The prevalence of line extensions, as manufacturers struggle to maximize the leverage of their brand equity, is undoubted and well documented (Aaker 1991; Ries and Trout 1986; Tauber 1981). Brand owners use existing brand names to reduce barriers to entry for the new line with the implicit assumption that additional profit will be earned as a result. But haunting the parent brand is the specter of cannibalization. What if the line extension is successful but only at the expense of the parent? Then additional costs will be incurred without the benefit of incremental revenue.

Cannibalization is a very real threat for the vast majority of new product launches. But there has been little empirical work which quantifies this threat, or which examines the measures which can be used to define it. In this study we use consumer panel data to examine three alternative techniques which managers might use to measure cannibalization – gains loss analysis, duplication of purchase tables and a method based on deviations from the expected share movements. Each of these methods is tested on three line extensions in the UK and German detergent markets.

Definition of cannibalization

There is no one generally accepted definition of cannibalization. Kerin et al. (1978) use Heskett’s (1976) definition: “the process by which a new product gains sales by diverting them from an existing product”. Mason and Milne (1994) use Copulsky’s (1976) definition and are less concerned with process than with magnitude. They define cannibalization as “the extent to which one product’s customers are at the expense of other products offered by the same firm.” But it is difficult for any manager to determine this – managers tend to take a more aggregate approach and look at sales volumes and shares, not at an individual’s buying patterns. It also oversimplifies the construct which can be viewed on a number of levels.

As Figure 1 illustrates, any line extension can potentially gain revenue from a number of sources. Ideally the sales would be derived from the incremental revenues described in the top half of the figure which may be as a result of market expansion or switching from competitor brands, or a combination of the two. Line extensions may inflate market size by increasing weights of purchase or bringing in new consumers, as a result of the greater variety offered. They may also play an important defensive role as “me too” products, designed to match a competitor’s breadth of range. This type of extension is more likely to gain volume from competitor brands. But another distinct possibility is that the new product’s sales may take from the existing corporate portfolio to a greater or lesser extent. Indeed it is important to appreciate that for most line extensions, some cannibalization is almost inevitable. The work of Ehrenberg (1988) and others would suggest that any
new product entering a market will take share from all the existing players in proportion to their size. This figure we term “expected” cannibalization and we would expect this to be higher for larger brands, and lower for small ones. So to expect no cannibalization at all is perhaps idealistic and will only be achieved by a few. A prudent manager might expect some share loss by the parent brand, and indeed all other brands in the portfolio as inevitable. His efforts should be directed towards preventing “excessive” cannibalization, i.e. disproportionate share loss by either the parent brand or others within the company’s portfolio. Any cannibalization of the parent brand’s revenue we have termed “first order” cannibalization: this may be expected (i.e. in line with the size of the parent), or excessive (i.e. disproportionate share loss). This paper is concerned primarily with first order cannibalization. “Second order” cannibalization refers to share loss by other brands in the corporate portfolio and may also be at the expected or excessive level. For simplicity, we have not examined second order cannibalization explicitly in this paper, although all the methods described could be easily adapted to do so.

*Measures of cannibalization*

Since there is no agreed definition of cannibalization there can be no one standard measure of the concept. Reddy *et al.* (1994) define it as a percentage of total category sales. A working measure might be that percentage of the new product’s sales which derives from the sales of an existing product within the company’s portfolio (i.e. both first and second order cannibalization at both the expected and excessive levels). A tighter definition might examine only the sales loss experienced by the parent (i.e. only first order). Both allow for a range of 0 percent to 100 percent. We would expect the figure to be higher the closer the line extension is to the parent/other brands in the portfolio. That similarity might be in terms of
price, brand name, usage occasion or other attributes such as flavor or pack format.

Buday (1989, p. 29) suggests that:

Excessive cannibalization is one of the common arguments against brand-extending.... Common branding implies a similarity: similarity invites replacement.

The problem of the extension merely becoming a replacement purchase for the parent is only likely to occur where the products are substitutes, as was noted by Sullivan (1990). This is often assumed to be the case with line extensions – Bunten and Simmons (1993) cite the example of Alka Seltzer Plus whose sales volume was derived largely at the expense of the core brand. This effect can also be seen operating in the reverse direction. Birds Eye Walls’ rationalization of their Arctic Roll range, from two red berry flavors with strawberry and raspberry to one only, had a negligible impact on sales. Previous purchases of raspberry were replaced with strawberry.

Identification of cannibalization
Identifying cannibalization is by no means clear-cut and needs to take account of the dynamics of the market. We examine three methods:

(1) gains loss analysis,
(2) duplication of purchase tables, and
(3) deviations from expected share movements.

Each of these is tested on panel data covering consumer purchases of detergent in the UK (1986-1989) and Germany (1989-1990). In particular we examine the launches of three line extensions – Ariel Liquid (UK, 1986), Persil Liquid (UK, 1988) and Sunil Sulfatrei (Germany, 1989). The periods used are four-weekly for the UK data and monthly for the German data, following the convention in packaged goods markets (Parfitt and Collins, 1968). A brief summary of the three methods is given below and then the three launches are analyzed, illustrating the different perspectives each of the methods gives on the cannibalization effect.

Gains loss analysis
This method reallocates gains and losses in volume over two periods (normally those immediately before and after the launch of a new product). The analysis is done on a household basis and volumes are adjusted to take account of any change in volume between the pre- and post-launch periods (Rohloff, 1963). The results from the individual households are then aggregated to give a brand switching report for the panel as a whole. The convention of using the period immediately after launch raises some concerns. This period is likely to be atypical since the market’s equilibrium has been disturbed. Distribution may be gained only slowly. Buying behavior is likely to be more simply based with the more obvious cues of brand name and price assuming disproportionate importance (Rao and Sieben, 1992). Later periods are likely to show the impact of more knowledgeable buying behavior based on experience with the product (Rao and Monroe, 1988).

Duplication of purchase tables
Duplication of purchase (or perhaps more accurately cross-purchase) tables can be used empirically to give actual cross-purchasing and compared with
theoretical norms derived from Ehrenberg’s Duplication of Purchase Law (Ehrenberg, 1988, p. 353). We know that in almost all packaged goods product fields consumers will buy more than one brand. They will usually have a preferred (or favorite) brand and will make secondary purchases of one or more other brands. The proportion of individuals who buy any pair of brands can be predicted by calculating the separate and combined penetrations of the two brands. Ehrenberg and Goodhardt (1970) have shown that, in most product fields, the purchasers of other brands are distributed in accordance with the penetrations of those other brands, i.e. following the IIA (independence of irrelevant alternatives) assumption (Luce, 1959).

However, we would expect that where two products share the same brand name, i.e. a parent and a line extension, the level of cross-purchasing would be higher than that predicted by the Duplication of Purchase Law. Ehrenberg (1976) found the cross-purchasing of the two Macleans line variants to be more than twice the level predicted by their respective penetrations.

We analyze the cross-purchasing of consumers in two different time periods. Initially we looked at the total market in the period immediately after launch, as we did with the gains loss method, but over an extended period of 13 weeks to allow for adequate levels of cross-purchasing. Then the analysis is expanded by looking at a later post-launch period when the market had returned to stability (which was determined by a combination of a runs test and Daniels’ test – both these tests are nonparametric tests for stationarity, with the Daniels’ test being the more powerful of the two. For a more detailed explanation of the mechanics of applying these tests see Farnum and Stanton (1989)).

Deviations from expected share movements
As Figure 1 shows we would expect some share loss from the parent brand, and other brands in the portfolio. The magnitude of this “expected” cannibalization would be in direct proportion to the share held by the incumbent brands prior to the new product launch. As we have already noted, this concept of proportional gains (or losses) is consistent with many empirical duplication analyses, such as the Duplication of Purchase Law (Ehrenberg, 1959) formalized in the Dirichlet model (Goodhardt et al., 1984).

For each market, data are initially analyzed at the level of the individual consumer. The unit of analysis is the single purchase or sale which is then aggregated across the buyers of each brand. The basic brand performance measure is “share of purchase”: the percentage of purchase occasions accounted for by each brand in a period.

The market profile (in terms of the brands’ shares of purchase) is examined pre- and post-launch. The pre-launch measure is taken in the period immediately prior to the launch of the new entrant, and a post measure is then taken in the period after which sales patterns indicate a return to stationarity in the market (calculated by a combination of a runs test and Daniels’ test, as we used in the duplication of purchase analysis).

An estimate of share of purchase is made assuming that a straight share order effect (SOE) model applies, i.e. that all brands lose share to the new
entrant in direct proportion to their size before the launch. The calculation
takes as given the share achieved by the new entrant in the chosen post
launch period and recalculates all other brand shares in line with this. The
base case therefore assumes no change in the overall structure of the market,
consistent with Ehrenberg’s (1988) comment that markets tend to be
stationary for long periods.

Let us take the example of a very simple detergent market with only three
brands A, B, and C. Before the launch of new Brand D, Brand A’s share of
purchase is 20 percent, Brand B’s is 30 percent and Brand C’s is 50 percent.
Brand D is moderately successful and achieves 10 percent of the market.
The SOE model, underpinned by the IIA assumption, would predict that all
the existing brands will lose share to Brand D in proportion to their share
before the launch. So we would expect the post launch position to be:

- Brand D: 10 percent,
- Brand A: 18 percent \(20\times\frac{(100-10)}{100}\),
- Brand B: 27 percent \(30\times\frac{(100-10)}{100}\), and
- Brand C: 45 percent \(50\times\frac{(100-10)}{100}\).

These predictions are made for the total market (all buyers of detergent over
the relevant periods). The model is tested, on a brand by brand basis, using a
t- test for matched samples: the same households were measured in terms of
their purchases before and after a launch and the mean of these differences
was tested against the expected mean under this model. The absolute number
of purchases is used in this calculation rather than the market share derived
from these.

For each new entrant, the share of purchase profile in the pre-launch period
for purchasers of the new entrant is compared with that of the total market.
This is used to test for the existence of a cannibalization effect. If the buyers
of the new entrant are shown to be disproportionate purchasers of the parent
brand then this could confirm cannibalization, especially if the parent also
suffers an unpredicted share loss.

We will now see how these methods differ in their detection of
cannibalization for three line extensions: Ariel Liquid and Persil Liquid in
the UK detergent market and Sunil Sulfatfrei in the German detergent
market.

**Ariel Liquid: cannibalization evidence**

Ariel Liquid was launched in the UK in 1986 as a line extension of the
parent powder brand. It rapidly gained share. The gains loss methodology
gives a matrix of brands gaining share against brands losing share. An
abbreviated version of this is shown in Table I illustrating the sources of
Ariel Liquid’s share gain.

Gains loss analysis suggests that the two main losers were the parent brand
and Wisk. Nearly a third (32 percent) of Ariel Liquid’s volume came from
the parent brand with a quarter (25 percent) coming from Wisk. We might
expect Wisk to lose since it was the only other liquid detergent on the
market, and Ariel Powder to lose since the products share a common name.
Persil Powder also contributed a significant amount to Ariel Liquid’s
success, which could be explained on the grounds of size, since Persil was
the market leader at this time.

Duplication of purchase analysis produces a matrix of a different sort – that
of buyers of the different brands who also buy any or some of the other
brands available (see Table II). These composite penetrations can be
compared with the theoretical norms produced by the Duplication of
Purchase Law, to show any unusual variations from the pattern predicted. To
simplify the communication of these results we have called the predicted
penetration 100 and indexed the observed data against this. Figures over 100
show a level of cross-purchasing higher than that predicted by the model,
and suggest cannibalization.

The duplication of purchase method confirms the gains loss results in the
sense that both show that Wisk and Ariel Powder suffer most (in both the
immediate post-launch period and stabilized period Ariel Powder and Wisk
show a figure of greater than 100). However Persil Powder seems to be more
resilient in the latter analysis. Store Liquid appears to be part of the portfolio
of many of the Ariel Liquid buyers, which alongside the high figures
reported for Wisk, might be indicative of a partitioning in the market
between liquid and powdered buyers. Buyers of Ariel Liquid become less
likely to purchase Ariel Powder (157 to 130) over time which suggests either
a reduction in the brand effect as the line extension becomes established, or
that the liquid variant has become a substitute purchase for the parent. A
similar effect occurs with Wisk. Store liquids by contrast become more
important, probably as they become more widespread in the 40 weeks which
separate the two measures.

However, when we use the third method we find a different picture. This
approach uses the variation in share movements predicted from brand size.

<table>
<thead>
<tr>
<th>Brand gaining</th>
<th>Ariel Powder</th>
<th>Persil Powder</th>
<th>Wisk</th>
<th>Bold</th>
<th>Daz</th>
<th>Store</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ariel Liquid</td>
<td>32</td>
<td>16</td>
<td>25</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>13</td>
</tr>
</tbody>
</table>

* Figures represent percentage of Ariel Liquid’s volume gained from that source

Source: AGB

Table I. Launch of Ariel Liquid analyzed by gains loss analysis

More resilient

<table>
<thead>
<tr>
<th>Buyers of those brands who also bought Ariel Liquid</th>
<th>Immediate post-launch period</th>
<th>Stabilized post-launch period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ariel Powder</td>
<td>157</td>
<td>130</td>
</tr>
<tr>
<td>Persil Powder</td>
<td>78</td>
<td>60</td>
</tr>
<tr>
<td>Wisk</td>
<td>195</td>
<td>180</td>
</tr>
<tr>
<td>Bold</td>
<td>96</td>
<td>79</td>
</tr>
<tr>
<td>Daz</td>
<td>90</td>
<td>107</td>
</tr>
<tr>
<td>Store liquid</td>
<td>197</td>
<td>210</td>
</tr>
</tbody>
</table>

* Figures represent percentage of Ariel Liquid’s volume gained from that source

Source: AGB

Table II. Duplication of purchase for Ariel Liquid buyers
As Table III demonstrates, Ariel as a brand gained considerably from the launch of the liquid variant (increasing its total share from nearly 14 percent of the market before the launch to over 24 percent after the market had returned to equilibrium). The powdered variants showed none of the attrition of share which might have been expected. In line with the other methods, Wisk is shown to be a loser when the liquid competitor arrives, with a share decline which is significant at the 0.001 level.

One of the benefits of panel data is that it allows us to isolate groups of buyers. So we can look at just that group of consumers who chose to purchase Ariel Liquid. As Table IV demonstrates, there are two significant differences between Ariel Liquid purchasers and the total market. Wisk takes a higher proportion of their purchases than is true for the market as a whole: Persil takes a lower proportion than would be expected if Ariel Liquid buyers were typical of all detergent buyers. This suggests a predisposition towards liquids, rather than a brand effect.

Panel data can isolate groups of buyers

<table>
<thead>
<tr>
<th>Brand</th>
<th>Actual share of purchase pre-launch(%)</th>
<th>Predicted share of purchase post-launch(%)</th>
<th>Actual share of purchase post-launch(%)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ariel</td>
<td>14</td>
<td>21</td>
<td>24</td>
<td>3**</td>
</tr>
<tr>
<td>Ariel Powder</td>
<td>14</td>
<td>12</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Ariel Liquid</td>
<td>–</td>
<td>9</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Persil</td>
<td>29</td>
<td>26</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Bold</td>
<td>13</td>
<td>12</td>
<td>9</td>
<td>–3</td>
</tr>
<tr>
<td>Store</td>
<td>8</td>
<td>7</td>
<td>10</td>
<td>3*</td>
</tr>
<tr>
<td>Daz</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>–1</td>
</tr>
<tr>
<td>Wisk</td>
<td>12</td>
<td>11</td>
<td>6</td>
<td>–5**</td>
</tr>
<tr>
<td>Others</td>
<td>17</td>
<td>15</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Basea</td>
<td>1,202</td>
<td>1,333</td>
<td>1,333</td>
<td></td>
</tr>
</tbody>
</table>

Note: Pre-launch – period 26; post-launch – period 38
*p < 0.01
**p < 0.001
Rounding means that some of the figures in the Difference column may appear incorrect
* Base: purchases made by all detergent buyers
Source: AGB

Table III. UK detergent share of purchase pre- and post-Ariel Liquid launch – all buyers

<table>
<thead>
<tr>
<th>Brand</th>
<th>Buyers of those brands who also bought Ariel Liquid</th>
<th>Immediate post-liquid period</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persil</td>
<td>26</td>
<td>29</td>
<td>–3*</td>
</tr>
<tr>
<td>Ariel</td>
<td>15</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Bold</td>
<td>11</td>
<td>13</td>
<td>–2</td>
</tr>
<tr>
<td>Store</td>
<td>6</td>
<td>8</td>
<td>–1</td>
</tr>
<tr>
<td>Daz</td>
<td>10</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Wisk</td>
<td>16</td>
<td>12</td>
<td>5*</td>
</tr>
<tr>
<td>Others</td>
<td>17</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Base</td>
<td>724</td>
<td>1,202</td>
<td></td>
</tr>
</tbody>
</table>

Note: *p<0.001
Rounding means that some of the figures in the Difference column may appear incorrect
* Base: purchases made by all detergent buyers
Source: AGB

Table IV. Comparison of share of purchase for Ariel Liquid buyers versus total market
Persil Liquid: cannibalization evidence

Persil Liquid was launched onto the UK detergent market in 1988, a belated response to the success of Ariel Liquid. Similarly to Ariel Liquid, Persil Liquid was differentiated from the parent brand by product format but carried the same brand name in the same product category.

The gains loss analysis (Table V) shows a similar market response to Ariel Liquid’s launch.

The parent brand appears to contribute nearly a third of the volume (31 percent) to the line extension: the other liquid variants also suffer. Ariel Liquid is a significant contributor of volume (14 percent), as is Wisk to a lesser extent (8 percent). As far as Lever Brothers are concerned the loss by Ariel might be welcomed since Ariel is a Procter & Gamble brand whereas the loss by Wisk, one of their own stable, is more worrying.

The duplication of purchase analysis (Table VI) confirms that households purchasing Persil Liquid were also more likely to be purchasers of Persil Powder, Ariel Liquid, Wisk and Store liquids. Once again, the two main motivators to purchase appear to be the brand name and the liquid format. By the time Persil Liquid is launched, there are many more liquid competitors to face.

As with Ariel Liquid, the level of cross-purchasing between the parent and the line extension reduces significantly over time (from an index of 165 to 121). In this case the market returns to stability relatively quickly, and only eight weeks separate the measures. But interestingly the cross-purchasing between the liquids (with the exception of store liquids) remains high. Of the

<table>
<thead>
<tr>
<th>Brand gaining</th>
<th>Persil</th>
<th>Persil</th>
<th>Ariel</th>
<th>Ariel</th>
<th>Ariel</th>
<th>Bold</th>
<th>Daz</th>
<th>Store</th>
<th>Store</th>
<th>Other</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persil Liquid</td>
<td>31</td>
<td>3</td>
<td>14</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

Note: Pre-launch – period 45; post-launch – period 48
* Figures represent percentage of Persil Liquid’s volume gained from that source
Source: AGB

Table V. Launch of Persil Liquid analyzed by gains loss analysis

<table>
<thead>
<tr>
<th>Buyers of those brands who also bought Persil Liquid</th>
<th>Immediate post-launch period</th>
<th>Stabilized post-launch period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persil Powder</td>
<td>165</td>
<td>121</td>
</tr>
<tr>
<td>Ariel Powder</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>Ariel Liquid</td>
<td>182</td>
<td>184</td>
</tr>
<tr>
<td>Wisk</td>
<td>191</td>
<td>179</td>
</tr>
<tr>
<td>Bold</td>
<td>71</td>
<td>55</td>
</tr>
<tr>
<td>Daz</td>
<td>77</td>
<td>48</td>
</tr>
<tr>
<td>Store liquid</td>
<td>151</td>
<td>146</td>
</tr>
</tbody>
</table>

Note: Immediate post-launch – period 48; stabilized post-launch – period 50
Source: AGB

Table VI. Duplication of purchase for Persil Liquid buyers
households which buy Persil Liquid, nearly twice as many as expected buy Ariel Liquid and Wisk. Analysis of share movements (Table VII) shows that the share order effect model holds up relatively well in this case. None of the share movements deviate from those predicted (except the aggregate category of “others”). Persil Powder holds up well, losing only the share that would be expected in view of its size. The brand as a whole benefits from the introduction of the line extension increasing its share from 23 percent of the market before the launch to 27 percent after.

However, despite this relatively stable picture illustrated in Table VII, the purchasers of Persil Liquid are significantly different to the market as a whole. They are significantly more likely to be purchasers of Persil Powder, Ariel Liquid, Wisk and other liquids (Table VIII).

They are also significantly less likely to be purchasers of powdered products, particularly Ariel Powder, store powder and other powders. This profile confirms the gains loss and cross-purchase analyses, with a clear indication that those households who purchased Persil Liquid were heavier purchasers of Persil Powder and liquid detergents than the average, but lighter purchasers of powdered brands in general.

**Sunil Sulfatfrei: cannibalization evidence**

Sunil Sulfatfrei was launched onto the German detergent market in 1989 as a concentrated version of the parent brand Sunil. It was relatively unsuccessful, capturing only 2.3 percent of the market once the market had stabilized. This very small market share proved a problem for the gains loss analysis. The output suggested that no brands (at the two decimal place level), including the parent, had contributed any volume. The duplication of

<table>
<thead>
<tr>
<th>Brand</th>
<th>Actual share of purchase pre-launch(%)</th>
<th>Predicted share of purchase post-launch(%)</th>
<th>Actual share of purchase post-launch(%)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persil</td>
<td>23</td>
<td>27</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>Persil Powder</td>
<td>23</td>
<td>22</td>
<td>22</td>
<td>1</td>
</tr>
<tr>
<td>Persil Liquid</td>
<td>–</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Ariel</td>
<td>21</td>
<td>20</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Ariel Powder</td>
<td>13</td>
<td>12</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Ariel Liquid</td>
<td>8</td>
<td>8</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Bold</td>
<td>10</td>
<td>9</td>
<td>7</td>
<td>–2</td>
</tr>
<tr>
<td>Store</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>–1</td>
</tr>
<tr>
<td>Store powder</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Store liquid</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>–1</td>
</tr>
<tr>
<td>Daz</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Wisk</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Others</td>
<td>24</td>
<td>23</td>
<td>19</td>
<td>–4**</td>
</tr>
<tr>
<td>Other powder</td>
<td>18</td>
<td>17</td>
<td>15</td>
<td>–2*</td>
</tr>
<tr>
<td>Other liquid</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>–1</td>
</tr>
<tr>
<td>Base*</td>
<td>1,441</td>
<td>1,403</td>
<td>1,403</td>
<td>–23</td>
</tr>
</tbody>
</table>

Note: Pre-launch – period 45; post-launch – period 50
**p < 0.001 *p< 0.01
Rounding means that some of the figures in the Difference column may appear incorrect
* Base: purchases made by all detergent buyers

Source: AGB

Table VII. UK detergent share of purchase pre-and post-Persil Liquid launch – all buyers
purchase analysis proved more fruitful (Table IX) suggesting that households which purchase this line extension are six times more likely to be purchasers of the parent brand in the period immediately after the launch. They are more than twice as likely to be purchasers of both line extension and parent after the market has stabilized. This strongly suggests cannibalization. Purchasers of the extension are also more likely to be purchasers of Ariel, Omo and Weiss.

Analysis of share movements also shows evidence of cannibalization (Table X). The parent brand loses share between the pre-launch and post-launch periods. This share loss is significant, although only at the 5 percent level. The only brand to lose share significantly at the 1 percent level is Omo, which is again consistent with the cross-purchasing pattern shown in the third column of Table IX.

More evidence to support Sunil Sulfatfrei’s cannibalization of the parent comes from Table XI. Buyers of Sunil Sulfatfrei are significantly more

<table>
<thead>
<tr>
<th>Brand</th>
<th>Persil Liquid buyers’ purchase profile(%)</th>
<th>Total market purchase profile</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persil</td>
<td>30</td>
<td>23</td>
<td>7**</td>
</tr>
<tr>
<td>Ariel</td>
<td>20</td>
<td>21</td>
<td>–2</td>
</tr>
<tr>
<td>Ariel Powder</td>
<td>8</td>
<td>13</td>
<td>–5**</td>
</tr>
<tr>
<td>Ariel Liquid</td>
<td>12</td>
<td>8</td>
<td>3**</td>
</tr>
<tr>
<td>Bold</td>
<td>9</td>
<td>10</td>
<td>–1</td>
</tr>
<tr>
<td>Store</td>
<td>5</td>
<td>9</td>
<td>–4</td>
</tr>
<tr>
<td>Store powder</td>
<td>3</td>
<td>7</td>
<td>–4**</td>
</tr>
<tr>
<td>Store liquid</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Daz</td>
<td>6</td>
<td>8</td>
<td>–3*</td>
</tr>
<tr>
<td>Wisk</td>
<td>7</td>
<td>5</td>
<td>2*</td>
</tr>
<tr>
<td>Others</td>
<td>24</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Other powder</td>
<td>14</td>
<td>18</td>
<td>–4*</td>
</tr>
<tr>
<td>Other liquid</td>
<td>10</td>
<td>6</td>
<td>4**</td>
</tr>
<tr>
<td>Base</td>
<td>566</td>
<td>1,441</td>
<td></td>
</tr>
</tbody>
</table>

** p < 0.001 * p < 0.01
Rounding means that some of the figures in the Difference column may appear incorrect

Source: AGB

*Table VIII. Comparison of share of purchase for Persil Liquid buyers versus total market – pre-launch*

Buyers of those brands who also bought Sunil Sulfatfrei

<table>
<thead>
<tr>
<th>Buyers of those brands who also bought Sunil Sulfatfrei</th>
<th>Immediate post-launch period</th>
<th>Stabilized post-launch period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunil</td>
<td>600</td>
<td>238</td>
</tr>
<tr>
<td>Ariel</td>
<td>225</td>
<td>162</td>
</tr>
<tr>
<td>Tandil</td>
<td>75</td>
<td>38</td>
</tr>
<tr>
<td>Weiss</td>
<td>150</td>
<td>176</td>
</tr>
<tr>
<td>Omo</td>
<td>175</td>
<td>333</td>
</tr>
<tr>
<td>Una</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td>Almat</td>
<td>0</td>
<td>81</td>
</tr>
</tbody>
</table>

Note: Immediate post-launch – period 9; stabilized post-launch – period 17

Source: GfK

*Table IX. Duplication of purchase for Sunil Sulfatfrei buyers*
likely to be purchasers of the parent brand, and significantly less likely to be buyers of Persil and Tandil. So, although the small market share achieved by Sunil Sulfatfrei appears to cause problems for all the methods, particularly gains loss, there is supporting evidence for the cannibalization effect emerging from the other methodologies.

Summary
The three line extensions discussed here all showed some evidence of cannibalization. Ariel Liquid did not cannibalize the parent brand at the aggregate level of market share, indeed the brand as a whole benefited from its launch (Table III). This is surely the major target of any marketing manager. However, both the gains loss and duplication of purchase analyses suggested cannibalization: gains loss showed a third of the extension’s volume as deriving from the parent powders (Table I), and the duplication of purchase table (Table II) that buyers of Ariel Liquid were more likely to be purchasing Ariel Powder although this bias reduced over time. Comparison of the purchasing patterns of buyers of Ariel Liquid with those of the total market (Table IV) showed that they were significantly more likely to be purchasers of the Ariel brand before the launch of Ariel Liquid than was the market as a whole.

### Table X. Share of purchase pre- and post-Sunil Sulfatfrei launch – all buyers

<table>
<thead>
<tr>
<th>Brand</th>
<th>Actual share of purchase pre-launch(%)</th>
<th>Predicted share of purchase post-launch(%)</th>
<th>Actual share of purchase post-launch(%)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunil</td>
<td>10.4</td>
<td>12.5</td>
<td>11.2</td>
<td>–1.3</td>
</tr>
<tr>
<td>Sunil others</td>
<td>10.4</td>
<td>10.2</td>
<td>8.9</td>
<td>–1.3</td>
</tr>
<tr>
<td>Sunil Sulfatfrei</td>
<td>–</td>
<td>2.3</td>
<td>2.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Omo</td>
<td>5.1</td>
<td>20</td>
<td>25</td>
<td>–1.8*</td>
</tr>
<tr>
<td>Base*</td>
<td>651</td>
<td>651</td>
<td>651</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* Pre-launch – period 7; post-launch – period 17

**p < 0.001 *p < 0.01

Rounding means that some of the figures in the Difference column may appear incorrect

* Base: purchases made by all detergent buyers

**Source:** GfK

### Table XI. Comparison of share of purchase for Sunil Sulfatfrei buyers versus total market

<table>
<thead>
<tr>
<th>Brand</th>
<th>Sunil Sulfatfrei buyers’ purchase profile(%)</th>
<th>Total market purchase profile (%)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunil</td>
<td>21.2</td>
<td>10.4</td>
<td>10.8**</td>
</tr>
<tr>
<td>Persil</td>
<td>8.1</td>
<td>18.1</td>
<td>–10.0**</td>
</tr>
<tr>
<td>Tandil</td>
<td>7.1</td>
<td>17.7</td>
<td>–10.6**</td>
</tr>
<tr>
<td>Ariel</td>
<td>14.1</td>
<td>15.2</td>
<td>–1.1</td>
</tr>
<tr>
<td>Weisser</td>
<td>13.1</td>
<td>7.7</td>
<td>5.5*</td>
</tr>
<tr>
<td>Omo</td>
<td>4.0</td>
<td>5.1</td>
<td>–1.1</td>
</tr>
<tr>
<td>Una</td>
<td>4.0</td>
<td>3.4</td>
<td>–0.7</td>
</tr>
<tr>
<td>Almat</td>
<td>1.0</td>
<td>2.5</td>
<td>–1.4</td>
</tr>
<tr>
<td>Others</td>
<td>27.3</td>
<td>20.0</td>
<td>7.3**</td>
</tr>
<tr>
<td>Base</td>
<td>99</td>
<td>651</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** **p < 0.001 *p < 0.01

**Source:** GfK
The launch of Persil Liquid similarly benefitted the parent brand, although there was slight erosion of the share of the powdered variants by the time the market had stabilized (Table VII). Again both gains loss and duplication of purchase analyses show a cannibalization effect: once again gains loss suggested that around a third of volume came from the parent (Table V) and the duplication of purchase table (Table VI) shows that households are more likely to buy both the line extension and the parent than we would have expected given their respective penetrations. However, this bias again diminishes over time. Persil Liquid buyers were also significantly more likely than the market as a whole to buy Persil Powder before the launch of the liquid variant.

Sunil Sulfatfrei provided problems for all the methods because of its small sample size. Gains loss analysis was unable to show the source of the line extension’s volume. The duplication of purchase table (Table IX), share changes (Table X) and purchase profile (Table XI) all suggest cannibalization.

Discussion
This study examines the differing perspectives offered by three alternative techniques available to evaluate cannibalization effects. Testing of these techniques on three line extensions underlines the prevalence of cannibalization, since all three line extensions show some evidence of cannibalization, although the effect is not necessarily evident at the aggregate level of market share. Ariel and Persil seemed to benefit from the introduction of their respective liquid variants, although Sunil suffered share loss when its Sulfatfrei variant was launched.

However, duplication of purchase tables show disproportionate cross-purchasing between all the parent brands and their line extensions (up to six times the level predicted in the case of the period immediately after the launch of Sunil Sulfatfrei). This effect diminishes over time, but is still disproportionate even when the market has returned to stability. This unpredicted high level of cross-purchasing is confirmed by an examination of the purchase profiles of purchasers of the new entrants. Purchasers of Persil Liquid and Sunil Sulfatfrei are significantly more likely to have been purchasers of the parent brand before the launch than are the purchasers of detergent in total. Ariel Liquid buyers were only slightly more likely to have been purchasers of Ariel.

Gains loss analysis shows the parent brands contributing around a third of the line extensions’ volume in the case of Ariel and Persil Liquids, but is insufficiently sensitive to handle the low market share of Sunil Sulfatfrei.

These variations in results suggest that marketing managers should use multiple methods wherever possible, and need to sample over time since the “snap shot” approach may not give a true picture. All the angles need to be considered to develop a fuller understanding, particularly with small brands.

References


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