

Potential Anticompetitive Effects of Bundling

by

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12th July, 2004

There has been a recent surge of antitrust interest in the bundling behaviour of firms with market power. In this light, this paper reviews the economic arguments that raise concerns about the potential anticompetitive effects of bundling; distinguishing when it is and is not likely to be of concern to competition authorities.

^{*} Melbourne Business School, University of Melbourne. This paper was partially based on funding from Hutchison Telecommunications and CoRE Research. However, all views are solely those of the authors and do not necessarily reflect those of these organisations.

1. Background

Concern about the potential anti-competitive effects of bundled products has arisen in regulatory contexts around the world. The best known example involves the anti-trust litigation against Microsoft for the bundling of its Internet Explorer web browser with its Windows 98 (and beyond) operating system. However, concerns about bundling have also been raised in the telecommunications industry in Australia (ACCC, 2003) and the United States (e.g. King and Maddock 1999), regarding telecommunications and internet service provision in Canada (e.g. Telecom decision CRTC 98-4), in the provision of cable services in the UK (e.g. Joint OFTEL and ITC document, “The bundling of telephony and television”, February 2000), and finally, in the European Commission’s rejection of the GE-Honeywell merger (Nalebuff, 2003). Recently, the potential anti-competitive effects of bundling have been raised in the context of the proposed arrangement between Foxtel, Optus and Telstra relating to cable-TV services in Australia.

Bundling can have ambiguous economic consequences. Bundling may be desirable. For example, it may allow more efficient production and distribution of products and may save transactions costs associated with a consumer purchasing a variety of unbundled products. At the same time, bundling might provide a way for a firm with market power to extend that power by either harming potential competitors or raising barriers to entry.

Given the ongoing concerns about bundling, this paper is intended to provide a brief introduction to the economics of bundled products. The paper surveys the relevant economic literature and considers the benefits from bundling as well as how bundling might be used as a means of price discrimination, as a facilitating device to soften competition within existing markets and, finally, as a potential barrier to entry.

We note that, in each of these cases, the potential anti-competitive effects of bundling are at their strongest when a firm has significant market power over one component in a bundle. In this situation, an appropriate regulatory response is not necessarily to prohibit bundling. Rather regulation can be designed to either remove the ability to abuse bundling by requiring an unbundled option or to encourage access to components in a way that would enable equivalent bundles to be provided by non-integrated firms.

2. What is Bundling?

Suppose there are two products, A and B . A firm is said to *bundle* those products if it produces both and offers consumers a single price, p_{AB} , for both one unit of A and one unit of B together.

If a firm offers a bundle then it may or may not also offer the bundled products as individual products with prices p_A and p_B . Note that for the bundle to be non-trivial, in the sense that the consumers prefer to buy the bundle rather than to buy one unit of product A and one unit of product B separately, we require that $p_{AB} < p_A + p_B$. Similarly, note that for the individual products to be non-trivial, in the sense that consumers prefer to buy a unit of one product rather than to buy the bundle and ‘throw away’ the unit of the other product, we require that both $p_A < p_{AB}$ and $p_B < p_{AB}$. If these latter inequalities did not hold then the firm is effectively only selling the bundle.

Bundling is pervasive in the economy. There are many products that can only be bought as a unit (like shoes and laces) or that tend to be bought together (such as a mobile phone and a mobile phone service, recent songs by the same artist on a CD, or local phone calls regardless of the length or time of call made). In these cases it is

usually possible to identify good commercial reasons why the bundling occurs. For example, the reason might be driven by the costs of supply. It might be cheaper to supply two products *A* and *B* together than to supply each product separately. Alternatively, demand-side factors come into play so that the consumers value the bundle more than they would value the individual products separately.¹ Both of these arguments were put forward as reasons why it would make good commercial sense for Microsoft to bundle its browser and operating system.²

Bundling is closely related to tying. A product *A* is tied to another product *B* if the products are sold separately but a consumer is required to buy one product whenever they buy the other product. Thus, the firm charges separate prices for the two products p_A and p_B , but prevents the consumer from buying just one of the products. In this situation the consumer is forced to buy the bundle. If, for example, one unit of product *A* was tied to one unit of product *B* then the customer would be required to buy the bundle at an effective total price of $p_A + p_B$.

Tying and bundling are effectively identical in certain situations. For example suppose (i) that a firm tied one unit of *A* to one unit of *B* where the total price of $p_A + p_B = \$10$; or (ii) a firm bundled one unit of *A* with one unit of *B* for a bundled price of $p_{AB} = \$10$ and refused to sell the individual products. In this situation, the tying and bundling are effectively identical. This relationship is well recognised in the economics literature. For example, Carlton and Perloff (1994, p.470) refer to bundling as a 'package tie-in sale'.

¹ This may also be related to transactions costs and convenience. For example, it makes sense to sell laces with shoes. This not only means that consumers avoid the costs of finding laces that match a particular pair of shoes, but also helps the customers try the shoes on in the store. Some stores have begun extending this practice to 'socks' – they provide socks to try on with the shoes and 'throw in' the socks if the customer buys the shoes.

² Of course, this did not stop Microsoft from requiring Apple to have Internet Explorer as its default browser on a non-Windows operating system (see Fisher, 2000).

3. Socially Efficient Bundling

As noted above, bundling can sometimes be socially efficient; in the sense that social surplus – consumer welfare less opportunity cost – is maximised. In this section, we consider the potential for socially efficient bundling. This creates a useful benchmark for our analysis on potential anti-competitive effects.

Consider a specific consumer facing a firm that produces both product *A* and product *B*. It is more efficient for the firm to supply the consumer with a bundled product than to supply two separate products if the increment to value from the bundled product exceeds any additional cost associated with bundling.

Let v_i denote the value of product *i* to the consumer and c_i represent the cost of that product. There are three cases that need to be considered. First, suppose that efficient trade would involve the consumer buying both individual products in the absence of bundling. In other words, $v_A > c_A$ and $v_B > c_B$. Then it is socially efficient to sell the bundled product if and only if:

$$v_{AB} - (v_A + v_B) > c_{AB} - (c_A + c_B)$$

In other words, bundling is desirable relative to buying the individual products if the difference between the value of the bundle and its cost is greater than the sum of the gains from trade on each individual product.³ Note that this equation reflects both demand-side and supply-side benefits from bundling. For example, if there are no demand-side benefits so that $v_{AB} = (v_A + v_B)$, then bundling is socially efficient only if $c_{AB} < (c_A + c_B)$. In other words, in the absence of demand-side factors, bundling is socially efficient only if there are cost savings associated with the bundle.⁴

³ Throughout we assume that $v_{AB} > c_{AB}$. If this did not hold then the firm could not make a profit by selling the bundle.

⁴ Put the other way, whenever the consumer can ‘freely dispose’ of part of the bundle we would expect that the value of the bundle to the consumer was always no less than the value of the two individual

Alternatively, suppose that efficient trade would not involve the customer buying one of the two products in the absence of bundling. For example, suppose that efficient trade would not involve the customer buying product B because the customer values that product at less than the cost of production; $v_B < c_B$. Then, it is socially optimal to have bundling if and only if

$$v_{AB} - (v_A) > c_{AB} - (c_A)$$

Similarly, if the customer would not efficiently purchase product A in the absence of bundling because $v_A < c_A$, then bundling is only socially efficient if

$$v_{AB} - (v_B) > c_{AB} - (c_B)$$

Notice that in competitive markets where prices of bundled and stand-alone products reflected costs, bundling would only occur if it were socially efficient (Salinger, 1995). Moreover, if it were the case that A and B were truly separable products that may happen to be bundled, then such socially efficient bundling would only arise when the costs of providing the bundle are less than the costs of providing each product separately.

In summary, bundling is most likely to be socially efficient if it involves some complementarity on the demand (customer valuation) or supply (cost saving) side. It might be easy to exaggerate any complementarity, particularly if bundling is being used as an anti-competitive device. However, to the degree that bundling involves real and verifiable complementarity, any policy dealing with bundling should aim to allow these to be realised.

goods. In this case, bundling can only be socially inefficient if the cost of the bundle exceeds the sum of the costs of the individual products.

4. Competitive Consequences

When markets are imperfectly competitive, there is potential for bundling to occur even if it is more socially efficient for stand-alone products to be offered; that is, where bundling costs are higher and there is little complementary consumer benefit. These cases of ‘wasteful’ bundling fall into two broad categories. First, a monopolist may have an incentive to bundle unrelated products as a means of achieving price discrimination. Second, a monopolist in one product may bundle its product with one in a more potentially competitive products as a means of leveraging its monopoly power and to raise barriers to entry for the potentially competitive markets.

Bundling for Price Discrimination

Consider a firm that has market power in two products, A and B . Assume consumers have independent (or indeed negatively correlated) valuations for those products. Examples of this include different songs by the same artist, different articles in a newspaper, or even different topics in an advanced microeconomics course. In this situation, some consumers prefer product A to B while for others the reverse is true.

In the absence of bundling, a firm is forced to price each product individually, attempting to maximise total profits for these two products. For a firm with market power, this will involve restricting sales of products to each consumer. This is both a lost profit opportunity and a potential loss in consumer welfare.⁵

⁵ Suppose that there were two consumers, one of whom valued A at \$10 while the other valued it at \$4. In contrast, their valuations for B were the reverse. Finally suppose that each good did not involve any production costs. Then the monopolist would maximise profits by setting $p_A = p_B = \$10$ and selling one of each product; achieving a total profit of \$20. Each consumer would only buy one product. The potential gains from trade for the other product for each consumer would be wasted.

Offering a bundled product allows the firm to exploit the diversity of consumer preferences and charge a higher price for the bundle (or achieve greater sales) compared with the no bundling case.⁶ This is an example of price discrimination because consumers could potentially be placing different values on each component of the bundled package.⁷

Bundling for the purposes of price discrimination is only profitable in certain circumstances. For example, it requires that the usual conditions for price discrimination hold, so that re-sale of individual components is not possible (preventing one type of consumer buying the bundle and selling one component to the consumers that place a high relative value on that component).⁸ Bundling might also not be profitable if one type of consumer places a very high relative value on one component. In this situation bundling may not achieve higher revenues for the firm as they would be sacrificing the ability to use stand-alone pricing to extract high returns from that high-value customer.

The type of bundling discussed here is not necessarily socially undesirable unless it happens that a class of consumers actually values a product less than the costs associated with supplying it to them (Adams and Yellen, 1976). Even in this situation, this is a cost that is in part borne by the firm itself and so if it was too high, this type of bundling would not be observed. So generally, bundling purely for price discrimination is not undesirable from an economic perspective.

⁶ Continuing the example from the previous footnote, both *A* and *B* value the bundled product at \$14 a piece. This is what the monopolist could charge for the bundle and it would sell two bundles for a total profit of \$28. Note that the consumers are no worse off under this arrangement than when bundling did not occur.

⁷ This rationale for bundling was first explored by Stigler (1968), Adams and Yellen (1976) and, more recently, by McAfee, McMillan and Whinston (1989). Bakos and Brynjolfsson (2000) have recently used this theory to explain how bundling can be used to sell information goods. For a discussion see Gans (1997).

⁸ See Carlton and Perloff (1994, p.472) for a discussion.

Bundling as an Entry Barrier

Bundling creates competitive problems when a firm with market power uses bundling to extend its market power into potentially competitive markets. Suppose that a firm has monopoly over product A while the supply of B is potentially competitive. Is it possible for the firm to bundle products A and B together in such a way that reduces the profits of competitors who supply only B and potentially drive those competing firms from the market?

The most obvious way that this can occur is closely related to predatory pricing. To see this, suppose that the supply of B is perfectly competitive so that $p_B = c_B$. In the absence of bundling, the monopoly firm would price A at a level that maximised its profits in that market, say p_A^* and would price B at cost. However, the monopoly firm could drive the competitors in product B from the market if it set the price of product B below the competitive price. This would be standard predatory pricing. For this situation to arise, the standard conditions for predatory pricing would need to hold. For example, there would need to be the ability for the predator to recoup the profits that it forgoes in the short-term from product B . In other words, if the competitors in product B are driven from the market, the predator must have the ability to raise and maintain the price of product B .

Bundling can be used to disguise predatory pricing. For example, rather than explicitly pricing product B below cost, the monopoly could use a bundle to implicitly price product B below cost. In this situation, the firm could potentially drive out competition from the product B market by bundling A and B together so that the

incremental price consumers of B are paying for B is less than the competitive price for B as a stand-alone product.⁹

It can be argued that, to the extent that bundling is used as a guise for predatory pricing, there is nothing wrong with the bundling per se. Of course, this misses the point that direct predation might be more easily detected than predation through bundling. If bundling is used for predatory purposes then it raises all the concerns usually attached to predatory pricing.¹⁰

Bundling may also lead to unique competitive concerns particularly when the market for product B is not perfectly competitive. For example, bundling may be used to create an artificial barrier to entry. An incumbent firm can use the bundled product as a commitment to effectively counter new entry. If this commitment is successful, there will be less entry in the market for product B and less competition in this market.

To see how this might occur, suppose that products A and B are independent from both the producer's and the customers' perspective but that B is subject to potential entry by a firm that has a fixed entry cost. Suppose that the incumbent bundles the two products together and does not sell them separately (at comparable prices to the bundle). Thus the incumbent bundles both products for a price of p_{AB} , and it earns a margin of $p_{AB} - c_{AB}$ on each sale. Because of the bundling, if a new firm enters the market for product B and successfully wins sales from the monopoly producer, then each sale to the entrant is a loss of sale of both a unit of A and a unit of

⁹ Gans and King (2002) provide a related argument based on the ability of competing firms to work with larger buyers to extract rents from smaller buyers. If this is possible, the end result may be a structure where larger buyers facilitate the competitive advantage of one firm over another (perhaps driving that firm from the industry). This model is particularly applicable where large buyer purchases takes place via tender. This argument, however, relies upon an identified group of smaller buyers who do not have the same buyer power.

¹⁰ See Rey, Seabright and Tirole (2001) for a discussion of these issues and the Chicago School critiques of such arguments.

B to the monopoly. In other words, by only selling the bundle, the monopoly has committed itself so that any successful entry in product B will harm the monopoly in its sales of both product B and product A . In contrast, if the incumbent monopoly sold each product separately, it would only lose $p_B - c_B$ from each sale won by the entrant.

The consequence of bundling in this case is to raise the cost of lost sales of product B to the incumbent. The incumbent will tend to respond more aggressively in response to entry than if it were not selling the bundled product. From an entrant's perspective, this lowers their prospective profits from entry and may deter that entry. If that occurs, then the incumbent can maintain a higher price by bundling than it could by offering two stand-alone products (Whinston, 1990).

For bundling to act as an entry deterrent in this situation, it must be possible for the incumbent firm to commit to the bundled product and to its price for the bundle. An alternative argument as to how bundling can be used as a means of deterring entry is provided by Nalebuff (2004). Suppose that there are some consumers who value A and B as a bundle more than as stand-alone products. Nalebuff notes that in this situation a firm selling an A - B bundle is able to prevent a competitor selling only B from capturing as much of the B -market as it would be able to capture in the absence of bundling. The B -only producer can only capture sales of those consumers who place a low value on the A -product. However, when consumer valuations of A and B are positively correlated, these consumers are low value consumers. The end result is that the competitor in the B -market earns low profits and may exit. In this context bundling is advantageous to the incumbent even when it faces competition (it receives a gain from coordinated pricing across markets) and so bundling will be highly credible in this situation.

The analysis above and, in particular, the Nalebuff analysis highlights the situations where bundling is most likely to be socially undesirable. First, the firm bundling the products must have market power in one of the product markets and must be potentially subject to competition in the other product market. Secondly, bundling is most likely to be anti-competitive if the firm does not sell the relevant individual products at prices that are comparable to the bundled price. Thirdly, bundling is most likely to be anti-competitive if customer valuations are positively correlated over the products *A* and *B*. In contrast, bundling as a (socially desirable) means of price discrimination is most likely to occur when consumer valuations are negatively correlated. In this sense, the relationship between customer valuations provides an important indicator as to whether bundling is likely to be anti-competitive or pro-competitive.

5. Conclusions

There are two broad anti-competitive concerns that may arise from bundling.¹¹ First, bundling can be used to disguise predatory pricing. The firm selling the bundle can ‘cross-subsidise’ one market from another market for the purpose of driving competition from the subsidised market. This behaviour does not raise any particularly new regulatory concerns relative to predatory pricing. Rather, in this situation, bundling is simply a convenient method to implement predatory pricing.

¹¹ A third, social cost from bundling is identified by Gans and King (2004). They demonstrate that bundled discounts can distort consumer choices over unrelated products. This may cause consumers to purchase their least desired bundle; a direct social cost. For instance, recent moves to bundle retail petrol and groceries may have this effect. However, for a given number of firms this has no upwards impact on pricing. Of course, firms or entrants who cannot gain access to exclusive bundling alliances may find it difficult to compete. In this situation, bundling may act as an entry barrier as discussed above.

Second, bundling can be used to create a barrier to entry in a potentially competitive market. The incumbent, by offering a bundle, offers a superior product to high value customers relative to a rival who can only offer a single product. The firm that does not have access to the bundled product is placed at a competitive disadvantage.

At the same time, bundling can often be socially desirable. It can reflect real cost savings and it can reflect a form of price discrimination that may raise economic surplus. Any regulatory approach designed to deal with the potential anti-competitive effects of bundling needs to take the benefits of bundling into account. Of course, to the extent that bundling is an issue under Part IV of the *Trade Practices Act*, any remedy might be ex post – as a penalty or damages in response to anti-competitive effects.

Beyond ex post penalties, there are two obvious regulatory approaches to deal with bundling. The first would be to require the firm that provides the bundle to also sell the individual products at ‘consistent’ prices. The bundled product can be discounted to reflect legitimate cost savings. This approach allows both the producer and customers to enjoy benefits of bundling where they exist while avoiding the anti-competitive potential of bundling.

Alternatively, the anti-competitive potential of bundling can be avoided by requiring access to the monopoly product component. Under this outcome all firms in the competitive market segment have access to components and products they need to themselves form bundles to compete with the incumbent. Interestingly, from this perspective, the regulatory drives towards ‘unbundling’ seem a misnomer. Such moves ensure that bottleneck components have an explicit, wholesale price. This allows entrants into other segments to build bundles across segments that might be

controlled by a monopolist. In this sense, the outcome is not unbundling as much as facilitating potential bundling (or at the very least allowing the threat of bundling to constrain the pricing behaviour of incumbent firms).

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