Incentive Contracts as Merger Remedies

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Contrary to the suggestion of Williamson (1968), a merger enhancing total social welfare through the creation of substantial efficiencies nevertheless may violate current antitrust law in the United States, which considers only the effects of mergers on consumers. To avoid violating antitrust laws, merging firms could contract with a third party in a manner that offsets the incentive created by a merger to raise price or restrict output.

1. Introduction

The merger of competitors has the potential to produce a unilateral anticompetitive effect by altering the incentives affecting the choice of prices or other strategic dimensions of competition. Before merging, the incentives of neither merger firm are affected by gains to the other from a price increase or output decrease. The merger internalizes such effects and causes the merged firm, which maximizes the sum of the profits of the two merging firms, to prefer higher prices or lower outputs than they did. If the head-to-head competition between the merging firms were an important force in determining their pre-merger price or outputs, the resulting change in incentives could cause a significant increase in prices.

A well-crafted remedy prevents the merged firm from raising price or reducing output by eliminating or countering the effect of the merger on incentives. Ideally, the remedy perfectly and permanently restores the pre-merger incentives and thereby prevents any anticompetitive effect. Divestiture of either of the merging products along with associated production and distribution assets is the conventional remedy, and if the package of assets is properly constituted and

* The views expressed are not purported to represent those of the U.S. Department of Justice. Joe Farrell and Steve Salop provided helpful comments on the paper, which benefitted from earlier discussions with Jeremy Bulow and Einer Elhauge.
divested to an appropriate party, such a divestiture can perfectly restore pre-merger incentives. We propose an alternative remedy that may be used when divestiture is infeasible or would be tantamount to no merger at all. Our remedy is an incentive contract between the merging firms and a third party under which penalties paid by the merged firm, and rewards paid to it, eliminate the incentive to raise prices or restrict output.

2. Protecting Consumers while Preserving Merger Efficiencies

Antitrust case law in the United States holds that synergies are relevant to the legality of a merger only to the extent that the cost savings are passed on to consumers. Reductions in variable cost are, to an extent, passed through to consumers, and sufficiently large variable cost savings prevent a merger from harming consumers at all. Merger efficiencies, however, may affect fixed costs more than variable costs, and contrary to the suggestion of Williamson (1968), current antitrust law does not tradeoff the social welfare gain from fixed-cost reductions against the consumer welfare loss from price increases. Some socially beneficial mergers, therefore, either are prohibited altogether, or are allowed to proceed only with remedies designed to provide the merged firm with incentives to act in a way that preserves the pre-merger level of consumer welfare.

Structural remedies, which are used almost exclusively, entail divestitures of productive capacity, brand names, intellectual property, and other assets. In many cases, structural remedies can prevent price increases and other consumer injuries without sacrificing significant merger efficiencies. In other cases, however, the divestitures necessary to protect consumers also prevent the realization of much of the cost savings from a merger. In these cases, the merging firms have an interest in crafting a mechanism that protects consumers against exercises of market power

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1 Kolasky and Dick (2003) review both the modern jurisprudence on the treatment of efficiencies in merger cases as well as the history of both the cases law and enforcement policy. The most recent decision on point, FTC v. H.J. Heinz Co., 246 F.3d 708, 720 (D.C. Cir. 2001), held that “a defendant who seeks to overcome a presumption that a proposed acquisition would substantially lessen competition must demonstrate that the intended acquisition would result in significant economies and that these economies ultimately would benefit competition, and hence, consumers.”
while preserving their efficiency gains.

One mechanism for protecting consumers is a legally enforceable commitment not to raise prices, and another is a legally enforceable commitment to pass through substantial cost reductions. Merging hospitals have employed such mechanisms to satisfy concerns of state enforcers, but the federal enforcement agencies have not found them acceptable. If such commitments reflect anything more than the merging firms’ own expectations of optimal post-merger conduct, they command the merged firm to act contrary to its incentives and place enforcement agencies and courts in the unfamiliar and uncomfortable position of providing continuing oversight of consummated transactions. Such commitments also may prevent the merged firm from responding quickly and efficiently to market forces. Finally, such a commitment may permit the exercise of significant market power. A short-run exercise of market power would be permitted if prices would fall but for the merger. A longer term exercise of market power would be permitted if such a commitment had limited term (as is typical) and the anticompetitive effect of the merger would be longer lasting.

As remedy similar in spirit to the foregoing commitments, but which addresses the incentive effects of a merger, we propose an incentive contract: The merging firms execute a contract with a third party—the “Contractor”—with the incentive and ability to monitor the merged firm’s actions. The contract provides that merging

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3 In United States v. Long Island Jewish Med. Ctr., 983 F. Supp. 121 (E.D.N.Y. 1997), the Department of Justice challenged a merger after the state of New York announced support for the merger because they agreed to freeze prices to commercial payers for two years. In FTC v. Butterworth Health Corp., 946 F. Supp. 1285 (W.D. Mich. 1996), the FTC sought a preliminary injunction against the merger of hospitals in Grand Rapids, Michigan despite their “Community Commitment,” which included a pledge to freeze prices.

4 In some cases, conduct remedies may not relate to pricing or synergy pass through nor require continuing oversight, or there may be regulatory mechanisms already in place to provide the oversight. Rey (2003) offers a positive view of conduct remedies.
firms pay the Contractor a per-unit penalty for reducing output, and it may also provide that the Contractor pays the merged firm a per-unit reward for increasing output. If the penalty/reward is properly chosen, the contract eliminates the incentive to act in a manner that lessens consumer welfare.

3. An Incentive Contract Merger Remedy

In standard oligopoly models generating unilateral merger effects,\(^5\) it is straightforward to compute the “compensating marginal cost reductions” (CMCRs), which exactly offset the incentive to exercise market power that the merger otherwise would create.\(^6\) These CMCRs can be used to benchmark the efficiency claims of the merging parties. If merger synergies are likely to reduce the marginal costs of the merging firms’ competing products by at least the CMCRs, the merger is likely to cause prices to fall rather than rise.

If merger synergies affect only fixed costs, the incentive effect of marginal cost reductions can be achieved using a per-unit penalty/reward in the amount of the CMCRs, which gives the merged firm the incentive to act as the merging firms did pre-merger.\(^7\) With a single product, the contract could specify that merged firm pays the Contractor \(C(B - Q)\), where \(C\) is the CMCR, \(Q\) is the actual post-merger quantity sold, and \(B\) is a benchmark level for post-merger quantity.\(^8\) In this symmetric version of the contract, \(C(B - Q)\) is negative if the merged firm sells more than \(B\), and

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\(^6\) For applications of the concept to different models generating unilateral effects, see Froeb, Tschantz, and Werden (2005); Froeb and Werden (1998); Tschantz, Crooke, and Froeb (2000); and Werden (1996).

\(^7\) If merger synergies also significantly affect marginal cost, the penalty/reward must be less than the CMCR by the amount the merger reduces marginal cost.

\(^8\) If demand and cost were projected to be stable, \(B\) likely would be set at the pre-merger quantity. If demand and cost were not projected to be stable, \(B\) likely would be set at the projected future output but for the merger.
the merged firm is then paid by the Contractor. For any level of output for the merged firm, the contract effectively reduces its marginal cost to the level that induces it to produce the benchmark quantity, and hence, not injure consumers.

The contract instead could base the reward/penalty on deviations from a benchmark price, in which case the per dollar reward/penalty would be the CMCR multiplied by the slope of the demand curve. The main reason for preferring either price or quantity is that the Contractor’s observation of either presents difficulties, and one may be more observable than the other. The prices relevant under the contract are those for actual transactions, rather than more easily observable list prices, and the quantities relevant under the contract are those for completed sales to customers, rather than more easily observable levels of production or orders taken. Accurately and objectively observing price or quantity may require some sort of independent auditing such as that provided by Nielsen or IRI, which track retail sales, especially through supermarkets.

The contract would specify time increments in which the merged firm’s performance would be assessed and required payments made. Such time increments should be periods over which the merged firm’s output can be accurately and objectively measured. That often would mean that the time increments would have to be those already used by some independent auditor. Such time increments probably also should be reasonably short.

4. Example with Differentiated Consumer Products

To illustrate the incentive contract, we consider the merger of two sellers of differentiated consumer products. We assume that the Bertrand model accurately describes both the outcome of the competitive process pre-merger and the effect of the merger on the outcome of the competitive process. With multiple products involved, the merged firm would pay $C_i(B_i - Q_i)$ for each of the relevant products, and there might be multiple contracts, especially if the outputs of different products would be best monitored by different Contractors.

In a Bertrand model, Werden (1996) shows that the CMCRs for each of the merged firms’ products are fairly simple functions of the demand elasticities for
those products at the pre-merger prices and quantities. The first five columns of Table 1 presents data for a hypothetical merger between single-product firms. The fourth and fifth columns display hypothesized own and cross elasticities of demand, with the two negative numbers reflecting the own-price elasticities of demand for products A and B and the two positive numbers reflecting the two cross elasticities of demand between them.

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
<th>Share</th>
<th>Elasticity Matrix</th>
<th>CMCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$10</td>
<td>60%</td>
<td>−1.47</td>
<td>0.43</td>
</tr>
<tr>
<td>B</td>
<td>$12</td>
<td>40%</td>
<td>0.53</td>
<td>−1.97</td>
</tr>
</tbody>
</table>

Based on these data, the last column of Table 1 indicates the CMCRs, which are $2.18 for product A and $2.92 for product B. If the merger would cause both marginal costs to decrease by at least these amounts, prices would not rise as a result of the merger. Alternatively, an incentive contract could accomplish the same thing, artificially inducing effective marginal-cost reductions of the same amounts. One interesting feature of Table 1 is that the CMCR is larger for product B, which has the more elastic pre-merger demand. This is due to the incentive of the merged firm to raise price more on the product with the higher demand elasticity, and hence the lower price-cost margin. This shifts customers to the merged firm’s higher-margin product. Offsetting the incentive to shift customers in this manner requires a larger reduction in marginal cost for the product with the more elastic demand.

5. Additional Considerations

The proposed incentive contract is well suited to use as a “fix-it-first” remedy: The merging firms could enter into the contract even before filing the required Hart-Scott-Rodino notification or announcing the merger. But even if the contract is not used as a fix-it-first remedy, it is the responsibility of the merging firms to find a suitable Contractor, as well as to negotiate $B, C$, and a contract price. Once they have done so, the contract has passed a critical market test for workability, but the
enforcement agencies still have to make sure that the contract serves not just the interests of the contracting parties, but also the interests of consumers.9

The agencies would have to be satisfied that $C$ was appropriately set and that the contract specified a feasible and reliable method of observing the merged firm’s performance and assessing the penalty/reward. The agencies would have to be satisfied that it was not in the interest of the merged firm and the Contractor to terminate the contract in exchange for a lump sum payment. This likely would require that the contract contain a liquidated damages clause under which the Contractor would receive a lump sum payment in the event the contract is terminated or modified. This payment easily could be set at an amount large enough so that it would never be in the interest of the merged firm to buy the Contractor out of the contract. With such a provision in the contract, the agency would be require to undertake only minimal oversight of contract administration.10

The agencies also would have to be satisfied that the choice of the Contractor was not problematic. Competitors of the merging firms are the worst choices because the contract would distort their incentives. Their actions affect the merged firm’s prices and quantities, so the contract would alter their optimal prices and quantities. Moreover, administration of the contract could allow competitors to gain sensitive business information or to coordinate prices or outputs with the merged firm. Important customers of the merging firms also may be poor choices because they can manipulate the merged firm’s output, and use the threat to do so to extract concessions, possibly including actions designed to disadvantage of the Contractor’s rivals. Major lenders to the merging firms may be good choices because they may be well placed to monitor the merged firm’s performance.11

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9 With a symmetric contract, the agencies not care about the choice of $B$. The desired incentive effect would be accomplished even if $B$ were set at the level of the post-merger output with no remedy. The effect of the contract on the merged firm’s effect marginal costs would prevent any anticompetitive restriction of output or increase in price. The merging firms and the Contractor would care about $B$, and it would substantially effect on the contract price.

10 Some oversight would be required to assure that the contract is not a fraud on the agencies, with both parties secretly agreeing to a quite different arrangement.

11 Of course, the government could act as the Contractor, but that may be problematic for a host of reasons.
If the contracting parties shared the same expectations about future demand and cost, they can set $B$ to make the expected payout under the contract zero. The merging firms, nevertheless would have to compensate the Contractor for the risk that it may have to pay the merged firm for selling more than the benchmark quantity. The magnitude of the required risk premium depends on the degree of uncertainty about factors affecting marginal cost and demand, as well as on the extent to which demand shifts are apt to affect the relevant elasticities.

The risk premium is likely to be modest if the term of the contract is fairly short and to increase more than proportionately with the term of the contract, since the variance of demand and cost forecasts is likely to be greater the further into the future the forecasts are made. For this reason, the merging firms are unlikely to find it in their interest to pay this risk premium unless the contract is designed strictly as a stopgap measure, and there are mergers in which only a stopgap remedy is required. In a recent merger case litigated by the Department of Justice, the court found that anticompetitive effect of the merger would last “at least a year,” but not a great deal longer.\footnote{United States v. UPM-Kymmene Oyj, 2003-2 Trade Cas. (CCH) ¶ 74,101 (N.D. Ill. 2003).} It may be clear at the outset that anticompetitive effect of a merger will be short lived, for example, because the addition of new capacity already scheduled to come on line will eliminate the incentive to restrict output that the merger might create.

Furthermore, the enforcement agencies may reasonably decline to accept a contractual remedy that was not merely a stopgap.\footnote{It also may be possible for the merging firms to enter into futures contracts to provide a similar stopgap. As shown by Allaz and Vila (1993) and Green (1999), by pre-selling, before the merger is announced, they can substantially alter their post-merger incentives.} The merging firms and the Contractor may limit their potential liability over the life of the contract, and if they do so, the contract could eventually cease to create the marginal incentives it was intended to create. Moreover, the longer the duration of the contract, the more likely it will fail in a material way to provide the desired incentives. This is especially true because the contract addresses incentives relating to price and output decisions, but not decisions on other aspects of marketing or on new product development.
Under substantially changed circumstances, the contract may not induce the merged firm to act as the merging firms would have. Demand shifts can affect the relevant elasticities in arbitrary ways, inducing the merged firm to adjust prices differently than the merging firms would have. Changes in circumstances, however, need not have significant effects on the relevant demand elasticities, and if not, the contract would continue to provide the proper incentives.

Because precise calculation of the CMCRs is not likely to be possible, it is also important to consider the impact of error in their calculation. This gets a bit complicated, but in rough terms, a penalty/reward of x percent less than the true CMCRs would lead to a price increase of about x percent of that absent any penalty/reward. Moreover, a penalty/reward greater than the true CMCRs would cause net price reductions which enhance consumer welfare as compared with the pre-merger situation. Thus, getting the CMCRs approximately correct should be sufficient, especially if the remedy is used purely as stopgap.

It also is possible that the CMCRs are simply wrong because the model used to calculate they does not adequately reflect the actual competitive process. While this could cause the incentive contract to yield improper incentives, that is not necessarily the case. If the merger is part of an output-increasing long-term strategy, the merging firms would eagerly sign an asymmetric contract, imposing a penalty for raising price or decreasing sales, but paying no reward for cutting price or increasing sales. The merging firms expect no penalty ever to be paid, because they plan to increase output, and if the contract were asymmetric, there would be no reward to distort incentives. This might be enough to assuage the anticompetitive concerns of the enforcement agencies, without interfering at all with the strategy of the firm. As a general matter, only the penalty aspect of the contract is necessary to prevent the merged firm from reducing consumer welfare. An asymmetric contract would have the character of an option, and an unforeseen increased in demand could make the contract worthless.\(^\text{14}\)

\(^\text{14}\) An advantage of a symmetric contract, with both penalty and reward provisions, is that the contract would have zero value to all contracting parties, except for a risk premium, unless the contracting parties have different expectations. Thus, very little money might have to change hands.
While our proposed incentive contract clearly is an imperfect remedy, it is important to keep in mind that the conventional divestiture remedy is also imperfect. The package of assets divested may leave something to be desired; it may be difficult to find an appropriate purchaser; and the assets to be divested may degrade during the process of divestiture. One advantage of our incentive contract over divestiture is that the contract avoids the problem noted by Farrell (2003) that any party acquiring divested assets has an interest in suppressing competition, just as the merging firms.

Our analysis relates only to mergers producing strictly unilateral anticompetitive effects, but it may be possible to fashion an incentive contract remedy for a merger likely to produce coordinated anticompetitive effects. Incentives are critical to the likelihood of effective coordination, and there are a variety of ways in which the relevant incentives can be shaped through contracts. The principal difficulty in framing a contract remedy for coordinated effects is that there is no standard economic model in which to analyze the relevant incentives.

6. Conclusion

We have demonstrated that theoretical feasibility of using an incentive contract as a merger remedy in a unilateral effects case. Overcoming the practical problems with this remedy would be challenging, and the merging firms would have the heavy burden of convincing a skeptical enforcement agency that such a contract would work, not just in theory but also in practice. But many of the issues that would have to grappled with in evaluating such a contract already arise in merger enforcement, and declining to grapple with them could prevent significantly welfare improving mergers.

References


