# The Effect of a New Brand Entrant on a Market

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## Abstract

Through examining the impact of a new packaged goods brand on key market and brand performance measures, we contribute to the growing body of knowledge concerning new brand behaviour. Using 20 weeks worth of panel data, we evaluated the impact of a new brand launch on a beverages market, looking at how it performed in terms of gaining buyers and the rate at which they purchased. We also examined how the competitor parameters of the market were affected by the new entrant.

Our findings suggest that new brands look just like established brands within the short term. They also show that normal patterns of double jeopardy, where bigger brands not only have more customers but these customers also purchase slightly more often, are largely unaffected in a launch for both the new brand and existing brands. Finally, it appears that there are no obvious effects on the normal patterns of competition, as expressed by the parameters of the Dirichlet model of repeat-purchase.

These are encouraging results. As suggested in concept by previous researchers (see Ehrenberg 1991), the Dirichlet model is robust enough to be used in the proposed planning and monitoring role for a new brand launch.

These findings make an important contribution to the growing empirical generalisations concerning the behaviour of new brands and to our understanding of the robustness of the Dirichlet model.

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## Introduction

Quite a range of different approaches have been adopted when researching new brand issues. There has been a long tradition of diffusion modelling in the area (eg Bass 1969, Mahajan, et al. 1995), but most of this research has focused on product category diffusion rather than individual brand diffusion. Another stream of new brand research is the prediction of repeat-purchase rates for new brands using models such as the Parfitt and Collins model, ASSESSOR, BASES, or TRACKER (Lilien, et al. 1992). Many of these models though, are best suited to really new products or brands. Conjoint analysis and choice modeling have also been used to offer insights into the effect of new brands. But these have been as much about the assessment of product attributes on overall sales.

The questions we were interested in concern what happens when a new brand enters an existing market. How does it behave during the launch period? At what point can it be considered established? How does it change the structure of competition in the market? These questions are all focused on the patterns of behaviour in the market, rather than other aspects of new brand management such as the context in which innovations are developed, or marketing management issues associated with their launch. Most new branding text books (egUrban and Hauser 1993) and the previous research approaches discussed, have been used to focus on these different, wider issues rather than the questions we pose.

In order to answer the behavioural questions of new brand effects, we adopted the NBD-Dirichlet model of purchase incidence and brand choice perspective (hereafter 'the Dirichlet model'). This model and the associated empirical generalisations have been widely tested and supported with an unparalleled range of empirical data covering many different countries and markets (Ehrenberg 2000, Goodhardt, et al. 1984, Uncles, et al. 1995, Wright, et al. 1998). The model is well known for providing benchmarks against which brand performance in a stationary market can be measured (Ehrenberg 2000, Goodhardt, et al. 1984), and one key suggested application is to help plan and monitor new brand launches (Ehrenberg 1991, Ehrenberg, 2000). Yet there have been surprisingly few empirical studies of new brand launches from this perspective, despite

two areas of particular concern which arise from the possibility of market disturbances due to brand entry. First, the new brand may behave in an unusual fashion while it is becoming established, making the Dirichlet model inapplicable. Second, the data on which the model was estimated will have changed, and the same parameter estimates may not apply to the new market conditions. In other words, the category statistics, such as K (heterogeneity of purchase incidence) and S (heterogeneity of brand choice) may have changed, resulting in a permanent change in behaviour for all brands. There may also be a market expansion effect, but this is of less interest as it would merely scale brand purchases rather than change underlying relationships.

We sought to fill in some of the gaps in knowledge in this area by examining the performance of a new brand launch. In particular, we wanted to find out:

- How soon the new brand settled down into normal Dirichlet-type behaviours.
- Whether the famous 'double jeopardy' effect was preserved during the new brand launch.
- Whether the parameters of the Dirichlet model were robust to the introduction of a new brand.

# Previous Research

Ehrenberg gave a conceptual exposition of how the Dirichlet model could be used to help set targets for new brand launches (Ehrenberg 1991, Ehrenberg, 2000). Until recently there were only two studies that empirically examined new brand launches explicitly from the perspective of this modeling tradition. Ehrenberg and Goodhardt (1968) used the NBD model, a single-brand precursor to the multi-brand Dirichlet model, to examine repeat buying for an unnamed new brand. They found that it was lower than predicted by the model norms for some time. Wellan and Ehrenberg (1988) used the NBD model to examine penetration growth and purchase loyalty for a highly successful new brand, and found that it followed the norms for an established brand immediately. However, Wellan and Ehrenberg's (1988) analysis of purchase loyalty was aggregated over 32 weeks, and they were also concerned that the highly successful nature of this new brand may have affected their results.

A further study examined new brand cannibalisation by applying three analyses based on Dirichlet model principles (Lomax, et al. 1996). The first was the use of a gains-loss analysis to provide a brand switching report for the overall panel. The second was the use of duplication of purchase tables to compare observed cross-purchasing with

theoretical norms from Duplication of Purchase Law (Ehrenberg 2000). The third was to determine deviations from expected share movements by looking at the share of incumbent brands prior to launch; the Dirichlet model has provided benchmarks in this area that show brands lose/gain customers in line with their market share (Goodhardt, et al. 1984). However, while the study by Lomax et al (1996) drew on a common set of generalisations captured by the Dirichlet model, it otherwise addressed different issues to those examined in this research.

After the preliminary results of the research in this article were made public (Wright and Sharp 1999), a further study was published considering new brand loyalty from the perspective of the Dirichlet model norms (Ehrenberg and Goodhardt 2000). This study effectively addressed the first of our research objectives with virtually identical results (as will be seen) of 'near-instant loyalty'. To our knowledge, this is one of the few cases of simultaneous discovery in marketing. As marketing matures as an empirical science, we hope to see many more.

Ehrenberg and Goodhardt's (2000) study did not address the second and third of our objectives, and while they used a lower level of aggregation than Wellan and Ehrenberg (1988) their analysis still did not include any unsuccessful brands.

# The Data

The data we analysed related to the launch of a widely distributed, non-alcoholic chilled drink. The product was launched in one state of Australia. The new brand was ultimately withdrawn from the market (approximately a year after launch), so this research goes some way to addressing Wellan and Ehrenberg's (1988) concern about the highly successful nature of their new product, and also extends further on the simultaneous discoveries of Ehrenberg and Goodhardt (2000).

The data was derived from a panel run on either side of the 1994 Christmas period. The panel membership was approximately 90 percent consistent between the two periods. The sample sizes differed due to higher attrition in the initial panel period, this being attributable to respondent mobility during the holiday season. The first period of panel data covered 229 respondents purchasing over the two month period of November and December, 1994 (Panel 1). The second panel period covered 12 weeks of purchasing from January to April, 1995 (Panel 2). 385 complete respondent records were obtained in the second period.

The respondents were randomly recruited across the metropolitan area of the state in which the launch occurred. Panel members were posted out a diary in which to record their daily purchases and this information was collected by telephone on a weekly and then bi-weekly basis, as the respondents became accustomed to the requirements of the panel. A two week training period was built into the panels to allow respondents to become familiar with the data recording requirements. The information from the training period was excluded from the data analysed here.

There were six main brands present in the market prior to the launch of the new brand, but the market was dominated by one particular brand (Brand Big). The second largest brand (Brand Med) was produced by the same company as the new brand under consideration (Brand New). Both these companies also produced a lower calorie brand, but these and the other brands in the market were minor brands, and have been omitted from most analyses because of their small size. Before deciding this, we conducted analyses with these brands grouped together as 'other' but it contributed little to the findings and made the patterns in the data harder to see.

### Market Activity

Panel data was available from the week of the launch of Brand New. A distribution problem prevented the new product from being effectively available in the first two weeks. This problem was resolved, and a television advertising campaign was run in weeks three and four to launch Brand New. This means that the first two weeks of the data effectively provide a baseline against which the effects of the new brand on the market can be compared.

### Removal Of A Heavy Buyer

The data contained a single very heavy buyer. The occasional incidence of very heavy buyers has long been recognised as a problem with panel data (Ehrenberg 2000, page 118). Such heavy buying behaviour occurs constantly, but only for a very small proportion of the population at any one time. As a result, heavy buying behaviour is usually not present in a panel sample but, when it does occur, it seriously distorts estimates of average purchase frequency. Because it is so rare, heavy buying cannot be dealt with by traditional sampling theory.

The heavy buyer we observed bought the category 24 times in week four, 20 times in week five, and 15 times in weeks six, seven and eight. They were solely loyal to the new brand every week except week five, in which they were solely loyal to another brand.

The next heaviest buyers in the sample bought a particular brand no more than seven times.

To avoid having the analysis distorted by this heavy buyer, this statistical abnormality was omitted from the calculations of brand usage.

# Method

To examine the growth of the new brand, and the overall effects on the market, we undertook several different analyses.

- To determine how soon the new brand settled down we plotted weekly values for penetration, average purchase frequency, and market share for the three major brands (including the new brand).

- To determine whether the new brand disturbed the normal 'double jeopardy' pattern of the market, we plotted and examined the double jeopardy lines for both the three major brands together and for the new brand alone.

- To determine whether the parameters of the Dirichlet model were robust to the introduction of the new brand, we compared parameters calculated from different periods of data. For a short term comparison we compared parameters calculated from the baseline period with those calculated from the end of Panel 1. For a medium term comparison, we compared parameters calculated from Panel 1 with those calculated from Panel 2.

In our analyses we do refer to immediate, short term, and medium term effects. Immediate effects are those occurring within a few weeks of the launch; short term effects are those occurring by the end of Panel 1 (week eight post-launch); medium term effects refer to those occurring Panel 2 . We do not have the data to consider longer term effects, except to note the fact of ultimate withdrawal of the new brand.

Sampling errors are not well understood for the Dirichlet model, and there may be considerable variation due to both sampling error, stochasticity in brand choice, seasonality, and other factors. Typically, however, none of these factors obscures the underlying patterns that are of primary interest in this type of work. Consequently, as

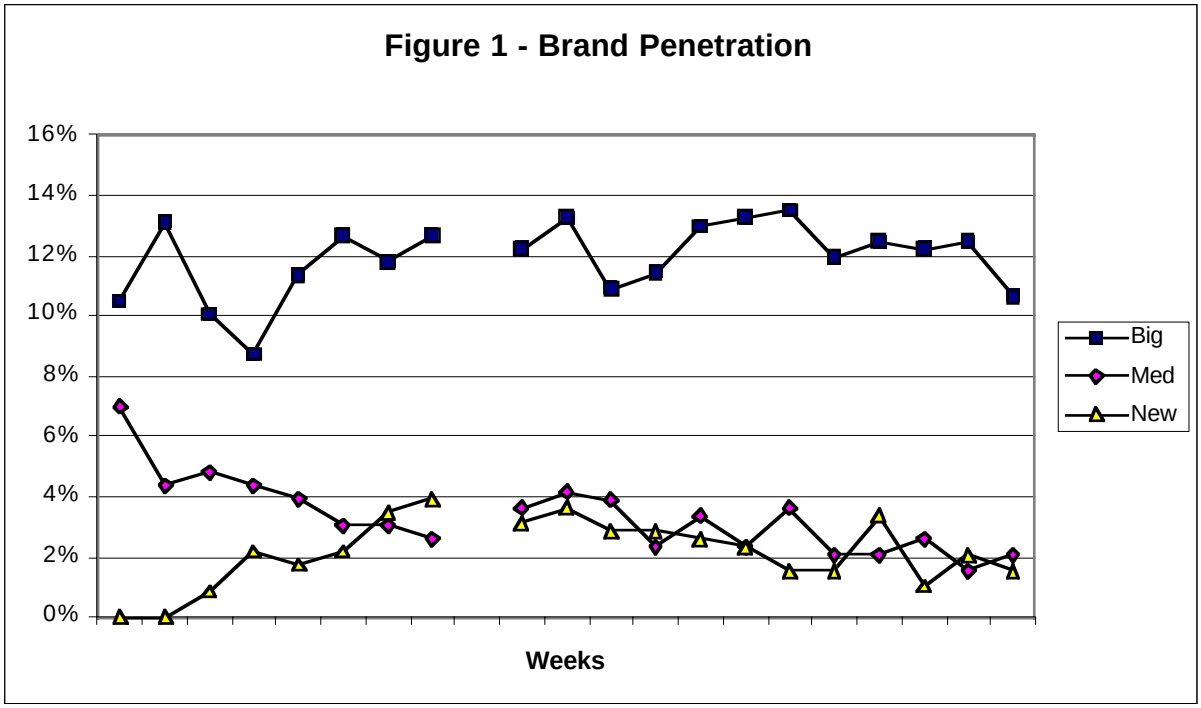
with most previous work on Dirichlet type markets, we do not report sampling errors but are rather primarily concerned with examining overall patterns.

# Results

### When Does The New Brand Settle Down?

Figure 1 plots weekly penetration for the three major brands in the category (brands Big, Med, and New), with a discontinuity of exactly four weeks between the end of Panel 1 and the start of Panel 2. The other four brands in the category averaged less than 2% penetration each and were omitted to enhance readability (their inclusion did not change the results of the analysis or add new insights).

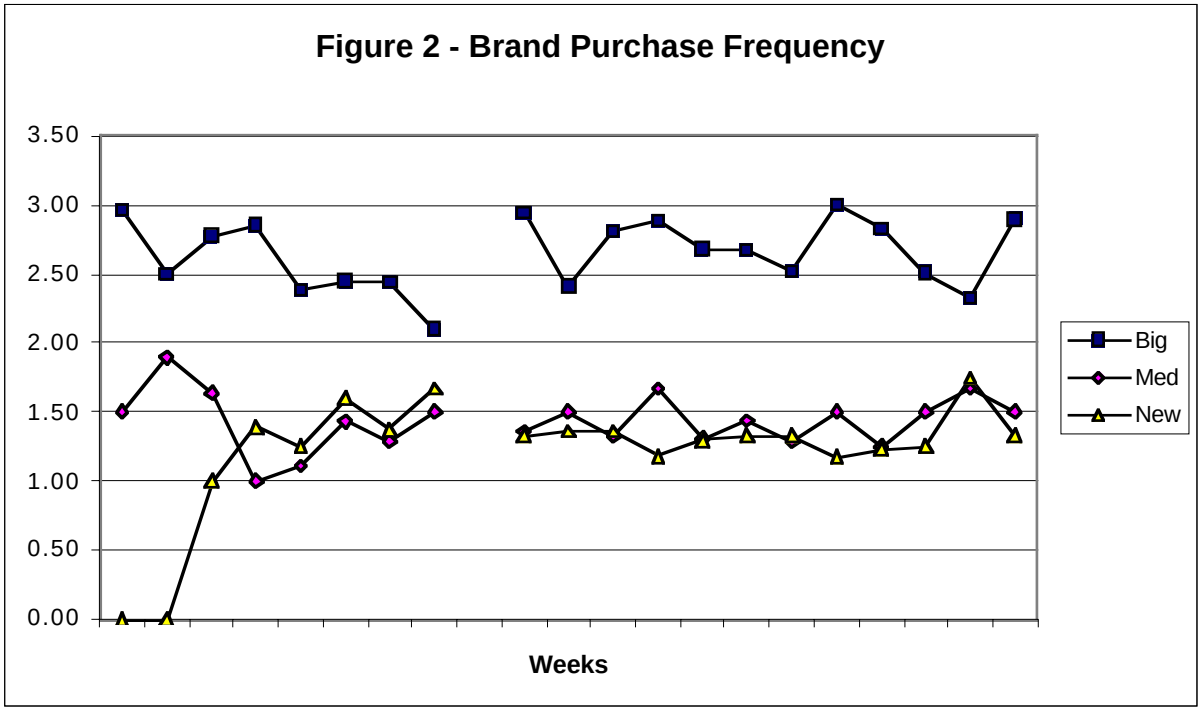
Due to Panel attrition and non-response, the Panel 1 and Panel 2 samples are not identical. While this limits the direct comparisons between Panel 1 with Panel 2, it does not prevent consideration of short term effects *within* Panel 1and then medium term effects *within* Panel 2.




*Penetration settles down around week seven*

Figure 1 shows that while the brand launch led to immediate fluctuations in penetration for all brands, these had largely disappeared by about week seven. There are minor

fluctuations in the last few weeks of Panel 1 and throughout Panel 2, but these fluctuations are no different to the patterns usually observed in mature markets (Ehrenberg 2000). They are likely to be due to factors such as weather and ambient temperature, ongoing brand competition, and stochastic variation in purchase.

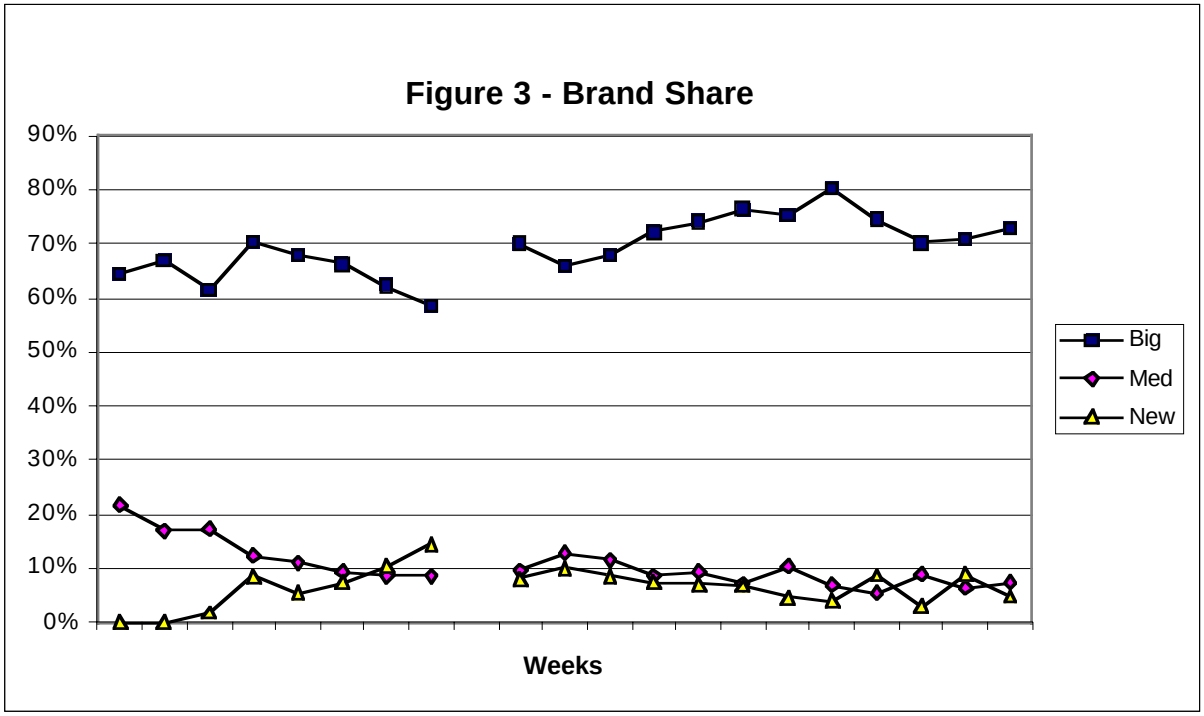



*Average purchase frequency also settles around week seven*

Figure 1 showed that penetration for Brand Medium B and Brand New had stabilised at virtually identical levels from week seven. Figure 2 shows the same result for average purchase frequency, both in the short term (Panel 1) and in the medium term (Panel 2).

This is another demonstration of Ehrenberg and Goodhardt's (2000) 'near-instant loyalty' and confirms that the results found for successful brands also apply to an ultimately unsuccessful brand. However, as average purchase frequency stabilised for Brand New before penetration stabilised, the immediate effect in the first few weeks is a slight excess in average purchase frequency for the new brand.

Figure 3 shows the effects on market share. Again, while there were the same immediate fluctuations in market share, these had largely disappeared by week four, remained stable for the rest of the short term, and then showed no more than the normal fluctuations of mature markets in the medium term.




*Market shares are quite stable within each panel*

However, there are noticeable differences between the end of Panel 1 and the first week of Panel 2 in Brand Big's market share and, to a lesser extent, average purchase frequency. These are just due to the sampling differences between the two panels. An analysis of those respondents common to both Panels (n=148) did not show these differences. For these respondents, Brand Big's average purchase frequency varied by only 0.6 between the end of Panel 1 and the start of Panel 2, while Brand Big's share varied by only 3 percentage points.

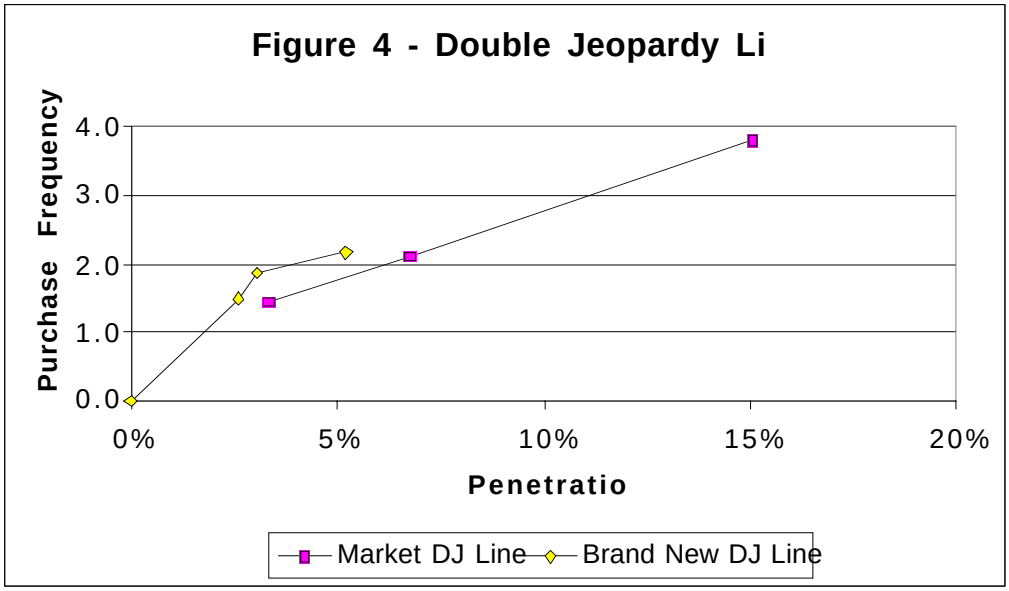
On the other hand, it is interesting that in Panel 1, Brand Big's initial drop in both share and average purchase frequency was not carried through to a drop in penetration. This demonstrates that the new brand launch did not cause Brand Big to lose buyers, but rather resulted in customers switching away some of their share of category requirements. This is a pattern that has also been observed for a price promotion in NBD-Dirichlet modelling (Sharp and Sharp 1997).

## Was Double Jeopardy Disturbed?

Qualitative evidence provided by Figures 1 to 3 shows that double jeopardy was preserved during the launch of the new brand. The largest brand, Brand Big, had both

higher penetration and higher purchase frequency. By comparison the second and third ranked brands, Brands B and C, both had fewer buyers and lower purchase frequency. The penetrations for Brands B and C were very similar, so double jeopardy suggests that average purchase frequencies should also be very similar. This was the case, except for the new brand's slight excess average purchase frequency in the few weeks immediately following launch.

Quantitative evidence for the preservation of double jeopardy patterns can be found in the double jeopardy line, which is the plot of penetration against average purchase frequency. Figure 4 shows double jeopardy lines from Panel 1, both for the top three brands in the market and for Brand New alone over successive fortnightly periods. The data for the top three brands has been pooled into average fortnightly observations to reduce stochastic variation while enabling comparison with Brand New and the baseline period.




The double jeopardy line for the top three brands is completely straight. This shows that, in aggregate over Panel 1, the double jeopardy relationship was perfectly preserved amongst the top three brands despite the launch of Brand New. The plot for Brand New alone also preserves the double jeopardy relationship; higher levels of penetration are consistently associated with higher levels of average purchase frequency. This further demonstrates that Brand New looked like an existing brand in the short term, except for a slight excess in average purchase frequency. This slight excess is reflected in the greater height of the last three periods of the Brand New double jeopardy line; that is, the line is parallel rather than coincident.

**Were The Dirichlet Parameters Robust To The New Brand Launch?**

Table 1 shows the changes that occurred in the Dirichlet parameters in the short and medium term. The parameters examined are: M, which indicates the volume of purchases, K, which indicates heterogeneity in purchase incidence; and S, which indicates heterogeneity in brand choice (ie. the degree of brand switching).

In comparing parameters it is important to use consistent samples. The short term effects on the Dirichlet parameters were considered by comparing the baseline period of Panel 1 with the last two weeks of Panel 1 (n=229). Medium term effects were considered by comparing Panel 1 with Panel 2 using only those respondents who were continuous reporters for both panels (n=148). Although the number of periods used for model estimation varies, all the reported parameters are based on one week averages.

Table 1: Changes in One Week Category Parameters

| | M | K | S |
|---|---|---|---|
| Short term | | | |
| Weeks 1&2 | .48 | .12 | 1.23 |
| Weeks 7&8 | .46 | .13 | 1.40 |
| Medium term | | | |
| Panel 1 | .41 | .15 | 1.12 |
| Panel 2 | .39 | .15 | 0.70 |

The M parameter and K parameter show virtually no changes following the launch of the new brand. This is true in both the short term (weeks one and two versus weeks seven and eight) and the medium term (Panel 1 versus Panel 2). The S parameter shows reasonable stability in the short term (changing from 1.23 to 1.40), but much less stability in the medium term (changing from 1.12 to 0.70). Does this undermine the use of the Dirichlet model in this situation?

When examining this question, it is helpful to consider two additional points. First, the S parameter is pooled from individual brand S parameters, while the category statistics are calculated from the aggregation of all purchase data. Consequently, it seems likely that the S parameter will be subject to more stochastic variation than category parameters. Second, the Dirichlet model is relatively insensitive to variations in S. Most of the

observed variation in loyalty and switching occurs once S values fall to below 0.7 (Sharp and Wright 1999).

These points suggest that while the short term variation in the S parameter is unlikely to be important, the medium term variation in the S parameter is of far more interest. It is not clear whether this medium term reduction in S is an effect of the launch of Brand New, a 'fightback' by Brand Big, some other market event, or just stochastic variation. There has been little work on comparisons of category parameters in Dirichlet modeling, so there are few interpretive guidelines as to how much stochastic variation is normal in the medium term. However, the reduction in S in the medium term seems unlikely to be due to the new brand launch, given that the market had already stabilised in the short term.

On balance, therefore, these results seem to suggest that the Dirichlet parameters were robust to the launch of a new brand. This is an important finding, because it supports Ehrenberg's approach to modelling hypothetical brands (Ehrenberg 1991), at least for this market. Of course some delayed effect from the new brand cannot be ruled out, but it is unclear how this could have operated given the short term stability in the market.

**Limitations**

This study has examined one relatively concentrated market, in a limited geographical area, in which the new brand was a stablemate for one of the existing brands. Despite these uncommon market features, the results were completely consistent with a recent study of more mainstream markets (Ehrenberg and Goodhardt 2000).

Therefore, the uncommon market features do not seem to have restricted the generalisability of our findings. This testing of the limits of generalisability is an extremely important part of the process of 'normal science' (Wright and Kearns 1998). Knowledge of buyer behaviour in wide range of different types of markets is also an important precursor for the development of further empirical generalisations. On both counts, this research makes an important contribution to the methodical expansion of marketing knowledge.

It is also important to be aware that, even with sample sizes of 229 to 385, the individual numbers of buyers of a particular brand in a particular week can be very small. This is not such an important issue for a panel where the aim is to study trends in buyer behaviour rather than to generalise to a larger population. Also, the sample size could be easily increased by aggregating the results to, say, the monthly level. However,

aggregation would have lost some of the insights available from this research, including the availability of the pre-launch baseline period. It would also have masked the remarkable and rapid achievement of market stability after the new brand launch. In fact, the remarkable weekly stability in Figures 1 to 3 is the best argument that aggregation is unnecessary.

# Summary

We found that, following the launch of a new brand,

- The new brand looked like an existing brand within the short term. As this was a relatively frequently purchased product category, the short term was six to eight weeks.

- The normal patterns of double jeopardy were not affected for either the new brand or the existing brands, except for slight excess average purchase frequency for the new brand in the weeks immediately following the launch.

- The Dirichlet parameters were stable in the short term, despite the launch of the new brand. There was a decline in the S parameter in the medium term, but this seems unlikely to be due to the new brand launch.

These results suggest that it is reasonable to use the Dirichlet model and its associated norms to model new brand performance, and that Dirichlet modeling can be applied to a market experiencing a new entrant very early on in the new brand's life. These results also represent a simultaneous discovery, with Ehrenberg and Goodhardt (2000), of 'near-instant loyalty' for new brands, but extend this finding to apply to an ultimately unsuccessful new brand as well.

The managerial implications of this are that there now exist empirical generalisations to help managers understand how a new brand is likely to behave when it enters a market, how quickly it may settle in the market, and how the entire market will be impacted upon by the new brand. This enables managers to set better performance targets for their new brands and to respond better to competitor launches. The empirical generalisation that a new brand looks like an existing brand virtually immediately, is one that can be easily incorporated in the planning and monitoring of new brands.

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