
Report from North America

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GUPPI, THE NEW HORIZONTAL MERGER GUIDELINES AND ASSESSING POTENTIAL COMPETITIVE EFFECTS

In many merger cases, the United States' antitrust agencies (Department of Justice and Federal Trade Commission) are concerned about the possibility of unilateral price effects. Unilateral effects are those competitive effects that require action by the merger parties but do not require specific actions by market participants who are not party to the transaction. In considering unilateral effects, one is mainly concerned with a competitive effect caused by an increase in prices, although other kinds of effects may be considered.

The new United States' Merger Guidelines (issued in August 2010) propose a specific test to determine whether a merger may create a unilateral price effect.¹ The test gauges whether a transaction is likely to create upward pricing pressure post-merger. This report discusses the upward pricing pressure index (referred to as the Generalized Upward Pricing Pressure Index or "GUPPI") that is included in the 2010 Merger Guidelines. Fundamentally, GUPPI takes information on price, marginal cost, and customer substitution and transforms that information into an index number that is greater than zero. According to the GUPPI concept, the larger the GUPPI number, the larger is the incentive to increase price.

The GUPPI concept is not new and has been around for a long time. GUPPI has been called a "poor man's merger simulation".² However, it is both more and less than merger simulation. It is more than a merger simulation because it is simple and rises above much of the details of merger simulation. It is based on information available pre-merger, and does not require many assumptions about structural elements inherent in merger simulation analyses in order to evaluate the potential for unilateral effects. It is less than a merger simulation because it does not really provide much specific insight into the likely effects of a proposed merger. GUPPI does not provide a definitive test of whether a merger should be approved or disapproved based on the potential for unilateral effects – at best it provides shades of gray. As with merger simulation techniques, the likelihood of the GUPPI being representative of actual post-merger behaviour depends, in part, on whether the market is characterised by a very restrictive set of structural circumstances. In any case, the information it provides is less useful in most situations in terms of its predictive value than that which would be provided using a more comprehensive merger simulation.

BACKGROUND ON GUPPI

In 1992 the United States Merger Guidelines were substantially revised (compared with the previous Guidelines issued in 1982, with more minor revisions in 1984). Shortly thereafter, Professor Carl Shapiro explained in 1996 (the first time he served as Deputy Assistant Attorney General) that diversion ratios³ and margins may be more informative than market shares in assessing potential competitive effects, at least in many circumstances.⁴ When firms compete on price and sell differentiated products, the incentive to raise prices unilaterally post-merger depends on how closely substitutable the products produced by the merging firms are compared with the other products in the relevant market. Diversion ratios – that is, consumers' second preferences for the merging firms' products – and margins will determine (at least in a general sense) the incentives of the merging firms

¹ United States Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines* (19 August 2010), <http://ftc.gov/os/2010/08/100819hmg.pdf> viewed 30 April 2012 (2010 Horizontal Merger Guidelines) p 21.

² Merger simulation is a method used to quantify the price effects associated with a merger through a structural representation of the underlying industry. See, for example, Leonard GK and Zona JD, "Simulation in Competitive Analysis" in *Issues in Competition Law and Policy* (American Bar Association, 2009) p 1405.

³ Diversion ratios are measured as the fraction of lost sales (for example, as a result of a price increase) that are captured by another product (or another firm's products).

⁴ Shapiro C, "Mergers with Differentiated Products" (1996) 10 *Antitrust* 23.

to raise price post-merger for the products they produce. Consequently, GUPPI is not a new concept just recognized in the 2010 Merger Guidelines; rather it has been around in various forms since at least the mid 1990s.

Pre-merger, a firm may be reluctant to increase price because it fears losing sales. Post-merger, the firm will account for the fact that some of the lost sales will be diverted to the products made by its merger partner, hence increasing the incentive to raise price (that is, because not all sales will be lost to competitors' products post-merger).

Assume that two firms – firm A and firm B – propose to merge and that they make products that are substitutes (respectively, firm A produces Product A and firm B produces Product B, with Product A and Product B being relatively close substitutes). The diversion ratio from firm A's product to firm B's product is the fraction of lost sales of firm A (following a unilateral price increase by firm A) that will be captured by firm B. Generally speaking, the closer competitors the merging firms are, the higher the diversion ratio. The higher the diversion ratio, the higher is the incentive to raise price post-merger (all else equal).

Diversion does not measure value. Instead it measures the fraction of lost units of Product A which are captured as sales of Product B. However, diversion is related to value through the loss in profits that occurs as a direct result of lost (or "diverted") sales. Multiplying the diversion ratio by the total number of units lost as a result of the price increase and the (marginal) profit per unit gives a measure of the value of the diverted sales. The higher the variable margin of the merger partner (that is, of Product B), the higher the value of the diverted sales and, hence, the greater the incentive to raise prices post merger (all else being equal).

The GUPPI is the product of a diversion ratio (diversion from firm A to firm B), the profit margin earned on diverted sales (rate of profit on Product B) and the ratio of Product B price to Product A price.⁵ Diversion ratio and margin are numbers between zero and one, so the GUPPI is bounded between zero and the ratio of prices. Obviously, when prices are similar for the merging parties, the GUPPI will be in the range of zero to one.

AN EXAMPLE

Assume a market analysis has determined that when the price of Product A is increased, sales are reduced by 100 units. At the same time, the sales of other competing products increase – the sales of Product B increase by 25 units (when the price of Product A is increased). This represents a diversion ratio from Product A to Product B of 25% (25 out of 100). Suppose Firm B earns a profit of \$4.00 per unit at a price of \$10 on its product, while Firm A charges \$8.00 for its product.

Using these figures, the GUPPI for Product A is $25\% \times (\$4 / \$10) \times (\$10/\$8) = 12.5\%$.

The GUPPI for Product A is different from the GUPPI for Product B, as a general matter. Because diversions are not symmetric (generally) and neither prices nor margins need be the same for each product, GUPPIs will generally be different for each product. One must therefore calculate a separate GUPPI for each (substitutable) product produced by the merging parties.

Interpretation

GUPPIs will be positive as a general matter (diversions are generally positive for competitive products and margins are generally positive), so no adverse competitive conclusion should be drawn merely from a positive GUPPI. The important issue is whether there is a threshold value for UPP (upward pricing pressure) or the GUPPI which may indicate a competitive concern. There are two basic perspectives that have been set forth to evaluate this issue.

The first involves comparing the calculated GUPPI to plausible cost reductions that may flow from the proposed merger (for example, because the merging parties may be able to achieve cost-reducing efficiencies). Werden discusses compensating marginal cost reductions (CMCR). In theory, the CMCR is a reduction in costs, that if achieved, would result in profit maximizing prices post-

⁵ Moresi S, "The Use of Upward Price Pressure Indices in Merger Analysis" (2010) 9(3) *The Antitrust Source* 1 at 6.

merger that match pre-merger prices.⁶ The CMCR (expressed relative to price) works in an entirely opposite manner to the GUPPI. For example, a GUPPI of 30% would require a 30% decrease in costs in order to enable the merging firms to hold prices constant (that is, the CMCR would in this circumstance have to be 30% to offset the GUPPI's effect on price). The magnitude of the CMCR is indicative of the potential positive impact of the postulated merger – the larger the CMCR (assuming it can be achieved), the larger the potential positive impacts on competition and consumer welfare (that is, the opposite of the GUPPI).

It can also be shown that the GUPPI can be related to a computed price increase from a merger simulation. Specifically, the GUPPI is twice the post-merger price increase implied by merger simulation, under some restrictive assumptions concerning industry structure and competition.⁷ Under these restrictive assumptions, a GUPPI of 30% would be consistent with a 15% post-merger price increase and would suggest that the merger would be of concern to the competition authorities. A general rule of thumb that has been suggested is that GUPPIs in excess of 10% may require further investigation of market conditions, competitive effects and expected merger specific efficiencies in order to decide whether to approve the proposed merger. While such a rule of thumb might be warranted in light of the parameters adopted for price increases under the hypothetical monopolist test (that is, 5%-10%, but generally at the lower end of this range),⁸ using this rule would be much more problematic in circumstances in which the structural characteristics of the industry are not consistent with the structural assumptions that govern the assumed 2:1 relationship between GUPPI and post-merger price effects.

PROBLEMS ENCOUNTERED IN CALCULATING GUPPI

Any practical application of the GUPPI concept requires reliable information on diversion ratio, margin and price ratio. However, obtaining accurate data on these three elements of the GUPPI concept may be difficult in many circumstances and interpreting and applying such data to calculate the GUPPI may be both complicated and subject to considerable error. Some of the issues one encounters in obtaining and utilising such data are discussed below.

Diversion ratios

Data on diversion ratios may not be readily available – in fact, diversion ratios are seldom directly observed and may often be difficult to estimate reliably. Customers may switch from one supplier to another for many reasons, but the only reason that is relevant for the GUPPI is a relative price change. It would be unusual in the real world for price to change for only one product at a time (and no other price or non-price factors change for any other product), so data on actual sales and shifts in sales in response to price changes would likely have to be adapted in some complex manner in order to identify diversion ratios that would be associated specifically and only with unilateral price increases. New entry of a product may allow diversions to be estimated, if no other factors which affect demand changed at the same time.

One shortcut approach to computing diversion ratios is to use customer share data. Under this very strong assumption about consumer behaviour, the diversion ratio from Product A to Product B would be the market share of Product B divided by one minus the market share of Product A. In some market circumstances this may represent a reasonable approximation, but in many circumstance it is probably not at all representative of consumer behaviour or market reactions.

Even if one adopted this assumption, several problems remain. For example, market shares for any product can be calculated based on historical information (that is, the product shares of the installed base) or current sales (which may be quite different than shares of the installed base). Particularly when sales shares are volatile over relatively short periods of time, it may be difficult to

⁶ Werden GJ, "A Robust Test for Consumer Welfare Enhancing Mergers Among Sellers of Differentiated Products" (1996) 44 *Journal of Industrial Economics* 409.

⁷ See, for example, Baker J, "Merger Simulation in an Administrative Context" (2011) 77 *Antitrust Law Journal* 463, http://www.americanbar.org/content/dam/aba/publishing/antitrust_law_journal/at_journal_v77i2_baker.authcheckdam.pdf viewed 30 April 2012.

⁸ See 2010 Horizontal Merger Guidelines, n 2, p 10.

discern which may be the better basis (assuming, of course, that either is useful) for any assumption on diversion ratios. Furthermore, assuming one could determine that either current sales or installed base were the more appropriate basis for estimating diversion ratios, the ability of this assumption to mimic real world outcomes may have some very problematic implications. Using a more tangible example, according to this assumption, the diversion ratio for each model of automobile to any other model of automobile would depend only on sales shares. Therefore, if a Toyota Prius, a Honda Civic and a Ferrari all had the same sales shares, one would assume that the diversion ratio from a Toyota Prius to a Honda Civic would be the same as the diversion ratio between a Toyota Prius and a Ferrari. While this is clearly a poor assumption in the case of automobiles, it may be more a more useful and realistic assumption, at least in some circumstances, in cases in which products are less differentiated on features than automobiles and/or in which products have more homogeneous margins and prices than automobiles.

Another approach is to use estimated own- and cross-elasticities of demand to estimate diversion ratios. In fact, price diversion ratios can be calculated readily using these elasticities. However, accurate measures of these elasticities are generally not available, requiring sophisticated econometric analysis. Even when such estimates are available, there may be considerable dispute as to whether they are reliable and/or accurate.

When one or both of the merging parties produces more than one close substitute, then identifying appropriate diversion ratios becomes even more complicated. In such a circumstance, one needs to calculate diversion ratios assuming that all of the relevant products of one merging party are subject to a unilateral price increase. In such circumstances, it may be more practical to compute one diversion ratio for the aggregate “product” produced by one merger party to the other aggregate “product” produced by the other merger party. This could be based on the most popular product (measured by sales) produced by each firm or on some other obvious basis. While less theoretically sound than separately calculating diversion ratios for each product produced by each firm, such shortcuts are more practical.

Margins

Economic margins are also not generally readily available. The calculation of costs according to accounting standards as reported in earnings statements and balance sheets will not typically correspond to the appropriate economic cost relevant for computing margins for the GUPPI. GUPPI calculations require margins based on the change in costs incurred with small changes in output (marginal costs in economic parlance). By contrast, accounting conventions typically do not even distinguish between fixed and variable costs, never mind identify the costs that vary with small changes in output (such as the costs of materials used in production of specific product). In practice, marginal costs can sometimes be measured using econometric analyses or approximated by computing average variable costs using only certain categories of direct costs.

The problem becomes even more complex when a firm makes multiple products. Again, accounting records usually aggregate costs for multiple products, making it more difficult to identify the marginal costs that are incurred to change production of individual products by a small amount. Of course, it is production costs at the margin, product by product, that would be relevant to calculating the margins for a proper GUPPI calculation.

Prices and products

Of the three elements required for a GUPPI calculation, obtaining prices seems, on its face, to be the most straightforward. However, in the real world, few firms charge one single “price” for their products. In addition, the terms of any sale may have non-price dimensions that vary across customers or even individual transactions. For example, in the case of a mobile phone service, the relevant prices might include the price per month, a disconnect fee, price for unlimited text messages and data services and other dimensions.

There are other reasons why the choice of price may be problematic. For example, the customers most likely to suffer competitive harm from a proposed merger may only represent a subset of all customers for a particular product – for example, customers in some particular geographic area. To the extent prices are or can be differentiated across different types or groups of consumers, then aggregate measures of GUPPIs, calculated across all customers, may not accurately reflect the

potential for competitive harm. One would have to, instead, focus on those customer groups more likely to suffer adverse effects from the merger and use prices (and margins and diversion ratios) relevant to those groups.

REAL WORLD APPLICATIONS

Assuming the problems identified above can be overcome, GUPPI calculations can be performed even in the early stages of an investigation. However, most real world investigations will require the analyst to consider several products simultaneously. Furthermore, because GUPPIs are not symmetrical, even in the simple (and not terribly realistic) case in which each of the merging firms makes just one product, there will be (at least) two (A to B and B to A) GUPPIs to evaluate.

In many real world cases, each of the merging firms may make several products that are substitutable within its own family of products (for example, two sizes of the same brand of laundry detergent) as well as several products that may be substitutable for the other merging firm's products. In such cases, the analyst must make some difficult and often arbitrary decisions. Is it best to take a "representative" product from each firm to use as the basis for a GUPPI calculation or should one use multiple products from each firm, in which case there will be "groups" of GUPPIs to analyse? In fact, there is no good practical or theoretical guidance for which route is more appropriate or, indeed, even how to interpret results from "groups" of GUPPIs.

Finally, given the data issues and imprecision in some of the data that one would naturally encounter in developing GUPPI calculations, there is the problem of dealing with the imprecision/errors in the calculation itself. Normally, this would be dealt with by using a rule of thumb that small GUPPIs (say 5% or less) are unlikely to be indicative of competitive problems, while large GUPPIs (say 25% or greater) indicate that further analysis of competitive effects is warranted.

FINAL THOUGHTS

The GUPPI concept seemed to hold the promise of providing valuable insight into the potential competitive effects of mergers at low cost – both in terms of time required and data intensity. Its potential attraction increased because it seemed particularly well adapted to considering competitive effects in situations in which differentiated products are involved – an increasingly common problem in merger analysis. However, given the real world data requirements associated with the technique, shortcuts that could save time leave some applications of the technique open to challenge and controversy as to the accuracy of results. Finally, the most fundamental problem associated with GUPPI analysis is the lack of any empirical basis at present to determine whether the technique in fact provides a reliable and accurate basis for forecasting post-merger behaviour, even if GUPPI indexes can be accurately calculated. There may well be anticompetitive mergers with low GUPPIs and pro-competitive mergers with high computed GUPPIs. This represents a challenge to researchers that will likely have to be addressed before the technique gains sufficient credibility for widespread use, particularly in the courts.

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