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Globalization Issues and Consumers' Purchase Decisions for Food Products: Evidence from a Lab Experiment

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1. Introduction

Globalization is often presented by governments/international organizations as a catalyst for the integration of developing countries into the world economy. Globalization may enhance their production and export capacities. On the other hand, an increasing number of citizens in developed countries fear economic competition from developing countries and do not perceive globalization as an opportunity for the economic growth of their own country. For example, 43% of respondents to the Eurobarometer public opinion surveys published by the European Commission in autumn 2008 think that globalization represents a threat to employment and companies in the European Union (European Commission, 2008). This negative feeling combined with the 2008 financial crisis led to fears of new protectionism (van Bergeijk, 2010).

In several European countries like France, questions about globalization are particularly sensitive. The replacement of domestic sourcing by foreign sourcing, especially from developing countries, is generally a thorny issue in public debates. In the aftermath of the 2008 financial crisis, intellectual assaults on free trade and globalization intensified. One striking example is provided by the book published by Todd (2008), concluding that only European protectionism can preserve Europe's industries and social stability (Thornhill, 2008).

However, this anti-globalization feeling is not clearly in evidence when consumers' decisions are observed. 44% of European citizens say that they personally benefit from international trade since wider choice and cheaper products are recognized as major benefits (European Commission, 2010).

Our paper sheds light on questions linked to globalization and consumers' attitudes. In particular, we try to investigate the following questions. Do consumers pay attention to the origin of products because of concerns about globalization? Do these globalization issues affect the purchase decisions of consumers in developed countries and more particularly their purchase of goods produced in developing countries? Our paper addresses these questions using the results of a lab experiment conducted in France in 2010.

Our experiment evaluates the impact of information linked to globalization on consumers' willingness to pay (WTP) for pickles (or gherkins). Food is particularly well-suited to lab experiments (Lusk and Shogren, 2007). The main advantage of pickles is that they are a very simple food product and their origin is easy to identify, which is not the case for manufactured products such as aircraft or cars made with many components from all around the world. Furthermore, Maille, the main French producer of pickles, was taken over by Unilever in 2000 and the pickle growing, initially performed in France, was moved to India and Madagascar in 2004. Our experiment is able to measure the impact of these recent changes on consumers' WTP for that good.

We use the BDM procedure (defined by Becker, DeGroot and Marschak, 1964) to elicit WTP for pickles. With this procedure, participants in the experiment are asked to indicate the maximum price they are ready to pay for the good. This BDM procedure is incentive compatible since, at the end of the experiment, participants buy the product if their WTP is higher than a randomly selected price of exchange. Successive messages revealing recent changes in the strategy applied by Maille/Unilever are delivered to the participants. These messages relate to the new foreign sourcing of pickles, the closure of French processing facilities (that is, 'negative' information) but also the development of new products and services and the achievement of new investments in France (that is, 'positive information').

Results show a statistically significant impact of messages on consumer WTP. Participants appear to be more receptive to 'negative' than to 'positive' information. However when negative information is first revealed to participants, the decrease in WTP due to 'negative' messages about foreign sourcing and closure of processing facilities is reversible with positive information. Once they receive additional information about innovative products/services and new investments made by the multinational in the domestic country, participants increase their WTP for the product. This result shows that globalization seems to be better accepted by consumers than suggested by classical opinion

surveys focusing on globalization with hypothetical responses and showing reluctance and concern across the European population. In other words, people are much more supportive of globalization when they are consumers than when they are citizens.

The experiment also studies the effect of two labels based on the origin of the product: a fair trade label for product produced in developing countries and a geographical indication label for product produced in developed countries. We estimate the potential choice of each participant by estimating surpluses. We show that the introduction of these labels increases the average consumer surplus, since the participants initially purchasing the conventional product are the ones that give a relatively high premium for labelled products. Such a label does not however attract any new consumers.

With this paper, we present what we believe to be the first lab experiment focusing on consumer responses to globalization and foreign supply when foreign origins fully replace the domestic one. This differs from previous experiments capturing the additional WTP linked to the local characteristics of the product, when a wide range of competing products with various origins are available on the market. Loureiro and McCluskey (2000) show that the inclusion of a label of origin on fresh meat in Spain leads to a price premium for medium-quality meat. Scarpa et al. (2005) confirm the existence of consumer preferences for territorial origin of production certification and regional food. Hassan and Monier-Dilhan (2006) show an additional WTP among French consumers for products with geographical indications. Lastly, Toler et al. (2009) show clear preferences for local foods among some American consumers.

The paper is organized as follows. Section 2 focuses on the experimental design, while section 3 discusses the results. The implications for food labeling policies are discussed in section 4. Section 5 concludes.

2. The experiment

2.1 Sample

We conducted the experiment in Paris, France, in multiple sessions in May 2010. We randomly selected the participants using the quota method. Participants were first contacted by phone and informed that they would have to reply to questions about food for one hour with a participation fee of €20. We made it clear that part of this amount of money could potentially be used to purchase a jar of pickles based on a mechanism explained to participants (see below).

The sample consists of 102 people aged between 20 and 72. Women are more present in our sample than men. Furthermore, about 62% of participants continued their studies for more than two years after the Baccalaureate, which is the French high school diploma. 59% of participants are in a household with a monthly net income of between €1,500 and €4,000 and 31% of participants have children living at home with them. In terms of consumption habits, 32% of participants never or rarely consume pickles, 38% of participants consume pickles one to three times per month, while 30% of participants consume pickles at least one a week. Lastly, about two-thirds of participants see pickles as a healthy product.

2.2 Product

Our experiment focuses on pickles for four main reasons. First, unlike many manufactured products, food products are well suited to lab experiments (Lusk and Shogren, 2007). Second, food products are often very simple and their origin (in terms of production) can be easily identified; this is clearly the case for pickles. Third, pickles are consumed by final consumers without transformation and are a classic condiment in many countries. In France, pickles have been consumed since the 16th century and current consumption stands at 25,000 tons (net drained) per year, i.e. 400 grams per inhabitant. Last, some globalization issues are linked to their production and sales, especially in France.

For the experiment, we selected a pickle jar of 380g (net drained), namely the Maille "Cornichons" brand. French consumers usually see Maille as a traditional and high-quality brand. In

our experiment, 86% of participants consider Maille as such. The company also uses this perception for its advertising. For example, on its website, the brand presents itself as follows: "*250 years after it was founded, the company remains loyal to and continues to cultivate its original values of high standards, excellence and refinement.*"[1] The jar's packaging clearly indicates that the pickles are hand picked. However, the origin of pickles was not mentioned at the time of the experiment and at the time of writing the present paper. In our introduction, we mentioned that Maille was taken over by the Anglo-Dutch group Unilever in 2000 and that the French supply of pickles was replaced by Indian and Malagasy supply in 2004.[2] For Maille, the new supply from India and Madagascar led to a saving of 40% on the cost of pickles compared to the French supply.

In our experiment, participants may purchase the Maille pickles jar at the end of the session, depending on the price they are ready to pay for it (see below).

2.3 Experimental design and information revealed

Our experiment uses the BDM procedure to elicit participants' WTP (Becker, DeGroot and Marschak, 1964). With this procedure, participants are asked to indicate the maximum price they are willing to pay for a jar of pickles. Successive items of information are revealed to participants and WTP is elicited after each message. The exact question is as follows: "What is your maximum price for the pickles jar?" We conduct the experiment in two treatments, varying the order of information provided to participants. To do so, we divide the sample into two groups (groups I and II) and randomly assign participants to one group. The experiment is divided into several stages as described in figure 1. The timing of the experiment is as follows.

- The session starts with a trial round in order to explain the choice mechanisms. Simulations help participants understand the mechanisms. The possibility of zero bids in the BDM procedure is carefully explained, as well as the €20 compensation for making the purchase.
- Participants fill in an entry questionnaire on consumption behaviour and socio-demographic characteristics.
- Based on different types of information revealed to participants, five rounds of WTP elicitation with the BDM procedure are successively determined. The observed retail price of one Maille pickles jar (€3.4) is revealed before the first WTP elicitation only, which allow us to control the anchorage effect for the first round. We do not post any prices between rounds in order to avoid any confusion regarding the effects linked to price information and the effects linked to information on globalization issues. The messages before WTP elicitations combine information about foreign sourcing of pickles/closure of processing facilities in France and new products/new investments in France made by Unilever, owner of the brand Maille (see appendix). These messages are based on press releases and reports produced by Maille/Unilever. The sequence of information revelation differs between the two groups. Group I first receives the messages about foreign sourcing/closure of processing facilities, while group II first receives the messages about new products/new investments.
- Participants fill in an exit questionnaire on trade and globalization issues. The experiment concludes by randomly selecting one of the five WTP, which will be used to determine whether or not the participants take the products away with them. A price of between €0.1 and €5 is also drawn at random[3] and purchase choices are enforced. If the selected WTP is smaller than the randomly drawn price, the participant receives their €20 indemnity. If the WTP is higher, the

[1] http://www.maille.us/pages/history_excellence.aspx. Accessed: January 19, 2011.

[2] This change was decided for cost reasons. The cost of Indian/Malagasy pickles is 30-40% lower than the cost of French pickles (transport and packaging included). Source: L'Yonne Républicaine (August 18, 2006).

[3] No information is revealed to participants about the distribution of this randomly generated number acting as a market price. This absence of revelation about the distribution avoids the anchoring effect on WTP, since Bohm et al. (1997) show that results are sensitive to the choice of the upper bound of the generated buyout prices.

compensation is equal to €20 less the price randomly drawn and the participant gets the pickles jar.

Information revealed during the experiment was new for a very large proportion of participants. Only 18% of participants had already heard about the Maille takeover by Unilever. Similarly, 18% of participants had already heard/seen the development of new products/services by Maille. Last, only 4% knew about the foreign origin of pickles. In other words, the level of knowledge about both origins and conditions of production is extremely low.

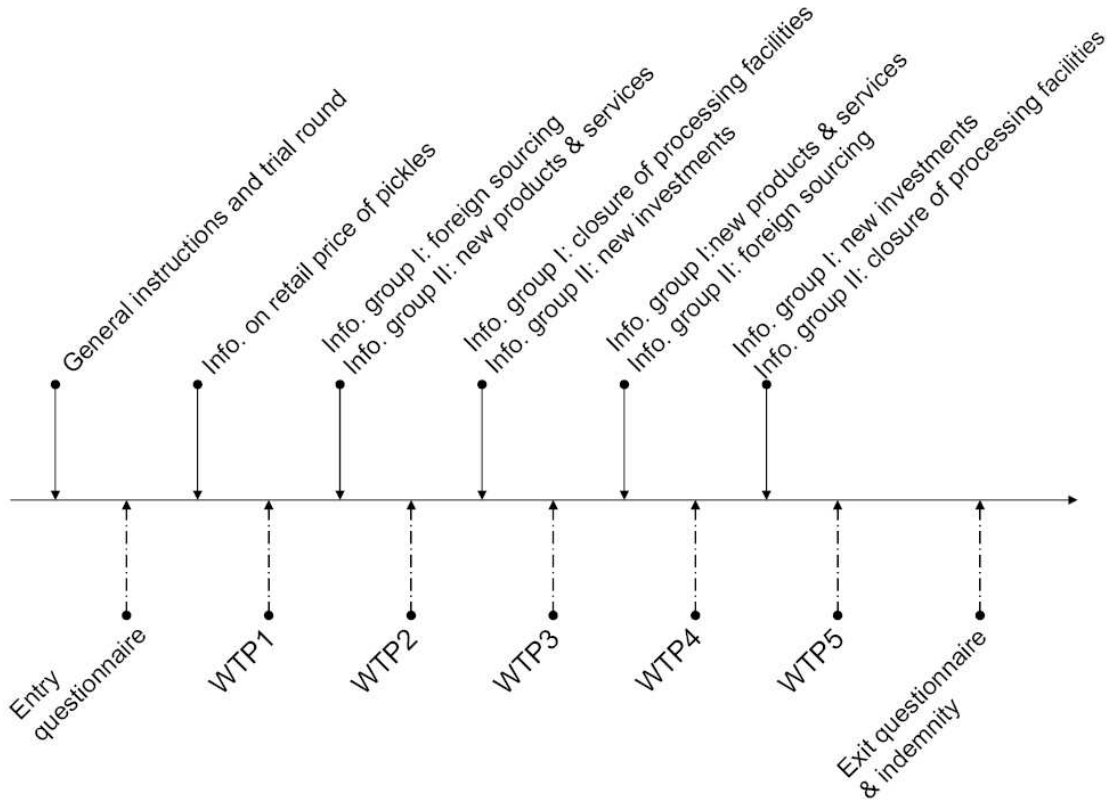


Figure 1. Experiment design

3. Results

3.1 Descriptive analysis

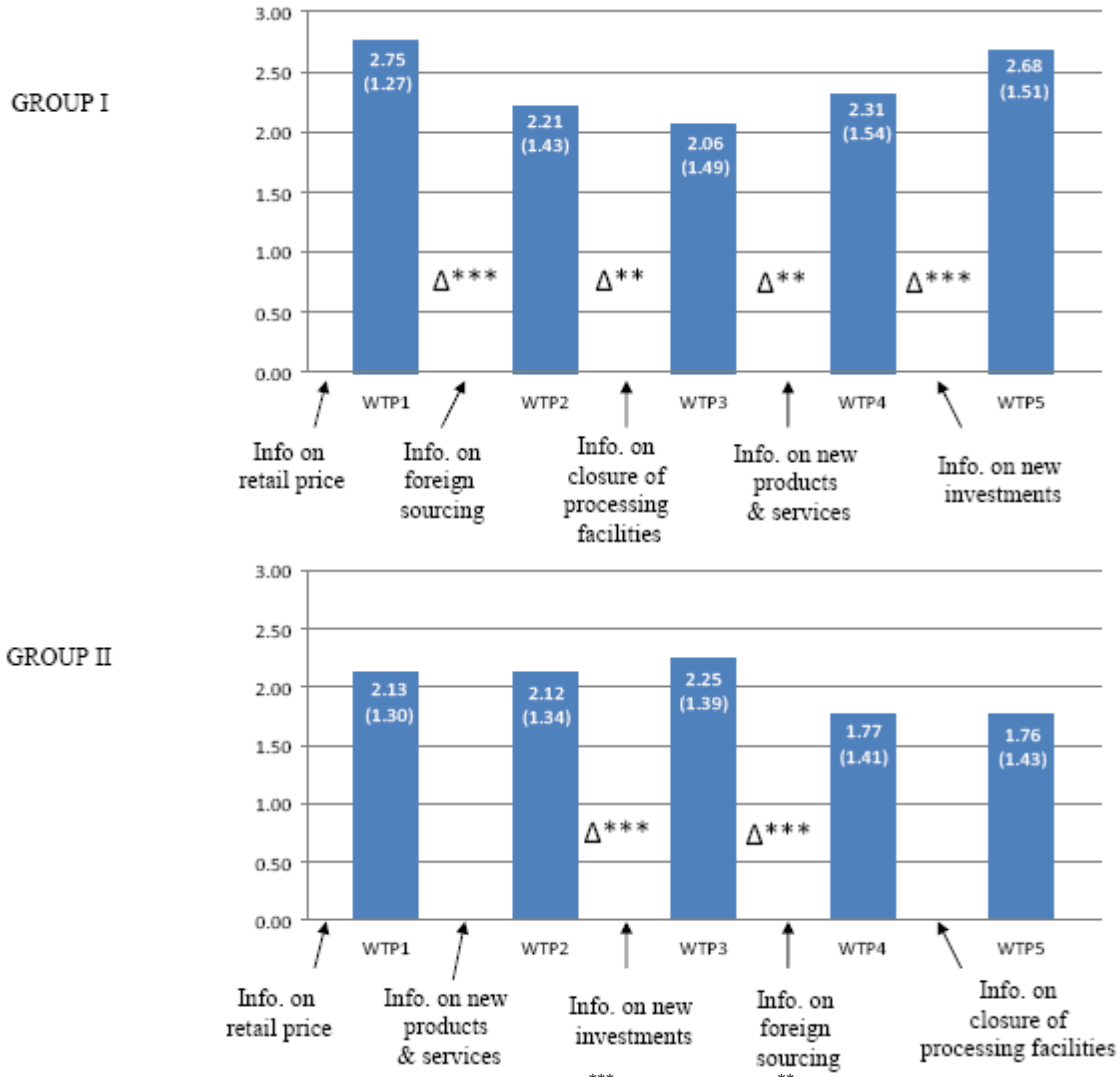
Figure 2 shows the average WTP in euro for one pickles jar expressed by participants after each round of information. The average takes into account bids by all participants, including the ones with WTP equal to zero. The standard deviation is reported in parentheses. We test for the significance of the WTP differences linked to the revelation of a message before the round *j+1* (that is, between *WTP*j and *WTP*j+1) by using the Wilcoxon test for paired samples. The indicators Δ show statistically significant WTP differences. The first bar of each graph reveals the WTP after the revelation of simple information about the retail price of a pickles jar. Figure 2 shows that information matters.

For group I, the decrease in WTP due to both messages about foreign sourcing of pickles and the closure of processing facilities in France is reversed by the messages about new products/services and new investments. It means that the decrease in WTP following the revelation of 'negative' information (with *WTP*3 significantly lower than *WTP*1) is reversible when 'positive' information is revealed (*WTP*5 significantly higher than *WTP*3).[4] Furthermore, *WTP*5 is not statistically different from *WTP*1 (Z-value = -0.569, P-value = 0.562), which confirms the reversibility of the WTP decrease

[4] We label information on foreign sourcing and closure of processing facilities in France as 'negative' information and information on new products/services and new investments made in France as 'positive' information.

linked to negative information by subsequent positive information. This result suggests that characteristics linked to trade matter to some consumers, but this is not as major a concern as health/safety characteristics for which risky/tainted products lead to zero bids (or low bids) even after subsequent revelation of positive information (see Hayes et al., 1995; Fox et al., 2002; Marette et al., 2008).

A similar trend may be observed for group II (with *WTP*3 significantly higher than *WTP*1 and *WTP*5 significantly lower than *WTP*3). However, participants seem to be less sensitive to the information revelation than group I (*WTP*2 is not statistically different from *WTP*1 and *WTP*5 is not statistically different from *WTP*4). Moreover, the 'positive' information first revealed leads to a lower WTP shift with E(*WTP*3-*WTP*1) = 0.12 compared to the WTP shift in absolute value due to the negative information with E(*WTP*5-*WTP*3) = 0.49. This differs from group I for which the positive information counterbalances the negative information initially revealed before the positive one. The attention given to the positive information therefore seems contingent to the negative information previously revealed as in group I.



Note: Mean WTP (€); standard deviation in parentheses; Δ^{***} (respectively Δ^{**}) denotes significant differences at the 1% level (respectively 5% level) as tested by the Wilcoxon test for comparing paired samples of WTP between rounds, namely *WTP*j at stage *j* and *WTP*j+1 at stage *j+1*.

Figure 2. Mean WTP (€) and variations after information revelation

3.2 Econometric estimations

We now investigate the determinants of WTP. To do so, we regress the WTP expressed by each participant under each choice #*i* (with *i=1,…,5*) on the information and participant's characteristics. The results are presented in table 1. Given that each participant makes multiple choices, there could be some correlation across data points relating to WTP. Furthermore, in our sample, WTP may not be negative and is therefore left-censored at 0. We use appropriate econometric methods to deal with both problems. Columns (1) and (2) perform random effects panel regressions, while column (3) presents the result of a random effects tobit estimation. We also control for the initial opinion of participants about the healthiness of pickles. Participants may see pickles as a healthy product, as a non-healthy product or as a product without significant health impact. Due to multicolinearity, the neutral perception is not included in our estimations but used as the reference category.

Table 1. Influence of information and individual characteristics on WTP

Model	(1)	(2)	(3)
Dependent variable	WTP expressed by participant *j* in choice #*i* (WTP_i^j)		
Specification	Panel random effects	Panel random effects	Tobit random effects
Initial opinion about pickles: bad for health (0/1)	-1.07[b]	-1.01[b]	-1.40[b]
	(0.48)	(0.49)	(0.61)
Initial opinion about pickles: good for health (0/1)	0.22	0.41	0.57
	(0.32)	(0.33)	(0.40)
'Negative' information (0/1)	-0.49[a]	-0.50[a]	-0.59[a]
	(0.07)	(0.07)	(0.08)
'Positive' information (0/1)	-0.10	-0.10	-0.13
	(0.07)	(0.07)	(0.08)
Female (0/1)		0.01	-0.08
		(0.28)	(0.34)
Age		0.01	0.01
		(0.01)	(0.01)
Children (0/1)		-0.36	-0.39
		(0.30)	(0.36)
Education: no BAC (0/1)		-	-
Education: [BAC-BAC+2] (0/1)		-0.95[c]	-1.23[b]
		(0.50)	(0.60)
Education: BAC+5 and more (0/1)		-0.52	-0.68
		(0.46)	(0.56)
Constant	2.40[a]	2.89[a]	2.84[a]
	(0.28)	(0.64)	(0.76)
Observations	510	495	495
R^2	0.10	0.15	0.15

Note: [a]: significant at 1%; [b]: significant at 5%; [c]: significant at 10%. Standard errors in parentheses. In the French system, the high school diploma is called 'baccalaureate' (BAC).

We first examine whether the information revelation affects participants' WTP (column (1)). We assume that three types of information are revealed during the experiment: (i) neutral information

on the retail-price of a pickles jar (before round #1), (ii) 'negative' information on French production activity (before rounds #2 and #3 for group I and before rounds #4 and #5 for group II), and (iii) 'positive' information on new products/services and new investments (before rounds #4 and #5 for group I and before rounds #2 and #3 for group II). To test the impact of information on participants' WTP, we therefore define two dummies: one for 'negative' information and one for 'positive' information. The first dummy (respectively the second dummy) is set to one if 'negative' information (respectively 'positive' information) is revealed and 0 otherwise. The estimated coefficient on the dummy for negative information has the expected sign and is significant at the 1% level: revealed 'negative' information decreases participants' WTP. On the other hand, revealed 'positive' information has no significant effect. Controls for the initial opinion about the healthiness of pickles suggest that, compared to participants seeing pickles as neutral in terms of health impact, participants with a bad opinion provide lowest WTP, while the effect is not significant for participants with a good opinion.

Column (2) controls for the socio-economic characteristics of participants: sex, age, presence of children in the household, and level of education. Some answers are missing and consequently 15 observations are dropped. However, this does not affect the results.[5] Except for age, all socio-economic variables are dummy variables. For education, we define three levels: low (below the baccalaureate – BAC – which is the French high school diploma), medium (between BAC and BAC+2) and high (BAC+5 and more). Due to multicolinearity, the first level is used as the reference level and the estimated coefficients on the two other levels should be compared to it. Results suggest that none of these socio-economic variables is significant. This absence of significance is often found in experimental economics, especially when one controls for the individual effect as we do. The introduction of socio-economic controls does not significantly change the estimated coefficients on information variables. This result shows that reactions to information seem similar across the sample of participants and, by extrapolation, for the overall French population. In other words, reactions are relatively similar whatever the people attending the experiment.

Column (3) replicates column (2) but using the random effects panel estimator. The results are very similar to column (2).

4. Fair trade label or geographical indication label

Previous results show that consumers are interested in globalization issues and the origin of food products. This raises the question of "fair" competition when production conditions differ greatly between countries such as France and India. One regulatory possibility consists in developing labels providing information about the conditions of production and allowing a diversity of products for consumers. For consumers who are sensitive to production conditions, a label is a possible way to restore fairness among heterogeneous countries without any risks of protectionism, since foreign products can still enter the domestic market.

In this section, we investigate the relevance of a labelling policy based on the origin and production practices of the product. We distinguish between two labels: one signalling fair trade practices for products grown in developing countries and one signalling a geographical indication for products grown in developed countries. The development of such labels is compatible with the World Trade Organization (WTO) rules. In March 2005, the WTO released the panel report on the European Geographical Indication (GI) system. The panel's conclusions and recommendations led the European Union to revise its rules governing how international GIs are treated. Specifically, the European Council (EC) Regulation 2081/92 was amended with EC Regulation 510/2006 (EC, 2006; WTO, 2005). The amendment complied with the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of the WTO and the European Union regulation is now WTO-proof (WTO,

[5] The exclusion of these 15 observations from the regression presented in column (1) does not significantly affect the results.

2006). The WTO panel decision demonstrated that the European Union's efforts to differentiate and label quality in agricultural products and foodstuffs are compatible with the WTO rules.

4.1 Economic value of labels and consumer surplus

Using the present experiment, we determine the economic value of labels signalling fair trade practices or a geographical indication. The exit questionnaire successively asked participants to choose a premium δ for pickles with a fair trade label (signalling products grown in developing countries with fair trade practices) or with a geographical indication (signalling products grown in France) with a range of values varying from €0 to €0.60[6] with a 10-cent interval between possible choices.

Combining these price premiums with WTP, one can determine the consumers' surplus and the related value linked to the introduction of new fair trade/geographical labels. We define two scenarios: a baseline scenario where only conventional pickles are available on the market and a scenario where both conventional and labelled (fair trade or geographical indication) pickles coexist. The participant surplus variation is computed by comparing the surplus in both scenarios. Each participant's choice is inferred since real choices are not observed – only bids in the lab. In addition, we make the following assumptions. First in the baseline scenario, we assume that conventional pickles are only grown in developing countries. Note that this is almost the case in France in 2010 where pickles from abroad have completely replaced pickles from France. Furthermore, in this baseline scenario, participants may or may not be aware of the foreign origin of the conventional product. As such we consider two extremes: a situation where participants are fully informed of the origin (because of a possible regulation making the origin mandatory or intense media coverage), and a situation where participants are completely uniformed of the origin.[7] Second, conventional pickles are sold at price P_0, while P_1 is the price of labeled products with $P_1 > P_0$. Third, for the sake of simplicity both groups of participants are merged and we assume that a participant purchases the product if his WTP for that product is equal to or higher than the average market price (P_0 for conventional pickles and P_1 for labeled pickles).

We first focus on the baseline scenario with only conventional pickles on the market and consider the situation where participants are uninformed about the origin of such pickles. This corresponds to the round of the experiment preceding the revelation of origin, that is, to the first round leading to $WTP1$. The participant i can choose between two outcomes (conventional pickles and none) and has a direct benefit equal to $\max\{WTP1_i - P_0, 0\}$. This value $WTP1$ may be different from the one under perfect information given by $WTP5$. As participants are ignorant about the pickles' origin and all the information linked to the multinational, the non-internalized premium is defined by $I_i(WTP1_i - WTP5_i)$ where I_i is an indicator variable taking the value of 1 if participant i is predicted to have chosen the conventional pickles at P_0 with $WTP1 > P_0$ in choice #1 (and 0 otherwise). The total surplus is given by:

$$CS^i_{A,U} = \max\{WTP1_i - P_0, 0\} - I_i(WTP1_i - WTP5_i). \qquad (1)$$

$N^C_{A,U}$ is the number of participants who purchase the conventional pickles with $WTP1_i - P_0 \geq 0$.

Now consider a situation where participants are fully informed of the origin of the conventional pickles. This situation corresponds to the situation after the last round of bids eliciting $WTP5$. The participant i can again choose between two outcomes: conventional pickles and none. She/he chooses the alternative that generates the highest utility, and thus the surplus is:

[6] We stop at €0.6 since it already represents 17.6% of the average observed price for a Maille pickle jar in French supermarkets.

[7] In reality, adoption may not be 100% and one could model an intermediate situation by introducing a parameter that describes the extent of adoption and/or consumer perception about the origin of the product. Here for the sake of simplicity, we focus on the extremes: fully informed or uninformed consumers. In our sample, only 4 participants out of 102 knew the foreign origin of pickles sold by Maille.

$$CS^{i}_{A,I} = \max\{WTP5_i - P_0, 0\}. \quad (2)$$

Where $WTP5_i$ denotes the bid linked to the conventional pickles during elicitation round #5 for a participant *i* with *i=1,…,N* where *N* is the number of participants. $N^{C}_{A,I}$ is the number of participants who purchase the conventional pickles with $WTP5_i - P_0 \geq 0$.

When labelled pickles (geographical indication or fair trade label) are introduced at price P_1, there is a new alternative for participants with a WTP equal to $WTP5_i + \delta_i$. We assume that with the label participants become fully aware of the origin of the conventional products.[8] In this case, participant *i* (with *i=1,…,N*) chooses the alternative that generates the highest utility, and thus the surplus is:

$$CS^{i}_{B} = \max\{WTP5_i - P_0, WTP5_i + \delta_i - P_1, 0\}. \quad (3)$$

N^{C}_{B} is the number of participants who purchase the conventional pickles with $WTP5_i - P_0 \geq 0$ and N^{L}_{B} is the number of participants who purchase the labelled with $WTP5_i + \delta_i - P_1 \geq WTP5_i - P_0 \geq 0$.

The variation in surplus following the introduction of the labelled product is defined by $CS_B{}^{i} - CS^{i}_{A,Z}$ with $Z = I,U$. The average surplus variation across the overall number *N* of participants is defined by:

$$\Delta CS^{N}_{Label} = \frac{\sum_{i=1}^{N} \left[CS_B{}^{i} - CS_A{}^{i} \right]}{N}. \quad (4)$$

A positive variation $\Delta CS^{N}_{Label} > 0$ means that participants benefit from the label since some of them purchase the labelled product.

4.2 Application

Lastly, using the WTP and price premiums expressed by participants during the experiment, we estimate surpluses. We use the following market prices: P_0 = €3.40 for a jar of conventional pickles (which corresponds to the average observed retail price in French supermarkets) and P_1 = €3.63 for a jar of labelled pickles. For the sake of simplicity, we assume the same price for the geographical indication and the fair trade label. The price P_1=(1+0.2*0.35)P_0 is determined by considering that (i) the cost of foreign conventional pickle production is 35% lower than the cost of labelled pickle production[9] and (ii) the cost of pickles represents 20% of the overall price of the jar. Table 2 reports the variation in the number of participants purchasing each type of pickles and the surplus variation following the introduction of labelled pickles on the market.

Table 2 suggests that the introduction of labelled products significantly increases the consumers' surplus. The number of participants purchasing the conventional pickles significantly decreases after the introduction of the labelled pickles, since many of them switch to the labelled pickles leading to the highest surplus defined by $WTP5_i + \delta_i - P_1$. The average surplus increases, because participants initially purchasing conventional pickles are the ones that give a relatively high premium for the labelled products. With the geographical indication label the average value of δ given by the exit questionnaire is 0.35 for all participants purchasing conventional pickles (based on *WTP*5), versus only 0.22 for participants not purchasing conventional pickles. This difference is statistically

[8] An alternative assumption would consist in considering that consumers are not aware of the origin of conventional products for which the WTP would be $WTP1_i$ or $WTP3_i$.

[9] Maille/Unilever replaced the French supply of pickles with an Indian/Malagasy supply in 2004 arguing that the cost of Indian/Malagasy pickles is 30-40% lower than the cost of French pickles (transport and packaging included) (L'Yonne Républicaine, 2006).

significant at 2 % with a comparison across the sample based on a Mann-Witney-U test (Z-value = -2.41, P-value = 0.016). Similar results are obtained for the fair trade label. Participants who did not purchase conventional pickles give a low premium for the label and are not attracted to the labelled pickles. Therefore, the increase in the number of participants purchasing labelled pickles is offset by the decrease in the number of participants purchasing the conventional pickles. The situation where participants are initially unaware of the origin of pickles (left column) shows a larger surplus variation than the situation where they are aware (right column), since the non-internalized WTP of equation (1) is eliminated with the label.

Lastly, the interesting result linked to the premium for pickles with a geographical indication label should be noted. The difference between hypothetical bids and bids with performance-based financial incentives is particularly salient with group I. The average premium E(δ)=0.27 for group I is lower than E(*WTP*1-*WTP*2)=0.54 measuring the WTP for domestic products, that is, before the revelation of information about the origin and the foreign sourcing leading to *WTP*2. These differences are statistically significant with a paired-sample comparison with a Wilcoxon test (Z-value = -2.01, P-value = 0.044). E(δ) based on hypothetical responses in the exit questionnaire is lower than E(*WTP*1-*WTP*2) based on bids with performance-based financial incentives after the second round of choices. The hypothetical WTP are lower than the WTP with financial incentives. This differs from Lusk and Schroeder (2004) who show that the marginal WTP for a change in quality/characteristic is, in general, not statistically different across hypothetical and real payment settings. One possible explanation for the relatively low average for E(δ) comes from the fact that this question came after 5 rounds of non-hypothetical choices with performance-based financial incentives. Therefore, participants do not perceive differences in the mechanisms and do not manipulate the bids even if they are not engaged in real purchases.

Table 2. Participants' surplus variation linked to the introduction of labels

	Geographical indication	
	Uninformed participants	Informed participants
Average premium E(δ)	€0.248	€0.248
Variation in the number of participants[1]		
With conventional pickles	-17	-16
With labelled pickles	+16	+16
Average surplus variation (per jar)[2]	€0.077 (+66.5%)	€0.038 (+24.6%)
Annual aggregate surplus variation[3]	€5,108,359	€2,528,379
	Fair trade	
	Uninformed participants	Informed participants
Average premium E(δ)	€0.228	€0.228
Variation in the number of participants[1]		
With conventional pickles	-15	-14
With labelled pickles	+14	+14
Average surplus variation (per jar)[2]	€0.070 (+60.3%)	€0.031 (+20%)
Annual aggregate surplus variation[3]	€4,631,062	€2,051,083

Note: [1] Defined by $N_B^C - N_{A,U}^C$ for the conventional pickles with uninformed consumers, by $N_B^C - N_{A,I}^C$ for the conventional pickles with informed consumers and by N_B^L for the labelled pickles.

[2] Defined by equation (4). For the average surplus variation, the relative variation in percentage is given in parentheses.

[3] The annual aggregate surplus is defined by *M**(average surplus variation) where *M* is the number of "equivalent" jars of pickles purchased over a year in France. The French annual consumption of pickles equals 25,000 tons (net drained). The jar used for the experiment contains 380g of pickles (net drained). *M* is therefore equal to 25,000,000,000/380.

5. Conclusion

Using a lab experiment, we showed that globalization issues matter to participants. It seems however that concerns linked to the replacement of the domestic sourcing by foreign sourcing are not major, since participants reverse their WTP when positive economic information is revealed. This result was obtained almost two years after the financial crisis, which indicates a relatively low level of support for protectionism. French consumers support globalization at least in supermarkets. The results are not definitive and should be replicated with other food products representing a larger share of spending and budget than pickles. However, going beyond the "particularity" of pickles, our experiment clearly shows that the origin of products matters, not only with respect to Maille, which is a famous brand, but also to all brands.

The experiment also studies the effect of two different labels respectively signalling a protected geographical indication and fair trade practices. The introduction of labelled products on the market increases the average consumer surplus, since the participants initially purchasing the conventional food products are the ones that give a relatively high premium for these labels. These labels could therefore coexist with conventional products.

The results of this experiment also have implications for firms. The significant decrease in consumer willingness to pay due to negative messages about foreign sourcing/closure of processing facilities is reversed after the revelation of positive information linked to new products/services and new investments recently made by the firm in the domestic country. It suggests that to keep their market shares firms should couple difficult decisions about the streamlining of the supply chain with decisions that are more favourable to the domestic country.

References

Becker, G. M., DeGroot, M. H. and Marschak, J. (1964). Measuring utility by a single-response sequential method. *Behavioural Science* 9(3): 226-232.

Bohm, P., Linden, J. and Sonnergard, J. (1997). Eliciting Reservation Prices: Becker-DeGroot-Marschack Mechanisms vs. Markets. *Economic Journal* 107(443): 1079-1089.

European Commission (2008). Eurobarometer 69 – The Europeans and globalization. Brussels: European Commission.

European Commission (2010). Special Eurobarometer 357 – International Trade. Brussels: European Commission.

European Council (2006). Council Regulation (EC) No 510/2006 of 20 March 2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs.

Fox, J., Hayes, D. J. and Shogren, J. F. (2002). Consumer Preferences for Food Irradiation: How Favorable and Unfavorable Descriptions Affect Preferences for Irradiated Pork in Experimental Auctions. *Journal of Risk and Uncertainty* 24(1): 75-95.

Hassan, D. and Monier-Dilhan, S. (2006). National brands and store brands: competition through public quality labels. *Agribusiness* 22(1): 21-30.

Hayes, D. J., Shogren, J. F., Shin, S. Y. and Kliebenstein, J. B. (1995). Valuing Food Safety in Experimental Auction Markets. *American Journal of Agricultural Economics* 77(1): 40-53.

Loureiro, M. L. and McCluskey, J. J. (2000). Assessing consumer response to protected geographical identification labeling. *Agribusiness* 16(3): 309-320.

Lusk, J. L. and Schroeder, T. C. (2004). Are Choice Experiments Incentive Compatible: A Test with Quality Differentiated Beef Steaks. *American Journal of Agricultural Economics* 86(2): 467-482.

Lusk, J. L. and Shogren, J. F. (2007). *Experimental Auctions. Methods and Applications in Economic and Marketing Research*. Cambridge: Cambridge University Press.

L'Yonne Républicaine (2006). Le cornichon local ne se rend pas. August 18.

Marette, S., Roosen, J., Blanchemanche, S. and Verger, P. (2008). The Choice of Fish Species: An Experiment Measuring the Impact of Risk and Benefit Information. *Journal of Agricultural and Resource Economics* 33(1): 1-18.

Scarpa, R., Philippidis, G. and Spalatro, F. (2005). Product-country images and preferences heterogeneity for Mediterranean food products: A discrete choice framework. *Agribusiness* 21(3): 329-349.

Thornhill, J. (2008). Review of Après la démocratie. *Financial Times*. November 30.

Todd, E. (2008). *Après la démocratie*. Paris: Gallimard.

Toler, S., Briggeman, B. C., Lusk, J. L. and Adams, D. C. (2009). Fairness, Farmers Markets, and Local Production. *American Journal of Agricultural Economics* 91(5):1272-1278.

van Bergeijk, P. (2010). *On the Brink of Deglobalization*. Cheltenham: Edwar Elgar.

World Trade Organization (2005). Panel reports out on geographical indications disputes. Geneva: World Trade Organization.

World Trade Organization (2006). Dispute Settlement: DISPUTE DS174. European Communities — Protection of trademarks and geographical indications for agricultural products and foodstuffs. Geneva: World Trade Organization.

Appendix: Information revealed

General information before WTP1 for both groups:

"You can buy the Maille brand pickle jar that is in front of you. For your information, the retail price of this jar is about €3.40."

Information about foreign sourcing of pickles before WTP2 for group I and before WTP4 for group II:

"In 2000, the Anglo-Dutch group Unilever bought the brand Amora-Maille. In 2004, Unilever, the owner of Amora-Maille, decided, for cost reasons, to source its pickles from India and Madagascar. French producers suddenly had no outlets and had to restructure."

Information about closure of processing facilities in France before WTP3 for group I and before WTP5 for group II:

"In November 2008, Unilever announced a reorganization of its activities:

- Closure of two production plants of Amora-Maille in Burgundy (265 jobs shed);
- Outsourcing of the logistic activities of Amora-Maille;
- Grouping of marketing activities at the headquarters of Unilever France in Rueil-Malmaison (suburbs of Paris) and grouping of research and development activities for the European market in the Netherlands.

According to the management of Amora-Maille, these reorganizations were made for reasons of economic rationalization."

Information about new products and services before WTP4 for group I and before WTP2 for group II:

"Over the last few years, the Maille brand, owned by the Anglo-Dutch group Unilever, was reinforced and renewed with the development of new products and the launch of an online boutique in 2007.

In a highly competitive environment, Maille succeeded in strengthening its image of a traditional and high-quality product."

Information about new investments made in France before WTP5 for group I and before WTP3 for group II:

"Over the last few years, the sales of condiments have decreased sharply in France (e.g. -12% for pickles since 2003). Despite this fall, Unilever France plans to invest €10 million over the next few years in Burgundy. The group also plans to locate its new French logistic centre for its food activities in Burgundy. This location should induce the creation of 250-300 jobs, of which 150 will be saved for the former Amora-Maille employees who lost their jobs following the closure of two of the group's production plants in 2008."