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Price tags ending in 9 may be fooling shoppers

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Consumers commonly perceive prices ending in the number 9 as being low, but new research shows that 9-ending prices are often higher than others by as much as 18%, potentially leading shoppers to make suboptimal choices and impacting monetary policy.

Among sale prices, 9-ending prices are on average lower than comparable prices ending in other digits, but 9-ending regular prices have typically become higher than prices ending in other digits, according to research published on Dec. 11 in the *Journal of the Association for Consumer Research*.

Prices ending in 9, which comprise between 40% and 95% of retail prices, are widely believed to be lower than prices ending in other numbers, according to a 2011 study published in *Cornell Hospitality Quarterly* — and because of this, retailers have increased the overall frequency of 9-ending prices.

"We suspect that the retailers, particularly large ones, are aware of the behavior of their clients," said Daniel Levy, a professor at Bar-Ilan University in Ramat Gan, Israel, and co-author of the research. "They study their psychology and perceptions, they employ pricing experts that are familiar with the relevant studies, and thus we believe that they know what they are doing."

Previous research by Robert Schindler of Rutgers University focused on 99-ending prices and, based on an analysis of 10 retail prices for 120 different goods, found that those prices were 24.1% higher than the lowest price of the item.

Levy and his co-author Avichai Snir, a lecturer at Netanya Academic College in Netanya, Israel, decided to study 9-ending prices instead, Levy said, because of how many 9-ending prices there are and because recent research has found 9-ending prices are more rigid than other prices, which impacts monetary policy. If prices are less flexible, an increase in money supply will have less of an immediate impact on price levels and will therefore stimulate the economy more.

To conduct their research, Levy and Snir used retail scanner price data from former Midwestern U.S. supermarket chain Dominick's Finer Foods, which included 98 million weekly price observations between 1989 and 1997 for 18,036 products.

Dominick's, which closed or sold all of its locations by 2014, was the second-largest retailer in the Chicago metropolitan area, with between 20% and 25% of the market share. The price data used comprises about 30% of the supermarket chain's revenue.

Research has shown that 9-ending prices lead to higher demand and, therefore, higher sales volume, with 9-ending prices increasing sales by 10%, according to a 1987 study. In the data used by Levy and Snir, 9-ending prices are the most common, covering 63.9% of products, followed by 5-ending prices and 0-ending prices, covering 11.4% and 4.7% of products, respectively.

Despite consumer beliefs, however, 9-ending prices were higher than other prices in 22 of the 29 product categories, by 18% on average — a finding that surprised Levy and Snir.

"If consumers are confused by 9-ending prices and possibly by other procedures that retailers use to obfuscate prices," such as temporary price cuts at the same time as regular price increases, "then this might affect the extent of the competition in the marketplace," Levy said.

Additionally, because 9-ending prices are linked to price rigidity, they have an effect on monetary policy as well, Levy said.

"Other papers show that in response to macroeconomic shocks, 9-ending prices respond six months after the prices that end with other digits," he said, referencing a 2019 study co-authored by Snir. "Thus, 9-ending prices have a role in the effect that monetary policy has on the macroeconomy."

Even though the dataset includes over 98 million observations, it comes from a single retailer in the

Chicago area, which Levy and Snir say may raise questions about how applicable their results are for other retailers, markets and geographical areas. Additionally, the dataset is dated, they noted, which may not properly represent the current retail landscape, especially since technological innovation gives consumers more information about pricing than ever before.

Still, Levy and Snir wrote, these findings are robust and lay the groundwork for future research in different markets and geographical areas, and more studies are necessary to understand the full impact and implications of 9-ending prices.

The study "If You Think 9-Ending Prices Are Low, Think Again," published Dec. 11, 2020, in the Journal of the Association for Consumer Research, was authored by Daniel Levy, Bar-Ilan University, and Avichai Snir, Netanya Academic College.