

GX 622

Designing and Using Surveys to Define Relevant Markets

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The degree to which consumers are sensitive to changes in price and their purchasing behavior after such changes are key aspects of an antitrust analysis, whether the context is merger enforcement or antitrust litigation. These dimensions of consumer demand lie at the foundation of relevant market definition, an inquiry that involves an analysis of the lost sales that would likely result following an increase in price, as well as the identification of the alternatives to which consumers would turn in the event of a small but nontransitory increase in price.

An analysis of the own- and cross-price elasticities of demand is a common empirical approach to market definition. The *own-price elasticity of demand* is a measure of consumer price sensitivity. The *cross-price elasticity of demand* is a measure of the degree to which two products are close or distant substitutes. Estimates of the own- and cross-price elasticities of demand can be used to implement the antitrust market definition test that is described in the US Department of Justice (DOJ) and Federal Trade Commission (FTC) *Horizontal Merger Guidelines* and to estimate the competitive consequences of a proposed merger or acquisition.¹ The elasticities of demand also can be inputs to a critical loss test and other analyses that are often applied when assessing market definition.²

When relevant and reliable data on actual purchases are available, it may be possible to use econometric methods to estimate the elasticities of demand as part of a relevant market analysis. However, such data are often either not available or not specific enough to estimate the relevant elasticities of demand for the product(s) at issue. In this circumstance, a properly designed consumer survey that measures preferences over hypothetical products and alternatives—a *stated preference survey*—can be, and indeed has been, used to assess the nature of consumer demand and to delineate the boundaries of the relevant market.³

Surveys Can Be Useful Proxies for Market Data

Historical market data that reflect actual purchase decisions are known as *revealed preference* data. Such data are valuable and informative because an individual consumer's decision to purchase a particular product instead of an alternative product clearly reveals that person's preferences for the product purchased with respect to price and other product attributes. There are numerous sources of transaction data—they may be kept by companies that track their sales orders, collected by third-party consultants, or recorded by cash register checkout scanners at retail stores.

However, in many industries, revealed preference data are either not available or are insufficient to fully understand consumer demand. For example, there may be data on transactions at grocery stores and drug stores but incomplete data from the retail channel that is relevant for the issue at hand. An analysis of such data—rich as they may be—could yield biased or potentially inaccurate estimates of the elasticities of demand if most of the purchases of the product are not made in grocery stores or drug stores.

Even if complete transaction data are available, there may not be sufficient data to understand the nature of demand by a particular group of customers. Consider, for example, a 1997 merger of ski resorts in Colorado and the Antitrust Division's concern regarding the impact of such a transaction on Denver-area residents looking for weekend skiing.⁴ Because the resorts near Denver attract skiers from around the United States and the rest of the world, an analysis of actual lift ticket prices and sales would capture the preferences of *all* skiers (i.e., both local Denver-area weekend skiers and nonlocal "destination" skiers) and not just those who live in the Denver area.

When reliable or accurate transaction data are not available, stated preference data may be a useful source of information for the purposes of defining relevant markets or assessing the competitive effects of a merger or alleged anticompetitive action. The value of stated preference surveys in these situations is the ability to target the data collection to the specific segments of consumers of interest in the analysis and to target the specific product choices that need to be evaluated. For example, in a stated preference survey, target respondents would be asked to describe the purchases they would make under different hypothetical situations. If such a survey were designed and implemented properly and the responses determined to be reliable and valid, then the responses may reveal the preferences of consumers as if we had observed their actual behavior in the marketplace.

Distinguishing Good Surveys from Bad Surveys

To be admissible in court, survey evidence must be trustworthy and scientifically valid.⁵ Seven criteria that can be used to determine whether a survey is trustworthy or not can be found in the *Manual for Complex Litigation*.⁶ These general principles also have been adopted by professional associations and by the courts, occasionally with greater detail. For example, in *United States v. Dentsply International, Inc.*, the US District Court enumerated the following standards for the admissibility of survey evidence:⁷

- The survey should contain screening questions to identify relevant respondents.
- The instructions should be clear and not confusing.
- The examiner should conduct a pre-test.
- There should be a "sufficient" response rate.
- The survey should address nonresponse bias.
- The survey should be designed to ensure that respondents were willing and able to devote the time to take the survey seriously.
- The results must be replicable.
- Standard errors should be calculable and presented.
- The survey should be conducted in accordance with generally accepted survey principles and used in a statistically correct way (e.g., implement double-blind questioning, appropriately train and monitor interviewers, create ways to verify the accuracy of data coding and recording, and validate survey responses).

Many of these principles also appear in a list published by the American Association for Public Opinion Research (AAPOR), a professional organization that promotes standards of conduct for survey and public opinion researchers.⁸

Designing Surveys to Assess Likely Future Actions and Behavior

The typical merger review is a forward-looking exercise, and in the context of a market definition analysis, the questions often revolve around how consumers are likely to respond if prices were to rise significantly above competitive levels. Evaluating the impact of potential postmerger price increases to supracompetitive levels involves future events. In this situation, historical data may not be available or informative. Under such conditions, a survey of consumer preferences regarding future choices may

be a useful source of data. Such surveys can be designed to test the impact of price and changes in available product options under various assumptions about the post-merger situation. A carefully crafted stated preference survey offers an opportunity to evaluate the response of specific target consumers to specifically identified price and option scenarios.

The Problem of Biased or Noisy Data

While stated preference surveys offer substantial advantages in targeting the consumers and choices of interest, they are not without disadvantages. In particular, the prospect of a supracompetitive price increase for a product may not be familiar or realistic to survey respondents, and as a result, the data that are generated by a stated preference survey could be biased or noisy. For example, a study might simply ask respondents to say what they would do in the face of a hypothetical increase in prices. The problem is that a variety of factors affect respondents' ability to provide an accurate estimate of their actual behavior if prices do increase in some manner. Depending on how the question is asked, the responses can systematically over- or understate real behavior in the face of an actual price change.

Questions involving hypothetical future choices are difficult for respondents, particularly if they are unfamiliar with the prices, products, or market under study. As a result, how the questions are asked, the ordering of the questions, and the nature of the response categories all create cues that may unintentionally bias how respondents guess at their likely behavior. For example, if asked whether he would switch to alternative products, a respondent may give answers that are based on his *perceptions* about the available alternatives, rather than facts. The opposite response is also possible—when put on the spot, a respondent may be unwilling to switch to alternative products, a response that could well be different with more information, further consideration, and the passage of time. Either way, responses of this kind are not likely to generate reliable data that can be used to estimate the true underlying preferences of consumers.

A particularly tricky aspect of conducting stated preference studies about hypothetical future conditions is controlling for respondents' self-interest. For example, surveys that directly ask consumers whether a certain price point for a particular product would be (a) too expensive, (b) high, but acceptable, (c) about right, or (d) less than expected are unlikely to yield useful data for the purpose of assessing market definition. In

general, consumers tend to want lower prices, not higher prices. For stated preference surveys to be useful in merger analysis, it is important that they be conducted in a manner that minimizes various forms of strategic bias or gaming of responses by respondents.

Discrete Choice Surveys

One important tool for addressing the potential biases in stated preference studies is the use of well-crafted discrete choice surveys.⁹ Discrete choice surveys refer to a form of stated preference survey in which respondents are offered choices under hypothetical conditions. The technique has been used extensively for marketing and transportation applications,¹⁰ but, it is applicable in a wide range of situations.

In a discrete choice survey, respondents are presented with a set of alternative items with specified characteristics at randomly selected prices.¹¹ For example, the respondent may be shown four product options; each option would be a product with a different combination of attributes and prices. The respondents are then asked to choose which product they would purchase, if any, and to rank the product options from their most preferred to their least preferred. By asking respondents to simply choose or rank the product options shown to them, the survey attempts to generate data that reveal what consumers would actually do if faced with the options presented to them.

To obtain information about the respondent's likely response to changes in price, the range of prices of the different product options shown to the respondent might be randomly selected from among a set of four or five hypothetical price points. For example, the range of prices might be plus or minus 10 percent of the average price observed in the marketplace. Because different respondents are shown the same item at different price points (e.g., some respondents are shown lower prices and others are shown higher prices), the survey can reveal how consumer demand is likely to change following an increase in price.

In the end, the ability to estimate the own- and cross-price elasticities of demand derives from a survey design that reveals the differences in "purchasing behavior" between respondents who are presented a choice set that includes a product at a low price and respondents who are presented with a choice set that includes the same product at higher prices. By randomly giving some respondents high-priced options and other respondents low-priced options, a discrete choice survey is, in effect, an attempt to create a controlled market experiment.¹²

Unlike a survey that asks the respondent directly how his purchase decision would change if the price were different, the results derived from a properly designed discrete choice survey can reduce or eliminate the potential for noise or bias in the data. For example, an individual respondent might be presented with a set of products just like those he or she would find in the marketplace—the products have the same or similar packaging, the prices are what he or she would expect, and the product features are realistic.¹³

In addition, no respondent would be asked to directly compare product options that are identical in every way except that one has a higher price and the other has a lower price. Thus, respondents would not be asked—either explicitly or implicitly—what they would do in the event of a price increase, which is a question or scenario that could lead to gaming by the respondents.

Considerations When Designing a Discrete Choice Survey

In a discrete choice survey, respondents are presented with a set of product options and asked to select the acceptable alternatives and identify their most preferred option. Although such a survey may mimic the choice faced by a consumer in a real-world situation, it lacks many elements of real-world market circumstances.¹⁴ Even so, with careful and thoughtful survey design and implementation, it is possible to obtain reliable and useful data.

One critical survey design issue concerns the universe of product options that will be shown to respondents. The product options must be realistic and include products to which consumers would switch in the event of a price increase on one of the merging entities' products. In other words, the range of product options should be realistic and broad enough to encompass the likely products viewed as substitutes by consumers. In addition, the product options shown should be available across different retail channels and sufficiently wide in scope to encompass the possible relevant markets.

Consider, for example, a discrete choice survey designed to assess consumer preferences regarding athletic apparel. It may be important to include a broad range of product options with many dimensions. There can be different product categories (e.g., shirts and caps), multiple brands, multiple logos (e.g., one for each sports team), and many styles of clothing. In addition, there may be important interactions across these

product options (e.g., baseball team logos may be more important on caps than on shirts).

A second consideration is the burden that is placed on the survey respondent. If the questions are confusing or too complex, the result may be data that are noisy or filled with inconsistent responses. As noted in the District Court's decision in *United States v. Dentsply International, Inc.*, the instructions should be clear and the survey should be designed so that respondents are able to complete the survey. Moreover, a pre-test should be conducted to ensure that this is the case and to allow for changes to be made should a redesign of the survey be necessary.

Suppose, for example, that it is overly burdensome to ask respondents to consider and choose from more than four product options. If there are many products that must be considered, one solution is to increase the number of survey respondents, which would make the survey more costly. An alternative solution would be to reduce the number of times that a particular product option is shown to the survey respondents. This may keep the number of respondents and survey expenses manageable, but potentially lead to less precise estimates of the own- and cross-price elasticities of demand. Thus, while it is important to design the survey so that respondents are asked to consider all of the reasonable substitutes to the product at issue, it also is important to design the survey so that it is not overly burdensome for respondents.¹⁵

A third consideration concerns the sample of consumers to be surveyed. In our example of athletic apparel, it may be important to consider the purchaser and the purchase decision carefully when defining and determining the survey sample. For example, do people typically buy athletic apparel for themselves or are the purchases gifts for others (e.g., children)? The preferences (and elasticities of demand) for gift buyers may be very different from those of consumers who are buying products for their own use.

The demographics of the consumers at issue also may be important in that there may be different segments of consumers, each with their own set of alternatives and considerations. College age purchasers of athletic apparel may have alternatives that are different from younger and older purchasers. They may even buy from different types of stores. Whether and how each of these considerations are factored into the survey design will depend on the product and market at issue. One of the advantages of using surveys is that the consumers can be targeted very specifically. Thus, it is important to take the time and effort to develop an appropriate set of

screening questions that would help to ensure that the individuals surveyed are properly chosen and representative of the relevant population.

Conclusion

The ability to design and develop a survey tool to inform relevant market definition or to assess the degree to which certain products are close or distant substitutes is particularly important in circumstances where historical data are not available or sufficient. However, a survey must be carefully designed if it is to yield reliable and accurate data that are admissible as evidence. Indeed, the opinion in *United States v. Dentsply International, Inc.* reminds us that surveys must surpass high standards if they are to yield data that are admissible in the courtroom.

A properly designed discrete choice survey is a particularly valuable tool, and it is being used in merger analysis and antitrust litigation. Designing a discrete choice survey requires careful consideration of a number of complex factors such as the range of product options to be included in the survey, respondent burden, and sampling, but if done properly, the result can be data that provide insight into the nature of consumer demand that otherwise would remain unobserved.

Notes

1. As stated in the US DOJ and FTC *Horizontal Merger Guidelines*, Section 1.0, a relevant market is defined as the narrowest group of products such that a hypothetical monopolist of those products could profitably impose a "small but significant and nontransitory" increase in price (assuming the terms of sale of other products remain unchanged).
2. A critical loss analysis compares the *actual* loss in sales that might result from an increase in price against the amount of lost sales that would make such a price increase unprofitable. The latter is the "critical loss," or the threshold against which the actual loss in sales is compared. This analysis can be useful in defining relevant markets based on the antitrust market definition approach that is described in the US DOJ and FTC *Horizontal Merger Guidelines*.
3. There are many types of consumer surveys. Some are designed to gather information on past purchases and transactions, while others are designed to gather data on consumer preferences. I use the term *survey* to refer to methods that are used to elicit information on consumer preferences.
4. In 1997, Vail Ski Resorts, Inc. acquired three Colorado ski resorts (Keystone, Breckenridge, and Arapahoe Basin) owned by Ralston Resorts, Inc. Prior to the merger, Vail Ski owned two resorts in the area (Vail and Beaver Creek Resort). All five resorts involved in the transaction were located less than a 90-minute

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drive from Denver, Colorado. The ski resorts compete for skiers who easily could have chosen to ski instead at mountains elsewhere in the United States. However, the US DOJ focused on the potential competitive effects of the transaction on skiers living in the counties in and near Denver. The surveys that were conducted to assess market definition and the competitive effects of the proposed transaction are described in Jonathan B. Baker and Daniel L. Rubinfeld, "Empirical Methods in Antitrust Litigation: Review and Critique," *American Law and Economics Review* 1, 1-2 (1999): 424-427. The transaction, which shows that consumer surveys can be useful, is also discussed in a US FTC and DOJ report titled "Commentary on the Horizontal Merger Guidelines," March 2006, 31.

5. For a more detailed and general discussion of proper survey design and implementation, see Eugene P. Ericksen and Sarah M. Butler, "The Use of Surveys in Intellectual Property Disputes," in *Economic Approaches to Intellectual Property: Policy, Litigation, and Management*, eds. Gregory K. Leonard and Lauren J. Stiroh (White Plains, New York: NERA Economic Consulting, 2005), 125-139.
6. The seven criteria are as follows: (a) the population was properly chosen and defined, (b) the sample chosen was representative of the population, (c) the data gathered were accurately reported, (d) the data were analyzed in accordance with accepted statistical principles, (e) the questions were clear and not leading, (f) the survey was conducted by qualified persons following proper interview procedures, and (g) the process was conducted so as to assure objectivity. See *Manual for Complex Litigation* 3rd edition (Washington, DC: US Government Printing Office, 1995), 101-103.
7. Opinion, *United States v. Dentsply International, Inc.*, US District Court for the District of Delaware, Civil Action No. 99-005-SLR, August 8, 2003: 164-165 and 119-130.
8. For more information on AAPOR and to view the "Best Practices for Survey and Public Opinion Research," see their website at <http://www.aapor.org>.
9. The general technique is often referred to as conjoint analysis.
10. See, for example, Jordan J. Louviere, David A. Hensher, and Joffre D. Swait, *Stated Choice Methods: Analysis and Application* (Cambridge, United Kingdom: Cambridge University Press, 2000).
11. The survey can be conducted either in person or over the phone. If the survey is conducted telephonically, the alternatives from which the respondent must choose his or her preferred product would either be mailed ahead of time or read to the respondents during the phone call.
12. As with other types of surveys, some form of a control is important to permit a reasonable interpretation of the data. For example, the respondents who are presented with choice sets that contain only the low-priced product would comprise the "control group" against which the choices of the respondents who are presented with the higher-priced product can be evaluated. Thus, in a discrete choice survey, the set of the product options themselves and the random rotation of the options shown to respondents provide for a controlled experiment.

13. One concern that has been expressed about the use of survey data to model consumer demand is that consumers' responses to hypothetical situations may not mirror their responses to actual market situations. In other words, one might argue that data garnered from surveys are, ultimately, only hypothetical and cannot be relied upon to infer what consumers might *actually* do. There are challenges in using stated preference data and revealed preference data, and overall, the evidence comparing the two types of data is mixed—there are examples of survey data that are consistent with historical data, but there are also examples of inconsistencies. Such comparisons are difficult to interpret because discrepancies could be due to flaws in the design and execution of the survey itself or other factors that might have introduced bias or noise into the survey data.
14. Some of these differences are enumerated in George Allenby et al., "Adjusting Choice Models to Better Predict Market Behavior," *Marketing Letters* 16, 3/4 (December 2005): 199-201.
15. See George Allenby et al., "Adjusting Choice Models to Better Predict Market Behavior": 201-202 (as cited in note 14).