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How much do consumers care about farm labour exploitation?

Andreas C. Drichoutis
Department of Agricultural Economics and Rural Development, Agricultural University of Athens

Abstract:

This paper contributes in the discussion about the trade-offs between fair working conditions and the competitiveness of local agricultural products. We use the Choice Experiment methodology to capture the determinants of individual well-being and behavior by asking consumers to choose between alternative states of the world that vary attributes relevant to a fair labour certification scheme such as inflation of food prices, income of farm labourers, percentage of food imports and unemployment rate. This allows us to estimate how consumers' wellbeing differs with different levels of farm labourers income given all other trade-offs that consumers might face with the introduction of stricter policies regarding farm labour. The results confirm the interest of Greek consumers towards fair working conditions in agriculture since, holding other parameters constant, choice probabilities are responsive to changes in the level of daily wages.

Keywords: fair labour; choice experiment; D-efficiency

JEL: C91; D12; D63; J3; Q1.

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1. Introduction

In one of the most prominent incidents of farm labour exploitation in the Greek agricultural sector, 33 Bangladeshi workers were shot and injured by their supervisors at a strawberry farm because they protested for being unpaid for seven months. This incident brought in the spotlight of mass media attention the issue of labour exploitation as practiced by business in the Greek agricultural farming sector. Subsequently, cases of unfair working conditions in the farm business kept coming to the spotlight, causing the anger of consumers and distribution channels both within as well as outside the country. As a consequence, there was a (temporary) decline in the demand for strawberries. Farmers, on the other hand, claim that in order to keep market

prices at levels consumers are willing to pay and be competitive relative to imported agricultural products, they can't afford the cost of providing fringe benefits to the employees. Thus, their only option, as they claim, is to settle with illegal employment practices.1

This paper seeks to contribute in the controversy about the trade-offs between fair working conditions and the competitiveness of local agricultural products. To better understand whether fair labour in the agro-food sector is indeed an important concept in consumers' perception and also be able to quantify the magnitude of its importance relative to other potential changes that may accompany a fair labour policy, this study uses the Choice Experiment (CE) methodology. Our design, similar to Johansson-Stenman et al.'s (2002) and Alpizar et al.'s (2005), allows us to capture the determinants of individual well-being and behavior by asking consumers to choose between alternative states of the world. The states of the world presented to consumers vary attributes relevant to a proposed fair labour labeling certification system such as inflation of food prices, income of farm labourers, percentage of food imports and unemployment rate. This allows us to estimate how consumers' wellbeing differs with different levels of farm labourers income given all other trade-offs that consumers might face with the introduction of stricter policies regarding farm labour.

To answer the aims of our research agenda we conducted a wide scale questionnaire based choice experiment in two cities of Greece, Athens and Ioannina. We collected responses from more than 3,800 subjects which allows us to make robust inferences. In the next section we describe the data collection methods. Subsequently we report the experimental design and results for the choice experiment. We then conclude in the last section.

2. Data collection methods

A pilot questionnaire was pre-tested in February-March 2014 in the city of Athens with 160 subjects and several adjustments were made. The full scale survey lasted from April to June 11, 2014. In all, eleven interviewers worked for this project (six in Athens). All interviewers were briefed in and trained by the author. Consumers were randomly intercepted in front of the main entrance of various supermarkets. In all, 11,510 subjects were intercepted and 3,825 agreed to take part in the survey resulting in a cooperation rate of 33.23%. Of course, several subjects walked out during an interview or opted not to respond to certain questions, which further reduces the available number of subjects for statistical analysis. For the CE we have valid responses from 3,580 subjects. Table 1 shows number of refusals and agreements to participate in the survey-experiment by location site.

Tab. 1 *- Refusals and agreements to participate in the survey-experiment by location site*

	Refusals	Agreed to participate	Total
Athens	5233	2024	7257
Ioannina	2452	1801	4253
Total (Athens & Ioannina)	7685	3825	11510

To mitigate concerns of self-selection, we systematically recorded gender and age group of

[1] Drichoutis et al. (2017) cites statistics and other sources backing up the claim that the Greek agricultural sector heavily relies on illegal immigrants.

persons that refused to participate in the survey-experiment (Singh, 2007, p. 84). Interviewers were instructed to record the age group of the persons that refused to participate judging from the person's overall look. Table 2 compares gender and age group of co-operators and subjects that refused to participate (non-responders). First note that with respect to geographical location there is no difference between location sites when it comes to gender. On the other hand, there appears to be proportionally more subjects in the younger age group (18-25 years old) in the city of Ioannina. This is to be expected given that the university plays an important role in the life of the city of Ioannina and university students represent a big part of the city's non-permanent population. Overall, there are more female non-responders than female co-operators (73.57 − 66.34 = 7.23%), and vice versa for males. With respect to age, while the middle age groups (between 26 and 60 years old) are comparable between non-responders and co-operators, the extreme age groups (18-25 and ≥61 years old) differ. For example, there are more co-operators in the young age group of 18-25 years old (18.45-6.78=11.67%) and more non-responders in the oldest age group (16.08-7.73=8.35%).

Regarding the demographic profile of our sample, Table 3 shows that the vast majority of respondents were females (66.36%). This is not as problematic as it may seem on first glance, given that primary shoppers are mainly females. For example, one study estimates that 75% of principal household shoppers in the US are females (Mediamark Research and Intelligence, 2009). Therefore, the gender composition of our sample is not representative of the population of the two cities but it might better represent the grocery shopping population. Since we also asked respondents to report on the age and gender composition of their household, we can also compare the demographic profile of respondents' households with that of the 2001 census (which is the latest available census for which basic demographic information are available). The comparison shows that discrepancies with the 2001 census are rather small. Table A1 in the Electronic Supplementary Material compares the demographic profile of respondents and respondents' households with the 2001 census per survey location site. Full details about the data collection methodology and a questionnaire copy can be found in Drichoutis et al. (2014).

Tab. 2 *- Comparison of refusals and co-operators by gender, age group and geographical location site (percentages)*

		Gender		Age group				
		Female	Male	18-25	26-35	36-45	46-60	≥61
Refusals	Ioannina	73.41	26.59	11.30	21.08	31.12	26.79	9.71
	Athens	73.65	26.35	4.66	19.51	25.30	31.45	19.07
	Total (Athens & Ioannina)	73.57	26.43	6.78	20.01	27.16	29.97	16.08
Co-operators	Ioannina	67.08	32.92	26.13	22.93	24.47	22.42	4.05
	Athens	65.69	34.31	11.68	22.96	22.96	31.42	10.98
	Total (Athens & Ioannina)	66.34	33.66	18.45	22.95	23.67	27.20	7.73

***Tab.** 3 - Comparison of gender and age groups between survey respondents, their household members and the 2001 census (percentages)*

	Males	0-9	10-19	20-29	30-39	40-49	50-59	60-69	≥70
Respondents	33.64	0.00	3.47	24.07	22.37	23.50	17.29	7.13	2.18
Households	48.24	8.22	11.89	20.77	15.39	16.61	16.96	7.05	3.03
Census	48.45	9.22	11.46	16.37	16.06	14.54	11.93	10.45	9.96

3. The choice experiment

A labeling certification scheme about fair working conditions (e.g., like the labelling scheme explored in a companion paper in Drichoutis et al. (2017)) is expected to affect the labour market and unemployment rates since, if successful, it would attract part of the workforce from other sectors of the economy or from the pool of unemployed workers whose reservation incomes are higher than current farm wages. On the other hand, given that the production of several commodities is labour intensive (e.g., strawberries) and that workers play a major role in several stages of the production chain, it may drive some farms failing to cover the increased costs to cease production, and thus lower the demand for labour. Such labeling policies are also very likely to create distortions to the domestic supply and demand as well as to the international trade of some commodities and eventually, their prices. Depending on the potential market shares and the profit margins of the labeled products, domestic producers currently exporting their yield may focus on the domestic market while others may turn to exports in order to avoid competing under the new rules of differentiation and as such, incentivize imports of unlabeled products over domestic production. Given that we do not expect consumption patterns to change dramatically, food prices are expected to fall or rise depending on the substitutability and price elasticity of labeled, unlabeled, domestic and imported food products.

Although labeling policies have been extensively examined in the literature, the above presented macroeconomic interdependencies are not easy to capture using conventional non-market valuation techniques involving trade-offs between unlabeled/labeled products and prices. However, consumers alleged preferences over a fair labour certification system may fade out or weaken in face of changes brought about the policies necessary to ensure them. To circumvent this difficulty, we use an alternative choice experiment where consumers choose between states of the world which differ with respect to food prices (current level, ±5%, ±10%), unemployment rates (current level, ±2%, ±5%), food imports (current level, ±10%, ±20%) and daily wages of farm labourers (€20, €23, €26, €30, €35). Our design is similar to Johansson-Stenman et al. (2002) (albeit the scope of the two studies is different) who presented consumers with societies described by their income distribution or by the own and average income and asked them to decide in which society their grandchild would be most content. In a similar fashion, Alpizar et al. (2005) studied choices between societies described by the own and average consumption of goods such as cars, days of vacation, insurance plans and housing.

Because we use a Bayesian efficient design which uses the element of the final model, in a somehow unusual order, we present our utility and econometric model first and then the experimental design and the results.

4. The model

In a random utility framework, the CE methodology assumes utility functions with a linear-in-attributes deterministic component (V) and a random idiosyncratic component (ϵ) reflecting the unobserved influences. As a result, the utility from the j^{th} alternative is given by:

$$U_j = V_j + \epsilon_j, \text{ with } V_j = \sum_k \beta_k X_{kj} \quad (1)$$

with X_{kj}, the value of the k^{th} attribute for this alternative. In our application, assuming that the marginal utility of the four attributes is non-linear in their value and normalizing the utility of the status-quo to zero, the utility model specification is:

$$\begin{aligned} U_j = {} & \beta_1 \Delta_1 Food\_Prices\% + \beta_2 \Delta_2 Food\_Prices\% + \beta_3 \Delta_3 Food\_Prices\% \\ & + \beta_4 \Delta_4 Food\_Prices\% + \beta_5 \Delta_1 Unemployment\% + \beta_6 \Delta_2 Unemployment\% \\ & + \beta_7 \Delta_3 Unemployment\% + \beta_8 \Delta_4 Unemployment\% + \beta_9 \Delta_1 Food\_Imports\% \\ & + \beta_{10} \Delta_2 Food\_Imports\% + \beta_{11} \Delta_3 Food\_Imports\% + \beta_{12} \Delta_4 Food\_Imports\% \\ & + \beta_{13} Farm\_Wage_1 + \beta_{14} Farm\_Wage_2 + \beta_{15} Farm\_Wage_3 \\ & + \beta_{16} Farm\_Wage_4 + \epsilon_j \quad (2) \end{aligned}$$

The variables along with their description are given in Table 4 below.

Tab. 4 *- Variable names and description*

Variables	Description
$\Delta_1 Food\_Prices\%$	Food Prices are 10% lower than current level
$\Delta_2 Food\_Prices\%$	Food Prices are 5% lower than current level
$\Delta_3 Food\_Prices\%$	Food Prices are 5% higher than current level
$\Delta_4 Food\_Prices\%$	Food Prices are 10% higher than current level
$\Delta_5 Food\_Prices\%$*	Food Prices are at the current level
$\Delta_1 Unemployment\%$	Unemployment Rate is 5% lower than current level
$\Delta_2 Unemployment\%$	Unemployment Rate is 2% lower than current level
$\Delta_3 Unemployment\%$	Unemployment Rate is 2% higher than current level
$\Delta_4 Unemployment\%$	Unemployment Rate is 5% higher than current level
$\Delta_5 Unemployment\%$*	Unemployment Rate is at the current level
$\Delta_1 Food\_Imports\%$	Food Imports are 20% lower than current level
$\Delta_2 Food\_Imports\%$	Food Imports are 10% lower than current level
$\Delta_3 Food\_Imports\%$	Food Imports are 10% higher than current level
$\Delta_4 Food\_Imports\%$	Food Imports are 20% higher than current level
$\Delta_5 Food\_Imports\%$*	Food Imports are at the current level
$Farm\_Wage_1$	Daily Income of Farm Laborers is 20€
$Farm\_Wage_2$	Daily Income of Farm Laborers is 23€
$Farm\_Wage_3$	Daily Income of Farm Laborers is 30€
$Farm\_Wage_4$	Daily Income of Farm Laborers is 35€
$Farm\_Wage_5$*	Daily Income of Farm Laborers is 26€ (current level)

*Notes: *Excluded from estimation to avoid perfect multicollinearity*.

McFadden (1974) shows how the unknown parameters of the above utility model can be consistently estimated from stated choice outcomes between different alternatives using the Conditional Logit model. When ϵ_j's are Independently and Identically Distributed (IID), random components can be integrated out and the choice probabilities have a closed form solution. To relax the IID assumption, several models have been proposed with the most popular being the Random Parameters Logit (RPL). The RPL allows heterogeneity of parameters across individuals, correlation of random parameters and non-independence between choice observations (e.g., panel data) and as such it is the most used generalization of the CL. Non-independence between choice observations is a very important characteristic of the RPL model, since in most studies using the CE methodology (including the present one) subjects face more than one choice situations. In the RPL model, the β_j's in equation (2) are assumed to be randomly distributed across respondents according to some known distribution F, namely $\beta_j \sim F\left(\mu_{beta_j}, \sigma_{beta_j}\right)$. Because the choice probabilities are conditional on the specific assumptions made about the joint distribution of the parameters that is a priori unknown, the parameters of F are estimated using simulation (e.g., Train, 2003).

5. Experimental Design

Given that the choice sets had 2 alternative states with each state consisting of 4 attributes with 5 levels (see Table 5), we end up with a full factorial of 58 choices. Clearly, facing so

Tab. 5 *- Attributes and attribute levels of CE*

Attributes	Attribute levels
% Change in Food Prices	-10, -5, 0, 5, 10
% Change in Unemployment Rate	-5, -2, 0, 2, 5
% Change in Food Imports	-20, -10, 0, 10, 20
Income of Farm Laborers (€)	20, 23, 26, 30, 35

many choice situations would have been a huge cognitive burden for respondents, so we had to reduce the size of the design. The option of randomly selecting a subset of the full factorial for each respondent was discarded because it may lead to biased estimates due to attribute level imbalance. For this reason, orthogonal designs with or without blocking have been used in experimental design for a long time. Orthogonal designs satisfy attribute level balance and are able to estimate each parameter independently which, however, comes at a cost of design matrices which are larger than necessary and estimates which are not efficient for non-linear models. Street et al. (2005) proposed an alternative way to reduce the design matrix and at the same time retain orthogonality using a "D-optimal" design that maximizes attribute level differences and the determinant of the information matrix. However, such designs are problematic in the presence of one or more salient attributes while in general they are not

efficient. 2 Given the above, we have decided to employ a Bayesian "D-efficient" design suggested by Rose and Bliemer (2009) aiming to minimize the elements of the Asymptotic Variance-Covariance (AVC) matrix. This option of course, does not come without caveats. Since, apart from the design, the AVC matrix depends on the parameter estimates and the specific econometric model to be used, the generation of efficient designs requires some knowledge of these elements. Such prior information can only be obtained by pilot studies and this is the first step we took in constructing our final design.

Although, as explained above, our aim is to estimate a panel RPL model, the pilot (final) design was (Bayesian) "D-efficient" based on the CL model. According to Bliemer and Rose (2010) there are a few reasons one would want to base their design on a CL model even though a panel RPL is to be estimated. For one, designs for the CL model (especially using Bayesian priors) perform very well when the final model is a panel RPL. Another reason is that designs based on the CL model, are much easier to generate than the ones optimized for the RPL model which are very difficult or even infeasible and can take a considerable amount of time due to many required repetitions. In addition, the number of degrees of freedom necessary for the estimation of the full RPL model is 32 which, given that choices were binary, would correspond to 32 or 35 choice situations (rows in the design matrix) in the pilot study3. With the limited number of subjects participating in the pilot study (100 respondents), it would be infeasible to obtain reliable parameters estimates. Optimizing to the CL model instead, reduced the required size in half (i.e., 20 rows) and allowed the estimation of more reliable priors to be used for the final design. In all, the pilot CE design (see Table A2 in the Electronic Supplementary Material) was a CL D-efficient (see Table 5) with D-error of 0.64 and A-error of 0.92 and with all priors set to zero. We have also used 4 blocks so that each respondent faced only 5 out of the 20 choice situations.4

From 100 subjects that were asked to answer the CE pilot questionnaire, we obtained usable data on 351 choices. The results of the CL model from the pilot are given in Table 6. For the final design, all parameters are assumed to be normally distributed with means equal to their above estimates and standard deviations equal to their associated standard errors. The final design (Table A3) is a Bayesian D-efficient design, optimized for CL with 40 rows and 8 blocks5. The mean D-error of the final design is 0.45 (SD=0.034, [Min,Max]=[0.39,0.56]) and the A-error is 0.75 (SD=0.06, [Min,Max]=[0.64,0.97]).

Tab. 6 *- Results of the Conditional Logit model from the Pilot Study*

Variables	Coeff.	Std.Error	Z	P-value	95% Conf. Interval	
Δ_1*Food_Prices*%	0.45	0.32	1.40	0.16	-0.17	1.0
Δ_2*Food_Prices*%	0.57	0.37	1.63	0.10	-0.11	1.25
Δ_3*Food_Prices*%	-0.24	0.29	-0.83	0.41	-0.80	0.33
Δ_4*Food_Prices*%	-0.01	0.42	-0.01	0.99	-0.83	0.82

[2] An exemption is when all the parameters of the model are zero.

[3] This is to achieve attribute level balance since the attributes had 5 levels.

[4] All designs were constructed in Ngene ver. 1.1.2.

[5] Although the number of rows needed to satisfy the degrees of freedom and attribute level balance is 35, we have added 5 additional rows for better organization of the questionnaires in combination with the other treatments of the survey (see the companion paper Drichoutis et al. (2017))

Δ_1*Unemployment*%	1.08***	0.38	2.83	<0.001	0.33	1.83
Δ_2*Unemployment*%	0.80***	0.31	2.58	0.01	0.19	1.41
Δ_3*Unemployment*%	0.015	0.31	0.05	0.96	-0.59	0.63
Δ_4*Unemployment*%	-0.59*	0.35	-1.67	0.09	-1.29	0.10
Δ_1*Food_Imports*%	0.16	0.38	0.42	0.68	-0.58	0.90
Δ_2*Food_Imports*%	0.76**	0.30	2.55	0.01	0.18	1.35
Δ_3*Food_Imports*%	-0.59*	0.36	-1.65	0.10	-1.30	0.11
Δ_4*Food_Imports*%	-0.88***	0.30	-2.92	<0.001	-1.47	-0.29
$Farm\_Wage_1$	-0.72**	0.36	-1.99	0.05	-1.43	-0.01
$Farm\_Wage_2$	-0.52*	0.29	-1.76	0.08	-1.09	0.06
$Farm\_Wage_3$	0.61*	0.34	1.79	0.07	-0.06	1.27
$Farm\_Wage_4$	0.91*	0.35	2.56	0.01	0.21	1.60

*Notes: ***, **, * Significance at 1%, 5%, 10% level.*

6. Results

Estimates from the RPL model are shown in Table 7. To study consumer's preferences towards fair labour labels, we need to investigate the trade-offs between their introduction to a market and the change of other attributes that are likely to be affected by the labeling policy. Usually, such trade-offs are examined using the marginal WTP which is derived, assuming fixed and linear cost parameter, by the division of the marginal utility of the label by the (negative) partworth of price. When the cost parameter is random and its density is positive around zero, other methods have been developed for the estimation of WTP values (see Scarpa et al., 2008; Train and Weeks, 2005). However, when partworths are non-linear and random, one should study the joint distribution of the parameters that correspond to the attributes affected by the introduction of the labels, in order to conclude upon the underlying preferences of consumers for such a policy.

As explained in Section 4, all parameters $j \in J$ are assumed to be normally distributed across consumers with means $\left(\mu_{beta_j}\right)$ and standard deviations $\left(\sigma_{beta_j}\right)$ as given in Table 7. Due to independence, the sum of the marginal utilities associated with the combination of any attributes is also normally distributed with mean $\sum_j \mu_{beta_j}$ and standard deviation of $\sqrt{\sum_j \sigma^2_{beta_j}}$. Using this fact, in Table 8 we estimate the fraction of consumers that would be in favor of a state of the world where the daily income of farm labourers is 4€ (3€) and 9€ (6€) higher (lower) or a state of the world that food prices are 5% or 10% higher (lower)6. All estimated shares in the table are derived as $1 - F(0)$ where F is the CDF of the sum of the corresponding partworths.

[6] Note that this representation of preferences is irrespective of attributes that are held constant so the results are indicative for any food imports-unemployment combination.

***Tab. 7** - Results of the Random Parameter Logit model*

	Coeff.	Std.Error	Z	p-value	95% Conf.	Interval
			Mean			
Δ_1*Food_Prices*%	0.57***	0.05	10.51	<0.001	0.46	0.67
Δ_2*Food_Prices*%	0.29***	0.05	5.71	<0.001	0.19	0.39
Δ_3*Food_Prices*%	-0.19***	0.05	-3.50	<0.001	-0.29	-0.08
Δ_4*Food_Prices*%	-0.50***	0.05	-9.20	<0.001	-0.60	-0.39
Δ_1*Unemployment*%	0.50***	0.05	9.68	<0.001	0.40	0.60
Δ_2*Unemployment*%	0.35***	0.05	6.46	<0.001	0.24	0.46
Δ_3*Unemployment*%	-0.29***	0.06	-4.70	<0.001	-0.41	-0.17
Δ_4*Unemployment*%	-0.82***	0.08	-10.47	<0.001	-0.98	-0.67
Δ_1*Food_Imports*%	1.23***	0.09	14.12	<0.001	1.06	1.40
Δ_2*Food_Imports*%	0.65***	0.06	10.39	<0.001	0.53	0.78
Δ_3*Food_Imports*%	-0.85***	0.06	-15.39	<0.001	-0.96	-0.74
Δ_4*Food_Imports*%	-1.67***	0.09	-19.61	<0.001	-1.84	-1.51
Farm_Wage$_1$	-0.88***	0.07	-12.79	<0.001	-1.02	-0.75
Farm_Wage$_2$	-0.47***	0.06	-7.74	<0.001	-0.58	-0.35
Farm_Wage$_3$	0.24***	0.05	4.61	<0.001	0.14	0.35
Farm_Wage$_4$	0.69***	0.06	10.99	<0.001	0.57	0.82
			Standard Deviation			
Δ_1*Food_Prices*%	0.53***	0.13	4.13	<0.001	0.28	0.78
Δ_2*Food_Prices*%	0.62***	0.13	4.69	<0.001	0.36	0.87
Δ_3*Food_Prices*%	0.42***	0.15	2.73	0.01	0.12	0.72
Δ_4*Food_Prices*%	0.79***	0.12	6.50	<0.001	0.55	1.02
Δ_1*Unemployment*%	0.61***	0.12	5.30	<0.001	0.39	0.84
Δ_2*Unemployment*%	0.19	0.17	1.18	0.24	-0.13	0.52
Δ_3*Unemployment*%	0.17	0.23	0.76	0.45	-0.27	0.61
Δ_4*Unemployment*%	0.58***	0.14	4.04	<0.001	0.30	0.86
Δ_1*Food_Imports*%	1.25***	0.09	14.08	<0.001	1.07	1.42
Δ_2*Food_Imports*%	0.72***	0.12	6.01	<0.001	0.48	0.95
Δ_3*Food_Imports*%	0.30*	0.18	1.68	0.09	-0.05	0.65
Δ_4*Food_Imports*%	1.27***	0.10	12.28	<0.001	1.07	1.47
Farm_Wage$_1$	1.21***	0.11	11.43	<0.001	1.00	1.42
Farm_Wage$_2$	0.53***	0.12	4.27	<0.001	0.29	0.77
Farm_Wage$_3$	0.06	0.22	0.29	0.77	-0.38	0.50
Farm_Wage$_4$	0.99***	0.09	10.53	<0.001	0.81	1.18

*Notes: ***, **, * Significance at 1%, 5%, 10% level.*

***Tab. 8** - Choice Probabilities of Price-Wage tradeoff scenarios*

Choice Scenario	Food Prices	Daily Income of Farm Laborers	Choice Probability
1	+5% (-5%)	30€ (23€)	56% (42%)
2	+5% (-5%)	35€ (20€)	68% (33%)
3	+10% (-10%)	30€ (23€)	37% (56%)
4	+10% (-10%)	35€ (20€)	56% (40%)

As shown in Table 8, 56% of the respondents would prefer a mild increase (5%) in food prices in return to an increase in daily wages of crop labourers of 4€ (i.e., from a base level of 26€ to 30€). However, only 42% would rather experience an analogous decrease in food prices if it was associated with an even lower decrease (3€) in daily wages (i.e., from a base level of 26€ to 23€). This difference is depicted in Figure 1, which shows how the CDF of the marginal utility below zero associated with the higher daily wage stochastically dominates the choice linked to the lower wage.[7] Figures 2 and 4 reveal that a similar pattern is also observed for higher increases (decreases) in prices and daily wages. However, Figure 3 shows that when a 10% increase (decrease) in food prices is combined with a 4€ (3€) increase (decrease) in the daily income of crop labourers, respondents are more responsive to the price change. Only 37% prefer the combination of 10% increase in food prices and 4€ increase in the daily income of crop labourers while 56% prefer a 10% decrease in food prices and 3€ increase in the daily income of crop labourers.

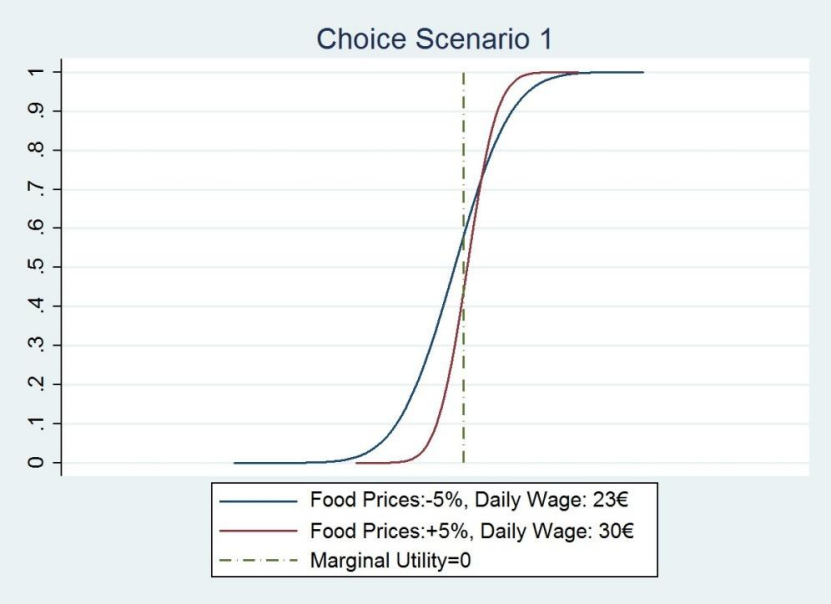

***Fig. 1** - CDF of Marginal Utilities in Choice Scenario 1*

[7] According to our model specification, zero represents the utility associated with the status-quo.

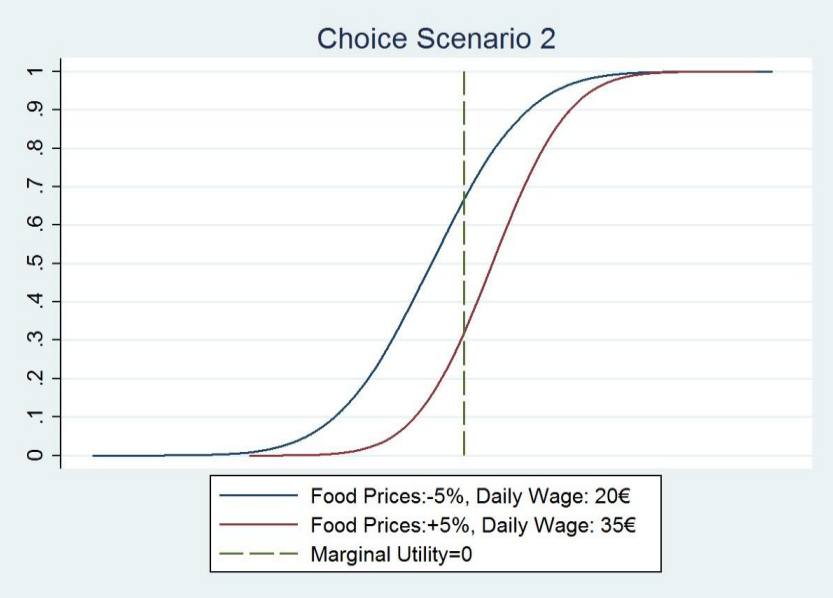

Fig. 2 *- CDF of Marginal Utilities in Choice Scenario 2*

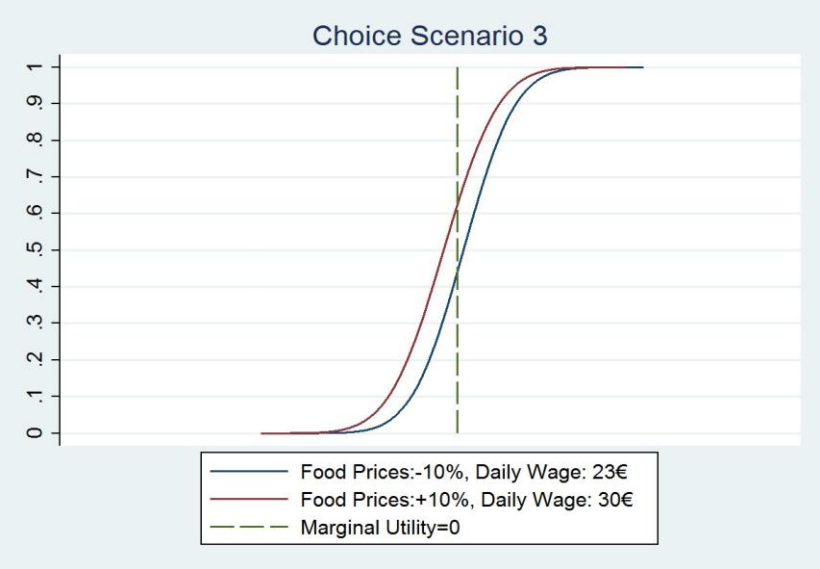

Fig. 3 *- CDF of Marginal Utilities in Choice Scenario 3*

In addition, Figure 5 shows that holding food price changes constant, there is a significant increase (decrease) in choice probabilities of 9% to 19% for incremental changes in farm labourers' income. For example, the percentage of respondents who prefer an increase in food prices of 5% is 12% higher when the associated daily wage change is +9€ than when it is +4€ (68% vs 56%, see Table 8).

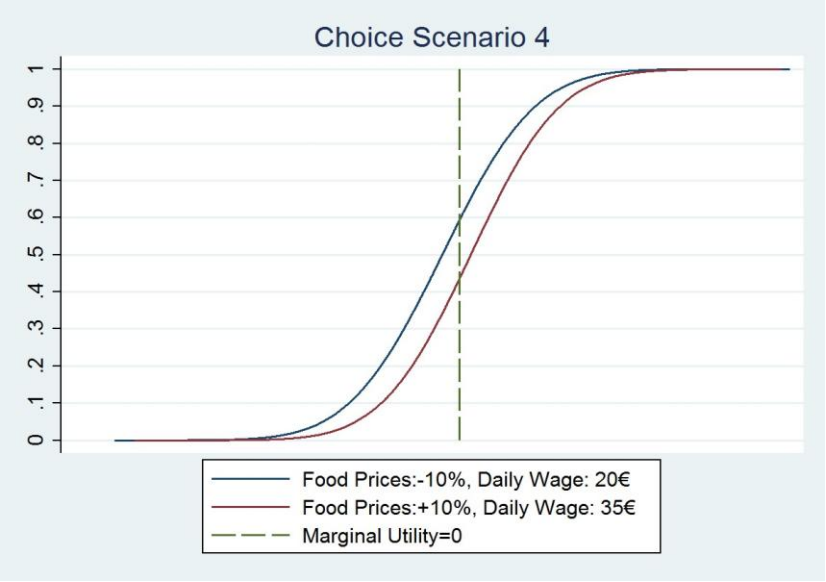

Fig. 4 *- CDF of Marginal Utilities in Choice Scenario 4*

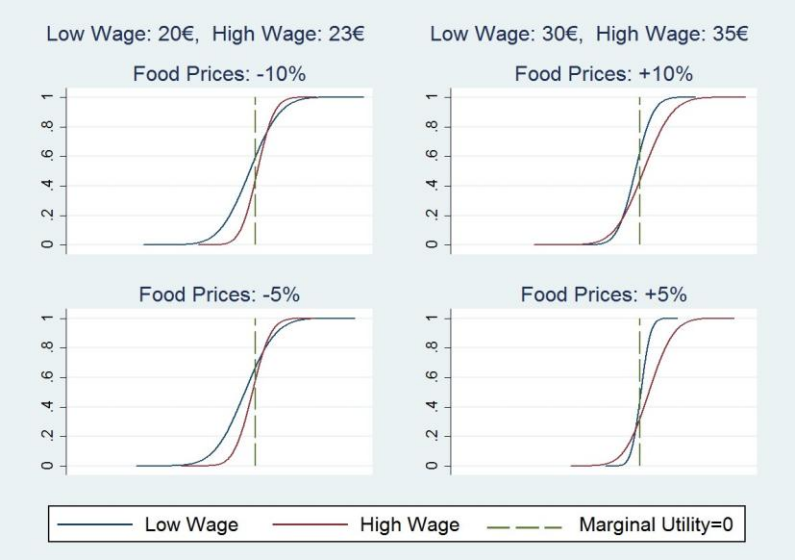

Figure 5 *- CDF Shifts with Daily Wages*

All in all, we find that Greek consumers have a high interest towards fair working conditions in agriculture which is reflected to the fact that choice probabilities are quite responsive to changes in the level of daily wages.

7. Conclusions

There have been increasing calls around the world for urgent action to tackle widespread abuse of migrant workers in the agri-food sector. This paper sought to contribute in the controversy about the trade-offs between fair working conditions and the competitiveness of local agricultural products. To explore whether fair labour in the agro-food sector is an important concept in consumers' perception and also be able to quantify the magnitude of its importance relative to other potential changes that may accompany a fair labour policy we used a Choice

Experiment. Our design, allowed us to capture the determinants of individual well-being and behavior by asking consumers to choose between alternative states of the world which varied in terms of food prices, income of farm labourers, percentage of food imports and unemployment rate. The results in general confirm the interest of Greek consumers towards fair working conditions in agriculture since, holding other parameters constant, choice probabilities are responsive to changes in the level of daily wages.

In addition, when consumers consider the food prices-labour wages trade-off they are inclined to choose states of the world with higher crop labourers wages. Although in determining the importance of a fair labour certification system, one should examine the welfare effect of all changes brought about the policy (which are a priori unknown), we believe that our results are sufficient to establish a good motivation for a labelling scheme that would certify fair labour conditions at all stages of agricultural production.

Nevertheless, the fair labour label should not be looked at as a scheme that would force all farmers to offer better working conditions and hire only green card holders, given that a law mandating the hiring of only green card holders could not always be enforced. A voluntary scheme, on the other hand, could potentially create the right incentives for some producers to differentiate their products, sell these at a higher premium, and avoid a market where only 'lemons' are sold (Akerlof, 1970).

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