

COMMENT CONTAINING SUGGESTED REVISION TO 1992 HORIZONTAL MERGER GUIDELINES REGARDING THE HYPOTHETICAL MONOPOLIST TEST FOR PURPOSES OF MARKET DEFINITION

by

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I. INTRODUCTION

This comment suggests a relatively simple modification of the hypothetical monopolist test for market definition that is set forth in the 1992 revisions to the Horizontal Merger Guidelines (“Guidelines” hereafter) in order to better reflect the way product markets are typically defined in practice. Following the Guidelines’ methodology literally can lead to very narrow relevant markets that often do not include all of the functional substitutes of the merging firms’ products.² Markets defined in practice are often broader than those implied by the Guidelines’ methodology in the sense that they include all functional substitutes of the merging firms’ products. The modification suggested in this comment consists of adding a *constraint* to the optimization exercise that is involved in the current market definition methodology which consists of identifying the *smallest* collection of products (including at least one of the merging firm’s products) for which a hypothetical monopolist finds it profitable to impose a small but significant and non-transitory price increase (“SSNIP”). The added constraint serves to broaden the smallest collection of products so identified and, thus, leads to relatively broader markets.³

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² Guidelines markets can sometimes be so narrow as to not even contain both of the merging firms’ products leading to the embarrassing implication that the merging firms have no horizontal overlap. For a demonstration and discussion of the narrowness of Guidelines’ markets, see, for example, Joseph Farrell & Carl Shapiro, *Improving Critical Loss Analysis*, THE ANTITRUST SOURCE (February 2008), at 6.

³ Aside from better reflecting the way market definition is often undertaken in practice, an additional benefit of adopting the suggested modification would be to resolve differences between relevant markets that result from following the current Guidelines’ methodology and the way the Courts tend to envision product markets (as evidenced by Court opinions in at least two recent high profile merger challenges, *FTC v Whole Foods* and *DOJ v Oracle Corp*). Notwithstanding being the first step in the five-step analytical process for merger review that is

The constraint seeks to capture the notion that a relevant market should include all products that are functional substitutes of the merging firms' products i.e., all products that share a set of common consumer-valued attributes with the merging firms' products. The underlying idea is that firms that produce functional substitutes of the merging firms' products likely have the ability to undertake either pro-competitive supply-side responses that could deter the merged firm from raising its prices, or anticompetitive supply side responses that could further exacerbate any price increases by the merged firm. Pro-competitive supply side responses could involve output expansion or product repositioning. Anti-competitive supply side responses can include reactionary price increases following a price increase by the merged firm. The purpose of the suggested market definition methodology is, thus, to identify the non-merging entities which are likely to have the *ability* to react to any price increases by the merged firm. A fuller examination of the competitive effects analysis of a merger would then involve assessing whether these non-merging entities have the *incentives* to undertake pro-competitive supply-side responses (which could mitigate the merged firms' anti-competitive actions) or anti-competitive supply side responses (which may further exacerbate the merged firms' anti-competitive actions). In this way, the added constraint seeks to dilute the narrow focus of the current Guidelines' market definition methodology on demand-side substitutability alone by adding a modicum of supply-side considerations into the market definition exercise. By doing so, the suggested approach may help not only to better reflect the way market definition is often undertaken in practice, but also serve to reduce the proportion of mergers which are, in the initial market definition step, found to result in unacceptably high market concentrations (when relevant markets are defined according to current Guidelines' methodology) only to be eventually cleared on the basis of the conclusion that potential supply-side responses would likely be sufficient to deter the merged firm from acting in an anti-competitive manner.

described in the Guidelines, antitrust practitioners have long known that the analyses of a merger's competitive effects can be undertaken directly without requiring market definition as a pre-requisite. Yet, market definition remains an essential first step in arguments that are heard during judicial proceedings that determine the outcome of merger challenges. Articulating a market definition methodology that is acceptable to the Courts can pave the way for the merging firms and the government to focus more of their efforts in developing and arguing their respective positions regarding the likely competitive effects of a merger rather than getting bogged down in the initial market definition step.

This comment is most directly responsive to Q.4 in the Questions for Public Comment (“questions” hereafter) that were posted by the Federal Trade Commission (FTC) and the Antitrust Division of the Department of Justice (DOJ) (“Agencies” hereafter) on September 22, 2009.⁴ The comment is also responsive to Q.3 and Q.5, and has implications for certain elements of Q.7 and Q.10.

The remainder of the comment is organized as follows. Section 2 discusses the potential role of market definition in the merger review process. Section 3 provides brief comments on two alternatives that are suggested among the questions as ways to broaden market definition – dropping the smallest market criterion and raising the SSNIP to 10%. Section 4 introduces an informal model that seeks to better reflect the way markets are frequently defined in practice. The informal model is used to describe several constraints any one of which can be added to the hypothetical monopolist test in order to broaden the resulting market definitions. Section 5 provides an example to illustrate how to implement the modified hypothetical monopolist test and discusses the breadth of the associated relevant markets relative to the current Guidelines’ unconstrained hypothetical monopolist approach.

II. BACKGROUND: THE ROLE OF MARKET DEFINITION IN MERGER ANALYSIS

Given that competitive effects analysis can often be undertaken without requiring market definition as a pre-requisite, a natural starting point may be to clarify exactly what useful role market definition plays in the merger review process.

A. Market shares and market concentration as a screen

The implicit view that is embodied in the Guidelines is that mergers that have anticompetitive effects are likely to imply high market shares and large measures of market concentration (HHI)

⁴ Fed. Trade Comm’n & U.S. Dep’t of Justice, Horizontal Merger Guidelines: Questions for Public Comment (Sept. 22, 2009), at 1, *available at* <http://www.ftc.gov/bc/workshops/hmg/hmg-questions.pdf>.

in appropriately defined relevant markets. Thus, market definition (and measurement of market shares and market concentration) is a useful screen for distinguishing mergers that are likely to have anticompetitive effects from those that are unlikely to do so.

It is, however, unclear to what extent market shares that result in a market defined by following the Guidelines' hypothetical monopolist test can be informative about a merger's potential competitive effects. The "smallest market" criterion (which requires that during the market definition exercise, products be added to the hypothetical monopolist's portfolio in the order of "next best substitutes") and the use of a small value of SSNIP yields the smallest collection of products on which, based on considerations of demand-side substitutability alone, a hypothetical monopolist would find a SSNIP profitable.⁵ How does the construction of such a relevant market help to inform the likely competitive effects of a merger?

1. *Screen for likely coordinated effects*

Consider first concerns regarding coordinated effects of a merger. It may be reasonable to envision coordinated conduct as involving firms that, in an effort to maximize their joint profits, set the prices of their products at the same level as would a hypothetical monopolist who owned all of their products. Thus, viewed in the context of the potential coordinated effects of a merger, the hypothetical monopolist test may be thought of as identifying *smallest cartel* that would find it profitable to impose a SSNIP on its product(s), absent any pro-competitive supply-side response from non-cartel firms. If both merging firms belong to the smallest cartel so identified, that would imply that the merger would stand to reduce the size of the cartel by one firm. To the extent that a smaller number of firms may find it easier to coordinate their actions relative to a larger number of firms, the merger may be thought of as increasing the likelihood of post-merger coordination. However, it is unclear whether market shares and HHI constitute a better screen

⁵ The next best substitute is defined to be the product, which when available in unlimited quantities at constant prices, would account for the greatest value of diversion of demand in response to a SSNIP. See Guidelines, §1.11, note (9). It may be reasonable to measure the value of diversion of demand as the multiplicative product of the *diversion ratio* from the product on which the SSNIP is imposed to the product to which diversion of demand is being measured, and the *variable margin* earned on the latter product.

than simply counting the number of post-merger firms in the smallest cartel. If, on the other hand, only one of the merging firms belongs to the smallest cartel, then the merger would seem to have no effect on the number of firms in the smallest cartel. In that case, the construction of the relevant market as the smallest cartel does little to indicate whether the merger is likely to induce post merger coordination between firms.

2. Screen for likely unilateral effects

In the context of unilateral effects concerns, it is unclear whether the hypothetical monopolist test has any relevance at all. After all, if the concern is that following the merger the merged firm may find it profitable to *unilaterally* increase its price, then how does the identification of the smallest collection of products for which a hypothetical monopolist will find a SSNIP profitable serve to address that concern? Perhaps, in a differentiated products Bertrand setting in which each firm finds it profitable to raise its own price when its competitors raise the prices of their own products, the hypothetical monopolist test is, somehow, thought of as capturing the idea of an industry-wide price increase that might result from the reaction of non-merging firms to an unilateral price increase by the merged firm. But at best this is a very coarse approximation of the outcome of unilateral price increase by one firm which in turn may induce reactionary unilateral price increases by its competitors. In any event, it remains unclear how market shares and HHI can be informative of the magnitude of any such post-merger industry wide price increase.⁶ Thus, in principle, using the hypothetical monopolist test to define relevant markets (and then calculating market shares and market concentration in such a market) as a screen to identify mergers that are likely to have anticompetitive effects lacks a strong conceptual basis, especially with regards to unilateral effects.

⁶ For a formal analysis of why change in HHI need not accurately reflect the potential for merger induced unilateral price increases in a homogeneous product industry, see Joseph Farrell and Carl Shapiro, *Horizontal Mergers: An Equilibrium Analysis*, THE AMERICAN ECONOMIC REVIEW, 80:1 (1990), p. 107-126. For a discussion regarding the same issue in a differentiated products setting, see Joseph Farrell & Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, 25 November 2008 (available at <http://faculty.haas.berkeley.edu/Shapiro/>)

B. *Market Definition as a means of identifying the non-merging firms that can constrain the merging firms' post-merger actions*

An alternative view regarding the role of market definition, which is consistent with the idea that market definition is not a pre-requisite for identifying potential anticompetitive effects of a merger, is that market definition serves only to identify the non-merging firms whose products are “sufficiently substitutable” to (i.e. share a common set of attributes with) those offered by the merging firms so as to provide them with the ability to constrain the merging firms' actions. Identifying which non-merging firms to include in the relevant market can then be useful when it comes to identifying the pre-merger constraints on the merging firms that would survive the merger as well assessing the incentives of the non-merging firms to undertake additional supply side responses in the event of a price increase by the merged firm. Such supply-side responses can be pro-competitive, as for example, output expansion or product repositioning, in which case a full accounting of the competitive effects of a merger will need to net out such supply-side responses by the non-merging firms from the merged firm's anticompetitive incentives to raise prices. The underlying idea is that output expansion by a non-merging firm will depress the prices of the merging firms' products only if the non-merging firm's product is a sufficiently close substitute of the merging firms' products (i.e. shares a sufficiently large set of attributes with the merged firms' products). Similarly, non-merging firms that already produce a sufficiently close substitute of the merging firms' products may more likely be able to reposition their product offerings closer to the merging firms' product space. In a differentiated products Bertrand setting, the supply-side responses of non-merging firms may consist of raising their own prices in the event the merged firm is to raise its prices, in which case, such reactionary price increases will need to be taken into account to measure the fully amplified anticompetitive effects of a merger.

In this comment, I take this latter view that the purpose of market definition in merger analysis is to identify the non-merging incumbent firms that have the ability to constrain or amplify the actions of the merging firms. The suggested market definition approach will help to identify the list of non-merging firms whose post-merger incentives will need to be assessed in order to

determine whether any attempted price increase by the merged firm will be effectively countered by the likely responses of the non-merging firms.

III. ALTERNATIVES SUGGESTED AMONG THE QUESTIONS FOR PUBLIC COMMENT

Q.3 in the questions for public comment observes that relevant product markets defined according to the Guidelines' methodology are often very narrow and do not include the full range of functional substitutes of the merging firms' products. Q.4 and Q.5 explore two different aspects of the market definition methodology in the current Guidelines each of which is believed to contribute to making relevant markets very narrow. These are the "smallest market" criterion (implying that during the construction of a relevant market, substitute products be added to the hypothetical monopolist's product portfolio in the order of next best substitutes) and the use of a small SSNIP (5%). The questions offer the following alternatives. Should markets be defined as *any* collection of products for which a hypothetical monopolist will find a SSNIP profitable (as opposed to the smallest collection of products)? Should the SSNIP be raised from 5% to 10%?⁷

A. *Dropping the smallest market criterion*

I consider first the suggested alternative of defining a market as *any* collection of substitute products for which a hypothetical monopolist finds a SSNIP profitable. One problem with this alternative is that the relevant market for a product will no longer be unique. In particular, the hypothetical monopolist may typically find it profitable to impose a SSNIP for any collection of products that includes as a proper subset the set of products that constitute a relevant market under the current smallest market principle. This is because adding more products to the hypothetical monopolist's product portfolio will typically not reduce its profitability from imposing a SSNIP.⁸ To the extent that market shares and market concentration continue to be

⁷ See supra note 4.

⁸ In principle, it is conceivable that a hypothetical monopolist seeking to maximize profits may find it preferable to lower the price of the merging firm's product and instead raise the price of some other product that is subsequently added in the course of iteratively expanding its product portfolio. However, a commonly employed version of the

considered probative to a merger's likely competitive effects, which one of such a progressively expanding collection of products is taken to be the relevant market may determine whether or not a merger passes the market share screen.

Moreover, there may also be partially overlapping collections of products for which a hypothetical monopolist finds a SSNIP profitable. Which one from amongst such a set of product portfolios is taken as the relevant market may well determine whether or not there is a horizontal overlap between the merging firms' products and, thus, whether or not the merger should raise any competitive concerns at all.

B. Raising the SSNIP from 5% to 10%

The second suggested alternative is to consider a SSNIP of 10% as opposed to a SSNIP of 5%. Use of a 10% SSNIP will likely broaden relevant product markets. But the change from 5% to 10%, if undertaken only for the purpose of ensuring broader markets, would seem to be a rather ad-hoc and an indirect way in which to go about broadening relevant markets. It will be ad-hoc for the same reason as the current use of 5% is somewhat ad-hoc. The Guidelines, while suggesting the 5% figure, are quick to point out that whenever appropriate, the Agencies can consider a SSNIP of less than 5%.⁹ Moreover, it is unclear whether increasing the SSNIP from 5% to 10% will necessarily bring all functional substitutes of the merging firms' products within

hypothetical monopolist test simply checks whether or not a single-product SSNIP only on the price of that merging firm's product for which the relevant market is being constructed is profitable relative to no increases in the prices of any of the products in the hypothetical monopolist's product portfolio. Under this version of the hypothetical monopolist test, the statement made in the text of the comment is accurate. Henceforth, whenever I refer to the hypothetical monopolist test, I will mean the single product SSNIP test performed only with respect to the merging firm's product for which the relevant market is being constructed.

⁹ The Guidelines are clear that a 5% SSNIP is only a tool to implement the hypothetical monopolist test and there is no suggestion anywhere in the Guidelines that the recommended use of 5% should be taken to mean that a merger induced price increase no higher than 5% is tolerable under the Guidelines. See Guidelines, §1.11. Nevertheless, a highly superficial reading of a revision of the SSNIP from 5% to 10% may lead some to misconstrue this revision as a relaxation of the standards by which mergers are currently reviewed.

the fold of the relevant market. One can easily create examples where even a 10% SSNIP will be too small for this purpose.¹⁰

IV. THE APPROACH SUGGESTED IN THIS COMMENT

The objective of this comment is modify the market definition methodology described in the current Guidelines in order to lead to market definitions that better reflect the way in which markets are defined in practice.

A. *Market Definition in practice*

In practice, relevant markets are rarely defined according to the Guidelines' methodology. More often than not, the exercise of market definition revolves around the identification of *all* products that share with the merging firms' products a common set of attributes which are believed to be valued by consumers. The premise is that if a hypothetical monopolist owning all such products was to impose a SSNIP, then there would be insufficient diversion outside of the hypothetical monopolist's product portfolio rendering the SSNIP profitable (although the profitability calculations are generally not carried out in practice). In this way, all products that contain the desired set of consumer preferred attributes are included in the relevant market regardless of whether subsets of those products would have also satisfied the hypothetical monopolist test. Markets defined in practice in this way can be narrow or broad depending on the list of common attributes that are considered to be sought after by consumers. A longer list of common attributes would lead to fewer products being included in the relevant market, and vice versa.

¹⁰ Michael Katz and Carl Shapiro have shown that a hypothetical monopolist owning a group of products finds it profitable to impose a SSNIP if the resulting critical loss is no higher than the aggregate diversion ratio. See Michael L. Katz & Carl Shapiro, *Critical Loss: Let's Tell the Whole Story*, ANTITRUST 49 (Spring 2003). (For the correction to an incorrect formula in the Katz & Shapiro paper, see Øystein Daljord, et al., *The SSNIP Test and Market Definition with the Aggregate Diversion Ratio: A Reply to Katz and Shapiro*, J. COMP. LAW & ECON. 1 (2007).) If the pre-merger variable margin of each product is 50% and the SSNIP is 5%, the critical loss in question is $5\%/50\% = 10\%$. Increasing the SSNIP to 10% will increase the critical loss in question to 20%. In an industry with, say, 10 differentiated products, and assuming zero elasticity for the aggregate industry demand, the average diversion ratio from a product to each of the other competing products is $100\%/9 = 11\%$ (approximately). An increase of the SSNIP from 5% to 10% (and concomitant increase of the critical loss from 10% to 20%) in this case will, on average, add only one more product to the relevant market.

A practical example may be illuminating. Consider the formation of the joint venture between Miller and Coors-Molson. Light beer (beer with low calories) is a product category in which both firms offered products. Hypothetically speaking, suppose the DOJ (which reviewed the joint venture) considered low calorie content as an attribute of beer that is valued by certain consumers. An example of a broad market for low calorie beer is all light beer, domestic and foreign. This may include, in addition to the joint venture partners' products, Miller Lite and Coors Light, other domestic light beer brands like Bud light as well as foreign light beer brands like Corona Light and Heineken Light. In contrast, an example of a narrow market for low calorie beer is all domestic light beer which would exclude foreign brands like Corona and Heineken. In the case of the broad market, the list of product attributes is shorter (low calorie only) whereas in the case of the narrow market, the list of product attributes is longer (low calorie and domestic brand). Further, depending on the pre-merger margins of and diversion ratios between Miller Light and Coors Light, it is conceivable that a hypothetical monopolist owning only these two products may have found a SSNIP profitable. However, it is very unlikely that the DOJ would have sought to exclude Bud Light from the relevant market for Miller Lite or Coors Light because Bud Light shared both of the product attributes ("light" and "domestic") of Miller Lite and Coors Light in this case.

B. A Model of Market Definition in practice

One way to model market definition in practice (as described above) is to posit a relationship between commonality of consumer valued product attributes between any pair of products and the closeness of substitution between them (as measured by the relevant diversion ratio). The larger the set of common consumer valued product attributes between two products, the higher are the diversion ratios between them. Such a relationship can enable us to translate the market definition exercise for a product from one that involves identifying all products that possess a set of common attributes relative to that product to an exercise which involves identifying all products whose diversion ratios from the product in question exceed an appropriate threshold diversion ratio ("threshold"). That is, if the diversion ratio between a merging firm's product and

another substitute product is less than the appropriate threshold, then the substitute product is assumed to share fewer than the desired list of common attributes with the merging firm's product and, thus, likely to be dropped from the relevant market for the merging firm's product if the market were to be constructed according to the practical market definition exercise.

C. A model of broader relevant markets

Based on this model, I suggest a more direct approach by which to modify the hypothetical monopolist test in order to broaden relevant markets. The modification consists of defining a relevant market for a product to be the *smallest* collection of substitute products for which a hypothetical monopolist finds a SSNIP profitable *subject to the constraint* that the relevant market include all substitute products whose diversion ratio from the product in question exceeds an appropriate threshold diversion ratio. By appropriately setting the determinants of the threshold, relevant markets can be made broad or narrow. I consider four different determinants of the threshold diversion ratio.

1. Threshold diversion ratio equals the diversion ratio from the merging firm's product (for which the relevant market is being constructed) to the merging partner's product. Under this approach, construction of the relevant market starts with the two merging firms' products and then adds to it all products that are at least as substitutable to the product in question as its merging partner's product. In other words, based on the posited relationship between shares product attributes and diversion ratios, the relevant market under this approach contains those substitute products that share the full set of attributes that are common to the two merging firms' products.
2. Threshold diversion ratio is set equal to a natural break point in the distribution of diversion ratios from the merging firm's product to all other substitute products (including the merging partner's product). Under this approach, the empirical distribution of diversion ratios from the product in question to all other products is allowed to determine which products are sufficiently close as to be included in the relevant market.

3. Threshold diversion ratio is stated in terms of the aggregate diversion ratio from the merging firm's product to all other products in the hypothetical monopolist's product portfolio. The threshold value of the aggregate diversion ratio can be set at some reasonably high value (say, 75% for illustrative purposes). Under this approach, the relevant market for a product is defined as the smallest collection of products such that a hypothetical monopolist owning the products finds it profitable to impose a SSNIP and the relevant market accounts for a sufficiently large amount of aggregate diversion from one of the merging firm's product, leaving the rest to be diverted to "outside goods".
4. The threshold diversion ratio is set at some reasonably small value (say, 5% for illustrative purposes). Under this approach, any product that accounts for a certain minimum diversion ratio from the product in question is included in the relevant market, reflecting the idea that all substitute products that are "reasonably interchangeable" with a product are included in the relevant market for that product.

V. AN ILLUSTRATIVE EXAMPLE

Table 1: An illustrative example

Relevant Market (containing product 2)						
Critical Loss for a 5% SSNIP				=	0.16	
(1)	(2)	(3)	(4)	(5) = (4) / 0.46	(6) = (2) x (5)	
Product	Diversion Ratio from Product 2	Margin	Price Cost Difference (\$)	Relative Price Cost Difference	Diversion Ratio weighted by Relative Price Cost Difference	
1	23%	69%	2.28	4.93	1.13	
2		32%	0.46			
3	12%	42%	0.72	1.55	0.19	
4	12%	53%	1.13	2.45	0.31	
5	9%	41%	0.71	1.53	0.13	
6	23%	34%	0.53	1.14	0.26	
7	9%	48%	0.91	1.98	0.19	
8	3%	34%	0.52	1.12	0.03	
Outside good	9%					

Consider the construction of a relevant market in a differentiated products industry which, pre-merger, is characterized by Bertrand-Nash competition between 8 firms each of which produces one product. Let these products be labeled as 1 through 8 and let product 2 be the product whose

relevant market is of interest. The pre-merger equilibrium outcome is characterized in Table 1.¹¹ Table 1 shows diversion ratios from product 2 to each of the other products (including diversion to the “outside good”) and the pre-merger variable margin of each product (in both dollars as well as expressed as percentages of respective pre-merger prices). These equilibrium variables are sufficient to illustrate the construction of a relevant market for product 2 according to each of the four suggested market definition approaches, each of which is a constrained version of the hypothetical monopolist test.

A. Market Definition according to the current Guidelines

To begin with, consider as a benchmark, the unconstrained hypothetical monopolist test which constitutes the market definition methodology according to the current Guidelines. Katz and Shapiro have shown that a hypothetical monopolist will find it profitable to impose a SSNIP on one amongst a collection of products if the sum of the diversion ratios from the product in question to the remaining products in that collection, weighted by the corresponding relative price-cost differences, exceeds the critical loss associated with the SSNIP. The variable margin earned on product 2 is 32%, which implies that for a 5% SSNIP on product 2, the critical loss for product 2 is $0.05/0.32 = 0.16$.¹² The diversion ratio from product 2 to each of the remaining products, weighted by the corresponding relative price cost differences, is shown in the rightmost column in Table 1. The Katz Shapiro approach to market definition according to the Guidelines relies on the idea that pre-merger, each product’s price is set so as to maximize the profit earned by the firm that produces that product. As a result, a hypothetical monopolist that owns only product 2 will not find a SSNIP on product 2 profitable. That is, a relevant market for product 2 must include at least one other product. The first product to consider adding to the relevant market is the product with the highest value of relative price cost difference weighted diversion ratio from product 2. From the rightmost column in Table 1, this can be seen to be product 1, which has a relative price cost difference weighted diversion ratio from product 2 of 1.13.

¹¹ The characterization in Table 1 is derived as the equilibrium outcome of Bertrand-Nash competition between 8 firms for which the demand system is linear and marginal costs are constant over the relevant range of output. The values of the demand parameters and marginal costs, and complete details regarding how the equilibrium is derived, are available from me on request.

¹² See Katz and Shapiro, supra note 10.

Furthermore, the weighted diversion ratio from product 2 to product 1 exceeds the critical loss of product 2, which, as calculated previously, is 0.16. Thus, the smallest collection of products containing product 2 for which a hypothetical monopolist would find it profitable to impose a SSNIP on product 2 consists of products 1 and 2. Therefore, if a relevant market is defined according to the current Guidelines, the relevant market for product 2 is the set {1, 2}.

B. Market Definition according to the suggested approaches

Each of the suggested approaches seeks to broaden the defined relevant market by imposing a constraint on the smallest market hypothetical monopolist test.

1. Consider the first constraint that sets as a threshold of inclusion in the relevant market the diversion ratio from product 2 to its merging partner's product. Suppose the merger in question is between the firm that produces product 2 and the firm that produces product 3. The diversion ratio from product 2 to product 3 is 12%. The products (including product 3) whose diversion ratio from product 2 is no less than 12%, and must therefore be included in the relevant market as per the constraint, are 1, 3, 4 and 6. We also know from having already undertaken the unconstrained hypothetical monopolist test that it takes only product 1 to be added to product 2 for the hypothetical monopolist to find a 5% SSNIP on product 2 to be profitable. Thus, the relevant market for product 2 according to this suggested methodology is the set of products {1, 2, 3, 4, 6}.
2. Consider the second constraint which sets as a threshold for inclusion in the relevant market a natural breakpoint in the distribution of diversion ratios from product 2 to the other products. The diversion ratios from product 2 are clustered at three levels, 23% (to products 1 and 6), 12% (to products 3 and 4), 9% (to products 5 and 7), and a solitary product, product 8, with a diversion ratio from product 2 of 3%. It may be more reasonable to consider the larger gap between 23% and 12% to be a natural break when compared to the gap between 12% and 9% or that between 9% and 3%. Based on that, the products that exceed the threshold for inclusion in the relevant market are products 1 and 6. The relevant market according to this method is then the set {1, 2, 6}. Note that

the set contains the subset {1, 2} which is the result of the unconstrained hypothetical monopolist test.

3. Consider the third constraint which requires that the hypothetical monopolist test be satisfied subject to the inclusion of the fewest products that account for an aggregate diversion of 75% (say). The smallest collection of products that account for an aggregate diversion from product 2 of 75% is the set {1, 6, 3, 4, X} where X is any one of the products 5 or 7. The relevant market in this case is {1, 2, 3, 4, 6, X}. Of course, the inclusion of product 1 ensures that the hypothetical monopolist test is satisfied.
4. Consider the fourth constraint that sets as a threshold for inclusion in the relevant market a sufficiently small (exogenously specified) diversion ratio from product 2, say 5%. The set of products with diversion ratios from product 2 of no less than 5% is {1, 3, 4, 5, 6, 7}. The relevant market according to this methodology is the set {1, 2, 3, 4, 5, 6, 7}. Of course, the inclusion of product 1 ensures that the hypothetical monopolist test is satisfied.

The size of the relevant markets defined according to the constrained hypothetical monopolist test that is suggested in this comment varies between 3 products (for constraint number 2) and 7 products (for constraint number 4). In each of the four cases, the constraint binds strictly, thus making the relevant market broader than what results from the unconstrained hypothetical monopolist test that is described in the current Guidelines. The first two thresholds for inclusion in the relevant market – the diversion ratio from a merging firm’s product to its merging partners product, and a natural break in the distribution of diversion ratios from the merging product to all other substitutes – are endogenous in nature. The remaining two thresholds for inclusion in the relevant market – fewest products that account for a predetermined aggregate diversion ratio from the merging firm’s product, and every product whose diversion ratio from the merging firm’s product exceeds a predetermined threshold – are exogenous in nature and can, thus, be set at an appropriate level. What constitutes an appropriate level is likely to become evident with experience in much the same way as the Agencies appear to have settled on different safe harbor thresholds than the ones that are set forth in the 1992 Guidelines, presumably as a result of their

cumulative experience of reviewing mergers since 1992 when the Guidelines were most recently revised.¹³

¹³ Among the questions for public comment, Q. 9 asks whether the HHI thresholds set forth in the Guidelines accurately reflect Agency practice and whether or not they should be updated. See *supra* note 4.