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Effects of $9 Price Endings on Retail Sales: Evidence from Field Experiments

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Abstract. Although the use of $9 price endings is widespread amongst US retailers there is little evidence of their effectiveness. In this paper, we present a series of three field-studies in which price endings were experimentally manipulated. The data yield two conclusions. First, use of a $9 price ending increased demand in all three experiments. Second, the increase in demand was stronger for new items than for items that the retailer had sold in previous years. There is also some evidence that $9 price endings are less effective when retailers use "Sale" cues. Together, these results suggest that $9-endings may be more effective when customers have limited information, which may in turn help to explain why retailers do not use $9 price endings on every item.

Key words. price ending, odd-pricing, pricing, catalogs

JEL Classification: C81, C93, D12, D8, L11, L15, M3

1. Introduction

Published studies report that 30% to 65% of all prices end in the digit 9 (Stiving and Winer, 1997; Schindler and Kirby, 1997; Daily Mail, 2000). Despite interest from economists reaching back over 65 years (Ginzberg, 1936) and the current widespread use of this practice amongst retailers, empirical evidence that price endings affect demand is limited. In this paper, we present a series of three field experiments in which we vary the price endings of many products. The three studies were conducted with two different national mail-order companies that sell moderately priced women's clothing.

The study was motivated in part by a pilot study in which one of the catalogs agreed to mail three versions of a catalog to separate randomly selected customer samples. The prices of four dresses were manipulated across catalog versions. The current policy of the catalog was to use a $9 ending and we refer to this as the Control version. In the two treatments, the price was either raised or lowered by $5,

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which removed the $9 ending from each dress. The prices and demand for the four dresses in each of the versions are summarized in the table below. A total of 66 dresses were sold in the $9 ending conditions, compared to 46 units in the $5 lower conditions and 45 units in the $5 higher conditions. The $9 ending yielded a demand increase of approximately 40% for these four dresses, while the $10 price difference between the two Treatment conditions resulted in effectively no difference in demand. This outcome persuaded catalog managers to conduct additional studies to replicate the findings on a larger sample of items. The findings also raise important questions about the contexts in which a $9 ending effect occurs. The three studies reported in this paper investigate whether the $9 ending effect varies depending upon how often an item has appeared in the catalog, and whether the $9 ending effect is moderated by "Sale" cues claiming that an item is discounted.

Pilot study: design and results.

	Prices			Number of units purchased		
Item	Control	Test A	Test B	Control	Test A	Test B
1	$39	$44	$34	21	17	16
2	$49	$44	$54	14	8	10
3	$59	$54	$64	7	7	6
4	$79	$84	$74	24	12	15

The marketing and economics literatures have long recognized the phenomenon of price endings but have produced few conclusive empirical studies. Prior research has focused on consumer-packaged goods or has involved very small price changes. Stiving and Winer (1997) offer a recent example of research conducted with consumer-packaged goods. They analyzed demand for canned tuna and yogurt and found conflicting evidence about the effect of 9-cent price endings (see also Blattberg and Neslin, 1990, p. 349). Examples of studies investigating very small price changes include Ginzberg (1936) and Schindler and Kibarian (1996). Ginzberg (1936) offers a brief description of a price-ending study conducted by a national mail-order catalog. In this study, round prices (i.e., 0-cent ending) were compared against "just under" prices of one to two cents less. Overall, the results were varied, with demand increasing for some items and decreasing for other items. Schindler and Kibarian (1996) conducted a study comparing 88-cent, 99-cent and 00-cent price endings in a clearance version of a mail-order catalog that sold women's clothing. Their findings regarding the impact on demand were also inconclusive.

Our studies offer new insights on the role and effectiveness of price endings. First, we present findings investigating $9 ending effects in three large-scale studies conducted in two different catalogs. The studies involved large price manipulations (generally $1 to $5) and revealed a consistent significant effect across all three studies, providing conclusive evidence that $9 price endings can increase demand. Second, we demonstrate that $9-endings are more effective on newer items. There is