The Effects of Organic Label on Marketing Performance (Prices, Sales, and Margins)

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Abstract: The measurement of marketing performance is delicate because of the multidimensional nature of marketing. Past researches have assessed the market performance only using attitudinal data. This paper investigates the impact of organic label on performance, with a differentiation between market and financial performance. Two studies are implemented, build on real market data, to assess the price, sales volume and market share performance of organic eggs, and measure the margin creation according to store type. Our results reveal a positive trend for higher quality products, and that core organic consumers are not price-sensitive, which increase market performance. Critically, we found a negative correlation between the market share growth and the margin growth of organic products. This effect is mitigated by the store type which commercializes the organic product, highlighting the importance of the interaction between the two quality signals.

Key word: organic label, performance, price, market, store

Les Effets du Label Bio sur la Performance Marketing (Prix, ventes et marges)

Résumé: L'aspect multidimensionnel du marketing rend la mesure de sa performance ardue. Les recherches visant à mesurer les performances de marché du label Bio sont basées sur des études déclaratives et hypothétiques. Fondées sur des données réelles de marché, l'objet de cette étude est d'analyser la performance du label Bio en différentiant la performance marché et la performance financière. Deux études complémentaires ont été menées afin de mesurer les prix, les volumes de ventes et les parts de marchés des œufs coquilles Bio, et d'analyser la formation des marges chez trois types de distributeurs. Les résultats révèlent d'une part une hausse des ventes de produits de haute qualité, et d'autre part, un profil de consommateurs de produits Bio peu sensibles aux variations de prix. Ces deux tendances augmentent la performance du marché Bio. Nous observons également une corrélation négative entre l'augmentation des parts de marché et l'augmentation de la marge pour les produits Bio. Cet effet est atténué par le type de distributeur qui commercialise le produit Bio, mettant en lumière l'importance de l'interaction entre les deux signaux de qualité.

Mots clefs: label Bio, performance, prix, marché, type de distributeurs

The Effects of Organic Labels on Marketing Performance (Prices, Sales, and Margins)

Introduction

Over the last decades, the offer for organic products in the food sector has sharply increased. The organic production shows an exponential growth rate, especially for animal products. In France, the laying hens are the second sector with the highest part of organic production (10,1% in 2017), right after honey production (15,3% in 2017) (« Chiffres de la bio en France - Agence Française pour le Développement et la Promotion de l'Agriculture Biologique - Agence BIO », s. d.). The average French consumer eats 248 eggs per year, including egg products (processed food) (Guibert & Victoria, 2010).

The intensification of animal products production required new policies regarding animal production diseases, sustainable intensification and animal welfare which incorporate consumer priorities as well as technical assessments of farm animal welfare. Thereby, the table eggs are all marked according to an official marking system managed by a European directive concerning registration of establishments keeping laying hens Appendix 1 Code for the farming method (The commission of the european communities, 2002). Each egg wears a code, and its first number defines the level of production quality in decreasing order (Appendix 1 Code for the farming method (The commission of the european communities, 2002). Indeed, each label dovetails with a production method whose ethics is assessed by consumers, according to their interests, lifestyle, opinions and attitudes (Funk & Phillips, 1990). There are two official quality signs (OQS) for eggs, namely Label Rouge, which is included in the free-range category, and the Organic category (The commission of the european communities, 2002). As consumers are not able to distinguish the production mode through tasting (Guibert & Victoria, 2010), they essentially focus on in-store information including price ranges, marks, store types and brand types, but also beliefs towards animal welfare, healthcare, environmental and social concerns (Shepherd, Magnusson, & Sjödén, 2005). These new consumers concerns grant a higher

willingness-to-pay (WTP), so command a higher price (Auger, Devinney, Louviere, & Burke, 2008; Kehlbacher, Bennett, & Balcombe, 2012). The eggs are non-expensive animal products compared to meat and fish but show large price differences.

The organic label signals information and tends to meet new consumers' expectations. The organic food choice determinants are, among others, health benefits, animal welfare and environmental concerns (Paul & Rana, 2012; Shafie & Rennie, 2012; Shepherd et al., 2005). Eggs are credence goods which quality is signaled by labelling (Roe & Sheldon, 2007; Nelson, 1970). This study contributes to the body of research on the impact of organic label on marketing performance, with a differentiation between market and financial results (Katsikeas, Morgan, Leonidou, & Hult, 2016). Using market metrics instead of consumer metrics, we avoid the biases associated with hypothetical responses and unrealistic scenarios (Breidert, Hahsler, & Reutterer, 2006).

This study completes the literature on profitability and market efficiency of organic label for agrifood products. It focuses on the organic label but also questions the influence of other marks and store types. We use three dimensions of performance, namely prices, sales volumes and margins, to strive to identify how the organic certification influences value creation.

To answer these questions, we have implemented two studies. The first one builds on price data collected by Kantar and identifies the impacts of the organic label on price and sales, as compared to other marks, using the hedonic price method and price elasticity. The second builds on one store scanner data of wholesalers and provides information on organic hedonic price according to store type, and an analysis on margins and their variations for organic and non-organic eggs. Researchers have frequently examined the intention of consumers to pay a price premium for organic products but these researches are based on attitudinal metrics and suffer from several biases such as halo effects and low external validity (Breidert et al., 2006; Gall-Ely, 2009; Lusk & Hudson, 2004). Moreover, they do not indicate the value creation for the

retailers. Our study contributes to the field by presenting the results of complementary studies about the store type influence on margin creation.

Literature review and hypotheses

The marketing performance of OQS

The evaluation of the marketing influence in term of financial measures is a challenge as it requires specific methodologies because of the multidimensional nature of marketing (Hanssens & Pauwels, 2016). The assessment of the organic OQS performance require the choice of indicators. According to the marketing productivity chain, the customer attitude influences downstream market impacts and positions. The customer behavior toward the price and the volume of purchase might be used to indicate the value addressed to the product. Both indicators must lead to market shares and profit (Rust, Ambler, Carpenter, Kumar, & Srivastava, 2004).

Price, (perceived) quality and value are often studied together in marketing. The price acceptance at a certain quality level is commonly studied (Bernard & Bernard, 2010; Bernard, Zhang, & Gifford, 2006; Van Doorn & Verhoef, 2011). Sales revenues and market shares are widely used in the literature as product-market performance indicators. The margin is an income-statement accounting result that completes the two first indicators for performance assessment (Katsikeas et al., 2016).

Most of the research on performance use the resource-based view (RBV) to assess the financial impacts on marketing. The RBV has been seriously criticized because of its inability to prove the real implication of resources management in competitive advantage (Priem & Butler, 2001). To address this limitation, researches developed the concept of dynamic capabilities (DC), taking into consideration the dynamic dimensions of resources further their real role in performance (Kraaijenbrink, Spender, & Groen, 2010, p. 365). The DC theory “consists of

many well-known processes such as alliancing, product development, and strategic decision making that have been studied extensively in their own right, apart from RBV. Their value for competitive advantage lies in their ability to alter the resource base: create, integrate, recombine, and release resources" (Eisenhardt & Martin, 2000, p. 1116). The RBV and dynamic capabilities theory together help to understand the link between the marketing actions such as OQS and the financial performance (Morgan, Slotegraaf, & Vorhies, 2009).

The market results of organic OQS marketing performance

The OQS are signals that provides a better information to the consumers about the product, its production process or the company which produces it, and represent marketing levers (Larceneux, 2003). The marketing field studied the consumers motivations and perceptions of organic food to understand how it contributes to a price premium acceptance (Van Doorn & Verhoef, 2015; Ngobo, 2011; Gall-Ely, 2009; Tellis & Wernerfelt, 1987). The organic OQS influences positively the purchase intention and the WTP (Dufeu, Ferrandi, Gabriel, & Le Gall-Ely, 2014; Larceneux, Benoit-Moreau, & Renaudin, 2012; Bernard & Bernard, 2010).

In the marketing literature, there is a large volume of studies focusing on consumers' WTP for different quality products, and more specifically organic labelled products (Bernard & Bernard, 2010; Bernard et al., 2006). Researchers found a higher WTP for products with OQS (Dufeu et al., 2014; Larceneux et al., 2012; Bernard & Bernard, 2010). This positive effect is even more important in the case of virtuous foods like eggs (Van Doorn & Verhoef, 2011)

The eggs categories possess different characteristics and vary in quality, which make eggs a suitable product for a hedonic price analysis. Hedonic prices are defined by Rosen (Rosen, 1974, p. 34) as "the implicit prices of attributes and are revealed to economic agents from observed prices of differentiated products and the specific amounts of characteristics associated with them.". This theory makes the assumption that a product is a set of attributes or characteristics for which an implicit price can be derived from prices of different versions of

the same commodity that contain specific characteristic. This method has been largely used to analyze market from real market data. It estimates the QS weight in agrifood products, including the organic QS and the table-eggs (Kiesel & Villas-Boas, 2007; Karipidis, Tsakiridou, & Tabakis, 2005).

Hypothesis 1: The organic OQS commands a price premium.

To give a better understanding of the organic OQS effects in terms of price but also sales volumes, we test the price-elasticity. Previous studies have looked at the price-elasticity of organic products, and the results are heterogeneous (Bezawada & Pauwels, 2013; Kiesel & Villas-Boas, 2007). Lower price has a negative impact on consumers purchase, according to a study on French grocery stores (Ngobo, 2011).

Hypothesis 2: The own-elasticity is greater for organic eggs than non-organic eggs.

The store type and its environment influence the organic purchase (Paul & Rana, 2012). For example, specialized food store are preferred for organic purchasers (Akaichi, Nayga Jr, & Gil, 2012) and discount store stimulates the organic market (Gottschalk & Leistner, 2013). We investigate the weight of store type in price formation.

Hypothesis 3: The store type influences the organic eggs price premium.

<u>The financial results of organic OQS marketing performance</u>

The price influences consumers' choices and consequently firms' turnover and profitability. In addition to the market results, we assess the financial results by measuring the margins (Grønholdt & Martensen, 2006).

Primarily, OQS create value that can spray out downward the chain. The higher WTP for organic observed in the previous section should generate a higher gross margin for organic

products than conventional products. The retail margins are on average 25,18% higher for organics in the US (Bezawada & Pauwels, 2013).

> **Hypothesis 4**: The stores take higher margins on organic as compared to non-organic products.

Secondarily, the organic label is not equally profitable in all store types.

First, the consumers assess subjectively the quality according to several components, such as brand, distribution channel, packaging or certifications (Dodds, Monroe, & Grewal, 1991; Richardson, Dick, & Jain, 1994). Store image, which is defined as "the total impression represented in the memory as a gestalt of perceived attributes associated with the store, which are both independent and interdependent in consumer's memory learned from current and previous exposure to stimuli" (Hartman & Spiro, 2005, p. 1113) has an influence on consumers' assessment and perceived quality (Konuk, 2018, p. 307).

Second, the conventional and discount stores offer both conventional and organic. Both want to increase organic products' sales, but do not hurt their other quality range products sales (Bezawada & Pauwels, 2013). Nevertheless, decreasing their organics' regular prices is a good lever for non-specialized stores. Managing regular and organic products require a decrease in price.

> **Hypothesis 5**: Margins from organic eggs are higher in specialized stores than a conventional and discount store.

Data

In order to test our hypotheses, we used two databases using the stated preference method.

The first one is a consumer panel conducted by Kantar over 5 years, from January 2012 to September 2017, extracted from France Agrimer, a national institution which works for the

French ministry of agriculture and food. There are monthly mean prices and mean sales volumes for each quality sign. Finally, a "no sign" category gathers the eggs that have no sign, such as direct selling or marketplace. Each egg type shows 74 observations.

The second database is a store scanner database from France Agrimer, with the market prices organic and non-organic eggs at two stage of the chain: the wholesaler and the store. It contains 377 observations from February 2010 to April 2017.

Both databases are presenting data for 100 eggs as a unit, and prices are all taxes included.

Preliminary analysis: The market for organic eggs

Eggs are a common agrifood product. The price and sales volumes variation according to the egg marks are displayed in table 1. The sales volumes of cage and barn hens' eggs decreased drastically over the period, whereas the organic eggs are gaining market shares.

Table 1: Sales volumes (%) and price (€) evolution for certifications from January 2012 to September 2017 – Rate of change and mean price

		Cage	Barn	Label Rouge	Free-Range*	Organic	No sign
Sales Volumes (%)	*Rate of change*	-22,50%	-45,00%	64,44%	56,21%	55,71%	-4,00%
	Mean	53,23%	3,00%	6,24%	18,60%	8,43%	10,35%
	September 2017	45,80%	2,20%	7,40%	23,90%	10,90%	9,60%
Price (€)	*Rate of change*	-4,66%	50,82%	2,96%	-4,80%	1,92%	27,08%
	Mean	14,52€	16,15€	31,16€	23,43€	32,44€	23,37€
	September 2017	13,90€	21,10€	31,00€	23,40€	34,00€	26,00€

*Except the Label Rouge free-range eggs

The table shows that there has been a trend in favor of higher quality, and the OQS categories are promising. The Label Rouge is the fastest-growing category. Its sales volumes increased more than organics', with respectively 64,44% and 55,71% of the rate of change. Nevertheless, organics' still show better sales in September 2017 with 10,90% of the market sales, compared with 7,40% for Label Rouge. The OQS products have similar market prices, highlighting the competition between the OQS products. Organic products increased its price of 1,92% within

the period, and end up at 34€ for a hundred eggs in September 2017. The Label Rouge category show here again a higher rate of change, but a lower price at the last month with 31€.

The free-range category sales increased slightly more than organic with a rate of change of 56,21%. Its volume is equal to 23,90% of the market in September 2017, the second biggest sales volume after the cage category with 45,80%. The free-range category shows a price 31,18% cheaper than organics.

These observations highlight the profitable trend for high quality products including OQS in spite of a largely higher price. The consumers shift away from cage and barn categories.

The second data base completes the examination of organic profitability in terms of margin according to the store type. Table 4 gives an overview of the five actors we are studying.

Table 2: Price volatility - variation coefficient of mean prices of the chain - comparison of conventional and organic table eggs

	Non-organic eggs		*Organic eggs*	
	Mean (€)	*Stand. Dev.*	*Mean (€)*	*Stand. Dev.*
Wholesaler	6,86	1,52	29,35	0,83
Conventional distributor	17,73	0.83	31	1.77
Discount distributor	16,98	0,76	25,53	1.61
Organic distributor	X	X	34,28	0.49

Not surprisingly, the mean price of organic eggs is higher than for the non-organic eggs at any stage of the chain. At stores, the cheapest organic eggs option is available in the discount stores. We use the standard deviation to indicate the price volatility. At the wholesaler stage, non-organic eggs shows the most volatile price, certainly because it includes several price range, from cage to Label Rouge eggs. What stands out in this table is the wholesalers' mean price difference between the organic and non-organic products that does not seem to be as colossal at the stores stage.

Because of the promising trend of organics and the poor price-sensitivity of organic consumers, we expect growing market shares. The relative market shares have been calculated by multiplying the monthly mean price and the monthly mean sales volumes.

Table 3: Relative market shares evolution and means of each category of eggs

	Cage	Barn	Label Rouge	OFR	Organic	No signal
Rate of change (%)	-26,12%	-17,05%	69,31%	48,71%	58,70%	21,99%
Mean (€)	774,17	47,43	194,28	433,89	273,01	242,37
January 2012	861,678	55,96	135,495	376,074	233,52	204,6
September 2017 (€)	636,62	46,42	229,4	559,26	370,6	249,6

The organic eggs are the second-best rate of change ratio with 58,70% of increasing within the studied period, right after the Label Rouge products which increased by 69,31%. Nevertheless, the proportion of organic eggs is higher than the Label Rouge ones. Unsurprisingly, all the high-quality products gained market shares. The organics gained market shares, so did the Label Rouge and the free-range.

Study 1. Market results : Price premium and sales for organic, and the store type influence

The present study aims to identify the market results coming from the organic quality. We look at the variation of price premium and demand for organic products.

Our first analysis is based on the hedonic price function that determine the retail price in the fresh eggs markets. The major contribution of our article, in reference to the existing literature, is to address the valuation associated to the organic claims embodied in the label, and the evaluation associated to the presence of a label. The second study is the price elasticity, calculated with the same data base. This allowed us to analyze the demand variation, and complete the hedonic price method with the study of sales volumes. Finally, we looked at the weight that might have the store type for organic product, using again the hedonic price method with the second data base.

The hedonic model for organic quality

A first stage hedonic price function is an appropriate approach to our problem. Rosen (1974) defined hedonic prices as "the implicit prices of attributes and are revealed to economic agents from observed prices of differentiated products and the specific amounts of characteristics associated with them". It allows us to estimate the implicit prices of each characteristic that define the nomenclature of table eggs. Differences in price levels between eggs should reflect differences in eggs characteristics. We selected four characteristics that are claimed by the marking system, namely the cage free breading, the free range breading, the presence of a label (either Label Rouge or Organic), and the organic production.

Table 4 Egg marking and characteristics

	Cage Free	*Free-Range*	*OQS*	*Organic*
Cage	-	-	-	-
Barn	X	-	-	-
Free-Range	X	X	-	-
Label Rouge	X	X	X	-
Organic	X	X	X	X

This classification gives us information about the value creation of the organic feature. Indeed, the organic label combines all the characteristics of other marks. The purpose is to identify if the organic characteristic itself is creating value or if other characteristics included in the organic label is more valuable.

Table 5 Descriptive statistics for hedonic price calculation

Variables	*Abbreviations*	*Modalities*	*Descriptive statistics*
Price	Price	Continuous	Mean = 23,53 Sd Dev = 7.46
Egg Type	Type	Cage=1; Barn=2; Free-range=3; Label Rouge=5; Organic=6	45;45;45;45;45
Characteristics			
Cage free breading	CF	Yes=1; No=0	296;74
Free-Range breading	FR	Yes=1; No=0	222;148
Official quality sign	OQS	Yes=1; No=0	148;222
Organic	OR	Yes=1; No=0	74;296

Table 4 contains the complete list of the available variables in the sample, the abbreviations and some descriptive statistics. The characteristics are dummy variables. The assumption we have made is that consumers are well aware of each mark characteristics.

In our equation, the independent variable is the price of table eggs, and in the exploratory variables we include the characteristics named above in the table 1. The full regression specification estimates the hedonist price of eggs as a function of several egg production characteristics. We elaborated a shorten model as:

$$lnP_i = \propto + \sum_{j=1}^{3} \beta_j V_{ij} \quad (1)$$

Where P is the final price, $\propto$ is the base price, β is the coefficient and V gathers all dummy variables for cage free, organic, free range and Label.

Our extended model is expressed as:

$$lnP_i = \propto + \beta_1 CF_i + \beta_2 FR_i + \beta_3 LB_i + \beta_4 OR_i + \varepsilon_i \quad (2)$$

Incorporating the attributes into the hedonic function, it is possible to estimate the market price according to the summation of the marginal yields of characteristics multiplied by their respective marginal implicit prices. As shown in equation, we chose the semi-log model because it accepts when characteristics are equal to zero (Diewert, 2003). We want to obtain a better estimate of the organic characteristic importance in price formation. Test results suggest the presence of heterosckedasticity; consequently White's heteroskedasticity-consistent standard errors. The model fit the data well with an adjusted R^2 of 0,977.

We estimate the effect of each characteristic on eggs price.

Table 6 Semi-log hedonic model estimates for marks

	Estimate	*Std.Error*	*t-value*
Constant	2.675197	0.004013	***

Cage-Free	0.101982	0.010627	***
Free-Range	0.375223	0.011673	***
OQS	0.285719	0.00673	***
Organic	0.040087	0.004883	***
Number of Observation	*370*		
Adjusted R^2	*0,977*		

In the table 5, we present the results of the hedonic price equation based on the 370 observations for which all the characteristics are available.

Every single characteristic significantly adds value to the product. We notice that the free-range characteristic is the most important in term of market price determination, followed by the presence of an OQS. The organic characteristic does not play a key role according to our results. This confirm the study of Karapidis *and al* (2005) which expressed that free-range is more powerful in price formation than organic. The cage-free characteristic is not as much important as free-range and OQS in price formation, and it confirms the study of Chang, Lusk and Norwood (2010).

The price premium for organic is significant, supporting H1. Nevertheless, we temper this result as the organic products has a low coefficient.

The price-elasticity of organic eggs

As seen in the preliminary studies, the sales increased in the organic sector. The investigation toward the price-elasticity completes this result with a volumes analysis.

We use a log-log system calculation based on a general form of the multivariate model:

$$Y = f(X_1, X_2, X_3, \dots, X_n) \quad (3)$$

where Y is the egg type sales volumes (dependent variable); and X1 to Xn are different relevant factors affecting the demand (independent variables). The log-log functional form provides direct estimates of the respective elasticity of the independent variables with respect to the dependent variable. The values of the intercept and coefficients are obtained through multiple

regression analysis employing Rstudio software (DevelopmentCoreTeam, 2005) with time series data of the dependent and independent variables as inputs. The demand function is equal to the sales volumes in percentage.

We observed the impacts of other egg types' price variation.

$$lnY_i = b_0 + b_1 ln(X_1) + b_2 ln(X_2) + b_3 ln(X_3) + b_4 ln(X_4) + b_5 ln(X_5) + b_6 ln(X_{(6)}) \quad (4)$$

Where lnY_i is the predicted sales volume, b0 is the model intercept, and all the following factors are price variation for each production methods: b1 for cage production methods, b2 for barn production methods, b3 for Label Rouge production methods, b4 for other free-range production methods, b5 for organic production methods and b6 for no signaled production methods. Barn and no sign categories are not analyzed deeply because of the very small amount of sales volumes they represent. The analysis of the variation of its sales volumes would not be relevant, as the previous table shown.

This method helps to first understand the importance of price in the organic purchase, and second, observe the effects of price increases on organic sales. The elasticity are displayed in table 6.

Table 7 Price elasticity for eggs according to the categories

		Sales' Volumes			
		Cage	Free-range	Label Rouge	Organic
Prices	Cage	X	-0.811**	X	X
	Free-range	X	X	-0,455*	0.239*
	Label Rouge	X	X	X	1.080**
	Organic	X	X	X	X

Note : ***sig < 0,01 ; ** < 0,01 ; *sig < 0,05

This table shows the lack of elasticity of organic consumers. This confirms the work of Ngobo (2011). The consumers tend to stay with organic products rather than shift to another quality. Also, the organic volumes benefit from free-range and Label Rouge price increase. It is the only case where this phenomenon is observed. This result confirms the work of Bernard and Bernard

(2010, p. 473) which found that a price increase for non-organic products shifts consumers toward the organic version, more than the opposite. Organics commands a high price premium and show a high growth of their relative sales volumes

The blatant asymmetrical and heterogeneous elasticity confirms that price is not the main concern for consumers. That may be the effect of a lower price premium that the consumer consent to pay to access the higher quality product. In that sense, the organic attribute is valuable for consumers.

This support H2. The consumers pay a price premium to accede to the quality of organic eggs.

A certain weakness of the Label Rouge is pointed out by the data in the Table 2. Its sales can be negatively impacted by the free-range price. As the Label Rouge quality sign belongs to the free-range category, the free-range without quality sign might be perceived as a substitute of Label Rouge. Competition is not limited to price competition, and quality has importance.

The hedonic model for organic eggs at different store types

Based on the second data base, we investigate the price function of organic eggs according to the implicit prices of store types, namely conventional, discount and specialized stores. The purpose is to identify if the store type generates a value in addition to the organic quality.

Table 6 Descriptive statistics for hedonic price calculation

Variables	*Abbreviations*	*Modalities*	*Descriptive statistics*
Price	Price	Continuous	Mean = 23,53 Sd Dev = 7.46
Organic eggs at			
Conventional store	GMSBIO	Yes=1; No=0	538;2690
Discount store	DISBIO	Yes=1; No=0	538;2690
Specialized store	SPE	Yes=1; No=0	538;2690

Table 6 shows the dummy variables we used to assess the store type influence on organic eggs price formation. In our equation, the independent variable is the logarithm of the table eggs

prices, including organic and non-organic quality. The full regression specification estimates the hedonist price of eggs as a function of several egg production characteristics. We elaborated a shorten model as:

$$lnP_i = \propto + \sum_{j=1}^{3} \beta_j V_{ij} \quad (5)$$

Where P is the final price, $\propto$ is the base price, β is the coefficient and V gathers organic eggs at store types dummy variables. Our extended model is expressed as:

$$lnP_i = \propto + \beta_1 GMSBIO_i + \beta_2 DISBIO_i + \beta_3 SPE_i + \varepsilon_i \quad (6)$$

Here again, we chose the semi-log model. The model fits the data well with an adjusted R^2 of 0,977. We estimate the effect of store types as follow.

Table 8 Semi-log hedonic model estimates for marks

	Estimate	*Std.Error*	*t-value*
Constant	1.2669528	0.0006801	***
Conventional store	0.2576552	0.0015699	***
Discount store	0.1835961	0.0018538	***
Specialised store	0.2886783	0.0008283	***
Number of Observation	*2690*		
Adjusted R^2	*0,977*		

The results of the table 7 confirmed that in any store type, organic quality creates value. Nevertheless, this value is unequal. The weight of specialized store in organic price formation is the highest, followed closely by the conventional store. The discount store stays positive but is way weaker than others.

The price premium for organic eggs is modified according to the store type. Our results support H3, in line with the literature about price premium at conventional stores (Rondán Cataluña, Sánchez Franco, & Villarejo Ramos, 2005). Moreover, our results confirm that organic quality commands a price premium.

Study 2. Financial results : organic margin

We aim to make a better understanding of the value creation of organic quality signs through the margins. We use the theoretical price method to assess the performance of the different store types on organic eggs. To this end, we first calculate the price difference at the wholesalers' stage ($\propto$) between the non-organic eggs and the organic eggs. Then, we calculate the value created between the wholesaler and the store (β). The calculation is expressed as follows:

$$P_{TP} = WS_{no} \times \left(1 + \propto_{org}\right)(1 + \beta_{cha}) \quad (7)$$

$$D_{TP} = WS_{no} \times (1 + \gamma_{TP}) \quad (8)$$

where P_{TP} is the theoretical price for the distributor and WS_{no} the wholesalers' price for non-organic eggs. Also, $\propto_{org}$ is the coefficient from the non-organic to the organic wholesaler, and β_{cha} is the coefficient from the non-organic wholesaler to the channel type (conventional or discount).

$$DC_{org} = D_{no} \times \left(1 + \propto_{org}\right) \quad (9)$$

$$\frac{DC_{sta}}{WS_{sta}} = (1 + \beta) \quad (10)$$

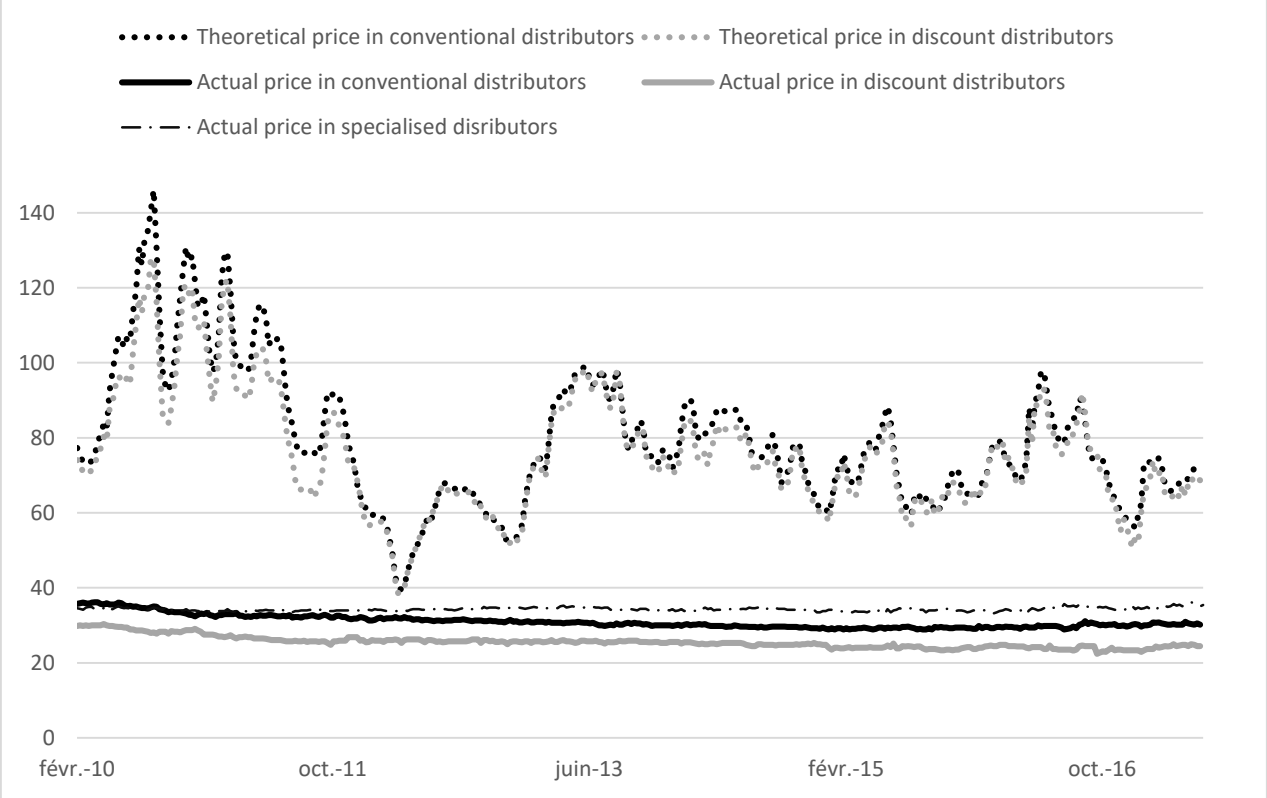
Table 9: Mean Distributors multiplying factors

	$\propto_{org}$		β
Organic wholesaler	4,43	**Conventional distributors**	2,70
		Discount distributors	2,58

In table 9, we observe that the organic wholesalers make a consequent margin compare to non-organics. The organic eggs almost cost four times and a half more than non-organics'. The non-organics create a better value creation in conventional distributors than in discounts'.

Then, to foresee the theoretical price of organic eggs, equation 2 is processed and compared to the actual organic wholesaler's prices. Figure 1 shows both theoretical and market prices.

Figure 1Theoretical and market prices at the stores' stage from 2010 to 2017 (€ for 100 table eggs)



The market price is largely below the theoretical price. We compare both coefficients for organic and non-organic table-eggs at the stage of conventional and discount stores.

Figure 2 Coefficient for conventional and discount stores for the theoretical price (TP) and market price (MP)

$$1 + \gamma_{TP\_conv} = 10{,}88 \qquad 1 + \gamma_{MP\_conv} = 5{,}05$$

$$1 + \gamma_{TP\_discount} = 10{,}42 \qquad 1 + \gamma_{MP\_discount} = 4{,}27$$

The difference recorded between these two prices express the weakness of the organic label for value creation at the retailers'. Both stores' types make a higher profit on non-organic than organic eggs. The mean price differences observed over the studied period is -61,72 euros for conventional distributors and -58,84 euros for the discount distributors. This negative result decreased respectively by 8,5% and 5,3% from February 2010 to April 2017.

These results disproved H4. The margins of organic eggs are way less profitable than non-organics'. The value created by the organic label at the wholesalers' stage is not reflected at the stores level and that the margin made with conventional eggs is more profitable.

Continuing with the comparison of margin creation, we call $(1 + \Delta)$ the multiplying factor for non-organic eggs to organic eggs, in order to indicate the difference applied at each stage.

Table 10 Multiplying factors between non-organic and organic products

Stage	$(1 + \boldsymbol{\Delta})$
Wholesaler	4,43
Conventional stores	1,08
Discount stores	0,89
Specialized stores	1,19

These results support H5, as the margin varies according to the store type, and the specialized stores show the best margin creation. Nevertheless, the conventional and discount stores sell organic and non-organic eggs. They compute both margins for firm profitability.

Table 11 Computed margins for stores' types (€ for 100 eggs)

	Conventional			**Discount**			**Specialized**
Margins	Non-organic	Organic	Total	Non-organic	Organic	Total	
Mean	11,56	2,29	13,86	10,77	-3,47	7,30	5,71
Rate of change	-15,96%	-102,22%	-47,82%	-9,09%	-427,27%	-66,71%	-11,76%
4th feb. 2010	12,80	7,497	20,29	11,47	1,83	13,30	5,66
20th ap. 2017	10,76	-0,16	10,59	10,43	-5,99	4,43	4,99

All the stores show a negative rate of change for organic and non-organic eggs. The specialized stores hava a small decrease of 11,76 %, compared to conventional and discount which lost respectively 102,2% and 427,27% of their margins. The specialized stores are the only one with a positive margin on organic eggs at the 20th of April 2017. As expected, we find that the interaction between the store type and the organic label modify the margin creation.

The conventional stores show the most profitable total margins. Conventional and discount store types compensate their small profitability for organic eggs is compensated with non-organic eggs. That possibility of compensation allows the retailers to offer a better price to consumers, and make them more price competitive than specialized distributors.

Discussion and implications

A considerable amount of researches investigated the value creation of organic food products. The biggest part of these marketing researches builds on hypothetical surveys and behavior intentions of consumers. Our findings offer an analysis of value in terms of market and financial results of organic eggs at different selling places.

First, we find that consumers are globally in a social trend that shifts their purchase to high-quality products, regardless of the price. Both hedonic analyses report the implicit prices of organic in eggs price formation. Although our results give evidence about the organic value creation on the market, we must interpret them with cautious. Indeed, the study 1 highlighted that other features, such as OQS and free range, have a high importance in price formation, and organic label may derive from these dummy variables, and others such as GM-free or local production features. The organic OQS may create added value because of the sum of features it gathers. Also, the store type can enforce the organic price, and we expect that brand types are highly important too.

Second, we observe that all the low-quality categories are decreasing, including cage and barn, in favor of higher quality. The price variation investigation reveals a lack of price-sensitiveness consumers. Consumers seem to stay with organic quality. Other high-quality ranges react differently, and both free-range and Label Rouge price increase shift consumers to organic. Noncore organic consumers pay a price premium to access to organic quality too. Organic is still an expanding market. This study confirms previous researches. The public policies and

OQS influence the purchase and the market price of consumers. According to Larceneux and al. (2012), the judgment on food quality is based on four dimensions, including the process attribute of the product. The marking system gives information about the production process. The study supports the literature concerning the non-commercial attributes of products and enhances social quality importance (Auger et al., 2008), in spite of the price premium (Kehlbacher et al., 2012). The health is another dimension that is associated with the organic label. The strength of the organic OQS must come from both process methods and health aspect of the products. We cannot give more meaning to these results, as the motivations of purchase are not known. The Label Rouge may point out the territory and a know-how. The lack of the environmental and healthcare criteria may explain the weakness of the quality signs compare to organic.

Third, lower prices is not a competitive advantage for organics. The consumers face a wide range of price on the market. Nevertheless, the price is not highly important in this market and can even be positive for organics. A price premium is applied for organic eggs, and it did not affect negatively the sales. The results confirm the work of Ngobo (2011) and Bezawada and Pauwels (2013). Reducing organic prices is ineffective, and increasing non-organic eggs is in favor of organic products. The stores' managers should consider increasing or stabilizing their organic eggs prices. Otherwise, the non-specialized stores must use the low price to attract noncore organic consumers, as a loss-leader product, and benefits from the consumers' traffic in the organic section for creating margins with other products.

In accordance with our first study, Monoprix does not sell cage eggs since 2016, and other major stores such as Carrefour, Casino or Intermarché undertook the end of these eggs in 2020 in their supermarkets. This might be a reason for the big decrease in the cage category. This also insures that the price does not drive growth in this sector. The analysis of the market thanks to the marks segmentation allows us to measure the social quality attribute of the products. We

distinguished three high-categories on the market. The free-range is the highest category without an official quality sign but its pricing is decreasing and its market shares increasing. Thus, the OQS seem to play an important role in pricing. Dodds, Monroe and Grewal found that the negative effect of a price increase is reduced when the consumer has information about the brand and the store name (1991, p. 317). The organic OQS generates price premium and increase the sales, as quality signals, but one must be careful in not rushing to judgment.

Fourth, this price premium for organics only generates interesting margins for specialized stores. The consumers at this store type pay the highest price premium. In contrast, the margins are not very profitable at conventional and discount stores. In spite of a higher price in all three store types, organic make lower margins than non-organic eggs. Non-specialized stores have the most to lose from organic products sales. The margins they make on organic eggs is lower and lower. The interaction of the store type and the organic label is the key to the organic products margin creation. They compensate their loss with non-organics but might lose market opportunities. They have the most volatility in price certainly because of promotions. Our first findings show that organic products' price decrease has no effects on consumers. The sales increase comes from the price increase of other categories. As OQS have a positive impact on producers making high quality (Linnemer & Perrot, 2000), we assume that the value creation is upstream in the chain, at the producers or wholesalers stage. These results confirm the work of Morgan, Slotegraaf and Vorhies (2009). The revenue growth of organic eggs, generated by a price and a sales volumes increase, did not generate a margin growth. In that sense, the organic OQS generate positive market results but weak financial results according to our studies.

Finally, the organic label is an intangible resource of the company that contributes to a market performance. The resource can be a tool for enhancing the customer, the market and the financial performance (Hooley, Greenley, Cadogan, & Fahy, 2005). The firms employ the resource to create value, defined as an "additional revenue minus the costs of generating the

additional revenue" (McWilliams & Siegel, 2011, p. 1492). The stores must promote organic products in the hope of margins and store revenues increase. In our study, only the price revenues increase and do not generate margins. We assume that the non-specialized stores keep organic eggs for enhancing their long-term image (Bezawada & Pauwels, 2013).

Our study also has implication for policymakers. The creation of an official marking system modified the market and created new opportunities. The official marking system creates value as it gives better information to consumers. This system may be tested on other agrifood products.

Conclusion

The French egg market witness an impressive growth between 2012 and 2017. Using the Kantar Panel and the AgriMer scanner data collected from wholesalers and stores in France, this study investigated the value of organic OQS using egg attributes, price elasticity and margin creation.

The main contributions are the identification of the marketing outcomes in term of price premiums, sales growth and margins. Our study contributes to the literature about financial marketing's contribution. It also completes the literature mostly from attitudinal surveys. The organic label enhances market performance in terms of price and sales volumes. Its market shares growth proves that the organic market has a bright future, but the financial outcomes come with an interaction between different variables. We investigate the interaction with the store type, but we can easily imagine that the brand, the assortment and the promotion affects the value creation of organics'. The price premium covers very slightly the extra cost paid by the non-specialized stores for purchasing organic eggs at wholesaler's stage. The study showed a better profitability for non-organic eggs than organic eggs.

The framework we have proposed assesses the importance of the interaction between the store type and the organic label. The organic label potential must depend on several other variables.

This analysis of table eggs market was twofold. First, we observed and identified the market performance of organic products on the market and the influence of its price variations. We give a better picture of the French market using price-elasticity. Second, we analyzed the margin, as an indicator of the financial performance of the organic products. We clarify the relation between prices and margins using the theoretical price method.

The acceptance of a higher price for a higher quality revealed a market advantage for the organic label. Low-quality products do not have a bright future on the market.

This research gives a better understanding of organic label challenge on the market. It represents a step forward in resolving the market and financial performance mechanism. Our analysis implies that organic products are compatible with all types of retailers, but each store may have a different reason to propose organics' in their stores. The future of organic eggs is bright for specialized stores and must conduct non-specialized stores to modify their strategies to take advantage of this market.

Limits and future research

Future research can be conducted to complete ours.

First, the interaction between the organic label, the brand name and the store name must have an influence on the organic label market and financial results of organic products (Fabrice & Valérie, 2016). A research on the effect of congruence between these quality signals may explain the choice of the conventional and discount distributors.

Second, the specialized stores can have different forms. There are organic retail chains such as Naturalia and Biocoop, but also independent organic shops, or direct sales *via* association of producers. The details of specialized stores may help to get a better understanding of the value creation and the interaction between labels and stores.

Third, the contribution to the academic sector implies the financial results of marketing. This analysis should take into consideration other elements, such as expenses per store types. The gross margin is a good primary indicator but other criteria may complete the understanding of store type functioning.

Appendix

Appendix 1 Code for the farming method (The commission of the european communities, 2002)

The farming methods as defined in Regulation (EEC) No 1274/91 and the Regulation (EEC) No 2092/91 shall be indicated by the following code:

Code	Farming methods
0	Organic
1	Free-range
2	Barn
3	Cages

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