Willingness to pay for organic food in Argentina: Evidence from a consumer survey

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Willingness to pay for organic food in Argentina: Evidence from a consumer survey

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Summary

Most food markets do not count on complete information about food quality for consumers. Quality has become a key concept in the new approaches of the Demand Theory (Lancaster, 1966; Antle, 1999), and, therefore, food quality information has turned into a crucial factor when explaining the existing differences between demand profiles.
Throughout these last years, organic agriculture has undergone a notorious expansion due, among other things, to the greater interest shown by consumers aware of food safety concerns involving real or potential quality risks perceptions. (Henson, 1996)
This paper aims to estimate consumers´ willingness to pay (WTP) for organic food products available in the Argentinean domestic market, with a view to providing useful evidence to the government, and thus gain support in the promotion of organic production, regulation processes and labelling programs.
The Contingent Valuation Method (Hanemann, 1984) was selected to estimate WTP. Data derives from a food consumption survey conducted in Buenos Aires city in April 2005. The parameters estimates for the selected products were obtained by applying a Binomial Multiple Logistic Regression.
The results indicate that Argentinean consumers are willing to pay a price premium to acquire better quality products. Indeed, this is conditioned by the effective prices in the domestic market, in which price premiums range from 6% to 200%, thereby restricting their acquisition. Besides, the scarce availability of these healthy products has also become another meaningful obstacle for domestic consumption expansion in Argentina.

KEYWORDS: Willingness to pay, Food quality attributes, Organic price premium, Argentina.

1. Introduction

Most food markets do not count on complete information about food quality for consumers. As a consequence, quality has become a crucial concept in the new approaches of the Demand Theory (Lancaster, 1966); and so, Antle (1999) started to incorporate it in food demand functions as an additional variable.
Quality is a wide and subjective notion that refers to different kinds of attributes that could either be verified by consumers or not, before or after purchasing food, e.g. colour, temperature, taste, nutritional facts, applied processes -such as irradiation or genetic manipulation- and added substances during the productive processes.
Quality uncertainty has played a key role in the literature about safety and products liability. Several articles have dealt with quality and uncertainty, the most relevant of which is that by Akerlof (1970), which demonstrates that, even though suppliers can determine quality by incurring greater costs, consumers cannot test quality before purchasing, and then bad goods tend to drive good ones out. Consumers acquire products based on their perceived quality expectations. The attributes of the quality-nutritional content, i.e.; food safety attributes; convenience; place and manner of production, including environmental production processes, are all valued in accordance with consumers' subjective perception.

When purchasing food, consumers make their choices by comparing prices and qualities. Such choices are definitely conditioned by the uncertainty they perceive in relation to the different qualities offered; in other words, by the information available to them. Before purchasing, consumers could get better informed, though to a certain extent, since that would imply additional search costs. (Andersen & Philipsen, 1998) Hence, food quality information is an attribute in itself and becomes a crucial factor when explaining the differences existing between demand profiles.

Throughout these last years, organic agriculture has undergone a remarkable expansion due, among other things, to the greater interest awoken in producers and consumers. Such interest arises from an awareness process that involves food safety concerns. These concerns are related with real or potential quality risks perceptions linked with technologies applied to food production and processing. (Henson, 1996)

In Argentina, key factors such us very good agro-ecological conditions; intensive labour requirements and increasing export perspectives for these differentiated foods, could transform organic production into an attractive activity for farmers, distributors and retailers, thereby improving the development of our regional economies. Even though Argentina relies on national organic dispositions which have turned it into the First Third Country with a national regulation adapted to the European Union requirements (1993)[1] as well as on a private certification system accredited by SENASA (National Service of Agrifood Quality and Safety) and on significant public research actions carried out by technological institutions such as the INTA (National Institute of Agricultural Technology) and universities, information scarcity remains a gap to be bridged as it confines supply and demand quantification and the potential market growth. (Rodríguez, 2005)

The total organic production in Argentina reached 71,748 Mt. in 2005 (SENASA, 2006); 94 percent was destined to the foreign market in the same period. The domestic market, on the hand, demanded as little as the remaining 6%. The biggest marketing export volumes are cereals -corn and wheat-, oils and soybean. Fruits -apples and pears- and industrialized products such as sugar and wines are placed behind; and aromatic herbs rank third. Cereals and oils are also central products in the domestic market due to their high volume, and vegetables and pulses are noteworthy because of their diversity.[2]

The organic sector in Argentina has grown thanks to its own efforts. No governmental direct subsidies or economic aids are provided to this sector. Some public funding for research and teaching activities are available, and other official export agencies help producers attend international fairs.

Along these lines, the INTA fosters key public research actions to develop new technologies and train farmers and the SAGPYA (National Agricultural Office) has implemented the National Program for the Development of Organic Production (PRONAO). This program aims at promoting organic product on a domestic basis, increasing the number of producers committed to this activity, developing new markets, and creating well-informed consumers.

In the Argentinean domestic market, many consumers are willing to pay higher prices for healthy products, i.e. organics, because they increase their utility level reducing health

[1] Since 1993, Argentina has been recognized as an organic certified country included in the list of Third Countries. This has enabled it to export organic product processed and certified in accordance with standards equivalent to those of the EU (International Federation of Organic Agriculture Movements - IFOAM).

[2] Other processed organc products such as olive oil, sugar, concentrated juices, honey and wine, regardless of teir low production volumes, are also attractive export alternatives. The European Union imorts more than 80% of the Argentine organic products, the rest is exported to the United States.

risks. Even if the part these "safe products" play in the food consumption budget is still small, they are considered a market niche of great potential growth.
The main restrictions to expanding the domestic demand is the lack of information available to consumers; prices over those of conventional foods; and the limited and erratic domestic supply. Besides, many consumers do not trust the certification proceedings carried out by private certification agencies. (Rodríguez, 2005)

2. Background

2.1 Estimation of Willingness to Pay (WTP)

Many consumers seek food safety and are willing to pay higher prices for "healthy or nutritive products" since they increase their utility level, reducing, at the same time, health risks. However, they are unable to ascertain food safety before purchase, being this the most important constraint to economic efficiency in the production and marketing of food safety. Since some of these health risks benefits are hard to assess, a method commonly applied to determine food safety benefits is estimating consumers´ willingness to pay for safer and better quality food. (Goldberg & Rosen, 2005)
Along these lines, the notion of *willingness to pay* could be defined as the sum of money representing the difference between consumers´ surplus before and after adding or improving a food product attribute. Van Ravenswaay & Wohl (1995) and Halbrendt *et al.* (1995) introduced models that estimate consumers' willingness to pay when adding or enhancing a given quality attribute. Such models lie on Lancaster approach (1966), which sustains that consumers directly derive utility from goods´ attributes.
When measuring willingness to pay (WTP), some methodologies apply primary data directly derived from consumers. These methods are Contingent Valuation, Conjoint Analysis and Experimental Auctions. Hedonic Prices is the most well-known method used indirect sources to infer consumers´ willingness to pay. While the methodologies in the first group lie on consumers´ elicited preferences, Hedonic Prices is based on consumers´revealed preferences. (Lee & Hatcher, 2001)

2.2 Measuring WTP by applying the Contingent Valuation Method (CVM)

In this study, the selection of the Contingent Valuation (Hanemann, 1984) as the method applied to estimate consumers´willingness to pay resulted from a theoretical and empirical analysis concerning those methods most commonly applied.
CVM creates a hypothetical market situation for a given good or service. It tends to quantify the value consumers confer to products by associating that value with the sum of money they are willing to pay. (Kawagoe & Fukunaga, 2001) Researches conducted by CVM offer a specific survey design, especially when they inquire about WTP. They solicit information about consumption behaviour, risks perceptions and experiences, and socio-demographic information. (Mitchell & Carson, 1989; Carson, 1999) Respondents face a hypothetical purchasing situation in which they have to answer how much money they are willing to pay for a given product, or if they are willing to pay a certain premium, expressed either as a sum of money or as a percentage above the reference price. (Carmona-Torres & Calatrava-Requena, 2006)
Before asking respondents, the researcher must define the different price premiums (so called "starting points"). A frequent way of so doing is by conducting a pilot test. Still, other criteria such as iterative selection (Cooper, 1993), random premiums definition (Gil *et al.,* 2000) or questions based on the effective prices at the survey's points (Ara, 2002) are also common. In the last option, chosen in this study, it is assumed that if the respondent

answers the questions in the supermarket or specialized store where he/she is shopping, they will be on the basis of the prices charged by such supermarket or store.

2.3 Determinants of WTP for Organic Food

Several references[3] in papers covering consumers´ WTP for attributes linked to food safety and food quality support the use of the Contingent Valuation Method; and many of them especially deal with WTP for organic food.

Most recent studies conducted on the potential market for organic agriculture have tried to establish connections between the WTP of these products and a particular lifestyle (Hartman & New Hope, 1997; Gracia *et al.,* 1998). Consumers segmentation based on those variables has resulted in several profiles of potential organic consumers. Despite the notorious ambiguity of the socio-demographic profile, (Thompson, 1998) generally speaking, these consumers show a purposeful attitude towards a balanced life between their duties and their free time; eating healthy food and decreasing agriculture impact on the environment. The choice of these differentiated foods is definitely related to nature and to the extent in which food safety concerns consumers. (Henson, 2001)

Results from empirical works carried out in countries with a significant level of organic food consumption demonstrate that the main reason why these foods are acquired is associated to health care, either because of disease suffering or disease prevention. (Kuchler *et al.,* 2000) Besides, due to their low pesticide-residue content, these products are considered as beneficial, at least speaking of vegetal-origin products. (Weaver *et al.,* 1992; Baker, 1999) As regard meat products, e.g. chicken meat, the risks perception linked to hormone use along the productive process is remarkable. (Farina & de Almeida; Rodríguez & Lacaze, 2005)

Earlier studies conducted in Buenos Aires[4] city (Rodríguez *et al.,* 2005; 2006), the most populated city in Argentina, concluded that Argentinean consumers are worried about healthy and nutritive food, unsafe productive processes and health care, which are key factors to organics consumption. Taste and nutritive attributes are other relevant factors mentioned as well.

Argentineans seem to be "Europeanized" in so far as they place no trust in the regulatory system's ability to monitor and guarantee food safety. (Rodríguez *et al.,* 2006) In Córdoba, Mendoza and Mar del Plata cities consumers do not trust organic certification bodies. They usually link organics with local, homemade and handmade food, and, therefore organic producers and retailers constitute important credibility sources, attracting relatively more consumers. (Rodríguez & Lacaze, 2005)

Socio-demographic variables have been widely explored as WTP predictors for organic food products. Gil *et al.* (2000) asserted that the variable that better approximates WTP is lifestyle rather than the usual socio-demographic factors.

Indeed, the relationship between income level and WTP offers controverted and contradictory empirical evidence. A greater degree of confidence in food supply was verified in higher income levels. (Buzby *et al.,* 1995) This would explain and determine, at the same time, the investment of a great proportion of income to purchasing food products perceived as safer and of better quality. (Govindasamy & Italy, 1999) Some studies have

[3] Eom (1994); Buzby *et al.* (1995, 1998); Cao *et al.* (1995); Caswell (1995); Cummings *et al.* (1995); Wessells & Anderson (1995); Govindasamy & Italia (1997, 1999); Fox *et al.* (1998); Huang *et al.* (1999); Kuchler & Golan (1999); Gil *et al.* (2000); Shogren *et al.* (2000); Stenger (2000); Govindasamy *et al.* (2001); Ara (2002); Loureiro *et al.* (2002); Corsi & Novelli (2003); Kola & Latvala (2003); Conner & Christie (2004); Travisi & Nijkamp (2004); Goldberg & Roosen (2005); Goldberg *et al.* (2006); Onozaka *et al.* (2006)

[4] Buenos Aires, capital of the Republic of Argentina, is the most densely populated city and centers most trading activities in the country.

found direct associations between income and WTP either regarding risk reduction, derived from consuming healthier and safer food products, (Jordan & Elnagheeb, 1991; Blend & van Ravenswaay, 1998) or certified quality (Misra *et al.,* 1991; Underhill & Figueroa, 1996).

Educational level turns out to be the most controverted socio-demographic predictor. Misra *et al.* (1991) obtained a negative correlation between education and fresh organic products consumption. Groff & Kreider (1993) observed that those consumers with lower educational instruction considered fresh organic products as of higher quality than conventional ones; and therefore, were willing to pay higher prices for them. Govindasamy & Italia (1999) also obtained an inverse relationship between WTP and education. To explain so, they formulated two observations. On the one hand, the lower the educational level, the higher the risk perception; and, on the other, the higher the educational level, the greater the confidence in production standards. In addition, Eom (1994) found that better educated consumers seem to be more reluctant to modifying their consumption habits, due to the relevance these people ascribe to the information concerning food risks of little or null probability of occurrence. He adds, as an explanation, that better educated people seem to understand scientific information related with food risks, and, therefore, are more skeptical about the alleged benefits that the less risky food would generate. Van Ravenswaay (1995) also affirmed that higher education respondents can easily access to trustful information sources about food risks and benefits and, generally speaking, they are less worried about these issues.

In Argentina, consumers´ perceptions about organic food quality are better WTP´s predictors than other socio-demographic variables such as respondent's gender or age. (Rodríguez *et al.,* 2006) The better educated consumers, who eat healthy food, and consider food control organisms as 'inefficient', are more likely to buy organic products. According to these results, educated people seem to be more exposed to diet and health information sources, and can better understand and process them.

Several researches have focused on the obstacles hindering organic food demand expansion. Higher prices and products shortage in supermarkets should be mentioned as the most relevant ones (Michelsen *et al.,* 1999; Richman & Dimitri, 2000; Gil *et al.,* 2000) together with the degree of relative satisfaction in relation to conventional food organic products and the level of information about food quality consumers have access to. (Morris, 1996; Roddy *et al.,* 1994; Pearson, 2001) Byrne *et al.,* (1991) asserted that prices are strong restrictive factors against organic market expansion. Govindasamy & Italia (1999) affirmed that the price premiums over conventional prices can become a barrier to those consumers who do not buy organics regularly. Due to the significant differences between WTP and current price premiums, organic food prices constitute a major obstacle to organics trading, at least from a consumers´ viewpoint. (Sánchez *et al.,* 1998; Thompson, 1999; Soler, 2000)

Rodríguez *et al.* (2006) highlight that Argentinean consumers would increase their organic consumption level if organic food were cheaper. This is explained by consumer price premiums which range from 0% to 250%.[5] Since higher prices and products scarcity in supermarkets are important constraints to organic consumption in the domestic market, these variables unfailingly affect consumers´ willingness to pay more. It is worth mentioning that the degree of relative satisfaction obtained from organic and conventional food constitutes a relevant factor when explaining consumers´ choices.

[5] Price premium is the additional percentage charged for organic products when compared with conventional products prices.

In the EU, the higher prices charged for organic products vary across countries and depending on the product, just like in Argentina. According to available data, in the EU price premiums range from 0% to 300%. (Hamm *et al.,* 2002)

3. Objective

The purpose of this paper is to estimate consumers´willingness to pay for different organic food products available in the Argentinean domestic market. The results yielded by this study are expected to provide some useful governmental evidence to support the promotion of organic production, regulation processes and labelling programs in Argentina so as to contribute to organic food domestic market expansion.

The following *hypotheses* are to be tested:

- As a quality attribute, the risk reduction associated with health care rises consumer's utility level and, consequently, asserts the willingness to pay for organic food products.
- The impact of regulation processes on the willingness to pay for organic unprocessed products is lower than for organic processed products.
- The highest willingnesses to pay for organic food products are not always in agreement with real market prices.

4. Data and methodology

4.1 Data

The data in this study derives from a food consumption survey conducted in Buenos Aires city, Argentina, in April 2005, by applying a semi-structured questionnaire. 301 surveys were completed by trained interviewers who intercepted respondents in the largest supermarket chains and also in an important specialized organic store.[6] The sample was based on age and gender local distribution pursuant to the last National Population Census in Argentina (INDEC, 2001), for respondents aged 18 or above with a medium-high socio-economic level.[7] Respondents were surveyed upon leaving the stores.
Table 1 provides the representativeness of the sample in terms of the demographic structure of Buenos Aires city population according to gender and age:

[6] Supermarket chains: Coto, Disco, Jumbo, Norte and Wall Mart. Specialised organic store: La Esquina de las Flores.
[7] As defined by the Argentine Marketing Association (AAM). [Available online]
URL: http://www.aam-ar.com

Table 1. Sample representativeness in terms of Buenos Aires city demographic structure according to gender and age (18-87 years old)

Comparison between Survey Sample[(1)] and Population Census in Buenos Aires City			
Demographic characteristics	***Categories***	***Relative frequency***	
		Representation in the survey sample	***Representation in Buenos Aires City***
Respondent's GENDER	Male	32%	44%
	Female	68%	56%
Respondent's AGE	18-24	15%	14%
(in years)	25-34	19%	20%
	35-49	26%	24%
	50-59	15%	15%
	60-87	25%	27%

Proportion of Buenos Aires city population in relation to Argentinean overall population			
	Buenos Aires City	**Argentina**	
Population	2,174,017	23,927,108	9%

[(1)] N = 301

Source: Consumption survey, Buenos Aires City/2005 and Population Census in Argentina (INDEC/2001).

The survey sample yields a higher female proportion as may be expected since grocery shopping is mostly a female activity. (Baker, 1999; Ara, 2002; Chen *et al.*, 2002)

A convenience sample was selected and applied due to the difficulty to spot the target population, i.e., individuals who usually (or frequently) shop organic foods (or did in the past). In this type of convenience samples, the probability of being selected is unknown. But with a theory-based model and using relatively balanced explanatory variables, a convenience sample could be used to obtain model-based inferences. (Brewer, 1999; Chow, 2002; Schonlau *et al.*, 2002)

4.2 Methodology

A hypothetical market situation for a good or service is created by means of the Contingent Valuation Method (CVM). Carson *et al.* (1994) documented well the advantages of CVM as the most widely used method for estimating willingness to pay. It constitutes a flexible measuring tool to deal with quality attributes changes. Besides, it is easy to apply and less expensive than other methods. The data used in the procedure derived directly from consumers.

The dichotomous question about WTP was asked following the procedure applied by Ara (2002). Therefore, each respondent was asked at the sampling point if he/she was willing to pay the difference between conventional and organic prices.

In order to obtain the parameters estimates for each selected product, a Binomial Multiple Logistic Regression was applied: Regular Milk, Leafy Vegetables, Whole Wheat Flour, Fresh Chicken and Aromatic Herbs. As a preliminary step, the estimated model was as follows:

$$WTPij = \alpha + \beta 1\,(Pj) + \beta 2\,Yj + \beta 3\,\pi j + F\left(Zj\right) \quad [1]$$

Where:

WTPij	i consumer´s willingness to pay for j selected food product;
α, $\beta 1$, $\beta 2$, $\beta 3$	Coefficients to be estimated, where P is the organic price premium;[8]

[8] This variable was calculated as follows: (Average organic price – Average conventional price) / average conventional price. The differences between average organic and

Y	Income level;
π	Risks and quality attributes perceptions;
Z	Socio-demographic characteristics.

This equation was estimated by Maximum likelihood, and WTP was calculated following the procedure used by Hanemann (1984), and applied by several studies (Donovan & Nicholls, 2003; Loureiro & Umberger, 2003; Afroz *et al.,* 2005):

$$WTPij = H + \frac{1}{\beta 1} \ln \left[\frac{1 + \exp\left[-\left(d + \beta 1 H\right)\right]}{1 + \exp\left(-d\right)} \right] \quad [2]$$

Where:

β1	Coefficient estimated for P variable (organic price premium);
H	Highest organic price premium observed in the market;
-d	= α + β2 Yj + β3 πj + F (Zj), according to [1];
j	Selected food products.

5. Results

5.1 Socio-demographic Sample Characterization

Sixty eight percent of the respondents were female. The average sample age was 44, and the highest absolute frequency ranged between 35-49 years, and 60 years or more.

Thirty four percent of the respondents sustained that they usually consumed organic food or at least had once in the past. These were called "organics consumers". The remaining 66% stated that they had never consumed organics or that did not know if they had done so. These were called "organics non-consumers".

Thirty eight percent of the respondents stated that they earned U$S 500 or less per month, while for the remaining 62%, the household monthly income was above U$S 500. Still while 67% of organics consumers earned above U$S 500, these differences are not so significant for non-consumers.[9]

Regarding educational level, 20 percent of the respondents had not completed high school, and more than a half had gone into further education, even though they had not graduated. 29% held a university or postgraduate degree.

The sample descriptive results are shown in Table 2 below.

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conventional prices are referred to in the paper as "price premiums", and expressed in percentages. See Section 5.2 for prices collection procedure and average prices calculation.

[9] For comparative purposes, notice that in April 2005, an Argentinean citizen living in Buenos Aires city was considered below the poverty line if he/she made less than U$S 83.35 per month. Therefore, a 4-member family with 2 children had to earn U$S 285 monthly to be above such poverty line. (INDEC, 2005)

Table 2. Socio-demographic Sample Characterization

Socio-demographic Variables	Total Sample (100%)	Organics consumers (34%)	Organics non consumers (66%)
Respondent's gender			
Female	**68%**	**66%**	**69%**
Male	32%	34%	31%
Respondent's age (in years)			
18-24	15%	16%	15%
25-34	19%	19%	20%
35-49	**26%**	**27%**	**26%**
50-59	15%	16%	15%
60 or +60	**25%**	**23%**	**23%**
Respondent's household's monthly income [(1)]			
≤ U$S 500	38%	33%	**45%**
> U$S 500	**62%**	**67%**	**55%**
Respondent's educational level			
Unfinished High School	**20%**	10%	24%
Unfinished University	**51%**	54%	50%
University or Postgraduate degree	**29%**	36%	25%

(1) Exchange Rate: 3 Argentinean Pesos ($) equals 1 U.S. Dollar (U$S).
Source: Author's Calculation. Consumption survey, Buenos Aires City/2005

5.2 Current Organic Price Premiums in the Domestic Market

The price of the five selected food products was provided in the sampled stores. In accordance with the aim of this study, average price premiums were calculated and expressed in percentages.
The selected products´ description is displayed in Table 3. This selection is justified by different consumers´ perceptions linked to the productive processes risks involved and the confidence the nutritional information in the organic food labels provides.

Table 3. Products´ Prices Collection

Selected Product	*Description*	*Packaging*	*Net Content*
Regular Milk	Regular Milk	Carton	1 lt.
Leafy Vegetables	Fresh Leafy Vegetables: Chard, Green Onion, Parsley, Leeks, Cabbage, Rocket and Chicory Escarole	Plastic trays	½ kg.
Whole Wheat Flour	Whole Wheat Flour	Carton	1 kg.
Fresh Chicken	Fresh Chicken	Plastic trays	1 unit
Aromatic Herbs	Tarragon Oregano Black Pepper	Plastic envelopes	15 gr. 20 gr. 50 gr.

Source: Author's Calculation. Consumption survey, Buenos Aires city/2005

Prices result from the interaction of supply and demand, whose relationship is determined by product's availability and demand. Organics price premiums reflect both the higher costs and the consumers´ WTP for the product itself. Also, the relative degree of satisfaction between organic and conventional available options, and the market (domestic or foreign) where they are sold.
Price premiums gaps were estimated by comparing current prices data with the results of a previous study also conducted in Buenos Aires city. (Rodríguez *et al.*, 2003) Available data

correspond to 2005-2002, and estimations were offered only in the cases in which the products had been available in both reference years.

Table 4. Organic over Conventional Products Price Premiums Gaps

Organic over Conventional Products Price Premiums Gaps – Argentinean Domestic Market			
Selected Product	*2002 Price Premium*	*2005 Price Premium*	*2005-2002 Gap Change*
Regular Milk	-0.61%	13.66%	↑
Leafy Vegetables	21.80%	83.87%	↑
Whole Wheat Flour	172.31%	6.15%	↓
Fresh Chicken	(1)	25.15%	?
Aromatic Herbs	62.35%	201.33%	↑

(1) No data available.
Source: Author's Calculation. Consumption survey, Buenos Aires City/2005.

Table 4 above shows the differences among products. Whole wheat flour is within the narrowest price premium gap. The 10% to 30% premium gap encompasses regular milk and fresh chicken; and finally, leafy vegetables and aromatic herbs yield the widest premium gaps.
Ever since the devaluation of the peso in 2002, the prices of conventional and organic food products have increased; however, in relative terms, higher organic prices seem to be lower. This has led to relative reductions in the premiums between organic and conventional products prices, just as the case of whole wheat flour.
Argentinean production has foreign markets as its main destiny. Therefore, the domestic prices of tradable goods rise in the country as export prices do. This is the case of aromatic herbs.
Organic fresh chicken (unavailable in the domestic market in 2002) yielded in 2005 an average 25% premium price over the conventional fresh chicken price sold in the sampled stores.
While in 2002 organic regular milk seemed to be cheaper than conventional milk, in 2005 the opposite occurred with a 13% price premium. This could be explained by the sharp increase of dairy products since 2003. The same applies to organic leafy vegetables which registered a dramatic rise during 2005-2002.
According to an EU Report,[10] price premiums are in general lower for processed products (e.g. whole wheat flour and regular milk) than for unprocessed products (e.g. fresh chicken and leafy vegetables). If Table 4 is analysed, it can be concluded that this trend replicates in Argentina. Yet, the opposite applies to aromatic herbs, because of the incidence of export prices on domestic prices, as explained above.

[10] Commission Européenne G2 EW – JK D 2005 Report.

5.3 Empirical Results of Binomial Logit Models

The parameters estimates for each selected product were obtained by applying a Binomial Multiple Logistic Regression using the Statistical Package for Social Sciences (SPSS version 11, 2001). Table 5 lists the explanatory variables selected in the Logit Models:

Table 5. Description of Models´ Variables

	Dependent Variable	***Categories***
WTP	*If the respondent is willing to pay the current price premium for the product*	*1 = Yes, 0 = Otherwise*
	Categorical Explanatory Variables	***Categories***
CONSUMP	*If organics are usually consumed in the respondent's household*	*1 = Yes, 0 = Otherwise*
LABELS	*If the respondent is used to reading food labels when buying*	*1 = Yes, 0 = Otherwise*
PRESERV	*If the respondent perceives the high risks of preservatives in regular milk content*	*1 = Yes, 0 = Otherwise*
HORMONE	*If the respondent perceives the high risks of hormones in conventional fresh chicken content*	*1 = Yes, 0 = Otherwise*
PESTICIDEV	*If the respondent perceives the high risks of pesticides in conventional leafy vegetables content*	*1 = Yes, 0 = Otherwise*
PESTICIDEF	*If the respondent perceives the high risks of pesticides in conventional whole wheat flour content*	*1 = Yes, 0 = Otherwise*
DIFORCON	*If the respondent believes that there is no significant difference between organic and conventional food products*	*1 = Yes, 0 = Otherwise*
RISKSCON	*If the respondent believes that there are no significant risks when consuming conventional food*	*1 = Yes, 0 = Otherwise*
AVAILABLE	*If the respondent would be willing to buy organics if they were more available*	*1 = Yes, 0 = Otherwise*
REGULATION	*If the respondent agrees to the need of a food quality regulation system*	*1 = Yes, 0 = Otherwise*
	Quantitative Explanatory Variables (in percentages)	
RMPP	*Organic regular milk price premium over conventional regular milk price*	
LVPP	*Organic leafy vegetables price premium over conventional leafy vegetables price*	
WWFPP	*Organic whole wheat flours price premium over conventional whole wheat flours price*	
FCPP	*Organic fresh chicken price premium over conventional fresh chicken price*	
AHPP	*Organic aromatic herbs price premium over conventional aromatic herbs price*	

Source: Author's Calculation. Consumption survey, Buenos Aires City/2005.

Tables 6-A to 6-E below display the estimated models. For all products under consideration, models were estimated taking into account two income levels: U$S 500 or less and more than U$S 500.

Table 6-A. Results from the Estimated Logit Models – Regular Milk

Model 1: Regular Milk – Respondent's Household's Monthly Income > U$S 500					
	Parameter estimate (β)	***Std. Error***	***Wald Statistic***	***p value***	***Odds ratio (e^{β})***
CONSUMP	1.085	0.428	6.423	0.011 **	2.958
AVAILABLE	1.394	0.438	10.122	0.001 ***	4.031
REGULATION	1.078	0.523	4.251	0.039 **	2.938
RMPP	0.052	0.029	3.234	0.072 *	1.053
Constant	-2.214	0,729	9.216	0.002***	0.109
n_1 = 146 (48% of the total sample) - Notes: Cut-off = 0.50 - *** 1%, ** 5%, * 10% significance levels.					
Model 2: Regular Milk – Respondent's Household's Monthly Income ≤ U$S 500					
	Parameter estimate (β)	***Std. Error***	***Wald Statistic***	***p value***	***Odds ratio (e^{β})***
CONSUMP	1.318	0.656	4.039	0.044 **	3.737
AVAILABLE	2.453	0.576	18.142	0.000 ***	11.629
REGULATION	1.538	0.615	6.261	0.012 **	4.657
RMPP	0.084	0.049	2.940	0.086 *	1.088
Constant	-3.418	1.077	10.077	0.002 ***	0.033
n_2 = 99 (33% of the total sample) - Notes: Cut-off = 0.50 - *** 1%, ** 5%, * 10% significance levels.					

Source: Author's Calculation. Consumption survey, Buenos Aires City/2005.

The following models show the estimated parameters only for high income levels (above U$S 500), since for U$S 500 or less, some of the analyzed variables were not statistically significant:

Table 6-B. Results from the Estimated Logit Models – Leafy Vegetables

Model 3: Leafy Vegetables – Respondent's Household's Monthly Income > U$S 500					
	Parameter estimate (β)	***Std. Error***	***Wald Statistic***	***p value***	***Odds ratio (e^{β})***
CONSUMP	1.231	0.436	7.956	0.005 ***	3.423
PESTICIDEV	-0.982	0.479	4.201	0.040 **	0.375
AVAILABLE	1.645	0.449	13.396	0.000 ***	5.179
LVPP	-0.050	0.027	3.385	0.066 *	0.951
Constant	4.098	2.392	2.936	0.087 *	60.230
n_3 = 143 (47% of the total sample) - Notes: Cut-off = 0.50 - *** 1%, ** 5%, * 10% significance levels.					

Source: Author's Calculation. Consumption survey, Buenos Aires City/2005.

Table 6-C Results from the Estimated Logit Models – Whole Wheat Flour

Model 4: Whole Wheat Flour – Respondent's Household's Monthly Income > U$S 500					
	Parameter estimate (β)	***Std. Error***	***Wald Statistic***	***p value***	***Odds ratio (e^{β})***
PESTICIDEF	-1.612	0.491	10.770	0.001 ***	0.200
LABELS	1.503	0.735	4.179	0.041 **	4.494
AVAILABLE	1.589	0.491	10.491	0.001 ***	4.898
REGULATION	1.478	0.596	6.140	0.013 **	4.384
WWFPP	0.232	0.083	7.704	0.006 ***	1.261
Constant	-3.349	1.139	8.649	0.003 ***	0.035
n_4 = 139 (46% of the total sample) - Notes: Cut-off = 0.50, - *** 1%, ** 5%, * 10% significance levels.					

Source: Author's Calculation. Consumption survey, Buenos Aires City/2005.

Table 6-D. Results from the Estimated Logit Models – Fresh Chicken

Model 5: Fresh Chicken – Respondent's Household's Monthly Income > U$S 500					
	Parameter estimate (β)	***Std. Error***	***Wald Statistic***	***p Value***	***Odds ratio (e^{β})***
CONSUMP	1.584	0.493	10.330	0.001 ***	4.873
HORMONE	-1.305	0.549	5.650	0.017 **	0.271
LABELS	1.276	0.720	3.138	0.076 *	3.581
AVAILABLE	1.626	0.481	11.431	0.001 ***	5.083
REGULATION	1.589	0.576	7.619	0.006 ***	4.901
FCPP	0.076	0.031	5.797	0.016 **	1.079
Constant	-4.321	1.288	11.251	0.001 ***	0.013
n_5 = 143 (47% of the total sample) - Notes: Cut-off = 0.50 - *** 1%, ** 5%, * 10% significance levels.					

Source: Author's Calculation. Consumption survey, Buenos Aires City/2005.

Table 6-E. Results from the Estimated Logit Models – Aromatic Herbs

Model 6: Aromatic Herbs – Respondent's Household's Monthly Income > U$S 500					
	Parameter estimate (β)	***Std. Error***	***Wald Statistic***	***p Value***	***Odds ratio (e^{β})***
CONSUMP	1.636	0.553	8.768	0.003 ***	5.135
LABELS	1.503	0.717	4.393	0.036 **	4.493
DIFORCON	-0.938	0.491	3.657	0.056 *	0.391
RISKSCON	1.129	0.506	4.984	0.026 **	3.094
AVAILABLE	1.325	0.471	7.908	0.005 ***	3.762
REGULATION	1.578	0.586	7.250	0.007 ***	4.848
AHPP	0.017	0.009	4.025	0.045 **	1.018
Constant	-6.996	2.163	10.462	0.001 ***	0.001
n_6 = 138 (46% of the total sample) - Notes: Cut-off = 0.50 - *** 1%, ** 5%, * 10% significance levels.					

Source: Author's Calculation. Consumption survey, Buenos Aires City/2005.

After testing the Models´ Performance, Pearson's Chi-Square Statistic indicates the model adequate fit.

The alternative forms of R^2 for Binomial Logit Models are Cox & Snell's R^2 and Nagelkerke's R^2. It could be observed that Model 2 yields noteworthy values of 0.352 and 0.454, respectively. (Ryan, 1997; Menard, 2000)

The Overall Predicted Power is above 73% in all Models. The Concordance Index estimates the predictions and outcomes probability of concordance. The Index values are above 0.50 for all the estimated models, indicating that predictions are better than random guessing. (Agresti, 2002) Results are shown in Table 7.

Table 7. Models´ Performance

Model	Chi-Square Statistic [1]	Cox & Snell's R^2	Nagelkerke's R^2	Overall Predicted Power	Concordance Index
Regular Milk[2]	24.668	0.155	0.217	74.70%	0.72
Regular Milk[3]	38.914	0.325	0.454	81.80%	0.84
Leafy Vegetabl.	26.959	0.172	0.241	73.40%	0.74
W. Wheat Flour	37.399	0.236	0.332	77.00%	0.80
Fresh Chicken	38.824	0.238	0.334	75.50%	0.80
Aromatic Herbs	35.912	0.229	0.322	76.10%	0.78

[1] P value = 0.000
[2] Estimations for high income level [3] Estimations for low income level
Source: Author's Calculation. Consumption survey, Buenos Aires City/2005.

5.4 Odds Ratio and Willingness to Pay Estimation

The odds ratio analysis, based on the results listed in Tables 6-A to 6-E, is useful to determine the contribution of the explanatory variables in WTP estimation for each selected food.

Models 1 and 2: Regular Milk

For both income levels, organic regular milk WTP is largely explained by the scarce availability of this product in the market, since the highest odd ratio variable is AVAILABLE. Nevertheless, relatively speaking, this explanatory factor is more relevant for lower income levels (Model 2, households whose monthly income is below U$S 500). Besides, for both models, the need to count on a food regulatory system (REGULATION) ranks as the second explanatory factor.
For all the variables analyzed, the numeric values of their corresponding odds ratio are higher in Model 2 than in Model 1. The fact that the odd ratio corresponding to REGULATION obtained for Model 2 doubles that of Model 1 is striking.
When analyzing respondents´ monthly income level and educational level, the fact that, in our sample, lower income households yield a higher relative proportion of lower educational level respondents (28% vs. 10%) and a smaller proportion of university graduates or postgraduates respondents (13% vs. 40%) should not be overlooked. By means of this parallelism, risks perceptions associated to products quality being higher for lower educational levels gets verified and the conclusions reached by some other research works[11] validated. This is because those who have attained higher educational level have access to better sources of information, which allows them to relativize the risks advertised and/or to trust more in regulatory standards. Therefore, the value yielded by the odd ratio for REGULATION in lower income levels (4.66) is above that of higher income levels (2.94), and, by so being, its relative weight in WTP estimation for lower income levels (Model 2) is higher.
The variable PRESERV was not meaningful for the model explaining WTP for organic regular milk. In this respect, and in agreement with the conclusions drawn by other research

[11] Eom (1994); Van Ravenswaay (1995) and Govindasamy & Italia (1999).

works[12], the positive perception conventional regular milk has, plays a role in consumers´ valuations. In other words, and particularly for this product, the degree of relative satisfaction among the available varieties of organic and conventional milk favours the latter. In this regard, and applicable to both income levels, 65% of the respondents ascribed great importance to the brands they choose, as they constitute a confidence factor when it comes to shopping choices.

As seen in Table 8, while higher income level respondents are willing to pay 12.2% (on average) more for organic regular milk than for conventional regular milk, i.e., an extra U$S 0.08/lt over the conventional milk average price, lower income levels would pay 11.6% more, i.e., an extra U$S 0.075/lt, for the organic variety. In short, even though explanatory variables operate on a different basis, as each model behaves differently, there would be no substantial differences in the estimated WTP values for both income levels.

It is worth mentioning at this point that both WTPs estimated for lower income levels are below organic regular milk market price; 1% less for higher income levels and 2% for lower income levels.

Model 3: Leafy Vegetables

Among respondents whose monthly income is above U$S 500, WTP for organic leafy vegetables is mainly explained by the product shortage in the market (AVAILABLE), since respondents would buy more organic leafy vegetables, were they readily available. These results coincide with those found by Michelsen *et al.* (1999) and by Richman & Dimitri (2000). Moreover, knowledge on organics resulting from the consumption of this type of foods (CONSUMP) also contributes to consumers´ willingness to acquire organic leafy vegetables.

Without doubt, those who choose these vegetables demand a highly differentiated product in terms of packaging, presentation in container, serving size, origin, etc., and, therefore, their target is expected to be of relatively high income. In this regard, a high proportion of the respondents included in this analysis (78%) considers that knowing leafy vegetables origin keeps up confidence when it comes to shopping decisions.

The above mentioned is also connected with the perception of high health risks associated to pesticides in the conventional varieties of these products. This turned out to be a significant variable in the Model (PESTICIDEV), even though for WTP estimation, its relative importance is lesser. The empiric evidence of these results is consistent with those by Weaver *et al.* (1992) and Baker (1999).

The results in Table 8 demonstrate that higher income levels are willing to pay for organic leafy vegetables 87% more (on average) than for conventional leafy vegetables, i.e., an extra U$S 0.96/kg over the conventional leafy vegetables average price. Even so, the estimated WTP turns out to be hardly 1% higher than the market price for organic leafy vegetables.

Model 4: Whole Wheat Flour

WTP for organic whole wheat flour of respondents whose monthly income is above U$S 500 is explained mainly by regular label reading when making their shopping decisions (LABELS). Besides, 78% of the respondents regularly looks for information about products quality, and thinks necessary to count on a quality regulatory system (REGULATION). It is also worth noticing, though to a lesser extent, the scarcity of this product in the market (AVAILABLE). These results are consistent with those by Michelsen *et al.* (1999); Richman & Dimitri (2000); Gil *et al.* (2000) and Pearson (2001).

[12] Roddy *et al.* (1994); Morris (1996) and Pearson (2001).

Consumers perceive whole wheat flour as a natural and healthy product. In this sense, 65% of the respondents affirms that knowing its origin as well as the store constitute confidence factors when it comes to shopping choices.
Even to a lesser degree, WTP is further explained by high health risks perceptions associated to pesticides in the conventional varieties of these products (PESTICIDEF). In addition, 68% of the respondents believes that the greater this product processing, the higher distrust its quality arises.
Table 8 shows that, for higher income levels in this sample, WTP for organic whole wheat flour is, on average, 7.5% higher if compared to the price paid for conventional whole wheat flour, i.e., an extra U$S 0.05/kg over the conventional whole wheat flour average price; this WTP being below the organic whole wheat flour market price in as much as 3%.

Model 5: Fresh Chicken

High income level respondents assert to be willing to pay price premiums for organic fresh chicken mainly due to the need to count on a quality regulatory system (REGULATION). This result reinforces those previously found in focus groups studies, in which the degree of concern consumers expressed in view of the discretion evidenced in the fattening productive process of some varieties of conventional chicken was evidenced, as well as the notorious lack of state control by regulatory bodies. (Farina & de Almeida, 2003; Rodríguez & Lacaze, 2005)
On the other hand, the scarcity of this product in the market[13] (AVAILABLE) together with the regular label reading by consumers when they make their purchase decisions (LABELS) play a minor, though significant, role in WTP for the organic variety of this product. Finally, organic food knowledge resulting from frequent consumption of some of these products (CONSUMP) as well as the perception of high health risks associated to hormones present in the conventional varieties of these products (HORMONE) contribute, to a lesser extent, to WTP understanding. In this sense, 60% of the respondents sustains that knowing the product's origin constitutes a confidence factors when it comes to shopping choices, while 68% of the respondents believes that the greater this product processing, the higher distrust its quality arises.
Table 8 shows that, for higher income levels in this sample, WTP for organic fresh chicken is, on average, 20% higher if compared to the price paid for conventional fresh chicken, i.e., an extra U$S 0.39/kg over the conventional fresh chicken average price; this WTP being below the organic fresh chicken market price in as much as 4%.

Model 6: Aromatic Herbs

WTP for organic aromatic herbs of respondents whose monthly income is above U$S 500 is explained mainly by regular label reading when making their shopping decisions (LABELS) as well as by the need to count on a quality regulatory system (REGULATION).
It is also worth noticing, though to a lesser extent, the perception of this product shortage in the market (AVAILABLE). This is explained by the fact that most organic aromatic herbs production is exported, as export prices are more profitable. Knowledge and identification of organic food is also relevant, and evidenced in CONSUMP, RISKSCON and DIFORCON. In this sense, 68% of the respondents sustains that knowing the product's origin constitutes a confidence factors when it comes to shopping choices, while 60% of the respondents believes that the greater this product processing, the higher distrust its quality arises.

[13] Just as mentioned above, the availability of organic chicken in the domestic market is recent and erratic, thereby preventing prices gap trend analysis for the triennium 2005-2002

Table 8 shows that for higher income levels in this sample, WTP for organic aromatic herbs is, on average, 110% higher if compared to the price paid for conventional aromatic herbs, i.e., an extra U$S 19/kg over the conventional aromatic herbs average price; this WTP being below the organic aromatic herbs market price in as much as 30%.

Table 8. Total WTPs Estimated by Products

Model	*Mg WTP* [3]		*Av Prices* [4]		*Av WTP* [5]	*Relative Difference*[6]
	%	*U$S*	*Conv.*	*Org.*		
Model 1: Regular Milk [1]	12.2%	0.08	0.65	0.74	0.729	-1%
Model 2: Regular Milk [2]	11.6%	0.075	0.65	0.74	0.725	-2%
Model 3: Leafy Vegetables [1]	87%	0.96	1.10	2.03	2.05	1%
Model 4: Whole Wheat Flour [1]	7.5%	0.05	2.03	2.15	2.08	-3%
Model 5: Fresh Chicken [1]	20%	0.39	1.95	2.43	2.33	-4%
Model 6: Aromatic Herbs [1]	110%	19.02	17.29	51.60	36.32	-30%

Exchange Rate: 1 U.S. Dollar (U$S) equals 3 Argentinean Pesos ($)
[1] Estimations for high income level [2] Estimations for low income level
[3] Extra money people are willing to pay over the price of conventional products, in %/kg (or lt) and U$S/kg (or lt)
[4] Average prices of conventional and organic products, in U$S/kg (or lt)
[5] The average price of conventional products people usually buy plus the average amount people are willing to pay for the organic product in question, in U$S/kg (or lt)
[6] Relative difference between average WTP [5] and organic average prices [4].
Author's Calculation. Consumption survey, Buenos Aires City/2005.

To sum up, it is worth mentioning that, considering the effective prices when the study was conducted, the WTPs for each organic product analyzed were explained by a set of factors related to food safety concerns involving real or potential quality risks perceptions and, as a consequence, perceived quality expectations and information availability. Still, the relative importance of these factors is different when WTPs are explained for each product. Table 9 below synthesizes the statement above:

Table 9. WTPs´ Main Explanatory Factors

Model	Main Explanatory Factors
Models 1 y 2: Regular Milk	Perception of product scarcity in the market. Need to count on a quality regulatory system.
Model 3: Leafy Vegetables	Perception of product scarcity in the market. Knowledge about organics resulting from prior/habitual consumption of this type of foods.
Model 4: Whole Wheat Flour	Regular label reading of goods. Need to count on a quality regulatory system.
Model 5: Fresh Chicken	Need to count on a quality regulatory system.
Model 6: Aromatic Herbs	Regular label reading of goods. Need to count on a quality regulatory system.

Author's Calculation. Consumption survey, Buenos Aires City/2005.

The key factor for organics consumption in Argentina seems to be the concern for a regulatory system. For all the estimated models, even though 74% of the respondents affirms that the regulatory bodies are inefficient, 70% believes that food regulation should be public rather than private.
Regulations concerns with respect to organic fresh chicken, whole wheat flour and aromatic herbs are highly significant. Therefore, the hypothesis #2 -*The impact of regulation processes on the willingness to pay for organic unprocessed products is lower than for organic processed products*- has been rejected.

In relative terms, consumers perceive, to a great extent, the scarcity of these organic products in the market.
Undoubtedly, current prices play a critical part in WTP determination for these differentiated quality products. In all the estimated models, 75% of the respondents states that they would buy organics more frequently, if these were cheaper.
Based on the results listed in Table 8 above, the prices consumers are willing to pay for organic regular milk, whole wheat flour and fresh chicken are below market prices, though near. Hence, if effective prices were slightly reduced, these differences would get reduced as well, and, in consequence, consumers would have greater access to these products of better quality. Therefore, the hypothesis #3 -*The highest WTPs for organic food products are not always in agreement with real market prices*- has not been rejected.
The WTP estimated for organic leafy vegetables is slightly above the effective market price, thereby fostering optimum growth perspectives for its production, even when the regular supply of these vegetables in the market remains a real challenge for producers.
On the other hand, organic aromatic herbs clearly represent a restriction to consumption, due to their high prices in the domestic market, which are exceedingly influenced by the high revenues obtained when exported.
As mentioned before, in Argentina consumers´ perceptions about organic food quality are better WTP´s predictors than the socio-demographic variables. (Rodríguez *et al.,* 2006)

6. Final remarks

Just as in the rest of the world, organic products consumption in Argentina is explained, to a large extent, by their better quality -in terms of packaging, nutritional benefits and nutritional information-, their market availability -especially for their continuity and variety of supply available-, and by the degree of credibility of the standards applied and certification systems. Yet, these products prices as well as the purchasing power consumers have are also central explanatory factors.
The results of WTP estimates obtained for the selected products indicate that organic products are positively valued in Argentina, since consumers affirm to be willing to pay price premiums to acquire these products of better quality. Such results are undoubtedly conditioned by the effective prices in the domestic market, which, in turn, are conditioned by the incidence of export prices, as the main destiny of organic products production in Argentina is the foreign market.
This study carried out in the main consumption and domestic distribution centre, Buenos Aires city, where the highest absolute and relative income levels are evidenced, verifies that those consumers whose income is above U$S 500 are worried about products quality as well as about health risks connected to pesticide-residue and hormone-treated product. As a consequence, they look for and persistently request information, demanding the implementation of an efficient food quality regulatory system. The concern consumers express regarding current regulatory and controlling bodies is worth noticing as well as their preference for a public system.
These consumers know what organics stands for, they perceive products scarcity and irregular availability in the market, and they would be willing to increase consumptions if these products were cheaper. The price premiums in the market depend on the product type but, regarding the scrutinised products, they range between 6% and 200%. Taking into consideration that one of the final aims of every food policy should be consumers´ health, the high premiums of effective prices question or, at least, condition the purchase of these healthy products, even when an important population sector expresses its true desire to acquire them. On the other hand, the limited possibilities lower income level households have to access organic products are clearly evidenced.
To conclude, scarcity as well as high price premiums are identified as the most difficult obstacles to overcome when it comes to domestic consumption expansion in Argentina.

The involvement of general food retailers in the organic food market is of major importance and should be encouraged in order to increase organic products market share. Therefore, an increase in production levels is a must together with reductions in production, processing and/or trading costs, which, in turn, translate into sale price reductions, and into an increase of organic products consumption. Lower distribution costs constitute a contributing factor, which reduce consumer price premiums by involving general food retailers.

Most countries with lower consumer price premiums have a common national label, and such label recognition by consumers is usually high. Clear recognition is a pre-requisite if organic products are to break free from niche product status. This is another key issue Argentina still has to sort out if it wishes to expand in the organic domestic market.

As mentioned in other studies, pull strategies should be applied to promote organic market growth. To do so, the organic market actors must convince themselves that there is a growing consumer demand for organic food and that any efforts they make to increase the supply of organic products will enhance their competitiveness; however, a high level of market transparency must be assured.

Argentinean current system devotes most of its resources to those enterprises and actors already inserted in the global economic system, and does not contribute to smallholders' farms inclusion through regional development programs, thereby strengthening the asymmetric distribution of benefits. The potential growth of the domestic market should be encouraged as a step towards targeting foreign markets. (Rodríguez, 2005)

Given that scenario, the government goal should be to support already operating markets, assuring an equal development of both supply and demand. As consumers claim, research, consumer food education and counselling programs should be further supported. In Argentina, efficient government actions need be directed towards a stricter control system; a better coordination between public and private organizations and a long-term planning for the organic sector.

References

Afroz, R.; Hassan, M.; Awang, M. & Ibrahim, N. (2005). Willingness to pay for air quality improvements in Klang Valley Malaysia. *American Journal of Environmental Sciences, 1(3): 194-201.*

Akerlof, G. (1970). The market for lemons: Quality uncertainty and the market mechanism. *Quarterly Journal of Economics, 84, 488-500.*

Agresti, A. (2002). An introduction to categorical data analysis. John Wiley & Sons INC, Canada.

Andersen, E. & Philipsen, K. (1998) The evolution of credence goods in customer markets: Exchanging ´pigs in pokes´. [Draft]

Antle, J. (1999). The New Economics of Agriculture. *American Journal of Agricultural Economics, Proceedings, 81(5): 993-1010.*

Ara, S. (2002). Environmental evaluation of organic rice: A case study in the Philippines. M.S. Thesis, Kobe University, Japan. [Available from the author]

Baker, G. (1999). Consumer preferences for food safety attributes in fresh apples: Market segments, consumer characteristics, and marketing opportunities. *Journal of Agricultural and Resource Economics, 24 (1): 80-97.*

Bishop, R. & Heberlein, T. (1979). Measuring values of extramarket goods: Are indirect measures biased? *American Journal of Agricultural Economics, 61: 926-930.*

Blackburn, M.; Harrison, G. & Rutström, E. (1994). Statistical bias functions and informative hypothetical surveys. *American Journal of Agricultural Economics, 76: 1084-1088.*

Blend, J. & van Ravenswaay, E. (1998). Consumer demand for ecolabelled apples: Survey Methods and descriptive results. Staff Paper 98-20. Dept. of Agricultural Economics, Michigan St. University.

Brewer, K. (1999). Design-based or prediction-based inference? Stratified random vs. stratified balanced sampling. *International Statistical Review, 67: 35-47.*

Buzby, J.; Fox, J.; Ready, R. & Crutchfield, S. (1998). Measuring consumer benefits of food safety risk reductions. *Journal of Agricultural and Applied Economics, 30(1): 69-82.*

Buzby, J.; Ready, R. & Skees, J. (1995). Contingent valuation in food policy analysis: A case study of pesticide-residue risk reduction. *Journal of Agricultural and Applied Economics, 27(2): 613-625.*

Byrne, P.; Toensmeyer, U.; German, C. & Muller, H. (1991). Analysis of consumer attitudes toward organic produce and purchase likelihood. *Journal of Food Distribution Research, 6/91: 49-62.*

Cameron, T. & Quiggin, J. (1994). Estimation using contingent valuation data from a ´dichotomous choice with follow-up questionnaire. *Journal of Environmental Economics and Management, 27: 218-234.*

Cao, K.; Gibson, J. & Scrimgeour, F. (1995). An experimental approach to estimating willingness to pay for improvements in food safety. [Available on line] URL:http://www.agric.uwa.edu.au/ARE/AARES/Conf2005/PapersPDF/CaoAARES2005.pdf

Carmona-Torres, M. & Calatrava-Requena, J. (2006). Bid design and its influence on the stated willingness to pay in a contingent valuation study. Contributed paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-18, 2006. [Available on line] URL: http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=22558&ftype=.pdf

Carson, R. (1999). Contingent valuation: A user's guide. Discussion Paper 99-26. University of California, San Diego.

Carson, R.; Flores, N. & Meade, N. (2001). Contingent valuation: Controversies and evidence. *Environmental and Resource Economics, 19(2): 173-210.*

Carson, R.; Wright, J.; Alberini, A.; Carson, N. & Flores, N. (1994). A bibliography of contingent valuation studies and papers. NRDA. La Jolla, CA; Natural Resource Damage Assessment.

Censo Nacional de Población y Vivienda 2001. Resultados definitivos por Provincias, para la ciudad de Buenos Aires. [Disponible en línea] URL: http://www.indec.gov.ar/censo2001s2_2/ampliada_index.asp?mode=02

Chen, K.; Ali, M.; Veeman, M.; Unterschultz, J. & Le, T. 2002. Relative importance rankings for pork attribute by Asian-origin consumers in California: Applying an ordered Probit Model to choice-bases sample. *Journal of Agricultural and Applied Economics, 34 (1): 67-69.*

Chow, S. (2002). Issues in statistical inference. *History and Philosophy of Psychology Bulletin, 14(1): 30-41.*

Commission Européenne. Direction Générale de L´Agriculture et du Développement Rural. Organic Farming in the European Union. Facts and Figures. Report G2 EW – JK D (2005). [Available online] URL: http://ec.europa.eu/agriculture/qual/organic/facts_en.pdf

Conner, D. & Christy, R. (2004). The organic label: How to reconcile its meaning with consumer preferences. *Journal of Food Distribution Research, 35 (1): 40-43.*

Cooper, J. (1993). Optimal bid selection for dichotomous choice contingent valuation surveys. *Journal of Environmental Economics and Management, 24: 25-40.*

Corsi, A. & Novelli, S. (2003). Measuring quantity-constrained and maximum prices consumers are willing to pay for quality improvements: The case of organic beef meat. Contributed paper selected for presentation at the 25th International Conference of Agricultural Economists, Durban, South Africa, August 16-22, 2003.

Cummings, R.; Harrison, G. & Rutström, E. (1995). Home-grown values and hypothetical surveys: Is the dichotomous choice approach incentive-compatible? *American Economic Review, 85(1): 260-266.*

Dankers, C. & Liu, P. (2003). Environmental and social standards, certification and signalling for cash crops. Corporate Document Repository, FAO. [Available on line]
URL: http://www.fao.org/docrep/006/y5136e/y5136e07.htm#fnB8

Darby, M. & Karni, E. (1973). Free competition and the optimal amount of fraud. *Journal of Law and Economics, 16: 67-88.*

Diamond, P. & Hausman, J. (1994). Contingent valuation: Is some number better than no number? *Journal of Economic Perspectives, 8(4): 45-64.*

Donovan, G. & Nicholls, D. (2003). Estimating consumer willingness to pay a price premium for Alaska secondary wood products. Research paper PNW-RP-553, October. United States Department of Agriculture, Forest Service.

Eom, Y. (1994). Pesticide residue risk and food safety valuation: A random utility approach. *American Journal of Agricultural Economics, 76(November): 760-771.*

Esteban I.; Gracia, A.; Gil Roig, J. & Sánchez, M. (2001). Diferencias entre los segmentos del mercado en la disposición a pagar por un alimento ecológico: Valoración contingente y análisis conjunto. *Revista Española de Estudios Agrosociales y Pesqueros, (190): 141-164.*

Estes, E. & Smith, V. (1996). Price, quality and pesticide related health risk considerations in fruit and vegetable purchases: A hedonic analysis of Tucson, Arizona supermarkets. *Journal of Food Distribution Research, 27(3): 59-76.*

Farina, T. & de Almeida, S. (2003) Consumer Perception on Alternative Poultry. *International Food and Agribusiness Management Review, 2(5).*

Fox, J.; Shogren, J.; Hayes, D. & Kliebenstein, J. (1998). Contingent values with experimental auctions. *American Journal of Agricultural Economics, 80(3): 455-465.*

Gil, J.; Gracia, A. & Sánchez, M. (2000). Market segmentation and willingness to pay for organic products in Spain. *International Food and Agribusiness Management Review, 2 (3-4): 207-26.*

Goldberg, I.; Roosen, J. & Nayga, R. (2006). Parental response to health risk information: A lab experiment on evaluating willingness to pay for safer infant milk formula. Poster paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-18, 2006. [Available on line]
URL: http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=22235&ftype=.pdf

Goldberg, I. & Roosen, J. (2005). Measuring consumer willingness to pay for a health risk reduction of salmonellosis and campylobacterosis. Paper prepared for presentation at the 11th Congress of the European Association of Agricultural Economist, Copenhagen, Denmark, August 24-27, 2005.

Goldman, B. & Clancy, K. (1991). A survey of organic produce purchases and related attitudes of food cooperative shoppers. *American Journal of Alternative Agriculture, 6(2): 89-95.*

Govindasamy, R.; De Congelio, M.; Italia, J.; Barbour, B. & Anderson, K. (2001). Empirically evaluating consumer characteristics and satisfaction with organic products. New Jersey Agricultural Experiment Station, P-02137-2-97. The State University of New Jersey, Rutgers.

Govindasamy, R. & Italia, J. (1999). Predicting willingness-to-pay a premium for organically grown fresh produce. *Journal of Food Distribution Research, 30: 44-53.*

Govindasamy, R. & Italia, J. (1997). Consumer response to integrated pest management and organic agriculture: An econometric analysis. New Jersey Agricultural Experiment Station, P-02139-1-01. The State University of New Jersey, Rutgers.

Gracia, A.; Gil, J.M.; Sánchez, M. (1998). Potencial del mercado de los productos ecológicos en Aragón. Gobierno De Aragón.
Green, W. (1999). Análisis econométrico. Tercera Edición. Prentice Hall, Madrid.
Groff, A. & Kreider, C. (1993). Analysis of the Delaware Market for Organically Grown produce. *Journal of Food Distribution Research, 24(1): 118-126.*
Grunert, S. & Juhl, J. (1995). Values, environmental attitudes, and buying of organic foods. *Journal of Economic Psychology, 16: 62-69.*
Halbrendt, C.; Sterling, L.; Snider, S. & Santoro, G. (1995). Contingent valuation of consumers´willingness to purchase pork with lower saturated fat. In: J. Caswell (Ed.) Valuing food safety and nutrition. Chap.15, pp. 319-339.
Hamm, U.; Gronefeld, F. & Halpin, D. (2002) Analysis of the European market for organic food. Organic marketing initiatives and rural development: Volume one. ISBN 0-9543270-0-4 [Available online] URL:http://www.irs.aber.ac.uk/omiard/publications-pdf/OMIaRD_MarketReport2002Summary.pdf
Hanemann, W. (1984). Welfare evaluations in contingent valuation experiments with discrete responses. *American Journal of Agricultural Economics, 66(3): 332-341.*
Hanemann, W. (1994). Valuing the environment through contingent valuation. *Journal of Economic Perspectives, 8(4): 19-43.*
Hartman & New Hope. (1997). The evolving organic marketplace. Hartman and New Hope Industry Series Report. Washington D.C.
Henson, S. (2001). Food safety and the European consumer. 71st EAAE Seminar 'The Food Consumer in the Early 21st Century', Zaragoza-Spain.
Henson, S. (1996). Consumer willingness to pay for reductions in the risk of food poisoning in the UK. *Journal of Agricultural Economics, 47(3): 403-420.*
Henson, S. & Traill, B. (1993). The demand for food safety. Market imperfections and the role of government. *Food Policy, 18: 152-162.*
Herriges, J. & Shogren, J. (1996). Starting point bias in dichotomous choice valuation with follow-up questioning. *Journal of Environmental Economics and Management, 30: 112-131.*
Hossain, F.; Onyango, B.; Adelaja, A.; Schilling, B. & Hallman, W. (2002). Consumer acceptance for biotechnology. Willingness to buy genetically modified food products. Food Policy Institute Publication No. WP-0602-001. [Available on line] URL:http://www.foodpolicyinstitute.org/docs/working/Willingness%20To%20Buy%20GMFood%20WP-0602-001.pdf
Huang, C.; Kan, K. & Fu, T. (1999). A generalized binary-ordinal probit model of consumer willingness to pay for food safety in Taiwan. *Journal of Consumer Affairs, 33: 76-91.*
International Standards Organization. URL: http://www.iso.org
Instituto Nacional de Estadísticas y Censos (INDEC). Incidencia de la pobreza y la indigencia en 28 aglomerados urbanos. Resultados 1º Semestre de 2005. Información de Prensa. ISSN 0327-7968. Buenos Aires, 22 de setiembre de 2005. URL: http://www.indec.gov.ar
Instituto Nacional de Estadísticas y Censos (INDEC). Censo Nacional de Población y Vivienda 2001. Resultados definitivos para la Ciudad de Buenos Aires. URL: http://www.indec.gov.ar
Jolly, D.; Schutz, H.; Diez-Knauf, K. & Johal, J. (1989). Organic foods: Consumer attitudes and use. *Food Technology, 43 (11): 61-66.*
Jordan, J. & Elnagheeb, A. (1991). Public perception of food safety. *Journal of Food Distribution Research, 22(3): 13-22.*
Kaneko, N. (2005). Willingness to pay for genetically modified oil, cornflakes and salmon: Evidence from a U.S. telephone survey. *Journal of Agricultural and Applied*

Economics, December 2005. [Available on line]
URL: http://www.findarticles.com/p/articles/mi_qa4051/is_200512/ai_n15957651
Kawagoe, K. & Fukunaga, N. (2001). Identifying the value of public services by the contingent valuation method (CVM). Nomura Research Institute. NRI Papers, No. 39 December 1.
Kennedy, P. (1994). A guide to Econometrics. 4th edition. Cambridge, Massachusetts, The MT Press.
Kinsey, J. (1993). GATT and the Economics of food safety. *Food Policy, (April): 163-176.*
Kmenta, J. (1971). Elements of Econometrics. Macmillan Pub. Co., New York.
Kola, J. & Latvala, T. (2003). Impact of information on the demand for credence characteristics. Selected paper in the International Food and Agribusiness Management Association. World Food and Agribusiness Symposium and Forum, Cancún, México, June 21-24, 2003.
Kuchler, F.; Ralston, K. & Tomerlin, J. (2000). Do health benefits explain the price premiums for organic foods?. *American Journal of Alternative Agriculture, 15(1): 9-18.*
Kuchler, F. & Golan, E. (1999). Assigning value to life: Comparing methods for valuing health risks. ERS/USDA Report No. 784. [Available on line]
URL: http://www.ers.usda.gov/publications/Aer784/
Lancaster, K. (1966). A new approach to consumer theory. *Journal of Political Economy, LXXIV(2): 132-157.*
Lin, B. & Milon, W. (1995). Contingent valuation of health risk reductions for shellfish products. In: J. Caswell (Ed.) Valuing food safety and nutrition. Chap. 5, pp. 83-114. [Available on line]
URL: http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=562&ftype=.pdf
Lee, K. & Hatcher, C. (2001). Willingness to pay for information: An analyst's guide. *Journal of Consumer Affairs, 15(1).*
Loomis, J. (1988). Contingent valuation using dichotomous choice models. *Journal of Leisure Research, 20(1): 46-56.*
Loureiro, M. & Umberger, W. (2003). Consumer demand for source verification labels. Final report for the Federal-State Marketing Improvement Program (FSMIP). [Available on line]
URL: www.ams.usda.gov/tmd/FSMIP/FY2002/CO0353.pdf
Loureiro, M.; McCluskey, J. & Mittelhammer, R. (2002). Will consumers pay a premium for eco-labelled apples? *Journal of Consumer Affairs, 36: 203-219.*
Menard, S. (2000). Coefficients of determination for multiple logistic regression analysis. *American Statistical Association, 54(1): 17-24.*
Michelsen, J.; Hamm, U.; Wynen, E. & Roth, E. (1999). The European market for organic products: Growth and development. *Organic farming in Europe: Economics and Policy. Vol. 7.*
Mitchell, R. & Carson, R. (1989). Using surveys to value public goods: The contingent valuation method. Resources for the Future, Washington DC.
Misra, S.; Huang, L. & Ott, S. (1991). Consumer Willingness to pay for Pesticide Free Fresh produce. *West Journal of Agricultural Economics, 16 (1991): 218-227*
Morris, L. (1996). The ethical consumer: A new force in the food sector. *Market Intelligence Section, April 1996.*
Nelson, P. (1970). Information and consumer behaviour. *Journal of Political Economy, 78: 311-329.*
Onozaka, Y.; Bunch, D. & Larson, D. (2006). What exactly are they paying for? Explaining the Price Premium for Organic Fresh Produce. *UPDATE Agricultural and Resource Economics, 9(6):1-4.* [Available online]
URL: http://www.agecon.ucdavis.edu/outreach/update_articles/v9n6_1.pdf

Pearson, D. (2001). How to increase organic food sales: Results from research based on market segmentation and product attributes. *Australasian Agribusiness Review, 9, paper 8.*

Peña Sánchez de Rivera, D. (1989). Estadística. Modelos y métodos. 3ra reimpresión. Alianza, Madrid.

Pindick, R. & Rubinfeld, D. (1998). Microeconomía. Prentice Hall Iberia, Madrid, 1ra edición en español. ISBN: 84-8322-038-5

Portney, P. (1994). The contingent valuation debate: Why economists should care. *Journal of Economic Perspectives, 8(4): 3-17.*

Richman, N. & Dimitri, C. (2000). Organic Foods: Niche market venture into mainstream. *Agricultural Outlook, June-July, 11-14.*

Roddy, G.; Cowan, C. & Hutchinson, G. (1994). Organic food: a description of Irish market. *British Food Journal, 96(4): 3-10.*

Rodríguez, E. (2006). El Mercado de alimentos orgánicos. Producción y consumo de los principales productos argentinos. Elsa M. Rodríguez (Comp.). Prólogo. En: Editorial Universitaria de Mar del Plata (EUDEM). Serie Tramas.
ISBN-10: 987-544-195-3 ISBN-13: 978-987-544-195-3

Rodríguez, E. (2005). The domestic and foreign markets of organic products in Argentina. Executive Summary presented to the International Workshop "How can the poor benefit from the growing markets for high value agricultural products?", CIAT, Cali, Colombia, October 2005.

Rodríguez E. & Lacaze V. (2005). Consumer preferences for organic food in Argentina. Handbook of the 15th Organic World Congress of the International Federation of Organic Agricultural Movements (IFOAM), September 20-23, Adelaide, South Australia, Australia.

Rodríguez, E.; Lupín, B. & Lacaze, V. (2006). Consumers perceptions about food quality attributes and their incidence in Argentinean organic choices. Poster paper presented at the International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-18, 2006. [Available from the author]
URL: http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=22222&ftype=.pdf

Rodríguez, E.; Lupín, B. & Lacaze, V. (2005). Las percepciones de calidad de los consumidores de alimentos diferenciados. Trabajo presentado en la XXXVI Reunión Anual de la Asociación Argentina de Economía Agraria, Adrogué, Buenos Aires, octubre de 2005. Resúmenes de Trabajos y Comunicaciones, p. 31.

Rodríguez E.; Gentile N.; Lupín B. & Garrido L. (2003). El mercado interno de alimentos orgánicos: Perfil de los consumidores argentinos. *Revista de la Asociación Argentina de Economía Agraria Nueva Serie, Volumen VI, Nº 1, Otoño.*

Rothschild, M. & Stiglitz, J. (1976). Equilibrium in competitive insurance market: An essay on the Economics of imperfect information. *Quarterly Journal of Economics, XC: 629-649.*

Rudd, M. & van Kooten, G. (1998). How accurate are dichotomous choice contingent valuation welfare measures when agents have heterogeneous preferences? Working Paper 1998-15, Sustainable Forest Management Network, University of Alberta, Canada.

Ryan, T. (1997). Modern regression methods. John Willey & Sons INC, Canada.

Sánchez, M.; Gil, J. & Gracia, A. (1998). Frenos al crecimiento del mercado ecológico: ¿El precio o la actitud hacia el medio ambiente? *Revista Española de Investigación en Marketing, 2(2): 103-116.*

Schonlau, M.; Fricker, R. & Elliot, M. (2002). Conducting research surveys via e-mail and the web. [Available on line]
URL: http://www.rand.org/publications/MR/MR1480

SENASA (2006). Situación de la producción orgánica en Argentina durante el año 2005. [Disponible en línea]
URL: http://www.senasa.gov.ar/oldweb/documentos/situ_2005.pdf
Shadid, S. & Kirmani, A. (2004). George A. Akerlof. Nobel Prize for Economics, 2001. *RWES Opportunities Cost Economics Newsletter, Vol I, Issue I, December.*
Shogren, J.; Stamland, T.; Cherry, T. & Crocker, T. (2000). Valuing pathogenic risk: Methods, skills and rationality. Paper presented at the Conference on Valuing Health Benefits from Food Safety, University of Maryland, USA, September 14-15, 2000.
Soler, F.; Gil J. & Sánchez, M. (2002). Efecto de la información en la aceptación de los productos ecológicos: Un enfoque experimental. [Disponible en línea]
URL: http://www.infoagro.com/agricultura_ecologica/aceptacion_ecologicos.htm
Sparks, P. & Shepherd, R. (1992). Self-identity and the Theory of Planned Behaviour. In D. Rutter and L. Quine (eds). *Social Psychology Quarterly, 55 (4): 388-399.*
Spence, M. (1974). Market signalling: Information transfer in hiring and related processes. Harvard University Press.
Stenger, A. (2000). Experimental valuation of food safety: Application to sewage sludge. *Food Policy, 25: 211-218.*
Stigler, G. (1961). The economics of information. *Journal of Political Economy, LXIX: 213-225.*
Stiglitz, J. (1975). The theory of screening, education and the distribution of income. *American Economic Review, LXV: 283-300.*
Stiglitz, J. (2000). The contributions of the economics of information to twentieth century economics. *The Quarterly Journal of Economics, (November):1441-1478.*
[Available on line]
URL: http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=571&ftype=.pdf
Travisi, C. & Nijkamp, P. (2004). Willingness to pa for agricultural environmental safety: Evidence from a survey of Milan, Italy, residents. Working Papers 2004.100. Fondazione Eni Enrico Mattei.
Thompson, G. (1999). Consumer demand for organic foods. American Society of Horticultural Science 96th Conference.
Thompson, G. (1998). Consumer demand for organic produce: What we know and what we need to know. *American Journal of Agricultural Economics, 80(5): 113-118.*
Underhill, S. & Figueroa, E. (1996). Consumer Preferences for Non-Conventionally Grown Produce. *Journal of Food Distribution Research, 27: 56-66.*
Van Ravenswaay, E. (1995). Public perceptions of agrichemicals. Council for Agricultural Science and Technology, Iowa.
Van Ravenswaay, E. & Wohl, J. (1995). Using contingent valuation methods to value the health risks from pesticide residues when risks are ambiguous. In: J. Caswell (Ed.) Valuing food safety and nutrition. Chap.14, pp. 287-317.
Weaver, R.; Evans, D. & Luloff, A. (1992). Pesticide use in tomato production: Consumer concerns and willingness-to-pay. *Agribusiness, 8(2): 131-142.*
Weiss, M. (1995). Informational issues for principal and agents in the ´Market´ for food safety and nutrition. In: J. Caswell (Ed.) Valuing food safety and nutrition. Chap. 4, pp. 69-79. [Available on line]
URL: http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=561&ftype=.pdf
Wessells, C. & Anderson, J. (1995). Consumer willingness to pay for seafood safety assurances. *Journal of Consumer Affairs, 29(1): 85-107.*

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