I’m thankful I was asked to comment on this paper, as both the data and the insights derived in the paper are fascinating. This paper uses large-scale experimental variation to study the long-term effects of price promotions. The paper is unique in the scope and the scale of the experimental variation, allowing it to study important but rarely considered issues in marketing.

I think about this paper’s primary contribution in terms of price expectations: the prices a consumer expects to find when they visit a grocery store. Consumers not only base their purchase decisions on current prices, but also on what they expected prices to be. For example, a forward-looking consumer may avoid purchasing today if they expect lower prices tomorrow. However, price expectations could even affect a myopic consumer’s decisions by influencing their propensity to search the category. If consumers believe there might be large discounts available in a period, they may search the category more deeply, discover smaller price promotions more frequently and subsequently make more purchases.

Price expectations have played an important role in the marketing literature. Mela et al. (1997) found when brands offered larger promotions, their consumers became more price
elastic over time. Price expectations helps explain this phenomenon as consumers exposed to deep promotions might come to expect larger promotions in the future, thereby increasing their price elasticity and depressing firm margins.

Despite their potential to influence consumers’ purchase decisions, price expectations are not well studied in the academic literature for several reasons. First, price expectations are not easily represented in a regression equation since they encompass a multivariate distribution. Second, price expectations are not directly observable. Previous survey studies have demonstrated that consumers often don’t recall the prices of the products they purchased (Dickson and Sawyer (1990)). Third, if price expectations are sufficiently sticky, there may not be sufficient variation in price expectations to estimate model parameters with adequate precision. Fourth, price expectations might be strongly related with previous prices, making endogeneity a concern.

The authors are able to study this phenomenon by using a large experiment at a Chilean grocery chain, which I briefly describe below. Using a matched pairs design, the authors randomly sort stores into treatment and control groups, and manipulate the discounts of UPCs in the top 17 categories. During the first five weeks of the experiment, they instruct the treatment stores to have discounts of 30% and the control stores to have discounts of 10%. In the subsequent measurement phase, both treatment and control stores offer discounts of 10%. The authors compare the purchase behavior of matched consumers in these two groups. This experiment is able to overcome the difficulties of studying price expectations by inducing large and exogenous variation in past prices.

The authors found that consumers in the treatment group were 22.4% more likely to purchase promoted products. Furthermore, treated consumers shifted 4.7% of their shopping basket towards promoted products and made more purchases overall. The authors confirmed the robustness of their results using a randomization check and a placebo test. They argued the results cannot be explained by state dependence or consumer inventory building behavior.

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1I encourage interested readers to where the authors give a comprehensive description of the experimental protocol
One can interpret the experiment as testing whether current price expectations or future price expectations are more malleable. If promotions primarily effect consumers current price expectations, then treated consumers would search more deeply for price promotions, purchase more products, and, in particular, purchase more discounted products. Alternatively, if promotions primarily effect consumers price expectations in future periods, then treated consumers would be less likely to purchase as they would expect larger sales in future periods. Furthermore, the most price sensitive consumers would be most likely to delay purchasing. The experiment’s results are fully consistent with the notion that current price expectations are more responsive.

The findings are also consistent with the results of Mela et al. (1997). Consumers who are exposed to deeper promotions may be searching more frequently, leading them to discover more promotions and increasing their price elasticity.

The authors then used the data to estimate a Weitzman (1979) style search model. This model and the subsequent counterfactuals provide additional insights into the long-term implications of a price promotion. They found the increase in price sensitivity may actually help less popular products, as the change in price expectations induced consumers to consider more products as they searched for larger promotions.

While I enjoyed the paper, I would push the authors on a few points. First, I would encourage them to consider whether their manipulation directly changed consumer beliefs about the distribution of prices. In treated categories, discounts were deep for five consecutive weeks, whereas in other categories deep promotions were only observed less than 5% of the time. One thing that makes this data so unique is the experiment’s long length. The authors could use that fact to address how beliefs about prices change.

Second, the interpretation of the parameters in the structural model should be adjusted because of some of the modeling choices of the authors. Discounts are modeled as either deep or shallow using fixed effects variables. However, there is some variation in the actual promotional depth, so the estimate of the effect of discounts likely suffers from attenuation
bias. The authors model consumers as initially knowing which products are on sale, but they need to search to discover the promotional depth. In the data, promotional depth is generally the same within each period, while in the model consumers assume these depths are independent. The authors also assume that consumers use the prices from their last visit to update their beliefs of future promotions, no matter how long ago the visit was. Instead, rational consumers should account for the number of intervening weeks since their last visit.

Finally, I’d love to see the authors delve deeper into the nature of the estimated effect as there is potential to answer several other potential research questions by taking advantage of some additional moments in the data. First, the manipulation might have affected consumers in different ways. One might expect that the most price sensitive consumers would be the most likely to react to changes in price expectations. However, if these consumers are already fully searching the category, then the observed effect may primarily be due to less price sensitive consumers. Second, the discounts were all implemented in terms of percentages, meaning categories with larger fixed prices received larger absolute discounts. We might expect these categories to have a larger observed effect as the gains from search would be larger. Third, it would be interesting to see how long the effects last. Firms considering a temporary increase in promotional depth could use this information to evaluate the long-term cost of the promotion. Furthermore, this could help guide the estimation assumptions of researchers fitting dynamic structural models. Lastly, because the experiment only modified the prices of a subset of the largest categories in each store, the authors could check for potential category spillovers. While the large manipulation was useful for the analysis, the observed effect could have been due not only to the price variation within a category, but also to the simultaneous variation of many categories in the store. If that’s the case, the observed effect may not be relevant as such large variation in pricing strategy is rare in practice. If the authors confirm the non-manipulated categories were unaffected, it would support the notion that the changing promotions in various categories did not affect each other.
References

