Pricing Best Sellers and Traffic Generators: The Role of Asymmetric Cross-selling

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Abstract

Among the many items online retailers sell, some stand out as best sellers and are often sold at considerable discounts. Best seller discounting can encourage customer traffic and the purchase of a basket of other products in the same transaction. Although most studies treat retailers as symmetric, the cross-selling potential is generally asymmetric across retailers, since some online retailers have more products to sell. In addition, the cross-selling effect works both ways — customers intending to buy a best seller may buy other items in their shopping basket, while other customers intending to buy a basket may buy a best seller while visiting the retailer. The authors model the pricing implications of this rich variety of asymmetric cross-selling, with both best sellers and typical baskets acting as traffic generators and cross-sold products. The common wisdom that loss leader pricing leads to neither a significant increase in store traffic nor an increase in profits does not apply in an asymmetric case where one retailer has more products to cross-sell. The cross-selling potential of products even far down the best seller list is demonstrated. Empirical analyses provide support for key findings of the theoretical model using book pricing and sales rank data from multiple online retailers.
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Introduction

On October 22, 2009, the American Booksellers Association sent a letter to the U.S. Department of Justice (DOJ) accusing Amazon.com, Wal-Mart, and Target of illegal predatory pricing. These three retailers had sold ten hardcover new releases, including best sellers by James Patterson, John Grisham, and Stephen King, for less than $9, though such books typically retail between $25 and $35 (Trachtenberg 2009). The letter also reported that publishers were not offering special terms to these retailers, so the titles were being sold below cost. Taking issue with this claim, The Wall Street Journal Law Blog commented that retailers setting prices below profit-making levels was not a sign of predatory pricing but rather an indicator of healthy price competition (Jones 2009). Promoting and selling the top-ten titles below cost represented a loss leader strategy to draw in customers who might purchase other titles or merchandise.

The DOJ case focused on 10 best sellers, but we also observe strong price competition for many products with even far lower sales ranks. News reports in October 2009 suggested that Wal-Mart was already offering up to 200 best sellers for 50% off their list price (Reisinger 2009). Amazon.com typically lists 100 books at considerable discounts under its "Best Sellers in Books" list. In other product categories, more than 500 generic prescription drugs are offered either for free (e.g., antibiotics at Publix and Meijer) or for only $4 for a month's supply (e.g., Wal-Mart, Kmart, Target) (National Conference of State Legislatures 2011). Amazon.com even provides sales ranks of books up to 10 million, similar to buy.com and other sites that track and report the sales ranks of almost all products offered for sale online. Retailers recognize that many products are able to generate some degree of traffic and cross-selling opportunity.

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Given the observed richness of price discounting across hundreds of items, we aim to clarify the pricing implications of the traffic generation potential for products with diverse sales ranks. We model and empirically examine price discounting strategies for online retailers. Although our model has application to retail competition more generally, the online pricing issues are more pertinent for several reasons. First, although products at the top of best seller lists are clear traffic generators and prime candidates for loss leader pricing, many products with lower sales ranks also exhibit some traffic generation potential. In other words, "best seller" is not so much a category as it is a matter of degree. Considering that an online retailer can offer millions of items, the retail pricing decision is much more complex since even less popular items may generate at least some traffic and cross-selling potential, prompting an online retailer to consider how to best discount such items. A key question thus emerges: What is the price discounting implication of the diminishing but positive traffic generation potential of products farther down the best seller ranks? Second, if a best seller is meant to generate traffic and sales of other products, then retailer size may be an important variable. Some retailers are bigger than others in that they offer more products for customers to purchase. Such asymmetric competition means that some retailers can benefit more from best seller discounting since the opportunity for cross-selling is bigger. Online stores have achieved very large assortments, so consideration of shopping basket size is important for online retailing. How do price discounting strategies and cross-selling vary with a retailer's size of the typical shopping basket it sells? Third, the psychological and economic motivations to visit a retailer and be cross-sold can be more prevalent in an online setting. The large product assortment can impact traffic for the online retailer and be an important basis of differentiation (Pan, Shankar, and Ratchford 2002; Ratchford 2009). Online recommendations for other items to purchase during online shopping introduce prolific cross-selling opportunities, including instances where a best seller is the product being cross-sold. How are price discounting strategies affected when additional shopping items or a best seller may be cross-sold to different shoppers? Finally, offering lower prices may be more prevalent and important for online retailers compared to brick-and-mortar stores (Pan, Shankar, and Ratchford 2002). Ratchford (2009) suggest that online price dispersion deserves additional explanations, particularly in relation to "heterogeneity in services" such as the product variety offered by retailers. Our study of cross-selling with asymmetric retailer size adds new insights to online price discounting strategies.

Given these important online pricing issues, we pose several research questions:

1. How do competing, profit-maximizing retailers determine price discounts for best sellers?
2. How does the loss-leading price of best sellers depend on retailer size?
3. How do retailers price best sellers and traffic generators of varying ranks?
4. When does best seller pricing increase traffic and profits?

Current marketing literature is limited on the first two research questions and absent on the rest, even though these questions are crucial to understanding the retail dilemma of which items to price higher or lower and when. The 2009 case about best-selling books reveals that not all retailers can offer the same lowest price. If the optimal (loss leader) price of a best seller is not the same across retailers, on what does it depend? Can a retailer with relatively smaller basket sizes offer the same loss leader prices as a larger basket-size retailer?

To examine these questions, our model includes two main characteristics of realistic retailer cross-selling activity generally ignored in prior research. First, retailers are asymmetric in that they vary in how many products they sell, meaning that their cross-selling capabilities differ.[1] Second, cross-selling is not a one-way activity where a customer buys a single best seller and then buys another basket of items while visiting the retailer. Some customers intending to buy a typical shopping basket may be cross-sold a best seller.

We examine the price discounting strategies of multiproduct retailers that incorporate these cross-selling characteristics. We use the term "best seller" to refer to any product with a higher potential to generate traffic for the retailer than a product lower down the sales rank.[2] We analyze a model in which best sellers can lead to the cross-sale of a basket of goods, just as the sale of a shopping basket can lead to the cross-sale of a best seller. An online retailer might be willing to reduce the price of a best seller if it would lead to cross-selling opportunities, but it also wants to increase the price of the best seller to the degree that it is cross-sold to buyers of other items. We show that the loss leader prices of best sellers depend critically on the typical basket size of a retailer. This finding explains why big-box retailers, such as Amazon.com, can offer discounts that cannot be matched by smaller retailers. We examine the boundary conditions of this phenomenon, and provide empirical evidence with online book pricing data that supports key propositions from our model: price discounts positively correlate with sales rank (even far down the best seller list), best sellers with low list prices are discounted more, and large basket retailers offer deeper discounts on the top best sellers.

Best Seller Discounts and Loss Leaders

Best sellers are books for which demand vastly exceeds what is then considered to be large sales (Steinberg 1996). Recent research has uncovered three major content reasons a book becomes a best seller: (1) its main themes, (2) symmetric plot with 3-act structure, and (3) everyday language (Archer and Jockers 2016). Becoming a best seller is also driven by the reputation of the author, gatekeepers such as publishing houses and publishers of book reviews and bestseller lists,

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[1] Li, Gu, and Liu (2013) analyze asymmetry in a retailer cross-selling, but the asymmetry is binary in that a retailer either cross-sells or it doesn't.
[2] While we use "best seller" to indicate a traffic-generating product, other research uses similar labels of "loss leader" or "shopping good." We use loss leader to reflect a best seller product priced below cost. A composite good "basket" in our study represents one or more items purchased in addition to a focal best seller item.