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***Efficiency and Anticompetitive
Effects of Tying***

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1. INTRODUCTION

This paper proposes a framework for the analysis of tying practices undertaken by dominant companies under Article 82 with a view to identifying the circumstances in which tying practices are most likely to be harmful. A number of recent contributions have explained why it is essential to focus on the rationale behind the practices adopted by firms with market power and to carefully analyze the effect these practices have on actual and potential competitors and the competitive process more generally. In particular, it is important to recognize that tying practices are not *per se* harmful to consumers and may have net positive effects. We therefore propose that a rule of reason approach should be adopted when investigating tying cases under Article 82. We also note that our proposed approach is consistent with the rule of reason approach proposed by Frederic Jenny in his paper on this topic in this Volume. This approach is reflected in the *Discussion Paper* on the application of Article 82 to exclusionary abuses published by DG Competition in December 2005.¹ In the Issues Paper distributed in advance of this Workshop, it is suggested that a “consumer welfare balancing test” for abuse cases under Article 82 could be defined as follows:

“Conduct cannot be abusive unless it is likely to harm consumers.... It is now commonly agreed that few practices (including retroactive rebates and tying) can be considered as generally harmful. The evaluation of these practices has to move away from the evaluation of forms towards the evaluation of effects (to identify those circumstances in which indeed consumers are likely to be harmed). The likely harm to consumers could be demonstrated by showing that *the dominant firm will have higher market power than in the counterfactual scenario, and that the conduct will not lead to sufficient countervailing efficiencies.*” (emphasis in the original)

We agree fully with the substantive test being proposed.

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¹ *DG Competition discussion paper on the application of Article 82 of the Treaty to exclusionary abuses*, 2005, available at: <http://ec.europa.eu/comm/competition/antitrust/art82/discpaper2005.pdf>.

1.1. DEFINITIONS

Bundling and tying are associated concepts. Bundling refers to the practice of selling two products together. Bundling can take several forms. “Mixed bundling” occurs where the two products² are sold separately but they are also available together at a discount (for example, two pay TV packages may be sold separately but also at a discount to a consumer subscribing to both at the same time). By contrast, “pure bundling” occurs where the two separate products are only sold together and are not available separately. Tying is another special form of bundling which occurs when one product (the “tying” product) is sold only on condition that the second product (the “tied” product) is also purchased, although the second product may also be sold individually. A pure bundle can then be seen as a two-way tie in which each product is sold only on condition that the other product is also purchased.

Tying (conditioning the sale of one product on the sale of another) may be effected through contractual terms, through technological integration or through pricing (economic tying). To illustrate how the different approaches could generate exactly the same economic effect, consider the case in which each potential consumer does not want more than one unit of each product and suppose there were a law against explicit contractual ties. In this case, sellers could achieve the *same* effect by setting the price for one of the products equal to the price for both of the products taken together. The implicit price for the second product is thus zero,³ and the consumer may as well take the two products together, even if the consumer attaches no value to the second product. In fact, an exclusionary tie effected through pricing will occur whenever the bundle discount is so large that it would not be profitable for competitors selling only the tied product to match that discount. In other words, it will occur where the implicit price for the tied product when it is sold in the bundle is below the incremental cost of producing the tied product.⁴

The practices of mixed bundling and refusal to supply are also closely associated with tying. As discussed above, selling a mixed bundle but setting the implicit price of the second product in the bundle below its incremental cost means that the first product is effectively “tying” the second product, and refusal to supply the “tying” product independently has exactly the same effect as tying the two products together. This means that the antitrust treatment of these practices needs to be perfectly consistent and generate exactly the same outcome when the practices generate the same effects. In this paper we use tying as shorthand, but the arguments would equally apply to bundling practices (or to refusal to supply) generating the same effects.

² Paragraphs 185 to 187 in DG Comp’s Discussion Paper (cited in previous footnote) discuss how one can determine, in practice, whether products are distinct.

³ In fact, any price for the second product that is below the long run incremental cost of producing the product means that, in practice, a tie occurs.

⁴ See Barry Nalebuff, “Exclusionary Bundling”, 50(3) *The Antitrust Bulletin* 321 (2005), for a discussion of tying through bundled pricing (which he calls “exclusionary bundling”).

1.2. SAMPLE SELECTION

When discussing the relative importance of efficiency and “anticompetitive” motives driving tying policies, there is an inherent sample selection problem to address. The reason is that, while all the Article 82 decisions adopted by the European Commission or National Competition Authorities (collectively, “the Authorities”) against dominant companies are in the public domain, there are many complaints brought by rival firms against dominant companies where bundling and tying concerns represent the main theory of harm that are not taken up or are later abandoned by the Authorities without a formal case closure decision that is publicly available. In these cases, it is likely that the decision by the relevant Authority not to pursue the particular complaint was significantly influenced by the presence of an efficiency rationale for the specific conduct being analyzed. This means that a focus on the role played by the “efficiency defence” in the handful of cases where an infringement of Article 82 is found by the Authorities would *significantly underestimate* the role actually played by efficiency motives in convincing the Authorities whether or not to pursue particular cases. The reason is that these are precisely the handful of cases where it is difficult to find efficiency justifications for the particular conduct carried out by the dominant company, or where there is the need to very carefully balance efficiencies against anticompetitive effects.

Another interesting aspect of the enforcement activity in this area is that it is almost always linked to complaints from rivals who claim to be weakened or excluded by the tying practices undertaken by the dominant company. It is therefore the business decision of actual or potential entrants to fight a legal battle that acts as a pre-condition to a possible antitrust investigation. Unless one believes that complaints are more likely to arise in those markets where potentially the most significant detriment to consumer welfare linked to the tying practices exists, there is a very real risk that the enforcement activity will not focus on the markets where the most significant potential detriment arises.⁵

In practice, there is also a potential asymmetry in enforcement activity between: (i) instances where entry takes place and particular tying activities are *subsequently* introduced which have the effect of substantially undermining the entrant’s expansion or which cause the entrant to exit; and (ii) tying practices put in place *before* entry occurs which have the effect of “strategically” increasing barriers to entry. In some cases, the latter practices might

⁵ The UK Office of Fair Trading (OFT) has recognized this bias by adopting its “Competition Prioritisation Framework” – a set of criteria used to assess which cases should be taken up for investigation, and which cases already under investigation should be continued, in order to allow the OFT to focus its finite resources on “high impact” cases. See OFT, *Competition Prioritisation Framework*, October 2006, available at http://www.offt.gov.uk/shared_offt/press_release_attachments/compcriteria.pdf. The initial step for the OFT is to consider whether it is best placed to tackle the problem, or whether the problem is better addressed in another forum. This includes consideration of the opportunities for private enforcement. Subsequent steps for consideration before opening an investigation are: 1) an estimate of direct consumer benefit from an OFT investigation; 2) the likely deterrent effect of an investigation; 3) aggravating or mitigating factors; 4) the need to set policy or precedent or the opportunity to take advantage of a high profile sector; 5) the demands of an investigation on OFT resources; and 6) the likelihood of success.

generate greater consumer detriment, but they may be less likely to be the subject of an antitrust investigation. For instance, some technological ties might in practice allow a dominant company to monopolize a neighbouring market, and a detailed investigation might show that there was no efficiency rationale for the tie. Nonetheless, the reaction of potential rivals might simply be to focus their R&D efforts in other markets where the potential payoff is more significant, and in the absence of complaints the market might remain monopolized for years without being subject to any enforcement activity.

1.3. ROADMAP OF THE PAPER

There is general agreement among economic commentators that tying may be motivated by cost savings, quality improvements or other efficiencies, by the desire to price discriminate among heterogeneous customers (with ambiguous effects, *a priori*, on consumer welfare) or by “strategic” (potentially anticompetitive) rationales. It is also possible that more than one of these rationales applies in a particular case. We discuss efficiency rationales and price discrimination in Section 2, the main “strategic” rationales in Section 3 and a possible rule of reason approach to individual (and complex) cases in Section 4.

2. EFFICIENCY RATIONALES AND PRICE DISCRIMINATION

There is an inevitable degree of circularity in the assessment of the rationale behind certain practices, especially in the absence of contemporaneous internal (strategy) documents discussing the rationale behind certain choices. The reason is that, often, certain practices are defined as being driven by an efficiency rationale because the companies implementing them are active in fiercely competitive markets, so it would be entirely irrational to expect “strategic” effects to arise. This is a correct inference to make, but what is not clear is the extent to which it is then appropriate to argue that similar practices by firms with significant market power⁶ are equally motivated by efficiency reasons, as these firms may simultaneously stand to gain from strategic moves.

In this section we briefly review efficiency rationales for tying that have been identified in the literature. We note that, while the Commission’s Discussion Paper on the application of Article 82 acknowledges that there may be efficiency explanations for tying behaviour, the Discussion Paper’s list of possible efficiencies is somewhat narrower than what is found in the literature, and the list does not capture all of the arguments the commentators have raised.⁷

2.1. TRANSACTION COST SAVINGS

Tying can reduce transaction costs in a number of ways. For instance, an important reason why tying is a pervasive feature of competitive markets is that savings in customer search

⁶ We use significant market power and dominance interchangeably in the paper.

⁷ See *supra* note 1, paras. 178 and 204-206.

costs can be realized by tying component products together into bundles that customers find most convenient. To give a “well-worn” example, people generally do not want to buy shoes for their left foot separately from shoes for their right. If left and right shoes were not sold together as a pair, consumers would have to spend time and effort to search for matching pairs. These search costs would raise the implicit price of the pair of shoes and would by the same token reduce demand. Shoe manufacturers and distributors save consumers these search costs and promote efficient matching by offering only pure bundles of left and right shoes (or to use the terminology of tying, they tie the sale of left shoes to the sale of right shoes and vice versa). Shoes offer a somewhat trivial example, but it should be readily apparent that search cost savings exist for almost any consumer product. For example, automobiles are typically purchased as a bundle of a very large number and variety of components – engine, transmission, chassis, seats, wheels, tyres, CD player and more. Most consumers value the tying together of these components, in part because it avoids for them the time and effort of searching for each component separately.

Tying can also reduce “oversearching” or “sorting” costs that arise when customers are allowed to “cherry pick” from a pool of similar, but imperfectly homogenous items. For example, when mushrooms are sold loose in supermarkets at a given price per kilogram, the first customer will choose those that are least blemished, since they will be undervalued at the average price. Later customers will arrive to find that the average quality of the remaining mushrooms has fallen so far that they are overvalued at the average price. These customers may not make a purchase that day and the market may not clear. It may be costly for the seller to price every item individually, as this would require close inspection to determine each item’s value and individual labelling of the items. One solution commonly observed is that a group of similar items of varying quality is tied together, so that customers are forced to take both overvalued and undervalued items in an average priced bundle. Tying in this fashion can reduce search and sorting costs incurred by customers and may also increase total consumption. This explanation for tying was first proposed by Kenney and Klein (1983)⁸ to explain the movie studio practice of block booking groups of movie features. This involved movie distributors requiring exhibitors to contract to take a number of movie features for a given period at an average price, rather than letting them pick and choose particular films. In the United States, block booking practices were found to be illegal and were prohibited by the US Supreme Court on the basis that they extended monopoly power from desirable features to undesirable features.⁹ These judgments were later criticized by Stigler, who noted that the monopoly extension analysis makes no sense: the blocks of films were average priced and so the distributor should be able to collect as much revenue by setting higher prices for the more

⁸ Roy W. Kenney and Benjamin Klein, “The Economics of Block Booking”, 26(3) *Journal of Law and Economics* 497 (1983).

⁹ See *United States v. Paramount Pictures, Inc.*, 334 U.S. 131, 156 (1948); *United States v. Loew’s, Inc.*, 371 U.S. 38 (1962).

desirable films and lower prices for the less desirable ones.¹⁰ Contracts between distributors and exhibitors were entered into before the films' production and before the true value of each film could be ascertained, and features were therefore said to be "blind sold". Kenney and Klein argued that the practice of block booking was used to prevent exhibitors from exploiting the informational advantage that arises once the film quality is known by accepting only desirable films and rejecting undesirable ones.¹¹ Kenney and Klein also illustrated their theory with a case study of the diamond marketing arrangements of De Beers. As the precise value of an individual uncut diamond is uncertain and difficult to measure, and as customers typically demand a large number of uncut diamonds, the De Beers company developed a system of bundling together a number of "imperfectly homogenous" diamonds (i.e., diamonds of inherently different, but roughly similar value) at an average price in order to reduce search and sorting costs. Kenney and Klein note that block packaging can operate only when the seller enjoys high brand name capital; the value of De Beers' reputation ensures the correct incentives for De Beers not to cheat customers with bundles of low average value. They argue that it is this very efficiency of De Beers' selling practices that explains its dominance of the world's gem-quality uncut diamond market.

A third transaction cost explanation for tying is that too many options can be overwhelming for customers and may lead to no purchase decision at all.¹² Tying reduces the option set. If the effect of this is to reduce indecision and increase consumption, then welfare will be enhanced.

2.2. PRODUCTION AND DISTRIBUTION COST SAVINGS

Tying can also save on production and distribution costs through economies of scale and scope. Returning to the automobile example, it would be possible for car manufacturers to sell each component of a car separately and allow customers to assemble the car themselves. Only a very small minority of customers would find own-assembly desirable. Most would be faced with considerably greater costs of assembly than those faced by the manufacturer, and most would therefore prefer to buy a fully assembled car at a price that reflects the manufacturer's lower assembly costs. This explains why bundling occurs for automobiles, but it does not fully explain why the *option* of mixing and matching components is generally limited – i.e., it does not explain why components are generally "tied" together. The explanation for this lies in production and distribution cost savings from standardization. A certain level of standardization of product sets can save costs both in assembly and in the administration of customer orders; allowing customers to pick and choose each and every component would

¹⁰ George J. Stigler, "United States v. Loew's, Inc.: A Note on Block Booking", *Supreme Court Review* 152 (1963).

¹¹ *Supra* note 8. Their argument relies on there being prohibitive costs of entering into an *ex post* contractual mechanism whereby the price for each film is determined only after its value is known.

¹² See Barry Nalebuff, "Bundling, Tying and Portfolio Effects: Part 1 – Conceptual Issues", *DTI Economics Paper No.1*, February 2003 at p. 32, referring to recent work in behavioural decision theory.

impose significant administrative costs on the car manufacturer.¹³ Moreover, there would be considerably greater costs in distribution if distributors were required to stock a complete range of car components.

2.3. COMPATIBILITY COST SAVINGS

Where product interfaces are complex and not standardized, it may be costly for a manufacturer of two or more component products to design interfaces between the components so that each component will be compatible with components manufactured by competitors. The process of standardization can itself be costly in the consultation, negotiation and documentation of interfaces. In addition, standardization may require modifications in the design of the components that compromise their efficient functioning. In this case, tying provides a technological solution to minimize these compatibility costs.¹⁴

2.4. PROTECTION OF INTELLECTUAL PROPERTY

Tying may also serve to protect intellectual property rights in the tying product.¹⁵ Achieving compatibility between the tying product and competitors in the tied product might require disclosure to those competitors of proprietary information in the design of the tying product. For example, suppose that in order to develop applications to run on an operating system it is necessary to have access to proprietary source code for the operating system. The operating system manufacturer might be reluctant to share the source code with competitors in application software for fear that those competitors, or others, would use the source code to develop rival operating system software, undermining the returns to the proprietary information. In this case, tying the operating system together with applications provides customers with the functionality that they desire while preserving the operating system manufacturer's intellectual property. While the short-term consequences may be higher prices and reduced choice for consumers, the premise of intellectual property laws is that protection of intellectual property is in the long-term interests of consumers because it provides the necessary incentives for future valuable innovations.

2.5. QUALITY ASSURANCE

Tying can also preserve product quality and can protect a firm's reputation and brand name. Where two products are complements, and where the quality of one product may influence the actual or perceived quality of the second product, tying is a way for manufacturers of the second product to maintain its quality and quality perception.¹⁶ For example, a manufacturer

¹³ See *ibid.* at page 31. Some high-end car manufacturers might allow for greater customization while charging higher prices to reflect the additional costs. Mass market manufacturers offer more standardized products at correspondingly lower prices.

¹⁴ For another discussion of compatibility cost savings as a reason for tying, see Jean Tirole, "The Analysis of Tying Cases: A Primer," 1(1) *Competition Policy International* 1, 15 (2005).

¹⁵ See *ibid.*

¹⁶ For a general discussion, see Nalebuff, *supra* note 12, at pages 32-33.

might tie customer service, after-sales support or distribution to the main product if there is a risk that low cost and low quality third-party supply of the associated services may reflect poorly on the main product, damaging its reputation and reducing its demand. For instance, pay TV broadcasters usually exercise a tight control over the set-top boxes distributed in the marketplace by the manufacturers, as any technical problems with the reception of the programmes that might be due to the set-top boxes will likely generate complaints from the subscribers to the pay TV broadcaster and not to the manufacturer. In addition, where customers or courts lack the information necessary to determine liability for malfunctions of a system of two complementary products, a manufacturer may prefer to tie the two products together rather than risk exposure to liability for the faulty designs of third parties.¹⁷

2.6. LEGITIMATE COMPETITIVE RESPONSE

In some situations tying products together may be an efficient response in a competitive market situation. For example, in markets where products are durable but require frequent replenishment or ongoing maintenance, competing firms may develop strategies of tying the durable product with the replenishment or maintenance service and offering low (possibly below-cost) prices for the durable product while recovering losses sustained on the durable product via charges for the replenishment or maintenance of the product. Common examples are printers and toner cartridges, mobile phone handsets and minutes of talk time, and razors and razorblades. The same argument has also been applied to tying of aftermarket sales.¹⁸ If the market for the durable product is competitive, competition should drive the overall system prices for consumers towards the overall system costs.¹⁹

Such strategies may be legitimate responses to consumer preferences to reduce their up-front commitments to a product or to “time-shift” their overall payments towards the future. In the absence of such strategies, total consumption would be lower, as many consumers would not purchase the durable product. However, if the firm is dominant in the “primary” market, the Authorities have sometimes taken a suspicious view of low prices charged in the “primary” market to capture “follow on” sales. For instance, in the *Napp* case in the UK,²⁰ the Authorities ruled that it was unlawful for the dominant company to force its smaller rivals to engage in “system competition”. The “rule of reason” approach to these cases is discussed in Section 4 below.

2.7. ELIMINATING DOUBLE MARGINALISATION

A final important efficiency explanation for tying is the elimination of double monopoly mark-ups in a vertical chain of supply to the customer or in a system of complementary

¹⁷ See Tirole, *supra* note 14.

¹⁸ Carl Shapiro, “Aftermarkets and Consumer Welfare: Making Sense of *Kodak*”, 63 *Antitrust Law Journal* 483 (1995).

¹⁹ See *ibid.*

²⁰ See the Decision of the DG of Fair Trading, Case No CA98/2/2001, *Napp Pharmaceutical Holdings Ltd and Subsidiaries (Napp)*, 30 March 2001, paras. 148-159.

products. Where there is a monopolist at one level of the supply chain, or of one product in a system of complementary products, the absence of perfect competition in the other stages of production, or in the complementary products, will result in both lower profits to the monopolist and higher prices for consumers than if the monopolist were the sole supplier and able to set a single monopoly price for the system.²¹ In this situation, consumers stand to benefit from lower prices if the monopolist ties the vertical stages or complementary products together. While this rationale holds only where the products are complements, and where competition in each of the complementary products is imperfect, it is nonetheless an important efficiency rationale for tying behaviour when these conditions hold.

2.8. PRICE DISCRIMINATION

Even if none of the above efficiency explanations for tying fits the facts of a particular case, tying is not necessarily an exclusionary practice. Tying may instead be employed to facilitate price discrimination, possibly without any exclusionary intent or effect. Price discrimination is a practice designed to increase seller revenues in the presence of heterogeneous consumers. Although it does not generally have an exclusionary motive, price discrimination in oligopolistic markets has, *a priori*, ambiguous effects on consumer welfare and therefore requires careful analysis in the circumstances of the particular case to determine whether consumers will gain from the behaviour.

The literature has identified two forms of price discrimination facilitated by tying practices. The first relates to the extraction of greater value from customers with heterogeneous preferences across two products that are not necessarily functional complements. The second relates to the use of complementary products to meter the usage of customers and to segment the market according to customer valuations for the system.

2.8.1. Homogenizing preferences

Where customers have differing preferences for two products, tying the products together can encourage greater consumption than selling the products separately and can enable sellers to extract greater consumer surplus.²² The aim of the tie in this instance is to homogenize

²¹ A monopolist selling complementary products will charge less overall than the sum of the prices of independent monopolists selling each product separately. This is because, in the case of two complementary products, a lower price for one product stimulates demand for the other. Only when this positive externality is internalized within a single firm is pricing set efficiently. The original insight comes from Augustin Cournot, *Reserches sur les Principes Mathématiques de la Théorie des Richesses*, Hachette, 1838. The result is quite general – it does not depend on specific functional forms of demand or cost functions, and it does not require the products to be perfect complements. See Nalebuff, *supra* note 12, at p. 38.

²² The original insight is from George J. Stigler, *supra* note 10. Stigler argued that block booking of feature movies was a rational response of movie studios to the imperfectly observable variation in preferences for movies in different geographic markets. By selling movies in blocks, the studios could extract greater revenues than by selling each movie separately.

preferences. For example,²³ suppose there are two customers, Fred and Wilma, and two pay TV channels, Bedrock Bowls and Larry Lava. Suppose the marginal cost to Bedrock Sky Broadcasting (BSB) of supplying each channel is zero. Fred is willing to pay 10 clams for BB and 4 for LL. Wilma is willing to pay only 4 clams for BB but will pay 11 for LL. If the channels could only be sold separately, then BSB's best price strategy would be to sell BB for 10 and LL for 11 clams. If the two channels can be sold together at a single price of 14, BSB can increase its revenue from 21 to 28 clams. The extra value extracted by BSB comes from the additional channel consumption that the tied offer generates. Consumer surplus will actually increase in this case by 1 clam, as Wilma values the two channels at 15. However, it is also possible to construct examples where this form of price discrimination decreases consumer welfare.²⁴

2.8.2. Metering usage

Where some customers use a durable product more intensively than other customers, they are likely to have a different willingness to pay for the product. Setting a single price for the product will fail to extract consumer surplus from customers with higher valuations for the product. At the same time, customers with lower valuations will not purchase the product. Ideally, a firm in this situation would like to identify high- and low-valuation customers at the time of sale and charge them varying up-front sums to reflect their full valuations. When this is not possible, an alternative is to find some way to meter usage of the product and to charge prices that vary accordingly. One way to do this is to tie the durable product to a complementary product that must be used in a given proportion to usage of the durable product, and then to charge a reduced price for the durable product while charging higher prices for the complementary product, thereby extracting greater consumer surplus from those customers with greater intensity of use. This is referred to as "metering" or "requirements tying".²⁵ A familiar illustration is of a printer manufacturer tying toner cartridges to its printers through patented designs so as to extract greater toner revenues from high-usage customers than from those with low usage. The theory has also been applied to the tying of after sale services such as maintenance.²⁶ In some cases it may be debateable whether a tie is

²³ This example is adapted from David S. Evans and Michael Salinger, "Why do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law", 22(1) *Yale Journal on Regulation* 37, 49-50 (2005).

²⁴ For example, suppose that Fred and Wilma's values for LL and BB respectively are 6 rather than 4. In this case, if the two channels had to be sold separately, BSB's profit maximizing prices would be 6 clams for each channel. Both Fred and Wilma would purchase both channels and BSB's revenue would be 24 clams. If the channels could be sold together, BSB would set a single price of 16 and earn 32 clams. But in this case Fred's consumer surplus would fall from 4 to 0 and Wilma's from 5 to 1; total consumer welfare, measured by consumer surplus, would fall by 8 clams.

²⁵ This explanation for tying was developed by Meyer L. Burstein, "The Economics of Tie-In Sales," 42 *Review of Economics and Statistics* 68 (1960). For a formal exposition, see Lester G. Telser, "A Theory of Monopoly of Complementary Goods," 52 *Journal of Business* 211 (1979).

²⁶ See Zhiqi Chen and Thomas W. Ross, "Refusals to Deal, Price Discrimination and Independent Service Organizations," 2(4) *Journal of Economics and Management Strategy* 593 (1983).

necessary for the purpose of metering, and whether an alternative and more direct metering method and charging structure for the main product could be used instead.²⁷ Where a less costly method of metering exists, greater suspicion of a price discrimination motivation for the tying behaviour may be justified. However, it is likely that there will be instances where tying does indeed offer a more efficient and practical metering method than direct metering.²⁸ Again, the consumer welfare effects of requirements tying are *a priori* ambiguous; some customers may be better off under metering while others may be worse off.²⁹

2.8.3. Ambiguity of consumer welfare effects

Since the consumer welfare effects of price discrimination are *a priori* ambiguous, we agree with Tirole (2005),³⁰ who maintains that, where tying conduct is supported by a rationale of price discrimination, it is appropriate to apply a rule of reason analysis to determine what the net effects on consumers would be on the facts of the particular case. We also agree with Nalebuff (2003), according to whom price discrimination schemes can introduce a number of inefficiencies caused by customer's efforts to try to work around tying schemes.³¹ These factors (among others) should be considered in the rule of reason analysis.

²⁷ See Nalebuff, *supra* note 12, at pp. 74-77. Nalebuff argues that, if direct metering is possible, this should be encouraged over a tying arrangement which could have anticompetitive collateral effects in the tied product market and even in the tying product market (if in order to enter the latter market, a firm needs access to independent firms in the tied market).

²⁸ See *ibid.* Nalebuff acknowledges that direct metering may be difficult due to measurement issues and added costs in adding counters to products.

²⁹ It is possible to construct examples where no customer is worse off. See Simon Bishop and Mike Walker, *The Economics of EC Competition Law: Concepts, Application and Measurement*, Sweet and Maxwell, 2002, pp. 212-213. Bishop and Walker develop a specific example in which, without metering, a low-value customer will not purchase the durable product and a high-value customer will have her entire consumer surplus extracted, whereas with metering, the low-value customer will purchase the product but have his entire consumer surplus extracted, while the high-value customer will derive a positive consumer surplus.

³⁰ *Supra* note 14.

³¹ Nalebuff, *supra* note 12, at pp. 77-79.

3. ANTICOMPETITIVE RATIONALES – EXCLUSIONARY TYING

As we have seen above, tying can have efficiency explanations or can be motivated by the additional revenues to be earned from price discrimination (with ambiguous effects on consumer welfare). Tying can alternatively (or at the same time) have exclusionary effects with respect to the supply of the tied product or of the tying product (or even of products that may not yet exist), and this “strategic” rationale may be the main motive behind the decision to tie the two products together.

We begin this section by explaining the circumstances under which we can be reasonably confident that tying does *not* have an anticompetitive motivation. This derives from the Chicago school critique of the classical antitrust hostility towards tying arrangements, a critique developed in particular in the 1960s and 1970s. We then move on to review post-Chicago learning on the circumstances in which tying may have anticompetitive purposes and effects. As mentioned above, these effects may be felt in the tied market, in the tying market, or in other markets altogether.

3.1. WHEN TYING IS NOT LIKELY TO BE ANTICOMPETITIVE: CHICAGO SCHOOL INSIGHTS

The Chicago school critique provides some insights into the conditions under which tying could be said to be less likely to have an anticompetitive motivation. Chicago school economists argued that if a firm is a monopolist in relation to one product, and if customers also purchase another product that is *supplied competitively*, there is nothing for the monopolist to gain from requiring the customer to purchase both products together.³² In this particular situation there is only ever one monopoly rent that can be extracted. Similarly, if two products are complements and there is no independent demand for the tied product, such as the components of an automobile (chassis, engine, steering wheel, etc.) or a desktop operating system and an internet browser, then there is again only one available monopoly rent in the system and the monopolist of the tying product has incentives for the tied product to be supplied as efficiently as possible so that it can extract all available rents in the system through the price for the monopoly product.³³ Chicago school scholars argued that if, in either of these situations, a monopolist supplier of the “tying” product decides to tie the two

³² Suppose a customer independently values each of two products, A and B, at €10 (with no value for a second unit of either product), and suppose that the marginal cost of producing each product is €5. Suppose further that a firm has a monopoly over the production of A, but B is supplied competitively. If the monopolist supplies A alone, it can set a price of €10 and earn a profit of €5 from the customer. If the monopolist instead requires that the customer take B together with A, then the most that the customer will pay for this bundle will be €15 and the monopolist will gain nothing. This is because, at any higher bundle price, the customer stands to earn greater consumer surplus by purchasing B on its own for €5 from a competitive supplier. See Aaron Director and Edward H. Levi, “Law and the Future: Trade Regulation,” 51 *Northwestern University Law Review* 281 (1956); Richard A. Posner, *Antitrust Law: An Economic Perspective*, University of Chicago Press, 1976; Robert H. Bork, *The Antitrust Paradox*, Basic Books, 1978.

³³ See Posner, cited in previous footnote.

products together, it is unlikely that it does so in order simply to leverage market power into the tied product market. However, post-Chicago learning has questioned the generality of the Chicago school approach. In Section 3.2 we explore what happens when the Chicago school conditions are relaxed, which may be more realistic in many markets.

Post-Chicago scholars have also identified the limited frame of reference of the Chicago theory. Implicit within the Chicago model is a static concept of strategic behaviour; the model demonstrates the irrationality of seeking additional profits in the tied product market when the tying product market is monopolized, but it ignores the possibility of future rent streams that may derive from control of the tied product. In Section 3.3 we review the recent development of dynamic models which illustrate that concerns for competition may arise even when the Chicago school conditions hold. First, there may be an incentive for a monopolist in the tying product to leverage its market power into the market for the tied product in order to exclude competition in the market for the tying product or in new and emerging markets that are connected to the tied product. This was essentially the US Department of Justice's allegation against Microsoft with regard to the tie of the company's operating system with its internet browser. Second, where products are durable and the tied product is characterized by product upgrades, a monopolist may have an incentive to leverage its market power into the tied product market in order to capture future profits in the upgrades. Microsoft's operating system and application programmes may provide an illustration of this. If a plausible theory of harm can be developed along one of these lines, there may be legitimate concerns regarding anticompetitive effects even when the Chicago school conditions hold.

3.2. RELAXING THE CHICAGO SCHOOL CONDITIONS

Whinston's seminal paper³⁴ was the first to explore what happens when the Chicago school conditions are relaxed. He explored the consequences of relaxing, first, the condition of perfect competition in the tied product market, and second, an implicit assumption underlying the Chicago school's complementary products theory, namely that the monopolist's product in the tying market is *essential* for all uses of the tied product. In each case, he showed formally that tying can be used as a strategic tool to leverage monopoly power from the tying market into the tied market; in other words, it can be profitable for a monopolist of the tying product to exclude competitors in the tied product.

The main intuition in Whinston's models is that, in certain circumstances, tying can deny competitors in the tied product market the scale necessary to cover fixed costs, and can thereby deter entry or drive existing competitors out of the tied product market. In each case, the monopolist incurs costs as long as rivals remain in the tied product market (relative to selling the products separately) and the tying conduct is only profitable if exclusion is

³⁴ Michael Whinston, "Tying, Foreclosure and Exclusion", 80 (4), *American Economic Review* 837 (1990).

Coscelli and Edwards, "Efficiency and Anticompetitive Effects of Tying", in Ehlermann and Marquis, *European Competition Law Annual: A Reformed Approach to Article 82 EC*, forthcoming 2008.

effected and prices can subsequently rise. It is therefore the exclusionary effect of the tying behaviour that makes tying profitable for the monopolist. Note that, as with predation, actual exclusion of rivals may not be necessary for the monopolist to achieve anticompetitive effects; the mere disciplining of rivals' conduct in the tied product market may be sufficient.³⁵

3.2.1. Tying with independent demands and imperfect competition in the market for the tied product

The first model that Whinston explores assumes that there are two products that are demanded independently and that competition for the tied product is imperfect. In particular, suppose there are fixed costs in production of the tied product so that there are scale economies in the production process; the structure of the tied product market is therefore oligopolistic. Since the two products are demanded independently, there are, in principle, two markets and therefore two "monopoly" rents available.³⁶ If the monopolist commits to tying the two products together, then in order to make sales of its monopolized product it must also make sales of the tied product. This will lead the monopolist to compete more aggressively and to lower its implicit price of the tied product to attract sales away from rivals in the market for the tied product.³⁷ If the impact on rivals' sales is sufficiently large, the rivals' profits may fall below the level that justifies entry or continued operation in the presence of fixed costs, and exclusion may result. Tying in this case may or may not be a profitable strategy for the monopolist. On the one hand, the monopolist stands to gain from converting the tied market from an oligopoly into a monopoly (or into an oligopoly with fewer competitors). On the other hand, the monopolist will only offer the two products together in a tie, and must therefore sacrifice some sales of the monopolized product to customers with low valuations for the tied product. Note, importantly, that in this model the monopolist will only stand to earn greater profits if rivals are excluded from the tied product market. If rivals remain in the tied product market, then the monopolist would do better to sell the products separately rather than tying them together.³⁸

To identify when the exclusionary strategy just described is a likely explanation of tying behaviour, it is important to consider whether it would be both credible and profitable for the monopolist. The strategy will only exclude rivals if the monopolist can make a *credible (irreversible) commitment* to the tie, such as in the form of a technological tie in the

³⁵ See, e.g., *ibid.*, p. 844, footnote 10.

³⁶ The rent in the market for the tied product might not actually be a "monopoly" rent if rivalry in the tied product market is disciplined but not excluded and the market thus remains an oligopoly.

³⁷ To see the monopolist's incentives to compete more aggressively when the products are tied, note that, when the products are sold separately and the monopolist fails to sell a unit of the tied product, the monopolist loses only the profit on that unit of the tied product, whereas when the products are tied together, failing to sell a unit of the tied product causes the monopolist to lose both the profit on the tied product and the monopoly profit on the tying product.

³⁸ This is because, by tying the two products together, the monopolist sacrifices sales of the monopolized product and also receives a lower implicit price for the tied product.

product design or in the production process. Otherwise, the rival will realize that if it enters or remains in the market the monopolist will do better to undo the tie. The strategy will be *profitable* only if customers have a reasonably high valuation for the tying product and if the monopolist's version of the tied product is of a reasonably high quality. If a significant proportion of customers do not place great value on the tying product, and/or regard the rival's tied product as significantly superior in quality, then the tie will be ineffective in excluding the rival because the monopolist will be unlikely to capture a sufficient proportion of the rival's sales (customers will simply ignore the monopolist's tied offer). More generally, these are some of the key factors one would assess under a rule of reason analysis.

Finally, although there is likely to be a loss of consumer welfare in this scenario of exclusionary tying (since, following exclusion, prices for the tied product will rise and product variety will be diminished), there would also be efficiency gains in the form of avoided fixed costs. Therefore, the overall welfare impact is unclear prior to an evaluation in the context of a particular market.

3.2.2. Tying with complementary demands when the monopolist's product is not essential

Whinston also examined an alternative model in which the two products are complements for one group of customers, but where there is another group of customers with demand only for the tied product or who attach only a small value to the monopolist's product.³⁹ The monopolist's product is therefore *not essential* for all customers of the tied product. Here again, there is the possibility of extracting a second "monopoly" rent from those customers with independent demand for the tied product. By tying the products together, the monopolist ensures that the first group of customers (who view the two products as complements) will acquire its version of the tied product, thereby reducing the size of the tied product market available to rivals. If a large enough proportion of customers view the products as complements, there may be insufficient residual demand for rivals in the tied product market to cover their fixed costs of operation, leading to exclusion. Again, note that the monopolist will only stand to earn greater profits if rivals are excluded from the tied product market. Prior to exclusion, the monopolist will incur costs relative to selling the products independently. Following exclusion, the monopolist can earn greater profits by setting higher prices for the tied product when it is sold separately to customers with demand only for that product while

³⁹ To give a familiar example, suppose that there is only one hotel on a resort island and that dinner in the hotel's associated restaurant is included in the room price. Hotel guests view the hotel and restaurant on the island as complements. However, suppose there is another group of customers for restaurants on the island, such as locals and visitors for the day from neighbouring islands. These customers have demand for restaurants independent of demand for hotel accommodation on the island. Replacement parts markets can also be characterized as instances in which the monopolist's tying product is not essential for use of the tied product. For example, one component of a typical stereo system is an LED display. When the stereo system is first purchased it is purchased as a bundle of components including the display. After this initial purchase, however, if the display fails a customer may seek a replacement part. For this customer, demand for the replacement part is independent of demand for the other components of the stereo system.

the threat of the monopolist to tie the products again will deter entry and allow the monopolist to continue extracting the rent. In this way, the monopolist may leverage its market power in relation to the tying product so as to obtain and exploit market power in the market for the tied product.

Once again, tying will only exclude rivals if a credible commitment can be made to the tie. Whether a tie in this situation would be profitable for the monopolist depends on the sizes and valuations of the two groups of customers. A sufficiently large group of customers with independent demand for the tied product will allow an efficient rival to enter and remain in the tied product market. Unless there is exclusion, there would be nothing for the monopolist to gain from tying the products. If there is exclusion, then consumer welfare will be harmed due to higher prices for the tied product, although again, aggregate welfare may rise or fall. Note also that the Whinston model assumes homogeneous products in the tied market, while there will almost invariably be some degree of differentiation in real-world markets, and this will have a significant effect on the profitability of a potential exclusionary strategy.

3.3. DYNAMIC MODELS

Even when the Chicago school conditions hold in a static sense, dynamic models of tying can be developed to reveal the possibility of strategic motivations related to separate streams of future rents that may be earned if the monopolist can gain control of the tied product market.

3.3.1. Tying to exclude competition in the tying market or in an emerging market

Carlton and Waldman (2002)⁴⁰ show that tying of complementary products can be used to preserve a monopoly position in the tying market or to allow a monopolist to transfer its monopoly to a newly emerging market.

The intuition for tying to preserve market power in the market for the tying product is straightforward. Suppose that a monopolist in a primary product market also operates in a complementary product market, and suppose that a potential entrant has the ability to supply a superior complementary product. It follows from the Chicago school logic that the monopolist would generally have no incentive to tie its products together, as it can benefit from the effect that the superior complementary product offered by its rival will have on demand for the monopoly product. However, if the entry of an independent supplier of the complementary product enhances the prospect of rival entry into the monopolist's primary product market in a subsequent period, then the monopolist may have an incentive to tie its products together to exclude entry into the complementary product market, thus blocking the path into the primary

⁴⁰ Dennis W. Carlton and Michael Waldman, "The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries," 33(2) *RAND Journal of Economics* 194 (2002).

Coscelli and Edwards, "Efficiency and Anticompetitive Effects of Tying", in Ehlermann and Marquis, *European Competition Law Annual: A Reformed Approach to Article 82 EC*, forthcoming 2008.

market and preserving its monopoly.⁴¹ Carlton and Waldman show that the tying conduct may exclude entry into the complementary product market in one of two ways; it may deny the entrant the necessary scale to cover the fixed costs of entry, or alternatively, even if there are no fixed costs of entry into the complementary product, if there are network externalities on the demand side of the complementary product market then the tie may have a similar exclusionary effect.

A similarity between this model and the earlier Whinston models is that the tying conduct has to be irreversible to be effective. If the tie is reversible, then entry will not be deterred. A significant difference between this model and Whinston's models is that, here, there is only one monopoly rent available in a system of complementary products. It is the preservation of that single monopoly rent in the future that motivates the exclusionary conduct. The consumer welfare concern is that, in the long run, consumers will be harmed by having to pay higher prices for the system and by experiencing less variety. This stylized model captures a number of the key elements of the case brought by the US Department of Justice against Microsoft. In that case, it was alleged that Microsoft had tied its internet browser to its operating system in order to exclude a rival browser (Netscape Navigator) from the complementary product market and thus to preserve Microsoft's monopoly over the primary market, i.e., the market for operating systems.

The analysis with regard to extending a monopoly position into a newly emerging market is similar. Suppose the newly emerging market is for a product that is associated with the same complementary product as the primary market. Tying of the primary and complementary products may again reduce the profitability of an entrant in the complementary product market below what is necessary to cover its fixed costs of entry, and this may deny a rival in the newly emerging market an independent source of the necessary complementary product. In this way, a monopolist in the primary market can transfer its monopoly to a newly emerging market. Alternatively, if the complementary product market is characterized by demand side network externalities, tying of the primary and complementary products may exclude rivals in the complementary product and again enable the monopolist to transfer its monopoly from the primary market to the newly emerging market.

Choi and Stefanadis (2001)⁴² model a somewhat different setting in which there is a single potential entrant for each of multiple complementary products that are currently monopolized by one firm. The authors show that, if the monopolist ties the products together

⁴¹ For example, if the products are complements and if the monopolist refuses to supply its complementary product for use in combination with rival versions of the primary product, then entry into the primary product market may depend on the availability of an independent supplier of the complementary product. In Carlton and Waldman's model, the returns to the rival in the primary market depend on capturing more of the surplus associated with the superior complementary product, so if the superior complementary product is not available, the rationale for entry into the primary market falls away.

⁴² Jay Pil Choi and Christodoulos Stefanadis, "Tying, Investment and the Dynamic Leverage Theory," 32 *RAND Journal of Economics* 52 (2001).

it can preserve its monopoly position by reducing the probability of entry, as entry would then require the coordination of successful innovation in *all* of the complementary products.⁴³

The Office of Fair Trading (“OFT”) in the UK used a similar framework in its characterization of Genzyme’s abuse.⁴⁴ The OFT argued that Genzyme’s policy of selling the drug Cerezyme (in respect of which Genzyme was dominant) together with the associated home care services at the same price to the National Health Service for use by patients suffering from Gaucher disease amounted to a tie, and that it effectively excluded rivals from the potentially competitive market for the provision of home care services to Gaucher patients. According to the OFT, this also had the effect of increasing the barriers to entry in the monopolized market for the tying product (the supply of treatments to Gaucher patients, where Cerezyme was the leading treatment), as Genzyme’s “close relationship” with Gaucher patients through the delivery of home care services would have made it more difficult for a rival supplier to convince patients to switch to its product.

The *Genzyme* case highlights a key issue common to many other cases: is there a relevant antitrust market for services associated with the supply of a main product where those services may be insourced or outsourced? That is, whenever dominant companies decide not to outsource particular activities (or to bring back into the “house” activities previously outsourced) in competitive markets, do they “monopolize” the “tied” market related to the supply of these services? For instance, suppose that a dominant pay TV company initially issues a tender to acquire installation services from third parties to offer at subsidized prices to its customers. When the original contract with a third party expires, the company decides it would be more efficient to bring this activity back in-house. Is this an illegal tie, given that the company has now “monopolized” the market for the supply of installation services to its pay TV customers?

We believe that there is a very significant risk that antitrust concerns regarding these types of in-sourcing/outsourcing activities by dominant companies would prevent dominant companies from efficiently reorganizing the perimeter of their business, as a number of other factors affecting in-sourcing/outsourcing decisions change over time.

3.3.2. Tying with durable products and upgrades for the tied product

In a subsequent paper, Carlton and Waldman (2005)⁴⁵ considered a situation where the products are durable and product upgrades are a characteristic of the tied product. They showed that, even if the products are complements and the monopolist’s product is essential

⁴³ This is a formalized extension of Oliver E. Williamson, “Assessing Vertical Market Restrictions: Antitrust Ramifications of the transaction Cost Approach,” 127 *University of Pennsylvania Law Review* 953 (1979), where it was noted that tying forces an entrant to enter both markets, and that this may be more costly and hence less likely.

⁴⁴ See *Genzyme Ltd v. Office of Fair Trading*, Competition Appeal Tribunal judgment of 11 March 2004.

⁴⁵ Dennis W. Carlton and Michael Waldman, “Tying, Upgrades and Switching Costs in Durable-Goods Markets,” *NBER Working Paper* 11407 (2005).

for consumers of the tied product, there might still be an incentive for the monopolist to tie the products together. In particular, there might be an incentive to exclude rivals in the market for the tied product in order to capture future rents from the sale of upgrades of the tied product. This observation essentially relaxes another implicit assumption in the Chicago school analysis, namely that all sales are made in one period and there are no profits to be realized in a later period. If upgrades are sold in a second period, then in order for the monopolist to ensure that it captures the rents from selling those upgrades it must ensure that it is the firm that sells the upgrades. If a rival could develop a superior tied product, the only way for the monopolist to ensure that it sells upgrades in the second period is to exclude the rival in the first period. Carlton and Waldman also showed, as might be expected, that the incentives for the monopolist to tie the two products together are stronger when switching costs are added to the model.

3.4. NO-COST EXCLUSIONARY TYING

Tirole has argued that exclusionary tying cases are best characterized as predation rather than tying *per se*.⁴⁶ However, as Nalebuff has observed, an important distinction between tying cases and standard single-product predation cases is that, in some cases, exclusionary tying may be effected with no profit sacrifice by the monopolist.⁴⁷ Nalebuff focuses on the case of economic ties (tying through mixed bundle pricing) and describes two ways in which a monopolist may price its products with the effect of excluding equally efficient rivals in the market for the tied product at no cost to itself.

First, the monopolist may under-price the competitive (tied) product. Following Nalebuff's notation, let the monopoly price of product A (the tying product) be m , and let the competitive price of product B (the tied product) be c . Nalebuff assumes a special case where the two products are consumed in equal proportions. In this case, consumers will be indifferent between buying a bundle of A and B at a price of $m+c$ and buying A and B separately at prices of $m+\epsilon$ and $c-\epsilon$ respectively. Setting prices in this way will not affect the monopolist's profitability or consumer welfare in the short term; the monopolist will continue to earn the full monopoly rent on each sale of product A whether it sets unbundled prices of m and c or $m+\epsilon$ and $c-\epsilon$. However, rivals in product B cannot compete at a price of $c-\epsilon$ and will be excluded from that market. The monopolist would therefore stand to gain, and consumers would lose in the long term, if by excluding competition in the B market the monopolist can preserve its monopoly over product A. The important difference with predation cases is that the monopolist in a tying case can use the price of the monopolized product to instantaneously offset any losses from under-pricing the competitive product, so that no short-term profit sacrifice is implied.

⁴⁶ See Tirole (2005), *supra* note 14.

⁴⁷ See Nalebuff, *supra* note 4. See also Barry Nalebuff, "Tied and True Exclusion: Comment on Jean Tirole's 'The Analysis of Tying Cases: A Primer'", 1(1) *Competition Policy International* 41 (2005).

Second, the monopolist may over-price the monopoly (tying) product. Lowering the price of product B below the competitive level may not even be necessary to effectuate no-cost exclusion. Here, Nalebuff assumes products consumed in fixed but not necessarily equal proportions. However, for simplicity of exposition we will continue to consider the case of equal proportions. If the stand-alone price for A is set at $m+\epsilon$ and the A+B bundle price is $m+c$, then for any positive value of ϵ the customer is better off buying B from the monopolist than from an equally efficient rival B producer. Although the stand-alone price of A is above the profit-maximizing monopoly price, there will be no sacrifice of profits in equilibrium, as no customers will purchase A on a stand-alone basis. Rivals will be excluded from the B market because, while they would charge c , the implicit price faced by customers would be $c+\epsilon$. Again, in contrast to predation cases, customers' dependence on the monopolized product A can be exploited so that exclusion may be effected in the market for product B with no short-term profit sacrifice.

3.5. MIXTURE OF EFFICIENCY AND POSSIBLE “ANTICOMPETITIVE” MOTIVES

While it is useful to separately list the “efficiency” and “strategic” considerations in tying cases, as we do in the sections above, the reality is that most antitrust cases analyzed in detail by the Authorities tend to have both efficiency and “strategic” motives behind specific tying practices.

An interesting example is discussed in a recent EC merger decision, *Amer/Salomon*.⁴⁸ In this decision, the Commission discusses a fairly recent trend according to which suppliers of winter sports equipment tie the sale of alpine skis and alpine bindings. Historically, skis and bindings were sold on a separate, stand-alone basis and the market leaders in the sale of skis differed from the market leaders in the sale of bindings.

According to the Amer Group (owner of the Atomic brand) and Salomon, there were technical and economic motivations for the development, since “ski manufacturers have identified the ski-binding interface as an important factor in the overall performance of a ski. To make this interface more efficient, each manufacturer has developed its own interface. The positions of screws are now specific to each ski manufacturer so that only one brand of bindings can match.”⁴⁹

When the tying practices began, the two markets (alpine skis and alpine bindings) were highly competitive oligopolies with a reasonably large number of suppliers selling many differentiated products in each. It would therefore seem that the move must have been entirely driven by efficiency considerations. Nonetheless, there were positive margins in each market and the effect of the tying practices was twofold: (a) the market leaders in alpine skis managed to significantly increase their share in the market for alpine bindings (i.e., the market for the “tied” product) and (b) the main manufacturers of alpine bindings were weakened, and

⁴⁸ Case No COMP/M.3765 – *Amer/Salomon*, Decision of 12 October 2005.

⁴⁹ *Ibid.*, para. 16.

some of them in the end were purchased by manufacturers of alpine skis. While the size of the “efficiency” benefit associated with the technical tie to the end consumers was a matter of debate, it seems clear that the leading manufacturers of the “tying” products (alpine skis) gained significantly from the decision to tie the “tied” product (alpine bindings).

This example shows that, even in situations where the degree of market power is limited, it is very difficult to disentangle pure efficiency reasons from more “strategic” reasons that might be labelled “anticompetitive” during an antitrust investigation. For instance, in this case one might be worried that the market structure, after all the leading manufacturers began to tie their sales of alpine skis and bindings, is less competitive and/or less conducive to innovation than the previous (less concentrated) market structure, and that this has caused some consumer detriment.⁵⁰

4. ANALYZING TYING UNDER A RULE OF REASON APPROACH

From the preceding sections we have seen that there can be efficiency or price discrimination explanations for tying, and that it is also theoretically possible for tying to exclude or discipline competitors, with adverse effects on consumers. We note that Nalebuff prefers a *per se* rule to a rule of reason approach in cases where a monopolist creates a tie that equally efficient rivals cannot match and a significant share of the tied market is foreclosed (and the monopolist could reasonably have understood that such foreclosure would be the consequence of its pricing).⁵¹ However, we would favour a (structured) rule of reason approach in order to open up the analysis to the possibility of counterbalancing efficiency explanations for the tie that benefit consumers.⁵² A rule of reason approach would also be sufficiently flexible to properly analyze tying cases with essentially empirical assessments focusing on the market facts discussed in Section 4.1 below. There is no set of necessary and sufficient conditions that can be derived from the economic analysis to allow a decision maker to easily adjudicate on a tying claim, so we believe a detailed empirical analysis under a (structured) rule of reason remains the most appropriate approach.⁵³

⁵⁰ It is clearly difficult to compare two oligopolistic market structures with many players in each in a situation where innovation and branding are key competitive variables.

⁵¹ See *supra* notes 3 and 53.

⁵² We speak of a “(structured) rule of reason” in this paper because we consider that the rule of reason approach we envisage should have a logical structure. On the other hand, we leave it to legal commentators to decide how “structured” the approach must be to help the courts (i.e., in relation to the extent to which burdens of proof and legal presumptions need to be rigidly determined in the administrative or civil procedure). In this sense, we would agree with the observations made by Lowe and by Neven (in this Volume) with respect to the use of safe harbours and rebuttable presumptions as opposed to a more formal “structured rule of reason” as described by Ahlborn and Padilla (also in this Volume).

⁵³ Interestingly, the imposition of a *per se* rule on tying in the US has simply shifted part of the substantive assessment that would take place under rule of reason to the discussion of whether there are two distinct products and whether the two products are tied (i.e., whether there is stand-alone demand for the tied product.)

We suggest that there should logically be two steps to an analytical assessment of tying behaviour under a (structured) rule of reason approach.⁵⁴ First, as a preliminary step, it must be established whether the tying conduct has excluded or disciplined efficient competitors, or whether there is a dangerous probability that it will do so. Only if there is a likely adverse effect on efficient *competitors* is there a need to investigate further. Second, it must be assessed whether the adverse effect on competitors is harmful to, or simply part of, the process of competition, i.e., it must be determined whether harm to *consumers* is, or is likely to be, the ultimate effect.⁵⁵

An issue in mixed bundling cases is whether there is a potential foreclosure concern when a dominant firm selling a bundle of products prices each product above long-run average incremental cost (LRAIC) but causes efficient single-product rivals to be excluded because they cannot recover their common set-up costs. The issue here is that the dominant firm exploits economies of scope (and possibly economies of scale) that are not immediately available to single-product rivals. Our view is that a rule of reason test should be applied in this context, as in some instances it might be more appropriate to adopt a “reasonably efficient competitor” test than an “equally efficient competitor” test in order to protect *efficient* single-product (or smaller) rivals until they are able to expand and achieve the economies of scale and/or scope needed to compete on an equal footing with the dominant company. This means that a “safe harbour” for prices above LRAIC would not be appropriate.

4.1. THEORY OF EXCLUSION: WILL THE TIE HAVE EXCLUSIONARY EFFECTS?

The first step, we suggest, in a (structured) rule of reason approach is to ask whether the tying conduct in question would be likely to exclude or discipline rivals so as to cause consumer detriment in the absence of any efficiency effects. In other words, this initial step involves the development of a theory of exclusion and empirical support for this theory wherever possible. This is a key step in the assessment of when tying is likely to be harmful.

We first note that an essential factor in the assessment of a tie is whether the firm in question has market power in the market for the tying product (and the burden of proof for this assessment would obviously lie with the Authorities). Unless the firm’s primary product is viewed by customers as having few alternatives and the firm thereby has significant market power to use as leverage, there can be no question of an anticompetitive tie. The following

⁵⁴ A similar two-step approach has been suggested by Willig. See the presentation by Robert Willig to the US FTC and DOJ *Joint Hearings on Understanding Single Firm Behaviour: Tying Session*, 1 November 2006, titled “(Allegedly) Monopolizing Tying via Product Innovation”.

⁵⁵ Willig’s two-step approach (see previous footnote) begins with an assessment of whether there is “harm to competition” and then asks whether the practice is “part of competition” (essentially an allowance for business justifications and efficiency effects). Unfortunately, “harm to competition” can be a particularly vague term if not carefully defined. For example, in this instance, does it mean harm to competitors, harm to the dynamic *process* of competition, harm to social welfare, harm to consumer welfare, or something else altogether? In the context of Willig’s two-step approach, it seems to us that what Willig is referring to by this term is actually “harm to efficient competitors”, which in the absence of any efficiency effects would be likely to harm consumers through a reduction in output and increase in prices.

discussion therefore assumes that there is significant market power in relation to the tying product.

A large range of factors determine the impact that a tie is likely to have on rivals in the market for the tied product, many of which are amenable to assessment with empirical evidence. We will begin with supply-side conditions in the tied product market, and then we discuss demand-side conditions and counter-strategies that may be available to rivals in the tied product market.⁵⁶ Finally, we consider whether the tie is likely to lead to exclusion in the market for the tying product or in emerging markets.

4.1.1. Supply-side conditions in the tied product market

On the supply side, higher marginal (unit) costs and higher fixed costs in producing the tied product each increase the likelihood that a tie will have exclusionary effects.

- **Marginal costs.** When two products are tied together, customers that require the tying product pay a zero implicit (effective) price for the tied product. Rival producers of the tied product will be able to compete for these customers only if they can differentiate their version of the tied product sufficiently so as to convince these customers to add the rival's product to the version that they have already purchased from the monopolist through the tie. In other words, the rival's product must offer *additional* value to these customers that exceeds the marginal cost of production and therefore the price that the rival must charge for the product. Higher marginal costs then require greater differentiation in the rival's tied product in order for the rival to make sales to these customers, and increase the likelihood of exclusion in the tied product market.⁵⁷
- **Fixed costs.** Fixed costs imply economies of scale in production. In order for a rival to enter and remain in the tied product market, it must make sufficient sales and sufficient margins on those sales to recover its fixed costs. Tying by a monopolist in the primary market reduces the residual market available to rivals in the tied product. The higher the fixed costs, the less likely the rival will be able to achieve a minimum efficient scale in the presence of a tie. Since R&D costs are fixed costs, exclusion is more likely in industries where R&D plays a particularly important role. Learning curve effects may be seen as analogous to fixed costs, requiring rivals to achieve economies of scale in production of the tied product and contributing to a greater likelihood that a tie will lead to exclusion.

⁵⁶ The analysis of competition in the market for the tied product deals with the question of whether in fact the tied product is a distinct product and involves concepts such as the demand for "pure heterogeneous bundles" and for "mixed heterogeneous bundles".

⁵⁷ This factor is discussed in Tirole (2005), *supra* note 14, at pp. 9-10.

4.1.2. Demand-side conditions in the tied product market

Recall that customers which purchase the tying product face a zero implicit (effective) price for the tied product. For a given tied product market size, the higher the proportion of tied product demand subject to the tie, the smaller will be the residual market available to rivals that produce only the tied product, and the more likely it is that those rivals will be excluded. A number of factors are relevant to an assessment of the size of the residual market that remains available to rivals that offer only the tied product.

- ❑ **Proportion of customers with demand for both products.** If there is no scope for product differentiation in the tied product, and if all customers consume the two products in fixed proportions (i.e., if there is no independent demand for the tied product) then a tie implies exclusion, as no customers will remain available to rivals in the tied product. The smaller the proportion of customers of the tied product that also require the monopolist's primary product (and so the larger the proportion of customers with independent demand for the tied product) the greater the residual market available to rival producers of the tied product.
- ❑ **Identity of customers subject to the tie.** Some customers may be more readily accessible to entrants seeking to operate on the tied product market. For example, in the telecommunications industry, entrants can typically serve business customers and residential customers in dense urban areas at considerably lower cost than rural customers. These customers are therefore particularly important in determining whether a tie leads to exclusion of rivals in the tied product market.
- ❑ **Large customers.** Large customers in the tied product market that have independent demand for the tied product may be particularly important in determining the size of the residual market in the tied product. If their demand is sufficiently large, these customers may have the ability to guarantee rivals sufficient sales to remain as competitors in the market, or they may be able to sponsor new entry.
- ❑ **Scope for product differentiation.** The more that rivals in the tied product market can differentiate their products from the tied product of the monopolist, the greater their scope to make sales and to earn positive margins above marginal costs and thereby recover fixed costs. Note that greater heterogeneity in customer preferences will provide greater scope for product differentiation. Also, the greater the value to customers of the tied product relative to the tying product, the smaller the product differentiation in the tied product that will be needed to overcome the effects of the tie.
- ❑ **Network effects.** Network effects arise where a customer's value for a product increases with the number of other users of the product. Where there are network effects in the tied product market, a tie may serve to "tip" the tied product market to the monopolist and deprive rivals of the opportunity to develop network externalities of their own. One part of the allegation in the Microsoft case brought by the US DOJ was that network effects led to a tipping of the market toward Microsoft's Internet

Explorer and away from Netscape at a critical moment in the development of the internet browser market.

- **Two-sided markets.** Two-sided markets are a variant of markets with network effects. In two-sided markets, such as (non-direct) advertising, card systems or platform software, one side of the market will be more attracted to the product the larger the size of the other side of the market; it is therefore necessary to get both sides of the market on board to be successful. For example, advertisers will pay more for advertising in a magazine the larger the number of readers; retail merchants will be more willing to pay for a card system the larger the number of retail customers that use the particular type of card; and application software developers will be more willing to write software for a particular platform the larger the platform base in the market. Tirole (2005) explains that there may be scope in two-sided markets for rival producers of the tied product to survive a tie on one side by a monopolist of the primary product, even if rivals cannot differentiate their products in the eyes of that side of the market, as there may be scope for differentiation in supply to the other side.⁵⁸

4.1.3. Counter-strategies in the tied product market

Rivals in the market for the tied product might be able to develop effective strategies to counter tying by a monopolist in the primary product market. For example, a rival in the tied product market may form its own tie with an alternative producer in the primary product market. In some circumstances it might even be possible for a rival in the tied product market to sponsor entry or to enter the primary market itself as a rival to the monopolist. Alternatively, the rival might look to tie its product with a third product that the monopolist in the primary market does not control. For example, a tie by a monopolist in print advertising of print and television advertising might be countered by a rival in television advertising that ties its product with radio or internet advertising.⁵⁹

Also relevant here, under many models of tying (though not all), is whether the monopolist's tie is credibly irreversible.⁶⁰ If it is not, rivals in the tied product market will be aware that if they remain in the market the monopolist will be likely to earn lower profits under the tying arrangement and will not rationally maintain the tie. Exclusion in these situations is therefore more likely to be effected if the monopolist makes a pre-commitment to the tie, such as through a technological tie in the product design. By contrast, contractual ties

⁵⁸ See *ibid.*

⁵⁹ Slade shows that Canadian newspapers with monopoly power in local areas tend to tie the provision of advertising services to the purchase of advertising space much more frequently than the newspapers published in multi-newspaper cities. Margaret Slade, "The Leverage Theory of Tying Revisited: Evidence from Newspaper Advertising", 65 *Southern Economic Journal* 204 (1998).

⁶⁰ As we have seen, in some models tying may be used to maximize short term profits, in which case there is no need to make an irreversible commitment to the tie.

and economic ties (i.e., mixed bundling with a low implicit price for the tied product) can more easily be undone.

4.1.4. Is there a plausible dynamic theory of exclusion?

Consider the possibility that a tie may be designed to exclude competition in the tying market or in a newly emerging market. The key question here is whether the tie increases the costs and reduces the prospects for entry into the monopolist's primary market (the tying product market). In other words, "but for" the tie, would there be more competition in the market for the tying product? An allegation that the monopolist is seeking to exclude competition in the tied product market in order to retain its monopoly in the tying product market should be accompanied by a credible theory of how the tie reduces the prospect of greater competition in relation to the tying product. It seems to us that this theory of exclusion should consist of at least two elements. First, it needs to be established that existing barriers to entry in the tying product market are not insurmountable, and that in the absence of the tie it is possible, or perhaps probable, that rivals would enter that market and constrain the market power of the current monopolist. Second, the link between the tied product market and the tying product market must be explained, such that greater competition in the tied product market will facilitate entry into the tying product market. For example, in the *Microsoft* case, the US DOJ argued that, although Microsoft already enjoyed a near monopoly position in operating systems, it perceived a real threat from rival operating systems running Java-based applications. One line of argument was that, if Netscape were allowed to remain a significant player in the browser market, it would facilitate the development of Java-based applications that would run on any operating system, and over time this would attract more and more customers away from Microsoft's operating system.

4.2. THEORY OF HARM: WILL THE TIE CAUSE LONG-RUN CONSUMER HARM?

Once it has been established that exclusion has occurred or is likely to occur, it is necessary to assess whether that exclusion will cause consumers to suffer harm in the long run. Consumer harm does not follow exclusion automatically. As we have seen, tying that has exclusionary effects might generate efficiencies enjoyed directly by consumers or passed on to them indirectly, or it might facilitate price discrimination, which, as pointed out several times, has *a priori* ambiguous effects for consumer welfare. Therefore, to establish anticompetitive tying conduct it is necessary for the relevant Authority to demonstrate both a theory of exclusion and a theory of harm, and to support each theory with empirical evidence wherever possible.

We suggest that an assessment of whether a tie will cause long-run harm to consumers should be conducted in two stages.

- The first stage is to consider whether the circumstances surrounding the tie are consistent with any of the efficiency or price discrimination motivations presented in Section 2 of this paper (or any other non-strategic motivation that might be proposed). If no such explanations are presented by the dominant company, then it would seem

reasonable for the relevant Authority to reach a presumption that the tying conduct is motivated by a strategy of exclusion and leverage of market power.

- If non-strategic motivations are plausible, then since tying conduct could simultaneously serve both strategic and non-strategic purposes, with both negative and positive effects on consumers, the final stage is to perform a balancing assessment of these likely effects.

4.2.1. Threshold conditions: is there likely to be harm from exclusion?

Threshold conditions for an investigation of tying behaviour follow the Chicago school insights reviewed earlier. Where there is strong competition in the tied product market, or where the two products are consumed in fixed proportions and the monopoly product is essential, so that there is only one monopoly rent across the two products, and where dynamic theories of exclusion (such as those relating to future streams of rents in the tying product, in newly merging markets, or in upgrades of the tied product) do not appear plausible, the relevant Authority could presume that tying is unlikely to be motivated by a desire to exclude competitors and subsequently to lower output and raise prices in the tied product market. In these circumstances, even if rivals in the tied product market are excluded, *efficiency or price discrimination motives* for tying are more likely.

For example, in the *Genzyme* case,⁶¹ the market for home care services (which includes home care for Gaucher patients and home care for patients with other illnesses) was *highly competitive*. Genzyme would not have been able to extract any additional rents by integrating the supply of Cerezyme with home care services for Gaucher patients, except to the extent that those rents derived from greater efficiency and quality assurance in the delivery of Cerezyme. This would be a case where it would seem reasonable to conclude that, even if exclusion of competitors in home care services might occur, consumers would not be harmed by the tie.⁶²

We note that exclusion is more likely when there are high R&D costs, as the tie reduces the ability of rivals in the tied product market to recover these fixed costs. The tie may also discourage R&D aimed toward new products that rely on the tied product as a complementary product. Tying is therefore likely to be particularly problematic in industries characterized by innovation competition, as tying can dampen the incentives of rival firms to innovate.

There might also be cases where the exclusionary effects of tying on actual and potential rivals are limited, as rivals will simply adapt their commercial offerings to the structure adopted by the main player in the market. The question in these cases is whether there has been a significant detriment in consumer welfare as a result of moving from one competitive equilibrium to another.

61 *Supra* note 50.

62 We discuss the OFT's theory of harm in Section 3.3.1 above.

4.2.2. Are there plausible efficiency rationales?

If a review of the threshold conditions indicates that tying might be an exclusionary (predatory) anticompetitive strategy, then it is necessary to consider whether the conduct is motivated by efficiency rationales. This should involve careful consideration of each of the efficiency rationales discussed earlier in Section 2, and any further rationales that the impugned firm might suggest. That is, we agree with Philip Lowe's comment that the dominant firm needs to explain to the relevant Authority its "theory of benefit". Again, an emphasis should be placed on empirical verification and quantification of efficiencies.

If no efficiency rationale appears plausible (including any efficiency rationale advanced by the dominant firm), then it would be reasonable for the relevant Authority to conclude that the tie has an anticompetitive motive and would have harmful effects on long-run consumer welfare.⁶³

4.2.3. Balancing assessment

If efficiency or price discrimination rationales are identified as plausible, it is then appropriate to balance the conduct's likely benefits for consumers against the likely harm. One important issue to consider here is whether an alternative method was open to the monopolist to achieve the claimed efficiencies with less (or no) anticompetitive effects, in line with the EU principle of "objective necessity" as applied by the European Commission in the *Microsoft* case.⁶⁴ If it can be established that the tying arrangement is indispensable to achieving the claimed efficiencies, the next issue is the extent to which those efficiencies are passed through to final consumers.

4.3. POLICY CONSIDERATIONS

We believe that detailed guidelines on the application of Article 82, and in particular on how the Commission will approach future tying cases, would be extremely useful and timely. In that regard, we agree with the comments made by Philip Lowe and by Damien Neven, which seem to indicate that such guidelines may indeed be expected in the future. We believe these guidelines should follow the very helpful format adopted in the recent draft guidelines on the assessment of non-horizontal mergers.⁶⁵ The reason is that we believe it would be useful at this stage to provide the (national) Authorities, as well as lawyers and economists working on these matters in the EU, with detailed guidelines describing the issues the Commission would focus on when analyzing specific cases. Some legal commentators have argued that guidelines

⁶³ We note that it is not so simple to reach a conclusion on the effects of the tie on overall social welfare. Where there are fixed costs in production and downward sloping average cost curves, exclusion may save society the duplication of fixed costs.

⁶⁴ See Christian Ahlborn, David Bailey and Helen Crossley, "An Antitrust Analysis of Tying: Position Paper", GCLC Research Papers on Article 82 EC 166, 196 (2005).

⁶⁵ Available at: http://ec.europa.eu/comm/competition/mergers/legislation/draft_nonhorizontal_mergers.pdf.

are not necessary and that the Authorities should simply bring cases and let the Community Courts change the case law on tying (if necessary) through their judgments. Even leaving aside the current time-lag between the Authorities' decisions and the Courts' judgments in non-merger cases, we disagree with this approach, as we believe that tying cases are very fact-specific and that it is difficult to provide correct guidance through a few judgments on complicated tying cases.