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**DEVELOPING EFFECTIVE MERGER CONTROL  
IN EMERGING ECONOMIES:  
LESSONS FROM ESTABLISHED POLICY AND PRACTICE**

**John Kwoka  
Northeastern University  
Boston, Massachusetts**

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This paper borrows extensively from prior work by myself and Daniel Greenfield, “Retrospective on Mergers and Merger Policy: Agency Predictions, Actions, and Outcomes,” which was presented at the International Industrial Organization Conference, Boston 2011. The data on which that work is based are preliminary, and the results should be viewed accordingly.

## I. INTRODUCTION

More than one hundred countries now have competition laws in place. These laws are often passed with considerable hope that they will foster the development of markets characterized by greater efficiency, growth, and prosperity for emerging and less developed economies. While commendable, such expectations are often unrealistic. One reason is that competition laws are but one component of policies necessary for such objectives. Other important ingredients include liberalization of markets, supportive legal institutions, and political commitment. Furthermore, by themselves, competition laws do not constitute competition policy. Competition policy requires enforcement resources, an agency with the capacity for competitive analysis, an understanding of the distinction between legal and illegal behavior, and the ability to impose effective remedies where necessary.<sup>1</sup>

Compounding these challenges is the fact that competition policy typically must address several quite distinct concerns, notably, cartels, mergers, and monopoly practices.<sup>2</sup> Each of concerns raises distinctive enforcement issues. Cartels, for example are rarely socially beneficial, so that a simple policy of prohibition runs little risk of so-called Type 1 errors, that is, banning pro-competitive outcomes. Rather, the principle enforcement challenges are definition and detection of cartels. The issues confronting policy with respect to mergers and monopoly practices are quite different, since the distribution of economic outcomes from each ranges from anticompetitive to socially beneficial. That is, mergers may be procompetitive as well as

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<sup>1</sup> A World Bank survey (2002) has revealed substantial differences among countries' competition policies on a variety of such issues.

<sup>2</sup> A fourth concern—state actions and institutions contrary to competition—will not be discussed here.

anticompetitive, both outcomes occurring with considerable frequency. Similarly, many possibly anticompetitive behaviors by dominant firms—low prices and bundling, for example—have benign aspects and explanations as well. As a result, simple prohibition of these latter, while eliminating all anticompetitive outcomes (Type II errors), would also prohibit some innocent and beneficial actions. As a result, policy determinations with respect to both mergers and monopoly practices—unlike cartels—are usually evaluated on a case-by-case basis.

As between mergers and monopoly practices, case-specific evaluations of the former are more complicated due to another difference between the enforcement areas, namely, that merger control is typically exercised prospectively. That is, the competition agency ordinarily decides whether or not to issue a challenge to a merger in advance of its consummation. Thereafter, it becomes far less likely that the agency will take action against it, in large part due to the near-impossibility of reversing a merger. For this reason effective merger control is fundamentally an exercise in economic prediction. The key question facing the competition agency is whether or not a merger that has not occurred, but with particular characteristics to the merging firms, their market, and the transaction, will have significant and demonstrable anticompetitive effects. If so, a corollary question is whether or not the competition agency can act effectively against the merger.

This paper evaluates the ability of a competition agency to correctly answer these questions in its merger control mission. It examines experience in a jurisdiction with a well-established competition policy in the belief that the success of merger control in that setting is likely to represent an upper bound on the success rate of jurisdictions with more recent competition policy, less experienced competition agencies, and fewer enforcement resources.

The country with well-established policy should be better able to identify anticompetitive mergers and state the bases for that determination. They should also be better able to pursue actions against such mergers that are scaled to the degree of likely competitive harm—that is, prohibiting the merger, or imposing various conditions. And it should be the case that the outcome of this entire process is one that prevents significant competitive harm in terms of adverse price or quality effects.

The jurisdiction with a well-established competition policy examined in this paper is the United States. While there obviously are many important differences in the U.S. economic and institutional setting for merger control, this study nonetheless finds some striking results and implications for merger control in emerging economies. This paper begins with a brief discussion of the history of merger control in the U.S., focusing on the Merger Guidelines. This is followed by a comparison between actual case-bringing and the stated Guidelines, and then a review of merger retrospectives that cast light on the actual outcomes of mergers. Finally, additional information on prior conditions in each industry and on agency actions with respect to the mergers is added, creating “end-to-end” information on each merger and associated policy.

Analysis of this end-to-end information yields a number of insights. First, merger control should evolve, and has evolved, with economic understanding of the conditions giving rise to adverse effects. Second, merger control in the U.S. diverges, often substantially, from the stated Guidelines. Third, a very large fraction of carefully studied mergers seem to result in higher prices, suggesting possibly lenient merger policy. Fourth, mergers without adverse effects are approved more often than those resulting in higher prices. Fifth, mergers resulting in the greatest price increases were not subject to stronger conditions for approval than others with more

modest price effects. Sixth, ease of entry appears to be a decisive argument for merger approval.

Further implications of this mixed record of well-established merger control and recommendations for emerging economies are spelled out in detail at the end of this paper. We begin with formal policy and its practice.

## **II. U.S. MERGER GUIDELINES AND MERGER CONTROL**

Competition laws in the U.S. date as far back as 1890, although effective merger control began with the passage of legislation in 1950. One of the most important enforcement tools developed since that time have been the Merger Guidelines, first promulgated in 1968 and subsequently revised and reissued a number of times. By themselves the series of revised Guidelines makes clear that merger control has not been static, but rather has changed with evolving economic understanding and with judicial interpretation of the underlying statutes.

The first merger guidelines in the U.S. were issued in 1968 with the explicit purpose of “acquaint[ing] the business community, the legal profession, and other interested groups and individuals with the standards currently being applied by the Department of Justice in determining whether to challenge corporate acquisitions and mergers.”<sup>3</sup> That purpose has remained a constant even as the specific standards themselves have changed. Broadly constant, too, has been the sequential process set forth for analysis of mergers. That process begins with market definition (both product and geographic), then proceeds to measurement of market shares and concentration, followed by consideration of other relevant factors, and then efficiencies.

A prominent feature of the 1968 Merger Guidelines was the quite stringent market share

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<sup>3</sup> U.S. Department of Justice, “1968 Merger Guidelines,” p. 1.

thresholds that, as stated, would “ordinarily” trigger a challenge. As shown in Table 1, in a highly concentrated market a merger between two firms each with four percent shares could expect to be challenged, as would the acquisition of a one percent firm by a 15 percent firm. Also important was the Guidelines’ statement that these structural factors should be viewed as conclusive except in “certain exceptional circumstances,” such as when technological change blurred industry distinctions.

These guidelines reflected economic understanding at the time that emphasized the dominant role of market structure in determining industry performance. That understanding subsequently has undergone revision in two respects. First, the structural criteria embodied in the 1968 Guidelines were soon understood to be far too stringent, and second, “other factors” became known to matter more than recognized at the time. These and other significant changes were embodied in the 1982 Merger Guidelines, co-authored by both the Department of Justice and the Federal Trade Commission. Indeed, the most significant contribution of the 1982 Guidelines may have been its approach to market definition, which focused on the smallest group of products whose price could be increased by a small but significant and non-transitory amount.

The new structural criteria were notable in that they were no longer stated in terms of the traditional concentration ratio, which simply sums leading firms’ shares. Instead, the Guidelines relied upon the Herfindahl-Hirschman Index of concentration, which was thought to have superior informational content and predictive value.<sup>4</sup> The actual standards set forth in the 1992

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<sup>4</sup> But see Kwoka (1985). The Herfindahl-Hirschman Index (HHI) is defined as the sum of all squared-shares.

Guidelines are displayed in Table 2, indicating the likelihood of challenge to a merger based both on the level of post-merger concentration and on the increase in concentration resulting from the merger itself.

The 1982 Guidelines are generally recognized as the first modern merger guidelines in the U.S., and in many ways they have formed the basis for merger policy ever since. Their intellectual underpinnings can be traced to the economic theory of collusion—what is now termed “coordinated effects.”<sup>5</sup> Mergers were viewed as raising competitive concerns when they increased the likelihood of cooperation among firms. Consistent with that theory, the new Guidelines made clear that there might be influences other than concentration on merger outcomes, and that the agencies were prepared to consider those factors in many—not just “exceptional”—circumstances. As a result the Guidelines relaxed somewhat the strict presumption of anticompetitive outcome from share and concentration thresholds.

A similar shift from presumption to case-specific determination prompted a revision to the portion of the Guidelines involving efficiencies. In 1984 the Guidelines were modified to indicate that the agencies were prepared to consider merger-related cost savings in all cases, thus modifying the 1982 language that suggested consideration only of cases involving “unusual” (atypically large) efficiencies.

The next revision of the Merger Guidelines, in 1992, made three significant changes. The first was to give specificity to the analysis of entry conditions, a topic whose policy importance was growing but for which the process of analysis had advanced little. The new guidelines stated that entry would be relevant only insofar as it was likely, timely, and sufficient

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<sup>5</sup> See White (2006) and also Kwoka and White (2009).

to restore premerger competition. The second change constituted a fundamental rethinking of concerns with the competitive effects of a merger. While coordinated effects continued to be one concern, the new Guidelines elevated “unilateral effects” to co-equal status. The theory of unilateral effects derives from the differentiated products Bertrand model, which shows how, by merging with a competitor to whom the firm would otherwise have lost many customers, a single firm can unilaterally raise its profit. The third and related change in the 1992 Guidelines was its promise that the agencies would state more explicitly the theory of competitive concern motivating any challenge. This promise substantially modified the so-called “structural presumption” that had largely sufficed in an earlier era.<sup>6</sup>

Those Guidelines underwent a subsequent modest revision in 1997, focusing again on the efficiencies defense. This revision explained that efficiencies would matter to the extent that they strengthen a firm’s competitiveness and result in consumer benefits. They made explicit criteria for cognizable efficiencies, including that they be merger-specific and verifiable.

The 2010 revision of the Merger Guidelines issued by the Department of Justice and Federal Trade Commission constituted the most substantial change since the 1992 version. The most relevant changes for present purposes were two-fold. First, the revision made explicit that analysis no longer followed the formulaic, sequential approach of all past Guidelines, an approach based on concern with coordinated effects. Rather than first defining the market, then measuring shares, etc., the new guidelines state that there are acceptable—sometimes even superior--alternatives that re-ordered or de-emphasized certain traditional elements of analysis.

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<sup>6</sup> For discussion of the merits and consequences of this promise, see Kwoka and Grimes (2003).



Second, for cases where market shares and concentration are important, it revised the numerical thresholds for likely challenges (see Table 3) to bring them into greater conformity with actual practice. At the same time it indicated that these structural criteria would now carry a substantial presumptions about anticompetitive effects and hence the likelihood of challenge.<sup>7</sup>

The changing nature of these Guidelines makes clear that stated merger control policy in the country with the longest history and most extensive experience is not a static phenomenon. Rather, it changes with evolving understanding of the underlying economics, with efforts at greater clarity and precision, and with recognition of deficiencies in past versions of the Guidelines. As we shall now see, another important aspect of these Guidelines is the degree to which they describe actual practice.

### **III. MERGER CONTROL IN PRACTICE**

Stated merger policy may or may not reflect actual practice. In the case of U.S. merger control, the divergence between the Guidelines and enforcement practice is abundantly clear from data released by the Federal Trade Commission and the Department of Justice. These data document over a number of years the frequency of merger investigations and challenges by each agency according to the value of the HHI index for the industry and the change in HHI resulting from the merger. Also included is information on the number of “significant” competitors in the merging firms’ industries, and entry conditions.<sup>8</sup>

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<sup>7</sup> The 2010 Guidelines made other significant changes, notably, concerning mergers that eliminate potential competitors. For discussion, see Kwoka (2001)

<sup>8</sup> FTC and DOJ, Merger Challenges Data, 1999-2003. FTC, Horizontal Merger Investigations Data, 1999-2007. See also Coate (2009). No specific mergers are identified in

These data on the characteristics of all mergers challenged by the FTC and DOJ between 1999 and 2003 illustrate this divergence between the stated guidelines of the time, and actual practice. As shown in Table 4, very few mergers with HHIs less than 2000 were challenged. Indeed, the lowest HHI for any challenged merger was about 1400, and the median HHI in markets where mergers were challenged was 4500—far in excess of the guidelines. Similarly, few mergers with changes in HHI less than 300 were challenged. The lowest value was 85, and the median value was approximately 1200. More than three-fourths of all challenged mergers involved markets with HHIs in excess of 2400 and changes in HHI of at least 500. These numbers are all well in excess of the thresholds set forth in the Merger Guidelines at the time, which implied some possibility of antitrust challenge for mergers in industries with HHI index values between 1000 and 1800, and the likelihood of challenge for values over 1800 when the merger caused an increase of more than 100 points.

A similar divergence between standards and practice is revealed by data on all FTC investigations of horizontal mergers covering the years 1996-2007. These data, reproduced in Table 5, indicate that more than three-fourths of all investigations resulted in enforcement actions, but few of these occurred when the Herfindahl index was less than 1800 or when the change in the Herfindahl was less than about 200-300. The vast majority of merger enforcement actions occurred with considerably higher values of the HHI and increases in the HHI.

Since the released data include the actual numbers of investigations leading to enforcement action and the number resulting in closure of investigations without action, it is

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these data.

possible to construct a variable for the probability of enforcement action according to brackets of HHI values and changes in HHI.<sup>9</sup> This in turn permits a simple regression of the form

$$\text{PROB} = f(\text{HHI}, \Delta\text{HHI}) \quad (1)$$

to determine the actual relationship between these concentration factors and the likelihood that a merger will trigger enforcement.

The results of this empirical estimation is shown in Table 6. The specification in column (a) is that given in text equation (1), and indicates that both HHI and its change are statistically significant ( $\Delta\text{HHI}$  at 5 percent in a one-tail test). This confirms that merger enforcement action is indeed more likely for industries characterized by higher levels of concentration and by larger changes in concentration as a result of the merger. The estimated coefficients imply, for example, that a 1000 point higher HHI results in an 8.2 percent greater probability of challenge, and that a change in HHI that is 1000 points larger causes an 7.7 percent greater likelihood of a challenge.

The effects as estimated in the regression in column (a) are simply additive. To test whether the trade-off is more complicated, with perhaps a greater effect on likelihood from the change in HHI in markets where HHI itself is larger, the second model includes an interaction term between HHI and its change. The result of that estimation, shown in column (b), again finds that all coefficients are statistically significant. Interestingly, the coefficient on the interaction term is negative, implying that the probability of an investigation resulting in a challenge is in fact *lower* when both HHI and its change are large, contrary to what might be

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<sup>9</sup> In addition to the filing of actual cases, “enforcement actions” include instances in which the parties abandoned the merger in the face of likely challenge or escalating investigation.

expected under those circumstances.

The FTC data for 1999-2007 include additional information related to investigations and enforcement actions. It shows, for example that the probability of enforcement action is a strictly declining function of the number of significant competitors in the market affected by the merger. For mergers that reduce the number of significant-size firms from 8 to 7, for example, less than 30 percent resulted in enforcement, whereas for those causing a reduction from 4 to 3 significant competitors, the percentages are reversed with more than 70 percent resulting in enforcement action.

The data also cast light on the importance of entry conditions to the disposition of investigations. Thus, all 36 investigations in markets where entry was judged as “easy” resulted in closure rather than enforcement action. By contrast, in markets where entry was judged difficult, enforcement occurred in more than 80 percent of all investigations overall, with ever higher percentages as the number of remaining significant competitors declined.

#### **IV. RETROSPECTIVE STUDIES OF MERGERS**

The FTC-DOJ data on merger investigations and challenges cast light on one link in the chain that is the focus of this paper. The complete chain involves “end-to-end” analysis of merger policy, by which is meant the following three-step process:

- (1) the initial conditions in an industry that prompt investigation of a proposed merger,
- (2) agency analysis and prediction of the merger’s likely effects as well as agency action with respect to that merger, and
- (3) the actual outcome of the merger and the policy taken,

The last section focused on the linkage between the first two steps in this process—underlying conditions and the actions taken—while this section expands the scope to include the further step involving the actual outcome.<sup>10</sup>

For purposes of examining actual outcomes, we rely upon the growing body of so-called merger retrospectives. Merger retrospectives are empirical studies of the performance of firms that have been allowed to merge, but whose merger was investigated by the competition agency since it raised significant competitive concerns. The latter qualifier implies that these studies are not a random sample of all mergers, nor even a random sample of those that pass before the competition agency. Rather, they are viewed as likely problematic. Moreover, those that attract researchers interest are generally prominent cases and also cases for which the relevant data exist.

The empirical methodology most commonly used in these studies is difference-in-difference. The difference-in-difference approach is illustrated by a study by Barton and Sherman, who published the first such study. Barton and Sherman (1984) examined the price effects of two acquisitions by Xidex Corporation of its major competitors in each of two product markets for duplicating microfilm. The first acquisition, in 1976, increased Xidex's market share from 40% to 55%. The second, in 1979, raised its share of another product from 67% to 93%. Barton and Sherman compared the postmerger price of each product to the respective premerger price.

Of course any number of other possible influences could account for the observed price

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<sup>10</sup> The importance of analyzing outcomes, rather than outputs like number of cases, has been stressed by Kovacic (2009), among others.

change. One method for addressing this possibility would be to explicitly include all such influences in a reduced form empirical model, so they could be held constant and the effect of the merger isolated. This approach requires enumeration of all such possible influences, and then their measurement and appropriate inclusion in the empirical model. One alternative method to address possible confounding influences is to compare the observed price change for the products undergoing merger to the change in prices in a control group of products with similar demand and cost characteristics but not affected by the merger. Any difference between the two differences should be attributable to the merger itself.

In Barton and Sherman's analysis, the control group was precisely that--a set of products produced with similar technology but not involved in the mergers in question. The difference in price differences between the affected and unaffected products implied that the merger was in fact responsible for substantial price increases on both of the products where Xidex acquired its major rivals. The Federal Trade Commission sued Xidex in 1981, and ultimately secured a settlement on relatively favorable terms.

The economics literature now contains a considerable number of these merger retrospectives. Present purposes are served by those studies that examine horizontal transactions (or if some combination of horizontal and vertical, those with a major horizontal component), where that transaction is a merger or acquisition, but also a joint venture or (in airlines) a code-sharing agreement with substantial horizontal implications. For data reasons, we also focus on transactions involving U.S. companies and markets.

In addition, the study itself must address one or more mergers individually, since those that cover groups of mergers only, without separate assessment of the effects of each, cannot be

matched to policy. The study must use a recognized analytical techniques such as difference-in-difference, thus meeting modern standards of research design,<sup>11</sup> and must have appeared in a peer-reviewed journal in economics or closely related discipline, or in a respected working paper series such as that from the NBER, FTC, or DOJ.

Our survey has uncovered a total of 26 such studies beginning with the previously described Barton and Sherman analysis. Despite rather stringent criteria, this number exceeds those found in prior surveys and summaries.<sup>12</sup> These 26 studies analyze a total of 45 mergers and other qualifying transactions, yielding 59 estimates of the price effect of a merger on a particular product.<sup>13</sup> There also are 14 estimates of the output (or market share) as the performance outcome of a merger, and seven similarly defined estimates on quality.

The findings of these studies with respect to postmerger price performance are summarized in Table 7. About one-half of the 59 estimated price effects conclude that the mergers result in “large” price increases, defined as a price increase in excess of 5 percent.<sup>14</sup>

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<sup>11</sup> Alternative approaches include structural or reduced form estimation, and merger simulation.

<sup>12</sup> The Hunter et al (2008) review, for example, lists a total of 16 studies of mergers in the oil and gas industry, consumer products, railroad, airline, hospital, banks, and academic journal markets. Ashenfelter et al (2009) state that there are twenty merger retrospective studies overall, but they include some that do not qualify here. It should be noted that a number of studies cover mergers in the same industry, sometimes the same mergers.

<sup>13</sup> The term “product” refers to any set of products or markets for which a merger effect has been estimated in the literature. It should be noted that studies such as those by Kim and Singal (1993), Dafny (2009), and others are excluded since they only provide estimates of the average effect of *groups* of consummated mergers in various industries. Grouped-merger results do not permit associating agency priors and actions with the outcome of a particular merger.

<sup>14</sup> Selection issues again may play a role, since some of the authors state that they chose to analyze instances where price increases were likely to be substantial.

Together with those studies finding increases of smaller magnitude, it appears that that nearly two-thirds of all these mergers find that they lead to increases in price. Seventeen other studies find that there is either no effect or a mixed effect.<sup>15</sup> Only six, or about ten percent, of the studies conclude that there has been a price reduction as a result of the merger.

A useful disaggregation of these estimated effects separates true mergers from joint ventures and airline code-shares. Among the latter, it is interesting to note that studies of four joint ventures concluded they had, respectively, no effect, a mixed effect, a small price rise, or a large price decline. Studies of three codeshare agreements found two with large price reductions and one with a mixed effect. Although these numbers are small and the sample not random, it would nonetheless seem that these less thorough-going structural changes--codeshares and joint ventures--produce more modest and varied price effects. Subtracting out these seven observations from the overall data base implies that 29 of 52 true mergers that have been studied--greater than 55 percent--have been found to result in price increases. Only three estimates--less than six percent—indicate price reductions from true mergers.

Noteworthy as well is the fact that ten of the 13 estimates on airline mergers have concluded that they result in large price increases, the other three reporting mixed effects. Not one airline merger was found to result in lower prices. Of those studied more than once, all three studies of the USAir-Piedmont merger concluded it raised price by a large amount. Of the four studies of the Republic-Northwest merger, three concluded that price rose a lot, one finding mixed effects. The four studies of the TWA-Ozark merger were evenly split between a large

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<sup>15</sup> “Mixed effects” often involve a difference between the short-run and the longer-run effects.



price increase and a mixed effect. All in all, these airline mergers would seem to have been decided too favorably to the carriers.

While studies of petroleum industry mergers are as numerous as airline merger studies, the results are considerably more varied. These range from large negative price effects to large increases in price. Moreover, many of the studies come from a single source, whose methodology and conclusions themselves have been subject to debate.<sup>16</sup> All other sectors have been studied only once or a very few times.

As previously mentioned, there are fourteen estimates of output or market shares. Three of these were the studies of code-sharing, and consistent with their findings regarding price, they conclude that output rose by either large or small amounts. Four other studies conclude that output fell as a result of the mergers they investigated. All of those cases are in airlines, and in each case the output reduction is a reflection of their finding of a large price increase. The remaining seven cases are mixed or uncertain.

There are seven estimates of the effect of a merger on service or product quality. Of these, three find that quality declined and three that it rose, while the other came to a neutral conclusion about the quality effect. The five estimates of the cost consequences of mergers—all in airlines—came to divergent conclusions. Three indicate that costs in fact rose by a large increment while the other two suggest that costs fell by an equally large amount.

Three significant insights can be gleaned from examination of the universe of such studies. First and perhaps most noteworthy is the fact that significantly more than half of all studied mergers result in price increases, and most increases are quite large. This suggests that

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<sup>16</sup> See U.S. Government Accountability Office (2004) and response by the FTC (2005)

these mergers appear to have been treated too permissively. Second and also of interest is the fact that no study exists indicating that airline mergers result in price reductions. Rather, there is near unanimity that permitted mergers in that industry raise prices. Finally, we note that transactions short of mergers—code-shares and joint ventures—appear to have lesser effects than do the more thorough-going structural change represented by mergers.

Apart from selection issues, these conclusions suggest that in the U.S. actual merger enforcement has been too permissive in general, and considerably too permissive with respect to mergers in the airline industry. As noted, this is particularly striking since the U.S. has perhaps the best developed mechanisms for merger control and yet its actual practice appears not only to have made errors, but also to have erred systematically, by being too permissive.

## **V. AGENCY ACTIONS AND MERGER OUTCOMES**

Evaluation of merger policy—as opposed to simply the merger—requires additional information on matters both before and after the merger. Relevant information prior to each merger includes the merging parties’ market shares, market concentration, entry conditions, and any other product and transaction factors that were relevant to agency determination. In addition, the specific nature of any actions taken—whether a court case, a settlement, a particular type of remedy, etc.—must be compiled. Finally, this information is added to information about the actual outcomes from the retrospective studies to give a full “end-to-end” account of mergers and associated policy.

This research strategy encounters some difficulties that should be recognized. Information about prior conditions are not always readily available. Agency investigations that result in court

proceedings or consent decrees will disclose facts and competitive concerns. In other instances, the agencies have released statements upon closing investigations explaining some of the bases for their determination. But in many cases information must be gleaned from public sources and remains incomplete. A further limitation is that retrospective studies, by their very nature, examine consummated mergers. There are few examples of ex post evaluations of the parties to prospective mergers that were not consummated due to agency challenges. Moreover, any use of retrospective studies is dependent on their accuracy and lack of bias. Reliance on the peer-review process is an important assurance, as is the fact that multiple studies of the same merger generally come to consistent conclusions.

With these caveats, information has been compiled on as many of the mergers covered by the retrospective studies as possible. At present, there is “end-to-end” data—that is, from agency prediction to action to outcome—for thirty products affected by 23 of the mergers evaluated in the retrospective studies previously described. For 25 of those 30 products, actions by either the FTC or DOJ can be matched to ex post price outcomes. In two other instances, the retrospective studies examine quality but not price outcomes. The remaining three cases involve mergers of airlines where the Department of Transportation, rather than the competition agency, had ultimate merger review authority.

Agency actions can be categorized into one of four categories:

(1) Approved/no action taken. In these cases the merger was investigated but the relevant competition agency determined that no further action was appropriate.

(2) Conduct remedy. Here the merger was allowed to proceed subject to certain conduct remedies that were intended to resolve agency concerns. Conduct remedies may be internal or

external to the firms. Internal conduct remedies include such things as firewalls that are intended to prevent the flow of information between divisions of the merged company. External conduct remedies are directed at such actions as retaliation or discrimination that the merged company might direct at rivals.

(3) Divestiture remedy. In these cases the merger was allowed to proceed after certain assets implicated in competitive concerns were divested by the merging parties. Divestiture remedies are generally viewed as more effective, and certainly administratively easier, than conduct remedies. They are likely more effective since they preserve corporate boundaries on information flows and preserve incentives for independent action.<sup>17</sup>

(4) Opposed. In these cases the merger was opposed by the agency, either outright or at least without any stated method of resolving competitive concerns.

Table 8 reports the policy actions taken toward all 25 products undergoing merger where there is end-to-end information on the merger and associated policy. Of these, five were approved without agency action. A total of eleven were approved subject to conduct conditions or remedies, while five others were approved subject to divestiture (i.e., structural) requirements. The final four were opposed outright by the antitrust agencies.

Tables 9 reports information on market concentration, firm shares, entry conditions, and other factors relevant to the agency's decision, and also information about type of agency action taken, if any, with respect to the merger.<sup>18</sup> We focus on concentration and entry conditions,

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<sup>17</sup> It is, of course, entirely possible for divestiture remedies to be less effective if they happen to involve inconsequential aspects of overlapping businesses.

<sup>18</sup> Recall that Section III examined data on all investigations and cases as reported by the FTC and DOJ, without identifying firms. Present data is specific to the mergers examined in the

noting that we do not have information on these factors for each merger. With that caveat, we nonetheless observe the following patterns:

(1) For mergers that were approved, the postmerger HHIs ranged from 1500-6390, and in one instance a two-firm concentration ratio of 100 percent. In the cases where measured concentration was quite high, it was also the case that entry was determined to be quite easy.

(2) For mergers that were subject to conduct remedies, the numerical HHIs ranged between 2540 and 3000. In another instance concentration was unmeasured but described as “moderate/high,” and in a further case two-firm concentration was determined to be 100. In all cases entry was said to be difficult.

(3) For mergers subject to divestiture requirements, the relevant HHIs were in the range of 6000-8000, and elsewhere described as “high/moderate.” Again, in all cases entry was said to be difficult.

(4) In all cases of outright opposition by the competition agency, the agencies’ views were overridden by a different agency (generally, the Transportation Department) or a court.

These observations caution that any association between underlying conditions and the chosen policies is somewhat loose. Two conclusions may nonetheless be supported. First, despite considerable variation it seems that somewhat higher concentration characterizes cases resulting in divestiture compared to cases resolved with conduct remedies. This would be consistent with the expectation that resolving competition concerns in more highly concentrated markets requires more aggressive policy measures. Second, it would seem that entry conditions

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retrospective studies. It should be noted that our data base includes some examples of remedies *after* consummation of the merger—e.g., Xidex, Evanston Hospital. For present purposes we include these without distinction.

may be more important than concentration. Belief in easy entry has seemed to negate competitive concerns even in quite highly concentrated postmerger markets.<sup>19</sup>

Finally, we examine the relationship between agency actions and the measured outcomes for these 25 products undergoing merger. It should be noted that not all observations are independent. Some are multiple studies of the same merger. Others are multiple products affected by the same merger. And some are multiple mergers evaluated in the same study. For the present we put these issues aside and summarize the relationship found in all the data.

Table 10 presents the matrix of actions vs. outcomes for these 25 merged products. The distributions of the total among agency actions has just been described, with 4 opposed, 5 subject to divestitures, 11 subject to conduct remedies, and 5 approved. The distribution among measured price effects was previously described overall. For these mergers, 19 of 25 products undergoing merger resulted in price increases of some magnitude (most were large), 6 had mixed or no effects, while none were found to have decreased price.

In order to assess whether policy was well-suited to competitive problems and had the desired effect, these outcomes should be related to the actions taken by the agency. Specifically, we would expect that the preponderance of mergers resulting in no price effects or price decreases should have been approved by the reviewing agency. The evidence in Table 10 is that three out of the six such mergers were indeed approved by the reviewing agency. While this record does not indicate overwhelming accuracy, it is useful to contrast those 19 mergers that resulted in price increases. Of those, only two were allowed to take place without some type of agency response.

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<sup>19</sup> In addition, of course, other factors undoubtedly play important roles in the resolution of particular investigations. Hence, we should not expect a perfect correlation with those for which we have measurements.

A two-sample test of proportions<sup>20</sup> confirms that a merger-approval rate of .500 for six mergers without adverse price effects and a .105 merger-approval rate for the 19 cases where prices rose are significantly different at a  $p > .98$ . Thus, despite a record with substantial policy errors (both of omission and commission), the data suggest on average that the reviewing agencies can distinguish problematic mergers from those without adverse competitive consequences.

A yet more qualified conclusion emerges from closer examination of those mergers that resulted in large price increases. Of those, only two elicited outright opposition by the relevant competition agency, and indeed an equal number—that is, two-- were allowed to proceed without any agency action whatsoever. Among the remaining 11 products undergoing merger, eight were subject to conduct remedies—generally viewed as weaker--and three to tougher structural remedies in the form of divestitures.

Thus, it would appear that well-developed merger control is capable on average of distinguishing mergers that pose a threat of substantial adverse effects from those that do not, but this average obscures considerable variation and hence policy error. Error appears even more frequent in the type of policy actions chosen. Moreover, that error is systematic, favoring weaker remedies than appropriate and necessary for the mergers in question.

These inferences are subject to several qualifications. We have already noted characteristics of the studied cases and of measured outcomes that invite disproportionate attention. In addition, for mergers that proceeded subject to divestiture or conduct remedies, observed outcomes are conditional on the actions taken. Thus, large price increases for mergers

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<sup>20</sup> This test determines the probability that the proportion of occurrences in two samples of different sizes indicates that the samples come from different populations. It should also be noted that these price outcomes are conditional on the policy measures taken.

with conduct remedies should be interpreted as large price increases *in the presence of* conduct remedies. In cases of consummated mergers, those eliciting no agency action, and cases in which agency opposition was overridden by other authority, the actual outcomes are not conditional on actions but even those cases raise concern about selection bias.

## **VI. IMPLICATIONS FOR EMERGING ECONOMIES**

The Antitrust Division of the U.S. Department of Justice has an annual budget of approximately \$163 million, while the Federal Trade Commission's antitrust budget is about \$120 million. The Antitrust Division employs a total of 880 people, including 50 economists and 380 lawyers. The FTC's antitrust staff numbers about 510, comprised of about 75 economists and 300 attorneys. Whatever the adequacy of these resources in overseeing competition in a \$15 trillion economy, a total budget in excess of \$280 million clearly permits considerable antitrust enforcement activity. Indeed, with respect to mergers alone, over the past decade the agencies conducted between 50 and 135 formal investigations and filed between 2 and 20 cases per year.

With this degree of on-going activity as well as its long history, it might be expected that the U.S. merger control would be able to target cases representing true threats to competition, conduct analyses correctly identifying competitive concerns, and impose sound remedies where appropriate. As has been shown, the reality is considerably murkier. Actual merger enforcement has been significantly more lenient than stated policy guidelines. Agency actions with respect to mergers appear to make numerous errors, although on average distinguishing cases that do not threaten harm from those that do. Yet, the nature of actions taken against the latter appear systematically too weak and often ineffective at preserving competition.



Given this deviation from the ideal in the setting where such variance should be at a minimum, these findings contain some cautions for merger control in emerging economies that lack the history, experience, and resources of the U.S. competition mission. Specifically, the following implications are supported by the data:

(1) Case-by-case determination of which mergers are likely anticompetitive is resource-intensive and subject to substantial error under the most favorable circumstances. Accordingly, a strong structural presumption is both administratively easier and no less likely accurate than more complex case-specific analyses.

(2) Ease of entry represents an important safeguard against both anticompetitive mergers in general, and against possible Type II errors in enforcement (that is, errors of omission). Merger control should be interpreted to include removal of existing entry barriers and vigilance against their being erected or raised as a result of any merger.

(3) Where remedies are imposed, structural remedies are much easier to fashion than conduct remedies, and are likely more effective as well. Thus, divestitures should be employed as remedies wherever possible, and certainly in preference to conduct approaches that are difficult to implement, monitor, and enforce.

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**TABLE 1**  
**Structural Thresholds in 1968 Merger Guidelines**

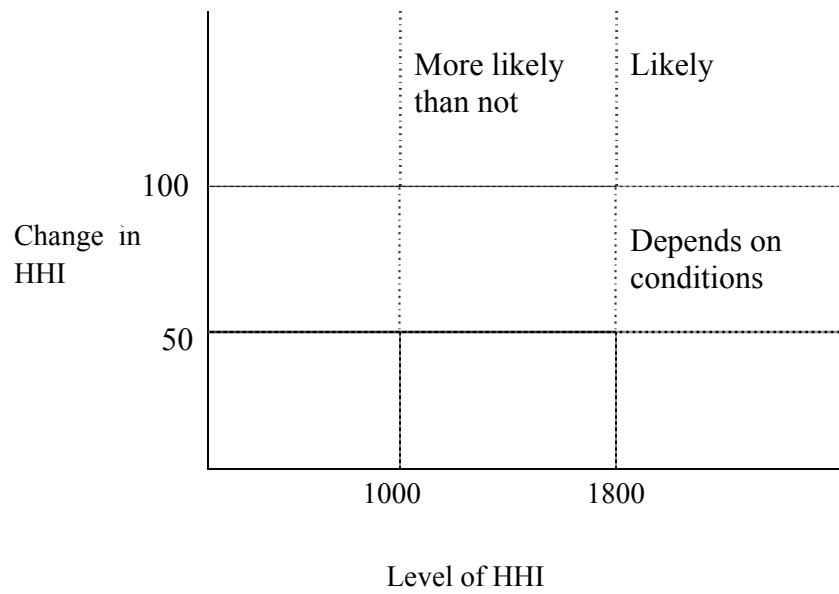
**A. For a highly concentrated market (CR4>75%)**

<i>Acquiring Firm</i>	<i>Acquired Firm</i>
4 percent	4 percent or more
10 percent	2 percent or more
15 percent or more	1 percent or more

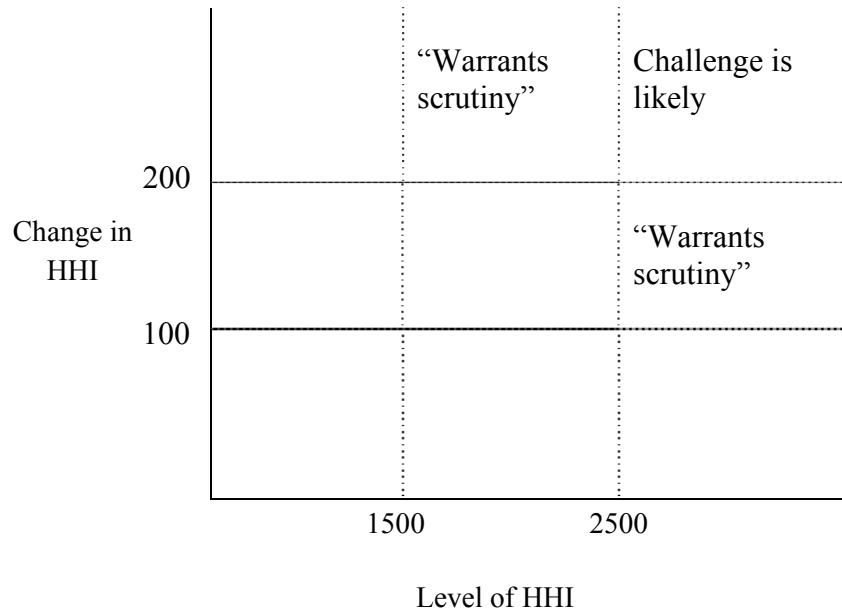
**B. For a less highly concentrated market (CR4<75%)**

<i>Acquiring Firm</i>	<i>Acquired Firm</i>
5 percent	5 percent or more
10 percent	4 percent or more
15 percent	3 percent or more
20 percent	2 percent or more
25 percent or more	1 percent or more

**TABLE 2**  
**Structural Thresholds in 1982 Merger Guidelines**



**TABLE 3**  
**Structural Thresholds in 2010 Merger Guidelines**



**TABLE 4**  
**Cases in which the Agencies Challenged Mergers (1999-2003)**

Post-Merger HHI	Change in the HHI								
	0-99	100-199	200-299	300-499	500-799	800-1,199	1,200-2,499	2,500+	total
0-1,799	0	17	18	19	3	0	0	0	57
1,799-1,999	0	7	5	14	14	0	0	0	40
2,000-2,399	1	1	7	32	35	2	0	0	78
2,400-2,999	1	5	6	18	132	34	1	0	197
3,000-3,999	0	3	4	16	37	63	53	0	176
4,000-4,999	0	1	3	16	34	30	79	0	163
5,000-6,999	0	2	4	16	9	14	173	52	270
7,000+	0	0	0	2	3	10	44	223	282
total	2	36	47	133	267	153	350	275	1263

**Table 5**  
**FTC Merger Investigations by HHI and Change in HHI (1996-2007)**  
**Enforced/Not Enforced**

<i>Change in HHI (Delta)</i>										
		<b>0 - 99</b>	<b>100 - 199</b>	<b>200 - 299</b>	<b>300 - 499</b>	<b>500 - 799</b>	<b>800 - 1,199</b>	<b>1,200 - 2,499</b>	<b>2,500 +</b>	<b>TOTAL</b>
<i>Post Merger HHI</i>	<b>0 - 1,799</b>	0/14	17/30	19/20	17/11	3/6	0/1	0/0	0/0	56/82
	<b>1,800 - 1,999</b>	0/4	5/4	5/5	12/4	12/4	0/0	0/0	0/0	34/21
	<b>2,000 - 2,399</b>	1/2	1/5	7/7	25/16	31/10	1/2	0/0	0/0	66/42
	<b>2,400 - 2,999</b>	1/2	4/1	6/5	18/5	44/13	26/9	0/0	0/0	99/35
	<b>3,000 - 3,999</b>	0/2	2/2	4/2	6/5	19/12	66/18	31/14	0/0	128/55
	<b>4,000 - 4,999</b>	0/0	1/2	1/1	3/1	8/4	12/4	54/3	0/0	79/15
	<b>5,000 - 6,999</b>	0/0	4/0	4/2	4/1	12/0	11/2	110/18	36/4	181/27
	<b>7,000 +</b>	0/0	0/0	1/0	1/0	2/0	8/0	17/1	198/2	227/3
	<b>TOTAL</b>	2/24	34/44	47/42	86/43	131/49	124/36	212/36	234/6	870/280

**TABLE 6**  
**Probability of Merger Challenge**  
**by HHI and Change in HHI**

	(a)	(b)
HHI	.00815 (5.51)	.01026 (5.25)
$\Delta$ HHI	.00772 (1.65)	.02718 (2.11)
HHI $\cdot$ $\Delta$ HHI		-3.45e-06 (-1.62)
CONSTANT	26.7	16.8
R <sup>2</sup>	.52	.55

Note: t-statistics in parenthesis



**TABLE 7**  
**Findings of Studies**

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PRICE INCREASE	
Large	29
Small	7
MIXED OR NO EFFECT	17
PRICE DECREASE	
Small	0
Large	6
TOTAL	59

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**TABLE 8**  
**Agency Actions**

<b>ACTION</b>	<b>NO. OF CASES</b>
Approved without conditions	5
Approved subject to conduct remedies	11
Approved subject to divestiture	4
Disapproved (but overridden)	4

**TABLE 9**  
**Industry Conditions**

<b>ACTION</b>	<b>NO. OF CASES</b>	<b>CONCENTRATION</b>	<b>ENTRY</b>
Approved/ no conditions	5	HHI between 1500 and 6390 CR2=100	Easy
Approved/ conduct remedies	11	HHI between 2540 and 3000 CR2=100	Difficult
Approved/ divestiture	5	“Moderate/high” HHI between 6000 and 8000	Difficult
Disapproved	4	“High/moderate”	

**TABLE 10**

AGENCY ACTION	<u>OUTCOME</u>				
	<u>PRICE INCREASE</u>		MIXED/ NONE	PRICE DECREASE	TOTAL
	LARGE	SMALL			
OPPOSED	2	1	1	0	4
DIVESTITURE REQUIRED	3	1	1	0	5
CONDUCT REMEDIES	8	2	1	0	11
APPROVED/NO ACTION	2	0	3	0	5
TOTAL	15	4	6	0	25

Two-sample test of proportion

A = proportion approved without action that did not experience a price increase = 0.5 (n=6)

B = proportion approved without action that experienced a price increase = 0.105 (n=19)

Under Null Hypothesis that  $A - B = 0$ : p-value = 0.0349

Under Null Hypothesis that  $A - B > 0$ : p-value = 0.0175