

The Economics of Merger Control

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Economics provides the underlying analytical framework of merger control and forms the basis of the various guidelines followed by competition authorities in assessing mergers in practice. The merger guidelines have greatly helped in highlighting key considerations in the assessment of mergers as well as types of evidence that can inform the assessment. The guidelines are nevertheless only the starting point for economic analysis of a particular merger. Examination of the general facts of a case often leads to rival theories being put forward as to whether a particular merger would be likely to support or harm competition. In this note, we focus on the state of play in the use of economics in identifying the assumptions that are critical to a particular competitive effects theory, as well as the empirical techniques that have been used to test these assumptions. We also describe a relatively new technique being proposed by Farrell and Shapiro that tests for what they have termed “upwards pricing pressure” (UPP). The method provides a relatively simple screening test for problematic mergers in differentiated product markets, and will be particularly useful when efficiencies are a significant factor in the transaction.

The role of theory

The economic theory used in the assessment of more complex mergers has developed significantly over the last two decades. Insights from theoretical developments have been incorporated into the guidelines and decisions of competition authorities such as in relation to the assessment of coordinated effects, the closeness of products, efficiencies and foreclosure effects in non-horizontal mergers. Economic theory can often enable strong predictions to be made as to the implications of a particular combination of factors for the likely competitive impact of a merger. In doing so, economic theory helps to identify which particular factors are critical to the case. For instance, while the analysis of the likelihood of coordination or foreclosure effects can be complex, the presence or absence of

one factor can frequently prove decisive. Once the critical market factors are identified, the challenge is to determine whether those factors are present or are present to a sufficient degree as to support the applicability of a particular theory of the likely effect of the merger.

Statistical and econometric analysis

Statistical and econometric analysis can be an important complement to qualitative evidence obtained from the parties, customers and competitors. Such analysis can be used to test the veracity of particular claims as well as providing information on the materiality and strength of factors impacting competition in that market. Moreover, certain types of market evidence can be used to provide a relatively direct indication of the likely price and other effects of a merger. For example, the analysis of the impact of previous entry by one of the parties in a market where the other party is already present can provide an indication of what would happen in that market post-merger when the competitive interaction between the parties ceases. Analysis of the differences in outcomes between geographic markets with varying degrees of market concentration can also provide an indication of the likely effect of the change in market concentration that would be brought about by a merger. The European Commission has shown itself increasingly prepared to undertake extensive empirical analysis in reaching its decisions.

The European Commission’s analysis in *Ryanair/Aer Lingus*

Empirical analysis undertaken by the European Commission formed a key part of the Commission’s decision to prohibit Ryanair’s proposed takeover of Aer Lingus (M.4439). The parties were the two main airlines operating in Ireland with a large number of overlapping routes and many routes in which they were the only two airlines operating. Ryanair nevertheless claimed that it effectively set its prices with regard to the price sensitivity of its

customers and without regard to the prices of Aer Lingus. The Commission rejected Ryanair's claims on the basis of three types of evidence. First, the Commission obtained qualitative evidence on the method by which the parties set their prices and found that the prices offered by other airlines were explicitly monitored and were implicitly taken into account in the parties' yield management systems. Second, the Commission undertook a fixed-effects regression analysis that examined the impact of differences in the market structure of particular routes over time, particularly the impact on Aer Lingus' prices of the entry of Ryanair. The Commission found that Ryanair's entry on a particular route tended to result in Aer Lingus' prices being 7 to 8 per cent lower on average (the data was not conclusive in relation to any impact of Aer Lingus' presence on Ryanair's prices). Third, the commission undertook a passenger survey that found further evidence that the parties were close competitors, including that more than half of the passengers of each airline had considered flying on the other airline for routes where both airlines are present. The consistency of the qualitative and quantitative evidence obtained by the Commission provided a solid foundation for rejecting Ryanair's claims, leading to the Commission's first prohibition of an airline merger.

Developing use of merger simulation

For some mergers, market evidence may not exist that can provide a reliable indication of the likely effect of the mergers. A particular problem arises in assessing the likely effect of mergers in markets involving differentiated products where "closeness of competition" is the main issue, and those mergers that are expected to lead to significant increases in concentration as well as bringing significant efficiencies. In these cases, a structural game-theoretic model can provide a formal way of simulating the likely effect of a merger by comparing the outcomes estimated by the model given the market structure before and after the merger. In this regard, a model can in some cases produce a better estimate of the likely price change that would result from a merger. However, the value of such models is not so much in encouraging an authority to simply accept a modelled "answer", but rather in showing which assumptions are critical and hence which assumptions should warrant the greatest scrutiny against the empirical data.

Despite the increasing use of merger simulation, it remains controversial within the antitrust community due to key limitations. For example, the results of merger simulation can depend critically on the functional form of the demand model, the model of competition and the input assumptions chosen. Collecting sufficient data of acceptable quality to calibrate merger models can be challenging and will not always be possible. Further, simulations do not always remove the need to identify the relevant market, nor do they deal with dynamic post-merger issues such as entry and expansion, product repositioning or buyer power that are particularly important in many mergers.

Given these limitations, merger simulation should be seen as only one component of the analysis and not as a substitute for more standard competitive effects analysis.

In the following section, we briefly describe two mergers before the European Commission in relation to which quantitative analysis of the likely price effects played an important role. Following this discussion, we look at a simplified technique proposed by Farrell and Shapiro that may prove particularly useful in assessing mergers with significant efficiencies.

Recent use of merger effects analysis in the EU

In the recent *TomTom/Tele Atlas* (M.4854) and *Nokia/Navteq* (M.4942) transactions the European Commission and the merging parties' economists engaged in significant analysis focused on the question of whether or not the merging entities might increase prices post-merger. The deals involved vertical integration in markets involving mobile GPS navigation devices. In both cases, the purchasing party was a downstream navigation device supplier (TomTom and Nokia) acquiring the supplier of a critical input, "navigable digital maps", provided by Tele Atlas and Navteq.

In a vertical merger, the key issue is assessing the potential costs and benefits to the combined entity of increasing the input price post-merger as the entity will then take into account the possible downstream gains associated with competitors being forced to increase prices in the downstream market. This calculation, sometimes called the "vertical arithmetic", is conceptually closely related to the analysis of a horizontal merger of differentiated products that are close substitutes

– when increasing the price of one product post-merger the impact on the other partial substitute product will now be taken into account. The difference is that the effect is direct in a horizontal merger whereas it is indirect in a vertical merger, and importantly the vertical merger will usually have counterbalancing incentives to lower prices as the result of vertical pricing and production efficiencies. The complex nature of the trade-offs, particularly in the case of vertical mergers or horizontal mergers with significant efficiencies, makes it difficult to estimate the net effect on prices without some form of analysis of potential price effects.

A detailed review of the Commission's decisions in these cases shows that when analysing the incentive for full or partial input foreclosure the commission used a wide range of models and tests, some constructed by its own economists and some by the parties' economists. The Commission carried out an econometric estimation of downstream price elasticities in the device markets to measure the sales that the merged entities could expect to capture if the merged firms increased map prices for competitors downstream. Some tests involved calculation of full equilibrium merger models, whereas others appear to have consisted of relatively simple break-even tests based on implied diversion ratios. The Commission concluded that in both cases the merged entities lacked an incentive to increase the input price.

It is clear that the Commission's approach was to use a number of empirical models and test a wide range of assumptions to assist the analysis of these cases, rather than relying on any one particular model or core set of assumptions. It has looked for critical values (for example, at what percentage price increase does input foreclosure become profitable) and then considered whether the point at which potential problems would arise represent a plausible set of assumptions. In our view, this is a good example of how to use modelling in a complex case.

A simplified approach – upwards pricing pressure

Farrell and Shapiro have recently proposed a test for what they have termed “upwards pricing pressure” (UPP). The authors are proposing the method as a potential alternative to the traditional approach of market definition and concentration analysis as a method of initially screening

mergers in differentiated product merger cases – cases where the “nought/one” nature of market definition is particularly challenging and often of limited value. The proposal is described in detail in a new paper, ‘Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition’, Farrell J and Shapiro C, 25 May 2008.

Whether or not the method is used for a purpose as broad as substituting for market definition, the method offers potentially significant benefits in differentiated product mergers where efficiencies are a significant claimed benefit of the deal. The technique is relatively simple when compared with full merger simulation. Arguably it has benefits that suggest that a simple technique that is adequate for the purpose should be favoured over relatively more complex approaches, especially where the transaction is small and where cost efficiency in the merger process is likely to be desirable.

At the most basic level, the UPP test requires data on the price and cost margins of the products sold by the merging parties, and estimates of the magnitude of direct substitution between the two firm's products which can typically be obtained from the parties' documents. Notably, when compared with merger simulation, the method does not require elasticity estimates, nor does it require assumptions about the shape of the demand curve that determines the level of price pass through to the consumer. As noted, these are particularly difficult areas in merger simulation. Of course, the simplicity has an associated cost. The cost is that the method does not estimate the ultimate price effect that consumers might experience. Rather, it simply estimates the sign of the net price incentive post-merger. That is, whether there will be net pressure for the merging parties to increase or decrease prices of the merging products following a merger of differentiated products. This is a much more limited goal. But against that, in some cases involving efficiencies the answer will be that the net effect results in lower prices, in which case the regulator has no need to estimate the actual price effect and can confidently clear the deal. If this could be achieved quickly and at low cost in even a small number of cases, then the technique is worth the attention of the antitrust community.

The test balances two opposing forces: the price increasing pressure that results from the loss

of direct competition between the merging parties, and the offsetting downward pricing pressure that results from marginal cost efficiencies. Farrell and Shapiro show that these forces can be compared in a relatively simple formula without working out the full equilibrium adjustment to industry prices post-merger. The test does this by quantifying the cannibalisation effect of the merging products on each other. Conceptually, the method recognises that the headquarters of a merging firm could control this effect by applying what amounts to an internal tax on the merging products that represents the opportunity cost of cannibalised sales. The key to the test is the observation that once this theoretical optimal tax is calculated, it is essentially a “virtual marginal cost” and is directly comparable to marginal cost efficiencies, but operating in the opposite direction. In its simplest form, the test asks whether the cannibalisation tax exceeds the marginal cost efficiencies. If it does, there will be upwards pricing pressure; if not, the net incentive is to lower prices.

The strength of the test lies in its potential to relatively cheaply and quickly identify pro-competitive transactions – those where the net incentive is to lower prices – in an otherwise difficult class of mergers (differentiated product mergers with claimed efficiencies). If UPP is found, this does not mean the deal should be blocked, but it does mean that a full competitive effects analysis of the deal should be undertaken.

Conclusion

Our aim in this chapter has been to illustrate the use of quantitative techniques for assessing mergers. Where transactions are complex and, primarily, where markets involve differentiated products or where efficiencies are claimed, there may be the need to use simulation analysis or a more recent technique called the upwards pricing pressure (UPP) test. Testing for UPP will in some cases provide a relatively simple screening test for problematic mergers.

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The Competition Economists Group (CEG) is an economic consulting practice spanning Europe, the Asia Pacific and North America providing economic and financial advice on competition, regulatory and damages matters. CEG economists have provided economic and quantitative analysis in all phases of competition investigations and litigation, including before the European Commission and national competition authorities. We have also provided competition, damages and regulatory advice to courts and arbitral tribunals.

In 2008, CEG worked on cases covering a large number of sectors from airlines to energy and from financial services to pharmaceuticals and telecoms. Many cases have involved the application of economics to network and regulated industries. Our recent clients include Bord Gáis, European Payments Council, GSK, GSM Association, Iberdrola, Japanese steel companies, Mitsubishi Electric, Mobistar, Optus, T-Mobile and Vivendi.



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Prior to joining CEG, Paul advised on competition and regulation issues at CRA International in London. He has also previously worked as an economist in the telecommunications industry, and for regulators in both New Zealand and the United Kingdom.



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