Mass media and food consumptions:
the case of avian flu syndrome in Italy

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The aim of this research is to analyse the interactions that exist in Italy between mass media and food consumption during the avian flu crisis. To study the relationships among the wholesaler's price of avicultural meat and the number of published articles a Vector Auto Regression (VAR) model in two different simulations has been used. This research has showed a significant statistical relationship between articles and poultry consumptions existed in Italy; in fact, the result data has showed for each published article there were two weeks after a decrease of wholesaler's avicultural meat price equal to 0.03 Euros. This short analysis has confirmed that the mass media was able to influence the behaviour of the consumers, their trust levels and their purchasing behaviour by increasing the purchase of precooked avicultural meat.

Key words: avian flu, mass media, consumer behaviour, food safety, food security.

INTRODUCTION

The primary sector has suffered the exogenous events that have attracted people's attention to the food safety and food security. Italian zootechny has been characterized by some upsetting exogenous events that the consumer has perceived as a dangerous action with the consequence of influencing his own purchasing behaviour. The mass media has a primary role towards the risk perception and in particular in communicating to the consumers a reassuring message and detailed information about food safety and they are considered as a primary agent to knowing upsetting problems. The consumer behaviour is marked out by a predominant irrational component and in this case the mass media is useful for defining some strategies and for reducing in part an informational sensationalism (Pellizzoni 2006). Culture and the level of study have a significant capacity in operating on the risk perception and in particular to meat which could assume different attributes; ethical and cultural choices could operate on the risk perception (Fiddes 1991). The analysis of food risks consists of three subsequent moments where risk management is a fundamental element in protecting the public health and in this case the consumer puts a greater trust in the food safety and in food security.

The shock caused by the avian flu psychosis in European Union has had some different consequences in different States members. The larger decrease in the large-scale retail trade is pointed out in France and United Kingdom. Germany, Italy and Romania have been the countries in which they have had the greatest decrease in the avicultural meat consumption and in these countries the poultry has quickly been replaced by pork meat (see Fig. 1). The Italian consumer has shown a specific and sensitive behaviour compared to the other European consumers during upsetting events in different years (Mazzocchi 2006).
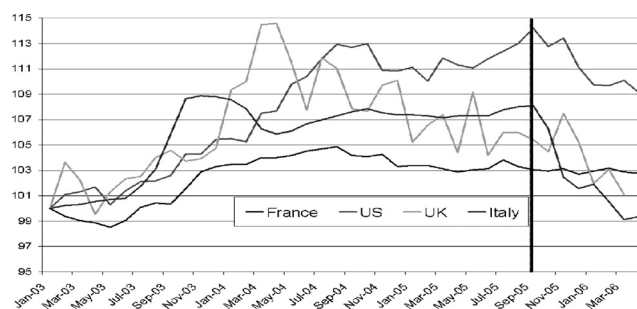

Figure 1. Trend of wholesale avicultural meat prices in different countries. January 2003=100 (Source: Mazzocchi 2006)

METHODOLOGY

The aim of this research was to value if the Italian consumer is a subject easily influenced by the mass media during upsetting events; in this research it has used this short assumption: does a relationship among the number of the Italian newspaper published articles on avian flu and the avicultural meat price exist? In Italy, in fact, a literature that described in quantitative way the relationships among the influence of the mass media on the price of some food did not exist; in general the published researches have studied only the economical impact of BSE on Italian market and the structural change of food demand (Mazzocchi 2001).

The time of study was from July 1st 2005 until October 31st 2006, during which only the published articles of news stories, economy, politics and science that described avian flu and not all the published articles that contained in the text the word avian flu were considered. In this research the most widespread mass press has been chosen, according to Italian press associations, with a circulation of more than 700,000 copies

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a day. In particular in estimating the effectiveness of the mass media on the price those political articles that have been published with the objective to reassure the Italian consumer and to stimulate the public opinion trust were removed from published ones (see Fig. 2). The first problem to resolve was a non homogeneous source of data; in fact the wholesales poultry meat prices were surveyed every week but the number of articles were surveyed every day. To synchronize the two different data source the published articles were set on the same day of the week, usually on Fridays, in which the most important Italian commodity Exchange fixed the wholesale avicultural meat price.
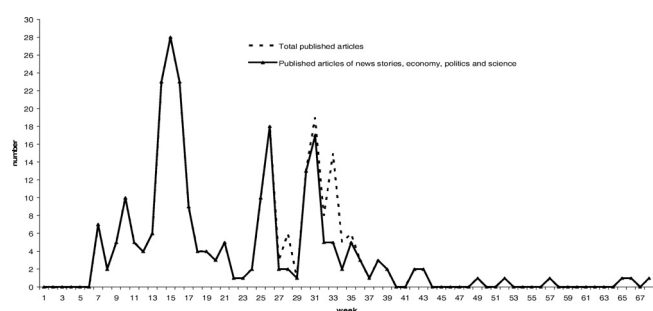

Figure 2. **Number of newspaper articles published in Italy during the time of observation from July 1st 2005 to October 31st 2006. The broken line shows the total published newspaper articles that contained the word avian flu in the text. The whole line shows only the newspaper articles of news stories, economy, politics and science used in the research during the observation period**

To value if the wholesales prices of poultry had cyclical phases of price decrease during the winter seasons and a strong increase in the spring and summer seasons this analysis was considered over a long time the variance between the average and the median of the monthly data of wholesales avicultural meat prices. In fact, in the case of the cyclical phase of buying of avicultural meat the variance from the average and from the median should have the same value.

The used statistical approach was a Vector Auto Regression (VAR), because it is an estimator that considers only endogenous variables together and, in particular, each variable, like the number of published articles and wholesale avicultural price meat, is explained by the other endogenous variables and by its lag. In this case, each endogenous variable is explained by all the endogenous variables used in the model like price and number of articles or rather by all the lag values of the variables studied in this model. The VAR model was applied to a vector of weekly time series of published articles and wholesale avicultural meat price in constant value; it was able to evaluate, as an unbiased estimator, all the used variable contemporarily (Stock and Watson 2005), because it had been obtained using non distorted Ordinary Least square (Verbeek 2006). Two VAR model simulations were tested to find significant relationships among the poultry meat price, at the time t, and the

numerousness of articles published at the time t-1 (previous week) and at the time t-2 in the second simulation.

RESULTS AND DISCUSSION

A preliminary analysis of wholesale avicultural meat prices was shown during the period August 2005-March 2006 and that Italian avicultural chain was sensitive enough when there had been some avian flu cases, which had involved a strong price decrease and, in a particular way, the wholesale prices of poultry had highlighted a decrease of their prices, after the mass media published articles peak in the month of February-March 2006. The analysis of the variance between the average and the median during the observation period, were confirmed as the greatest variances that were noticed during the months when the avian flu syndrome appeared. In Italy, during the period of observation from August 2005 to March 2006, when the mass media gave emphasis to the avian flu, it observed a significant and rapid decrease in the price of poultry meats and a comparison with the average and median values of wholesale poultry prices but it contradicted a hypothetical cyclic price trend (see Fig. 3). In general the poultry meats, showed a significant substitution power in comparison to the bovine meats and vice-versa when in Italy there had been some upsetting events like BSE in 1996 and 2001, the cases of dioxin found in some chicken meats (1999) or avian flu in the years 2005-2006 (see Fig. 4).
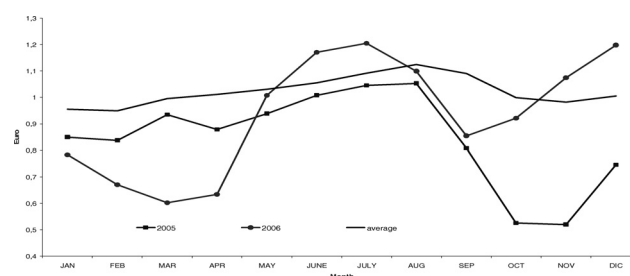

Figure 3. **Trend of wholesales poultry meat prices in two-year period 2005-2006 in Italy during avian flu syndrome (Source: elaboration on Ismea data)**
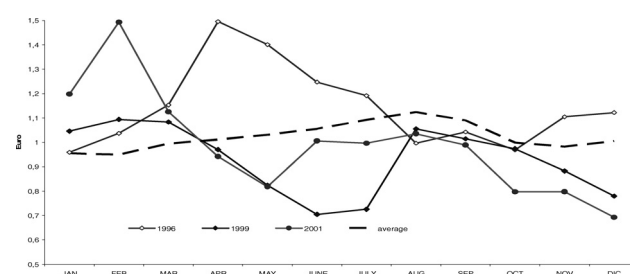

Figure 4. **Different trend of wholesales poultry meat prices in Italy during appearance of some upsetting events as BSE in the years 1996 and 2001 or when there were found some cases of chicken meat with dioxin in the year 1999 (Source: elaboration on Ismea data)**

The both used VAR models simulations confirmed the price of poultry meat and the number of published newspaper articles and that a statistical significant relationship exists and it is able to affect the consumer purchasing behaviour. The methods of statistical information used to value the lag used in the VAR model it showed as the articles published at the time t-2, second simulation, had a greater effect on the price at the time t (see Tables 1,2).

Table 1. Choice of the best lag in the second simulation of model VAR using statistic information criteria. The asterisks below indicate the best minimized values of the respective information criteria as AIC Akaike criterion, BIC Schwartz Bayesian criterion and HQC Hannan-Quinn criterion

Lag	Logver	Information criteria		
		AIC	BIC	HQC
1	-94.96013	3.155004	3.357399	3.234738
2	-79.72881	2.804025	3.141351*	2.936915*
3	-77.19171	2.849741	3.321997	3.035786
4	-70.76530	2.773916*	3.381102	3.013117

Significant: * P< 0.05

Table 2. Relationship among number of published articles that describe avian flu in the newspaper with the most widespread mass press and wholesale poultry meat price using lag 2 in the second simulation

Variable	Coefficient	Standard error	Statistical t	p-value	Significant
Constant	0.0849228	0.034619	2.4531	0.01699	**
Poultry wholesale price at the time t	0.9134	0.036459	25.052	<0.00001	***
Number of published articles at the time t-2	-0.0035392	0.001387	-2.5504	0.01324	**

Significant: *** P<0.001 ** P< 0.01

Nevertheless, the statistical results explains in a significant way that a possible relationship between the newspaper articles and price and the consumer purchasing behaviour exists, the economical results have not showed that the economical impact is acceptable, because for each published article there has not been a significant price decrease equal to 0.03 Euros.

CONCLUSIONS

In Italy the economic losses produced by avian flu fever were very important and equal approximately 80 million of Euros for each month, during August 2005-March 2006; in other European countries the loss of avicultural meat prices was more reduced (see Table 3).

Table 3. Economic effects on wholesale poultry meat prices (€/100 kg) of avian flu syndrome in Europe (Source: European Commission)

Country	Decrease of price (%)	Observed price at 31-7-2005	Observed price at 16-10-2005
Italy	-42.85	162.50	91.25
Poland	-15.52	126.14	109.09
Spain	-7.65	148.54	137.18
Hungarian	-3.62	163.61	157.69
France	-2.50	200.00	195.00
England	-1.73	140.39	137.96
Netherlands	-0.66	149.99	149.00
Germany	+2.86	175.00	180.00
European Union 15 Coutries	-8.50	164.58	150.59

In Germany it was observed at the same time an increase of poultry meat consumptions, imputable to an increase of Italian exports because the German consumer had more trust in buying avicultural Italian products that was able to assure greater safety guarantees of the product. This research has put in evidence the role and function of mass media acting on the purchase consumer and it has confirmed the mass media inertia that exists among the upsetting events and the ability of the consumer to reduce its buying power. After the Italian avian flu fever there was a strong change of purchasing behaviour; in fact the Italian consumer of poultry meat preferred to buy precooked avicultural meat and it was more careful of the food track and trace and of the label.

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