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A more general theory of commodity bundling ☆

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Abstract

This paper discusses the incentive to bundle when consumer valuations are non-additive and/or when products are supplied by separate sellers. Whether integrated or separate, a firm has an incentive to introduce a bundle discount when demand for the bundle is more elastic than the overall demand for products. When separate sellers coordinate on a bundle discount, they can use the discount to relax competition, which can harm welfare.

JEL classification: D11; D43; D82; D86; L13; L41

Keywords: Price discrimination; Bundling; Discrete choice; Oligopoly; Common agency

1. Introduction

Bundling—the practice whereby consumers are offered a discount if they buy several distinct products—is widely used by firms, and is the focus of a rich economic literature. However, most of the existing literature discusses the phenomenon under relatively restrictive assumptions, namely a consumer's valuation for a bundle of several products is the sum of her valuations for consuming the items in isolation, and bundle discounts are only offered for products sold by the same firm. The two assumptions are related, in that when valuations are additive it is less likely that a firm would wish to reduce its price to a customer who also buys a product from

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another seller. This paper analyzes the incentive to engage in bundling when these assumptions are relaxed.

There are very many situations in which it is useful to model products as substitutes or complements. For instance, when visiting a city a tourist may gain some extra utility from visiting art gallery A if she has already visited art gallery B, but the incremental utility is likely to be smaller than if she were only to visit A. Joint purchase discounts (or premia) on products offered by separate sellers are rarer, though some examples include:

- A tourist may be able to buy a "city pass", so that she can visit all participating tourist attractions at a discount on the sum of individual entry fees. This could be organized either as a joint venture by the attractions themselves, or implemented by an intermediary which assembles its own bundles.
- Inter-firm bundling is prevalent in markets for transport services, as is the case with alliances between airlines or when neighboring ski-lifts offer a combined ski-pass.
- Products supplied by separately-owned firms are often marketed together with discounts for joint purchase. Thus, supermarkets and gasoline stations sometimes cooperate to offer a discount when both services are consumed, as do airlines and car rental firms.[1]
- An academic journal might choose one subscription price when it is sold on a stand-alone basis to a library, and a lower price when it is sold as part of a "collection" alongside other journals.
- Pharmaceuticals are sometimes used as part of a "cocktail" with one or more drugs supplied by other firms. Drug companies can and do set different prices depending on whether the drug is used on a stand-alone basis or in a cocktail.
- Marketing data may reveal useful information about a potential customer's purchase history which can be used to determine a firm's price to the customer. For instance, information that a customer has chosen to buy firm 1's product may induce firm 2 to discount its own price to that customer.
- At a wholesale level, a manufacturer may offer a retailer a discount if the retailer does not stock a rival manufacturer's product. (Such contracts are sometimes termed "loyalty contracts".) This is a situation with a bundle premium instead of a discount.

The plan of the paper is as follows. In Section 2, I present a general framework for consumer demand for two products which allows for non-additive valuations and the use of bundle discounts. Section 3 covers the case where an integrated firm supplies both products. In Section 3.1, I revisit the approach to bundling presented by John Long [10]. Long's result is that the firm has an incentive to bundle when demand for the bundle is more elastic than demand for stand-alone products. Applying Long's general formula to the case of symmetric substitute products in Section 3.2 yields a simple formula governing when the firm wishes to introduce a bundle. Relative to the situation with additive preferences, the integrated firm typically has a greater incentive to offer a bundle discount when products are substitutable. Because the purchase of one product can decrease a consumer's incremental utility from a second, the firm has a direct incentive to reduce the price for a second item, in addition to the rent-extraction motive for bundling familiar from the existing literature.

[1] A more exotic example at the time of writing (September 2012) is a jeweler in Cobb County, GA, who offers a voucher for a free hunting rifle from a nearby sports store to any customer who buys a diamond worth more than $2500.