per se antitrust acts describe horizontal arrangements among market competitors.}\]
3  The 1968 Guidelines

The 1968 merger guidelines relied heavily on market structure – particularly concentration ratio data – to determine the legality of a proposed merger. This reflected many years of academic analysis within the structure-conduct-performance (SCP) framework.

3.1  CR₄ measure and its limitations

The 1968 document used as its guide to industry structure the four-firm concentration ratio. Concentration ratio is defined as follows:

$$CR_k = \sum_{i=1}^{k} s_i, \ k < N; s_1 < s_2 < \ldots < s_N$$

While the CR₄ measure appears reasonable, there is no obvious justification for focusing on the market share of the top four firms rather than the top three or six. Thus the choice of the CR₄ as the appropriate measure of concentration is somewhat arbitrary.

More importantly the CR₄ provides only limited information about actual market structure. To take an extreme example, a market where the top four firms each had a market share of 22.5% would have a CR₄ of 90 but so would a market where one firm had a market share of 60% and there were three firms with 10% each. However, company behavior may differ greatly in these two situations with very different competitive outcomes.

Under the 1968 guidelines, horizontal mergers would be challenged in any industry in which that ratio exceeded 75 percent if both the acquiring and acquired firm each had as little as 4% of market share. In industries with a CR₄ of less than 75%, mergers would be challenged if the two firms each had market shares of as low as 5%. Thus a combined share of 10% would in most cases suffice to challenge the merger.

3.2  Merger Efficiencies in 1968 guidelines

In 1968 AER article, Economies as an Antitrust Defense: The Welfare Tradeoffs, O.E. Williamson used what he termed his “naïve trade-off model” to show that a merger that yields nontrivial real economies will only have a net negative allocative effect if it produces substantial market power resulting in relatively large price increases. He also showed that cost savings almost always benefit consumers
because even a monopolist would pass some portion of any cost savings on to its customers, unless its demand functions was perfectly inelastic. Williamson (1968) derived the following rule:

\[
\frac{\Delta AC}{AC} - \frac{k}{2} \eta \left( \frac{\Delta P}{P} \right)^2 > 0
\]

Where \(\frac{\Delta AC}{AC}\) and \(\frac{\Delta P}{P}\) are percentage changes in average cost and price in post merger firm. \(\eta\) is elasticity of demand, and \(k\) is an index of pre-merger market power and is greater or equal to unity.

He further argued that if this inequality holds, the net allocative effect of the merger is positive, and the merger should be allowed. Hence, this inequality reveals a strong result: market power is only a necessary and not a sufficient condition for undesirable price effects to exist.

As a result of Williamson’s paper, the 1968 Guidelines recognized that in some “exceptional circumstances” efficiencies might justify a merger that would otherwise be subject to challenge. However, the 1968 guidelines gave three reasons for limiting the consideration of efficiencies to exceptional circumstances:

(i) A merger proposition will usually result in no challenge if involved companies operate significantly below the size necessary to achieve significant economies of scale; (ii) where substantial economies are potentially available to a firm, they can normally be realized through internal expansion; and (iii) there usually are severe difficulties in accurately establishing the existence and magnitude of economies claims for a merger.

The Chicago School objected strongly to the narrow efficiencies defense. They argued that, rather than considering efficiencies on a case-by-case basis, the guidelines thresholds for challenging mergers should be set significantly higher and no merger-specific efficiencies defense should be allowed.

4 1982 Guidelines

In 1982, accumulated legal and economic dissatisfaction with the earlier standards led to major changes in the guidelines. Reliance on the four-firm concentration ratio was abandoned in favor of the Herfindahl-Hirschman Index (HHI), which is defined as follows:

\[
HHI = \sum_{i=1}^{N} S_i^2
\]
Additionally, if firms 1 and 2 merge, then $\Delta HHI = (s_1 + s_2)^2 - (s_1^2 + s_2^2) = 2s_1s_2$

4.1 The threshold for intervention

The 1982 Guidelines retained the efficiencies section of the 1968 guidelines largely unchanged; taking efficiencies into account, if at all, by raising the market share and concentration thresholds at which the DOJ was likely to challenge a merger.

Where the HHI is above 1000 and increase by more than 100 points, the market is considered to be moderately concentrated. The guidelines define this as an amber zone. Where the HHI is above 1800 and increases by more than 50 points as a result of the merger, the market is considered highly concentrated and the merger guidelines define this as a red zone.

The 1982 Guidelines gave basically the same reasons for not considering claims of “specific efficiencies” more broadly as the 1968 Guidelines had. First, they argued that the numerical market share thresholds for challenging mergers were sufficiently high that, “in the overwhelming majority of cases, the Guidelines will allow firms to achieve available efficiencies through mergers without interference from the DOJ.” Second, they argued that efficiencies “are far easier to allege than to prove,” and that, even where they exist, “magnitudes would be extremely difficult to determine.”

1982 guidelines reflected an increasing awareness of modern industrial organization theory as well as a growing body of empirical data that suggested many mergers did not threaten competition as much as the structure-conduct-performance paradigm suggested. If they did, one might expect mergers to be fairly profitable. However, studies such as Mueller (1982), Ravenscraft and Scherer (1989), Loughran and Vijh (1997) and most recently Andrade, Mitchell and Stafford (2001), have found that mergers are nor very profitable – especially for the acquiring firm.

The 1982 Guidelines essentially followed the Chicago School approach to efficiencies rather than the more structural Areeda-Turner Harvard School approach. As the Chicago School adherents had urged, the Guidelines considered efficiencies in setting that at the time were viewed as relatively high market share thresholds for challenges, but showed a disinclination to consider specific efficiency claims in individual cases.

4.2 HHI and its measuring problems

Like a concentration ratio, the HHI measure has its drawbacks. However, HHI does have one strong advantage over a measure such as $CR_4$ or $CR_8$ because it: (1) gives proportionately greater
weight to the market shares of the larger firms in accordance with their relative importance in market transactions; and (2) takes account of all firms in the market.

Take the two examples referred to previously, one where there are four firms each with 22.5% of the market and the second where one firm has 60% and three others have a 10% market share. Assuming for simplicity that in both cases the remaining 10% is divided up between two firms, each with a 5% market share, the HHI will be 2075 in the first case and 3950 in the latter. The inequality in firm size in the latter case results in a much higher HHI.

The HHI method has the advantage of specificity with the drawback that it has no supporting theory and is intended simply as a rule of thumb. The most obvious disadvantage of this measure is that the demand elasticity is not represented in the HHI formulation.

The HHI also fails to consider a firm’s true competitive position. For example, firms with a large amount of unused capacity will be assumed to have large market shares, hence overstating the competitive position of such a firm.

Another drawback of the HHI is that it cannot directly capture many aspects of a market, such as the ease of entry into a market. Market power is a dynamic issue, which cannot be entirely represented by such static measure as HHI. Consequently, it is not possible to establish a clear value below or above which market power exists for any concentration index. The greatest usefulness of this index is as a relative market power indicator. Furthermore, the ability to make any market concentration measurements is predicated entirely upon our ability to properly identify a market. In the U.S., the Census Bureau provides the definitions of the markets based on the Standard Industrial Classification (SIC) system. The basic procedure is to assign any plant to a market on the basis of that plant’s primary product. This classification system is deeply flawed as it doesn’t measure substitutability in consumption. Cross price elasticity would be a superior measure in the definition of the market case.

5 1984 Guidelines

The efficiencies section of the 1982 guidelines was substantially revised just two years after its publication. The antitrust authorities argued at that time of the 1984 revision that there was no economic literature that pointed to some exact threshold below which mergers are competitive – or, at least, not anticompetitive – and above which they are. Instead, it was agreed that there are general ranges in which concerns about anticompetitive consequences of mergers exist. The 1984 guidelines stated more fully the criteria under which antitrust authorities would evaluate claimed efficiencies.
Specifically, instead of providing that efficiencies would be considered “only in resolving otherwise close cases,” the 1984 Guidelines indicated that the Department would use a sliding scale to evaluate efficiencies: “The parties must establish a greater level of expected net efficiencies the more significant are the competitive risks.” Additionally, the revisions eliminated the language from the 1982 guidelines that required the parties to show that the purported efficiencies were “already enjoyed by one or more firms in the industry.”

6 1992 Guidelines

In 1992, the Department undertook an extensive revision of the merger guidelines, which the Federal Trade Commission joined for the first time. The principal change in the guidelines was to shift decision making further away from structural presumptions based on market shares and concentration ratios, and to place greater emphasis on qualitative competitive effects analysis.

6.1 Entry conditions

One of the earliest and most far-reaching Chicago school successes came in convincing the courts to recognize that new competition – supply substitution or entry – could counteract or deter the exercise of market power. Recent developments in economic theory have helped clarify the significance of sunk expenditures in determining when this would occur. If the fixed costs of entry are not sunk, and entrants have variable costs comparable to incumbents, the market is “contestable” and performs competitively regardless of market concentration among incumbent sellers (Baumol, Panzar and Willig, 1982). But if entry required sunk expenditures, and incumbents would be expected to react quickly to cut price in response to entry, entry may be deterred even if the pre-entry price exceeds competitive levels. This may occur because the prospective entrant, recognizing the prospect of post-entry competition, will not expect to earn a contribution margin adequate to cover its sunk costs (Schwartz and Reynolds, 1983).

In theory, even small sunk expenditures may be sufficient to protect incumbents’ exercise of market power (Stiglitz, 1987). But the courts and guidelines have acted as if relatively small sunk costs create a relatively small entry deterrent. The revised 1992 merger guidelines described how the federal enforcement agencies determine whether significant sunk expenditures would deter entry in response to an anticompetitive merger. The guidelines now asked whether a new competitor operating at “minimum viable scale” could secure pre-merger prices and thus be profitable (Salop, 1986; Willig, 1991; Ordover and Baker, 1992). This question recognized that if the entrant must operate at an output level too large for the market to absorb without depressing prices further, or if
incumbents would keep the new producer from achieving the necessary output level by expanding sales in response to entry, then new competition sufficient to solve the competitive problem from the merger would not be forthcoming. The guidelines test an entrant’s profitability at pre-merger prices, notwithstanding the price increase expected as a result of an anticompetitive merger, because entry will solve the competitive problem only if it returns the market price to pre-merger levels. Hence, it is assumed that potential entrants relevant for merger analysis – namely, those whose entry would solve the feared competitive problem – will evaluate profitability of entry based on a forecast that price will be at the pre-merger level.

6.2 Unilateral Anticompetitive Effects of Mergers

Unilateral theories of the anticompetitive effect of mergers have become common in the internal analyses of antitrust enforcement agencies during the last twenty years. Instead of focusing on how a merger could make coordination more likely or more effective, the unilateral theories describe how a merger would make it profitable for the merged firm to raise price without assuming repeated play, as by taking rival’s reactions as given.

Two developments in economics spurred the recent interest in unilateral theories:

1. Theoretical literature that investigated the conditions under which oligopolists would find a merger profitable even if the industry members were not coordinating their actions, but were instead taking each other’s output or price as given, consistent with Cournot-Nash or Bertrand-Nash solution concepts (Salant, Switzer and Reynolds (1983); Deneckere and Davidson (1985); Perry and Porter (1985); Farrell and Shapiro (1990)).

2. Empirical literature encouraged by the simultaneous development of new econometric tools and computerized scanner data (Baker and Bresnahan (1985); Berry and Pakes (1993); Hausman, Leonard and Zona (1994); Werden and Froeb (1994); Baker (1997)). These tools and data can make it possible to identify the extent to which individual products constrain the pricing of rivals and the extent to which mergers encourage higher prices by removing those constraints. The 1992 revisions to the DOJ and FTC Horizontal merger guidelines recognize these economic developments by describing several ways in which a merger can lessen competition through unilateral effects.

To fully understand how unilateral effects can undermine the efficiency effects, consider the empirical model, developed by Werden and Froeb (1994), and summarized here. Suppose producers of competing brands A and B merge, then the first order condition for the merged firm, as derived by Werden and Froeb (1994) is:
\[ p_A - C_A = p_B - C_B = \frac{\bar{p}}{\beta \bar{p} (1 - s_m) + \eta s_m} \]

Where \( \eta \) is the aggregate elasticity of demand parameter, controlling between the competing, “inside” goods and the “outside” good; \( \beta \) is the cross elasticity of demand parameter controlling the substitutabilities among the “inside” goods. \( \bar{p} \) is the share-weighted average pre-merger price for the “inside” goods.

Since larger firms have higher price-marginal cost margins (also shown by Werden and Froeb), increasing \( \beta \) decreases all margins; and increasing \( \eta \) also decreases all margins. Since the price-marginal cost margin is the same for both products, the effect of the merger on the price of the smaller-share product is the greater one because the merger causes a larger portion of its loss in sales from a price increase to be recaptured by the other product involved in the merger and because the pre-merger markup is smaller for the smaller share product.

The application of this unilateral theory of anticompetitive effect is controversial; not because the economic theory is questioned, but because the results can be demonstrated through methods (such as the estimation of demand cross-elasticities between only a few products) that do not necessarily require an overall definition of a market (Baker (1997)). Under such circumstances, the traditional practice of not challenging mergers among firms with low market shares may be undermined.

Although the merger in the hypothetical example leads to a higher price so long as \( A \) and \( B \) have a non-zero demand cross-elasticity, this theory doesn’t in fact imply that all mergers among sellers of differentiated products will harm competition. Pro-efficiency forces that undermine or counteract the merged firm’s incentive to raise price are: (i) product repositioning, in which a third firm responds to the \( A \)’s price by adding similar product \( C \) to its product line; (ii) efficiencies, in which the merger may lower marginal cost, leading to post-merger price fall even if the direct competition between the brands falls significantly; and (iii) entry by other firms.

In some cases where it is possible to estimate demand cross-elasticities among the products of the merging firms, data limitations and the econometric problem of identification are the most common hurdles. Information on cross-elasticities can then be used – in combination with estimates of price and marginal cost for the relevant products – to make inferences about the strength of the merged firm’s incentive to raise price. One approach for making such inferences reports the extent to which the demand curve faced by the firm will grow steeper as a result of transaction (Baker and Bresnahan (1985)). Another approach simulates the profit-maximizing post-merger prices, thereby
incorporating information or assumptions about the non-local behavior of demand and marginal cost (Shapiro (1996), Werden (1996, 1997), Hausman and Leonard (1997)). Even when quantitative estimates of the information needed to employ these techniques – such as demand cross-elasticities, marginal cost, the pass-through rate, or the non-cooperative oligopoly solution concept – are unavailable or imprecise, these methods can still inform the evaluation of qualitative information.

The unilateral theory based upon the loss of localized competition among sellers of heterogeneous products underlies a number of recent consent settlements reached between merging firms and the FTC or DOJ in consumer product industries. For example, the FTC recently required two merging producers of distilled spirits, Grand Met and Guinness, to divest Dewars scotch and Bombay gin to resolve competitive problems arising from that transaction. Similarly, the DOJ recently expressed the requirement for Continental Baking Co., which markets Wonder Bread, to create a brand of white bread in each of seven regions of the country before acquiring Interstate Bakeries Corp.

These are not the only ways econometric methods are now used to demonstrate unilateral anticompetitive effects of mergers. In litigating its successful challenge to the proposed Staples/Office Depot merger, for example, the FTC introduced an econometric study to show that direct competition among office superstore chains within metropolitan areas lowered the price of consumable office supplies. Other econometric methods of measuring market power are surveyed in Bresnahan (1989) and Baker and Bresnahan (1992).

Overall, the uncertainties inherent in trying to predict the likely effect of a merger requires highly sophisticated structural econometric modeling which in turn has to be executed on case by case basis.

7 1997 Revisions

In 1992, Robert Pitofsky published a widely noted article advocating broader use of efficiencies in merger reviews due to the relationship between efficiencies and the competitiveness of U.S. firms in an increasingly global economy. The key features of Pitofsky’s proposal were focuses on (1) production efficiencies that reduce unit costs and (2) the inability to achieve the efficiencies through less restrictive alternatives.

The 1997 revised guidelines recognize that mergers can create conflicting incentives: they can lead to higher prices if they facilitate the exercise of market power, or they can lead to lower prices if they generate cost savings that encourage the merged firm to compete more aggressively. In
the dynamic context, merger guidelines are also concerned with the possibility that firms could exercise market power by slowing innovation or the possibility that the efficiencies from a merger could generate product improvements. An acquisition’s net effect on price in any market depends on which effect dominates. The guidelines focus on price, and thus emphasize identifying the net effect of the merger on consumer’s surplus within the markets where anticompetitive harm appears possible.

The first major change in the 1997 revisions was in providing a more systematic explanation of when efficiencies would be viewed as “cognizable” and therefore entitled to consideration. Cognizable efficiencies were defined by three characteristics: (1) merger-specific efficiencies that (2) have been verified and (3) do not arise from anticompetitive reductions in output or service. Each of the characteristics are summarized here:

**Merger-specific.** The 1997 revisions focused on the treatments on entry, expansion, and repositioning. It was recognized that the likelihood, not merely the feasibility, of these changes occurring was the relevant criterion. For example, if cost efficiencies are a function of economies of scale, which can be achieved only with output expansion, a firm may not wish to add capacity to achieve these greater efficiencies as it would depress existing market prices.

**Verifiable.** The revision requires that efficiencies be verified to be cognizable. Efficiency claims will not be considered if they are vague or speculative or otherwise cannot be verified by reasonable means.

**Not anticompetitive.** Reductions of output will normally be accompanied by reductions in (total) costs, but this cost reduction is not an efficiency. Similarly, elimination of rivalry between the merging firms may mean that the merged firm may be able to cut its cost of acquiring customers or to spend less in providing service to its customers. To the merging firms, such changes certainly represent cost savings and merging firms sometimes mistakenly try to treat these savings as efficiencies.
Modern comprehensive merger appraisal, as utilized by the FTC and DOJ, requires a simultaneous consideration of multiple factors. The most important of which are: (1) Degree of market concentration; (2) Possible competitive harm; (3) Evidence of entry barriers; and (4) Potential efficiency gains. As can be seen from Table 1, enforcement agencies still use HHI and change in HHI measures as a rough guide for market concentration, however, as it is evident from the table, some highly concentrated industry mergers get approved: the characteristics of the particular market involved will determine whether merger is anti- or pro-competitive.

8 Conclusions

US public policy with respect to horizontal mergers has changed rather drastically over last forty years. To a large extent, this change is reflected in the differences between the first Merger Guidelines issued by DOJ in 1968 and the guidelines currently in force. While it is tempting to summarize these changes as a move from a very strict regime to a more permissive one, it is more accurate to describe the evolution of merger policy as a reflection of more sophisticated theoretical and empirical Industrial Organization research, recognizing complexity of corporate combinations in the real world.

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<th>Post Merger HHI</th>
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