# Proposed Horizontal Merger Guidelines:
## Economists' Comment
## June 4, 2010

We are a group of economists (listed at the end of this letter) with extensive experience working on antitrust issues, including horizontal mergers.   We applaud the Federal Trade Commission and the Department of Justice for inviting comments from the public on the proposed Horizontal Merger Guidelines (HMGs). The proposed HMGs represent a substantial advance over the existing guidelines by better explaining the methodologies actually employed at the Department of Justice and Federal Trade Commission in their evaluations of mergers. We are writing to comment on one specific aspect of the proposed HMGs: the use of price/cost margins in merger analysis.

## A.  Profit Maximization

Antitrust economics generally, and the HMGs in particular, are premised on the working assumption that firms seek to maximize profits.  The 1992 HMGs state:

> Throughout the Guidelines, the analysis is focused on whether consumers or producers "likely would" take certain actions, that is, whether the action is in the actor's economic interest. References to the profitability of certain actions focus on economic profits rather than accounting profits. Economic profits may be defined as the excess of revenues over costs where costs include the opportunity cost of invested capital.  [Section 0.1]

The draft HMGs state:

> In evaluating how a merger will likely change a firm's behavior, the Agencies focus primarily on how the merger affects conduct that would be most profitable for the firm. [Section 1]

The hypothetical monopolist methodology that has been used to define markets since the 1982 HMGs also is premised on profit-maximization.  That methodology evaluates the impact on profits of a small but significant increase in price.  Competitive effects analysis also is premised on the incentives that follow from a desire to increase profits.

We support the use of the working assumption of profit maximization as the best starting point for competition analysis.

## B. Margins and Elasticities: The Basic Relationship

The assumption of profit maximization has implications for the relationship between price/cost margins and the own-price elasticity of demand facing a firm. Indeed, this is one of the most basic relationships in microeconomics and industrial organization economics.

The typical treatment of pricing in introductory economics textbooks centers around the statement that a profit-maximizing firm that sells a single differentiated product unilaterally sets its price (or output) (i.e., assuming no price response from other suppliers) so that its marginal revenue equals its marginal cost: MR=MC. This equation implies in turn that the firm's price/cost margin (measured as a fraction of price) is equal to the reciprocal of the (negative of the) firm's own-price elasticity of demand, or $M = 1/E$, where M is equal to the price/cost margin as a fraction of price, i.e., $M = (P-MC)/P$, and E is the absolute value of the own-price elasticity of demand facing the firm for the product in question. This latter form of the equation states a specific, inverse relationship between margins and the firm's own-price elasticity of demand, which sometimes is called the elasticity of the firm's "residual demand." For a firm setting price unilaterally, a high margin indicates that the firm perceives a low own-elasticity of demand.

We support merger analysis that builds upon profit-maximization and this basic relationship between the margin and the elasticity. As with any simple theoretical relationship in economics, care must be taken in applying the $M = 1/E$ relationship in practice. In particular, when the data are available to directly estimate the elasticity of demand, those estimates should be used in conjunction with margins and other available evidence to obtain the most reliable overall estimates of the own-price and cross-price elasticities of demand, as discussed in more detail below. As the proposed HMGs emphasize, merger analysis is highly fact-specific, and the basic relationship between margins and the own-price elasticity of demand can only be a starting point for a full analysis. But it is a sound starting point that should not be overlooked.

## C. Applying the Margin/Elasticity Relationship in Practice

A number of factors can arise in practice that affect the interpretation of the relationship between margins and the elasticity of demand, and may suggest further analysis. These factors do not undermine the utility and validity of using the inverse $M = 1/E$ relationship as a key part of the analysis, but they nonetheless can be important. The proposed HMGs, with their emphasis on the fact-specific nature of the merger inquiry, recognize these other factors and acknowledge that addressing these factors is a necessary part of a reliable analysis. For example, the HMGs have explicitly recognized the relevance of anticipated supply responses (entry, production substitution and product repositioning) in some form since at least 1982.

We now address several of the factors that arise in practice and how the proposed HMGs take them into account. We then discuss econometric estimation of demand elasticities.

**1. Product Differentiation, Fixed Costs and Monopoly Power:** Product differentiation reduces consumer price sensitivity and the firm's own-price elasticity of demand, which leads in turn to a higher margin. This factor is relevant for both market definition and unilateral effects analysis. For example, the proposed HMGs recognize that when margins are high and the products of the merging firms are close substitutes, unilateral effects concerns arising from the merger are more likely, *ceteris paribus.* However, those are not the only relevant determinants of competitive effects. Moreover, it is clear that high margins alone do not indicate that a firm is earning an excess return on capital. In fact, in many industries, firms must earn substantial margins between price and incremental cost in order to cover their fixed costs and earn a competitive rate of return, after adjusting for risk. While high margins typically indicate that a firm does not face perfectly elastic demand, high margins certainly do *not* imply that the firm has monopoly power in an antitrust sense. We do not read the proposed HMGs to suggest otherwise, though this point may deserve further clarification to prevent confusion.

**2. Oligopoly Interaction and Coordinated Effects Analysis**: The introductory economics textbook treatment leading to the equation $M = 1/E$ usually is derived by considering a single firm setting its price, taking as given the prices and product offerings of other firms. In antitrust, this is commonly referred to as "unilateral" or "independent"

price setting.  This analysis is extended in industrial organization economics textbooks to take into account anticipated oligopoly reactions.  There are several economic models of such "coordinated" effects.  One example involves a firm that expects its rivals to adjust their prices somewhat in the same direction to the price changes the firm initiates.  Economists also use more complex models to analyze dynamic oligopoly behavior, such as Stigler's famous detection/punishment model.[1]  High margins for homogeneous products may suggest the relevance of evaluating evidence of oligopoly interaction, including the Stigler model.  The coordinated effects section of the proposed HMGs recognizes these complications.

**3.  Multi-Product Firms**.  The simple $M = 1/E$ relationship is derived for a firm selling a single product.  More complex equations apply to a firm selling multiple products.  If the firm sells complementary products, the sale of one product stimulates the sales of complementary products, providing an additional benefit to the firm and possibly implying a benefit from charging a lower price.  This effect is economically equivalent to the firm having a lower incremental cost of the product in question.  If margins are measured without taking these complements into account, the analyst may effectively under-estimate the margin and thus over-estimate the own-price elasticity of demand.  Likewise, adjustments may be necessary if the firm sells substitute products.  A high margin may be consistent with relatively elastic demand for a single product if the firm selling that product also sells other products with significant cross-elasticities of demand with the product.  The proposed HMGs recognize this issue and take it into account.  For example, the proposed HMGs suggest that the analysis of the hypothetical monopolist sometimes may be replaced by analysis of a hypothetical cartel.  The analysis of unilateral and coordinated effects analysis also can take the existence of multiproduct firms into account directly.

**4. Discrete, Non-Transitory Price Changes**:  The textbook relationship MR=MC is usually derived using calculus and applies to marginal changes in output (whatever counts as "one unit" of output) in a static model.   In practice, merger analysis typically

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[1]   George J. Stigler, *A Theory of Oligopoly*, 72 <u>Journal of Political Economy</u> 55 (1964).

concerns itself with small but significant and non-transitory increases in price (SSNIPs), and the corresponding output changes over time. This framework for analysis is explicitly the case for the price change in the standard hypothetical monopolist test for market definition since the 1982 HMGs. The analysis of competitive effects that involve a "substantial lessening of competition" also involves a discrete rather than infinitesimal increase in price. The elasticity of demand for a discrete change in price is measured as the arc elasticity of demand over the discrete price range, not the point elasticity. This is the approach of the proposed HMGs. The $M = 1/E$ relationship between margin and elasticity is equally valid using a discrete change in price or output; the margin is measured using average incremental cost rather than marginal cost and the elasticity is measured using an arc rather than a point elasticity.

**5. Curvature of Demand:** In some cases, the elasticity of demand can rise rapidly with price. This corresponds to a highly curved demand curve (or even a non-differentiable, kinked demand curve), with the absolute value of the elasticity increasing rapidly as price rises above the pre-merger level. If demand has this shape, the margin may not equal the reciprocal of the arc elasticity measured over any particular range of prices. We support the approach taken in the proposed HMGs, which involves the use of all available relevant evidence to assess likely responses in the merging firms' residual demand to price increases. For example, if demand is curved in this way, perhaps because of stronger consumer responses to price increases, one would expect to observe that the firm's price, or industry prices, have been "sticky" at the pre-merger level even in the face of non-transitory cost increases. When there is reliable evidence that cost increases of the magnitude relevant for evaluating the alleged effects are not passed through because demand has this property, that evidence should be taken into account and may indicate a reduced concern about unilateral effects. This point also might be clarified to prevent confusion.

## D. Empirical Analysis

Numerous issues can arise in empirical analysis and we do not intend this list to be exhaustive.

**1.  Measuring Incremental Cost**.  Calculating margins requires that one estimate the average incremental cost that is associated with a change in output corresponding to the price changes and time frames under consideration.   While this exercise may be difficult, it is not new to merger analysis or to antitrust more generally.  Merger analysts have been measuring average incremental costs for some time to perform the hypothetical monopolist test and as part of the estimation of unilateral pricing effects.  Predatory pricing analysis involves the comparison of price to incremental cost.

**2.  Estimating Demand Elasticities.**  The firm's own-price and cross-price demand elasticities provide useful information for merger analysis, both for determining relevant markets and for evaluating the closeness of substitution of the products sold by the merging firms.  They also are useful in the analysis of the competitive effects of a proposed merger.  The margin provides an estimate of the own-price demand elasticity, taking into account the factors discussed above.  Where sufficient data are available, depending on data and methodology, econometric methods may be used to estimate the own-price and cross-price demand elasticities, and that estimation faces the usual array of potential econometric problems.  In some situations, the margin might be used in the estimation process, along with information about the various factors discussed above.  Analysis based on both margin information and econometric estimates of the own-price elasticity also may be able to throw light on the importance of the various factors discussed above.

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In conclusion, the inverse relationship between the price/cost margin and the firm's own-price elasticity follows from the fundamental working assumption of profit-maximization, has a long history in economics and remains relevant for careful and reliable merger analysis, along with econometric estimates and other facts learned during a full merger analysis.  The treatment of margins in the proposed HMGs correctly notes that margins are informative about the potential for price increases in a unilateral effects analysis.  The proposed HMGs do not conclude that margins are dispositive of the likelihood of a price increase and emphasize the importance of empirical evidence of demand conditions and other factors that might limit the ability and incentive of firms to

raise prices post-merger.  As recognized by the proposed HMGs, the ultimate goal of merger analysis is to evaluate the likely potential to harm competition, using all the available evidence, not just margins.

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