



CPI COMPETITION POLICY
INTERNATIONAL

Volume 7 | Number 1 | Spring 2011

The Antitrust Economics of Free

David S. Evans

Global Economics Group,
Univ. of Chicago, & UCL

The Antitrust Economics of Free

By David S. Evans

This article examines antitrust analysis when one of the possible subject products of an antitrust or merger is ordinarily offered at a zero price. It shows that businesses often offer a product for free because it increases the overall profits they can earn from selling the free product and a companion product to either the same customer or different customers. The companion product may be a complement, a premium version of the free product, or the product on the other side of a two-sided market. The article then shows how antitrust and merger analysis should proceed when the subject is either the free product or the companion product. A key point is that the existence of a free good signals that there is a companion good, that firms consider both products simultaneously in maximizing profit, and that commonly used methods of antitrust analysis, including market definition, probably need to be adjusted to properly analyze two inextricably linked products. When antitrust or merger analysis involves a free product, the analysis of consumer welfare and injury also needs to account for customers of both the free product and its companion product since any change in market conditions for customers of one product affects the customers of the other product. Much of the analysis of the article is also relevant to other common situations in which price is set less than marginal cost.

David S. Evans is Chairman, Global Economics Group; Lecturer, University of Chicago Law School; Executive Director, Jevons Institute for Competition Law and Economics, and Visiting Professor, University College London. He can be contacted at devans@globaleconomicsgroup.com. He would like to thank Howard Chang and Angela Zhang for helpful comments and discussion.

I. Introduction

Consumers can get many products and services at a price of zero. They do not have to pay money to use Adobe Flash; post a resume on Monster; watch the Super Bowl on Fox; pay with a Visa debit card; use Google’s search engine; post messages to their friends on Facebook; find businesses through the Yellow Pages; download many applications for their iPhones and iPads; or use the Linux operating system. It seems like “free” is a feature of modern times, but people have also historically paid zero prices for many products—for radio since the 1920s, for using general purpose payment cards since the introduction of those cards in 1950, and, going back millennia, for a man getting a bride from the village matchmaker.¹

Zero prices result in conundrums and confusion in antitrust analysis. The SSNIP test becomes inoperable when the basic price is zero. There is no sound way to analyze a 5 percent increase in a price of zero—5 percent of zero is still zero. The analysis of market definition and power therefore becomes a challenge with commonly used analytical tools. Companies sometimes argue that their product or service should not be subject to antitrust scrutiny because it is free. In *Kinderstart v. Google*² a U.S. federal court granted Google’s motion for summary judgment in part because the court concluded that it is not possible to have a relevant antitrust market for something that is given away for free. Chinese search engine Baidu made the same argument in *Renren v. Baidu* and was rebuffed by the Chinese court.³ More companies would, in my experience, pursue this argument if their economic experts did not refuse to endorse the zero-price antitrust exemption.

There are several reasons to spend some effort sorting out what to do when the sticker price is 0.0. Despite the observation that free has a long pedigree, zero-price offers seem to have exploded with the growth of the web-based economy. The companies offering these great deals are sometimes large global companies that are already in the sights of the antitrust authorities. A number of high-profile antitrust cases have involved free products, including browsers and media players in the various Microsoft cases,⁴ search engines in the various investigations and antitrust cases involving Google,⁵ and free open-source software in Oracle’s acquisition of Sun.⁶

It will prove increasingly challenging to get antitrust analysis right as more and more antitrust cases and mergers involve companies that offer products as zero prices. Based on my experience, there is a tendency on the part of companies, authorities, and courts to do more hand waving than serious analysis when they encounter products and services offered for free. While

BASED ON MY EXPERIENCE,
THERE IS A TENDENCY ON THE
PART OF COMPANIES,
AUTHORITIES, AND COURTS TO
DO MORE HAND WAVING THAN
SERIOUS ANALYSIS WHEN THEY
ENCOUNTER PRODUCTS AND
SERVICES OFFERED FOR FREE.

one solution to the conundrum brought by zero prices is to figure out some way to ignore them, investment in getting the analysis right is unquestionably worthwhile given the vast amount of consumer surplus that likely results from products and services offered for free.

This article examines the challenge to conventional antitrust analysis when one of the possible subjects of an antitrust or merger is ordinarily offered at a zero price.⁷ Proper analysis must begin by understanding why the provider has decided to charge a price of zero. Section 2 summarizes the main economic reasons. Then, in Section 3, the article explores how a good or service offered at a zero price should factor into antitrust and merger inquiries. Modern antitrust and merger analysis relies heavily on market definition and, in particular, the hypothetical monopoly test. Section 4 examines the implications for market definition and the monopoly test when a product of interest carries a zero price. Consumers, all else equal, would seem to get a great deal of consumer surplus from free goods and services. Just consider the value to global consumers of getting free search results. Section 5 considers the analysis of consumer welfare and consumer harm when one of the goods or services implicated in an antitrust or merger matter is priced at zero. Section 6 concludes and makes the observation that the analysis in the preceding sections is also relevant to other common situations in which price is ordinarily set at less than marginal cost.

II. Economic Reasons for Free

While we will see some exceptions below, most companies charge a price of zero because doing so allows them to make more money than charging a positive price. Charging nothing for a product or service enables them to make money, somehow, somewhere else.

A. COMPLEMENTARY PRODUCTS

The recognition that a zero price could be profit maximizing was made early in the 20th century in the analysis of pricing by a monopolist of complementary products.⁸ Two products are complements if a decrease in the price of one product increases the price of the other product. Consider a monopoly that produces two complementary products. As it searches for the profit-maximizing price the monopolist realizes that, as it raises the price of one product, it reduces the sales and possibly the profits coming from the other product. If widgets are highly complementary to gadgets, and if the elasticity of demand for widgets is very high, then increasing the price of widgets results not only in a great increase in the sales of widgets as well as a great loss of sales of gadgets. It could be that the profit-maximizing price involves giving widgets away and making the money from the gadgets.⁹ The result does, of course, depend a bit on a Goldilocks result—the degrees of complementarity and the elasticities of demand have to be just right for the optimal price to be zero.¹⁰

This result is often described not in terms of widgets and gadgets but with razors and blades. That has led to the business advice “give away the razors and sell the blades.” That example has some problems, as Professor Picker has argued.¹¹ If a razor manufacturer gives away the razor and makes the losses up on the blades, a competitor could sell the blades at a lower price since it does not need to absorb the losses on the razors. A razor manufacturer can make money from its free razor policy only if it can use patents, product design, or other devices to prevent consumers from buying from a competitor. This is a general, although hardly insolvable, problem for durable goods makers who might consider giving away the durable such as a copying machine to make money in the aftermarket for toner.

For the free complementary good strategy to work in practice, the seller must have some market power over the customer during her purchasing decisions for the not free product. Consider snacks at a bar. The bar could charge the customer for peanuts and pretzels. But most bars provide the snacks for free. The more snacks people consume, the more drinks they will buy. To make this strategy work, the bar should eject customers that bring in their own cheaper drinks to get the free snacks. Other situations in which people are provided something for free have a similar profile. To continue the food example, restaurants provide seating, water, utensils, bathrooms, and other services at no charge. Hotels provide basic television for free and some even provide free internet access. American airlines used to allow people to check as many bags as they wanted for free but that policy was abandoned along with the free peanuts.

Customers do not have to be literally captured in the short run for the free strategy to work with complementary goods. Over the last decade American banks have given customers “free checking accounts” in the expectation that the banks would earn fees from complementary services offered by the bank, such as direct deposit and savings.¹² The banks bet that enough customers will make enough use of the complementary services to offset the costs of providing the free services.

Free, as mentioned above, is a special case. Often, sellers of complementary products will price one of the products low, without going all of the way to zero. American movie theatres earn much of their profits not from the admission fee for seeing the movie, but from the sale of complementary beverages and snacks.¹³ Supermarkets reportedly sell some products at “low prices” that are complementary to other products. Consumers buy the cheap milk and then put other more expensive items in the basket. Casual observation suggests that setting the price of a complementary good exactly at zero is relatively rare. As of today, even the famous free razor has an implied price of several dollars.¹⁴

OFTEN, SELLERS OF
COMPLEMENTARY PRODUCTS WILL
PRICE ONE OF THE PRODUCTS
LOW, WITHOUT GOING
ALL OF THE WAY TO ZERO.

B. MULTI-SIDED PLATFORMS

A number of businesses are based on multi-sided platforms that serve two or more distinct groups of consumers, each of whom can provide a source of revenue.¹⁵ At least one of the consumer groups values being on the same platform as the other group of consumers. The profit-maximizing prices for each group depends on its level of demand, the interdependencies between itself and the other group, and possibly the marginal costs of producing the products.¹⁶ In some ways this is similar to the traditional analysis of complementary products. But here the complementary product for members of one group of consumers is the members of the other group of consumers. If the elasticities of demand and cross-dependencies between the demands of each group line up properly, it is possible that the profit-maximizing price for one of the products is zero.

While again, this is a Goldilocks condition, it turns out to be empirically quite important. A price of 0.0 is common across diverse industries, examples include:

- The general purpose charge card, introduced in 1950 in the United States. People value charged cards to the extent that merchants take them for payment, and merchants value accepting charge cards to the extent that they get incremental sales from accepting this form of payment. The card companies charge consumers a zero price for transactions and an annual fee that is largely, if not completely, offset by the float that consumers get.¹⁷ They charge merchants a percent of the transaction amount.
- Shopping malls have two groups of customers: the retailers who locate there and the consumers who shop there. Most malls do not charge consumers; shopping at a mall is usually free. The mall owners make their money from retailers.
- Microsoft Windows provides valuable services to both users who use it as their operating system and developers who write, and sell, applications for it. The developers get most of the benefits for free while the user pays (indirectly, in this case, to original equipment manufacturers who install Windows on machines that are sold to users).
- Online job boards such as Career Builder do not charge users anything to view job posts, but make their money from employers who are seeking to find workers.
- Advertising-supported media provides several examples. Google provides search engine services for free and makes its money from advertising. Facebook provides social networking services for free and makes its money from advertising and other complementary products such as games. Countless free newspapers, websites, radio stations, and free television stations provide content for a zero price and make their money from advertisers. OpenTable provides a restaurant reservation service to consumers for free; it charges participating restaurants,

which make their money from the patrons who have made their reservations through OpenTable.

There is nothing about the economics of multi-sided platforms that requires that customers on one of the sides are charged a zero price, or even a price below marginal cost.¹⁸ In fact, many multi-sided platforms earn significant revenues from both sides. Unlike Microsoft Windows on the PC, Apple, on the iPhone OS, not only charges applications developers 30 percent of their revenues, but also users (indirectly) for getting an iPhone or iPad. While many newspapers and magazines only charge subscription fees that roughly cover printing and distribution costs, others, such as *The Economist* and *People Magazine*, earn significant portions of their profits from both subscribers and advertisers.

The price structures for multi-sided platforms are not immutable. Magazines were mainly subscriber-supported in the 19th century United States. Many online newspapers, such as the *Wall Street Journal*, charge readers, and many more are starting to erect “pay walls,” eliminating the free-for-reader model they have relied on for many years. Nevertheless, as it happens, 0.0 is a common price for one side of many multi-sided platforms.

One important distinction between the multi-sided platform case and the complementary product case discussed above is that the beneficiaries of the subsidy are usually different. Bar flies get the free nuts but pay for the drinks. People who make restaurant reservations with OpenTable pay nothing to OpenTable. The fact that these multi-sided platforms involve different groups of customers has important implications for the analysis of consumer welfare, as we will see below.

THE FACT THAT THESE
MULTI-SIDED PLATFORMS
INVOLVE DIFFERENT GROUPS
OF CUSTOMERS HAS
IMPORTANT IMPLICATIONS
FOR THE ANALYSIS OF
CONSUMER WELFARE

C. PREMIUM UPGRADE STRATEGIES

A common business strategy in the internet economy is to offer a basic product for free, but then charge for premium versions of the product. In some cases this may simply reflect two-sided market pricing strategy. The company charges a zero price for a basic version to develop an installed base of users that are valuable to growing the other side of the platform. But it charges a positive price for enhanced versions of the platform to earn revenue from some of these users. Adobe has adopted this strategy for its Adobe reader. Consumers can get the basic Adobe reader for free; that increases the demand for people to buy software that writes Adobe files. But then Adobe charges people for enhanced versions of its reader software—for example, for versions that enable readers to highlight or comment on certain passages. This strategy has also become popular for online newspapers. The *Wall Street Journal* and *The Financial Times* provide limited free

access to content, but charge subscription prices for access to the full publication. It is a two-sided strategy because these free users are attractive to advertisers.

In other cases, the business strategy is to use the basic version to get people to try and learn about a product. Some fraction of these people will upgrade. This can be profitable if the marginal cost of offering the basic version is low, as is often the case for software or online media. The revenue from the upgrades to the premium version more than covers the fixed costs of creating the product. SugarCRM, for example, is a customer-relationship management software package that is provided under the open source model. Sugar CRM makes the “community edition” model available for free, but charges \$360 for the “professional edition.”

D. FREE SOFTWARE

Software has had a long history of being free. From the 1950s through the 1970s many software programs were distributed for free, and the notion of charging for software was controversial. Congress extended copyright privileges to software programs in 1974 and, as a result of court interpretations of that legislation, it became relatively easy for application developers to copyright their works. While free software never literally went away, it started to make a significant comeback in the 1990s as a result of the open source movement. This movement involved developing an institutional structure that granted licensing arrangements to software developers, who were, in turn, required to distribute their program enhancements for free.

Open source has resulted in the development of many freely available software languages and software programs. The most famous of these is Linux, but almost every software category has open source competitors and, in some cases, these free programs have significant market shares. Over time, paid business models have sometimes developed around these free software packages, including ones based on selling add-on services (RedHat Linux), selling premium versions (SugarCRM mentioned above), obtaining ancillary revenues (the Firefox browser receives money from Google for using Google’s search engine which benefits Google, which then gets advertising revenue), or selling complementary products (IBM).¹⁹

Software developers wrote and gave their programs away for free before copyright protection because, once they had developed the program for their own purposes, it was costless to distribute it and, further, creating a popular software program could enhance a programmer’s reputation. They have continued to do so despite having copyright protection available. Many applications for the iPhone and Droid operating systems are available for free. A June 2010 survey found that 23 percent of iPhone’s applications were free as were 57 percent of Droid applications.²⁰

III. Antitrust and Mergers Involving Free Goods and Services

The previous section identified situations in which a profit-maximizing firm would charge a price of zero for a good or service, and documented anecdotally that this practice was hardly unusual. The question arises: Does the fact that the supplier doesn't charge for a product imply anything about whether the antitrust laws should apply to that product?

There are several possible reasons for concluding that the antitrust laws are not relevant to things that are given away. If a product, by its nature, is free, then there is no concern that business practices will result in consumers paying a higher price for the product. Without the prospect of consumer harm, there is no reason to care about that product.

One could also question whether the notion of a market is even meaningful for a free good. The product is not really sold since consumers can get it for free and, in some cases, it is just there for the taking. Since a relevant antitrust market is usually a prerequisite for an antitrust claim, there would be no basis for pursuing such a claim under this theory.²¹

Another possible argument is that businesses providing a free product are almost certainly making money from some other product. Antitrust analysis can, therefore, focus on the relevant market for the paid companion product and the impact on consumers of that product. In a merger, for example, we would be concerned about the impact of the consolidation on the increase in price for the paid twin.

A common problem with all of these justifications for a "free exemption" is that they focus on price. Price is only one dimension of competition. Although it is often convenient for economists to concentrate on price in economic models of business behavior, it is generally understood that price in these models subsumes all non-price measures of competition, including quality differences. However, while a merger or monopolistic practice may not affect whether a product is given away for free, it could very well affect such non-price dimensions as product attributes, service, and innovation. In fact, it is possible that a merger or monopolistic practice could have no material effect on the price of the twin paid product but still harm consumers substantially as a result of reductions in product quality or investments in product improvements and innovation. For example, a merger of web-based advertising supported properties could change incentives regarding how much privacy protection to give consumers.

HOWEVER, WHILE A MERGER OR MONOPOLISTIC PRACTICE MAY NOT AFFECT WHETHER A PRODUCT IS GIVEN AWAY FOR FREE, IT COULD VERY WELL AFFECT SUCH NON-PRICE DIMENSIONS AS PRODUCT ATTRIBUTES, SERVICE, AND INNOVATION.

The argument that free goods are not sold also does not make economic sense. Businesses still have to make decisions on how much to supply at a price of zero, and consumers still need to decide how much to demand given that they generally need to expend resources to obtain and consume these free products. In terms of competitive demand and supply, or the standard framework for a profit-maximizing firm setting price in the face of a downward sloping demand schedule, a “free price” simply means that the competitive market or the profit-maximizing firm sets a price of zero. Zero is just another number.

Two products that have been the subject of antitrust inquiries in many jurisdictions illustrate the debate over the relevance of a zero price: search engines and payment cards.

TWO PRODUCTS THAT HAVE BEEN
THE SUBJECT OF ANTITRUST
INQUIRIES IN MANY JURISDICTIONS
ILLUSTRATE THE DEBATE
OVER THE RELEVANCE OF A ZERO
PRICE: SEARCH ENGINES
AND PAYMENT CARDS.

Web search engines enable people to search vast quantities of data for free. Their twin paid product is usually advertising. Companies sell space on search results pages to advertisers usually based on an auction for the keywords that people use to find those results. In most countries, there is a dominant search engine

that has more than 60 percent of the shares of search and search-based advertising, and often more than 90 percent.²² Courts in the United States and China have addressed the relevance of free search when considering antitrust claims regarding search engines.²³

In a case brought in U.S. Federal District Court, *Kinderstart*, a website that focuses on providing content related to young children, claimed, among other things, that Google had lowered its rank—and thus reduced the likelihood it would appear on search engine results pages—in violation of Section 2 of the Sherman Act. In March 2007, the court dismissed the complaint for a number of reasons, including the fact that *Kinderstart* had failed to establish its claim that search is a relevant antitrust market. Key to the court’s conclusion was that search was freely provided.

“*KinderStart* has failed to allege that the Search Market is a “grouping of sales.” It does not claim that Google sells its search services, or that any other search provider does so. Rather, it states conclusorily that “[a]ny search engine must be free to the user because of past user experience and expectations with search engines and due to the preexisting governmental and technological policy of Internet freedom and Internet neutrality.” SAC ¶ 54. *KinderStart* cites no authority indicating that antitrust law concerns itself with competition in the provision of free services. Providing search functionality may lead to revenue from other sources, but *KinderStart* has not

alleged that anyone pays Google to search. Thus, the Search Market is not a “market” for purposes of antitrust law.” [emphasis added]

(The judge noted that KinderStart might have argued for a combined search results and search advertising market. We will return to this subject below.)

A Chinese court, in December 2009, reached the opposite conclusion on the relevance of “free” in a case brought by Renren, a web-based provider of medical information, against Baidu, the leading search engine provider in China.²⁴ Renren claimed that Baidu reduced its rank in order to coerce Renren to spend more on advertising with Baidu. The court ruled in favor of Baidu on the grounds that Renren had not shown that Baidu had a dominant position in a relevant market. However, in the course of its analysis, it rejected Baidu’s claim that search could not be a relevant market because it provided search for free. According to Zhang,²⁵

“The court was unpersuaded by Kinderstart and reasoned that although the search engine service was free, the service was closely tied to other products and services for which Baidu does requires payment. Unlike free public internet service, search engine service generates actual or potential profits from advertising and marketing. Therefore, whether a service is free is an irrelevant factor in evaluating the relevant market.”

In many countries, associations of bank-owned networks connect merchants that accept payment cards with banks that issue payment cards. These networks, sometimes in consultation with their member banks, set an “interchange fee” that a bank receives from a merchant when one of its cardholders uses the card for a purchase. Some competition authorities have concluded that setting the interchange fee results from coordinated behavior among horizontal competitors and is, therefore, a violation of the antitrust laws.

The European Commission concluded that MasterCard and Visa infringed Article 101 EU Treaty as a result of setting the interchange fee.²⁶ However, the Commission recognized that having a centrally set interchange is economically desirable and that a lower fee would be exempt under Article 101(3).²⁷

In the United States, merchants have claimed in a private lawsuit that MasterCard and Visa violated Section 1 of the Sherman Act as a result of setting an interchange fee. However, they appear to argue that it would not be a viola-

tion if MasterCard and Visa adopted a rule saying that merchants would not have to pay any discount off of the amount of the payment to the issuing bank—in other words, if they had established the same “on-par” payment as with the presentment of checks. On-par reimbursement is mathematically equivalent to an interchange fee of zero. Thus the argument hinges on the claim that setting a price of zero does not involve price-fixing while a positive price paid to the issuer does. It is easy in this case to see that this reasoning is spurious. The privately optimal interchange fee could involve a positive payment to the merchant when

A PRICE OF ZERO PROVIDES
A RED FLAG THAT THE TEXTBOOK
MODEL OF COMPETITION
AND STANDARD ANTITRUST
ANALYSIS DO NOT APPLY TO
THE PRODUCT IN QUESTION.

a cardholder pays with her card and a charge to the cardholder. Raising the fee from a negative amount to zero would harm the merchant.

The fact that a product is free is not, however, completely irrelevant to the practice of antitrust. A price of zero provides a red flag that the textbook model of competition and standard antitrust analysis do not apply to the prod-

uct in question. Almost certainly the proper antitrust analysis will need to consider the free product together with its companion moneymaking product. If the antitrust inquiry centers on a free product, then the analysis should be expanded to the other products provided by the firm that, in effect, subsidize the provision of the free product. Business practices related to the free product could result in benefits or costs for consumers of the companion money-making product. If the antitrust inquiry centers on a money-making product that has a free counterpart, the analysis should be extended to the free product for the same reason.

A free price also implies that traditional tools of economic analysis need to be used with care. Antitrust analysis often relies on the basic finding that prices tend to equal the marginal costs of production in competitive markets, and that deviations from marginal cost prices indicate market power. When a firm sells a product that is usually free, it cannot be operating in the sort of markets described in elementary models. It probably loses money on this product (assuming, as is usually the case, that it costs something to produce the product) and, if so, it must be selling another twin product at a price in excess of marginal cost—because only by making a profit on some other good can it sustain the losses involved in offering a free product. Therefore, the firm could earn a competitive rate of return overall even if it is selling a product at considerably more than marginal cost.

IV. Defining Markets When Products and Services Are Free

The purpose of market definition, and the related analysis of market power, is to understand the competitive constraints that can limit the ability of a firm to engage in behavior that harms consumers.²⁸ The fact that a product is sold for

free usually indicates there is a companion product and that the economics of those products are inextricably intertwined. Profit-maximizing firms do not provide products for free unless it helps them make money somewhere else. Formally, when a firm sets a price at zero, it is the result of a firm selecting the prices for several interrelated goods and finding that the profit-maximizing prices involve setting price equal to zero for one or more of those goods so long as at least one good is sold for a positive price.

The interdependency of complementary products has been recognized in after-market cases. These involve situations in which a company markets a durable good such as a printer and sells consumable products such as printer ink to purchasers of the durable goods. The primary and after-market products are complements. An antitrust analysis would not reach a reliable conclusion if it defined a market for the consumable product and ignored competitive constraints arising from the primary product.

The U.S. courts have generally recognized this. In *Kodak*, Kodak's motion argued for summary judgment on the grounds that competition in the primary market precluded monopoly pricing in the aftermarket, but the Supreme Court rejected that position.²⁹ However, the Court recognized that monopoly pricing in the aftermarket could occur only under special conditions. Lower court decisions applying *Kodak* typically grant summary judgment to the defendant unless the plaintiff can show: 1) there are high switching costs after purchasing the primary product; 2) consumers lack information to conduct lifecycle cost estimates when purchasing the durable good; and 3) the manufacturer engages in post-sale opportunistic conduct to exploit the installed base of users.³⁰

Under this analysis, the courts treat the provision of the durables and consumables as separate for the purposes of determining the relevant antitrust markets, and concentrate on the consumables market since that is usually the focus of the antitrust complaint. They then consider the role of the primary market in constraining behavior in the aftermarket. This approach can result in a sensible outcome when competition for the durable sale constrains the lifecycle price and therefore the aftermarket price as well.

The aftermarket cases illustrate a general proposition in antitrust. In terms of reaching the right answer a sensible market power analysis can cure all defects in a market definition analysis. If the market is defined too narrowly, then constraints, such as those coming from the provision of complementary products, can demonstrate that the firm at issue lacks the ability to engage in harmful behavior. If a market is defined too broadly, then an analysis of constraints can find that a firm could engage in harmful behavior even though it seems like a relatively small participant in the market. In that case, under case law there would

THE FACT THAT A PRODUCT IS SOLD FOR FREE USUALLY INDICATES THERE IS A COMPANION PRODUCT AND THAT THE ECONOMICS OF THOSE PRODUCTS ARE INEXTRICABLY INTERTWINED.

probably need to be a rethinking of the market boundaries. This result is not surprising since the analysis of market definition and market power are both really about identifying the set of competitive constraints that determine whether or not a firm can engage in harmful behavior with respect to its customers.³¹

Problems arise when courts or competition authorities reach conclusions based on market definition without considering market power analysis, or by conducting a perfunctory market power analysis. Doing so can lead to errors. False negatives can arise when the market definition for the paid product results in the conclusion that there is no problem, but the harm arises in the free product. For example, a competition authority may decide not to block a merger based on the finding that price of the paid product would not rise by a small but significant amount (“SSNIP”); had it considered the overall impact of the merger on both the paid and free products it might have found small but significant harm to consumers. False positives can arise when market definition for the paid product results in a conclusion that there is market power for the paid product but the analysis ignores the fact that competition results in the dissipation of that market power when the paid and free products are considered together. Aftermarket

cases that ignore the impact of competition in the primary market are likely to lead to false positives.

PROBLEMS ARISE WHEN COURTS OR
COMPETITION AUTHORITIES REACH
CONCLUSIONS BASED ON MARKET
DEFINITION WITHOUT CONSIDERING
MARKET POWER ANALYSIS, OR BY
CONDUCTING A PERFUNCTORY
MARKET POWER ANALYSIS.

Several approaches should be considered when an antitrust or merger analysis involves a free product or when a paid product has a twin free product. The simplest case concerns the situation in which the free and paid products are substitutes; this occurs when there is a basic free

product and a premium paid product or when free open source products compete with paid products. From a theoretical standpoint, the usual analysis of market definition and market power when there are differentiated products applies in this case. But analysts need to deal with practical problems that arise from the fact that one of the products has a price of zero. Market share calculations become problematic. Basing shares on the value of sales would not make sense since it would ignore the constraint coming from the free products; basing shares on unit sales does not take into account quality differences for which price is a common proxy. There is no good mathematical solution for this problem and qualitative and judgmental analysis becomes necessary.

When there are complementary free and paid products there are two alternative analytical approaches. Although it is not common practice, market definition could consider complementary products as part of the set of competitive constraints. That would be consistent with my view that the market definition analysis should identify the firms, products, and institutions that are the sources of competitive constraints on the firms and products under consideration.³² Both the complementary free and paid products would be considered together as part

of a business ecosystem that is relevant for the firms and products under consideration. Alternatively, the analyst could consider the role of complementary free or paid products in the analysis of market power. As noted above, this approach would also minimize errors so long as the market power analysis is done seriously, and is not an afterthought to market definition.

Similar observations apply for market definitions for multi-sided platform businesses. The preferred approach usually involves recognizing that competition takes place between multi-sided platforms, and that the market consists of these firms as well as other firms operating on either side that impose competitive constraints. The *Kinderstart* court seemed to recognize this as a possible approach when it said that, “Kinderstart might have argued that the Search Market and the Search Ad Market combine to form one market for antitrust purposes.” However, no U.S. court, to my knowledge, has defined a market consisting of multi-sided platforms that provide services to distinct groups of customers.

The other approach involves defining relevant antitrust markets separately for the free and paid sides of the platform, but then taking the interdependencies into account in the analysis of market power. Again, so long as this analysis is not abbreviated, it could lead to the same result. Errors are minimized so long as the market definition and market power inquiries consider the full set of competitive constraints, including those coming from both sides of the platform.

A practical implication of a price of zero is that some of the standard tools of market definition and market power analysis break down as a pure mathematical matter. Consider applying the hypothetical monopoly test to determine the relevant market that includes the free product. One cannot conduct a hypothetical percent increase in price because 5 percent of nothing is nothing, and because the nature of the product may be such that the hypothetical monopolist would still find it profit-maximizing to price at zero. Similarly, price-cost margins cannot be used for critical loss analyses or for assessing market power (technically the price-cost margin would involve division by zero).

The reason why these tools break down in the case of a price equal to 0.0 brings us back to where we started in this section. A free price indicates that the pricing of the product, and the overall analysis of competition, cannot be based on traditional models of firm behavior. The analyst must recognize that there is a twin product and deal explicitly with the relationship between the two. There is extensive literature on how to consider pricing and business relationships in the case of multi-sided platforms. However, as I have argued elsewhere, while it is technically possible to extend the hypothetical monopoly test to two-sided platforms, the challenges of implementing the SSNIP test empirically in two-sided markets are likely to be overwhelming in practice.³³

When an antitrust or merger analysis involves a product that is made available for free—or where the paid product in question has a twin product whose price

is zero—there is no substitute for carefully considering the economic interrelationships between these products and the overall competition between providers of the paired products or one or the other product.

V. Consumer Welfare and Harm Involving Free Products and Services

A basic implication of the existence of a free product is that there is a twin product that may or may not be consumed by the same consumers of the free product. The economic analysis of these paired products demonstrates that, since firms are usually jointly maximizing profits over both products, anything that affects the demand or supply of one of these products necessarily affects the demand and supply of the other product. By the same token, anything that affects consumer surplus³⁴ for one product is likely to affect consumer surplus for the other product. To understand how a business practice, or prohibiting a business practice, affects consumer welfare one needs to consider both products, and their interdependencies, together.

Unfortunately, the mechanical application of market definition to antitrust matters can prevent courts and competition authorities from considering the welfare of all of the consumers that are directly affected by a business practice or its prohibition. Courts and competition authorities, having defined a market, typically focus the rest of their analysis on that market. If a court or competition authority defines a market over one of the related product, but not over the other, then it will likely consider the impact of the practice only on the consumers in that market. For traditional products, this practice makes sense in

UNFORTUNATELY, THE MECHANICAL APPLICATION OF MARKET DEFINITION TO ANTITRUST MATTERS CAN PREVENT COURTS AND COMPETITION AUTHORITIES FROM CONSIDERING THE WELFARE OF ALL OF THE CONSUMERS THAT ARE DIRECTLY AFFECTED BY A BUSINESS PRACTICE OR ITS PROHIBITION.

terms of conserving judicial and authority resources; it would be time consuming and distracting to weigh all of the indirect effects, outside of the market, on other markets. For twin products, this approach makes no sense given that consumers of the product not considered in the market will directly feel the consequences of a business practice, or its prohibition, for the product for which a market has been defined.

The interchange fee cases illustrate the issue. A reduction in interchange fees necessarily increases the prices that cardholders pay, since banks will pass some portion of the lost revenue from merchants on to cardholders. It also necessarily reduces the prices that merchants pay, since acquiring banks will pass on some portion of the increased revenue to merchants in the form of lower prices. Consumers could obtain a benefit that would offset their costs if merchants passed on some portion of their sav-

ings in the form of lower prices. Evans, Litan, & Schmalensee show that, for the U.S. debit card business, a dramatic reduction in interchange fees is likely to harm consumers, at least in the short run.³⁵ Cases filed by plaintiff merchants have defined or proposed merchant-facing markets and largely ignored the impact of the behavior, or modifications to it, on consumers.³⁶ In cases in the EU addressing whether interchange fees constituted price fixing, the focus was on whether collectively set interchange fees raised prices to merchants, but consideration was given to benefits on the cardholder side facilitated by the existence of interchange fees.³⁷

The same point applies to analyzing the impact of a merger. If it involves businesses that produce related free- and paid products then the assessment of the merger should consider the impact of the merger on consumers of both products, even if those consumers are different. That could result in prohibiting mergers that do not impose significant harm on the paid product but do on the free product, or letting mergers proceed that impose significant harm on one product but provide offsetting benefits on the other product.

VI. Conclusion

Free goods and services are increasingly common as a result of the continuing development of web-based multi-sided platform businesses. There is no reason why these goods should receive any antitrust exemption through, for example, concluding (as the *Kinderstart* court did) that there is no relevant antitrust market for a free good. At the same time, the existence of a free good in an antitrust or merger inquiry—either as the subject of the inquiry or as a companion product to the subject of the inquiry—should signal to analysts that they need to understand the market forces that result in the provision of these interrelated products and the decision to price one of them for free.

Many of the issues discussed in this article for free goods also apply to products that are provided at prices below the marginal cost of production. These goods, like free ones, are economically rational for a firm to provide only if there is a companion product whose price is in excess (perhaps well so) of marginal cost. The two-sided market literature provides guidance on how to deal with these situations, but the existence of free- and low-priced goods can arise for other reasons as well. This reinforces the point that analysts need to understand the economics of these businesses and apply economic tools, and modes of analysis, that are relevant. ▼

1 Paying a price of zero is not necessarily the same thing as getting something for free. That is because money is sometimes only one of the values that buyers and sellers exchange. When a consumer goes to “free” websites such as www.yahoo.com the website often inserts a cookie into the consumer’s machine and retrieves information that helps the website secure higher prices for advertisements or provides data the website can sell. Consumers do not pay for listening to the radio but they incur a

cost, perhaps, of listening to the advertisements. People do not have to pay for credit card transactions but some fraction of them will end up revolving their balances or incurring late charges. Some goods and services do seem literally free though. There is no obvious value that people give up when they decide to use Adobe Flash, the Linux operating system, or the Yellow Pages. For the purposes of this paper we treat all these situations as part of the antitrust economics of free.

- 2 KinderStart.com, LLC v. Google, Inc. ("KinderStart"), 2007 WL 831806 (N. D. Cal.).
- 3 Tangshan Renren Information Services Co. ("Renren") v. Baidu, Opinion by Beijing No. 1 Intermediate People's Court, Civil Case No. Yizhongminchuzi 845/2009. The transcripts of the case are available (only in Chinese) at: http://www.chinacourt.org/zhibo/zhibo.php?zhibo_id=1865.
- 4 United States Of America v. Microsoft Corporation, No. 00-5212, Appeals From The United States District Court For The District Of Columbia, June 28, 2001, Civil Action No. 98-1232 (CKK); *Commission Decision of 24.03.2004 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/ C-3/37.792 Microsoft)*, Commission of the European Communities (April 21, 2004).
- 5 European Commission, *Antitrust: Commission Probes Allegations of Antitrust Violations by Google*, Brussels (November 30, 2010); *Google Faces Texas Ag Inquiry, Settles Privacy Suit*, REUTERS (September 3rd, 2010); *Italy Launches Antitrust Probe Of Google News*, LAW 360 (August 27, 2009); *French Mapmaker Takes Google Maps To Court*, RFI, (July 29, 2009), available at http://www.rfi.fr/actuen/articles/115/article_4550.asp; U.S. v. Google Inc., Case No: 1:11-Cv-0,0688; Tradecomet.Com LLC v. Google Inc., Case No.09-Cv-01400; *Google, Inc v. Mytriggers.Com, Inc.*, Case No. 09-Cv-14836.
- 6 See, *Mergers: Commission clears Oracle's proposed acquisition of Sun Microsystems*, Case No. 5529, Commission of the European Communities, Brussels, (January 21, 2010).
- 7 The case in which the price is ordinarily zero—that is, where \$0.0 is the long-equilibrium price for a product—is different than cases in which firms charge zero prices temporarily for promotional or predatory purposes.
- 8 See ROY G.D. ALLEN, *MATHEMATICAL ANALYSIS FOR ECONOMISTS*, 508 (1938).
- 9 This is a special case of pricing below marginal cost. See *Id.* at 359–362. For a general discussion, see Stephen K. Layson, *Multimarket Monopoly, Marginal Revenue and Profit Margins*, Working Paper.
- 10 Some of the examples discussed in this section could also be explained based on the theory of two-part tariffs where there is a fixed access charge for the good and then a variable charge based on the use of consumables which provides a proxy for the intensity of demand. It is possible that the optimal access charge is zero for the durable and positive for the consumable. See JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* (1988).
- 11 Randal C. Picker, *The Razors-and-Blades Myth(s)*, Olin Working Paper No. 532, September 13, 2010. Available at SSRN: <http://ssrn.com/abstract=1676444>. From the standpoint of the theory the razor blade example is complicated by the fact that there are dynamics in which the razor is a durable good and the blades are consumable goods; the possibility of competition in razors and blades that could make the give-the-razor-away strategy unprofitable; the existence of alternative reasons why a high price for the razor and low price for blades could be profitable; and, at least for the early years of razors, the possibility that the free razors was an investment in getting consumers to experience a new product.
- 12 To qualify for a free account a consumer has to keep a minimum balance. The account is therefore not really free since the consumer is giving up the opportunity cost of the use of these funds.

- 13 Although concessions account for only about 20 percent of gross revenues, they represent some 40 percent of theaters' profits. That is because while ticket revenues must be shared with movie distributors, 100 percent of concessions go straight into an exhibitor's coffers. See Richard Gil & Wesley R. Hartmann, *The Role and Determinants of Concession Sales in Movie Theatres: Evidence from the Spanish Exhibition Industry*, 30(4) *REV. INDUS. ORG.*, 325-347 (February 2007).
- 14 At cvs.com on April 10, 2011, the price of eight Gillette Mach 3 blades was \$21.99 for an average price of about \$2.75 while the price of a razor and two blades is \$9.29. The implied price of the razor is therefore \$3.79. For the economics of product bundling such as this see Michael A. Salinger & David S. Evans, *Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law*, *YALE J. ON REGULATION*, (2004). Available at SSRN: <http://ssrn.com/abstract=550884>.
- 15 See E. Glen Weyl for one of the most recent analyses of this topic, *A Price Theory of Multi-Sided Platforms*, 100(4) *AMER. ECON. REV.*, 1642-1672 (2010).
- 16 The precise relationship depends on the model. For the seminal paper in this area and one version of the optimal pricing relationships, see Jean-Charles Rochet & Jean Tirole, *Cooperation among Competitors: Some Economics of Payment Card Associations*, 33(4) *RAND J. ECON.*, pp. 549-570 (Winter, 2002).
- 17 DAVID S. EVANS & RICHARD SCHMALENSEE, *PAYING WITH PLASTIC: THE DIGITAL REVOLUTION IN BUYING AND BORROWING*, 2nd Ed. (January 1, 2005).
- 18 David S. Evans & Richard Schmalensee, *Markets with Two-Sided Platforms*, (1) *ISSUES IN COMPETITION L. & POL'Y*, Ch. 28 (2008), available at SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1094820
- 19 For a discussion of some of the reasons behind volunteering for open source software, see Josh Lerner & Jean Tirole, *Some Simple Economics of Open Source*, 50 (2) *J. INDUS. ECON.*, pp. 197-234 (Jun., 2002).
- 20 See <http://techcrunch.com/2010/07/05/distimo-june-2010/>.
- 21 Of course neither of these arguments would apply to a predatory pricing case where free is a temporary situation. These are mainly arguments for products that we expect will always be free.
- 22 According to StatCounter, as of 2010, Google was the dominant search engine in most countries, with search shares of 80.9 percent in the United States, 92.5 percent in the United Kingdom, 95.6 percent in France, 97.1 percent in Germany, 92.7 percent in Canada, 95.1 percent in Australia, and 78.8 percent in Japan. Baidu was the leading search engine in China with a 60.9 percent share of search. These statistics are available at <http://gs.statcounter.com>.
- 23 Also see Renren, *supra* note 3.
- 24 For a discussion of this case, see *Id.* and R. Ian McEwin & Corinne Chew, *China—The Baidu Decision*, 6(2) *COMPETITION POL'Y INT'L* (Autumn 2010).
- 25 See Angela Huyue Zhang, *Using A Sledgehammer to Crack A Nut: Why China's Anti-Monopoly Law was Inappropriate for Renren v. Baidu*, 7(1) *COMPETITION POL'Y INT'L* (forthcoming, Spring 2011).
- 26 European Commission, *Antitrust: Commission Prohibits Mastercard's Intra-Eea Multilateral Interchange Fees*, (2007); and *Commission Plan To Clear Certain Visa Provisions, Challenge Others*, (2000).
- 27 European Commission, *Summary of Commission Decision of 19 December 2007 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement*, (Case COMP/34.579

- MasterCard, Case COMP/36.518 – EuroCommerce, Case COMP/38.580 – Commercial Cards); and *Commission Decision of 24 July 2002 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement*, Case No COMP/29.373 – Visa International – Multilateral Interchange Fee.
- 28 David S. Evans, *Lightening Up Market Definition*, RESEARCH HANDBOOK ON THE ECONOMIC OF ANTITRUST LAW, (Einer Elhauge, ed.), (forthcoming 2011). Available at SSRN: <http://ssrn.com/abstract=1599270>.
- 29 Eastman Kodak Co. V. Image Tech. Svcs., 504 U.S. 451 (1992) , No. 90-1029.
- 30 See David A.J. Goldfine & Kenneth M. Vorrasi, *The Fall Of The Kodak Aftermarket Doctrine: Dying A Slow Death In The Lower Courts*, (1) ANTITRUST L.J. (2004).
- 31 Howard H. Chang, David S. Evans, & Richard Schmalensee, *Market Power: Assessment of Market Power in Competition Matters*, and *Market Definition: Assessment of the Relevant in Competition Matters*, prepared for the Federal Competition Commission of Mexico, March 30, 2011.
- 32 Evans, *supra* note 28.
- 33 David S. Evans, *Two-Sided Market Definition*, MARKET DEFINITION IN ANTITRUST: THEORY AND CASE STUDIES, (Forthcoming). Available at SSRN: <http://ssrn.com/abstract=1396751>.
- 34 All the points here would be equally true if we focused on social surplus instead of consumer surplus.
- 35 For an analysis of the net impact on consumer welfare, see David S. Evans, Robert E. Litan, & Richard Schmalensee, *Economic Analysis of the Effects of the Federal Reserve Board's Proposed Debit Card Interchange Fee Regulations on Consumers and Small Businesses* (February 22, 2011), available at SSRN: <http://ssrn.com/abstract=1769887>.
- 36 In Re VISA Check/Mastermoney Antitrust Litigation, Master File No: CV-96-5238, May 26, 1999; and In Re Payment Card Interchange Fee Antitrust Litigation, Master File No. 1:05-md-1720-JG-JO, April 24, 2006.
- 37 European Commission, *Commission Decision of 24 July 2002 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement*, Case No COMP/29.373 – Visa International – Multilateral Interchange Fee; and European Commission, *Summary of Commission Decision of 19 December 2007 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement*, Case COMP/34.579 – MasterCard, Case COMP/36.518 – EuroCommerce, Case COMP/38.580 – Commercial Cards.