Research Article

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Willingness to Pay a Premium for Safer Fresh Tomato: The Case of Urban Consumers in Tirana, Albania

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Abstract

The objective of this study is the consumer's willingness to pay a premium price (WTP) for greater safety of fresh tomatoes and the factors that determine it, in the city of Tirana, Albania. Primary data are used for over 800 individuals collected through a special face-to-face survey. Econometric methods, such as multivariate regression model and multinomial logistic models have been used. Tomato consumers are willing to pay an average premium of around 16% over the current price. Among the most important factors identified as positively affecting WTP are the level of perceived safety risk of the consumer, the frequency of adverse health events in the past, the level of risk intolerance, consumer concern about food safety, and consumer knowledge about food safety. Household income and its size are two other factors that positively impact WTP, while consumer perceptions of the farmer's ability to produce healthy tomatoes have a negative effect on expected WTP. The religious affiliation of the consumer turns out to be a determinant of WTP. Demographic and cultural characteristics, such as gender, age, and educational background do not seem to affect WTP for safer fresh tomato. Finally, some political implications are discussed.

Keywords: *Consumer, Multinomial model, Risk, Safety, Willingness to Pay*

1. Introduction

Tomatoes are one of the main types of vegetables produced in Albania. In 2018, tomato production was as much as 37% of total nationwide vegetable production. Tomatoes are produced both in the open field and in protected environments, greenhouses. Tomato production in greenhouses has increased year by year, now contributing to 48 % of tomato production nationwide (INSTAT, 2019). Tomatoes are mostly consumed locally in fresh form, but some are processed locally or exported.

1.1 Research problem

Consumption of tomato per head is significant, so analysis of issues related to its food safety is important to consumers' health. One of the essential issues related to consumer health denoting to what extent the consumers are concerned about their health when consuming tomatoes is their willingness to pay a price premium (WTP) if more safety would be guaranteed. To show this we should be able to measure the consumers' level of WTP and investigate why consumers are willing to pay a diverse amount of price premium for a safer product. To answer this question, we should make an investigation of factors determining consumers' WTP for safer tomato. Based on that, crucial policy implications for policymakers and actors along the tomato value chain to encourage or guarantee a safer tomato supply in the market could be written and proposed.

1.2 Conceptual framework and review of literature

Food safety is the guarantee that food does not cause harmful effects on human health (Albanian Law on Food, 2008). According to FAO and WHO food safety refers to all those hazards, whether chronic or acute, that may make food injurious to the health of the consumer; and hazard is an agent or condition that may cause harm. There are three categories of hazards: biological, chemical, and physical (FAO-WHO, 2003; UN, 2007).

Food safety might be objective or subjective. Objective food safety is what is being assessed by food experts. Subjective food safety is that existing in the mind of the consumer (Grunert, 2005).

Risk is the possibility of an adverse effect on the health and severity of this effect, as a consequence of the presence of one or more damaging elements in food. A damaging element is a biological, chemical, or physical element, or general conditions, potential to cause a damaging effect on human health. Food quality is the ensemble of special attributes of the food that satisfies the demands of the final consumer (Albanian Law on Food, 2008).

Willing to pay a price premium (WTP) is the amount of money above the actual price they can pay for one unit of food. It is a key concept in consumer demand, but also in consumer behavior theory. One key decision of consumer behavior involves understanding why consumers buy a product (Hoyer, MacInnis & Pieters, 2013).

Information to consumers on food safety is of critical importance (Nayga, 1996; Catherine, Andam, Amewu, & Asante, 2019). The Albanian legislation sets out the general principles and main requirements and responsibilities for the information on foods, in particular for labeling of food products (DCM, 2018). It also sets the means for it and guarantees the right to information of the consumers and procedures for providing information on food. This legislation is applicable to food business operators, at all stages of the food chain.

According to the consumer behavior theory, there are two groups of factors affecting consumer buying behavior, hence WTP; the cultural and psychological factors (Hoyer, MacInnis& Pieters, 2013). The cultural group includes behaviors, norms, and ideas, the reference group consumer interests and opinions age, gender, educational background consumer ethnic and religious differences. The psychological group includes motivation, ability, and opportunity. Motivation has to do with the need that the consumer intends to fulfill by purchasing the product and the risk that he perceives from the consumption of the product. Ability relates to financial opportunities (family or individual income), cultural knowledge, experience, education, and age of the consumer. The opportunity has to do with factors such as time, quantity and frequency of purchase, control of product information, etc.

Holysz (2013) divides the ensemble of factors that influence consumer purchasing behavior into four groups: economic, psychological, socio-cultural, and demographic determinants.

Empirical literature about WTP is large. Below we present only a small piece of findings from this literature about factors affecting consumers' WTP.

Based on statistical data, this literature makes it clear that if the product is labeled, i.e. certified

for safety, when the health concern over the consumption of unsafe products is high when it is perceived that the consumption of a product of interest has a negative impact on the environment, consumers are more willing to pay a premium price (Catherine, Andam, Amewu, & Asante, 2019; Angulo & José, 2007). Consumers are ready to pay a premium even if they have sufficient convincing information about food safety (Catherine, Andam, Amewu, & Asant, 2019).

Food labels informing consumers about food safety can encourage consumers to pay a high price (Britwum & Yiannaka, 2019). Other researchers, such as Cobbinah, Donkohm & Ansah, (2018) in a study of Ghana found that factors such as income, trust in traders, and care about the use of untreated wastewater for irrigation affect the WTP for safer vegetables. The same result was achieved by Angulo & Gil, (2007) in relation to household income and consumption amount.

Using the ordered logistic regression model Hayati, Haghjou, & Pishbahar (2017) found that individual income, concern about environment and health, safer shopping criteria, and consumer awareness affect positively the willingness to pay for safer fruits and vegetables, while the price has a negative effect. Nandi, Gowdru, Bokelmann, & Dias, (2016) used a logistic regression found that family income, size of the family, gender, and other opinion variables such as chemical residue in conventional foods, trust in retailers, taste, and environmental concerns significantly influence consumers' WTP for organic fruits and vegetables.

Perceived use values and trust in labels, as well as the disposable family income, increased WTP for organic vegetables in both urban and rural regions (Ha & Do, 2019). In a study carried out in Delhi (India), Singh & Neeraj (2018) found that price was one of the two most important factors influencing WTP for safer vegetables. In terms of gender, females were more concerned about freshness, price, total quality, and shelf life, place of purchase, and place of origin. Males were more concerned about pesticide residues, heavy metals, and packaging contamination than female respondents.

In a study about Kenya, researchers have found that income, confidence and consumption consistency, subjective knowledge, reference point, income, and age of children in the household were the main factors for WTP for leafy vegetables (Ngigi, Okello, Lagerkvist, Karanja & Mburu, 2011). Hoang & Nakayasu, (2006) used multiple regression models to investigate WTP for safe vegetables in Vietnam. Factors such as price, income, education, age, and the number of children in a family and trust in the quality and safety significantly affected the consumers` decision to buy and consume safer vegetables.

Consumer trust in information about food safety is a crucial element that influences buying behavior (Dierks, 2007).

Negative consequences that consumers may have experienced from consuming tomatoes in the past also are in a positive relationship with the level of risk intolerance taking place at purchase, being in line with what research highlights (Venturas-Lukas, 2004). People with better education and those with higher incomes are more sensitive to safe production processes (Nayga, 1996).

As Sckokai, Daniele, & Enrica (2010) have shown in the case of milk, Italian consumers are willing to pay a price premium for safer "reduced-mycotoxin" milk. More willing are women, middle-aged people, and consumers with lower levels of education. Consumer satisfaction with food safety, risk awareness, gender, age, education, and income are key determinants of willingness to pay for certified traceable food in China (Xu & Wu, 2010).

1.3 Research hypotheses

Based on the research goal and objectives, as well as findings from the literature review, the following are the research hypotheses:

Hypothesis 1: WTP of the tomato consumer is expected to be positively correlated with household size, consumption, income, consumer knowledge, risk intolerance, consumer concern about food safety, perceived risk level, frequency of past negative events from the consumption, and educational background of the consumers.

Hypothesis 2: WTP of the tomato consumers is expected to be negatively correlated with the farmers' capacity to guarantee a safe product.

Hypothesis 3: Gender and age of the tomato consumers do not affect WTP.
Hypothesis 4: The religious affiliation of the tomato consumers has no effect on the WTP.

2. Data and Method

2.1 Data

Our study is based on consumers' perceptions and opinions. Table 1 below presents the variables for which data were obtained, and their type and coding.

Table 1: Variables, their measurement scale, and operationalization

Variables	Code of the variable	Measurement Scale	Categories
Price premium willing to pay for safer tomato (% above actual price)	WTP	Ratio	Up to 5%, 15-20%, over 20%
		Multinomial	Low, Moderate, High
Risk intolerance	RISKINTOL	Ordinal	0 to 10
		Multinomial	1=Highly tolerant 2=Somewhat tolerant 3=Not at all tolerant
Weekly family consumption (kg)	CONSUM	Ratio	-
Religious affiliation	RELIG	Multinomial	1=Muslim, 2=Christian, 3=Other
Consumer concern about risk when consuming tomato	CONCERN	Multinomial	1=Low, 2=Moderate 3=High
Education background	EDUC	Multinomial	1=Elementary, 2=Secondary, 3=Superior
Consumer's Gender	GENDER	Binomial	0=Female, 1=Male
Consumers' knowledge on food safety	KNOWL	Multinomial	1=Low, 2=Moderate, 3=Super
Historical frequency of negative effects from the consumption	FRENEG	Multinomial	1=Low 2=Moderate, 3=Great
Household's size	SIZE	Ratio	-
Age of the respondent	AGE	Ratio	-
Perceived risk	RISK	Binomial	0=Low, 1=High
Farmers capacity to guarantee safe food	FARMCAP	Multinomial	0=Don't know, 1=Fully unable, 2=Almost unable, 3=Partially, 4=Fully able
Household Income (ALL)[1]	INCOME	Ratio	-

Primary data are collected for the Tirana commune and its surroundings. To collect data a Sample of 834 accidentally selected individuals has been face-to-face interviewed. Caution was taken to guarantee some approximate balance between the male and female numbers of individuals, as well as between religious affiliations of them. This was made taking into account natural rates of female-to-male and approximate religious affiliation proportions in the country.

Table 2 is a summary of major descriptive statistics for all variables that have a numeric measurement scale.

Table 2: Major descriptive statistics

Variable	Mean	Median	Standard deviation	Minimum	Maximum
AGE	38.10	38.00	15.20	18.00	80.00
INC	166.00	120.00	136.00	25.00	1500.00

[1] *ALL=Albanian Currency, Lek*

Variable	Mean	Median	Standard deviation	Minimum	Maximum
CONSUM	3.08	3.50	1.47	1.00	7.00
SIZE	4.70	5.00	1.40	1.00	10.00
RISKINTOL	4.95	5.00	2.65	0.00	10.00
WTP	16.20	15.00	9.30	5.00	155.00
RISK	6.71	7.00	2.91	0.00	50.00
CONCERN	5.31	5.00	3.30	0.00	10.00
FARMCAP	3.02	3.00	1.07	0.00	4.00

One can easily notice that the average percentage the consumers are willing to pay is 16.2% above the actual price they paid at the moment of the interview, while half of the individuals are willing to pay more than 15% (median). The level of perceived safety risk is 6.71 but their level of risk intolerance is 4.95. On average, consumers estimate the capacity of farmers to guarantee safe tomato by 3.02, which means that farmers are almost partially able to guarantee food safety. Consumers' concern is rated a little bit above the median (5.31), which is relatively high.

2.2 Method

We use econometric models to identify potential factors to consumer's willingness to pay a price premium for fresh tomato. Our research strategy is to use a number of various models to investigate the relationships between WTP and its hypothetical determinants and see whether and/or how much their results are consistent. Three types of models are used to investigate the determinants of the consumers willing to pay a premium for safer tomato: classical multiple regression and multinomial, ordered, and unordered models. Through them, we are able to obtain useful information of various types, as explained in detail below.

If Y is the dependent variable and X is the matrix of ***k*** independent variables or factors, the classical multiple regression models in a matrix form are:

Y=XA +e

Here **A** is a vector of coefficients, one for each of the independent variables plus one free parameter (constant). The linear model helps to obtain percentage estimates on how much is expected to change the dependent variable Y in response to unit changes in the independent variables. Each coefficient denotes how much is expected to change the dependent **Y** in terms of percentages if the corresponding variable X changes by one unit, other variables remaining unchanged. The sign of the coefficient shows the direction of change or the type of relationship, positive or negative.

If Y is the dependent multinomial or ordinal variable with M categories (j=1, 2,...M) the general form of the ordered logistic regression with ***k*** independent variables or factors is the following:

$$P_j = P(Y \leq j) = \frac{\exp(a_j - BX)}{1 + \exp(a_j - BX)} \quad j=1, 2,\ldots M\text{-}1$$

Here P_j are cumulative probabilities; they are probabilities of consumer's WTP to be in the *jth* or previous categories of the dependent variable for given values of factors X. The regression coefficients are the same for each category, while the free parameter is specific.

Exponentiated coefficients Exp (B) of the ordered model are the partial odds ratios for being in the upper rather than the lower half of the dependent variable dichotomies. These odds are assumed to be the same for each dichotomy. In the case of one dependent variable with M=3 categories, such as WTP in our case, two dichotomies could be formed:

Dichotomy 1: Low *v* (Moderate *and* High)

Dichotomy 2: (Low *and* Moderate) *v* High)

If independent variables are nominal or ordinal it should be represented by a set of dummy variables and then inserted as such into the model (Wooldridge, 2013). As a rule, the number of dummies to be used for this purpose should be equal to the number of categories of the variable in consideration minus one (Gujarati, 2003). Thus, for the variable CONCERN (Consumer's concern about

food safety) two dummies have to be created and used because this variable has three categories in total (1=Low, 2=Moderate, 3=High).

The first category of the variable is set as a base category, whereas for each of the other categories one dummy should be used. The first (elementary level) has been taken as a base category, while D (CONCERN)_2 and D (CONCERN)_3 are two dummies, for the second and third categories. The values of these dummies are:

D (CONCERN)_2=1 if CONCERN =2
D (CONCERN)_2=0 if CONCERN =1 or CONCERN =3
D (CONCERN)_3=1 if CONCERN =3
D (CONCERN)_3=0 if CONCERN =1 or CONCERN =2

Except for the ordered model, the unordered multinomial model was also used. If the first category is taken as a base, then the form of this model is as follows:

$$P_j = \frac{\exp(a_j + b_{1j}X_1 + \ldots b_{kj}X_k)}{1 + \sum_{i=2}^{M} a_i + b_iX_1 + \ldots b_iX_k)}, \; j = 2, 3, \ldots, M$$

This model gives the probability or the chance of being in the *jth* category of the Y variable for given values of the ***k*** factors. Another form of the above model would be:

$$\frac{P_j}{P_1} = \exp(a_j + b_{1j}X_1 + \ldots b_{kj}X_k), \; j = 2, 3, \ldots, M$$

This model gives the odds, relative chances, or the ratio of the probability of being in the category ***j*** with the probability of being in the base category (category 1) for given values of the ***k*** factors. The odds could be rising if the regression coefficients are >0, one (constant) if the coefficient is zero, and decreasing if the regression coefficients are <0.

The exponentiated coefficients Exp (B) are the multipliers of the odds and indicate how many times are augmented the odds if a specific independent variable X is increased by one unit when the other X's remain constant.

To test if adding new variables (jointly or one by one) are significant the LR test could be used:

$\mathbf{LR=-2(L_r-L_u)=-2L_r-(-2L_u)}$

Here L_r is the Log-likelihood for the restricted or reduced model, which is the model with fewer variables; L_u is the unrestricted model or the model with new variable(s) added. The first reduced model is the one with the intercept only. The null hypothesis is that all parameters of that effect are 0.

LR follows a chi-square distribution with **p** degrees of freedom equal to the number of variables added. If $P(\chi^2>LR)<0.05$), or less rigorously if $P(\chi^2>LR)<0.1$), then variable(s) added in the model are significant.

For more theoretical details about the model building and statistical inference see Gujarati (2003), Benoit (2012), Osmani & Kambo (2019), and Wooldridge (2013). We used GRETL 2019d-git software to carry out all estimations needed.

3. Results

Table 3 presents the results of OLS estimation for the multiple linear model of Willingness to Pay.

Table 3: Linear multiple regression model for WTP (Ratio scale)

	Coefficient	*Standard Error*	*t-ratio*	*P-value*	
Const	9.655	2.100	4.599	<0.0001	***
INCOME	0.005	0.002	1.916	0.056	*
CONSUM	0.627	0.195	3.210	0.001	***
SIZE	0.623	0.208	2.995	0.003	***
DEDUC_2	0.450	0.845	0.532	0.595	

	Coefficient	*Standard Error*	*t-ratio*	*P-value*	
DEDUC_3	0.896	0.964	0.930	0.353	
DRELIG_2	-1.095	0.609	-1.799	0.072	*
DRELIG_3	-1.948	1.112	-1.752	0.080	*
DFRENEG_1	0.353	0.625	0.565	0.573	
DFRENEG_2	2.916	0.774	3.770	0.000	***
DCONCERN_2	1.417	0.682	2.079	0.038	**
DCONCERN_3	2.207	0.691	3.192	0.002	***
DKNOWL_1	0.914	0.720	1.269	0.205	
DKNOWL_2	1.781	0.738	2.413	0.016	**
RISK	1.984	0.714	2.777	0.006	***
FARMCAP_1	-3.089	1.867	-1.654	0.099	*
FARMCAP_2	-4.512	1.441	-3.132	0.002	***
FARMCAP_3	-4.865	1.224	-3.976	<0.0001	***
FARMCAP_4	−5.24285	1.234	−4.250	<0.0001	***
DRISKINTOL_2	0.940	0.682	1.377	0.169	
DRISKINTOL_3	1.690	0.752	2.247	0.025	**
GENDER	−0.294555	0.553	−0.5324	0.595	
AGE	−0.00652101	0.020	−0.3338	0.739	

Sum squared resid	39755.83	S.E. of regression	7.37
R-squared	0.16	Adjusted R-squared	0.14
F(22, 732)	6.38	P-value(F)	0.00
Log-likelihood	−2567.631	Akaike criterion	5181.26

The model, in general, is statistically significant, and in addition, no significant collinearity has been found between factors of the model (using variance inflation factor-VIF test) and no heteroscedasticity has been found in the error term (White's test has been applied for this purpose).

Based on the estimation results, the consumer willing to pay a higher price for safer tomato is higher when household income and consumption are higher, bigger families are willing to pay a safety price premium.

Consumers perceiving higher risks from the consumption, being more concerned about tomato safety, being less tolerant against risks and more knowledgeable about it are more willing to pay a price premium. The same happens to consumers who have suffered in the past from consuming unsafe tomatoes. On the other hand, if consumers think farmers are capacious of producing safe tomato they are less willing to pay more for safer tomato.

Demographic characteristics such as age, gender, and education not have significant effects on the WTP. In terms of coefficient interpretation, if the household consumption is increased by 1 kg, then WTP is expected to increase by 0.627%, other factors remaining constant. In the case of concern about food safety, consumers being in category 3 (high concern) are willing to pay a price 2.2% higher compared to the price that consumers of categories 1 or 2 (low or moderate) are ready to pay.

Table 4 shows the results of the ML (Maximum Likelihood) estimation of the ordered logistic model for WTP. In table 5 we have presented MLE estimation results for the unordered logistic model.

Table 4: Multinomial Ordered Logistic model for WTP (Multinomial). (Categories of WTP: Low, Moderate, High)

	Coefficient	*Standard Error*	*z*	*P-value*		*EXP(B)*
AGE	-0.001	0.005	-0.180	0.857		0.999
INCOME	0.001	0.001	2.062	0.039	**	1.001
CONSUM	0.172	0.051	3.380	0.001	***	1.188
SIZE	0.166	0.055	3.022	0.003	***	1.180

	Coefficient	*Standard Error*	*z*	*P-value*		*EXP(B)*
RISK	0.534	0.184	2.903	0.004	***	1.706
FARMCAP_1	-0.778	0.515	-1.511	0.131		0.459
FARMCAP_2	-1.235	0.390	-3.168	0.002	***	0.291
FARMCAP_3	-1.282	0.337	-3.804	0.000	***	0.277
FARMCAP_4	-1.374	0.340	-4.041	<0.0001	***	0.253
DRELIG_2	-0.310	0.157	-1.974	0.048	**	0.733
DRELIG_3	-0.535	0.291	-1.836	0.066	*	0.586
DFRENEG_1	0.084	0.161	0.526	0.599		1.088
DFRENEG_2	0.770	0.205	3.754	0.000	***	2.159
DCONCERN_2	0.403	0.176	2.284	0.022	**	1.496
DCONCERN_3	0.578	0.179	3.237	0.001	***	1.783
DKNOWL_1	0.215	0.186	1.157	0.247		1.240
DKNOWL_2	0.492	0.192	2.567	0.010	**	1.636
DRISKINTOL_2	0.252	0.174	1.446	0.148		1.286
DRISKINTOL_3	0.450	0.194	2.315	0.021	**	1.568
cut1	0.567	0.557	1.018	0.309		-
cut2	2.353	0.564	4.170	<0.0001	***	-

Likelihood ratio test: Chi-square (22) = 202.532 [0.0000]

Table 5: Multinomial Unordered Logistic model for WTP (Multinomial). (Categories of WTP: Low, Moderate, High. Base category=Low)

	Coefficient	*Standard Error*	*z*	*P-value*		*EXP(B)*
WTP=Moderate						
CONST	0.037	0.870	0.043	0.966		1.038
INCOME	0.006	0.194	0.032	0.975		1.006
CONSUM	0.001	0.001	1.230	0.219		1.001
SIZE	0.127	0.071	1.785	0.074	*	1.135
RISK	0.119	0.075	1.590	0.112		1.126
FARMCAP_1	0.011	0.233	0.047	0.963		1.011
FARMCAP_2	-1.722	0.870	-1.980	0.048	**	0.179
FARMCAP_3	-1.336	0.724	-1.845	0.065	*	0.263
FARMCAP_4	-1.373	0.662	-2.074	0.038	**	0.253
DRELIG_2	-0.159	0.211	-0.754	0.451		0.853
DRELIG_3	-0.321	0.365	-0.878	0.380		0.726
DFRENEG_1	0.185	0.212	0.872	0.383		1.203
DFRENEG_2	0.310	0.296	1.044	0.296		1.363
DCONCERN_2	0.008	0.235	0.035	0.972		1.008
DCONCERN_3	0.429	0.240	1.787	0.074	*	1.536
DKNOWL_1	0.226	0.243	0.928	0.354		1.253
DKNOWL_2	0.356	0.256	1.392	0.164		1.428
DRISKINTOL_2	0.650	0.233	2.793	0.005	***	1.916
DRISKINTOL_3	0.344	0.266	1.293	0.196		1.410
WTP=High						
CONST	-1.656	0.923	-1.794	0.073	*	0.191
GENDER	-0.002	0.007	-0.283	0.777		0.998
INCOME	-0.089	0.208	-0.429	0.668		0.915
CONSUM	0.002	0.001	1.930	0.054	*	1.002
SIZE	0.238	0.074	3.211	0.001	***	1.269
RISK	0.239	0.079	3.018	0.003	***	1.270
FARMCAP_1	0.800	0.282	2.832	0.005	***	2.225
FARMCAP_2	-1.769	0.846	-2.093	0.036	**	0.170
FARMCAP_3	-2.199	0.728	-3.021	0.003	***	0.111

	Coefficient	*Standard Error*	*z*	*P-value*		*EXP(B)*
FARMCAP_4	-2.332	0.664	-3.514	0.000	***	0.097
DRELIG_2	-0.434	0.229	-1.892	0.059	*	0.648
DRELIG_3	-0.745	0.420	-1.776	0.076	*	0.475
DFRENEG_1	0.161	0.234	0.691	0.490		1.175
DFRENEG_2	1.037	0.295	3.513	0.000	***	2.820
DCONCERN_2	0.521	0.255	2.042	0.041	**	1.683
DCONCERN_3	0.852	0.264	3.227	0.001	***	2.345
DKNOWL_1	0.357	0.268	1.330	0.184		1.429
DKNOWL_2	0.646	0.276	2.345	0.019	**	1.909
DRISKINTOL_2	0.366	0.256	1.431	0.152		1.442
DRISKINTOL_3	0.569	0.275	2.064	0.039	**	1.766

Likelihood ratio test: Chi-square (44) = 155.971 [0.0000]

The model presented in Table 4 is statistically significant and the same factors as in the case of the linear model are significant. In terms of coefficient interpretation, the coefficient EXP (B)=1.188 for the consumption factor denotes that if the household consumption is increased by 1 kg, controlling for the other variables, then the odds of the consumer to be in the higher category of the WTP dichotomy are 18.7% greater than being in the lower category. This percentage is the same for each dichotomy. Factors with a greater effect on the consumer WTP are Frequency of negative effects, Concern, Perceived risk, and Risk intolerance.

The model presented in Table 5 is also statistically significant. In general, the same factors are significant, but not all significant factors are significant across all categories. Thus, for example, household income, frequency of negative events, and perceived risk are not significant for the moderate WTP category.

EXP (B)=1.27 for the variable Risk in the Moderate WTP category denotes that if the perceived risk is increased by 1 unit, then the chances of the consumer to be in the Moderate category of WTP are 1.27 times higher than being in category Low. EXP (B)=1.766 of the variable RISKINTOL_3 denotes that chances for a highly intolerant consumer to be in the higher category of WTP are 1.766 times greater than the chances of being in the Low category of WTP.

4. Discussion

The results of this research are many and generally comprehensive. The main result is that the consumers of tomato in Albania in their buying behavior are guided by safety principles and they are convincingly willing to pay for a safety price premium.

A multitude of factors has been identified as affecting significantly the fresh tomato consumer WTP for safe tomato. In addition, the size of impact under the context of Albania was estimated for each, which helps to learn the most influencing factors.

In relation to hypothesis 1, consumer food safety, as represented by the consumer risk intolerance and perceived risk, is a key factor influencing positively the WTP. This is fully in line with the literature findings (Angulo & José, 2007; Xu & Wu, 2010). Household income is another key determinant, as with more income consumers can afford safer and more quality products. All findings from the literature support this result (Angulo & Gil, 2007; Venturas-Lukas, 2004; Nayga, 1996; Hayati, Haghjou, & Pishbahar, 2017; Ngigi, Okello, Lagerkvist, Karanja & Mburu, 2011; Xu & Wu, 2010). The size of the household affects positively the level of WTP, presumably because with bigger families risks about safety could be catastrophic, and buying a safer product is avoiding these consequences. This result is also in line with the literature (Nandi, Gowdru, Bokelmann, & Dias, 2016).

Consumer access to information about the food safety of the product and its attributes is critical in relation to consumer's WTP. This information helps the consumer to perceive real risk levels, make him aware of food risks and its consequences, and improve its knowledge about product food safety,

thus influencing WTP through perceived risk and knowledge. Better knowledge affects positively the WTP. This result is in line also with the findings from the literature (Ngigi, Okello, Lagerkvist, Karanja & Mburu, 2011; Dierks, 2007; Hoang & Nakayasu, 2006).

Concern about food safety also affects positively the level of WTP, which is in line with the findings from literature (Catherine, Andam, Amewu, & Asante, 2019; Hayati, Haghjou, & Pishbahar, 2017). The amount of consumption affects positively the WTP, which is also in line with the literature (Angulo & Gil, 2007). In conclusion, in general hypothesis 1 is not refuted.

In relation to hypothesis 2, if consumers believe that farmers have the needed capacity that is they have all means, experiences, and required knowledge to produce safe tomato, they are less willing to pay for a safer product, because they know or they believe that the product is safe. We were not able to find examples in literature in relation to farmer's capacity influence on WTP, but our hypothesis (hypothesis 2) is not refuted.

Gender and age are not significantly affecting consumer's WTP for safer tomato, though sources from empirical literature have found that females are more WTP than males (Nandi, Gowdru, Bokelmann, & Dias, 2016; Sckokai, Daniele, & Enrica, 2010; Xu & Wu, 2010). The same with age, where literature highlights that older people tend to be more WTP (Hoang & Nakayasu, 2006; Xu & Wu, 2010).

In relation to education, we found no effect on WTP. The literature shows instances a positive effect (Nayga, 1996; Hoang & Nakayasu, 2006) and cases with negative effects (Sckokai, Daniele, & Enrica, 2010). Thus, hypothesis 3 is partly not accepted.

In relation to hypothesis 4, we have been not able to find relevant research showing the effect of the consumer's religious affiliation. In our case, we found that religious affiliation has a negative effect on the WTP for tomato. More clearly, there are significant differences in WTP between Christian on one side and Muslim together with the "Other" category, with Christian being less WTP than Muslim or the "Other" category. Thus, our research hypothesis 4 is not accepted.

5. Conclusions and Policy Implications

5.1 Conclusions

The objective of this study is the willingness to pay a premium price for greater safety of fresh tomatoes and the factors that determine it. The study focuses on the city of Tirana, Albania. To conduct the study, data were collected for more than 800 individuals by means of a special face-to-face survey. The study was conducted using econometric methods such as multivariate regression model and multinomial logistic models.

The study showed that consumers' WTP is around 16% over the current price, but a significant proportion of them are willing to pay a premium far higher than that, as are consumers who are willing to pay only a very low premium.

Several important factors influence the level of WTP, such as level of perceived safety risk by the consumer; consumer access to information on different types of food safety, where the higher the risk or the more accessible the information is, the higher is expected to be WTP; the frequency of adverse health events in the past, where the higher this frequency the greater the WTP; the level of risk intolerance, where the higher the level of consumer intolerance against the risk the higher is expected to be WTP; consumer concern about food safety, closely linked to consumer risk awareness, where the higher this level is the higher is expected to be WTP; consumer knowledge about foods safety, the better this knowledge the higher is expected to be WTP. Household income and its size are two other factors that positively impact WTP, while consumer perception about the farmer's ability to produce healthy tomatoes has a negative effect on expected WTP.

Religious belief also turns out to be a determinant of WTP. Demographic and cultural characteristics such as gender, age, and basic education do not appear to be determinants of WTP.

5.2 *Policy implications*

As research suggests, information on food safety is essential to build consumer confidence in product safety. This could be aided by establishing an effective food traceability system (Xu & Wu, 2010). As research shows, trust in food can also be improved through improved control of hazards (Ha & Do, 2019). This should be done along all tomato chain. And farmers' capacity to produce safe should be enhanced through more effective technical and financial support.

Further on, education, information, and marketing programs can help inform and improve consumers' knowledge but should be tailored to population groups according to their characteristics and specific needs and not be of general focus (Nayga, 1996).

As food safety legislation is presumably already in place, strengthening law enforcement is of particular importance. Monitoring and law enforcement capacities should be strengthened and better motivated and equipped.

Strengthening the role of the consumer by providing him with more access to food safety issues is another critical policy dimension.

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