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How Business Cycles Contribute to Private-Label Success: Evidence from the United States and Europe

The growth of private labels over the past decades has been attributed to various factors. This article formally addresses the link between private-label success and economic expansions and contractions using recently developed time-series/econometric techniques. The findings confirm conventional wisdom that a country's private-label share increases when the economy is suffering and shrinks when the economy is flourishing. However, asymmetries are found in the extent to and speed with which private-label share changes in cyclical up- versus downturns. Consumers switch more extensively to store brands during bad economic times than they switch back to national brands in a subsequent recovery. In addition, the switch to private-label brands is faster than the opposite movement to national brands after the recession ends. Finally, not only are consumers more prone to buy private labels during economic downturns, but some keep buying them when bad economic times are long over as well, leaving permanent "scars" on national brands' performance level. The authors argue that national-brand manufacturers can mitigate the effect of an economic downturn on their shares by intensifying their marketing-support activities in recessions. Such a proactive strategy is not often observed. On the contrary, available evidence suggests that many manufacturers exacerbate their predicament by cutting back on their marketing expenses when the economy turns sour. Most retailers invest more strongly in their private-label program when the economy deteriorates, making it even more difficult for national brands to catch up with the share lost during contractions.

Private-label products now account for more than 20% of global grocery sales and are expected to grow to 30% by 2020 (M+M Planet Retail 2004). Although considerable cross-country differences still exist—a 2003 ACNielsen survey reports an aggregate private-label share of approximately 15% in the United States, which is below the level in many Western European countries, such as Switzerland (38%), Spain (23%), and France (21%)—all developed countries have witnessed a steady increase in the share commanded by store brands over the past decades. In the United Kingdom, for example, private-label share rose from 21.5% in 1980 to 39.3% in 2003, and Belgium witnessed a growth from 11.4% in 1983 to 30.1% in 2003. This growing success poses a serious challenge to manufacturers of consumer goods and has been attributed to factors such as a gradual shift in the communication budget from advertising to sales promotions (Hoch, Montgomery, and Park 2002), the growing concentration in the retail sector (Hoch and Banerji 1993), an improvement in the quality of private labels over time (Steenkamp and Dekimpe 1997), and the increasing efforts that retailers put into their private-label programs (Hoch 1996).

Various authors have also linked private-label performance to economic conditions. For example, Quelch and Harding (1996, p. 99) observe that "private-label market share generally goes up when the economy is suffering and down in stronger economic periods." Likewise, Nandan and Dickinson (1994) state that during difficult economic times, the popularity of private labels tends to increase, whereas in periods of relative economic prosperity, the share of national brands increases. A similar feeling is echoed in many business reports. A Deloitte & Touche (2003, p. 2) report argues that "private labels have typically experienced significant growth in times of recession, due to their low prices, and the reduced disposable income of households." This does not bode well for national-brand manufacturers. Unlike other drivers of private-label success, the general economic conditions are largely beyond their control. It is possible, however, that the opposing effects during contractions and expansions will cancel out each other. However, some sources have speculated that despite economic recov-

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ery, legions of consumers are not willing to switch back to manufacturer brands, even when they can again afford them (*The Wall Street Journal* 1993). If this pattern is systematic, the sequence of recessions and expansions would contribute to the prolonged upward evolution in private-label share over repeated business cycles.

Furthermore, is the rate of change in private-label share symmetric across expansion versus contraction periods? For example, do grocery shoppers quickly switch to less expensive private-label brands as the economy deteriorates, and are they more hesitant to switch back to national brands when economic prospects begin to improve? Such an asymmetric pattern would be the net result of actions by individual consumers, retailers, and/or manufacturers in response to aggregate economic fluctuations.

The purpose of this article is to shed light on these issues by formally investigating the relationship between private-label success and the aggregate business cycle. Specifically, we address the following three key research questions:

1. Does private-label success behave countercyclically?
2. Does private-label performance behave differently (asymmetrically) over expansion and contraction periods?
3. Does the aggregate business cycle contribute to long-term private-label success?

Our empirical analysis encompasses four countries: Belgium, the United Kingdom, the United States, and West Germany. These countries tend to follow clearly different private-label strategies, ranging from a focus on discount private labels in Germany to a highly sophisticated, three-tier private-label strategy in the United Kingdom, with Belgium and the United Sates in between (Kumar and Steenkamp 2006). The international setting contributes to the empirical generalizability of the results (Steenkamp 2005).

We organize the remainder of this article as follows: First, we review the literature on the relationship between private-label success and economic conditions. Second, we develop a framework for understanding the impact of business cycles on private-label share. Third, using this framework, we develop predictions about the effect of business-cycle fluctuations on private-label performance. Fourth, we describe the methodology and the data, followed by the empirical results. Finally, we present managerial implications and suggestions for further research.

Previous Research

Some prior literature has already suggested that there is a negative link between private-label success and the business cycle. Quelch and Harding (1996) note that U.S. private-label success increased remarkably during the 1981–1982 economic recession. During that period, U.S. private-label share peaked at 17%, compared with 14% during the previous years. In a study of the impact of the recent Asian economic crisis, Ang, Leong, and Kotler (2000) observe an increasing trend toward buying store brands during a recession. In the only quantitative study to date, Hoch and Banerji (1993) conclude that in the United States, variation in private-label share is closely linked to the business cycle. Using annual data from 1971 to 1993, they find that changes in aggregate private-label share are negatively related to changes in disposable income.

Our study extends previous work in several important ways. First, to the best of our knowledge, no study has systematically analyzed the relationship between private-label share and the economy from a business-cycle perspective. Existing knowledge of this relationship is often limited to the analysis of a single recession period (e.g., Ang, Leong, and Kotler 2000), which does not allow for rigorous conclusions. Only Hoch and Banerji (1993) examine a longer time span, covering multiple contraction and expansion phases. However, they emphasize the short run rather than the business-cycle relationship. They difference their data before regressing private-label share on disposable income. The first-difference filter reweights strongly toward the higher frequencies (associated with short-term fluctuations) and downweights lower frequencies that are typically associated with business-cycle fluctuations (Baxter and King 1999).

Second, unlike prior work, we do not presume that private-label performance reacts to the same extent and with the same speed to increases and decreases in economic activity. We explicitly allow for asymmetric performance in economic up- and downward periods.

Third, although several academic and business writers have theorized that private labels grow in economic downturns, no study has formally investigated the extent to which this increase is cancelled out in the subsequent recovery period or whether part of it is permanent. This is another key question of interest to both national brand manufacturers and retailers.

Thus, to study the link between private-label success and the general state of the economy, we (1) apply a business-cycle filter to the data to analyze the extent of comovement between private-label share and the aggregate business cycle over repeated recession and expansion periods; (2) consider the potentially asymmetric nature of this relationship; (3) explore the presence of permanent upward shifts in private-label performance due to business cycles; and (4) do this for several key private-label countries, broadly covering the range of private-label strategies followed in the marketplace. These issues have not been comprehensively analyzed in previous research, but they are significant to both manufacturers and retailers.

Cyclical Sensitivity of Private-Label Share

We propose a framework to understand the cyclical sensitivity of private-label share to business-cycle fluctuations. Our framework distinguishes between four major components of cyclical fluctuations—cyclical comovement, deepness asymmetry, steepness asymmetry, and asymmetric growth—and three marketplace parties—consumers, national-brand manufacturers, and retailers.

"Cyclical comovement" refers to the extent to which fluctuations within private-label-share series behave in step, or comove, with the country's aggregate business cycle. Three types of cyclical comovement may exist (Stock and

Watson 1999): procyclical (movement in the same direction as the aggregate economy), countercyclical (movement in the opposite direction), and acyclical (no comovement). Moreover, economic studies have found cyclical fluctuations in macroeconomic aggregates, such as gross domestic product (GDP) (Razzak 2001), unemployment (Bodman 2001), and consumption (Holly and Stannett 1995), to behave asymmetrically across expansion versus contraction periods. Two kinds of cyclical asymmetries are distinguished: deepness asymmetry and steepness asymmetry (Sichel 1993). "Deepness asymmetry" pertains to the phenomenon that the deepness of series' troughs may differ from the height of their peaks over business-cycle periodicities. "Steepness asymmetry" refers to asymmetry in the speed of adjustment, in that series drop faster (or slower) than they increase over business-cycle periodicities. We explore whether analogous asymmetries are present in private-label share.

Even if deepness and/or steepness asymmetries are present across expansion and contraction periods, the question remains regarding the extent to which private-label-share gains during a contraction are permanent, leaving a permanent scar on national brands' performance, or whether the economic recovery is strong/long enough for the latter to recoup fully. We estimate an asymmetric growth model (Beaudry and Koop 1993; Cover 1992) to investigate whether cyclical shocks cause only temporary deviations around an underlying trend driven by other factors (e.g., a gradual increase in the private labels' quality, the growing concentration in the retail industry, an expansion in the number of chains and product categories carrying private labels; see, e.g., Kumar and Steenkamp 2006) or whether these cyclical disturbances alter the private labels' long-term growth path, with a differential persistent impact for expansion and contraction periods.

We use these four components to understand how consumers' (demand side) and manufacturers' and retailers' (supply side) responses to aggregate business-cycle fluctuations may result in predictable effects on private-label sales. We believe that this framework provides a useful tool for developing predictions about the impact of business-cycle fluctuations on private-label share. Note that we test the expected pattern of variation in private-label share rather than the psychological and managerial processes that give rise to these predictions.

Demand Side: Consumer Purchase Adjustment over the Business Cycle

Cyclical comovement. As consumers' abilities and willingness to buy goods decrease during economic contractions, they may want to economize on their expenditures by reducing the quantity bought or by postponing their purchases until prospects become better (Katona 1975). This strategy is less of an option for consumer packaged goods (CPGs) because of their more necessary nature. To save on CPG purchases, consumers are more likely to economize on price (Shama 1981). Given that, on average, store brands are priced 25%–30% below national brands (e.g., Kumar and Steenkamp 2006), they become an obvious candidate to switch to when the economy turns sour. This behavior is expected to lead to countercyclical movements in private-label share, which is consistent with the finding that the propensity to buy private labels is inversely related to income (Ailawadi, Neslin, and Gedenk 2001). Moreover, during economic slowdowns, consumers become more inclined to acquire price information (Wakefield and Inman 1993), making them more price conscious (Estelami, Lehmann, and Holden 2001). Because price consciousness has been found to be a good predictor of private-label success (Ailawadi, Neslin, and Gedenk 2001), this further increases the countercyclical behavior of private-label share.

Cyclical asymmetries. At the beginning of a recession, consumers have a strong incentive to limit their spending and wait for better times (Gale 1996). This is enhanced by the notion that people lose their trust and confidence in the economy relatively quickly, which has been found to be a strong predictor of purchase-adjustment decisions (Allenby, Jen, and Leone 1996). Accordingly, consumers' willingness to buy premium-priced national brands is expected to decrease sharply at the onset of a recession.

Consumers may continue to economize on their expenditures even if the economic climate begins to improve again, resulting in a slower return to national brands in the subsequent expansion. This delayed reverse movement may emerge because (1) consumers typically find themselves at the lowest level of their actual income or ability to buy right after the downturn (Gale 1996); (2) any initial rise in their income may be used to pay off debts and rebuild a precautionary stock of assets or capital (Carroll 1992); and (3) the general pessimism regarding the recent recession and their breach of trust has made consumers more prudent in updating their income expectations, so that the anticipated increase in their future income and wealth remains conservative (Katona 1975). Indeed, it is a well-known principle that has been observed in areas ranging from economics to interorganizational relationships that it takes much less time to breach trust than to restore it (Katona 1975; Nooteboom, Berger, and Noorderhaven 1997). The old adage "once bitten, twice shy" applies here too.[1] This gradual return to national brands during expansions, together with the sharp decrease in the willingness to buy national brands during contractions, results in asymmetric steepness.

Furthermore, people change their purchase behavior more drastically in response to a contraction than to an expansion (Bowman, Minehart, and Rabin 1999). In this vein, we expect that the switch to private labels during the recession will be stronger or more extensive than the subsequent return to national brands in an expansion period, resulting in higher peaks than troughs in the cyclical pattern of private-label share (i.e., deepness asymmetry).

Asymmetric long-term growth. Overall, the aforementioned factors contribute to a pattern in which consumers switch quickly and more strongly to private labels during contractions but return to national brands more gradually in subsequent expansions. However, will all consumers eventually switch back to national brands, resulting in the absence of a long-lasting impact of an economic downturn?

[1]We thank an anonymous reviewer for this suggestion.

After all, the presence of steepness and deepness asymmetry is not a sufficient condition for such a permanent effect to occur (Beaudry and Koop 1993).[2] If expansions last longer than contractions, national brands might still recover fully and regain their precontraction market share.

However, we expect that a full recovery is not likely, because the perceived quality of private labels is typically lower than their actual quality (Kumar and Steenkamp 2006; Richardson, Dick, and Jain 1994). As we argued previously, an economic recession induces several national-brand buyers to switch to a private label. From actual product experience, which is the most important source of information for consumers to form their quality perceptions (Steenkamp 1989), they may learn that actual private-label quality exceeds their prior perceptions. On the basis of consumers' positive experiences with private labels, we expect that some will not switch back to national brands after the recession, giving rise to a permanent, positive effect of an economic contraction on private-label performance. In a similar vein, Ailawadi and Keller (2004) argue that if store brands can change consumers' quality perceptions (e.g., through direct consumption experience), they will gain more customers, and it will be difficult for manufacturers to win them back.

Supply Side: Manufacturer and Retailer Behavior over the Business Cycle

Cyclical comovement. Manufacturer and retailer actions may reinforce consumers' tendencies to switch to private labels during contractions. Most manufacturers decrease their brand support during bad economic times (e.g., Srinivasan, Rangaswamy, and Lilien 2005). Moreover, manufacturers are loath to reduce prices in a recession (Backus and Kehoe 1992; Deleersnyder et al. 2004), even though price sensitivity is higher at such a time (Estelami, Lehmann, and Holden 2001). This behavior may contribute to the countercyclical behavior in private-label share.

[2]As we discuss in more detail in the "Methodology" section, deepness and steepness asymmetry refer to the nature of the cyclical fluctuations around private labels' overall trend, whereas asymmetric growth models test whether economic contractions and expansions alter the growth rate of that trend.

Conversely, retailers tend to rejuvenate their own label when the economy sours (Hoch 1996). When the economy softened in the early 1980s and again at the beginning of the 1990s, numerous U.S. supermarkets revamped their private-label programs with new logos, new items, and more shelf space (Hoch 1996). Similar patterns have been observed in Europe (Walters 1994) and Asia (Davies 2000). Through such countercyclical private-label-support activities, retailers contribute to the countercyclical performance of store brands.

Cyclical asymmetries. Prior research has found that firms adjust their business strategies asymmetrically over different business-cycle phases (Mascarenhas and Aaker 1989). Brand support tends to be cut more quickly during recessions than it is restored when good economic times arrive again (Axarloglou 2003). Prices have also been found to be more flexible going up than going down (Ball and Mankiw 1994) and to be higher during contractions than during expansions (Backus and Kehoe 1992; Deleersnyder et al. 2004). As a consequence of such asymmetric manufacturer and retailer behavior, consumers' switch to private labels during the recession will be faster and more extensive than their subsequent return to national brands in an expansion period. This results in steepness and deepness asymmetry patterns in private-label share.

Asymmetric long-term growth. It is less clear whether long-term growth is also related to manufacturer and retailer actions. Even when manufacturers and retailers adjust their business strategies significantly and asymmetrically over different business-cycle phases, it is unclear whether brand manufacturers can regain lost ground by ramping up marketing investments in economic expansions or whether their retrenchment during recessions generates a decline in expertise (e.g., in research and development) that they cannot fully recoup during the subsequent expansion (Fatás 2002; Hillier and Baxter 2001).

Table 1 summarizes the expected effect of demand- and supply-side behavior on private-label performance along the four cyclical characteristics: nature of the comovement, deepness and steepness asymmetry, and asymmetric growth. Although it would be of interest to quantify the impact from each of the preceding members separately, it is

TABLE 1
Framework to Relate the Business Cycle to Private-Label Share

	Determinants of Private-Label Share			
	Demand Side	Supply Side		Net Effect on Private-Label Share
Business Cycle	Consumer	Manufacturer	Retailer	
Cyclical Comovement[a]	–	–	–	–
Cyclical Asymmetries				
Deepness asymmetry	+	+		+
Steepness asymmetry	+	+		+
Asymmetric Growth				
Contraction	++			+
Expansion	–			

[a]A negative sign means that private-label share is expected to behave countercyclically.

important to understand first the overall net impact of the aggregate business cycle on private-label share.

Methodology

Our research methodology consists of four steps. First, we apply the well-known Hodrick and Prescott (1997) filter (hereinafter, the HP filter) to isolate the cyclical component in the various time series of interest. Second, we quantify the extent of cyclical sensitivity in private-label success through the cyclical comovement elasticity. Third, we derive statistics to test for deepness and steepness asymmetry. Fourth, we assess whether expansion and contraction periods affect the long-term growth rate in private-label share differently.

Extracting the Cyclical Component

Not all over-time variation present in a series can be attributed to business-cycle movements. Therefore, in line with economic studies (e.g., Cook 1999; Holly and Stannett 1995), we adopt the HP filter to extract from each individual series the fluctuations that occur at business-cycle periodicities. The HP filter decomposes a time series, y_t, into a trend component, y_t^l, which varies smoothly over time, and a cyclical component, y_t^c, by fitting a smooth curve through a set of data points. The variance of the cyclical component is minimized subject to a penalty for variation in the second difference of the trend component. The cyclical component, which fluctuates around that trend, is then obtained by subtracting the long-term trend from y_t—that is, $y_t^c = y_t - y_t^l$. More formally, the HP filter obtains y_t^l by minimizing

$$(1) \qquad \sum_{t=1}^{T} (y_t - y_t^l)^2 + \lambda \sum_{t=2}^{T-1} [(y_{t+1}^l - y_t^l) - (y_t^l - y_{t-1}^l)]^2,$$

where λ is a penalty parameter that determines the degree of smoothing; the larger its value, the smoother is the resulting growth component. Because business cycles are of varying length that tend to last no longer than eight years (Christiano and Fitzgerald 1998), we choose our smoothing constant to generate a trend that accounts for all fluctuations longer than eight years. We follow the work of Baxter and King (1999), who recommend a value of λ equal to ten for annual series. This value produces a good correspondence between the HP filter and an ideal band-bass filter that passes through cycles between two and eight years. Furthermore, to enhance the comparability across series, we analyze y_t in logarithms, so that the units of y_t^c, when multiplied by 100, represent percentage deviations from the series' growth path (Stock and Watson 1999).

The proposed HP filter has several attractive features. First, the HP filter does not induce any asymmetries in the cyclical component when they were absent in the original series (Sichel 1993). This is a necessary property when exploring the presence of cyclical asymmetries (see the "Quantifying the Extent of Cyclical Sensitivity" subsection). Second, because it removes a stochastic trend from a series, the HP filter induces stationarity in a series that is originally difference stationary (Baxter and King 1999; Holly and Stannett 1995). This avoids the well-known spurious-correlation problem when correlating integrated variables. Finally, the HP filter can be regarded as a special case of a structural time-series model that consists of a trend and a cyclical component. This property will prove to be useful in our validation exercises when we want to control for a potential break caused by the German reunification in 1990 (for details, see Appendix A).

Nevertheless, as with any business-cycle filter, the HP filter suffers from some drawbacks. First, it is unable to distinguish short-term from business-cycle fluctuations (Canova 1998; Reeves et al. 2000). Indeed, the HP filter is a high-pass filter, in that it filters out fluctuations with small frequencies. Because business cycles tend to have a periodicity between two and eight years (Christiano and Fitzgerald 1998), band-pass filters, which can filter out both high and low frequencies, may seem better suited. However, with annual data (as we use), band-pass and high-pass filters become equivalent (Baxter and King 1999) because the Nyquist frequency (i.e., the highest frequency about which there is direct information) then corresponds to a component of two years (Granger and Hatanaka 1964). Second, it has been argued that the HP filter may (as do many other filters) induce spurious cycles within a series, thus causing spurious cross-correlations among filtered series (Harvey and Jaeger 1993). However, in an extensive simulation study, Kaiser and Maravall (1999) find that this problem is very small in HP-filtered series. Third, it has been argued that the results may be sensitive to the choice of smoothing parameter λ (Kaiser and Maravall 2001, p. 116). Thus, we conduct an extensive robustness analysis with other values that have been suggested in the literature.

Quantifying the Extent of Cyclical Sensitivity

To quantify the extent of cyclical sensitivity in private-label success, we derive the cyclical comovement elasticity. We regress the cyclical component extracted from a country's private-label share, pls_t^c, on the corresponding cyclical component filtered from that country's GDP per capita, $gdpc_t^c$. Although, strictly speaking, the business cycle is defined in terms of the joint movement of several economic series across multiple sectors (see www.nber.org/cycles.html), fluctuations in aggregate output have been found to be at the core of the business cycle, making it a good proxy for the country's economic activity as a whole (Stock and Watson 1999, p. 15). This results in the following test equation:

$$(2) \qquad pls_t^c = \beta gdpc_t^c + \varepsilon_t,$$

Because both cyclical components are expressed in percentage deviations, the resulting parameter β is an elasticity estimate.[3] The sign and significance of β indicate whether private-label share evolves pro-, counter-, or acyclical. Conversely, its magnitude reflects the extent to which fluctuations in the general economy are attenuated or amplified in

[3]It is not necessary to include an intercept, because both the private-label-share and the GDP-per-capita series are zero-reverting after filtering. We thank an anonymous reviewer for bringing this to our attention.

private-label share. The HP filter may induce serial correlation in the data (Engle 1974). To account for this, we can add autoregressive error terms in estimating Equation 2, the number of which we determine on the basis of information criteria (Judge et al. 1988).

Examining the Presence of Deepness and Steepness Asymmetry

To test whether private-label share displays cyclical (a)symmetries, we explore whether the filtered pls_t^c series is positively skewed or, in other words, skewed to the right.[4] In the case of deepness asymmetry, we expect that the positive deviations from the mean or trend during contraction periods are larger in absolute value than the negative deviations during expansion periods, whereas the number of observations above the mean or trend is smaller than the number below. Similarly, if a time series exhibits steepness asymmetry, its first difference, representing the slope or rate of change, will exhibit positive skewness. As such, increases in the series' growth corresponding to contractions should be larger, but less frequent, than the more moderate decreases during expansions.

To identify potential asymmetries in the evolution of private-label success over contraction and expansion periods, we adopt the nonparametric triples test that Randles and colleagues (1980) propose. In this test, all possible triples (y_i, y_j, y_k) of observations of a series y_t are considered. For a series with T observations, $\binom{T}{3}$, such triples can be identified. A triple is a right (left) triple when the middle observation is closer to the smaller (larger) observation than to the larger (smaller) observation. In a symmetric distribution, there are as many right as there are left triples. If there are relatively more right triples, the underlying distribution is skewed to the right. Formally, the triples test statistic is given by

$$\frac{\hat{\eta}}{\sqrt{\frac{\hat{\sigma}_{\hat{\eta}}^2}{T}}}, \tag{3}$$

where $\hat{\eta} = \dfrac{[(\text{number of right triples}) - (\text{number of left triples})]}{\left[3\binom{T}{3}\right]}$,

which can be shown to equal

$$\hat{\eta} = \binom{T}{3}^{-1} \sum_{i<j<k} \{[\text{sign}(y_i + y_j - 2y_k) + \text{sign}(y_i + y_k - 2y_j) + \text{sign}(y_j + y_k - 2y_i)]/3\}, \tag{4}$$

and

$$\frac{\hat{\sigma}_{\hat{\eta}}^2}{T} = \frac{1}{\binom{T}{3}} \sum_{c=1}^{3} \binom{3}{c}\binom{T-3}{3-c}\hat{\xi}_c. \tag{5}$$

We refer to Appendix B for the derivation of $\hat{\xi}_c$. The asymptotic distribution of the test statistic is standard normal, so we can use conventional critical values. In case of deepness asymmetry, we expect a right-skewed distribution, reflected in a positive value of the triples test statistic, for pls_t^c. As for steepness asymmetry, we derive a comparable asymmetry statistic on the first difference of pls_t^c, Δpls_t^c. Again, a right-skewed distribution will be reflected in a positive test statistic.

Following previous research (see, e.g., Bodman 2001; Cook 1999; Deleersnyder et al. 2004; Sichel 1993), we apply the univariate asymmetry tests to pls_t^c (or Δpls_t^c for steepness asymmetry). As an alternative approach, we could consider using the forecasted values of Equation 2 (i.e., $\hat{\beta}\, gdpc_t^c$) as input to the triples test. However, this procedure suffers from two deficiencies. First, it ignores that $gdpc_t^c$ is a valid but imperfect indicator of the business cycle. As such, $\hat{\beta}\, gdpc_t^c$ may not capture all fluctuations in private-label share that can be attributed to the business cycle. Second, this procedure assumes that the third-moment (skewness) properties of $gdpc_t^c$ automatically pertain to the private-label series as well because a linear transformation (rescaling) of $gdpc_t^c$ cannot alter the presence/absence of asymmetries (Sichel 1993). This assumption appears unduly restrictive. Indeed, prior research has established that several economic variables (e.g., unemployment, industrial production, consumer price level) that are conceptually linked to the business cycle have third-moment properties that differ from those in GDP (Bodman 2001; Sichel 1993; Verbrugge 1998).

Assessing the Presence of Asymmetric Growth

Univariate deepness and steepness asymmetries describe the behavior of the cyclical fluctuations around the series' overall trend or mean level and are studied on the filtered series, that is, where the underlying trend (mean) has been removed. As such, they cannot address whether this differential behavior also contributes to long-term private-label success (e.g., by altering the series' growth rate) or whether they represent only temporary deviations from the underlying trend or mean that eventually cancel out one another (Beaudry and Koop 1993). For example, if all customers who switched to private labels during the contraction would gradually return to buying national brands after the economy recovers, no long-term growth would be observed that could be attributed to the contraction. As such, deepness and steepness asymmetries can exist "with or without there being asymmetry in persistence" (Beaudry and Koop 1993, p. 151).

[4]In line with prior studies in the economics literature (Bodman 2001; Cook 1999; Razzak 2001), we use a univariate detrending procedure (i.e., the HP filter) to derive the cyclical component, from which we subsequently assess the skewness. Although more complicated multivariate procedures have also been used in prior studies, Canova (1998) finds that the third moment (reflecting the skewness) is not sensitive to the choice of detrending method, and he cautions against the use of multivariate detrending procedures that impose additional restrictions (e.g., common stochastic or deterministic trends) that are not satisfied in the data. In unreported analyses, we found that the various private-label series have a unit root but are not cointegrated with the GDP-per-capita series.

To assess formally whether cyclical shocks affect the private labels' long-term growth and to check whether this effect differs for contraction and expansion periods, respectively, we specify an asymmetric growth model. In line with the work of Beaudry and Koop (1993), Cover (1992), and Thoma (1994), we define two new variables that reflect the general state of the economy at a certain point in time t:

$$(6)\qquad \exp_t \begin{cases} = \text{gdpc}_t^c - (\text{prior trough in gdpc}^c), & \text{if } \Delta\text{gdpc}_t^c > 0 \\ = 0, & \text{if } \Delta\text{gdpc}_t^c \le 0 \end{cases},$$

and

$$\text{contr}_t \begin{cases} = 0, & \text{if } \Delta\text{gdpc}_t^c > 0 \\ = (\text{prior peak in gdpc}^c) - \text{gdpc}_t^c, & \text{if } \Delta\text{gdpc}_t^c \le 0 \end{cases}.$$

Decreases (increases) in the cyclical component of GDP per capita correspond to contractions (expansions). The variable $\exp_t$ measures the magnitude of the expansion by calculating how much the business cycle, reflected in the filtered GDP-per-capita series, has increased relative to its previous trough. Similarly, the variable contr_t measures the magnitude of a contraction by calculating how much the business cycle has dropped relative to its previous peak when the economy is on a downturn.[5] Private-label growth, Δpls_t, is subsequently linked to current and lagged values of $\exp_t$ and contr_t. By assessing whether they have additional explanatory power over lagged growth terms Δpls_{t-j} (j = 1, …, J), we test whether the business cycle Granger (1969) causes private-label growth:

$$(7)\qquad \Delta\text{pls}_t = \alpha + \sum_{j=1}^{J} \beta_j \Delta\text{pls}_{t-j} + \sum_{k=0}^{K} \varphi_k^- \text{contr}_{t-k} + \sum_{l=0}^{L} \varphi_l^+ \exp_{t-l} + \varepsilon_t,$$

with lag lengths J, K, and L determined on the basis of information criteria (Judge et al. 1988).[6] Note that our asymmetric growth model is specified in differences. Preliminary unit-root tests can be used to determine whether the series is indeed nonstationary (as implicitly assumed in Equation 7). If not, no long-term effects can be detected. However, because the presence of a unit root is a necessary but not sufficient condition for (cyclical) shocks to have a long-term impact (Dekimpe and Hanssens 1995), we still need to test for the significance of $\Sigma_{k=0}^{K}\varphi_k^-$ ($\Sigma_{l=0}^{L}\varphi_l^+$) in Equation 7. Through the intercept α, we control for unobserved factors, such as the gradual increase in private-label quality over time.[7]

By splitting the business cycle into two phases, we test for asymmetries in the long-term response of private-label growth to expansions and contractions. Thus, the effect of a recession is not necessarily cancelled out in a subsequent expansion. Unlike Equation 2, we no longer assess the linkage between the cyclical movements in private-label share, pls_t^c, or the cyclical movements in the economy as a whole. Instead, we now test whether changes in the latter contribute to the private labels' market-share growth (and, thus, their long-term level). The sum of the parameters φ_k^- (φ_l^+) associated with recessionary (expansionary) periods—that is, $\Sigma_{k=0}^{K}\varphi_k^- = \varphi_{ST}^-$($\Sigma_{l=0}^{L}\varphi_l^+ = \varphi_{ST}^+$)—gives the combined short-term impact on private-label growth. Because Equation 7 contains lags of the dependent variable, we can show that the impact on the series' long-term or steady-state growth rate becomes, respectively (Franses 2005),

$$\frac{\sum_{k=0}^{K}\varphi_k^-}{1-\sum_{j=1}^{J}\beta_j}\left(=\varphi_{LT}^-\right) \text{ and } \frac{\sum_{l=0}^{L}\varphi_l^+}{1-\sum_{j=1}^{J}\beta_j}\left(=\varphi_{LT}^+\right).$$

We can derive standard errors of these ratios using the well-known delta method. Under the assumption that a contraction period stimulates private-label growth, we expect that its impact is positive; thus, $\Sigma_{k=0}^{K}\varphi_k^- > 0$. When the impact of an expansion on private-label growth is negative—thus, $\Sigma_{l=0}^{L}\varphi_l^+ < 0$)—the size of the expansions will determine the extent to which the growth-stimulating effect of previous contractions will be offset.

Data

Annual data on the aggregate value share of private labels in CPGs are provided by ACNielsen for Belgium (1983–2004), by Taylor Nelson Sofres for the United Kingdom (1980–2003), by Selling Area Markets Inc and ACNielsen for the United States (1971–2003),[8] and by GfK for West Germany (1975–2002). The data span 20–30 years, which is comparable in length to other studies on business-cycle sensitivity (e.g., Cook 1999; Mills 2001).

Although private labels have grown their share in total grocery sales in all four countries, there are some notable differences as well, especially in terms of how this growth was obtained (Kumar and Steenkamp 2006). In Germany, to a large extent, private-label growth is driven by the success of the hard-discount format, as implemented by chains such as Aldi, Lidl, and Penny. For example, Aldi sells store brands almost exclusively (>95%) and is one of the fastest-growing retailers in the German grocery market. By 2002, it

[5]Through this operationalization, all values for $\exp_t$ and contr_t will be nonnegative, making the interpretation of their corresponding coefficients in Equation 7 more straightforward.

[6]For the sake of simplicity, we do not explicitly model that private-label share is bounded between zero and one, because it could be argued that private-label share operates well away from these boundaries. Nonetheless, we obtained the same substantive findings when we replaced Δpls_t by $\Delta[(\text{pls}_t)/(1 - \text{pls}_t)]$ in Equation 7.

[7]For an in-depth discussion on the role of the drift term in unit-root models, see Juselius and Hargreaves (1992).

[8]We are indebted to Stephen Hoch for making the U.S. data available to us.

had already captured close to 18% of total grocery retailing sales in Germany. The absence of manufacturer brands from most hard discounters' assortments leads to an almost unobstructed growth of private labels. In contrast, in the United Kingdom, private-label growth is mainly fueled by retailers' ability to offer an elaborate three-tier private-label range, including value, standard, and premium store brands. Finally, the United States and Belgium (the latter country being similar in private-label landscape to other European countries, such as France, Spain, and the Netherlands) are located in between Germany and the United Kingdom. Their growth in private-label sales can be attributed both to the increasing success of discount operations and to the growing importance of elaborate, quality-oriented, private-label programs by mainstream retailers.

Data on real GDP per capita are used as a proxy for the general economic activity in a particular country. Business-cycle fluctuations across many sectors are reflected in aggregate output, making the cyclical component of GDP (per capita) a good indicator for the overall economic cycle (Stock and Watson 1999). We obtained GDP per capita, expressed in constant prices, from the United Nations Statistic Divisions for Belgium, the United Kingdom, and the United States. For West Germany, we obtained these data from the VGRDL (Volkswirtschaftliche Gesamtrechnungen der Länder).

Empirical Results

The Extent of Cyclical Sensitivity

To control for serial correlation in the data, we added two autoregressive terms to Equation 2. The Chow test on common slopes and autoregressive error terms revealed that we could pool the four countries in our sample ($F(9, 86) = 1.24$, $p > .10$).[9] We obtained a significant and negative comovement elasticity ($\beta = -.96$, $p < .01$; $R^2 = .42$), indicating that private-label share behaves countercyclically. It increases during contractions and decreases during expansions. This confirms conventional wisdom from a business-cycle perspective and is in line with the negative short-term relationship that Hoch and Banerji (1993) find.

Cyclical Asymmetries

In addition to the extent of cyclical sensitivity in private-label share, we consider the nature of cyclical ups and downs, as reflected in the respective cyclical-asymmetry statistics. The test results for the nonparametric triples test appear in Table 2. To avoid potential distortion that may arise from deriving asymmetry statistics after log-transforming the series (DeFusco, Karels, and Muralidhar 1996), we based all inferences about these univariate asymmetries on the cyclical component extracted from the original (nontransformed) series.[10]

In line with our expectations, cyclical fluctuations in private-label share evolve asymmetrically across expansion and contraction phases. For all countries, the triples test showed the expected positive sign for both deepness and steepness asymmetry, even though the test was significant in few individual cases. However, note that the power of asymmetry tests in business-cycle research has been found to be low, especially when working with annual data (Mills 2001; Razzak 2001). Psaradakis and Sola (2003) show that whenever evidence of asymmetry in the cycle is established using HP-filtered series, this can be taken as strong evidence in favor of asymmetry.

Meta-analysis is a recommended way to address the challenge posed by the low power of individual tests. It offers a more powerful test for the presence of business-cycle asymmetries than do the individual test statistics because it combines evidence from all countries, allowing for an overall significance test. Using the meta-analytic method of adding weighted Zs (Rosenthal 1991), we found support for asymmetric behavior in both the extent (deepness) to which and the speed (steepness) with which private-label share fluctuates over the business cycle (both ps $< .05$). Thus, these results indicate that increases in

[9]Note that the pooling test is conducted on the filtered, rather than the original, series. As such, we account for differences in the long-term growth rates, which may distort the cyclical inferences.

[10]We obtained the same substantive findings when working with log-transformed private-label-share series instead of the original series.

TABLE 2
Results on Deepness and Steepness Asymmetry

	Belgium (n = 22)	United Kingdom (n = 24)	United States (n = 33)	West Germany (n = 28)	Meta-Analysis[a]
Deepness	.050	.043	.039	.033	1.92**
	(1.13)	(1.16)	(.93)	(.76)	
Steepness	.042	.061*	.034	.067*	2.13**
	(.83)	(1.31)	(.74)	(1.50)	

*$p < .10$ (one-tailed test).
**$p < .05$ (one-tailed test).
[a]The meta-analysis reports z-values that we obtained by the method of adding weighted Zs (Rosenthal 1991).
Notes: Z-statistics are in parentheses.

private-label share during economic contractions occur more extensively and faster than declines in private-label share in subsequent expansion phases.[11]

Do Economic Contractions Lead to Permanent Private-Label Growth?

The question still remains whether the net result of a series of cyclical ups and downs evokes long-term private-label growth. To draw this conclusion, (1) the private-label-share series should be evolving, and (2) long-term changes in private-label share should be related to business-cycle swings. Unit-root tests (Enders 1995) indicated that the private-label series are indeed evolving. We could not reject the null hypothesis of the presence of a unit root for any of the four countries (all *p*s > .10).

To determine whether long-term changes in private-label share can be attributed to business-cycle swings, we estimated the asymmetric growth model of Equation 7. Before estimation, a pooling test confirmed that common slopes were allowed ($F(9, 82) = 1.38$, $p > .10$) but that country-specific intercepts were needed ($F(3, 91) = 2.40$, $p < .10$). We subsequently pooled the data across the four countries, including country-specific intercepts. We included one lag for private-label-share growth, but we did not include any lags for real-GDP-per-capita expansion and contraction (thus, in Equation 7, J = 1, and K, L = 0). We derived standard errors using White's robust covariance estimation method (Greene 2003). The results appear in Table 3.

[11]As a further test for our assertion that the observed asymmetries in pls_t^c are driven by the business cycle, we applied the triples test to the residuals of Equation 2. We found no evidence of any remaining asymmetry in these residuals. Detailed test results are available on request.

Three of the country-specific intercepts were significant—$\alpha_{Belgium} = .022$ ($p < .10$), $\alpha_{U.K.} = .012$ ($p < .10$), and $\alpha_{West\ Germany} = .018$ ($p < .05$)—indicating the presence of a positive drift in private-label share. The country-specific intercept for the United States was not significant ($\alpha_{U.S.} = -.003$, $p > .10$). Furthermore, we found that previous-year private-label evolution had a significant, positive impact on private-label evolution this year ($\beta_1 = .34$, $p < .05$).

Most important, we found that economic expansions and contractions affect private-label-share evolution to a different degree. Contractions cause a substantial positive impact on private-label growth that is not offset in subsequent expansions. This important finding applies to changes in both short-term and long-term private-label growth.

Impact on short-term private-label growth. On the basis of Equation 7, we found a negative, albeit insignificant, impact on the trend or growth rate in private-label share during economic expansions ($\varphi^+ = -.18$, $p > .10$), whereas a contraction induced a significant, positive effect on short-term private-label growth ($\varphi^- = .80$, $p < .05$). Because we work in log-log space, these parameters are elasticities. Thus, when GDP per capita decreases 1% compared with the peak just before the recession, private-label growth increases .80% in the short run. Conversely, when GDP per capita increases 1% compared with the trough just before the expansion, private-label growth declines .18% in the short run. In summary, a contraction causes a short-term upward lift in the trend of private-label share, which is (partly) maintained afterward, because this shift is not fully recouped in the subsequent expansion.

Impact on long-term private-label growth. The impact of a recession on the long-term or steady-state growth in private-label share was again positive and significant ($\varphi_{LT}^- = 1.22$, $p < .05$), whereas during the expansion, the long-term growth rate was not significantly affected ($\varphi_{LT}^+ = -.28$, $p >$

TABLE 3
Results of the Asymmetric Growth Model

		Estimate	*p* Value
Country-Specific Drift			
	$\alpha_{Belgium}$	.022	.055[a]
	$\alpha_{U.K.}$	.012	.071[a]
	$\alpha_{U.S.}$	−.003	.666[a]
	$\alpha_{West\ Germany}$	.018	.029[a]
Lagged Private-Label Growth			
	β_1	.34	.023[a]
Business-Cycle Effects			
Contraction			
	φ_{ST}^-	.80	.006[b]
	φ_{LT}^-	1.22	.009[b]
Expansion			
	φ_{ST}^+	−.18	.223[b]
	φ_{LT}^+	−.28	.216[b]
$R^2 = .36$, N = 98			

[a]Two-sided *p* value.
[b]One-sided *p* value.

.10). Thus, when, in recessionary times, GDP per capita decreases 1% compared with the peak just before the recession, this causes a long-term upward lift in private-label growth of 1.22%. Conversely, when GDP per capita increases 1% compared with the trough just before that expansion, this generates a long-term growth reduction of only an insignificant .28%. Thus, a fraction of the consumers who switched to store brands in a contraction stay with their choice even after the economy improves.

Robustness Checks

Alternative smoothing parameters. We followed the recommendation of Baxter and King (1999) to set λ equal to 10. However, other researchers have recommended smaller values. Canova (1994) considers a value of λ equal to 4, Ravn and Uhlig (2001) suggest a value of 6.25, and Harvey and Jaeger (1993) work with a value of 7. Different values of λ lead to the derivation of slightly different cyclical elements. We conducted extensive robustness analyses to examine the sensitivity of our results to a wide range of λs, namely, the three aforementioned smaller values (4, 6.25, and 7) and the three larger ones (15, 20, and 30). The results (see Table 4) show that our main findings are robust to the choice of the smoothing value.

Alternative filtering approach. Different filtering procedures extract slightly different types of business-cycle information from the original series (Canova 1998). We reanalyzed our data, using another widely used detrending procedure, namely, the band-pass filter of Baxter and King (1999). The results based on brand-pass-filtered data confirmed the findings we obtained from HP-filtered data. The comovement-elasticity results revealed the same general pattern as before; there is combined evidence for countercyclical movement in private-label share ($\beta = -.70$, $p < .01$), and its value closely resembled the value of –.96 we found previously. Moreover, the analyses confirmed the presence of cyclical asymmetries, both in terms of deepness ($p < .05$) and in terms of steepness ($p < .10$). Finally, for the asymmetric growth model, we again obtained in both the short and the long run a significant, positive effect on private-label growth of a contraction ($\varphi^{-}_{ST} = 1.05$, $p < .01$; $\varphi^{-}_{LT} = 1.45$, $p < .05$), which was not offset in the subsequent expansion period ($\varphi^{+}_{ST} = -.11$, $p > .10$; $\varphi^{+}_{LT} = -.16$, $p > .10$).

Error in the cyclical component. Any filtered series may contain some noise. Different smoothing parameters in the HP filter and alternative filters extract somewhat different business-cycle information from the same series, with different amounts of noise (Kaiser and Maravall 2001). As we reported previously, we replicated our findings with (1) six alternative smoothing values and (2) the band-pass detrending procedure. This gives more confidence in our findings and indicates that error in the extracted cyclical component does not seriously affect our key insights.

Alternative specification of the asymmetric growth model. In estimating the asymmetric growth model (Equation 7), we accounted for the magnitude of expansions and contractions (see Equation 6). We assessed the robustness of our findings to an alternative specification of the expansion and contraction variables, focusing on the occurrence of an expansion or contraction per se rather than on their magnitude. We defined a dummy variable that equals one when the economy is downturning and zero when the economy is expanding.

In the corresponding pooled asymmetric growth model with country-specific fixed intercepts, we again found a positive impact of a recession on private-label-share growth ($\varphi^{-}_{ST} = .020$, $p < .05$). Because the country intercepts were all positive and significant (except for the United States, in which the intercept was insignificant at the 10% level), we conclude that the additional positive effect found during the contraction is not cancelled out by the subsequent expansion. We also estimated a model without intercepts but with an extra dummy variable to identify expansions. The dummy for recessions was positive and significant, whereas the dummy for expansions was positive but insignificant, leading again to the conclusion that increases in private-label share during recessions are not compensated for in the subsequent expansion. In summary, these alternative model specifications support our finding that the sequence of aggregate business cycles contributes to long-term private-label success.

German reunification in 1990. Germany experienced a major change during the time span under investigation, namely, its reunification in 1990. After the unification, West German investments in production and equipment fell because of major capital transfers to former East German

TABLE 4
Robustness Checks: Different Smoothing Parameters for the HP Filter

	$\lambda = 4$	$\lambda = 6.25$	$\lambda = 7$	$\lambda = 10$	$\lambda = 15$	$\lambda = 20$	$\lambda = 30$
Comovement Elasticity	–1.00**	–.98**	–.98**	–.96**	–.94**	–.93**	–.90**
Cyclical Asymmetries[a]							
Deepness	1.76*	1.88*	1.87*	1.92*	1.96*	1.91*	1.84*
Steepness	1.96*	2.07*	1.64*	2.13*	1.95*	1.91*	2.48**
Asymmetric Growth							
β_1	.36*	.46**	.36*	.34*	.44*	.43**	.42**
φ^{-}_{ST}	.98**	.79*	.89**	.80*	.65*	.56*	.53*
φ^{+}_{ST}	–.15	–.17	–.11	–.18	–.23	–.25	–.25

*$p < .05$.
**$p < .01$.
[a]We obtained the reported z-values of the meta-analysis by the method of adding weighted Zs (Rosenthal 1991).

regions (Lütkepohl, Teräsvirta, and Wolters 1999). In line with prior studies on the Germany economy (e.g., Hubrich and Vlaar 2004), we control for a potential break in the GDP-per-capita and the private-label-share series in 1990 when we derive fluctuations that can be attributed to the business cycle (for more details, see Appendix A). The parameters associated with the pulse dummy in Equation A3 were insignificant and do not affect the cyclical components derived from the West German private-label-share and GDP-per-capita series, respectively. Thus, the German reunification does not alter any of our prior findings.

Discussion

In this study, we examined the sensitivity of private-label share to the aggregate business cycle for several key private-label countries. In the beginning of the article, we identified three research questions that this study attempted to address. We summarize our findings in relation to these questions. First, we find that private-label success indeed behaves countercyclically. Several academics and practitioners have theorized that there is an inverse relationship between the state of the economy and private-label performance, but with the exception of Hoch and Banerji (1993), our study is the first to test this hypothesis rigorously. Our analysis confirms this conventional wisdom from a business-cycle perspective; that is, a country's private-label share increases when the economy is suffering and shrinks when the economy is flourishing.

Second, private-label performance behaves differently over expansion and contraction periods. This is a new finding that has not been examined in previous research. We find that business-cycle fluctuations induce asymmetries in both the extent and the speed of up- versus downward movements in private-label share.

Third, the aggregate business cycle contributes to long-term private-label success. Not only does the sequence of contractions and expansions induce temporary upward and downward swings in private-label share, but we also find that part of the share gain during contractions is permanent. This is also an important new finding, which contradicts a long-held opinion that private labels "are discarded once the economy picks up again" (Ward et al. 2002, p. 962). Thus, not only are consumers more prone to buy private labels during economic downturns, but some of them also keep buying these store-brand alternatives when bad economic times are long over.

Managerial Implications

Economic recessions contribute to the prolonged upward evolution in private-label share, leaving permanent scars on national brands' performance levels. Business-cycle fluctuations are beyond the control of individual brand managers. However, managers might mitigate the effect of an economic downturn on their brands' positions by engaging in proactive marketing, a strategy in which the firm views the recession as an opportunity and invests aggressively in marketing activities during downturns. This strategy has been found to result in improved performance not only during contractions but also in subsequent expansion periods (Hillier and Baxter 2001; Srinivasan, Rangaswamy, and Lilien 2005).

Unfortunately, however, the behavior of most brand managers appears to be anything but proactive. Indeed, their behavior might actually exacerbate the negative effects of an economic downturn on their brands' positions. The key driver behind this is managers' short-term focus. After all, most managers spend no longer than three years in the same job (Kerin 2005) and thus may be prone to underweigh long-term implications of their short-term decisions. In this context, Milgrom and Roberts (1992, p. 471) observe that a manager "will be tempted to put too much emphasis on activities that boost short-term performance compared to those whose benefits will be hidden … for a long period of time."

To protect short-term profits, managers want fast ways to cut costs in times of slow demand. Two common ways to achieve this are scaling back of innovation activity (Axarloglou 2003) and cutting advertising budgets (Picard 2001). Table 5 offers additional evidence on advertising retrenchment during a recession for ten major national CPG brands in the United Kingdom. Expenditure on these activities is often discretionary, and cutting them directly affects the bottom line, though their adverse effects may be revealed only in the longer run.

The apparently widespread practice of reducing brand support during bad economic times could reinforce the impact of the business cycle in favor of store-brand alternatives. However, is it true that innovation and advertising can reduce the negative effect of an economic downturn for brand manufacturers? If these instruments are not effective, managers' behaviors might be perfectly rational. Although there is little hard evidence, there is indirect support that innovation and advertising can indeed serve this role for manufacturer brands. Several authors have speculated that private labels are less successful in categories characterized by intense innovation activity (Quelch and Harding 1996;

TABLE 5
Average Yearly Growth in Advertising Expenditures for Several Top Brands in the United Kingdom

	Expansion Period (1997–1998)[a, b]	Contraction Period (2001–2002)[c]
Aquafresh	+.03	–.25
Colgate	+.11	–.18
Danone	+2.80	–.01
Guinness	+.04	–.15
Heinz	+.68	–.25
Kellogg's	+.03	–.34
Kraft	+.24	–.30
Nescafé	+.21	–.51
Nestlé	+.87	–.16
Persil	+.11	–.11

[a]We determined contraction and expansion years on the basis of the HP-filtered GDP-per-capita data of the United Kingdom.
[b]Average yearly growth between 1997 and 1998.
[c]Average yearly growth between 2001 and 2002.
Notes: We obtained advertising-expenditure data from ACNielsen Media Research U.K.

Steenkamp and Dekimpe 1997). Moreover, Hillier and Baxter (2001) show that firms that increase their product development spending during a recession perform better in terms of profitability and market share during the subsequent recovery. Although this does not prove that innovation is effective as a barrier against private-label success in recessions, at the very least, it suggests that reducing innovation activity in economic downturns is not conducive to fight private labels.

Because most CPG categories are mature, the positive role of advertising may appear less obvious. However, advertising is crucial to maintain product differentiation with private labels, which is necessary to justify the price difference (Hoch and Banerji 1993). Frankenberger and Graham (2003) report that firms that increased their advertising expenditure in a recessionary period created added value that extended through the year following a recession. However, the company is advised not to rely on advertising in isolation but rather to use it in combination with the introduction of new products. Lodish and colleagues (1995) report that the advertising elasticity for new products is five times higher than it is for established products. Similarly, Steenkamp and Gielens (2003) find that new products that were heavily advertised achieved a trial rate that was 72% higher than the trial rate of new products that did not receive much advertising support.

Taken together, these findings imply that proactive marketing involving new-product introductions supported by heavy advertising may be a powerful strategy to mitigate the effect of a recession on the position of manufacturer brands. Proactive marketing in times of recession may offer the key for national-brand manufacturers to prevent consumers from (permanently) switching to private-label offerings. One company that has successfully followed this route is U.K.-based Reckitt Benckiser.[12] Despite difficult economic times in many of its markets, it has managed real top-line growth (and doubled profitability) through hefty product innovation—40% of sales are from products launched in the last three years—and by investing much more heavily in advertising than most of its competitors. Notably, another "discretionary" marketing activity, marketing research, plays a key role in this process. Product development is based on ideas generated by marketing research and are tested with consumers before launch (*Financial Times* 2005).

Contrary to most manufacturers, anecdotal evidence suggests that retailers actually exploit the benefits of proactive marketing because they tend to increase their private-label support in recessions. For example, the British supermarket chain J. Sainsbury responded to difficult trading times in the beginning of the 1990s by increasing its promotional emphasis on own-label products with price reductions on some 300 of these items (Walters 1994). As another illustration, more than one-third of all new-product launches in Germany during the economically depressed period of 2001–2003 were private-label brands (Kumar and Steenkamp 2006). Through such countercyclical private-label support activities, retailers may significantly contribute to long-term private-label performance. Thus, although the impact of the aggregate business cycle may seem uncontrollable, a proactive marketing strategy by manufacturers and retailers may either mitigate or accentuate the observed dependency of private-label success on general economic conditions.

[12]Examples of Reckitt Benckiser brands in the United States are Lysol, Woolite, Calgon, Veet, Air Wick, Electrosol, and Spray 'n Wash.

Limitations and Directions for Further Research

Our study has several limitations that offer interesting avenues for further research. Future studies should examine the interplay between consumer actions and manufacturer or retailer behavior to assess the relative contribution to the increased popularity of private labels during contractions. If this phenomenon is driven mainly by consumer behavior in response to changes in the economic climate, this does not bode well for national-brand manufacturers, because part of private-label success is beyond their control.

Conversely, if manufacturer behavior is an important factor in explaining private-label success over the business cycle, what can managers do to reverse this? Can increased new-product development mitigate the effect of a recession for manufacturers? Can advertising staunch the loss of market share in an economic downturn, and if so, what advertising medium and content are most effective in recessionary times? Is it better to spend the money on price promotions, despite their often modest pass-throughs? Which marketing instrument is most effective and cost efficient? Can synergies be obtained by using several instruments simultaneously? Finally, why does available evidence, admittedly anecdotal, indicate that managers apparently behave in ways that hurt the long-term prospects of the company? Do they not know this, or do they unreasonably discount future profits? How can performance evaluation criteria and career paths be adapted to prevent unreasonable discounting?

On the part of the retailer, it is fruitful to consider whether actions during recessionary periods really reinforce the cyclical sensitivity of private labels and what kind of actions are most successful to strengthen the boost in private-label sales. Retailers should also give closer consideration to the profitability of private labels. Even if their behaviors increase private-label success in recessions, are they better off financially after the relevant criterion—annual dollar contribution per square foot of shelf space—is considered? From a more technical point of view, further research could develop an integrated (potentially nonlinear) model that enables the investigation of the four components of the business cycle in a single step rather than our current multistep procedure.

In summary, our study formally examines how the popularity of private-label alternatives is related to aggregate business-cycle fluctuations in a CPG setting and offers evidence on the much-debated and speculative idea that private labels are only for recessionary times. We propose a framework that helps understand and predict the observed net effect on private-label performance. However, more research is called for to identify which part of the observed negative effect of a recession on national-brand sales can be offset by manufacturers and which factors underlie the

observed patterns. We hope that our article provides an impetus to this much-needed research effort.

Appendix A

The HP filter can be rationalized as the optimal estimator of the trend in the following structural model (Harvey and Jaeger 1993):

$$(A1) \qquad y_t = y_t^l + y_t^c, \quad y_t^c \sim N(0, \sigma_{y^c}^2),$$

where the trend component y_t^l is modeled in general state-space form as

$$(A2) \qquad y_t^l = y_{t-1}^l + \beta_{t-1} + \eta_t, \qquad \eta_t \sim N(0, \sigma_\eta^2)$$

$$\beta_t = \beta_{t-1} + \varepsilon_t, \qquad \varepsilon_t \sim N(0, \sigma_\varepsilon^2),$$

where $\sigma_\varepsilon^2/\sigma_{y^c}^2 = 1/\lambda$, where λ is the smoothing parameter or penalty that determines the degree of smoothing. In line with the work of Boone and Hall (1999), we normalize $\sigma_{y^c}^2$ equal to 1. By imposing a value for λ equal to the smoothing parameter in Equation 1 and setting σ_η^2 equal to 0 in Equation A2, this general structural time-series model produces a trend and a cyclical component that are identical to those obtained using the well-known HP filter. The conversion of the HP filter into Equation A2 and A3 enables us to adopt the Kalman filter to calculate maximum likelihood estimates of the trend component.

To control for a potential break in the series after a certain point in time (τ), we can extend the HP filter formulated in Equations A1 and A2 with two pulse dummies that can account for a potential change in the level and the trend of the series. The resulting state-space form of the trend, y_t^l, in Equation A2 then becomes

$$(A3) \qquad y_t^l = y_{t-1}^l + \beta_{t-1} + \gamma_1 D_\tau,$$

$$\beta_t = \beta_{t-1} + \gamma_2 D_\tau + \varepsilon_t, \ \varepsilon_t \sim N\left(0, \frac{1}{\lambda}\right),$$

$$\text{where } D_\tau \begin{cases} = 0 & \text{if } t \neq \tau \\ = 1 & \text{if } t = \tau \end{cases}.$$

For a similar extension of the business-cycle filter with break dummies, see Boone and Hall (1999).

Thus, when we filter out the fluctuations due to the business cycle, the state-space formulation (Equation A3) enables us to control for a potential break in a series (e.g., the German reunification in 1990).

Appendix B

We express the quantities $\hat{\zeta}_1$, $\hat{\zeta}_2$, and $\hat{\zeta}_3$ in terms of probabilities and computed them as

$$(B1) \qquad \hat{\zeta}_1 = \frac{1}{T}\sum_{i=1}^{T} [\hat{f}_1^*(X_i) - \hat{\eta}]^2,$$

$$\text{where } \hat{f}_1^*(X_i) = \frac{1}{\binom{T-1}{2}} \sum_{\substack{j<k \\ i \neq j \neq k}} \sum f^*(X_i, X_j, X_k), \text{ and}$$

$$f^*(X_i, X_j, X_k) = \frac{1}{3}\begin{bmatrix} \text{sign}(X_i + X_j - 2X_k) \\ + \text{sign}(X_i + X_k - 2X_j) \\ + \text{sign}(X_j + X_k - 2X_i) \end{bmatrix};$$

$$(B2) \qquad \hat{\zeta}_2 = \frac{1}{\binom{T}{2}} \sum_{j<k} \sum (\hat{f}_2^*(X_j, X_k) - \hat{\eta})^2,$$

$$\text{where } \hat{f}_2^*(X_j, X_k) = \frac{1}{T-2} \sum_{\substack{i=1 \\ i \neq j \neq k \\ i \neq k}} f^*(X_i, X_j, X_k); \text{ and}$$

$$(B3) \qquad \hat{\zeta}_3 = \frac{1}{9} - \hat{\eta}^2.$$

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