INFLUENCE OF MACROECONOMIC INDICES ON EUROPEAN PRIVATE LABELS

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Abstract. In this study, we have analysed the impact and evolution of some of the most important macroeconomic indices on market share and value of private labels. The originality of this paper is the linkage of macroeconomic variables of European countries and the evolution of private labels in these nations. This relationship may show the development of commercial distribution with regard to macroeconomic indices. A sample of 13 European countries and a period of 14 years have been collected, including data of private brands and macroeconomic indices. Panel Data analysis has been applied using SAS software. The percentage of female unemployment negatively affects the volume and value of private label, unlike male unemployment, which affects them positively. The GDP influences positively and slightly both the volume and the value of store brands. In addition, the fact that the percentage of urban population has a positive influence on the value of private brands but not on their volume is noteworthy. Last but not least, only the estimation of value of private label in Spain shows a significant positive increase in following years. Eight countries of the sample indicate the opposite trend.

Keywords: private label, European scope, macro-economic indices, panel data, GDP, unemployment.

JEL Classification: C33, E24, M30.

Introduction

The historical evolution of private labels from generic products considered of low quality and price, to products seen as an attractive option for consumers and strong competitors of national top brands is a fact. The growing market share of private labels started many years before the global economic crisis in a great number of European countries. Nowadays, the overall perception of the price/quality relationship is one of the major reasons consumers reveal when purchasing these brands. The traditional connotation of private brands exclusively with a price emphasis, to the detriment of quality, seems to be contracting. Some authors show a practical confirmation that retailers' brands have

achieved brand equity during the course of their development and that this equity differs through the diverse private labels presented in the marketplace, and across product categories (Cuneo *et al.* 2012).

This is a pioneer study in the sense of analysing the effects of macro-level indices on variables related to private labels. Using longitudinal data, including 14 years of information from 13 different European countries, allows us to take into account the temporary effect, including periods of economic boom and periods of crisis, which gives us very reliable results in relation to the interactions between the variables analysed. Many European retailers are increasing their negotiation power and performance thanks to private brands, and it is very important for them to have precise prognostics of the evolution of these brands. In addition, manufacturers are very interested in the same topic in order to make better decisions about their strategies with regard to these phenomena.

The aim of this study is to analyse the relationship between several macroeconomic variables from various European countries regarding the value and volume share of private labels attained in these states. The significance of this work is to provide a macroeconomic examination of store brands that are often analysed from a microeconomic point of view and from a consumer perspective. We have really aimed to answer the question of whether the increased spending on store brands by consumers that has happened in several European countries in recent years has been caused by an impoverishment of the population (measured by the GDP and the unemployment rate), by a great concentration of population in urban areas and therefore easier access to large retail chains – which are the most encouraging players of private labels – or if it is actually a tendency unrelated to these factors.

1. Theoretical background

In general, the research focused on private labels has followed two main streams in recent years (Cortes 2010). The first is focused on understanding the change in market share through product categories (Gooner, Nadler 2012; Cuneo *et al.* 2012). The second is focused on understanding the consumer profiles of private labels (Garretson *et al.* 2002; Shukla *et al.* 2013; Mejri, Bhatli 2014).

We will focus on understanding characteristics related to consumers from different European countries, such as urban concentration (due to the gradual movement of the population to urban areas in the last decades) and the employment rate, as well as the main indicator of the economic health of a country: the GDP. Some authors assert that private brand loyalty is higher than it should be and that its market share is abnormally high (Nenycz-thiel *et al.* 2011). This is called "excess of loyalty". The question is: can the turbulent macroeconomic indicators of the economic cycles provoke this excess of loyalty towards retailers' brand? Other studies have scrutinised macro-economic factors of some countries – such as the retail distribution structure, the retailer typology and the logistic structure-to comprehend the disparate achievement of retailer brands across different nations. The results point out that the main influence on private label share is

the distribution structure, followed by the logistic structure and the dealer typology, specifically global discounters (Cuneo *et al.* 2015). Contradicting recent latest statements that the recession has stimulated an abrupt increase in private label demand, Dubé *et al* (2015) found a durable tendency headed for the growing approval of private labels that precedes the Great Economic Recession.

In this research, we will go deeply into the question of the socio-economic basis, focusing on European countries. Furthermore, there is a deficiency of published studies regarding macroeconomic data and private labels. Only a few studies have identified as future research to include macro-economic variables to examine the determinants of cross-price elasticity's of private labels (McQuade 2013). This study could help to open a new research stream.

1.1. The influence of the GDP on private labels in Europe

The Gross Domestic Product (GDP) is the indicator commonly used to measure the economic growth. Generally, if the GDP grows it is expected that the economic health of the country will improve. But does this macro-economic variable really influence private labels? We intend to examine if the GDP is one of the relevant factors for the development of private labels in the countries studied. On the other hand, the decrease in the relative weight of the food industry in the GDP is a logical trend in the extent to which a country grows. The more disposable income is proportionally less devoted to food (consumer staples) and to other expenses (Roger 2010). In addition, if the economy is optimal and the GDP is growing, it is expected that people will tend to buy more national brands and less private labels, because the need to adjust budgets for purchasing is not so strong. According to this idea we formulate the following hypotheses:

H1$_1$. The GDP negatively affects the "volume" variable of private labels.

H1$_2$. The GDP negatively affects the "value" variable of private labels.

1.2. The influence of the unemployment rate on private labels in Europe

The unemployment rate is a key indicator of the state of the labour market. With a high unemployment rate, many European buyers are cautious and continue looking for ways to maintain or reduce the cost of the shopping cart, and many retailers try to transform private label loyalty into profits. According to PLMA (PLMA 2014) data, there are significant national variations in Europe in relation to the share of private labels that range from 6% (Russia) to 53% (Switzerland), and also with regards to the unemployment rate.

It is known that an increase in unemployment causes a decrease of the budget available for families. This can trigger a lower purchasing power and a greater sensitivity to prices of products, which in turn may lead to raising the sales of private labels, because they are usually cheaper than national brands. Furthermore, the different purchase role of men and women may drive us to think that the male unemployment rate could have different effects than the female rate. This can be shown through the fact that the annual expenditure of purchasing of males is higher than that of females. Men in times

of crisis and high unemployment rate continue consuming as much as before, or even a little more (Martín 2009). From this reasoning, the following hypotheses are proposed:

H2$_1$: The male unemployment rate positively influences the "volume" variable of private labels.

H2$_2$: The male unemployment rate positively influences the "value" variable of private labels.

H3$_1$: The female unemployment rate positively influences the "volume" variable of private labels.

H3$_2$: The female unemployment rate positively influences the "value" variable of private labels.

1.3. The urban concentration and its influence on private labels in Europe

According to recent data from Eurostat, the urban regions of the EU (excluding France) tended to have the highest population growth generated by migration. 784 NUTS-level 3-regions in the EU presented a positive net migration (more immigrants than emigrants) in 2008–2012. In addition, 100 NUTS-level 3-regions of the EU increased their population due to migration, on average, at least 8.0 per thousand inhabitants in the period 2008–2012. These regions were predominantly urban.

It might be thought that the difference in the commercial concentration of cities compared to rural areas can influence the purchase of private labels, because these brands may be harder to find in rural areas. Therefore, this urban concentration can significantly affect the purchase of private label. In this study we investigate this phenomenon to see if it is a key with regard to the evolution of private labels. According to these ideas the following hypotheses are formulated:

H4$_1$: Urban concentration has a positive effect on the volume of private labels.

H4$_2$: Urban concentration has a positive influence on the value of private labels.

2. Methodology

2.1. Data sources

This study requires the use of similar data for all countries in the sample. This is why we contacted different agencies, such as the World Bank, the European Central Bank, Eurostat, etc., to collect this database. This consists of current information (2009–2013) for all countries in the study, based on a number of variables such as the GDP, the unemployment rate and the % of urban population. After obtaining these data, our goal was to see how these variables collected influence two important indicators in our research: the value and volume of private labels. The latter data were obtained thanks to the collaboration of the Private Label Manufacturers Association (PLMA) and its yearbook. We got comprehensive data about the value and the volume of private labels in 14 European countries, based on a time series from 1997 to 2013.

The number of observations of this research is 196; data from 13 European countries for 14 years have been collected. The data we used are the macroeconomic data from the World Bank (World Bank 2014) and more specifically the following variables:

– GDP per capita (US $ at current prices). The per capita GDP is gross domestic product divided by midyear population. The figures are in US $ at current prices.
– Unemployment rate. Unemployment is the proportion of the labour force that is unemployed but seeking work and available to do so. The percentage of women and men is of the active female and male population, respectively.
– Urban population (% of total). Urban population refers to people living in urban areas as defined by the national statistics office. It is calculated using World Bank population estimates and urban ratios of Urbanization Prospects in the World of the United Nations.

Furthermore we used the data provided by the Private Label Manufacturers Association (PLMA 2014) for:

– Volume of private brands: sales of products in units, kilograms, litres or other volume units.
– Volume of private brands: sales of products in euros, pounds or other currencies.

The PLMA is a non-profit organisation founded in 1979 with the aim of promoting private labels. The Yearbook of the Private Label PLMA is more than a simple statistical study. It helps to identify the categories in which the penetration of new brands is possible; provides insights into new business opportunities and serves as a benchmark for the strategy of companies. But, perhaps most importantly, the International Yearbook of the PLMA can observe private labels in their regional context, and compare efforts and results.

2.2. Methodology of panel data

There is a panel data set when there is simultaneously cross-sectional information and an available time series. The model we are specifically using is from Breusch and Pagan (Breusch, Pagan 1980):

$$a_{it} = a_i = a + \mu_i \, y b_{it} = b; \tag{1}$$

$$y_{it} = a_i + b x_{it} + e_{it}, \tag{2}$$

where a and b are parameters, i represents individuals and t represents time periods, e_{it} have to capture all possible differences between individuals and over time. μ_i is a group-specific random element, similar to e_{it} except that for each group, there is a single draw that enters the regression identically in each period. y_{it} is the dependent variable observed for individual i at time t, and x_{it} is the independent variable observed for individual i at time t.

The problem is if μ_i is deterministic or stochastic, and in other words whether it is correlated to the observable explanatory variables $x_{it.}$ If it is deterministic or correlated, then use models with fixed effects (dummy models). But if it is stochastic or uncorrelated, then you should use models with random effects (error component models).

In models with fixed effects it is hypothesised that the intercept is determinant and varies by individual (3) or by individual and time (4):

$$y_{it} = a + bx_{it} + \sum_{j=1}^{N-1} u_j D_{ji} + \varepsilon_{it}; \tag{3}$$

$$y_{it} = a + bx_{it} + \sum_{j=1}^{N-1} u_j D_{ji} + \sum_{s=1}^{T-1} u_s D_{st} + \varepsilon_{it}. \tag{4}$$

In the first case $(N-1)$ single dummy variables (D_{ij}) are used and the second $(N-1) + (T-1)$ and dummy D_{ij} and D_{st} whereby:

$$D_{ji} = 1 \text{ if } i = j, \ D_{ij} = 0 \text{ if } i \neq j : D_{st} = 1 \text{ if } t = s, \ D_{st} = 0 \text{ if } t \neq s. \tag{5}$$

The $N-1$ μ_i parameters measured deviations from the intercepts of $N-1$ individuals regarding the period chosen as a basis. In the same way the $T-1$ parameters τ represent deviations from the intercepts of $T-1$ periods since the base period.

The models with random effects are those that consider the individual and / or temporal effects as stochastic.

It is assumed that:

$$u_i \approx IID\left(0, \sigma_u^2\right); \ \tau_t \approx IDD\left(0, \sigma_\tau^2\right), \tag{6}$$

u_i are independent and identically distributed distributions with means equal to zero and variances equal to σ_u^2. τ_t are independent and identically distributed distributions with means equal to zero and variances equal to σ_τ^2. In all these models it is assumed that the movements of Y_{it} are uncorrelated with other regressors or with the error term. These models can be rewritten as:

$$y_{it} = a + bx_{it} + V_{2it}, \ V_{2it} = \varepsilon_{it} + u_i; \tag{7}$$

$$y_{it} = a + bx_{it} + V_{3it}, \ V_{3it} = \varepsilon_{it} + u_i + \tau_t. \tag{8}$$

The models with fixed effects use the estimation of least squares with dummy variables (LSDV), for the effects within time (the individual varies over time) and between groups (variations between individuals). In fact the method of ordinary least squares with dummy variables is a fixed effect model.

Random effects models are estimated by generalised least squares (GLS) when the Ω (structure of variance between groups) matrix is known. The estimated generalised least squares or FGLS are used to estimate changes in the structure when Ω is not known.

The fixed effects are assessed by the F test (incremental) while the random effects are examined by the Lagrange Multiplier test (LM) (Breusch, Pagan 1980). If the null hypothesis is not rejected, the pooled OLS regression is favoured. The Hausman specification test (Hausman, 1978) compares fixed effects and random effects models.

3. Results and discussion

3.1. Selection of the best model

Once we have the results provided by the SAS 9.2 software, we have to determine which method is the best to apply to our database: fixed or random effects. The answer was the Breusch-Pagan test. If the value of the test is low (p-value greater than 0.05), the null hypothesis is confirmed and then the OLS is better. If the value of the test is high (p-value less than 0.05), the null hypothesis is rejected and then to choose a random model is better.

The Hausman test compares the estimates of fixed effects and random effects models. If systematic differences are found (the null hypothesis of equality is rejected, a p-value less than 0.05 is obtained) and whenever we are fairly sure of the model specification and it is preferable to choose the fixed effects model.

We show the results of both tests using as a dependent variable the first value of private labels and the second the volume of private labels (Table 1).

Table 1. Hausman and Breusch-Pagan Tests, value and volume variables

	Hausman (value)	Breusch-Pagan (value)	Hausman (volume)	Breusch-Pagan (volume)
DF	5	1	5	1
Value (m)	2.20	890.45	0.62	825.93
Pr > m	0.8203	<0.0001	0.9872	<0.0001

The Breusch-Pagan test rejects the null hypothesis (p-value less than 0.05) and it is hence better to choose a random model for both variables. In addition, the Hausman test has a p-value less than 0.05, which also indicates that we have to use the random model for both variables.

However, there is a more important and discriminant test: F for non-fixed effects. We can see the results of both tests for our dependent variables (Table 2).

Table 2. Test F, volume and value variables

Variable	Num DF	Den DF	F-Value	Pr > F
Volume	13	177	64.23	<0.0001
Value	13	177	86.13	<0.0001

Therefore, we used an F-test to answer the question of using a fixed effects or a random effects model. The null hypothesis is that:

$$v_1 = v_1 = , ..., = v_i = 0, \tag{9}$$

(i.e., that all the dichotomous variables v_i are equal to zero). If the null hypothesis is rejected, this means that at least some dummies do belong to the model, and therefore

it is necessary to use the fixed effects. In this case it is rejected (<0.0001), so we have to use the fixed effects model. Besides, we should use the method that achieves a higher R-squared; in this case it is the one way FE. In conclusion, the one way FE model has a better goodness of fit and R^2 in our analysis after seeing and estimating several tests.

3.2. One way FE model

The FE model relaxes the assumption that the regression function is constant in time and space. What makes the model "one way" is to allow each observation in cross section to have its own constant while the slopes are constant between units in the same way that the σ^2_ε.

Equation 4 implies that OLS in transformed variables (Within) produces consistent estimates of the parameters. These are the FE estimators. We must remove the u_i also involving removing the δ. The estimator of the variance covariance matrix (VCE) of the FE estimator is the same as for OLS adjusted for degrees of freedom used in the transformation (NT-N-k-1). Next, Proc Panel results and One Way fixed estimators from SAS are shown (Tables 3–6).

Table 3. One way fixed model, value as dependent variable

Estimation method		Fix One	
Number of cross sections		14	
Time series length		14	
SSE	1852.6235	DFE	177
MSE	10.4668	Root MSE	3.2352
R-square	0.9208		

Table 4. Parameter estimates, value as dependent variable

Variable	DF	Estimator	Standard error	T value	Pr > |t|
United Kingdom	1	0.125683	5.7182	0.02	0.9825
France	1	–0.63679	6.1464	–0.10	0.9176
Germany	1	–6.33668	6.7644	–0.94	0.3502
Belgium	1	–7.66557	4.7462	–1.62	0.1081
The Netherlands	1	–12.1156	3.5775	–3.39	0.0009
Spain	1	12.45632	5.1734	2.41	0.0171
Italy	1	–18.5503	8.5284	–2.18	0.0309
Portugal	1	–19.2018	8.0598	–2.38	0.0183
Austria	1	–21.0273	6.3307	–3.32	0.0011
Switzerland	1	–16.6944	7.6470	–2.18	0.0303
Denmark	1	–8.34877	2.0361	–4.10	<0.0001
Sweden	1	–10.0852	3.7022	–2.72	0.0071

End of Table 4

Variable	DF	Estimator	Standard error	T value	Pr > |t|
Norway	1	–12.0624	5.4307	–2.22	0.0276
Intercept	1	–11.8746	14.7491	–0.81	0.4218
GDP	1	0.00009	0.000029	3.07	0.0025
Female unemployment	1	–1.38162	0.2261	–6.11	<0.0001
Male unemployment	1	1.121518	0.2050	5.47	<0.0001
% urban population	1	0.567444	0.2747	2.07	0.0403

Table 5. One way fixed model, volume as dependent variable

SSE	3234.0285	DFE	177
MSE	18.2713	Root MSE	4.2745
R-square	0.8732		

Table 6. Parameter estimates, volume as dependent variable

Variable	DF	Estimator	Standard error	T value	Pr > |t|
United Kingdom	1	9.447599	7.5550	1.25	0.2128
France	1	1.223187	8.1208	0.15	0.8804
Germany	1	–11.8857	8.9373	–1.33	0.1853
Belgium	1	–3.0109	6.2708	–0.48	0.6317
The Netherlands	1	–15.0886	4.7267	–3.19	0.0017
Spain	1	13.45636	6.8352	1.97	0.0506
Italy	1	–12.7714	11.2680	–1.13	0.2586
Portugal	1	–13.2541	10.6488	–1.24	0.2149
Austria	1	–22.0568	8.3643	–2.64	0.0091
Switzerland	1	–9.82795	10.1034	–0.97	0.3320
Denmark	1	–8.03435	2.6901	–2.99	0.0032
Sweden	1	–7.66302	4.8914	–1.57	0.1190
Norway	1	–5.369	7.1752	–0.75	0.4553
Intercept	1	25.50079	19.4870	1.31	0.1924
GDP	1	0.000178	0.000039	4.61	<0.0001
Female unemployment	1	–1.59713	0.2987	–5.35	<0.0001
Male unemployment	1	1.177183	0.2708	4.35	<0.0001
% urban population	1	0.084095	0.3630	0.23	0.8171

Having presented the model, already explained above, we move onto the discussions and conclusions of the study.

3.3. Discussion

In the set of European countries and for 14 years the GDP has a significant and positive effect on the volume of private labels, thus we do not have enough statistical evidence to accept Hypothesis $H1_1$. But when we analyse the weight of this estimator is very low. Therefore, although the GDP positively affects the volume of sales of private labels, it exerts relatively low influence. Nevertheless, the positive sign of the relationship between both variables is very interesting. This indicates that a better GDP implies a higher volume of sales of private labels. Therefore, and contrary to rational reasoning, private labels are more developed in economically well-off areas.

In the same way, the GDP has a significant and positive effect on the value of the retailer brand, thus we do not have enough statistical evidence to accept Hypothesis $H1_2$, but again the absolute value of the regression coefficient is low. Therefore, although the GDP positively affects the value of private labels, its influence is relatively small. The same previous reasoning can be attained with regard to the sign of the coefficient.

Concerning the unemployment rate, male unemployment specifically a significant and positive effect on the volume of private labels, therefore $H2_1$ is accepted. The estimated coefficient of the model provides a high and positive weight. In addition, male unemployment has a significant and positive influence on the value of retailer brands. As a consequence $H2_2$ is also accepted. And in this case the weight of the estimated coefficient is as well high and positive. According to these results some comments can be emphasised.

If the male unemployment rate is high, many European families have less money, and therefore it can be thought that price will become a more important factor in purchase decisions. Thereby, the volume and value of private brands will be higher. In households with unemployed men, they could attain a greater shopping responsibility, and their purchase behaviour can be different to that of females. They shop frequently and seem to be dedicated to local shops; they seldom check prices and do not organise their buying in advance. In addition, many of them will purchase impulse items (Mortimer 2012). If they have lower budgets for purchasing, an easy way of reducing expenditures in shopping is to buy more private labels brand.

With regard to the female unemployment rate, the estimated coefficient is significant for the volume of retailer brands, but has a negative sign. As a result, we do not have enough statistical evidence to accept Hypothesis $H3_1$. The estimator provides us with a high weight but a negative sign.

The estimated coefficient of the female unemployment variable is also significant for the regression equation of the value of retail brands, but has a negative effect; therefore Hypothesis $H3_2$ is not supported. As for the volume of private labels, the female unemployment variable has a strong negative effect on the dependent variable. The interpretation could be that the greater the female unemployment, the less the purchases of retailer brands. Therefore, unemployed women tend to have other preferences to retailer brands and a preference for national brands in Europe. These women may have

different preferences when distributing household spending rather than private brands, concentrating on the purchase of commodities such as fish or vegetables or meat or buying in small shops where they can obtain payment credit.

The percentage of urban population variable does not have a coefficient significantly different from 0 in the estimated regression equation using the volume of private labels as a dependent variable, therefore $H4_1$ is not supported.

However, urban distribution significantly and positively influences the value of private labels. As a consequence, there is not enough statistical evidence to reject $H4_2$.

The percentage of urban population variable is not decisive in the evolution of the volume of private labels. This can be explained because private labels were initially closely linked to large retailers, such as hypermarkets, supermarkets chains or category killers, more present in urban areas. Yet nowadays, small firms associated with whole-salers or other retailers also have established well their own private labels in Europe. Furthermore, we cannot forget that networks of transport and communication in Europe are in general rather good, so travelling several tens of kilometres to buy, and the great use of private cars allows the European inhabitants of rural areas to easily reach urban commercial areas. Nevertheless, the effect of the percentage of urban population on the value of private brands is significant. That is, if you consider the multiplication of prices and quantities sold of private labels, a positive relationship is obtained between the dependent and independent variables. Consequently, although the volume of private labels is not affected by the percentage of urban population, it is different with regards to value. We can say that if the percentage of urban population increases, a rise in spending on private labels occurs in Europe. Perhaps urban area shoppers buy goods of retailer brands with higher prices, such as premium private labels, or maybe they buy more sophisticated products but brands with private labels.

The results in Tables 4 and 6 suggest some interesting comments. Table 4 shows that only the estimation of value of private label in Spain shows a positive increment in next years, the rest of significant estimators (The Netherlands, Italy, Portugal, Austria, Switzerland, Denmark, Sweden and Norway) are negative. This means that the value of retailer brands will decrease in many European countries next years. Table 6 indicates that three countries (The Netherlands, Austria, and Denmark) show significant negative estimators of volume of private brands and no one has a positive significant estimator. Therefore, the decrease of volume of retailer brands will not be as strong as value of these labels.

4. Practical implications

Nowadays, retailers implement relational strategies to retain customers. As a consequence, companies focus on developing mutually valuable long-term relationships with customers (Ravald, Grönross 1996) based on fundamental variables, such as satisfaction, trust and commitment (Clark *et al.* 1995). For retailers, the optimal strategy leads to effective customers. But sometimes we forget the macroeconomic environment in which organisations are established, and some of the factors discussed in this paper are

essential for both new and existing organisations in order to implement the strategic formulas that could lead them to success.

Dholakia (2001) determined that the implication regarding a purchase positively and significantly influences the psychological, social and functional risk associated to it. In this study, we analyse a number of variables as a socio-economic thermometer to investigate what really influences the purchase decisions of private labels, the unemployment rate being the most influential factor of European societies in the private label phenomenon.

The most interesting result from our point of view is that at a European level the percentage of female unemployment negatively affects the volume and value of private labels, unlike that of the male unemployment, which affects them positively. This means that in Europe an increasing percentage of female unemployment reduces private label values and volumes. So what is the meaning of these results? One explanation is that women still continues to have a high responsibility within families concerning everyday purchases in European society. When the percentage of unemployed women increases, a deeper comparison of prices in a more comprehensive way can be fostered than when this percentage is lower and therefore women have less time to shop. It is not always true that low prices are the essential attribute when choosing a retailer (Huddleston *et al.* 2004; Yavas 2001). It might be thought that women having less time to buy (a lower unemployment rate) seek more private labels to ensure a greater value of the shopping cart. But, when they have more time they can compare more brands, and get a good value of their shopping cart by buying national brands. It is also true that national brands and private labels brands are increasingly more equivalent in price and perceived quality, thus a greater balance in prices can tend to the acquisition of the top manufacturer brands. A practical implication of this result could be that national brands would make a greater marketing effort on countries or regions suffering a higher female unemployment rate.

With regard to the GDP, this research determines that is a positive factor that influences both the volume and the value of private labels in Europe, but it is not a highly relevant factor in the proliferation of retailer brands. It can be said that a rise in the economic wealth of countries leads to an increase in the use of private labels. This may mean that the more developed European economies may cause, although slightly, consumers to be more adept at using private labels, perhaps looking for more rational purchases and less influenced by brand equity. Alternatively, perhaps some private labels in Europe have achieved a brand image as good as that of the leading manufacturer brands. Another practical implication of this consequence could be that national brands would make a bigger marketing effort on states or areas having a lower GDP.

Along with the variables already discussed, we determined that the variable percentage of urban population is not decisive in the evolution of the volume of the brand distributor. This can be explained by the fact that although private labels were initially closely linked to large retailer chains, more present in urban areas, today small businesses associated with wholesalers or other retailers have also implemented well their own private

labels in Europe. We cannot forget that networks of transport and communications in Europe are generally quite good, so travelling several tens of kilometres to shop and the intense use of private cars allows European rural dwellers to easily reach relatively distant urban shopping areas.

When the percentage of the urban population increases in a European country, the spending on private labels rises too, but not the market share of these brands gathered in the volume variable. An interpretation of this fact can be that in most urban countries consumers buy private labels of products with a higher unit value. For example, they might buy categories of products with higher prices, or they buy more premium private labels than in countries with a lower urban concentration. Therefore, premium private labels could be focused especially to urban areas.

It is very interesting that only the estimation of value of private label in Spain show a significant positive increment in next years. Eight countries of the sample show the antagonistic tendency. Furthermore, three countries exhibit significant negative estimators of volume of private brands and no one has a positive significant estimator. Therefore, the decrease of volume of retailer brands will not be as strong as value of these labels. In summary, it seems that volume and to a lesser extent value of private labels have achieved their maximum values in some European countries, and will fall next years.

Conclusions

This research brings to the science a novel attempt to relate macroeconomic variables and private labels at a European level. To the extent of our knowledge, this avenue of research is fairly new.

Some ideas can be highlighted as conclusions of this study. The most interesting findings of this research is that at a European level the percentage of female unemployment negatively affects the volume and value of private label, unlike male unemployment, which affects them positively. This idea could drive managers of national and private brands to meditate about communication and distribution strategies. For example, marketers from national brands would make a greater marketing effort on countries or regions suffering a higher female unemployment rate. However, marketers from private labels should focus more on countries with higher male unemployment rate.

The GDP influences positively and slightly both the volume and the value of store brands. As a consequence, managers from national brands would make an especial communication effort on nations offering a lower GDP.

In addition, the fact that the percentage of urban population has a positive influence on the value of private brands but not on their volume is noteworthy. As a result, premium private labels could be intensely distributed in urban zones.

Last but not least, only the estimation of value of private label in Spain shows a significant positive increase in following years. Eight countries of the sample show the opposite trend. Volume and to a lesser extent value of distributor brands have reached their top scores in some European countries, and will drop next years.

Finally, we will mention some limitations of this research that drive future research. We had to omit a few European countries from the study, such as Portugal, Greece, Turkey and Austria due to not having series of complete data for these countries; we had fewer years of data for them than for other European states. We want to include all the European countries and other nations out of Europe in next studies. Perhaps the greatest limitation we have found is the lack of previous studies relating macroeconomic variables and private labels, which has led us to have to propose some hypotheses without prior theoretical justification. According to this idea to include new variables collected from other sources of information would be interesting in future research.

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