





Article

Legumes on the Rise: The Impact of Sustainability Attributes on Market Prices

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Abstract: Despite their environmental value and important role in human nutrition and food security, legumes, including lentils, have been underestimated. Nevertheless, nowadays there is a renewed interest in their consumption due to regional specialization, varietal diversity and their role in the transition towards sustainable production and consumptions systems. Recent years have also witnessed a rise in consumer awareness regarding sustainable food, healthier and plant-based diet and regional or local food systems. The aim of this paper is to evaluate the influence of attributes linked to sustainability, such as biodiversity, organic certification, origin indication, and packaging type, on lentils' market prices in Italy. Based on the Hedonic Price Model, and following a review of scientific literature, eight lentil characteristics are defined. Data were collected on 228 valid observations of dry and precooked lentils across 20 different retail stores. Results indicate that Italian consumers have a positive appreciation for lentils with organic certifications and references to geographic and territorial characteristics. Some lentil varieties hold unique market positions, suggesting opportunities for diverse product offerings. Packaging materials influence consumer valuation, reflecting trends towards healthy and convenient food options. These insights will aid stakeholders in fostering sustainable practices and enhancing market competitiveness in the Italian lentil market.

Keywords: sustainability; food attributes; consumer preferences; local varieties; biodiversity; lentils; hedonic price model



Citation: Verza, M.; Ceccacci, A.; Frigo, G.; Mulazzani, L.; Chatzinikolaou, P. Legumes on the Rise: The Impact of Sustainability Attributes on Market Prices. *Sustainability* **2024**, *16*, 2644. <https://doi.org/10.3390/su16072644>

Academic Editor: Ilija Djekic

Received: 22 February 2024

Revised: 18 March 2024

Accepted: 21 March 2024

Published: 23 March 2024



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1. Introduction

In recent decades, there has been a scientific debate regarding the impacts of food production on agriculture and its eco-systems, advocating for more sustainable agricultural practices [1]. Given the breadth and depth of environmental concerns, such as biodiversity loss and climate change, sustainability has become a central issue across all sectors of contemporary society [2,3].

A global dietary shift towards a plant-based diet has been identified as a fundamental strategy in the fight against malnutrition and sustainability issues. In recent years, the exploration of alternatives to animal-based foods has brought legumes into the spotlight as one of the best options in making European agri-food systems more sustainable [4]. The production of legumes is recognized as a crucial factor contributing to sustainability, especially in terms of environmental performance, fostering resource efficiency, and contributing to a higher level of protein self-sufficiency.

The emphasis on sustainable food has grown significantly within the food industry. This has prompted manufacturers to adopt various strategies, such as certification and labelling, to distinguish their products based on attributes linked to sustainability. In parallel, consumers have demonstrated a consistent willingness to pay a premium for products labelled as sustainable [5].

This study evaluates the influence of various food attributes linked to the concept of sustainability on lentils' market prices in Italy by adopting an exploratory approach, thus contributing to a deeper understanding of the complexities inherent in the Italian agri-food market and inspiring innovative approaches that could positively impact the sustainability and resilience of the Italian market system. In particular, we perform an analysis differentiating between dry and precooked lentils, as these two types of product are likely to target separate demand segments characterized by different drivers.

Consequently, this study proposes the following research questions:

RQ1. Do different sustainability attributes associated with dry and precooked lentils influence consumer preferences and willingness to pay in the Italian market?

RQ2. Does the effect of these attributes differ in dry vs. precooked lentils?

1.1. Background

Sustainable growth is one of the main objectives of the European Union (EU). In a period of rapid global changes from climate change and environmental challenges to shifts in consumer behavior, the EU has introduced a range of policies and initiatives aimed at sustainable consumption and production. Following Agenda 2030 for Sustainable Development [6] and the on-going Post-2020 Global Biodiversity Framework [7], the EU has proposed measures for sustainable consumption and production encompassing an energy- and resource-efficient economy, waste management and recycling, and circular economy. To translate this strategy into action, the Farm to Fork initiative is one of the strategies at the heart of the Green Deal, advocating for a transition to sustainable agricultural and food systems and emphasizing environmental, health, and social benefits, while ensuring a sustainable livelihood for farmers [8–10].

In addition to the urgent need for policy intervention to achieve sustainable production and consumption systems, changes in consumer preferences, motives of their purchases, and buying channels also play a significant role in this transition. In the most recent years, consumer awareness regarding food production has increased, leading to a growing focus on shorter food supply chains and regional or local food systems [11,12]. Although local food production currently remains a niche market [11], socioeconomic issues related to food production and distribution have become more important to consumers [13], with a steady rise in interest in local food over the past decades [14]. Additionally, recent changes in consumer behavior toward a plant-based diet offer new sustainable solutions to the growing global demand for meat, dairy products, and their associated externalities [15,16]. This trend aligns with the increasing consumer awareness of the health benefits associated with the Mediterranean diet [17], which encourages frequent consumption of vegetables and legumes while reducing animal protein intake. As consumer preferences shift towards healthier and more sustainable dietary choices [18], their increasing commitment to environmental and social responsibility is driving significant growth in the organic lentil industry [19]. Furthermore, according to Paffarini et al. [20], the emphasis on promoting specific varieties, such as those with a Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI), has increased consumer interest for high-quality certified production.

On the route towards a sustainable agri-food system, legumes have been recognized for their pivotal role in agriculture. They boost productivity by facilitating nitrogen fixation [21–23] and help reduce dependence on cereal monoculture, thereby contributing to climate change mitigation and biodiversity preservation [24–27]. They also exhibit lower water and nutritional requirements, along with greater potential for environmental adaptability [28]. Specifically with regards to biodiversity, lentils stand out among all legumes due to their significant genetic variability and regional specialization, particularly in Italy. Indeed, the unique geographical identity of some Italian lentil cultivars, such as “Castelluccio di Norcia” in Umbria and “Altamura” in Apulia, is currently safeguarded by the “Protected Geographical Indication” (PGI) label. The “PGI-certified Lenticchia di Castelluccio di Norcia”, established in 1997, now has a well-established market position

at both the national and international levels. Similarly, the recent recognition of the “PGI Altamura Lentil” in 2017 underscores the increasing interest in this crop. This is also reflected by a growing trend in the consumption of lentils among Italian households, which increased from 0.54 g/capita in 1961 to 1.64 g/capita/day in 2015 [20]. Considered as one of the most traditional lentil-consuming markets, Italy is therefore highly reliant on imports from foreign countries to meet national demand [19].

1.2. Sustainability in Food Attributes

The focus on the sustainability of agri-food products has increased in recent years, as evidenced by the widespread adoption of claims and labeling initiatives in the food market. Eco-friendly or sustainable attributes have, indeed, become the subject of an extensive body of literature [29,30].

The legume industry is recognized as a successful example implementing sustainability claims, especially in relation with the territory and biodiversity, which are seen as credible attributes by consumers and an important tool for marketing and product differentiation [31]. For instance, attributes related to color, seed size and variety, which are associated with the principles of biodiversity and sustainable diversified systems, have been investigated as intrinsic features defining the product. Nevertheless, attributes such as organic certification and origin declaration have demonstrated a more significant influence on market prices compared to intrinsic characteristics like seed size or color [28]. Indeed, studies by Juhl et al. [32] and Loureiro et al. [33] demonstrate that food with organic certification is perceived as healthier, more sustainable, more environmentally friendly, and tastier compared to conventional counterparts.

Another aspect linked to sustainability is the declaration of origin for domestic and local food. Over the past few years, there has been a noticeable increase in consumer interest regarding food origin and consumers’ willingness to pay a premium for domestic and local food [34–36]. Several scholars [14,37,38] have highlighted a growing consumer interest in locally-produced food items. These products are perceived to be of higher quality based on (i) health-related attributes, such as freshness, taste, or safety; (ii) ecological sustainability, involving sustainable production methods and reduced transportation; and (iii) social sustainability, due to the involvement and support of local economies and communities. Certain scholars [39–41] have, indeed, shown that Italian consumers prioritize the origin of production and processing as critical factors in determining food quality. In this context, geographical origin indications following regulation standards, such as the Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI), play an important role in the added value of agri-food products [41].

Finally, environmental claims, such as the use of renewable energy sources or recyclable packaging, are additional attributes for which consumers have expressed a positive and significant willingness to pay [42]. For instance, the use of green packaging, like bio-degradable materials, has been largely investigated in order to reduce the use of plastic and other unsustainable materials causing a negative impact on the environment [43–45]. According to Rokka and Uusitalo [43], eco-friendly packaging is a crucial product attribute affecting consumers’ choice and changing customers’ attitudes towards green and sustainable purchasing behavior.

Overall, to promote sustainable consumption patterns, it is crucial to understand consumers’ perception of sustainable food products and identify the most influential attributes influencing purchasing behavior. Consumers, along with researchers, and agri-food industries, are recognized as pivotal actors in the successful conservation and sustainable use of genetic and natural resources in agriculture [46].

2. Materials and Methods

2.1. Hedonic Price Methodology

The estimation of the monetary value of product features is approached through the Hedonic Price Model (HPM), rooted in microeconomic theory and initially introduced by

Rosen in 1974 [47]. The method, grounded in Lancaster’s consumer theory from 1966 [48], assumes that individuals assign value to the attributes of a commodity or the services it delivers, rather than the commodity itself. Thus, prices will mirror the value of a specific set of characteristics that individuals consider significant when making a purchase.

Consumers select a product based on a set of attributes to maximize their utility, while producers optimize their profits by determining the product price based on these attributes [47]. Consequently, differentiated goods can be viewed as possessing various quality attributes that distinguish them from other similar products. As a result, the equilibrium market price can be seen as a function of the implicit prices associated with each attribute of the product. To evaluate the price premium linked to a product’s characteristics, the HPM is widely recognized as a valuable tool, particularly for assessing “credence attributes” like certification, indications of origin, indications of a territory, and other features that may remain unnoticed by consumers after the purchase [47,49]. With several examples of application in the agri-food market [30,50,51], the HPM represents a useful method to verify if labels indicating credence cues are successful in promoting the consumption of sustainable food products [52].

While the HPM is extensively applied to ascertain implicit prices in the food and beverage sectors, recent research has predominantly concentrated on specific products such as wine [53–56], oil [57], coffee [5,58], dairy, eggs and meat [59–62], and fish [63,64]. To our knowledge, there exist few studies [28,42] explicitly examining legumes, and only one investigating lentils [28], using hedonic price functions. In the context of a relatively unexplored market, the application of the HPM could provide valuable insights for legumes producers by showing which pivotal attributes they should focus on to enhance profitability. Among others, we are especially interested in further examining the effect of those characteristics that previous studies do not unanimously consider having price enhancing effects, like organic certification [28,42].

The hedonic price model enables an examination of the relationship between a product price and its primary quality attributes. Products are characterized by n objective features, and the hedonic price function, in its most basic form, may be expressed as:

$$P_j = f(Z_j) \quad (1)$$

In this equation, “ Z ” represents a vector containing the characteristics of the product “ j ”, and “ $f(\cdot)$ ” denotes an unspecified functional form.

Equation (1) elucidates that the price (P) paid by consumers for the product is a function of the monetary values associated with a specific set of attributes (j) embedded in the product (Z) available in the market. This relationship can be elucidated by partially differentiating it with respect to each attribute.

2.2. Data Collection

Drawing from previously delineated studies using HPM in the legume sector [28,42], 8 lentil characteristics (weight, brand, decortication, organic, packaging type, origin, variety, and typicality) were defined. Some characteristics were intrinsic features of the lentil product: decortication, organic certification, origin (if foreign or Italian area of origin is declared on the label), and typicality (if reference to the territory is declared on the label either with text or by means of protected geographical indication (PGI) logo); other features were extrinsic, such as brand, packaging type, and weight.

In particular, within the scope of this study, we would expect a typicality reference and organic certification to have a positive effect on the final market price of sampled products. However, further investigation into the impact of the color attribute is warranted, as there is a gap in the existing literature regarding its effect.

Lentil price and characteristic data were collected on 228 valid observations of packaged lentils presented on the shelves and sold in all 20 retail stores (i.e., 6 hypermarkets, 4 supermarkets, 3 small supermarkets, 2 organic shops, and 5 discount stores) in the city area of Vicenza (Italy) between November 2022 and December 2022 (Figure 1).

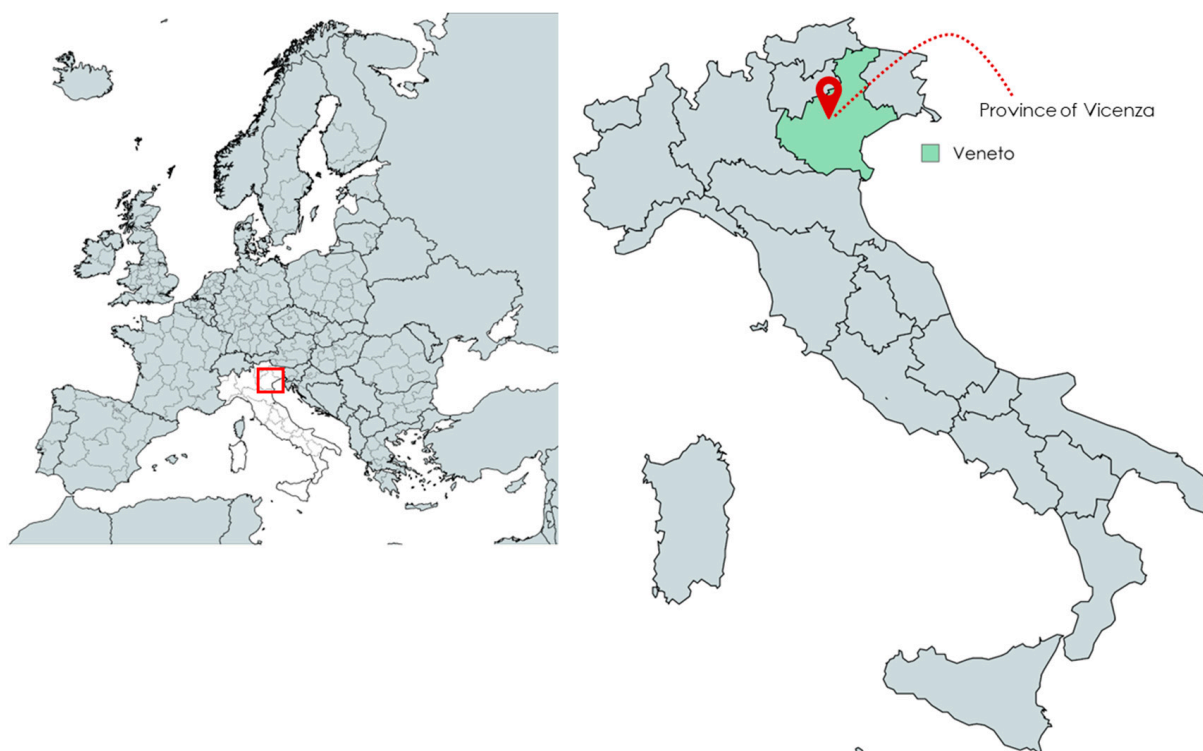


Figure 1. Geographical location of the sample.

Although the Veneto region does not stand out as one of the primary producers of lentils, it is, however, a region renowned for the cultivation and consumption of various other legumes, such as beans and peas. Legumes hold a significant place in the region's culinary heritage, featuring prominently in traditional dishes, and reflecting a strong cultural appreciation for these nutritious staples. This distinction underscores the importance of examining the potential of the lentil market in Veneto as it provides insights into consumer behavior, preferences, and market structures in a region of high legume culinary tradition and consumption patterns. Understanding how the lentil market can adapt to this regional context can shed light on broader trends in agricultural markets, and help inform strategies aimed at promoting sustainable food systems in regions with similar consumption patterns.

Finally, collected data were reported in a database and analyzed through the Stata 16 software.

2.3. Empirical Specification

Different functional forms to be used in the empirical specification can be found in the literature. While the theory provides no guidance, a frequent approach involves the use of the Regression Equation Specification Error Test (RESET) to choose among the linear, log-linear and log-log specifications [42,65]. Although the null hypothesis of no omitted variables was rejected for all of the three specifications, on the basis of the lowest magnitude F-value [58] we adopted a double log specification [66] of the hedonic price equation. Consequently, the equation of the final model is as follows:

$$\ln P = \beta_0 + \beta_1 \ln X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \varepsilon \quad (2)$$

where P is the price per kg, X_1 is the weight, and the remaining control variables are dummies indicating the brand (X_2), organic certification (X_3), origin (X_4), variety (X_5), typicality (X_6), decortication reference (X_7), and packaging type (X_8); β_0 is constant, ε is residual, and \ln is the natural log.

Equation (2) is estimated separately using ordinary least squares (OLS) for both the dry (Model 1) and precooked (Model 2) lentil sample. In Model 2, variables such as variety

(X5) and decortication (X7) are excluded due to their limited relevance in the context of precooked lentils (the variety specification is absent in 98.91% of observations of precooked lentils and none of them are decorticated). White's test indicates that the null hypothesis of homoskedasticity is rejected in the precooked case (Model 1 $\chi^2(47) = 55.31, p = 0.190$; Model 2 $\chi^2(19) = 40.19, p = 0.003$), hence Model 2 is estimated using robust standard errors. Lastly, the computation of the mean variance factor (Model 1 VIF = 1.76; Model 2 VIF = 2.45), with all individual VIFs below 6.0, indicates that multicollinearity does not affect the regression results.

This allows us to empirically determine the marginal implicit prices for each attribute for two product lentil categories: dry and precooked lentils. Variable descriptions and categories are summarized in Table 1.

Table 1. Variable descriptions.

Description	Variables	Category
Dependent variable		
Price	Sale price (€/kg)	Continuous
Explanatory variables		
Weight	Product's weight (kg)	Continuous
Brand	Supermarket brand = 1; Private brand = 0	Dichotomous
Organic certification	Organic certified = 1; not certified = 0	Dichotomous
	Foreign = 1; otherwise = 0	
Origin	Italy = 1; otherwise = 0	Dichotomous
	Not specified = 1; otherwise = 0	
	Green = 1; otherwise = 0	
Variety	Red = 1; otherwise = 0	Dichotomous
	Black = 1; otherwise = 0	Dichotomous
	Not specified = 1; otherwise = 0	Dichotomous
Typicality	Typicality = 1; otherwise = 0	Dichotomous
Decortication	Decortication = 1; otherwise = 0	Dichotomous
	Packaging paper = 1; otherwise = 0	
	Packaging compostable = 1; otherwise = 0	
Packaging type	Packaging metal = 1; otherwise = 0	Dichotomous
	Packaging glass = 1; otherwise = 0	
	Packaging tetra pack = 1; otherwise = 0	
	Packaging plastic = 1; otherwise = 0	

3. Results

The sample descriptive statistics for the collected data are summarized in Tables 2 and 3.

First, we remark that the data collection process was carried out covering all supermarket chains of the Vicenza city area. In particular, the 228 observations used in the analysis were collected from the following stores of the Vicenza city area: Aldi (5 observations), Ali (11), BioSapori (16), Conad (8), Coop (13), DPiù (4), Emisfero (18), Esselunga (22), Eurospin (4), Famila (22), Interspar (16), Lidl (3), Metà (6), Migross (14), NaturaSi (6), Pam (20), Prix (2), Sigma (9), Supermercati Stella (9), and Tosano (20).

Although Tables 2 and 3 show variety in terms of the attributes found among the products sampled during the survey, some recurring characteristics can be identified. As shown in Table 2, of the packaging types, plastic and metal appeared to be the most frequently used materials for the dry and precooked subsamples, respectively. Also, conventional lentils were more common than organic ones and the same holds for branded lentils versus those sold under the retailer's name. Regarding the variety, there was a clear tendency not to display the varietal name (i.e., green, black), while the origin specification (i.e., foreign, Italian) was more common in the dry subsample. In absolute terms, the most observed product in the dry subsample was a lentil with no organic certification or typicality references, sold in a supermarket-branded plastic package which did not specify the origin or the variety (10 observations). On the other hand, a lentil which also did not

show organic certification, variety/origin specification, or typicality references, but was sold in a private-branded metal package, was the most frequent combination of attributes found in the precooked subsample (28 observations).

Table 2. Descriptive statistics.

Variable	Dry	Precooked
	% Observations	% Observations
Supermarket brand	36.03	33.7
Organic	30.88	22.83
Origin, not specified	27.94	65.22
Origin, foreign	30.15	3.26
Origin, Italy	41.91	31.52
Variety, not specified	48.53	
Variety, Green	22.06	
Variety, Red	25.74	
Variety, Black	3.68	
Typical	16.91	20.65
Decortication	11.76	
Packaging, plastic	86.03	7.61
Packaging, paper	11.76	
Packaging, compostable	2.21	
Packaging, metal		82.61
Packaging, glass		5.43
Packaging, tetra pack		4.35
Total	100.0	100.0

Lastly, as shown in Table 3, a strong difference emerged in terms of price distributions, as the expected relationship between weight and price per kg holds only for dry lentils. The unprocessed product displays a higher average price than the processed one, as the mean value in the dry subsample (5.82 €/kg) was above the precooked one (4.96 €/kg). Precooked lentils are boiled and packed with water and the price used in this research is already calculated excluding the preservation water. However, the cooking processing contributes to increasing the volume and weight due to the rise in the product's moisture. If, on the one hand, processed lentils are subject to an additional step (i.e., boiling) which may increase their price, it is also true that a lower quantity of primary dry product is necessary to reach the same final weight compared to a dry lentil package.

Table 3. Price distribution based on lentil type and weight.

Type	Weight (g)	N	Mean Price (€/kg)	St. Dev. (€/kg)	Min (€/kg)	Max (€/kg)
Dry	0–400 *	70	6.87	3.20	2.48	19.80
	>400	66	4.70	2.70	1.55	11.40
Precooked	0–240 *	65	4.95	2.51	2.04	11.59
	>240	27	5.00	2.02	1.88	9.56

* Median value.

Table 4 shows the estimation results for both Model 1 and Model 2. The overall fit of the hedonic price equation is satisfactory for both the dry and precooked case, with R^2 values of 0.720 and 0.713, respectively. The baseline product assumed as a reference is a lentil (i) from a manufacturer brand, (ii) not having an organic certification, (iii) without a specified country of origin, (iv) with no references to the territory or PGI certification on the label, (v) whose variety is unknown (Model 1 only), (vi) not decorticated (Model 1 only), and (vii) in a plastic package.

Table 4. Parameter estimates for Model 1 and 2.

	Model 1	Model 2
	ln(Price)	ln(Price)
ln(Weight)	−0.487 *** (−6.20)	0.260 (1.07)
Supermarket Brand	−0.0639 (−0.95)	−0.339 *** (−4.73)
Organic	0.417 *** (5.93)	0.462 *** (5.69)
Origin, foreign	0.186 ** (2.36)	−0.215 ** (−2.13)
Origin, Italy	0.446 *** (4.92)	0.0563 (0.56)
Variety, Green	−0.163 ** (−2.18)	
Variety, Red	−0.0836 (−0.97)	
Variety, Black	0.307 * (1.80)	
Typical	0.196 * (1.96)	0.774 *** (5.18)
Decorticated	0.273 ** (2.43)	
Packaging, paper	0.229 ** (2.29)	
Packaging, compostable	−0.195 (−0.88)	
Packaging, metal		−0.749 *** (−8.86)
Packaging, glass		−1.253 *** (−6.94)
Packaging, tetra pack		−0.823 *** (−5.94)
Constant	4.205 *** (8.38)	0.618 (0.46)
N	136	92
R ²	0.720	0.713

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Most of the estimated parameters tend to display the expected sign and be statistically significant. Nevertheless, some remarkable differences can be found between Model 1 and 2, thus validating our decision to keep the dry and precooked lentils as two separate statistical populations. However, an important similarity concerns the role of the organic certification, which is estimated to lead to a positive price premium at the 99% confidence level, with increases of 51.8% and 58.7% for the dry and precooked cases, respectively (the percentage impact of the attribute was computed using the formula $(e^{\beta_j} - 1) \times 100$ [67]). A penalizing factor affecting the selling price of Model 1 observations appears to be the green variety specification, which is estimated to generate a 15.1% reduction in the price of dry lentils.

Concerning the influence of geographic references, it appears that displaying the country of origin has a positive effect on dry lentils (+20.5% if foreign, +56.2% if Italian),

while consumers of the precooked product are not willing to pay more for this characteristic (the foreign designation is even estimated to negatively affect the price). On the contrary, mentioning specific areas of interest for lentil production (in the form of references to a typical territory or through the PGI label) can be confidently deemed as a valuable marketing strategy especially in the precooked lentils market, where consumers are willing to pay 116.8% more for a product with such an attribute.

Being the functional form expressed as a double log, the coefficient associated to $\ln(\text{Weight})$ can be interpreted as the elasticity of price with respect to quantity. Surprisingly, only dry lentils display the inverse relationship usually expected due to unit price discounts associated with larger quantity purchases [5]. Other notable differences between Model 1 and 2 regard the influence of a supermarket brand (estimated to generate a 28.7% price drop for precooked lentils, but not relevant for dry ones) and plastic packaging, which is clearly preferred over metal, glass, and tetra pack packages in Model 2 but significantly underpriced compared to paper packaging in Model 1.

Lastly, as expected, decorticated lentils (available only in the dry subsample) are associated with a higher willingness to pay due to the additional product elaboration required, their reduced cooking time compared to non-decorticated lentils, and their enhanced palatability, hence testifying decortication as a valuable value addition processing strategy [68].

4. Discussion

4.1. Interpretation and Comparison of the Results

Our findings indicate that sustainable-related attributes can have a positive and statistically significant effect on lentil prices in Italian retail stores, thus providing a positive answer to RQ1.

In regards to biodiversity, our study reveals that indicating the variety of lentils can add value to the product only in specific cases. In marketing, lentil varieties are generally identified not by their genetic names, but rather by the color of their seed coats. Color becomes the primary distinguishing characteristic and serves as the variety's attribute in the market. For instance, although not explicitly mentioned on packaging labels, the majority of green lentils available in the market typically originate from the Eston cultivar (from Canada), while the predominant red lentil seeds are usually associated with the Crimson cultivar. However, exceptions to this cultivar–color relationship can exist. It is worth noting that only specialty lentils, such as Beluga (recognized for their black seed coat) or Du Puy lentils (known for their dark speckled blue-green seeds and originating from France), are explicitly labeled with their cultivar names and marketed accordingly. Finally, Castelluccio di Norcia PGI lentils correspond to local genetic material without an explicit variety denomination and color is not included in the label. In this study, the observed negative effect of specifying green lentils on the dry product price may stem from various factors, such as consumers' quality misperceptions or competitive pressures, which could trigger pricing adjustments. Conversely, the statistically significant positive price premium associated exclusively with the black variety for dry lentils suggests a unique appeal or perceived value attributed to this particular variety (Table 4, Model 1). In other words, as opposed to the consumers' negative perception associated with the green variety, consumers may view black lentils as offering unique qualities or benefits that justify a higher price. These results are likely related to the growing interest of Italian consumers in other lentil varieties for different sensory characteristics, such as more intensive and earthy flavors, and for nutrient value in terms of minerals and fibers. Insights from this study not only highlight the importance of product differentiation but also suggest new potential opportunities for producers offering specific lentil varieties. This finding aligns with prior research indicating that an alternative approach to product differentiation could involve utilizing and promoting diverse and less commercial varieties of the same food product [69]. Indeed, scholars have found that differentiation through varietal species is highly valued

by Italian consumers, probably because of the distinct tastes and unique appeal of different varieties, while also being associated with premium pricing strategies [66].

In addition, this study shows that declaring the product origin, whether foreign or Italian, has a consistently positive and significant impact (higher for the Italian origin) on the price of dry lentils (Table 4, Model 1). Interestingly, in the case of precooked lentils, declaring a foreign origin notably decreases the final product price, while the Italian origin does not show statistical significance (Table 4, Model 2). In simple terms, consumers may associate the country of origin of dry lentils with quality and tradition leading to a price increase, while people may prioritize other factors such as convenience and freshness when buying precooked lentils, disregarding the origin attribute in their purchasing decisions. This highlights the importance of origin labeling in consumer perception and pricing dynamics within the lentil market. Overall, these findings are in line with those of previous studies that found significant positive price premiums associated with Italian indications of product origin [28,57,66]. We also find that other effective product differentiation strategies aim to enhance the territorial connotation of the product (e.g., PGI or domestic/local origin). Italy stands as the EU country with the highest count of protected designation of origin (PDO) and protected geographical indication (PGI) products [70]. Within Italy, two lentil varieties currently hold a protected geographical indication (PGI) certification: the “Altamura Lentil PGI” in the Apulia region and the “Castelluccio di Norcia Lentil PGI” in the Umbria region. In this study, features related to the typicality of the product (precooked lentils in particular) have a positive and statistically significant effect on the product price; in terms of monetary value, the typicality attribute adds a significant premium price respective to the baseline precooked lentils price (Table 4, Model 2). In our research, it is noteworthy that lentils with a PGI specification are associated with a higher price per kilogram, as indicated by the fact that 12 of out 15 PGI products in the sample fall above the 75th percentile of the price distribution. The observed price surplus in typicality aligns with the findings presented in [28]. These insights validate the idea that the origin attribute associated with lentils encompasses more than just their geographical source, including tradition and culture as well. Indeed, consumers commonly associate a sense of “typicality” with food based on its place of origin, traditional production, and processing methods. This finding is supported by the outcomes presented in other previous studies [34,39–41], which reveal that products linked to specific localities in Italy can be perceived as possessing qualitative excellence. This perception prompts Italian consumers to recognize added value, leading to a significant willingness to pay a premium price for locally certified foods.

Based on the results of this study, organic certification emerges as another sustainability-related attribute associated with a higher willingness to pay (Table 4, both Model 1 and Model 2). This outcome aligns with Marette [71], who noted a significant positive influence for lentils with organic production labels. The rationale behind this finding likely stems from consumers’ recognition of organic products as a healthier food choice, and their commitment to environmentally friendly consumption practices [32,33].

With regard to brand influence, the interplay between national brands and private label (supermarket) products emerges as a crucial focal point in consumer research. If on the one hand, established national brands tend to wield a significant price premium over their private label counterparts, on the other, consumers’ increased price sensitivity can force major producers to adopt a spectrum of strategic responses, such as the implementation of price promotions and the formation of strategic alliances with discount stores [72]. In the case of Model 2, our results align with previous studies demonstrating a substantial premium price for food products by leading, national, and well-known companies over their distributors’ private brand counterpart [5,73–75]. Nevertheless, the same price-enhancing effect does not hold in the case of the dry subsample (Table 4, Model 1), suggesting that Italian lentil consumers positively value the producer’s identification only in those cases where additional processing is required, as in the precooked case.

Finally, packaging is another quality determinant that distinguishes the final product, generating a competitive advantage by meeting consumers’ requirements and prefer-

ences [76]. The results indicate that the willingness to pay for this attribute varies depending on whether the product evaluated is dry or precooked. As observed, packaging materials for precooked lentils mainly consist of metal (Table 4, Model 2), whereas dry lentils are primarily packaged in plastic, and occasionally in paper (Table 4, Model 1). In particular, paper packaging shows a price premium over plastic in the case of dry lentils while metal, glass, and tetra pack materials are underpriced in the precooked sample relative to plastic. Therefore, it emerges that different packaging materials have an influence on the final product price, in line with similar studies [43,77–79], demonstrating consumers' increased awareness and demand for healthy and sustainable food options, as well as concern for environmentally friendly packaging and overall sustainable consumption practices. However, rather than being associated with sustainability concerns, the price premium associated with plastic packaging in the precooked subsample is likely to be affected by the inclusion of those lentil products that are presented as "ready-made dishes".

With regard to RQ2, as indicated by the percentage variations presented in the Results section (Section 3, Table 4), it can be argued that positive and significant price premiums for sustainability attributes common to both dry and precooked lentils concern (i) organic production and (ii) typicality.

4.2. Importance and Implications of the Results

Understanding the implicit pricing of attributes associated with lentils holds significant implications for retailers, producers, and decision-makers. On the one hand, retailers can benefit from studies on price formation to enhance purchasing decisions and implement more effective marketing strategies. On the other, producers can use this information to make decisions regarding the assortment of lentils and strategic investments. Ultimately, for decision-makers, this knowledge could be crucial in improving regional competitiveness in the Italian lentil market. Insights coming from this study highlight the importance of meeting evolving consumer demands while promoting sustainable food systems in the future.

4.3. Limitations and Future Research Directions

One limitation of this work is its nature as a specific case study, as data collection took place in a well-defined city area in the Veneto region, which may limit the generalizability of the results to other areas of Italy. However, data collection for the hedonic price analysis encompassed various types of retail outlets, revealing consistent product offerings across shelves. This underscores the commodity nature of lentils and the efficacy of food attributes in explaining market price fluctuations. Despite these limitations, the findings from this research emphasize the complex interplay of consumer preferences and sustainability considerations in shaping lentil market dynamics and pricing strategies.

As for future research, these results need to be validated by further investigations by also considering other relevant attributes (i.e., other certifications besides organic, social sustainability, and other intrinsic lentil characteristics such as seed size, store type, etc.) attached to the lentil product and not considered in this research and other reference markets other than Veneto region. In addition, consumer preferences and market dynamics can change over time, so continuous research on emerging consumption trends is necessary for businesses in the lentil market.

5. Conclusions

In conclusion, our study reveals the significant impact of sustainable attributes on lentil prices in Italian retail stores. We find that indicating the origin, particularly if Italian, and emphasizing typicality (i.e., territory) positively influenced prices, reflecting consumer preferences for diversity and tradition. The impact of biodiversity in varieties appears to be positive only when associated with unique and less commercial varieties. Organic certification emerges as a key driver of consumer willingness to pay, signaling a preference for healthier and environmentally friendly options. Brand influence plays a role, with

national brands commanding premiums over private labels in precooked lentils. Packaging materials also influence prices, reflecting evolving consumer preferences for sustainability, especially in the dry lentils market, as indicated by the price premium associated with paper packages.

There are several indications that may suggest an increase in demand for organic biodiverse lentils among Italian consumers in the future. Consumers' preferences for diversity, tradition, organic certification, and sustainable packaging material suggest a potential market for products emphasizing these characteristics. However, it is important to note that while the study provides valuable insights and suggests positive trends towards sustainability attributes, it may not capture other factors altering market conditions (i.e., climate change or the development of new varieties).

Author Contributions: Conceptualization, M.V. and P.C.; methodology, M.V., A.C. and L.M.; software, A.C.; formal analysis, A.C. and L.M.; investigation, G.F.; data curation, A.C. and G.F.; writing—original draft preparation, M.V.; writing—review and editing, M.V., P.C., A.C. and L.M.; visualization, M.V. and A.C.; supervision, L.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Project-BIOVALUE: Fork-to-farm agent-based simulation tool augmenting Biodiversity in the agri-food VALUE chain, supported by European Commission Grant Agreement No.: 101000499.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study are available on request from the corresponding author (L.M.).

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Lin, B.B. Resilience in Agriculture through Crop Diversification: Adaptive Management for Environmental Change. *BioScience* **2011**, *61*, 183–193. [[CrossRef](#)]
2. Beery, T.; Calvén, A.; Wendin, K. Prepared Food on the Trail: Exploring Sustainability in Outdoor Recreation Food Choices. *J. Outdoor Recreat. Tour.* **2023**, *41*, 100582. [[CrossRef](#)]
3. Benton, T.G.; Bieg, C.; Harwatt, H.; Pudasaini, R.; Wellesley, L. *Food System Impacts on Biodiversity Loss*; Chatham House: London, UK, 2021.
4. Clark, M.A.; Springmann, M.; Hill, J.; Tilman, D. Multiple Health and Environmental Impacts of Foods. *Proc. Natl. Acad. Sci. USA* **2019**, *116*, 23357–23362. [[CrossRef](#)]
5. Merbah, N.; Benito-Hernández, S. Sustainability Labels in the Spanish Coffee Market: A Hedonic Price Approach. *Span. J. Agric. Res.* **2023**, *21*, e0102. [[CrossRef](#)]
6. Shulla, K.; Filho, W.L. *Achieving the UN Agenda 2030: Overall Actions for the Successful Implementation of the Sustainable Development Goals before and after the 2030 Deadline*; European Parliament: Brussels, Belgium, 2023.
7. IPBES. *Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*; Brondizio, E.S., Settele, J., Díaz, S., Ngo, H.T., Eds.; IPBES secretariat: Bonn, Germany, 2019; 1148p. [[CrossRef](#)]
8. *Regulation (EU) No 1305/2013*; European Parliament and of the Council of 17 December 2013 on Support for Rural Development by the European Agricultural Fund for Rural Development (EAFRD) and Repealing Council Regulation (EC) No 1698/2005. European Union: Luxembourg, 2013.
9. *Regulation (EU) No 1308/2013*; European Parliament and of the Council of 17 December 2013 Establishing a Common Organisation of the Markets in Agricultural Products and Repealing Council Regulations (EEC) No 922/72, (EEC) No 234/79, (EC) No 1037/2001 and (EC) No 1234/2007. European Union: Luxembourg, 2013.
10. *Regulation (EU) No 1310/2013*; European Parliament and of the Council of 17 December 2013 Laying down Certain Transitional Provisions on Support for Rural Development by the European Agricultural Fund for Rural Development (EAFRD), Amending Regulation (EU) No 1305/2013 of the European Parliament and of the Council as Regards Resources and Their Distribution in Respect of the Year 2014 and Amending Council Regulation (EC) No 73/2009 and Regulations (EU) No 1307/2013, (EU) No 1306/2013 and (EU) No 1308/2013 of the European Parliament and of the Council as Regards Their Application in the Year 2014. European Union: Luxembourg, 2013.
11. Augère-Granier, M.-L. *Short Food Supply Chains and Local Food Systems in the EU*; European Parliament: Strasbourg, France, 2016.

12. Weatherell, C.; Tregear, A.; Allinson, J. In Search of the Concerned Consumer: UK Public Perceptions of Food, Farming and Buying Local. *J. Rural Stud.* **2003**, *19*, 233–244. [[CrossRef](#)]
13. Deppermann, A.; Havlík, P.; Valin, H.; Boere, E.; Herrero, M.; Vervoort, J.; Mathijs, E. The Market Impacts of Shortening Feed Supply Chains in Europe. *Food Sec.* **2018**, *10*, 1401–1410. [[CrossRef](#)]
14. Feldmann, C.; Hamm, U. Consumers' Perceptions and Preferences for Local Food: A Review. *Food Qual. Prefer.* **2015**, *40*, 152–164. [[CrossRef](#)]
15. Springmann, M.; Godfray, H.C.J.; Rayner, M.; Scarborough, P. Analysis and Valuation of the Health and Climate Change Cobenefits of Dietary Change. *Proc. Natl. Acad. Sci. USA* **2016**, *113*, 4146–4151. [[CrossRef](#)] [[PubMed](#)]
16. Vainio, A.; Niva, M.; Jallinoja, P.; Latvala, T. From Beef to Beans: Eating Motives and the Replacement of Animal Proteins with Plant Proteins among Finnish Consumers. *Appetite* **2016**, *106*, 92–100. [[CrossRef](#)] [[PubMed](#)]
17. Trichopoulou, A.; Martínez-González, M.A.; Tong, T.Y.; Forouhi, N.G.; Khandelwal, S.; Prabhakaran, D.; Mozaffarian, D.; De Lorgeril, M. Definitions and Potential Health Benefits of the Mediterranean Diet: Views from Experts around the World. *BMC Med.* **2014**, *12*, 112. [[CrossRef](#)] [[PubMed](#)]
18. Hoek, A.C.; Pearson, D.; James, S.W.; Lawrence, M.A.; Friel, S. Shrinking the Food-Print: A Qualitative Study into Consumer Perceptions, Experiences and Attitudes towards Healthy and Environmentally Friendly Food Behaviours. *Appetite* **2017**, *108*, 117–131. [[CrossRef](#)]
19. CBI. The European Market's Potential for Dried Lentils. Available online: <https://www.cbi.eu/market-information/grains-pulses-oilseeds/dried-lentils/market-potential> (accessed on 14 March 2024).
20. Paffarini, C.; Torquati, B.; Tempesta, T.; Venanzi, S.; Vecchiato, D. Rural Sustainability and Food Choice: The Effect of Territorial Characteristics on the Consumers' Preferences for Organic Lentils. *Agric. Econ.* **2021**, *9*, 29. [[CrossRef](#)]
21. Jensen, E.S.; Peoples, M.B.; Hauggaard-Nielsen, H. Faba Bean in Cropping Systems. *Field Crops Res.* **2010**, *115*, 203–216. [[CrossRef](#)]
22. Preissel, S.; Reckling, M.; Schläfke, N.; Zander, P. Magnitude and Farm-Economic Value of Grain Legume Pre-Crop Benefits in Europe: A Review. *Field Crops Res.* **2015**, *175*, 64–79. [[CrossRef](#)]
23. Watson, C.A.; Reckling, M.; Preissel, S.; Bachinger, J.; Bergkvist, G.; Kuhlman, T.; Lindström, K.; Nemecek, T.; Topp, C.F.E.; Vanhatalo, A.; et al. Chapter Four—Grain Legume Production and Use in European Agricultural Systems. In *Advances in Agronomy*; Sparks, D.L., Ed.; Academic Press: Cambridge, MA, USA, 2017; Volume 144, pp. 235–303.
24. Köpke, U.; Nemecek, T. Ecological Services of Faba Bean. *Field Crops Res.* **2010**, *115*, 217–233. [[CrossRef](#)]
25. van der Werf, H.M.G.; Petit, J.; Sanders, J. The Environmental Impacts of the Production of Concentrated Feed: The Case of Pig Feed in Bretagne. *Agric. Syst.* **2005**, *83*, 153–177. [[CrossRef](#)]
26. Tidåker, P.; Karlsson Potter, H.; Carlsson, G.; Rööös, E. Towards Sustainable Consumption of Legumes: How Origin, Processing and Transport Affect the Environmental Impact of Pulses. *Sustain. Prod. Consum.* **2021**, *27*, 496–508. [[CrossRef](#)]
27. Jensen, E.S.; Peoples, M.B.; Boddey, R.M.; Gresshoff, P.M.; Hauggaard-Nielsen, H.J.R.; Alves, B.; Morrison, M.J. Legumes for Mitigation of Climate Change and the Provision of Feedstock for Biofuels and Biorefineries. A Review. *Agron. Sustain. Dev.* **2012**, *32*, 329–364. [[CrossRef](#)]
28. Acciani, C.; De Boni, A.; Bozzo, F.; Roma, R. Pulses for Healthy and Sustainable Food Systems: The Effect of Origin on Market Price. *Sustainability* **2020**, *13*, 185. [[CrossRef](#)]
29. Jiang, Y.; Wang, H.; Jin, S.; Delgado, M. The Promising Effect of a Green Food Label in the New Online Market. *Sustainability* **2019**, *11*, 796. [[CrossRef](#)]
30. Satimanon, T.; Weatherspoon, D.D. Hedonic Analysis of Sustainable Food Products. *Int. Food Agribus. Manag. Rev.* **2010**, *13*, 57–74.
31. Voisin, A.-S.; Guéguen, J.; Huyghe, C.; Jeuffroy, M.-H.; Magrini, M.-B.; Meynard, J.-M.; Mougél, C.; Pellerin, S.; Pelzer, E. Legumes for Feed, Food, Biomaterials and Bioenergy in Europe: A Review. *Agron. Sustain. Dev.* **2014**, *34*, 361–380. [[CrossRef](#)]
32. Juhl, H.J.; Fenger, M.H.J.; Thøgersen, J. Will the Consistent Organic Food Consumer Step Forward? An Empirical Analysis. *J. Consum. Res.* **2017**, *44*, 519–535. [[CrossRef](#)]
33. Loureiro, M.L.; McCluskey, J.J. Assessing Consumer Preferences for Organic, Eco-Labeled, and Regular Apples. *J. Agric. Resour. Econ.* **2024**, *26*, 404–416.
34. Tempesta, T.; Vecchiato, D. An Analysis of the Territorial Factors Affecting Milk Purchase in Italy. *Food Qual. Prefer.* **2013**, *27*, 35–43. [[CrossRef](#)]
35. Lopez-Galan, B.; Gracia, A.; Barreiro-Hurle, J. What Comes First, Origin or Production Method? An Investigation into the Relative Importance of Different Attributes in the Demand for Eggs. *Span. J. Agric. Res.* **2013**, *11*, 305. [[CrossRef](#)]
36. Hempel, C.; Hamm, U. How Important Is Local Food to Organic-Minded Consumers? *Appetite* **2016**, *96*, 309–318. [[CrossRef](#)] [[PubMed](#)]
37. Gracia, A.; Barreiro-Hurlé, J.; Galán, B.L. Are Local and Organic Claims Complements or Substitutes? A Consumer Preferences Study for Eggs. *J. Agric. Econ.* **2014**, *65*, 49–67. [[CrossRef](#)]
38. Gracia, A.; de-Magistris, T. Consumer Preferences for Food Labeling: What Ranks First? *Food Control* **2016**, *61*, 39–46. [[CrossRef](#)]
39. Cappelli, L.; D'ascenzo, F.; Ruggieri, R.; Rossetti, F.; Scalingi, A. The Attitude of Consumers towards "Made in Italy" Products. An Empirical Analysis among Italian Customers. *Manag. Mark. Chall. Knowl. Soc.* **2019**, *14*, 31–47. [[CrossRef](#)]
40. Cappelli, L.; D'Ascenzo, F.; Arezzo, M.F.; Ruggieri, R.; Gorelova, I. The Willingness to Pay in the Food Sector. Testing the Hypothesis of Consumer Preferences for Some Made in Italy Products. *Sustainability* **2020**, *12*, 6275. [[CrossRef](#)]

41. Vecchio, R.; Annunziata, A. The Role of PDO/PGI Labelling in Italian Consumers' Food Choices. *Agric. Econ. Rev.* **2011**, *12*, 80–98.
42. Petrontino, A.; Frem, M.; Fucilli, V.; Labbate, A.; Tria, E.; Bozzo, F. Ready-to-Eat Innovative Legumes Snack: The Influence of Nutritional Ingredients and Labelling Claims in Italian Consumers' Choice and Willingness-to-Pay. *Nutrients* **2023**, *15*, 1799. [[CrossRef](#)]
43. Rokka, J.; Uusitalo, L. Preference for Green Packaging in Consumer Product Choices—Do Consumers Care? *Int. J. Consum. Stud.* **2008**, *32*, 516–525. [[CrossRef](#)]
44. Koutsimanis, G.; Getter, K.; Behe, B.; Harte, J.; Almenar, E. Influences of Packaging Attributes on Consumer Purchase Decisions for Fresh Produce. *Appetite* **2012**, *59*, 270–280. [[CrossRef](#)] [[PubMed](#)]
45. Silayoi, P.; Speece, M. The Importance of Packaging Attributes: A Conjoint Analysis Approach. *Eur. J. Mark.* **2007**, *41*, 1495–1517. [[CrossRef](#)]
46. European Commission. *Agricultural Genetic Resources—From Conservation to Sustainable Use*; European Commission: Brussels, Belgium, 2013.
47. Rosen, S. Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition. *J. Political Econ.* **1974**, *82*, 34–55. [[CrossRef](#)]
48. Lancaster, K.J. A New Approach to Consumer Theory. *J. Political Econ.* **1966**, *74*, 132–157. [[CrossRef](#)]
49. Costanigro, M.; McCluskey, J.J. Hedonic Price Analysis in Food Markets. In *The Oxford Handbook of the Economics of Food Consumption and Policy*; Lusk, J.L., Roosen, J., Shogren, J.F., Eds.; Oxford University Press: Oxford, UK, 2011; pp. 151–180; ISBN 978-0-19-956944-1.
50. Caracciolo, F.; Cembalo, L.; Pomarici, E. The Hedonic Price for an Italian Grape Variety. *Ital. J. Food Sci.* **2013**, *25*, 3.
51. Sogn-Grundvåg, G.; Larsen, T.A.; Young, J.A. Product Differentiation with Credence Attributes and Private Labels: The Case of Whitefish in UK Supermarkets. *J. Agric. Econ.* **2014**, *65*, 368–382. [[CrossRef](#)]
52. Maesano, G.; Di Vita, G.; Chinnici, G.; Pappalardo, G.; D'Amico, M. The Role of Credence Attributes in Consumer Choices of Sustainable Fish Products: A Review. *Sustainability* **2020**, *12*, 10008. [[CrossRef](#)]
53. Caracciolo, F.; D'Amico, M.; Bianco, A.D.; Cembalo, L. Private vs. Collective Wine Reputation. *Int. Food Agribus. Manag. Rev.* **2016**, *19*, 191–210.
54. Galati, A.; Crescimanno, M.; Abbruzzo, A.; Chironi, S.; Tinervia, S. The Premium Price for Italian Red Wines in New World Wine Consuming Countries: The Case of the Russian Market. *J. Wine Res.* **2017**, *28*, 181–193. [[CrossRef](#)]
55. Roma, P.; Di Martino, G.; Perrone, G. What to Show on the Wine Labels: A Hedonic Analysis of Price Drivers of Sicilian Wines. *Appl. Econ.* **2013**, *45*, 2765–2778. [[CrossRef](#)]
56. Rossetto, L.; Galletto, L. Retail Strategies for Rosé Wines in Italy: A Hedonic Price Analysis. *Int. J. Wine Bus. Res.* **2019**, *31*, 282–302. [[CrossRef](#)]
57. Cavallo, C.; Caracciolo, F.; Cicia, G.; Del Giudice, T. Extra-virgin Olive Oil: Are Consumers Provided with the Sensory Quality They Want? A Hedonic Price Model with Sensory Attributes. *J. Sci. Food Agric.* **2018**, *98*, 1591–1598. [[CrossRef](#)] [[PubMed](#)]
58. Schollenberg, L. Estimating the Hedonic Price for Fair Trade Coffee in Sweden. *Br. Food J.* **2012**, *114*, 428–446. [[CrossRef](#)]
59. Bimbo, F.; Bonanno, A.; Liu, X.; Viscecchia, R. Hedonic Analysis of the Price of UHT-Treated Milk in Italy. *J. Dairy Sci.* **2016**, *99*, 1095–1102. [[CrossRef](#)] [[PubMed](#)]
60. Carlucci, D.; Nocella, G.; De Devitiis, B.; Viscecchia, R.; Bimbo, F.; Nardone, G. Consumer Purchasing Behaviour towards Fish and Seafood Products. Patterns and Insights from a Sample of International Studies. *Appetite* **2015**, *84*, 212–227. [[CrossRef](#)] [[PubMed](#)]
61. Ballco, P.; De-Magistris, T. Valuation of Nutritional and Health Claims for Yoghurts in Spain: A Hedonic Price Approach. *Span. J. Agric. Res.* **2018**, *16*, e0108. [[CrossRef](#)]
62. Hussein, M.; Fraser, I. Hedonic Analysis of Consumers' Valuation of Country of Origin of Meat in the United Kingdom. *J. Agric. Econ.* **2018**, *69*, 182–198. [[CrossRef](#)]
63. Pettersen, I.K.; Asche, F. Hedonic Price Analysis of Ex-Vessel Cod Markets in Norway. *Mar. Resour. Econ.* **2020**, *35*, 343–359. [[CrossRef](#)]
64. Hukom, V.; Nielsen, M.; Ankamah-Yeboah, I.; Nielsen, R. A Hedonic Price Study on Warm- and Cold-Water Shrimp in Danish Retail Sale. *Aquac. Econ. Manag.* **2020**, *24*, 1–19. [[CrossRef](#)]
65. Ramsey, J.B. Tests for Specification Errors in Classical Linear Least-Squares Regression Analysis. *J. R. Stat. Soc. Ser. B Methodol.* **1969**, *31*, 350–371. [[CrossRef](#)]
66. De Meo, E.; Nardone, G.; Bimbo, F.; Carlucci, D. A Hedonic Analysis of Processed Tomato Prices Using Italian Regional Markets Data. *Foods* **2022**, *11*, 816. [[CrossRef](#)] [[PubMed](#)]
67. Halvorsen, R.; Palmquist, R. The Interpretation of Dummy Variables in Semilogarithmic Equations. *Am. Econ. Rev.* **1980**, *70*, 474–475.
68. Vandenberg, A. Postharvest Processing and Value Addition. In *The Lentil: Botany, Production and Uses*; Erskine, W., Muehlbauer, F.J., Sarker, A., Sharma, B., Eds.; CAB International: Wallingford, UK, 2009; pp. 391–407. [[CrossRef](#)]
69. Botelho, A.; Dinis, I.; Lourenço-Gomes, L.; Moreira, J.; Costa Pinto, L.; Simões, O. The Role of Consumers in Agrobiodiversity Conservation: The Case of Traditional Varieties of Apples in Portugal. *Agroecol. Sustain. Food Syst.* **2018**, *42*, 796–811. [[CrossRef](#)]
70. Istat Quality Agro-Food Products (PDO, PGI and STG). 2016. Available online: https://www.istat.it/it/files//2016/12/EN_Agri-food-products_2016.pdf (accessed on 15 February 2024).

71. Marette, S. Sustainability and Consumer Willingness to Pay for Legumes: A Laboratory Study with Lentils. *Sustainability* **2021**, *13*, 3408. [[CrossRef](#)]
72. Roth, Y. Do Brands Serve as Reliable Signals of Nutritional Quality? The Case of Breakfast Cereals. *J. Food Prod. Mark.* **2017**, *23*, 1–23. [[CrossRef](#)]
73. Carzedda, M.; Gallenti, G.; Troiano, S.; Cosmina, M.; Marangon, F.; De Luca, P.; Pegan, G.; Nassivera, F. Consumer Preferences for Origin and Organic Attributes of Extra Virgin Olive Oil: A Choice Experiment in the Italian Market. *Foods* **2021**, *10*, 994. [[CrossRef](#)] [[PubMed](#)]
74. Li, J.; Hooker, N.H. Documenting Food Safety Claims and Their Influence on Product Prices. *Agric. Resour. Econ. Rev.* **2009**, *38*, 311–323. [[CrossRef](#)]
75. Ballco, P.; Gracia, A. Do Market Prices Correspond with Consumer Demands? Combining Market Valuation and Consumer Utility for Extra Virgin Olive Oil Quality Attributes in a Traditional Producing Country. *J. Retail. Consum. Serv.* **2020**, *53*, 101999. [[CrossRef](#)]
76. Lemken, D.; Knigge, M.; Meyerding, S.; Spiller, A. The Value of Environmental and Health Claims on New Legume Products: A Non-Hypothetical Online Auction. *Sustainability* **2017**, *9*, 1340. [[CrossRef](#)]
77. Ferreira, H.; Pinto, E.; Vasconcelos, M.W. Legumes as a Cornerstone of the Transition Toward More Sustainable Agri-Food Systems and Diets in Europe. *Front. Sustain. Food Syst.* **2021**, *5*, 694121. [[CrossRef](#)]
78. Perera, T.; Russo, C.; Takata, Y.; Bobe, G. Legume Consumption Patterns in US Adults: National Health and Nutrition Examination Survey (NHANES) 2011–2014 and Beans, Lentils, Peas (BLP) 2017 Survey. *Nutrients* **2020**, *12*, 1237. [[CrossRef](#)]
79. Śmiglak-Krajewska, M.; Wojciechowska-Solis, J.; Viti, D. Consumers' Purchasing Intentions on the Legume Market as Evidence of Sustainable Behaviour. *Agriculture* **2020**, *10*, 424. [[CrossRef](#)]

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