

# The Growth of Private Label Brands: A Worldwide Phenomenon?

Andres Cuneo, Sandra J. Milberg, Jose Miguel Benavente, and Javier Palacios-Fenech

## ABSTRACT

*In many countries, the growth of private label brands (PLBs) is negatively affecting manufacturer brands' shares, though PLBs have yet to take hold in other markets. Numerous studies have identified factors leading to the success of PLBs in product categories, and yet little empirical research has investigated the factors underlying the variability of PLB shares across countries. This research examines country-level market structure factors—retail distribution structure, retailer typology, and logistic structure—to understand the differential success of PLBs across countries. The results indicate that these factors help explain the dispersion pattern of PLB penetration across 46 countries and that the distribution structure has the largest effect on PLB share, followed by the logistic structure and retailer typology in particular global discounters. The findings can enable manufacturer brand managers to better foresee whether specific countries represent fertile ground for internationalizing their brands or, contrarily, constitute bastions for brand manufacturers to protect their brands' shares. The results also provide insights about the time frame over which PLB share development may pose a threat in different markets.*

**Keywords:** private label brands, store brands, brand competition, country-level factors, market structure

Private label brands (PLBs) have become a challenge for manufacturer brands, as evidenced by PLBs' impressive growth over the past decade. The numbers speak for themselves: PLBs are present in more than 90% of consumer packaged goods categories. Market shares across Europe have reached 23%, on average

(TNS 2009), but shares are higher in countries such as the United Kingdom (46%), Switzerland (45%), Germany (37%), and Spain (33%) (Europanel 2009). Moreover, their growth significantly exceeds that experienced by manufacturer brands (18% vs. 4.5%, respectively). The situation in the United States is similar to Western Europe, where penetration rates across categories have reached 24% (Europanel 2009). Furthermore, in many countries, PLBs have undergone a deep transformation, evolving from a low-price/low-quality image to competing in some categories with the strongest brands in the market. Clearly, manufacturer brands in many countries such as the United States and those in Western Europe are facing a competitive threat from the expansion of PLBs.

The question that arises is whether PLBs will also constitute a competitive challenge for manufacturer brands in regions of the world where PLBs are currently underdeveloped. For example, market shares of PLBs are relatively low in Latin America (Argentina [4.5%], Brazil

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[.9%], Chile [5.2%], and Mexico [1.7%]), Eastern Europe (Russia [.8%], Turkey [7.7%], Serbia [2.4%], and Ukraine [.3%]), and Asia (China [.3%], South Korea [5.5%], Malaysia [2.6%], and Taiwan [1.7%]) (Europanel 2009). It is evident, then, that there is widespread diversity across markets in terms of the level of PLB penetration. It is important for both managers and academics to understand why this is the case.

Whereas numerous studies have focused on identifying a variety of factors (e.g., consumer, competitive, retailer) to explain the success of PLBs in a host of product categories (Erdem, Zhao, and Valenzuela 2004; Rubio and Yagüe 2009), little empirical research has investigated factors underlying the variability of PLB market shares across countries. The few studies that have examined this issue focus only on consumer factors to help explain variances in PLB share between a limited set of countries. For example, Erdem, Zhao, and Valenzuela (2004) find that the disparities in the penetration of PLBs among Spain, the United Kingdom, and the United States can in part be attributed to differences in consumers' PLB quality expectations, quality uncertainty, and risk perceptions. In addition, market share percentages for PLBs are correlated with values; specifically, a positive association with individualism and a negative association with long-term orientation (De Mooij and Hofstede 2002). Furthermore, Mandhachitara, Shannon, and Hadjicharalambous (2007) indicate that differences in consumers' market knowledge, use of extrinsic cues to infer quality, and concerns for social image are associated with the differential success of PLBs in Thailand and the United States.

These studies consider consumer factors to account for PLB share differences across countries, but there is a lack of research examining other types of factors that are likely to help explain differences in PLB penetration across countries. If one considers PLBs at their onset as a retail innovation, it may be useful to draw on research based on the diffusion of innovation theory (Rogers 1983) to identify factors that influence the growth and diffusion of PLBs across markets. For example, the diffusion of new products is strongly influenced by supply restrictions related to market structure, such as the availability of offerings due to production constraints and/or difficulties in setting up distribution systems (Jain, Mahajan, and Muller 1991). These supply restrictions then also limit the amount of exposure that products require for consumers' adoption (Rogers and Shoemaker 1971). It is likely that the process of diffusion and adoption of PLBs will similarly be affected by sup-

ply restrictions imposed by market structures. Because countries show significant differences in terms of country-level market structure factors, examining the influence of market structure factors on supply restrictions that may hinder the diffusion and adoption of PLB may be useful in explaining differences in PLBs across countries. Thus, the objective of this article is to investigate country-level market structure factors that have not been considered in prior PLB research (retail distribution structure, retailer typology, and logistic structure), which likely influence the overall capacity of PLB performance to help explain the differential success of PLBs across a wide variety of countries.

Moreover, it is essential for brand managers and retailers to understand (1) why PLBs have become major players in some countries but have had a difficult time taking off in others and (2) what this means for manufacturer brands. Manufacturer brands in many countries are facing a challenge from the expansion of PLBs, so it is imperative that they develop competitive strategies to combat the incursion of PLBs to prevent further erosion of their business. A common strategy is differentiation through product innovation (Gielens 2012). Although this alternative is viable for some brand manufacturers, especially for those with sufficient resources to invest in research and development, others aim to grow their brands and avoid direct competition with PLBs by internationalizing into new markets where PLB penetration rates are low (Gupta and Govindarajan 2001). Indeed, extending brands into foreign markets has been the cornerstone of many firms' growth strategies, evidenced by the proliferation of international and global brands in the marketplace (Schuiling and Kapferer 2004). It is of critical importance that brand manufacturers planning to internationalize assess the market attractiveness of these countries to determine which ones provide greater opportunities for a sustainable competitive advantage.

Therefore, an important contribution of this research is that it sheds light on the influence of market structure factors on the growth of PLBs in different countries, which enables manufacturer brand managers to better foresee whether specific countries represent fertile ground for internationalizing their brands or, conversely, constitute bastions for brand manufacturers, local or foreign, to protect their brands' shares. In addition, assessing whether market structure factors represent barriers for PLB growth helps brand managers gauge the time frame (short vs. long run) over which PLB share development may pose a threat in different markets. Further-

more, this research contributes to the literature by linking the growth of PLBs to the diffusion of new products paradigm, thus providing a broader theoretical context in which researchers can understand and study the PLB phenomenon across markets. This connection creates a different lens to help focus attention to other factors, such as those related to market structure, to understand the differential success of PLBs across countries. Indeed, the findings suggest that the knowledge on the growth of PLBs may need updating to incorporate critical country-level market structure factors that researchers have largely ignored in building theories of the PLB phenomenon. Moreover, the study extends the applicability of the diffusion of innovation framework to include not only the diffusion and adoption of new products but also an innovative approach to retail marketing. Finally, this study further contributes to the international marketing literature by introducing country-level market structure factors and demonstrating their importance in determining the success of PLBs across countries.

## LITERATURE REVIEW AND HYPOTHESES

Academics have not overlooked the rapid development and expansion of PLBs. Over the past few decades, researchers have conducted numerous studies to understand the growth of this phenomenon (Cuneo, Lopez, and Yagüe 2012; Erdem, Zhao, and Valenzuela 2004). Scholars have provided conceptual and empirical insights in areas such as the benefits and strategic role of store brands for retailers (Wu and Wang 2005) and have identified key factors—competitive (Pauwels and Srinivasan 2004), consumer (Baltas and Argouslidis 2007), and retailer (Ailawadi and Harlam 2004)—that influence PLB success within a variety of product categories.

For example, studies have revealed that retailers are motivated to develop PLBs when they can derive superior benefits, either economic or strategic (Altinta et al. 2010). More specifically, research has indicated that developing PLBs is attractive to retailers when market conditions are set to maximize profits and growth as well as to build differentiation from competitors and improve store image (Corstjens and Lal 2000). From the economic perspective, PLBs can deliver higher margins and offer consumers greater price gaps with manufacturer brands if retailers manage to keep cost structures under control (Ailawadi and Harlam 2004). Establishing greater price differentials between PLBs and manufacturer brands is important to increase consumer demand for PLB (i.e., the likelihood of purchase), espe-

cially for price-sensitive consumers (Rubio and Yagüe 2009). So, although consumers are willing to pay more for manufacturer brands than for PLBs in many product categories, higher price differentials between PLBs and manufacturer brands constitute an incentive for consumers to buy or switch to PLBs (Sethuraman 2000; Steenkamp, Van Heerde, and Geyskens 2010). Research findings support this contention, indicating that greater price gaps between PLBs and manufacturer brands lead to higher PLB shares, and vice versa (Sethuraman 2000).

To obtain economic benefits and create higher price differentials with manufacturer brands, retailers first need to build market power through volume, exploiting economies of scale and scope (Cotterill and Putsis 2000). Thus, PLBs become viable in part when retailers are able to reach a critical mass to achieve scale advantages. It is apparent, then, that a well-developed modern trade structure (i.e., supermarkets, hypermarkets, and/or discounters) in a country is a prerequisite for the growth of PLBs because only large retailers are able to build sufficient market power to realize the high volumes required to attain scale advantages (Ailawadi et al. 2010). Unlike modern trade, traditional channels (i.e., small local chains and independent outlets such as mom-and-pop stores) are not able to exploit economies of scale, because they are incapable of building market power through volume. Thus, in countries that have a significant presence of traditional channels (e.g., Argentina [60% of sales], Ukraine [84% of sales]), PLBs do not perform well (4.5% share and .3% share, respectively) (Europanel 2009). Clearly, the lack of a well-developed modern trade structure constitutes a supply restriction that hinders the growth and diffusion of PLBs.

Retailers' market power has been previously measured by retail concentration—specifically, as the aggregated percentage of market shares of the top three retailers within modern trade (Ailawadi and Harlam 2004; Rubio and Yagüe 2009). Studies have confirmed that retail concentration rates are positively associated with PLB share because they signal both the market power of retailers in the marketplace and their negotiation power with brand manufacturers (Rubio and Yagüe 2009). This ratio captures the weight of the top retailers operating in a market and is a good proxy of retailer market power, but only for those operating in markets where modern channels account for a large proportion of sales and where traditional channel share is marginal. It is understandable why previous studies have used this measure because research on PLB share is conducted almost exclusively in the United States and in Western

Europe, where modern trade accounts for the overwhelming majority of retailer sales. This, of course, is not the case in many other regions throughout the world. Therefore, for various countries this ratio presents some limitations. Although it captures the market power of retailers in modern trade, it does not consider the split of the distribution structure between modern and traditional channels. Retailing in many markets represents a significant proportion of sales attributable to traditional outlets (Euromonitor International 2005). Thus, applying the retail concentration rate measure used in prior research across a wide variety of countries may lead to erroneous conclusions. For example, according to this measure, the top three Chilean retailers would account for close to 80% of sales (LatinPanel 2008). However, this figure does not take into account sales through traditional outlets, which represent 40% of total sales (LatinPanel 2008). In reality, then, these top three retailers account for 48% of total sales, which presents a very different picture of the market.

Therefore, when examining the penetration of PLBs across a diverse set of countries that differ with respect to the presence and size of modern trade, a better measure of retailers' market power should first consider the ratio between modern and traditional channels' market shares. We expect that whereas a developed structure of modern trade would underpin the growth of PLB share, a lack of a developed modern outlet structure would limit the opportunity for PLB growth. Because PLBs are developed by modern retailers, it is necessary that a sufficiently high penetration of modern retailers exist before PLBs can develop. However, when traditional channels account for a substantial percentage of purchases in these markets, even when the top three or four retailers control a high percentage of modern trade, PLB growth potential may be somewhat limited. Thus, we hypothesize the following

H<sub>1</sub>: The more highly developed a country's modern trade (i.e., supermarkets, hypermarkets, and discounters), the higher its PLB share.

The supply and growth of PLBs is dependent on, restricted, or facilitated by the existence and size of modern retailers. Although this is an essential condition for the development of PLBs, it does not necessarily translate into high PLB share even when modern retailers account for a high proportion of sales. For example, Brazil has 61% modern trade, with a PLB share of .9% (Europanel 2009). Thus, whereas the retail structure is important for reducing PLB costs through economies of

scale, retailers also need to create cost efficiencies in their distribution system to reap economic benefits and offer consumers significant price gaps with manufacturer brands (Cotterill and Putsis 2000).

Such cost efficiencies can be achieved by limiting logistical expenses and searching for low-cost suppliers (Altinta et al. 2010). The general trend among retailers regarding PLB sourcing is to contract PLB products from third parties. The PLB suppliers are typically brand manufacturers with spare capacity or independent producers who are available and easily accessible through well-developed logistic networks (Chen, Gilbert, and Xia 2011). As a means of reducing supplier costs, retailers are shifting the supplier base of PLBs from high-cost countries (e.g., France, Italy) to countries where labor and material costs are lower (e.g., those in Eastern Europe). Thus, finding low-cost, reliable suppliers is not an issue in many markets. However, in several other markets, local or regional retailers have a difficult time finding available, good-quality suppliers in close proximity with which to build a PLB business (Euromonitor International 2005).

In addition, even when retailers are efficient in accessing production, they can still lose their competitive cost advantage if the logistic structure needed to transport products is not well developed. For retailers, the logistic structure represents how efficiently and timely they can ship and distribute PLBs from their suppliers to their stores (Arvis et al. 2012). In many markets, retailers are faced with several logistical challenges, such as volume variability between countries and cities, underdeveloped logistic networks, the efficiency of customs and border management clearance ("Customs"), and even geography (Arvis et al. 2012). These types of logistical challenges also present restrictions on supply, similar to those that affect the diffusion of new products (Jain, Mahajan, and Muller 1991) and, as such, can create barriers for retailers to become profitable through their PLB. Thus, if the cost of sourcing stores with PLBs increases as a function of logistics, achieving higher margins and establishing attractive price gaps with manufacturer brands desired by consumers also constitutes a hardship for the growth of PLBs (Rubio and Yagüe 2009). Formally,

H<sub>2</sub>: The more highly developed a country's logistic structure, the higher its PLB share.

It is evident that reduced cost structures through economies of scale and efficient distribution systems are vital to create the level of profitability to incentivize retailers to develop PLBs and the price differentials to

motivate consumer PLB purchases. However, prior research has also found that the demand for PLBs strongly depends on consumers' PLB quality and risk perceptions. The higher the perceived quality of PLBs, the higher the demand for them (Baltas and Argouslidis 2007; Erdem, Zhao, and Valenzuela 2004). Perceptions of high quality increase the credibility of a brand, which in turn decreases perceived risk (financial, performance, and social), and vice versa (Gonzalez-Mieres, Diaz, and Trespalacios 2006). Moreover, risk perceptions are influenced by consumer exposure and familiarity with PLBs. The probability that consumers will choose and adopt PLBs increases when they perceive less risk (Erdem and Chang 2012). The role of perceived risk in the purchase of PLBs is consistent with findings from research on the adoption of innovations in that adoption of new products is also influenced by consumer risk perceptions (Rogers and Shoemaker 1971).

In many markets, PLBs are perceived as risky alternatives because consumers have limited exposure to them and perceive them to be inferior in quality to manufacturer brands (Erdem, Zhao, and Valenzuela 2004; Hsu and Lai 2008; Mandhachitara, Shannon, and Hadjicharalambous 2007). One reason for this is that in many countries, the typology of retailers consists mostly of local retailers that typically do not invest much in brand building. Instead, such retailers develop PLBs that are low-quality or copycat products (Kumar and Steenkamp 2007). This becomes a limitation for PLB share growth because consumers in these markets distrust and lack confidence in local retailer brands due to limited exposure and low-quality perceptions or uncertainty about product quality (Cuneo, Lopez, and Yagüe 2012).

In contrast, global supermarket and hypermarket chains such as Carrefour, Tesco, and Wal-Mart—and even some regional retailers—understand the strategic role of PLBs and have abandoned value propositions based on “pure price” for more sophisticated propositions with their own brands, offering basic, premium, and even symbolic products (Geyskens, Gielens, and Gijsbrechts 2010). Similarly, global discounters such as the German chains Aldi and Lidl have invested in product quality; thus, PLB offerings have become attractive to a wider range of consumers searching for value alternatives at lower risk.

Moreover, because quality is an attribute that often is imperfectly observable, consumers are typically uncertain about the quality level of many products, which increases their perceptions of risk (Gonzalez-Mieres, Diaz, and Trespalacios 2006). According to cue utiliza-

tion theory (Olson 1978) and signaling theory (Erdem, Swait, and Valenzuela 2006), when consumers are uncertain about quality levels, they search for extrinsic cues or signals to form expectations about product quality to reduce risk (Erdem and Swait 2004). One extrinsic cue that researchers find to be a universal signal of quality, invariant across cultures, is brand (Dawar and Parker 1994). In support of this finding, research has suggested that the success of global brands can be attributed largely to consumers' perceptions that global brands are of higher quality; globalness signals quality (Holt, Quelch, and Taylor 2004). Thus, global retailers can leverage their global image to generate consumer desirability (Gou 2013; Strizhakova, Coulter, and Price 2008). As a result, in some markets the entry of these global chains with their PLB offerings influence local consumers to adopt PLBs because they perceive them to deliver superior quality and value at low risk (Schuiling and Kapferer 2004; Swoboda, Pennemann, and Taube 2012). This is the case of Wal-Mart's “Great Value” brand in Latin America and Carrefour's “Reflects de France” brand in Eastern Europe.

In addition, the expansion of global supermarkets, hypermarkets, and discounters constitutes a solid platform for PLB growth because they increase consumers' exposure to and familiarity with PLBs. It is important, however, to distinguish global supermarkets/hypermarkets and global discounters. An important distinction between discounters and the other retailers is that discounters sell PLBs almost exclusively, which is likely to have a greater impact on PLB visibility (Euromonitor International 2005). The consistent development of discounters' PLBs, in terms of number of stockkeeping units and facings on the shelves, further increases PLB familiarity and awareness among consumers and shoppers, reducing their perceptions of PLB risk (Gonzalez-Mieres, Diaz, and Trespalacios 2006). The more familiar consumers are with PLBs, the more likely they are to adopt them. For example, in the Asia Pacific region, where PLB share is low, PLB familiarity is an antecedent to PLB proneness (Sheau-Fen, Sun-May, and Yu-gee 2012).

Furthermore, local retailers facing the arrival of foreign competitors and observing the positive financial and strategic effects of their PLBs must find new ways to compete. To battle global retailers' PLBs, local retailers often begin to adopt similar strategies, further quickening the pace of expansion of PLBs in these markets (Gielens and Dekimpe 2007). Therefore, given the strategic imperative for local retailers to compete with global retailers' PLBs, it seems that the growth rates for store

brands are directly related to the expansion of global retailers beyond their traditional geographic borders. Thus, the typology of retailers in a country is likely to influence PLB shares. As global retailers expand outside their home markets, so do PLBs, which increases the familiarity and reach of their brands as well as introduces good-quality PLB offerings to other markets. The increase in PLB familiarity and the improvement of store brand quality seem to be particularly effective in creating demand for PLBs (Baltas and Argouslidis 2007). As such, the penetration of PLBs in countries should increase as the entrance of global retailers increases. This leads us to hypothesize the following:

H<sub>3</sub>: The greater a country's presence of global retailers, the higher its PLB share.

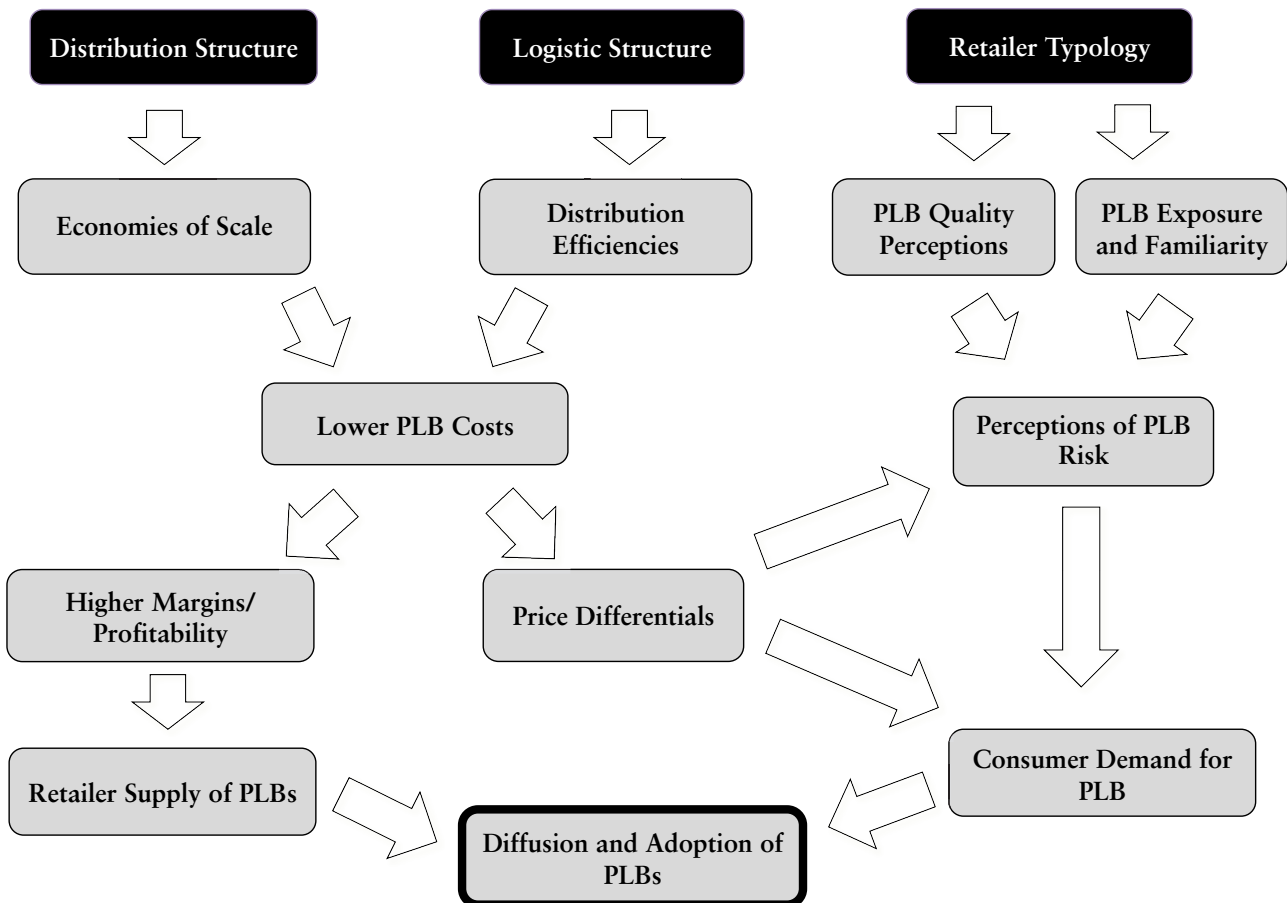
In summary, the preceding hypotheses suggest that the differential success of PLBs across countries is influenced

by country-level market factors such as the retail distribution structure, logistic structure, and the retailer typology. These factors are likely to either promote or inhibit retailers' abilities to develop and supply PLBs as well as consumer demand for PLBs.<sup>1</sup> This, in turn, influences the rate of diffusion and adoption of PLBs. For a model of conceptual relationships, see Figure 1. This conceptualization of the relationships among the country-level market factors and the growth of PLBs is consistent with both prior research on PLBs and findings from the diffusion and adoption of innovation literature (Jain, Mahajan, and Muller 1991; Rogers and Shoemaker 1971).

## METHODOLOGY

To test the influence of country-level market factors on the share of PLBs, we use panel data provided by Euromonitor International. The data span a period of

**Figure 1.** Model of Conceptual Relationships Among Variables Influencing PLB Growth Across Countries



ten years (2000–2010) across a sample of 46 countries from North, Central, and South America; Western and Eastern Europe; the Middle East; and Australasia. The data consist of the value sales of four macro categories—home care, packaged food, tissue and hygiene, and pet care—arranged by brand, channel, and producer.

### Variable Definitions

Two of the four independent variables, distribution structure (DISTRUC) and retailer typology, are built using the Euromonitor data. Specifically, the measure of DISTRUC is calculated using the percentage of market sales attributable to modern versus traditional channels. Retailer typology is measured by both the number of global super/hypermarkets in each country (GSUPHYP) and the number of global discounters in each country (GDISC). As we discussed previously, unlike supermarkets and hypermarkets, discounters carry almost exclusively PLBs, so it is important to distinguish these two types of retailers. To capture the third independent variable, logistic structure (LOGIST), we use the Logistics Performance Index (LPI), which is a benchmark tool developed by the World Bank that measures on a 1 (worst) to 5 (best) scale the performance of a country along the entire logistics supply chain. The scale scores performance in six areas: efficiency of customs, quality of transport infrastructure, competitive price shipments, quality of logistic services, ability to track and trace shipments, and frequency of meeting shipment schedules. Because the six scale scores are highly correlated ( $r > .90$ ), we average them across respondents and aggregate them to form a single score, which we use in our analysis. In summary, this index assesses a country's logistic structure in terms of both logistic systems and trade facilitation.

In addition, given the variety of countries considered in the analysis (46), it is likely that there are idiosyncratic country characteristics not captured by our variables that also affect PLB share. Prior research has suggested that consumers' education and income levels as well as their place of residence (urban or rural) (Dolekoglu et al. 2008; Sethuraman 2000) and economic development (Ernst & Young 2013) may influence PLB share. We recognize there may be a need to control for these differences, because they are not the focus of our research. Therefore, we created an index based on a principal component analysis to measure the control variable to adjust for country differences that are related to the country's level of development (LOD). The LOD index includes four variables related to the level of develop-

ment of a country used by different organizations (e.g., United Nations Development Programme, World Bank, UNESCO): gross domestic product, education, life expectancy at birth, and urbanization. We use a standardized index (0–1) in our analysis. Finally, the dependent variable, private label brand share (PLS) is defined as a percentage. It captures the value share of PLBs divided by the total sales on a yearly basis across the four macro categories described previously (for variable definitions, see Table 1).

### Data Description

Table 2 describes the data for both the independent and dependent variables: means, standard deviations, ranges, overall variances, within variances, and between variances. Specifically, between 2000 and 2010, the dependent variable PLS has an average of 9.4% among the 46 countries. Despite this relatively low value, this variable shows notable dispersion patterns. Indeed, the standard deviation associated with PLB value share is as large as its mean, starting at a zero value for some countries and reaching up to 32% for others. Regarding the retail distribution structure, modern trade retail sales has an average value of 49.7%, ranging from 13.9% to 86.8%. Furthermore, retailer typology, measured by the number of global super/hypermarkets and the number of global discounters, has an average of 1.95 and 1.13, respectively, varying in both cases between 0 and 4 by country. The logistic structure, based on the LPI score, ranges from 2.77 to 4.11, with an average of 3.48. In addition, the LOD index, which is standardized (0–1), has an average value of .64. Finally, it is important to recognize that there is far more variance between countries than within a country across time for all the variables. This means that the richness of the data comes mainly from the cross-country characteristic rather than from its temporal dimension.

## EMPIRICAL MODEL AND ESTIMATION PROCEDURES

We propose that the evolution of a country's private label share will depend on its market structure characteristics plus a combined error that captures unobservable country characteristics, common temporal shocks, and other idiosyncratic country-year elements that we assume have no systematic effect on each country's PLB share. Formally, this dependency can be expressed as

$$(1) y_{it} = m(x_{it}, \beta) + \mu_i + \lambda_t + u_{it}$$

**Table 1.** Variable Definitions

Variable	Definition
Private label share (PLS)	Private label share = total value sales of PLBs across four macro categories (home care, packaged food, tissue and hygiene, and pet care)/total value sales of the same four categories.
Retail distribution structure (DISTRUC)	Retail distribution structure = total value sales from modern trade across four macro categories (home care, packaged food, tissue and hygiene, and pet care)/ total value sales of the same four categories across total channels.
Retailer typology (GSUPHYP/GDISC)	Retailer typology = the number of global super-/hypermarkets (GSUPHYP) in each country, ranging from 0 to 4, and the number of global discounters (GDISC) in each country, ranging from 0 to 4.
Logistic structure (LOGIST)	Measures trade facilities and the logistic performance (1 = “worst,” and 5 = “best”) that a country offers to companies (PLB producers and sellers) to ship and transport products across the country. The World Bank’s LPI is used to assess this variable.
Level of development (LOD)	A control variable based on an index (0–1) built from four country development variables (gross domestic product, education, life expectancy at birth, and urbanization) that captures underlying idiosyncratic factors associated with LOD that are not attributable to the other independent variables.

where  $y_{it}$  accounts for the PLS of country  $i$  in year  $t$ ,  $m(x_{it}, \beta)$  represents the conditional mean of the dependent variable that is a function of a vector of independent variables  $x_{it}$  that characterizes each country  $i$  in year  $t$ . The vector of countries characteristics (independent variables including the control variable) can be synthesized by  $x_{it} = \{\text{DISTRUC}_{it}, \text{LOGIST}_i, \text{SUPHYP}_i, \text{GDISC}_i, \text{LOD}_i\}$ . Table 2 shows that some of the independent variables vary with  $i$  and  $t$ , whereas others only vary among countries  $i$ . The compounded error has an unobservable country fixed effect that captures other factors not considered in the vector and an unobservable common time effect  $\lambda_t$  capturing the effect of common shocks to all countries in a given period (e.g., economic cycles). Finally,  $u_{it}$  is the particular country-/time-specific error for which we make different assumptions depending on the estimation procedure.

Several characteristics of the data and the variables should be taken into account to define the estimation strategy. First, as mentioned previously, the data have a panel structure that includes information from 46 countries over a ten-year period. Most of these observations vary not only between countries but also through time. Second, the dependent variable is a percentage, defined between 0 and 1. Most of the models that assume a linear function between the vector of independent variables and the dependent variable consider that the

latter has a continuous distribution in real numbers and should not be bounded. Third, standard models assume that the distribution of the dependent variable has a Gaussian shape. However, the empirical distribution of PLS from the data is nonsymmetric and far from a Gaussian shape, which needs to be taken into consideration when choosing the model estimation procedure.

Following the traditional literature, we estimate Equation 1 using ordinary least squares (OLS), although most of the OLS assumptions do not hold (e.g., nonlinear, nonsymmetric errors, bounded range for the dependent variable). Taking into account the nonsymmetric pattern of the empirical distribution of PLS and that the dependent variable is a percentage, we also estimate a nonlinear model assuming a generalized linear model (GLM) that bounds the dependent variable between 0 and 1. Originally, the dependent variable was defined as a percentage, but it makes no difference if it is divided by 100. In line with a maximum likelihood estimation, we consider that errors may be correlated within countries because there is little variance within countries through time compared with the variation between countries (for Likelihood Function 1, see Appendix B). To relax the logistic assumption behind the GLM model, we introduce a beta-distributed model (Beta) (Ferrari and Cribari-Neto 2004). This functional form is more flexible because it is based on a gamma



**Table 2.** Data Description

Variables		M	SD	Min	Max	Observations
Private label share (PLS)	Overall	.094	.080	.002	.324	N = 460
	Within		.016	.031	.175	T = 10
	Between		.079	.010	.314	n = 46
Retail distribution structure (DISTRUC)	Overall	.497	.173	.139	.868	N = 460
	Within		.069	.249	.910	T = 10
	Between		.160	.166	.810	n = 46
Global supermarkets and hypermarkets (GSUPHYP)	Overall	1.957	1.352	.000	4.000	N = 460
	Within		.000	1.957	1.957	T = 10
	Between		1.366	.000	4.000	n = 46
Global discounters (GDISC)	Overall	1.130	1.280	.000	4.000	N = 460
	Within		.000	1.130	1.130	T = 10
	Between		1.293	.000	4.000	n = 46
Logistic structure (LOGIST)	Overall	3.481	.422	2.770	4.110	N = 460
	Within		.000	3.481	3.481	T = 10
	Between		.426	2.770	4.110	n = 46
Level of development (LOD)	Overall	.638	.242	.000	1.000	N = 460
	Within		.000	.638	.638	T = 10
	Between		.244	.000	1.000	n = 46

Notes: PLS and DISTRUC are shares (%), whereas LOD, LOGIST, GSUPHYP, and GDISC are scale means. Overall variation considers both the temporal and across-country dimensions for each variable. Between variation accounts for the cross-sectional (country) average variation between countries. Within variation accounts for the average standard deviation for only the temporal dimension.

distribution, which can account for the nonsymmetric data structure (Paolino 2001). The model considers specific country effects as well as unobserved country characteristics. It also considers highly correlated errors under a panel data setting (for Likelihood Function 2, see Appendix B).

## RESULTS

### Main Analysis

For all models, we consider a robust estimation of the variance (White 1980) and cluster the error by country and year to avoid the within-correlation problem (Liang and Zegers 1986). We also include year dummy variables to control for nonobservable time-variant effects that may affect all countries at the same time. For example, economic cycles or international price variations, such as in oil, may affect all countries during the same year. The analyses indicate that the OLS prediction

is far from the empirical prediction, suggesting that the model structure does not account for the heterogeneity present in the data. For this reason, the OLS model is unsuitable and will not be considered further. In contrast, the GLM and Beta models closely mimic the true empirical distribution of PLS and, thus, in all likelihood have higher explanatory power.

The results from the GLM and Beta models show that the independent variables are statistically significant in the predicted direction (see Table 3). More specifically, in support of  $H_1$ , we find a positive and significant effect of the retail distribution structure on PLS. This suggests that a more highly developed structure of modern trade in a country results in higher PLB share. In addition, the results indicate that the logistic structure (LOGIST) of a country also has a systematic effect on PLS such that the higher the LPI, the higher the share of PLBs, confirming  $H_2$ . Furthermore, retailer typology also influences PLS. More specifically, the presence of global discounters

(GDISC) has a positive and significant effect on PLS, indicating that the greater the number of global discounters present in a market, the higher the PLB share. However, although the effect of the presence of global super/hypermarket chains (GSUPHYP) is positive, it is not significant. Thus, we find only partial support for H<sub>3</sub>. Moreover, there are no significant interactions between any of the variables, including the control variable. Finally, the LOD control variable that captures idiosyncratic differences between countries in terms of PLS is not significant. Removing the LOD variable from the models results in negligible changes in the coefficients and no changes in significance levels.

Although these analyses enable us to test the direction and significance of the predicted effects, they do not permit us to compare the effects of the independent variables and the explanatory power in terms of PLS between the models. To compare the effects of the independent variables and the models, we analyze the marginal effects associated with each independent variable for the GLM and Beta models (see Table 4). The results reveal that the marginal effects are similar for both models, in which the distribution structure has the

largest effect, followed by the logistic structure and then the presence of global discounters.

Although the marginal effects allow us to compare the effects of the independent variables on PLS between the models, we want to estimate the quantitative impact of changes in the independent variable on PLS. To accomplish this, we evaluate the impact of an exogenous change in an independent variable on PLS while holding the other independent variables constant. In the case of the continuous variables, we consider a 10% exogenous increase. For the number of global discounters, we consider an increase in 1 moving from the current median of .5 global discounters to a value of 1.5. We do not consider this exogenous increase for GSUPHYP and LOD, because they are not significant. Table 5 presents the results of the analysis.

The first column in Table 5 indicates the median value of each of the independent variables. It is important to note that all of the analyses are based on median values because the distribution of PLS is highly skewed. The second column is the exogenous change measured in the same units for each variable. As we have mentioned, in

**Table 3.** Results of the Estimation Models

Variables <sup>a</sup>	GLM	Beta
Retail distribution structure (DISTRUC)	1.5220* (.5822)	1.5795* (.5653)
Global supermarkets and hypermarkets (GSUPHYP)	.0125 (.0534)	.0190 (.0477)
Global discounters (GDISC)	.3707* (.0745)	.3482* (.0758)
Logistic structure (LOGIST)	.5247* (.3089)	.4868* (.3013)
Level of development (LOD)	.4306 (.6762)	.4406 (.6696)
Log-pseudolikelihood	-95.161	980.322
N	460	460
Countries	46	46

\* $p < .01$ .

<sup>a</sup>The GLM variance inflation factors for each variable are all less than 2: DISTRUC (1.38), GSUPHYP (1.17), GDISC (1.34), LOGIST (1.54), LOD (1.56). Notes: PLS is the dependent variable. We considered dummy variables for each year. Standard errors appear in parentheses.

**Table 4.** Marginal Effects

Variables	GLM	Beta
Retail distribution structure	1.5220* .0710** (.0294)	1.5795* .0741** (.291)
Global supermarkets and hypermarkets (GSUPHYP)	.0005 (.0024)	.0008 (.0022)
Global discounters (GDISC)	.0173** (.0029)	.0164** (.0031)
Logistic structure (LOGIST)	.0245* (.0150)	.0230* (.0149)
Level of development (LOD)	.0201 (.0312)	.0208 (.0312)
Log-pseudolikelihood	-95.161	980.322
N	460	460
Countries	46	46

\* $p < .1$ .

\*\* $p < .01$ .

Notes: We considered dummy variables for each year. Standard errors appear in parentheses.

**Table 5.** Effects of an Exogenous Change in the Independent Variables

	Variable Median	Exogenous Change	Medial PLS Initial	Partial Effect (Beta)	Medial PLS Final	Median PLS Change
DISTRUC	50.6	5.06	7.31	.38	7.69	5.2%
GDISC	.5	1	7.31	1.64	8.95	22.4%
LOGIST	3.5	.35	7.31	.79	8.10	10.9%

the case of the first two variables, we evaluate an increase of 10% in their current median value. With regard to the retail distribution structure (DISTRUC; modern trade vs. traditional channels) and the logistic structure index (LOGIST), we assessed an increase of 5.06 and .35 percentage points, respectively. With regard to the discrete variable retailer typology, we evaluate an increase of 1 in the number of global discounters from its current median of .5.

The third column in Table 5 contains the current median value of the dependent variable PLS, which is 7.31%. The fourth column indicates the marginal effect (in percentage points) on the PLS variable resulting from the exogenous increase in each corresponding independent variable. To calculate this effect, we multiply the marginal effects of the Beta model by the exogenous change of each variable. We use the Beta estimates because they have better predictive power, though the GLM estimates produce similar results. The fifth column signifies the final median value (in percentages) for PLS as a result of the exogenous change in each independent variable while holding the other independent variables at their median value. The final column displays the net effect on PLS value, measured in percentages. The discrete variable, global discounters (GDISC) has the largest effect. Specifically, an increase of 1 unit in the number of global discounters, from its actual median of .5, has a positive impact of 22.4% on PLS. In the case of the continuous variable logistic structure (LOGIST), the results show that an increase of 10% in this index has a net effect of 10.9% on PLS value. With respect to the distribution structure (DISTRUC), when the share of modern trade rises by 10%, the results indicate that PLS increases by 5.2%.

### Supplementary Analyses

Given the variety of countries considered in the analysis, we incorporated a control variable, LOD, to control for

idiosyncratic country characteristics. Although such country characteristics are not the focus of our research, they may also affect PLB share not captured by the three country-level market structure variables. We chose LOD on the basis of research findings that indicate, for example, that variables such as consumers' income and educational levels may influence PLB share (Dolekoglu et al. 2008; Sethuraman 2000). However, the analyses indicated that the LOD control variable was not significant. Thus, we conducted additional post hoc analyses using an alternative control variable to capture the potential effects of idiosyncratic country characteristics.

There is a great deal of emphasis on regionalization as opposed to globalization in terms of international marketing strategy (Ghemawat 2007). It is possible that LOD at the country level might not be statistically significant because of an important and perhaps confounding influence of idiosyncratic factors, such as culture related to the regional environment. Therefore, we examine the effect of a regional dummy variable that represents country clusters. Specifically, following Ghemawat (2007), we group countries into six regional clusters: (1) North America, (2) Western Europe, (3) Eastern and Central Europe, (4) Latin America and Caribbean, (5) Middle East and Africa, and (6) Australasia.

The analyses reveal that the regional control variable is highly correlated with LOD ( $r = .63$ ). Even though they are highly correlated, we implement a likelihood ratio test to examine whether the regional dummy control variable contributes to explaining PLS in the model. Specifically, we compare the fit of two models: one that assumes that there are no idiosyncratic differences among geographical regions and one that explicitly considers these differences captured by the regional dummy variable. The results indicate that by including the regional dummy variable, there is no added gain in the likelihood function (model without regional dummy:

log-likelihood =  $-95.161$ ; model with regional dummy: log-likelihood =  $-94.426$ ). Thus, there is no significant difference ( $\chi^2(6) = 1.47$ , n.s.) between the fit of the two models. Therefore, this analysis does not support the idea that regional differences captured by the regional dummy variable contribute significantly to explaining PLS in the model beyond the country-level variations in market factors (retail distribution structure, retailer typology, and logistic structure).

Finally, we explore the possibility that regional similarities, with regard to shared cultural values among countries within a region, underlie the regional control variable. We examine the similarity of the cultural values of collectivism/individualism, uncertainty avoidance, and power distance among countries within each regional cluster. We find that the variability in cultural values among countries within each regional cluster is high, except for North America (Canada and the United States). Thus, our data do not seem to support the idea that similar or shared values among countries within regional clusters underlie any potential effects of regional clusters on PLS. In conclusion, the results regarding the high variability of cultural values among countries within regional clusters and the lack of explanatory power of both the regional and LOD control variables provide stronger support that the effects of variations in country-level market structure factors—retailer distribution structure, retailer typology, and logistic structure—substantially contribute to explaining the dispersion pattern of PLS across countries.

## DISCUSSION

Brand manufacturers and retailers across the globe indicate that the issue of PLBs is a main source of competitive concern and interest. The fast growth and development of PLB share in many countries has negative effects on manufacturer brands' shares and has changed the rules of competition between brand manufacturers and retailers. In countries where PLBs have high penetration, brand manufacturers are struggling to develop strategies to compete. In countries where PLBs have low share, brand manufacturers want to know if and when PLBs will create competitive challenges. Our research helps address these issues by identifying country-level market structure factors—retail distribution structure, retailer typology, and logistic structure—to explain the differential success of PLBs across countries. In addition, we shed some light on the pace of PLB share development in different markets.

The results indicate that these factors influence PLB share performance at the country level because they seem to serve as filters for PLB to permeate and grow. In other words, if these factors are underdeveloped in a country, they may act as barriers for PLB growth. For example, consider a country such as Mexico, in which traditional channels account for more than 70% of sales and the logistic systems are not well developed: the penetration of PLBs is low (1.7 %) and shows little change (Euromonitor International 2010).

The results of two complementary models support our hypotheses. Specifically, PLB share is positively associated with the development of the retail distribution system (i.e., modern vs. traditional trade). Thus, as retail distribution systems in a market transform from more traditional channels to more modern trade, it is likely that PLB share will grow and pose a greater threat to manufacturer brands in those markets. Currently, however, retail consolidation in many markets is relatively low—for example, in Asia Pacific and Latin American countries—and the progressive modernization of the retail distribution structure has not led to a considerable shrinking of the traditional channel. However, modernization is likely to take hold over time, especially as markets become more attractive to global retailers.

Furthermore, the findings suggest that as the logistic structure in a country becomes more highly developed, PLB share will increase. When logistic structures are underdeveloped, they constitute a barrier for retailers to access suppliers and stores in a timely and efficient manner. In addition, a real challenge for retailers to grow PLB is the variability of volume between countries and cities, logistic systems, customs, and even geography. Moreover, it is possible that markets with underdeveloped logistic structures might discourage global retailers from entering, thereby hindering PLB growth. Thus, although the logistic structure development is clearly important to the growth of PLB share, change is slow at best and is outside the purview of company control.

In addition, retailer typology—and specifically global discounters—play an important role in the growth of PLBs. They increase PLB visibility and familiarity because their assortments are almost exclusively PLBs, and they provide value to consumers by delivering good-quality products at discounted prices. Global discounters are able to differentiate themselves and create store loyalty through their PLB offerings, exerting increased pressure on local retailers. Faced with the arrival of foreign competitors, and noting the positive effects of

PLBs, local retailers in many markets are likely to increase their PLB offerings, quickening the pace of expansion of PLBs in these regions. Our findings lend support to these arguments by indicating that PLB share increases with the number of global discounters; moreover, increasing the median number of global discounters by 1 would have a significant impact on PLB share. Notably, although the effect of the number of global discounters on PLB share in a country is significant, the impact of the distribution and logistical structures are greater. However, in examining the effect of an exogenous change for each variable on PLS, we observe that increasing the presence of global discounters would have the greatest impact on PLB share.

### Theoretical Implications

This research also makes a contribution to the extant literature, in that the results are consistent with the theoretical framework and findings related to the diffusion and adoption of innovations (Mahajan and Muller 1979; Robertson and Gatignon 1986; Rogers 1983). There are similarities between the way PLBs are diffused and adopted over time and some of the factors that influence the processes of adoption and diffusion of innovations. More specifically, diffusion models involve the spread of new products, from manufacturers to users or adopters, through a product life-cycle curve (Wind 1976). The diffusion and adoption of innovations are influenced not only by consumer variables such as perceived risk (Motohashi et al. 2012) but also by supply restrictions such as the unavailability of products and the difficulties encountered in the distribution systems (Jain, Mahajan, and Muller 1991). The adoption and diffusion of PLBs, which could be considered a retail innovation at their onset, are also influenced by these factors, following a similar pattern. For example, we demonstrate that the country-level market factors, distribution and logistical structures, and retailer typology represent supply restrictions for retailers and constraints on consumer demand that affect PLB development and growth globally.

As we observe from the data, an important number of countries, mainly the United States and countries in Western Europe, have experienced fast growth and development of PLBs. The findings indicate that well-developed modern trade channels and logistical structures as well as the penetration of global retailers, especially global discounters, contribute to the diffusion and growth of PLBs. In addition, global retailers supply good-quality PLBs and convenient prices compared with

manufacturer brands, which increases consumer demand. Because retailers in these countries have a long history of building brand equity and brand trust among consumers, early adopters try the products with the majority then following suit, thus quickening the pace of PLB adoption.

However, this is not the case in countries where PLB share is low. In these markets, supply restrictions exist at different levels. At the production level, the configuration of the retail structure and the lack of suppliers limit the incentives and access of retailers to produce PLBs. At the distribution level, the complexity and difficulties inherent to efficient logistics systems serves as a disincentive for retailers to distribute PLBs because of high transport costs and reduced profits. Moreover, the limited presence of global discounters constricts consumer PLB exposure and familiarity, which in turn increases risk perceptions that inhibit consumer adoption and the diffusion of PLBs. In summary, the country-level market factors we identify constitute potential supply and consumer constraints or facilitators of PLB development and growth across countries that are similar to the supply and consumer restrictions influencing the diffusion and adoption of new products. Thus, considering the growth of PLBs as it relates to the diffusion and adoption of new products provides a broader theoretical context in which to understand and study the PLB phenomenon across countries. In addition, interpreting the results of this research in the context of the diffusion and adoption of new products literature provides more credence and confidence in the findings. Moreover, the findings from this study extend the applicability of the diffusion of innovation framework to include an innovative approach to retail marketing (i.e., the introduction of PLBs) that is neither a new product nor a new service per se. In addition, this research further contributes to the international marketing literature by identifying country-level market structure factors not considered in previous research, which play a significant role in determining the success of PLBs across countries.

Finally, this study serves as an important reminder to researchers to be attentive to the contexts in which studies are conducted. Because the studies that have identified factors leading to the success of PLBs were conducted almost exclusively in Western Europe and the United States, this in all likelihood led researchers to overlook important country-level market factors because there is little variation in these factors among these countries. This an issue often plagues marketing research, especially in the study of phenomena that are sensitive to

country differences, and speaks to the importance of international marketing research (Madden, Roth, and Dillon 2012; Walsh, Shiu, and Hassan 2014).

## Managerial Implications

Our study also helps address an important question that concerns local and global brand managers alike: Is it just a matter of time before PLB share increases aggressively, posing a threat to manufacturer brands across the globe? This research indicates that country-level market structure factors seem to create impediments to PLB development, though the speed at which we observe changes in these factors over time is slow. However, for example, whereas it took close to 50 years for supermarkets to become a dominant distribution channel in countries such as the United States and the United Kingdom, the time frame for the subsequent waves of expansion to reach the same level of penetration in other countries is significantly shorter (10 years) (Reardon, Henson and Berdegue 2007). Therefore, although PLBs might not pose an immediate threat, over a longer time frame as countries invest in modernization and the globalization of markets increases, PLBs will likely become major players in the competitive landscape in more and more markets.

This idea suggests that whereas brand manufacturers in many countries are struggling to defend their brands, in markets where PLB share is low, brand managers still have some time to develop effective strategies to counter the PLB challenge. However, in these markets, brand manufacturers may face more short-term challenges from the entrance of foreign brands aiming to internationalize to avoid fierce competition from PLBs in their home markets. Thus, although the PLB phenomenon might take some time to gain traction, brand managers in markets where PLBs are not yet a competitive threat should begin to anticipate and strategically plan for accelerated competition from not only PLBs but foreign brands as well. Therefore, even local manufacturer brands in markets with low PLB share are likely to experience enormous competitive pressure that will threaten their very existence as (1) global discounters expand their market reach, (2) local retailers develop PLBs that mimic global retailers, and (3) international manufacturer brands competing in markets where PLBs have a stronghold plan to enter new markets where PLB market share is low. Waiting does not seem to be a viable alternative, because PLBs will arrive sooner or later.

When companies try to avoid direct competition from PLBs by opting to internationalize their brands into new

markets where PLB penetration rates are low, assessing market attractiveness is critical to the decision of which of these markets to enter. Although some countries currently have low levels of PLB penetration, they might not present a sustainable competitive advantage because some barriers for PLB development and growth are low. For example, although PLB share is low in several Eastern European countries (e.g., Estonia, Latvia), the analysis of country-level market structure factors suggests that there might not be a market opportunity that is sustainable in the long run. Specifically, although global discounters are not present in these markets, the distribution and logistical structures are fairly well developed. As soon as global discounters enter these markets, PLBs are likely to take off, as evidenced by the finding that increasing the number of global discounters by 1 has a significant impact on PLB share (22.4%). This suggests that the time frame for the growth of PLBs in these markets is short, thus reducing the attractiveness of entry for manufacturer brands. In contrast, countries with low PLB penetration such as Mexico and Peru might be more attractive because the distribution structure, logistic structure, and presence of global retailers are all low. Changes in logistic and distribution structures take more time to develop, creating significant barriers that are likely to impede the short- and medium-term PLB growth. In summary, the findings from this research provide managerial insights regarding the attractiveness of new markets to enter to avoid competition with PLBs. In addition, where PLB share is low, it helps brand manufacturers understand if and when PLB will create competitive challenges.

## LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Although the three country-level variables help explain PLB share across a host of countries, it is likely that there are other factors that contribute to the level of PLB penetration. Therefore, researchers should consider additional variables—for example, regulatory policies that might create impediments for global retailers to enter a market, such as those found in India and China. Another factor that most certainly affects PLBs' success is retailers' willingness and ability to switch from a selling concept to a brand-oriented concept, whereby it becomes critical to develop and manage their own PLBs. Moreover, although it is doubtful that PLBs will develop rapidly in some markets at the country level and across a variety of categories, in the short run PLB growth is apparent in some specific product categories. Further

research should examine the combination of country-level and product category-level factors identified in prior research that might account for the uneven growth of PLBs between specific categories in different countries. It would be worth investigating the differential impact of PLB growth on the future of local, international, and global brands as well as identifying effective strategic options available to each type of brand to thwart PLB expansion. Along this line, whereas previous research has suggested that global brands influence local consumers, signaling good quality and value at low risk, recent research shows that as the world shifts to globally distributed companies, animosity toward global companies increases (Alden et al. 2013). Global companies should consider this potential backlash when entering new markets; they may do well to downplay their global identity and focus more at the product level by offering consumers variety, quality, and value (Magnusson et al. 2014). Further research should consider whether consumer animosity toward global companies hinders the growth and diffusion of PLBs and, if so, what strategies might offset this animosity.

Finally, the availability and reliability of PLB suppliers might underlie retailers' ability to develop PLBs. Although these factors do not present a barrier for retailers in many countries, because there are many good-quality, low-cost suppliers, such as second-tier brands and independent producers in close proximity to those markets, this is not the case in other markets. However, global retailers building on the attractiveness of large volumes may be able to access global PLB suppliers at relatively low cost, overcoming this barrier. Therefore, studying the impact of global retailers' competitive logistical advantage on local retailers' ability to develop PLBs and compete with global retailers' PLBs is an important topic for further research.

## CONCLUDING REMARKS

In conclusion, to answer the question of whether PLBs will become a worldwide phenomenon, this research investigates the influence of country-level market factors on the development and growth of PLB across a wide range of countries. The findings suggest that PLBs will become a global phenomenon; however, in some markets this will occur in the short run and in others in the long run. We believe this research provides important insights and contributions for academics who want to expand their knowledge and understanding of the PLB phenomenon; retailers that are attempting to develop

PLBs; and local, regional, and brand manufacturers that are wondering where and when they will face the PLB challenge and how to compete.

## NOTE

1. To explore the applicability of the theory-based hypotheses to the market, we conduct in-depth interviews with retail managers, manufacturer brand managers, retail consultants, and research managers. Interviewees' perspectives are consistent with our hypotheses. For examples of quotations from the interviews, see Appendix A.

## APPENDIX A: EXAMPLE QUOTES FROM THE QUALITATIVE INTERVIEWS

1. "Our buying power gives us a very strong position against our suppliers,... but when it comes to private labels, this power is not enough.... We can't push brand manufacturers to produce for us. Trying to source private labels from our global suppliers is not always profitable, and reliable local independent suppliers are really hard to find" (Head of Grocery, global retailer, Latin American headquarters).
2. "Private label brands are an important element of our retail formula; however, we don't develop them if they don't deliver profit.... Obtaining profit from private labels is not trivial. We need to deliver attractive price differentials compared to brand manufacturers while keeping logistical costs down.... Believe me, this is very hard when you are far from your supply" (Director of Private Label Brands, global retailer, Latin American subsidiary).
3. "Global retailers have a clear advantage compared to us: they have their global suppliers so they can develop full ranges of PLB.... What I don't know is how profitable is their private label, given the logistic complexity of serving all stores and moving merchandise around the region" (Commercial Director, regional supermarket chain).
4. "When I ask brand manufacturers: Would you produce PLB for us? They often say no.... So I wonder, 'Is there someone else willing to pro-

duce for us?’... Generally not, so this is the end of our PLB strategy” (Managing Director, local supermarket chain in Chile).

5. “In Europe there are many retail chains focused on PLB, here the retail formulas are hybrid, no one really bets on PLB, consumers generally think them as of lower quality and are afraid to try them. They still prefer branded products; who knows what is going to happen when, for example, more global retailers and discounters enter this market” (Marketing Manager, local brand manufacturer of dairy products with regional presence).
6. “Imagine I wanted to launch mineral water under my store brand, where should I bring it from? Brazil? Colombia? How much would that cost? I would never make a profit. In Europe, you can access your suppliers timely and easily, but in LATAM [Latin America] logistical costs are extremely high. Distance and transport optimization are huge barriers!” (Head of Food Division, global supermarket chain operating in South America).
7. “It is clear that private label brands play a key role in most global retailers’ strategy. As more global retailers enter this market, we anticipate a drop in sales.... This is why we are working on the development of a full range of private labels” (Chief Executive Officer, regional retailer in Brazil).
8. “Our management team should be more aware of the threat of private labels. Local managers haven’t realized that once private labels from global retailers enter their markets, consumers will realize their high quality, and our leadership will be challenged.... Buying private labels will no longer be a risky choice” (Chief Marketing Officer, global brand manufacturer).
9. “Of course we know how PLBs have expanded in Europe, but I think it will take time before they develop here. The retail structure in our markets is very different to that in Europe.... We have built a strong position in traditional channels, which are almost inexistent in Europe ... and this is an important difference” (Country Manager, global brand manufacturer of food products).

10. “The penetration of supermarkets, hypermarkets, and discounters could be considered one of the proxies for private label development. ... However, the modernization of the retail structure takes time and even new regulations. ... In some countries, traditional channels are protected by law” (Retail Consultant, United States).

## APPENDIX B: LIKELIHOOD FUNCTIONS 1 AND 2

### Likelihood Function 1

The goal is to find the values of  $\theta$  (subset of estimators) that maximize the following expression:

$$(B1) \quad Q(\theta) = \sum_{i=1}^n \left[ a \{ m(x_{it}, \beta) \} + b(y_{it}) \right] + c \{ m(x_{it}, \beta) \} y_{it}$$

where  $a(\bullet)$  and  $c(\bullet)$  are related functions, with the mean and variance of a binomial variable, and  $b(\bullet)$  is a normalizing constant (McCullagh and Nelder 1989).

### Likelihood Function 2

The idea is to find the values of the set of parameters  $\theta$  that maximize the following function:

$$(B2) \quad Q(\theta) = \sum_{i=1}^n \left[ \ln[\Gamma(\phi)] - \ln[\Gamma(m(x_{it}, \beta))] \right] - \ln[\Gamma(1 - m(x_{it}, \beta)\phi)] + [m(x_{it}, \beta)\phi - 1] \ln[(y_{it})] + (1 - m(x_{it}, \beta)\phi - 1) \ln[(y_{it} - 1)],$$

where, again,  $m(x_{it}, \beta)$  represents the conditional mean of  $y_{it}$ ,  $\phi$  represents its variance, and  $\Gamma(\bullet)$  represents the gamma distribution. In all three cases, values of the parameters  $\theta$  are obtained by a maximum likelihood procedure. It is important to note that the OLS estimates are the same as the maximum likelihood estimates if  $m(x_{it}, \beta)$  is a linear function of  $\beta$  and  $u_{it} \approx N(0, \sigma^2)$ .

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