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Price Promotions

How much volume is discounted that you would sell anyway at the normal price?

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We analysed the outcomes of 1,300 price promotions. In around half of them, the majority of the volume sold was 'baseline' volume that would have been sold anyway, at the normal price.

KEY POINTS

- Price promotions have a hidden cost - the profit margin forsaken on sales that would have been made anyway at normal price: what we call 'baseline' volume.
- In many cases the amount of 'baseline' volume that is sold cheaply is twice as much as the extra sales arising from the price promotion.
- If you cut back on price promotions, your amount of volume sold on deal will fall by a lot, but your total sales will not decline by as much. This is because so much of the volume sold in price promotions is 'baseline' volume.

INTRODUCTION

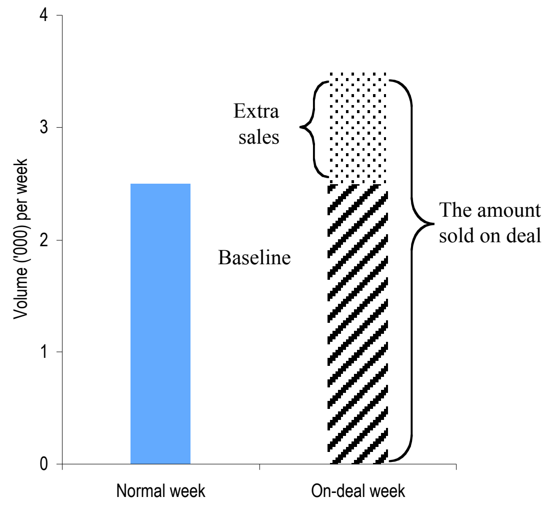
Price promotions are endemic. They often represent the main share of the marketing budget for consumer-packaged goods brands.

Price promotions do not usually expand category demand, but they do lead to a significant short-term increase in sales. This is mostly caused by brand-substitution. Price promotions also do not tend to have positive long-term effects, because most people who buy the promoted brand have bought it in the past. Therefore there is not much 'trial' by non-buyers. There can be some consumer purchase acceleration and stockpiling from price promotions, and these can have some minor negative effects on brand and category sales after the events. Also, frequent promotions tend to lower consumers' reference prices and make them more deal-sensitive. Price promotions can hurt profit: recent US research finds that a 5% increase in price promotion frequency or depth decreases profits by about 0.3-0.5% [1].

The conventional language of pricing and price promotions is *elasticities*. Prior research shows that the average price elasticity is around -2.6 [2-5]. This means a 10% price cut stimulates a volume increase of around 26% on average. It is higher when the price change is 'signaled,' with in-store ticketing. For example, a signaled price change can generate an elasticity up to around -5 [6, 7], in which case the 10% price cut will generate around a 50% volume uplift.

The concept of price elasticity helps us understand how much volume will change when price is cut. It focuses us on the *extra sales* that accrue from a promotion. However there is a big *cost* issue that affects the profitability of price promotions. This cost is the reduction in margin on the brand's 'baseline' sales. Baseline sales is the normal level of volume that a brand sells week to week. When a brand is price-promoted, the price cut applies not only to the extra sales, but also to these 'baseline' sales that would have been sold anyway at the normal price. Price elasticities don't tell us directly how much of the baseline volume is sold cheaply in a price promotion. This is an important issue as the margin lost in price promotions from one's baseline volume can be huge. Therefore, we examined how much baseline volume is typically sold at a discount, when brands are price-promoted.

Figure 1: Illustration of 'Baseline' versus 'Extra Sales'



- The amount sold on deal = Baseline + Extra sales
- Baseline volume is sold cheaper as well as extra volume in deal-week

DATA ANALYSIS

We examined data for leading brands in six packaged food-product categories, over three years. The data was obtained from four large supermarket chains in Australia. We identified all the weeks in which a brand was on promotion. We used a statistical smoothing technique to calculate the 'baseline' sales. Then, for every price promotion, we split the total sales on promotion into 'baseline' sales and 'extra sales'. The average price cut was 10-15%. In total, we analysed more than 1,300 temporary price promotions.

Figure 1 shows the difference between 'baseline' and 'extra sales'.

Table 1: Volume Split When the Brand is Price-Promoted

How Much of All the Volume in this Week is Baseline Volume?	Ratio of Baseline to Extra Sales	Percent of Promotions	Cumulative Percent of Promotions
Baseline volume is 90%, extra sales is 10%	9 to 1	5	5*
Baseline volume is 80%, extra sales is 20%	4 to 1	13	18*
Baseline volume is 70%, extra sales in 30%	3 to 1	16	34*
Baseline volume is 60%, extra sales is 40%	2 to 1	16	50*
Baseline volume is 50%, extra sales is 50%	1 to 1	11	61
Baseline volume is 40%, extra sales is 60%	0.7 to 1	14	75
Baseline volume is 30%, extra sales is 70%	0.4 to 1	14	89
Baseline volume is 20%, extra sales is 80%	0.2 to 1	7	96
Baseline volume is 10%, extra sales is 90%	0.1 to 1	3	100

* In 50% of promotions there was at least twice as much baseline volume sold cheaply as there was extra sales

It shows that the amount sold during promotions is the 'baseline' volume (the amount would have been sold at normal price) *plus* the 'extra sales'. The key point is that the baseline volume, as well as the extra volume, is being sold at a reduced price.

RESULTS

The key is to find out how many promotions result in as much 'baseline' volume being sold at a discount as the extra sales that accrue. This is identified when the ratio of baseline sales to extra sales is one to one, or greater. The ratio is shown in Table 1. We see from the rightmost column of Table 1 that in 61% of promotions, the component of baseline sales was as much, or more, than the extra sales in the promotion week. In other words, there was at least as much baseline volume sold cheaply as the quantity of extra sales that was generated in 61% of all the promotions. Plainly, many price promotions result in a price reduction on significant amounts of inventory that would have been sold anyway. We also found there were some instances of very large uplifts from price promotions. In around 10% of cases, the baseline volume was only 10 to 20% of total sales for that week, which translates to a volume uplift of around 400 to 900%. However, these big uplifts tended to occur only for small brands, with deep discounts of 20 to 30% percent.

This result means that marketers are paying a heavy price for making some extra sales from price promotions – for every extra sale, they are often giving away margin on another two times as much volume (or more). So while many marketing people and trade sales teams say "price promotions work", these promotions have massive costs in foregone margin on sales that would have been made anyway, at the normal price.

IMPLICATIONS

In half the cases we analysed, the ratio of 'baseline' to extra sales was 2 to 1 or greater. The fact that this ratio is often greater than one has a big implication if one wants to lower the frequency of price promotions. The implication is that if you do less discounting, your *volume sold on-deal* will drop a lot, but your *total volume* will not drop by nearly as much. We illustrate this with an example:

AN EXAMPLE

Brand A sells 2,000 units a week as baseline volume. When it is on promotion, it sells 3,000 units in that week. The ratio of 'baseline' sales to 'extra' sales is 2:1. The brand manager feels that too much volume is being sold on deal, and reduces the frequency of the promotions. What will happen? The answer is that the volume sold on-deal will drop quite a lot, but *total sales* will not drop by nearly as much. This is because for every week that discounting is stopped, the *volume sold on-deal* will drop by 3,000 units but *total sales* will drop by only 1,000 units (total volume minus baseline). Margin that would have been otherwise foregone will be saved on the 2,000 units that would have been discounted in order to sell the extra 1,000.

Even in the minority cases where the ratio of baseline to extra sales was less than 1 to 1, if discounting is reduced then volume sold on-deal will be reduced a lot more than total sales.

SUMMARY AND CONCLUSIONS

This short report clarifies our thinking about the cost of price promotions. Marketing managers often worry about the *cost* of mainstream activities such as advertising. But perhaps they do not consider fully the enormous cost of price promotions, which is the forsaken margin on baseline sales. This forsaken margin is often on 2 or 3 times as much volume as the extra sales that are made from discounting. This money could pay for an awful lot of other brand-building activity!

KEY REFERENCES

1. Jedidi, K., Mela, C.F., and Gupta, S., 1999. 'Managing Advertising and Promotion for Long-Run Profitability'. Marketing Science, 18(No. 1): p. 1-22.
2. Tellis, G.J., 1988. 'The Price Elasticity of Selective Demand: A Meta Analysis of Econometric Models of Sales'. Journal of Marketing Research, 25(November): p. 331-341.
3. Ehrenberg, A.S.C. and England, L.R., 1990. 'Generalising a Pricing Effect'. The Journal of Industrial Economics, 39(September): p. 47-68.
4. Scriven, J. and Ehrenberg, A., 2004. 'Consistent Consumer Responses to Price Changes'. Australasian Marketing Journal, 12(3): p. 21-39.
5. Bijmolt, T.H.A., Van Heerde, H.J., and Pieters, R.G.M., 2005. 'New empirical generalization on the determinants of price elasticity'. Journal of Marketing Research, XLII(May): p. 141-156.
6. Totten, J.C. and Block, M., Analyzing Sales Promotions. 2nd ed. 1994, Chicago: Dartnell Corporation. 226.
7. Dawes, J.G., 2004. 'Assessing the Impact of a Very Successful Price Promotion on Brand, Category and Competitor Sales'. Journal of Product & Brand Management, 13(5): p. 303-314.