

Comments on "Gaussian Demand and Commodity Bundling"

Richard Schmalensee's paper deals with commodity bundling, that is, the selling of goods or services in packages. The paper is particularly interesting to those who study and/or manage the marketing function. Indeed, selling of goods or services in packages is a very common marketing strategy. Examples include vacation packages, season tickets (concerts, sports, theater, etc.), and complete dinners. There are two forms of bundling strategies: pure bundling, if goods are sold only in packages, and mixed bundling, if goods are sold separately as well as in packages (e.g., ordering à la carte vs. a whole dinner). Bundles sometimes include goods or services that cannot be sold separately: luxury in a car is tied to transportation services; a brand name cannot be sold alone (see Adams and Yellen 1976). These authors also mention that selling different sizes is a form of commodity bundling. If two sizes of a product are sold, a small size s and a large size S , the offering (s, S) is a form of mixed commodity bundling: the quantity $S - s$ is not offered separately but only as part of the bundle S .

In the past, the explanation of commodity bundling focused on cost savings in production, transactions, or complementarity of bundle components. Stigler (1963) first articulated the idea that the profitability of commodity bundling can stem from its ability to sort customers into groups with different reservation-price characteristics and hence to extract consumer surplus. Adams and Yellen (1976) discussed this sorting of consumers. Figure 1 describes the case of selling each good independently. Any individual with reservation prices (r_1, r_2) for the two goods falls into one of four regions: 0 are nonbuyers ($r_1 < p_1, r_2 < p_2$); 1 are buyers of product 1 only ($r_1 > p_1, r_2 < p_2$), etc. Assuming additivity (the two products are independent), figure 2 illustrates pure bundling. Individuals above line AB are buyers of the bundle because $(r_1 + r_2) > (p_1 + p_2)$. Finally, mixed bundling is shown in figure 3. Region 1 individuals buy 1 only, because $r_1 > p_1$ but $r_2 < (p_B -$

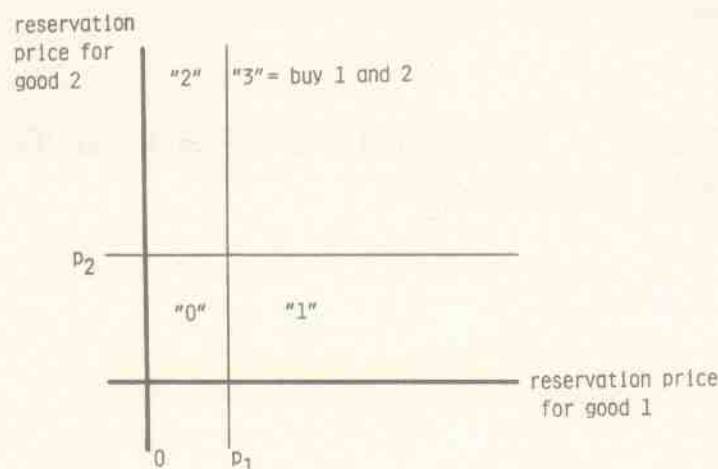


FIG. 1.—Each good sold independently at prices p_1 and p_2

p_1). The properties of the different strategies (unbundled sales, pure bundling, and mixed bundling) can be briefly summarized as follows:

Unbundled selling has the ability to extract a high price for each good because some buyers care little for the other good.

Pure bundling reduces consumer heterogeneity and thus extracts consumer surplus. Richard Schmalensee's paper makes this point rigorously (albeit on a very specific example—bivariate distribution of reservation prices) and thus extends the results of Stigler (1963). The latter suggested that pure bundling works when the reservation prices of two commodities are negatively correlated across the population of buyers. Schmalensee proves that this condition, although sufficient, is not necessary. The reduction in consumer heterogeneity comes from the fact that the standard deviation of reservation prices for the bundle is always less than the sum of the standard deviations of the two goods of which it is composed: $\sigma_{A+B}^2 = \sigma_A^2 + \sigma_B^2 + 2\rho\sigma_A\sigma_B < (\sigma_A + \sigma_B)^2$ as long as $\rho \neq 1$.

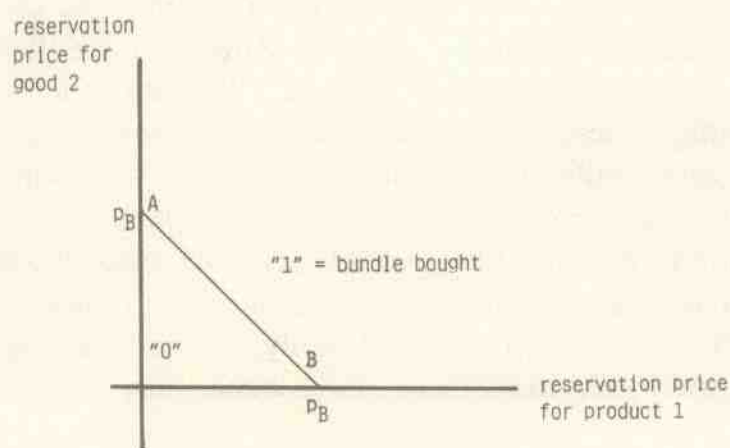


FIG. 2.—Goods 1 and 2 are offered only as a package at price p_B

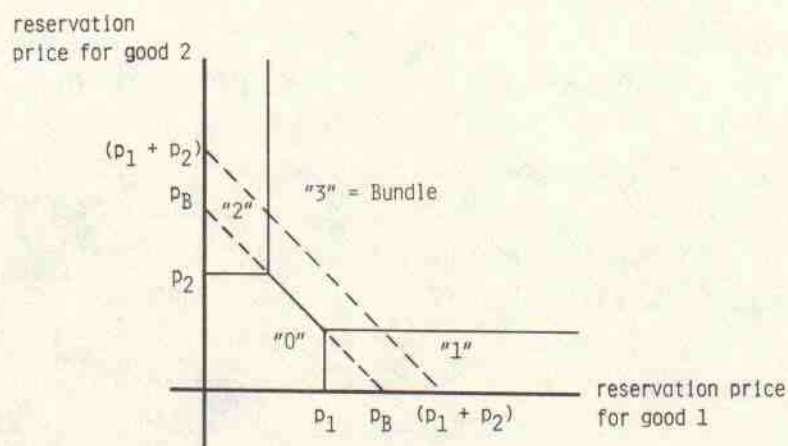


FIG. 3.—Goods 1 and 2 are offered separately at prices p_1 and p_2 and as a package at price $p_B < (p_1 + p_2)$.

Mixed bundling obviously has characteristics of both unbundled selling and pure bundling.

Depending on the distribution of reservation prices, any ranking—in terms of profitability for the seller—of these three strategies is possible (see Adams and Yellen 1976). Bundling works as a price-discrimination mechanism. Pure price discrimination (charging each consumer his reservation price) achieves the highest profits but violates price-discrimination laws and would be difficult to implement (the seller needs to know all reservation prices but consumers have an incentive not to reveal their reservation prices). Bundling requires knowing only the distribution of reservation prices, and each person pays the same price (thus it is not illegal).

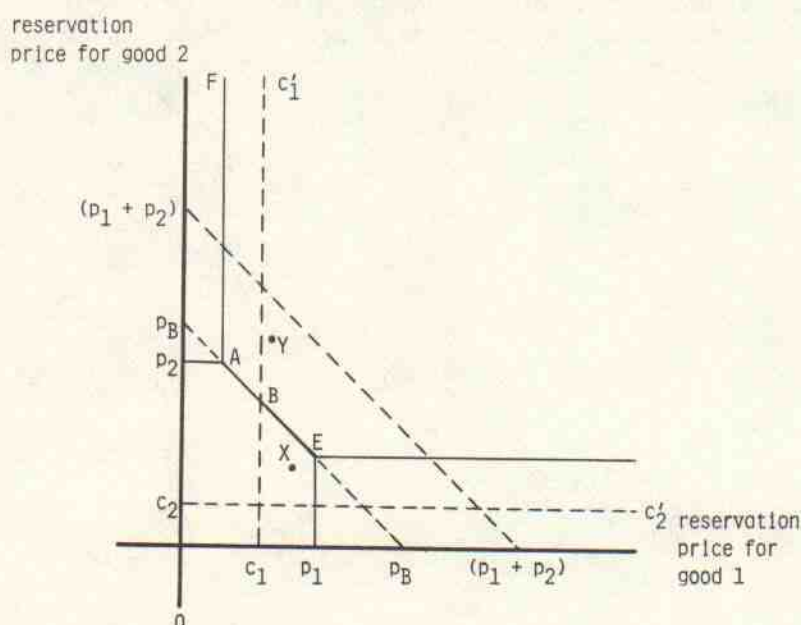


FIG. 4.—Two consumers, X and Y, with different reservation prices have an incentive to trade under the mixed bundling strategy.

The conditions under which the bundling strategy recommendations are applicable are very restrictive. The theoretical structure considered by Stigler, Schmalensee, and Adams and Yellen assumes: (1) a single seller selling to consumers (this monopoly assumption is obviously very restrictive to understand bundling as used in practice); (2) no arbitrage (indeed, buyers have an incentive to trade goods for money).

Adams and Yellen (1976) provide a simple illustration of this incentive to trade. Figure 4 considers two consumers X and Y: X does not consume good 1 but Y does. Yet Y's reservation price for good 1 is lower than X's. The result of this is that both X and Y can mutually benefit if Y trades good 1 for money paid by X. Adams and Yellen (1976) also identify the existence of "distributive inefficiencies" that bundling implies. From a supply standpoint, if c_1 is the constant cost of production of product 1 and c_2 of product 2, all consumers on the right of the vertical line c_1 , c'_1 should consume the good. However, in the mixed bundling strategy (see fig. 4), consumers located in the area to the right of $FAEp_1$ buy good 1. If customers in $FABc'_1$ are more numerous than in c_1BEp_1 , then good 1 is oversupplied.

In sum, bundling is a most relevant notion for marketers. Schmalensee's paper provides additional theoretical insights into how bundling actually works. However, more research is needed to extend the analysis of bundling to the competitive environment in which marketers operate.

References

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