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# Fair Trade? Yes, but not at Christmas!

# Evidence from scanner data on real French Fairtrade purchases

Gaëlle BALINEAU *

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**Contact at AFD:** Gaëlle BALINEAU (balineaug@afd.fr)

* Economist, Agence Française de Développement.

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**Fair Trade? Yes, but not at Christmas! Evidence from scanner data on real French Fairtrade purchases**

Gaëlle Balineau, Economist, Agence Française de Développement

**Summary**

Responsible consumption based on labels arouses enthusiasm among the community of development (donors, NGOs, researchers, policy makers). Indeed, information provision may appear as a "third wave" of regulation (Tietenberg, 1998), both less costly and more efficient than "command-and-control" or market-based instruments, particularly for commons or global public goods. However, analysis of responsible consumption is still scarce, particularly in economics. Relying on household scanner data on real French Fairtrade and conventional purchases to estimate a system of demand, this article shows that aside from income, standard consumer attributes are not relevant to profile the responsible consumer, particularly compared to variables that are more studied by marketing and business fields such as 'attitudes'. The empirical analysis suggests that Fairtrade goods are still luxury goods, and that the role of information, trust, and product attributes in explaining consumption choices should be worth studying in deeper aspects and details than it is currently the case.

**Keywords:** Fair trade, responsible consumption, systems of demand, labels.

**JEL Classification:** C34, D12, L15, O13, Q01.

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## I. Introduction

Since the beginning of the 21st century, the growing market share of Fair Trade (FT) products has been matched by an increasing interest of researchers in this responsible consumption behaviour. In their review of research on FT consumption, Andorfer and Liebe (2011) identify no less than 51 articles that have been published in English-language peer-reviewed journals between 2000 and 2011. The majority of them falls within the marketing research field and focuses on the consumers' motives and values underlying FT purchases. For example, de Ferran and Grunet (2007) find that French FT consumers have quite different motives (ranging from the desire to foster equality through the participation in alternative economy through the wish to protect oneself and the environment).[1] By contrast, Andorfer and Liebe (2011) point out that fewer studies analyse FT consumption according to the basic economic model that is to say in terms of "consumer preferences for ethical product features (*i.e.* the choices *between* products)" (p.2) – we italicize. These generally try to assess the determinants of FT consumption or, put differently, to "identify the socially responsible consumer in terms of demographic characteristics" (De Pelsmacker *et al.*, 2005, p.365), and to distinguish the effects of income from the one of other demographic characteristics (age, gender, profession, education).

Economic analyses are two-step studies in which the identification of FT consumers from whom the profile is drawn up has been based primarily on consumer willingness-to-pay (WTP) estimations, which is then regressed against a set of socio-demographics. Some estimations of the WTP rely on stated preferences surveys (Loureiro & Lotade, 2005; Becchetti & Rosati, 2007; Cicia, 2010, Mahé, 2009; De Pelsmacker *et al.*, 2005), while others are based on lab-experiments that reveal preferences (Arnot *et al.*, 2006; Rode *et al.*, 2008; Tagbata & Sirieix, 2008). The accuracy of FT consumers' profile thus depends on the reliability of consumers' declarations and/or experiments' results. However, because of many potential biases (selection-, social desirability-, and hypothetical bias), the data on WTP for FT products are hypothetical and may not result in actual purchase.[2] It is all the more problematic to rely on such estimations of preferences than ethical behaviour is particularly affected by the "attitude behaviour gap" (Andorfer & Liebe, 2011; Mahé, 2010).

Besides, due to survey or experimentation costs, most of these studies only concern one type of product (mainly coffee), and a limited number of participants generally chosen for convenience reasons. As a consequence, they are not representative of national

[1] For another study of French FT consumers' attitudes and motives, see Ozcaglar-Toulouse *et al.* (2006).
[2] Hainmueller *et al.* (2015) avoid many of these biases estimating WTP for FT from field experiments conducted in a multistore US retail chain. Hiscox *et al.* (2011) also provide interesting estimates from auctions on eBay.

populations or of national FT markets, and cannot be compared with each other's. Moreover, the lack of availability of many demographic variables may lead to misinterpretations of their respective influence. For example, the influence of profession and education level, found in many studies, might in fact reflects the role of income in FT consumption.

To our knowledge, the FT consumer profile drawn up by Cailleba and Casteran (2010) is the only one which is based on real purchases data. On the basis of 7,587 transactions, the authors identify general features of French FT coffee consumers. They find that "consumer segments differ significantly in terms of income but not in terms of household size and average age" (p.618). However, although based on real purchases, the work of Cailleba and Casteran is not exempt from limitations. First, they identify consumption through the number of transactions, regardless of the amount spent and the number of products bought. Second, transactions registered are store-specific (not household-specific). In other words, transactions made by the same households in other supermarkets than those included in the database are not registered. FT purchases may thus be underestimated. Lastly, the study of Cailleba and Casteran, as others, concerns only coffee, relies on a limited number of socio-demographic variables, and is not representative of the French population.

Contrary to previous studies, this article analyses FT consumption through scanned data on real purchases made in 2007 by a more than 12,000 households' panel representative of the French population in terms of usual characteristics (household size, residence, age and profession of the head of household…). Data on purchases are available for the entire FT-labelled market (coffee, chocolate and bananas but also spices, tea, rice, etc.). This article thus relies on consumers' actual behaviour towards FT, and allows inferences about the French population. Moreover, the database used in this article contains information on many households' characteristics, which helps to disentangle the effects of income and other socio-demographics on FT consumption. The estimation of a quadratic Working-Leser demand system and budget elasticities show that FT goods are luxury goods, whose consumption sharply depends on income and on the consumers' general perception of alternative consumption (organic and FT products).

The rest of the article is organized as follows. Section II starts with a detailed description of data used and presents some descriptive statistics on the French consumers' actual purchases of FT products. Section III presents the Working-Leser demand system retained to model FT consumption, and presents the methods and procedures used to estimate this demand system. Section IV contains the results about the FT consumers' profile and the budget elasticities of FT products. Section V discusses results and their implications for both the FT market and future research.

## II. Data

### 2.1. Data source

Data used in this paper have been provided by TNS Worldpanel (now the French filial of the Kantar Worldpanel group). In France, Kantar Worldpanel registers daily food, drink, hygiene, health, and cleaning products purchases for at-home consumption of more than 12,000 households. Participating households are provided with scanners to register the barcodes of all purchases brought into the home. This information is then sent electronically to Kantar Worldpanel. The dataset thus reflects the real purchasing behaviour of households. Besides this main characteristic, the dataset has many other advantages. First, it includes information on household characteristics and attitudes, updated monthly via a questionnaire which households fill at home, and that allows us to jointly estimate the influence of profession, income, age, region, etc., and attitudes on Fair Trade consumption (see table 1 below for a complete description of variables used in this article). Second, this 12,000 households' panel is representative of the French population in terms of age, profession of the household head, region, housing, and household size. Third, households who are recruited into the survey continue to participate for several years, which allows us to observe the purchasing behaviour of the same households for one year, and thus to avoid the infrequency of purchase problem.

### 2.2. Data description

The dataset contains only purchases of products for which there exists at least one 'Fairtrade variant'. By 'Fairtrade variant', we mean a 'Fairtrade-labelled' product.[3] In other words, our dataset does not register Fair Trade products that are sold in specialized shops (such as the French worldshop Artisans du Monde for example), or that are labelled by another third-party certifier. Data contain daily Fairtrade and conventional purchases that belong to one of the 14 following 'market segments': Sugar, rice and other grains (quinoa for example), jams and stewed fruits, coffee, dried fruits,

[3] FLO has developed an international certification system for FT goods. For end-products to carry the 'Fairtrade' mark the entire production chain must be monitored by an independent certification body (FLO-Cert), which ensures that producers, traders, and retailers comply with a number of social, economic and environmental requirements set by FLO. First and foremost, FLO requires the buyers to pay the 'Fairtrade price' to producers (that is to say a price fixed by FLO that aims to cover at least production costs), and a 'Fairtrade premium' to their cooperatives. Second, producers have to observe many economic, social, and environmental standards. For example, they have to be organized in a democratic and transparent structure which does not discriminate against any member, invest the Fairtrade premium in order to promote the economic development and the autonomy of their organization, and comply with a number of environmentally sound agricultural practices. For a detailed description of the FLO's system, see Raynolds (2009).

biscuits, honey, juice and soft drinks, ice cream, cocoa, chocolate and sweets, cosmetics and beauty products, tea, herbs and spices. In the remainder of that paper, we adopt the following terminology: These 14 'segments' constitute the 'grocery' market. For each purchase made in this market, the database indicates the segment (coffee, tea, rice, spice…), the amount spent in euros, the date of purchase (day/month/year), and if it concerned Fairtrade-labelled or conventional products.

Our data concern the daily purchases of 13,122 households made between 9 October 2006 and 7 October 2007. It should be noted that only 9,901 households (around 75%) participating throughout the entire calendar year. For the empirical analysis, we consider households expenditures for each 13 28-days periods from 9 October 2006 to 7 October 2007. This particular panel structure is due to the collection of socio-demographic variables which are updated every 28-days period. As a consequence, we cannot deflate our data as the consumption price index is provided monthly, and not weekly, by the French National Institute of Statistics (INSEE). However, between October 2006 and October 2007, the variation of consumption price index lies between 1% and 1.5%, suggesting a low inflation.

Our dataset also contains the following information: Households' size and income, profession of the head of household, department of residence, age and education of the person in charge of purchases in the household (hereafter the PCP, most of the time a woman). Table 1 below details these socio-demographics. We also have the PCP's positions towards Fair Trade, organic agriculture, genetically modified organisms (GMOs), food security, and quality labels; as well as its declared behaviour towards the protection of environment. These variables are less subject to the social desirability bias than in previously mentioned studies because they are collected via a mail-sent questionnaire filled at home by households (there is no interaction between the surveyed and the surveyor).

**Table 1 – Variables description**

| Variables | Definition and detailed description / values |
|---|---|
| Purchases | |
| $x_{i,t}^{s\_conv}$ | Expenditures (€) made by household i in period t for conventional grocery products of segments s* |
| $x_{i,t}^{s\_ft}$ | Expenditures (€) made by household i in period t for FT labeled grocery products of segments s* |
| $x_{i,t}^{conv}$ | Total expenditures (€) made by household i in period t for conventional grocery products ($\sum_s x_{i,t}^{s\_conv} = x_{i,t}^{conv}$) |
| $x_{i,t}^{ft}$ | Total expenditures (€) made by household i in period t for FT labeled grocery products ($\sum_s x_{i,t}^{s\_ft} = x_{i,t}^{ft}$) |
| $x$ | Total expenditures (€) made by household i in period t for grocery products ($x_{i,t}^{conv} + x_{i,t}^{ft} = x$) |
| *Segment $s$ takes 14 values: rice, sugar, jams, coffee, fruits, biscuits, honey, juice, ice cream, cocoa, chocolate, cosmetics, tea, spices. | |
| Socio-demographics | |
| *hsize* (continuous var.) | Household size, *hsize* = {1, 2, …., 11+} |
| *Income* (categorial var.) | Household monthly income group (€), *income* takes 18 values: <300€, 300-449€, 450-599€, 600-749€, 750-899€, 900-1,099€, 1,100-1,199€, 1,200-1,399€, 1,400-1,499€, 1,500-1,899€, 1,900-2,299€, 2,300-2,699€, 2,700-2,999€, 3,000-3,799€, 3,800-4,499€, 4,500-5,399€, 5,400-6,999€, 7,000€+ |
| *Profession* (categorial var.) | Socio-professional group of the head of household, *profession* takes 29 values which correspond to the level 2 or 3 of the INSEE (French National Institute of the Statistics and Economic Surveys) socio-professional group nomenclature. At the most aggregated level, *profession* takes 8 values that correspond to the first level of the INSEE nomenclature: farmers, craftspeople and tradespeople, senior executives, middle-level professionals, employees, blue-collar workers, retired workers, other unemployed. |
| *Department* (categorical var.) | Household department of residence (except Corse and DOM), 94 departments. |
| *Region* (categorical var.) | Household region of residence (aggregation of departments), 21 regions. |
| *Age* (continuous var.) | Age (years) of the Person in Charge of Purchases in the household (PCP) |

| **Variables** | **Definition and detailed description / values** |
|---|---|
| *Educ* (categorical var.) | Education level of the PCP, *educ* takes 7 values: 1= not declared, 2=primary, 3=secondary, 4=technical, 5=high school, 6=bachelor, 7=master+ |
| Attitudes | |
| *Attitudes are categorical variables which takes 4 values that indicate if the PCP strongly disagrees (1), disagrees (2), agrees (3), or strongly agrees (4) with the following claims*: | |
| *Fair Trade* | "Buying Fair Trade products is a socially aware behavior" ("*Acheter des produits équitables est un comportement citoyen*") |
| *Organic* | "I am ready to pay more for organic products" |
| *Earth* | "I preserve the earth's resources" |
| *GMO* | "I avoid buying genetically modified organisms" |
| *Label* | "I have confidence in the labels *Label Rouge* and *Appellation d'Origine Contrôlée*" (*Label Rouge* and *AOC* are French quality superior signs). |
| *Quality* | "Organic products are of a superior quality" |
| *Food Sec* | "I am worried about food security concerns" |
| *Recycling* | 'I buy products with recycling packaging" |
| Panel structure (subscripts) | |
| Period $t$ | Subscripts $t$ denotes the 28 days-period concerned by purchases. There are 13 distinct periods in the database. 200613 (Dec. 4 – Dec. 31, 2013) includes Christmas, and 200705 includes the two 2005 Fair Trade weeks (April 23 – May 13, 2007). |
| Household $i$ | Subscripts $i$ denotes the household, i={1, …, 13122}. Only 9,901 households have been followed during the 13 periods, the other 3,221 correspond to the panel renewal. |

### 2.3. Descriptive statistics

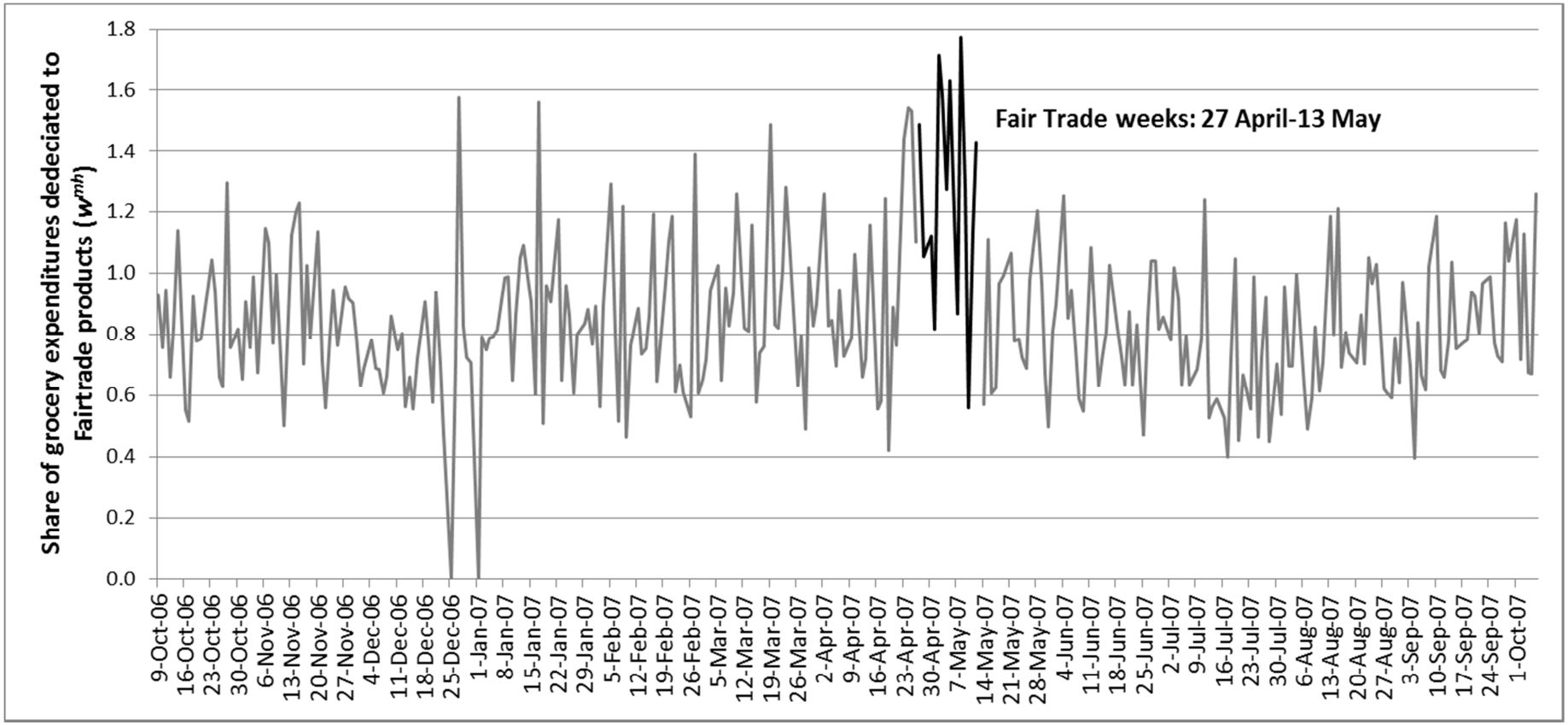
Between October 2006 and October 2007, the average amount spent by French households for grocery products reached 378 €, of which only 3.20 € (0.85%) was dedicated to Fairtrade products. Over these 9,901 households observed throughout the entire year, 2,053 (around 20%) bought at least one Fairtrade product. On average, 2,053 these Fairtrade consumers spent 455 € for grocery products, of which 15 € (3.3%) were spent for Fairtrade products. Coffee is the most consumed Fairtrade product as Fairtrade consumers spent 40% of their Fairtrade budget for coffee, 17% for cocoa, and 13% for tea.[5]

Descriptive statistics show that the share of grocery expenditures dedicated to Fairtrade products increase with income. Executives, intermediary professions and unemployed (including students) spent a larger share of their budget for Fairtrade goods than the average (respectively 1.5%, 1.1%, and 1.1%), as well as the 45-59 and 60-74 years old (respectively 1.05% and 0.91%). Fairtrade expenditures increase with the level of education and decrease with household size.

Other interesting statistics concern the geographical distribution of Fairtrade expenditures, and their evolution through the year. Figure 1 shows the positive impact on Fair Trade weeks on consumption. During the Fair Trade weeks, which traditionally take place every year in the months of April-May (from April 23 to May 13 in 2007), Fair Trade actors organize many events throughout the entire territory to promote Fair Trade. As Figure 1 shows, this promotional campaign seems to bear fruits as the average amount spent in France for Fairtrade goods during these two weeks is 1.65 higher than during the rest of the year (139 € versus 84 €), which results in a higher share of grocery expenditures dedicated to Fairtrade goods over the Fair Trade weeks (1.19% versus 0.81% during the rest of the year).

[5] 8% of the Fairtrade budget is spent for juices and soft drinks, 7% for rice and other grains, 5% for sugar, 4% for jams and stewed fruits, and less than 1% for each other Fairtrade product (see Table 3 column (4) in section 4.3).

**Figure 1 – The impact of Fair Trade weeks on Fairtrade consumption**



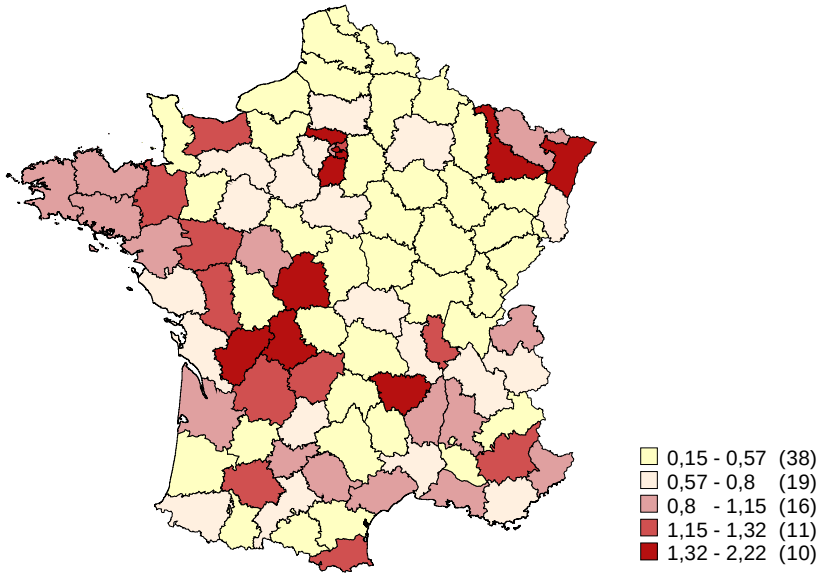

Note: This figure represents the evolution of daily share of grocery expenditures dedicated to Fairtrade products between, October 2006 and October 2007). Sundays are dropped for more visibility. Source: author, from TNS Worldpanel data.

Figure 2a displays how the share of grocery budget French households dedicated to Fairtrade products between 2006 and 2007 varies through the territory. Households located in the regions of Limousin, Île-de-France, Alsace, Bretagne, Basse-Normandie Pays de la Loire, Lorraine, Poitou-Charentes, Rhône-Alpes dedicate a larger share of their grocery budget to Fairtrade goods than other households. These discrepancies between departments and regions may reflect the different availability of Fairtrade products across departments, which might follow the rate of urbanization and/or the dynamism of department (proxied by their GDP per capita) as Fairtrade-labelled products are mainly distributed through mainstream retail channels (*i.e.* supermarkets). Figures 2b and 2c, which respectively shows the rate or urbanization by departments in France in 2007 and the GDP per capita in 2005 confirm this intuition. Differences between departments may also be due to differences in the activism of Fair Trade association. For example, the fact that consumers living in Alsace (north-east) spent more than others for Fairtrade products may be due to the many promotional activities undertaken by the dynamic COLECOSOL (Comity for Fair Trade promotion in Alsace) since 2001.

Lastly, consumers who claim to be ready to pay more for organic products, those who think that "buying Fairtrade products is a responsible behaviour", or that "organic products are of superior quality", and those who have confidence in French official quality superior signs and declare to act to preserve the environment spend a larger share of their budget for Fairtrade products than consumers who worried about food security issues and risks associated to GMOs.

Descriptive statistics thus corroborate results found in the literature on Fairtrade consumption. The next section presents the model to be estimated to disentangle the effects of these households' characteristics on Fairtrade consumption.

Figure 2a – Geographical distribution of Fair Trade consumers (share of grocery budget dedicated to Fairtrade products, by quintile)




Source: Author, from TNS Worldpanel data

Figure 2b – Rate of urbanization by department in France (2007, by quintile)

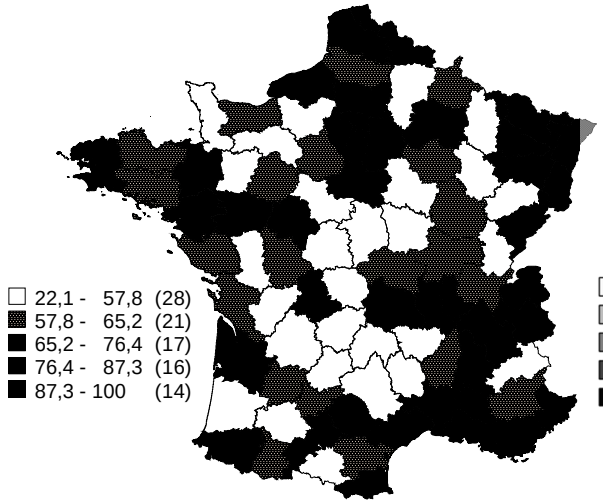
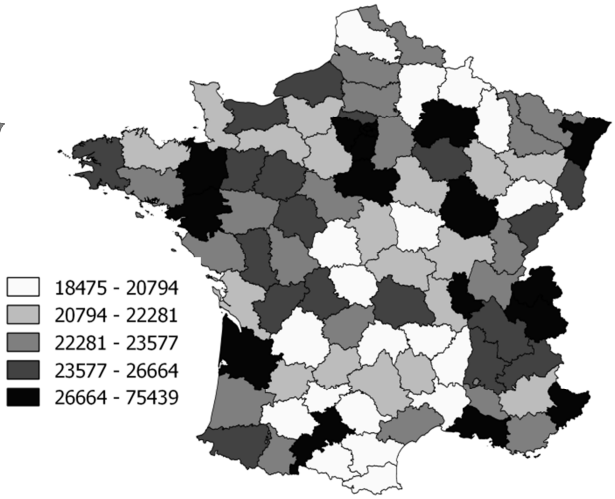



Figure 2c – GDP per capita (euro) by department in France (2005, by quintile)




Source: Author, from INSEE data

## III. Model and estimation methods

This section describes the specification chosen to model the demand for Fairtrade products, according to socio-demographics and attitudes.

### 3.1 Empirical specification

The limited availability of data constrains our modelling of Fairtrade demand. First, as we do not have price data, we based our empirical specification for Fairtrade consumption on a Working-Leser model (Working, 1943; Leser, 1963; see Deaton and Muellbauer, 1980; Banks *et al.*, 1997), where expenditures shares for goods g ($w^g$) only depend on disposable income ($m$) and socio-demographic variables ($D_k$). Second, purchase data concern only 14 segments; we are constrained to estimate a partial system of demand. We thus assume a multistage budgeting process in which households allocate their disposable income according to the following stages: First, as usual in the literature (Robin, 1999), we assume that households distribute their income between consumption and saving. Second, because we only have 'grocery expenditures' in our database, we have to postulate the separability of preferences between grocery products and other products (particularly other food products) in the household budget. In a third step, we suppose that households divide their grocery budget in a Fairtrade part and a conventional part. This is only in the last step that Fairtrade (respectively conventional) grocery budget is allocated across Fairtrade goods (resp. conventional goods) such as Fairtrade coffee, Fairtrade tea… (resp. conventional coffee, conventional tea). Figure A-1 illustrates this stepwise budgeting assumption. Econometrically, the analysis of consumers' preferences between Fairtrade and conventional products implies the estimation of the following system (system I or SI):

$$\begin{cases} (eq\text{I}.1): w^{FT}{}_{i,t} \equiv \dfrac{x^{FT}{}_{i,t}}{x_{i,t}} = \alpha_0^{FT} + \sum_{k=1}^{K} \alpha_k^{FT} D_{k\,i,t} + \beta^{FT} \ln x_{i,t} + \lambda^{FT} (\ln x_{i,t})^2 + u^{FT}{}_{i,t} \\ (eq\text{I}.2): w^{conv}{}_{i,t} \equiv \dfrac{x^{conv}{}_{i,t}}{x_{i,t}} = \alpha_0^{conv} + \sum_{k=1}^{K} \alpha_k^{conv} D_{k\,i,t} + \beta^{conv} \ln x_{i,t} + \lambda^{conv} (\ln x_{i,t})^2 + u^{conv}{}_{i,t} \end{cases} \quad \text{(SI)}$$

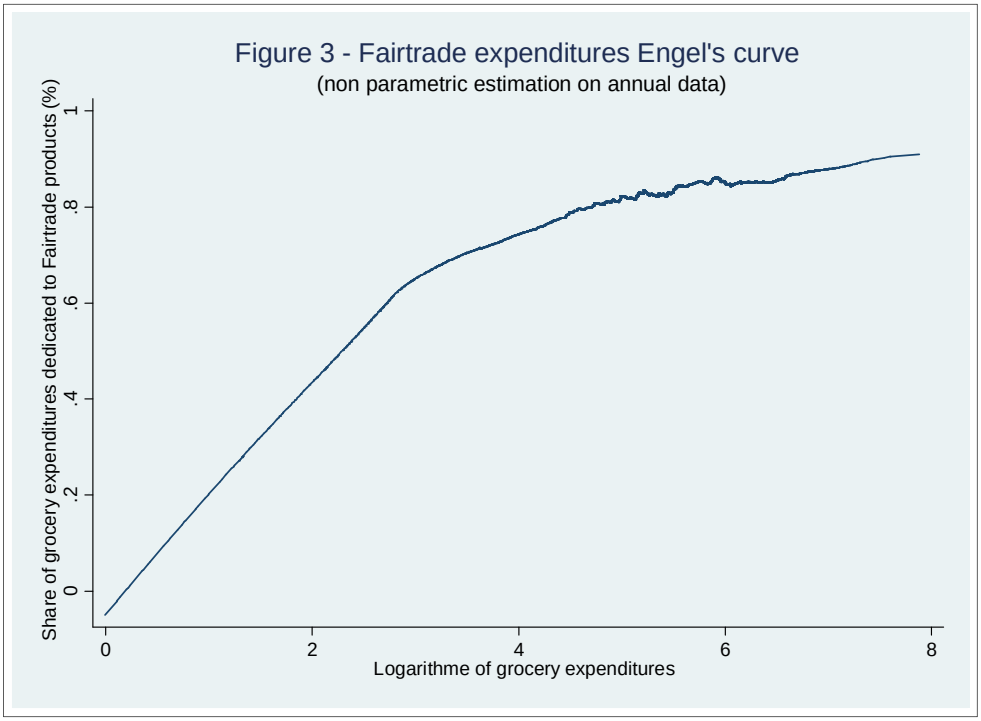
Where $i$ denotes household ($i$={1,…, 13122}) and $t$ denotes the 28-days period ($t$={1,…,13}). $x^{FT}$ is the total amount spent on Fairtrade grocery products (Fairtrade tea, Fairtrade coffee, etc.); $x^{conv}$ is the total amount spent on conventional grocery products, and $x$ is the total grocery expenditure ($x = x^{FT} + x^{conv}$). Hereafter the expression 'total expenditure' refers to total grocery expenditure. $D_k$ are the households' characteristics and attitudes described in Table 1†† that will be introduced progressively

†† To estimate the effect of socio-demographics and attitudes on demand for Fairtrade products, we use the 'translating approach' developed by Pollak and Wales (1978). For other methods and discussion of

in our estimations. Their exact number depends on the level of disaggregation taken into account (region or department of residence for example). $u$ is the error term. The additivity constraint implies that:

$$\begin{cases} \sum_g \alpha_0^g = 1 \\ \sum_g \alpha_k^g = 0, \forall k \\ \sum_g \beta^g = \sum_g \lambda^g = 0 \end{cases} \qquad \text{where } g = \{FT,\ conv\} \qquad (8)$$

The incorporation of the quadratic term in our model is justified by the nonlinearity of the 'expenditure Engel curve' [‡‡]: Concavity in Figure 3, which shows the budget share of Fairtrade goods as a function of the grocery budget, suggests that $\lambda$ coefficients should be negative.




Notes: This expenditure Engel curve was estimated non-parametrically using the Lowess smoothing technique in order to allow for nonlinearities in the curve (see Dahr *et al.*, 2005, and Cameron and Trivedi, 2005). All computations and regressions were performed using STATA 10.
Source: Author, from TNS Worldpanel data.

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their respective drawbacks and advantages, see Pollak and Wales (1981), or Sadoulet and de Janvry (1995).

[‡‡] Dhar and Foltz (2005, p.217) recall that such expenditure Engel curves are "different than Engel curves drawn with respect to total income".

It should be noted that the stepwise budgeting hypothesis leading to SI differs from the stepwise budgeting traditionally assumed in the literature on differentiated goods, which generally focuses on one type of good (soda, milk, beer…). Dhar and Foltz (2005), for example, analysing the demand market for labelled and unlabelled milk, suppose that households allocate their disposable income according to the following three-stage budgeting process: Households first divide their income among saving and consumption, and then allocate their consumption budget across goods. The budget for milk is determined in this second stage, and the choice between different brands of milk is made in the third stage. Hausman *et al.* (1994), Dhar *et al.* (2003) and Jonas and Roosen (2008) suppose the same three-stage budgeting process for, respectively; beer, soda, and milk. Transposing this budgeting process to our case would lead to the following sequence: First, households distribute their disposable income among saving and consumption. Second, they divide consumption expenditures between grocery products and other (groups of) products. Third, they allocate the grocery budget across the 14 segments listed above (coffee, tea, rice…). Fourth, they choose between a Fairtrade and a conventional variant (see the illustration of what we referred to as the 'traditional' separability assumption in figure A-1).

The econometric consequence of this budgeting process is that the analysis of consumers' preference between Fairtrade and conventional variant has to be made product by product, through the estimation of 14 2-equations systems corresponding to the 14 segments identified above (coffee, tea, chocolate, rice…):

$$\begin{cases} w^{s\_FT} \equiv \dfrac{x^{s\_FT}}{x^{s}} = \alpha_0^{s\_FT} + \sum_{k=1}^{K} \alpha_k^{s\_FT} D_k + \beta^{s\_FT} \ln x^{s} + \lambda^{s\_FT} (\ln x^{s})^2 \\ w^{s\_conv} \equiv \dfrac{x^{s\_conv}}{x^{s}} = \alpha_0^{s\_conv} + \sum_{k=1}^{K} \alpha_k^{s\_conv} D_k + \beta^{s\_conv} \ln x^{s} + \lambda^{s\_conv} (\ln x^{s})^2 \end{cases} \quad (7)$$

Where $x^{s\_FT}$ is the total amount spent for Fairtrade-labeled products of one of our 14 segments (the coffee segment for example), $x^{s\_conv}$ are the expenditures for conventional products of this segment, $x^{s}$ is the total expenditure for products of this segment ($x^{s} = x^{s\_FT} + x^{s\_conv}$).

We maintain the first hypothesis presented for three main reasons.[§§] First, weak separability of Fairtrade grocery expenditures from conventional grocery expenditure may not be a less realistic assumption than weak separability of coffee, tea, chocolate… expenditure from each other. Second, taking the total Fairtrade consumption instead of

[§§] Results of the separate estimation of some of the14 2-equations systems that result from the separability hypothesis traditionally made by authors who study the consumption of differentiated products with a demand system will be given as a robustness checks in the Appendix (table A-4).

the Fairtrade consumption for one product in particular distinguishes this contribution from the literature in allowing to determine the profile of the Fairtrade consumer in general (and not the by-product Fairtrade consumer profile: Fairtrade coffee consumers' profile, …). Third, combined with this assumption, the structure of our data allows us to study the allocation of Fairtrade budget across goods: Is there a relationship between the Fairtrade budget and goods consumed? Do large Fairtrade consumers differ from small Fairtrade consumers in their preferences? Can we find some differences with the conventional allocation? This will allow us to give insights of the potential role of product attributes in studying responsible consumption. To do this, we specify a second empirical model. The first (hereafter 'system I' or SI) is designed to study the general demand for Fairtrade products. The second ('system II' or SII) focuses the analysis on Fairtrade consumers and the allocation of their Fairtrade budget across Fairtrade goods:

$$\begin{cases} (\text{II.1}): w^{sugar\_FT}{}_i \equiv \dfrac{x^{sugar\_FT}{}_i}{x^{FT}{}_i} = \alpha^{sugar\_FT} + \beta^{sugar\_FT} \ln x^{FT}{}_i + \lambda^{sugar\_FT} (\ln x^{FT}{}_i)^2 + u^{sugar\_FT}{}_i \\ (\text{II.2}): w^{rice\_mh}{}_i \equiv \dfrac{x^{rice\_mh}{}_i}{x^{FT}{}_i} = \alpha^{rice\_mh} + \beta^{rice\_mh} \ln x^{FT}{}_i + \lambda^{rice\_mh} (\ln x^{FT}{}_i)^2 + u^{rice\_mh}{}_i \\ .... \\ .... \\ .... \\ (\text{II.14}): w^{spice\_FT}{}_i \equiv \dfrac{x^{spice\_FT}{}_i}{x^{FT}{}_i} = \alpha^{spice\_FT} + \beta^{spice\_FT} \ln x^{FT}{}_i + \lambda^{spice\_FT} (\ln x^{FT}{}_i)^2 + u^{spice\_FT}{}_i \end{cases} \quad \text{(SII)}$$

Where $x^{s\_FT}$ is the total amount spent for Fairtrade-labelled products in segment $s$, with $s$ taking 14 values that correspond to the 14 market segments listed above (rice, coffee, chocolate…). $x^{FT}$ are the total expenditure for Fairtrade goods.[***]

As the objective of the estimation of SII is only to study how Fairtrade consumers distribute their Fairtrade budget among the different Fairtrade-labelled products, we will estimate it on an annual basis for Fairtrade consumers only, that is to say for the 2,053 households which purchased at least one Fairtrade-labelled product between October 2006 and October 2007 and that have been followed throughout the whole period. As a consequence, $i$={1,…, 2,053}, and SII does not contain time subscript.

[***] $\sum_s x^{s\_FT} = x^{FT}$

The additivity constraint implies that:

$$\begin{cases} \sum_s \alpha^s = 1 \\ \sum_s \beta^s = \sum_s \lambda^s = 0 \end{cases} \quad \text{where } s \text{ takes 14 values } \textit{(sugar, rice… spice)} \qquad (9)$$

### 3.2 Estimation procedures

The estimation of Working-Leser systems of demand needs to deal with econometric problems due to seemingly unrelated regressions, the endogeneity of grocery expenditures, and the large share of zero Fairtrade expenditures.

As the estimation problems are similar for system I and system II, although more complicated for system II, we detail first the estimation procedure for SI and then precise how the estimation procedure differs for system II.

#### *3.2.1 Seemingly unrelated regressions*

While demand equations appear to be unrelated since none of the left-hand side budget shares ($w$) appear on the right-hand side on the other equations, error terms across equations are in fact correlated through the additivity constraint. The covariance matrix among residuals is thus singular, and the typical estimation procedure consists in deleting one of the equations of the demand system. The parameters from the deleted equation can be then calculated from the parameters of the other equations through the restrictions on the parameters (Sadoulet and de Janvry, 1995, p.45). Results are invariant to the equation deleted. While the estimation method developed by Zellner (1962) for seemingly unrelated regressions (SUR) provides estimates that are more efficient than ordinary least squares (OLS) estimates of demand equations (Sadoulet and de Janvry, 1995), SUR and OLS estimates give the same results when all the equations contain the same regressors (Cameron and Trivedi, 2005, p.210). As this is the case in SI, we can obtain parameters of interest estimating eq. (I.1) with the OLS method. However, OLS could lead to biased estimator if we do not take into account the two other problems.

#### *3.2.2 The endogeneity of grocery budget*

Potential endogeneity arises from the simultaneity bias (the grocery budget $x_{i,t}$ is on the left-hand side and on the right-hand side of each equation in SI). As in the literature (see Banks *et al.*, 1997, Blundell and Robin, 1999, Lecocq and Robin 2006 or Dhar *et al.*, 2003)), we instrument expenditure by income. The validity of this

procedure relies on the separability assumption which specifies that households first distribute their income among consumption expenditures, and then allocate the latter across goods "independently of their income" (Robin, 1999, p.139). In addition to a linear trend and seasonal dummies (introduced by Blundell and Robin, 1999, and Lecocq and Robin, 2006), we also incorporate the person in charge of purchases' age and its square in the instrumental regressions. Different specifications have been tested (see table A-1 in the Appendix). As coefficients do not vary that much we choose to retain the specification most used in the literature.

Following Banks *et al.* (1997), we use the augmented regression framework developed by Hausman (1978), Holly (1982), and Holly and Sargan (1982) to test and correct for endogeneity. We first regress the logarithm of the grocery budget $ln\ x_{i,t}$ on the list of instruments mentioned above, compute the residuals, and then incorporate these residuals in equation (I.1), which give equations (I.1') (see Blundell and Robin, 1999, p.215).

$$w^{FT}{}_{i,t} = \alpha_0^{FT} + \sum_{k=1}^{K} \alpha_k^{FT} D_{k\,i,t} + \beta^{FT} \ln x_{i,t} + \lambda^{FT} (\ln x_{i,t})^2 + \rho^{FT} \hat{v}_{i,t} + \varepsilon^{FT}{}_{i,t} \qquad (eq.\ \text{I.1'})$$

The OLS estimators in this augmented regression are identical to the 2SLS estimator (*ibid*, see also Wooldridge, 2002a, p.120), but this technique has "the advantage of directly testing exogeneity through the significance of the residuals (Banks *et al.* 1997, p.530).[†††]

### *3.2.3 Zero Fairtrade expenditures*

As mentioned above, only one fifth of the followed households purchased at least one Fairtrade-labelled good between October 2006 and October 2007. Our dependent budget shares variables in system I and system II are thus zero for a nontrivial fraction of our sample. The econometric treatment required in that case depends on the source from which such zero arise. Keen (1986, p.277) distinguishes three broad sources, all with which we have to deal: Infrequency of purchase, misreporting, and corner solutions.

When the purchase interval is longer than the survey period, a household may be observed to spend nothing on a commodity that it nevertheless consumes. This is

[†††] Another advantage is that this technique achieves convergence faster in the case of the Tobit maximum likelihood estimator that is employed in this article. In that case, however, obtaining standards errors that take into account the introduction of generated regressor is "quite complicated" (Wooldridge 2002a p.532).

especially the case of durable goods like cars, washing machine, etc. Here, while we study goods that are frequently consumed (rice, tea, coffee…), it could be the case that households do not renew their Fairtrade stock every 28-days. One solution to deal with infrequency of purchase consists in extending the observation window that is to say group the purchases made in the whole year of observation (see table A-2 in the Appendix). However, Keen (1986) showed that the instrumentation of consumption expenditure is sufficient to take into account this problem (see also Robin, 1999). This instrumentation also corrects for misreporting (when purchases occur but are not registered), as it is a particular case of measurement error.

Corner solutions arise when consumers do not consume goods because of their preferences (consumers do not like the products of interest), and lead to "true" zero expenditure. We thus use the Tobit estimator (Tobin, 1958), designed to deal with corner solutions (Wooldridge, 2002b, p.553). The use of the Tobit maximum likelihood estimator does not pose specific problems for the specification or the estimation of system I. First, the augmented regression framework described to solve the endogeneity problem can still be applied (see Cameron and Trivedi, 2005, p.561 and Smith and Blundell, 1986). Second, the introduction of socio-demographics can still be done with the translating approach. And last, but not least, the estimation of parameters in the equation of interest (I.1) can still be obtained through the estimation of equation (I.1) only. However, the estimation of system II, which contains more than 2 censored equations, is much more complicated. On the one hand, the estimation of SII with the three stage least squares (3SLS) method correct for the endogeneity of total expenditure, take into account the correlation of error terms accross equations, and ensure the respect of the additivity constraints (Cameron and Trivedi, 2005, p.214). However, 3SLS do not take into account the fact that our demand system is censored. On the other hand, the separate estimates of the 14 equations using the Tobit maximum likelihood estimator do not take into account the correlation of error terms across equations and the additivity constraints. We thus estimated SII with the simulated maximum likelihood estimator developed by Yen *et al.* (2003).[‡‡‡] However, estimations do not converge with the 14 equations. We are thus only able to show the results of 3SLS and Tobit equation-by-equation estimates in section 4.3.

[‡‡‡] Thanks to the Stata commands « cmp » and « mvtobit » developed by Roodman (2009) and Barslund (2007a, 2007b).

## IV. Results

### 4.1 "Standard" consumer attributes and the Fairtrade consumer profile

Table 2 (column 1) presents the results (marginal effects) of the Tobit estimation of equation (I.1') without the socio-demographics and attitudes, which are then added in a progressive manner through column 2 to column 5. We proceed as such to comment results step by step; and to see how the progressive introduction of households' attitudes affects the stability of coefficients (size, sign and significance) of traditional consumer attributes.

It should first be noted that the significance of residuals $v$ leads us to reject the exogeneity of log expenditure. However, the residuals on the reduced form for the square of log expenditure ($lnx^2$) are not jointly significant. This suggests that the inclusion of $v$ alone is sufficient to control for the endogeneity of grocery budget (see Banks *et al.*, 1997). Second, whatever the specification, $lnx^2$ has the expected (negative) sign expected from the non-parametric estimates of the Engel curve (Figure 3). The significance of $lnx^2$ validates the choice of a quadratic specification for our demand systems. $lnx^2$ becomes insignificant when we introduce more consumer characteristics (columns 2-3). However, doing the estimations without $lnx^2$ does not change results.

**Table 2 – Marginal effects of the Tobit estimation of equation (I.1').**

| | Right-hand side variable: share of grocery budget dedicated to Fairtrade products ($w^{FT}$) | | | |
|---|---|---|---|---|
| Left-hand side variables | (1) | (2) | (3) | (4) |
| *Ln x (x=grocery expenditures)* | 0.0130*** | 0.0144*** | 0.0115*** | 0.0083*** |
| | (0.0018) | (0.0018) | (0.0018) | (0.0016) |
| *Ln* $x^2$ | -0.0004* | -0.0004* | -0.0003 | -0.0002 |
| | (0.0002) | (0.0002) | (0.0002) | (0.0002) |
| $v$ (residuals) | -0.0065*** | -0.0082*** | -0.0048*** | -0.0037*** |
| | (0.0011) | (0.0012) | (0.0012) | (0 .0011) |
| ***Dummy variables (1=yes, 0 otherwise)*** | | | | |
| ***Period (omitted period : 200611)*** | | | | |
| 200613 | | -0.0012*** | -0.0012*** | -0.0008** |
| | | (0.0004) | (0.0003) | (0.0003) |
| 200702 | | -0.0005 | -0.0006* | -0.0003 |
| | | 0.0004 | (0.0004) | (0.0004) |
| 200705 | | 0.0031*** | 0.0026*** | 0.0023*** |
| | | (0.0005) | (0.0005) | (0.0005) |
| 200706 | | -0.0008* | -0.0008** | -0.0005 |
| | | (0.0004) | (0.0004) | (0.0004) |
| ***Age group (omitted : 18-29)*** | | | | |
| 45-59 | | 0.0021* | 0.0048*** | 0.0018** |
| | | (0.0011) | (0.0012) | (0.0009) |
| 60-74 | | 0.0036*** | 0.0052*** | 0.0013 |
| | | (0.0012) | (0.0016) | (0.0011) |
| 75-89 | | 0.0069*** | 0.0081*** | 0.0027 |
| | | (0.0021) | (0.0026) | (0.0017) |
| 90+ | | -0.0075*** | -0.0064*** | -0.0047*** |
| | | (0.0003) | (0.0003) | (0.0002) |
| ***Occupation (omitted : farmers)*** | | | | |
| Executives | | | 0.0144** | 0.0046 |
| | | | (0.0056) | (0.0034) |
| Intermediary | | | 0.0100** | 0.0031 |
| | | | (0.0041) | (0.0027) |
| Employees | | | 0.0055* | 0.0014 |
| | | | (0.0032) | (0.0022) |
| Retired | | | 0.0063** | 0.0019 |
| | | | (0.0031) | (0.0023) |
| w/o prof | | | 0.0105* | 0.0029 |
| | | | (0.0057) | (0.0033) |
| ***Region (omitted: Alsace)*** | | | | |
| Auvergne | | | -0.0020* | -0.0010 |
| | | | (0.0012) | (.) |
| Bourgogne | | | -0.0042*** | -0.0022*** |
| | | | (0.0007) | (0.0009) |
| Champagne | | | -0.0031*** | -0.0014 |
| | | | (0.0010) | (0.0010) |

| | | | | |
|---|---|---|---|---|
| Franche-Comté | | | -0.0044*** | -0.0031*** |
| | | | (0.0007) | (0.0007) |
| Nord Pas de Calais | | | -0.0035*** | -0.0011 |
| | | | (0.0008) | (0.0011) |
| Haute-Norrmandie | | | -0.0035*** | -0.0016 |
| | | | (0.0009) | (0.0011) |
| Picardie | | | -0.0037*** | -0.0019* |
| | | | (0.0009) | (0.0010) |
| ***Other socio-demographics*** | | | | |
| Education | | | 0.0013*** | 0.0006*** |
| | | | (0.0002) | (0.0001) |
| Hsize | | | -0.0017*** | -0.0012*** |
| | | | (0.0002) | (0.0002) |
| ***Attitudes (see Table 1)*** | | | | |
| Organic | | | | 0.0022*** |
| | | | | (0.0003) |
| Earth | | | | 0.0006* |
| | | | | (0.0003) |
| Quality | | | | 0.0008*** |
| | | | | (0.0003) |
| Food Sec | | | | -0.0008*** |
| | | | | (0.0003) |
| Fair Trade | | | | 0.0035*** |
| | | | | (0.0003) |
| Nb. of obs. | 127 284 | 127,284 | 127,284 | 95,573 |
| Pseudo-$R^2$ | 0.0385 | 0.0778 | 0.0778 | 0.164 |
| | | Expenditures elasticities | | |
| Mean | 2.83*** | 3.30*** | 4.01*** | 6.48*** |
| | [0.198] | [0.240] | [0.402] | [0.879] |
| 1st quartile of $x$ | 4.96*** | 5.97*** | 8.08*** | 14.70*** |
| | [0.450] | [0.538] | [0.977] | [2.270] |
| 2nd quartile | 2.53*** | 2.91*** | 3.22*** | 4.85*** |
| | [0.151] | [0.185] | [0.275] | [0.571] |
| 3rd quartile | 2.08*** | 2.36*** | 2.61*** | 3.71*** |
| | [0.109] | [0.135] | [0.204] | [0.410] |
| 4th quartile | 1.75*** | 1.96*** | 2.12*** | 2.81*** |
| | [0.083] | [0.102] | [0.152] | [0.290] |

Notes:
- In parentheses: standard errors robust to intra-individual serial correlation. *** p<0.01, **p<0.05, *p<0.1.
- $v$ is the residual from the reduced form for *lnx*, where the instruments include household's income, trend, seasonal dummies and the age of the person in charges of purchases and is square (see table A-1 in Appendix).
- It should be noted that we report only marginal effects of variables which are significant at least in one specification (*i.e.* column). For example, in col2-4, we have introduced 12 period-dummies but only four of them are significant in at least one specification.
- All marginal effects are then used to compute budget elasticities as in eq. (3) (at the mean of the variables and by quartiles of grocery budget). In square brackets: standard errors computed with the delta-method (see Cooch and White, 2010 and Greene 1993, p.765).

According to the results of table 2, Fairtrade consumption mainly depends on budget dedicated to grocery products ($ln\ x$). The negative effect of the household size on Fairtrade consumption, which remains fairly stable in column 4, confirms that responsible consumption depends on the household disposable income. Besides, budget elasticities reported at the bottom of table 2 show that Fairtrade goods are still luxury goods, while the budget elasticity of demand of Fairtrade decreases as the budget increases. That is to say for consumers who have a higher grocery budget, Fairtrade goods approach necessities. This is an important result as the literature on responsible consumption in general, and on Fairtrade consumption in particular, there is an implicit consensus on the idea that responsible consumption is not a question of income. Loureiro and Lotade (2005) and Mahé (2010) for example, whose studies of Fairtrade consumption are based on contingent valuation and face-to-face surveys, do not find that income plays a role in profiling Fair Trade consumers. However, when Fair Trade consumption analysis relies on actual data instead of consumers' statements (for both purchases and income), the importance of income is confirmed. Cailleba and Casteran (2010), for example, who identify general features of French Fairtrade coffee consumers on the basis of 7,587 transactions,[§§§] find that "consumer segments differ significantly in terms of income but not in terms of household size and average age" (*ibid.*, p.618). Here, results of table 2 confirms that Fairtrade consumption sharply depends on income as the coefficients associated to the household budget constraint (the log of grocery buget $ln\ x$ and household size *Hsize*) are both fairly stable through our different estimations and quite large compared to other coefficient, particularly those associated to other socio-demographics generally found to be important in other studies (mainly occupation, age, and education; see for example Loureiro and Lotade, 2005; De Pelsmacker *et al.*, 2005; Mahé, 2010; Cicia, 2010; Bechetti and Rosati, 2007, and Tagbata and Siriex, 2008).

Whatever the specification retained, the sign, size and significance of the dummy-period corresponding to the Fair Trade weeks (200705, see Table 1) indicate that this promotional campaign for Fair Trade bears fruit. Apart from the effects of advertising (*i.e.* large diffusion of positive messages about Fair Trade and its impact), the impact of Fair Trade weeks on consumption could be explained by a better availability of products in supermarkets (better and more shelf space allocated to Fairtrade-labelled products, which are often located at the end of a run of gondolas during this period),

[§§§] Although based on real purchases, the work of Cailleba and Casteran (2010) is not exempt from limitations. First, they identify consumption through the number of transactions, regardless of the amount spent and the number of products bought. Second, transactions registered are store-specific (not household-specific). In other words, transactions made by the same households in other supermarkets than those included in the database are not registered. Fairtrade purchases may thus be underestimated. Lastly, the study of Cailleba and Casteran, as others, concerns only coffee, relies on a limited number of socio-demographic variables, and is not representative of the French population.

and elsewhere (during these weeks, Fair Trade retailers typically install stands on local markets, on campus, etc.). However, Fair Trade weeks seem to have only a temporary effect on consumption. Indeed, a trend in regressions is not significant, and it then appears that they are followed by a drop in Fairtrade consumption (according to the negative sign of the coefficient associated to the following period – 200706). On the contrary, the Christmas period (200613) does not favour Fairtrade consumption. This may be explained by a substitution with other luxury but conventional goods during this period (Christmas teas, coffees or chocolate biscuits for example). This could also be due to substitution with other charity donations for people who consider Fairtrade consumption as an altruistic act of giving.

As regards the standard consumers' attributes, we first introduced the age of the PCP (the person in charge of purchases in the household) in years (results not shown, available on demand). It has a significant and positive but slight impact on Fairtrade consumption. The square of age is not significant. To better capture the effect of age, we introduce age-group dummies instead of age in years.[****] Results show that the oldest consume less Fairtrade products than the 18-29 years old, whereas the 45-69 years old spend more for Fairtrade goods. In other words, our results find a Fairtrade consumer who is slightly older than the one previously found in the literature, generally aged between 30 and 45 years old (see for example Loureiro and Lotade, 2005; De Pelsmacker *et al.*, 2005; Mahé, 2010; and Tagbata and Siriex, 2008). The remaining socio-demographics (occupation of the household head, region of residence, household size and education level of the PCP) are introduced in column 3. Executives, intermediary professions, employees and retired people spend more for Fairtrade products than farmers. In a specification not shown, we introduced the 29 disaggregated professions. We find that among retired people, only retired executives and retired employees consume more Fairtrade products than famers. While the influence of the household's socio-professional group on Fairtrade consumption should not be emphasized as it disappears when attitudes are introduced into empirical specifications, it is interesting to find that, contrary to previous studies (see for example Becchetti and Rosati, 2007), we do not find that students (a subgroup of "other unemployed" group) spend more for Fairtrade products. However, the positive correlation between the level of education and Fair Trade consumption corroborate the results of Becchetti and Rosati (2007), Cicia (2010), Loureiro and Lotade (2005), and de Pelsmacker *et al.* (2005).

To our knowledge, the correlation between the region of residence and Fair Trade consumption has not yet been examined. We find that consumers living in the less urbanized and/or densely populated and/or poorer regions of France (mainly

[****] We constructed the same categories as INSEE (the French National Institute of Statistics).

Bourgogne, Franche-Comté, and Picardie) spent less than others for Fairtrade products. As the influence of household income is already taken into account in our estimates, differences across regions may reflect differences in the dynamism of the associations that promote Fair Trade (as explained in the case of Alsace, see section 2.3). They may also reflect differences in the availability of Fairtrade products, as previously mentioned. Indeed, supermarkets are more likely to be large and to propose (many) Fair Trade variants in densely populated and richer regions.

Column 4 reports the marginal effects of attitudes. When attitudes are introduced in specifications; the influence of age, region of residence, education level, while remaining significant, decreases a lot. The impact of socio-professional group of the household head even becomes insignificant. Interestingly, variables related to household financial resources (grocery budget and household size) and periods are the less impacted variables as their associated coefficients remain fairly stable while the others roughly divide by one-third or two. The role of attitudes conforms to the intuitions. People who consider that buying Fairtrade goods means "behaving as a citizen" spend more for Fairtrade products, as well as those who declared to be "ready to pay more for organic products". Claiming to "preserve the earth's resources" is also associated with a higher Fairtrade consumption. On the contrary, people who worry about questions related to food security buy less for Fairtrade products. The Fairtrade consumer is thus a "socio-environmentally aware" person rather than a "worried" one (Kaiffer-Sivan, 2007).

### 4.2 Robustness checks and synthesis

As mentioned above, we estimated alternative specifications of our empirical model to test the robustness of our results.

We estimate system I using monthly (*i.e.* 28-days period) data to test two period effects (a Christmas effect and a Fair Trade weeks effect). Besides, the socio-demographics are collected monthly. Estimating SI on an annual basis thus implies to rearrange the database, which could lead to rough approximations (if there are modifications in the household size during the year for example). Results of the estimation of SI based on annual data for the 9,901 households observed through the entire are given as a robustness check in the Appendix (table A-2).

First, we re-estimated equation (I.1') on annual data, that is to say on data aggregated at the household level for the 9,901 households followed thought the entire year. In that case, the instrumental equation for the grocery budget $ln\ x_{i,t}$ (see section 3.2 and table A-1) does not contain trend or seasonal dummies; and the income variable is given by the mean of monthly income. Annual socio-demographics and attitudes are given by the mode of monthly corresponding variables. Results given in table A-2 in

the Appendix confirm those previously found. As a second robustness check, we estimated the 14 two-equation demand systems that derive from the traditional stepwise budgeting assumption (see section 3.1. and figure A-1 in Appendix). Table A-3 reports expenditure elasticities derived from these 14 set of estimates, and shows that Fairtrade products are still found to be luxury goods. We also estimated these 14 two-equation demand systems with socio-demographics and attitudes. Although they slightly differ across products, results do not change fundamentally. Indeed, the allocation of budget across Fairtrade and conventional goods remains mainly driven by the budget size and attitudes, and, to a lesser extent, by age, education level and household size (as examples, table A-4 in Appendix show results found for two products: coffee and rice, that respectively accounts for 40% and 7% of Fairtrade expenditures)

To sum up, three main conclusions can be drawn from our empirical findings. First, Fairtrade consumption sharply depends on the household budget constraint, and Fairtrade goods can be considered as luxury goods. Second, 'standard' consumer attributes such as occupation of the household's head, age and education of the person in charge of purchases appear not that relevant to Fairtrade consumption, especially compared to their attitudes. Third, as suggested by the influence of period and region dummies, consumer information about Fair Trade and the availability of Fairtrade products may be essential to understand Fair Trade consumption. The "negative" effect of the Christmas period also suggests that the complementary or substitutability between Fairtrade and other products should deserve more research. Indeed, it may be that Fairtade products do not have all attributes wanted by consumers at Christmas. Before discussing the implications of these main findings, we explore the potential role of product attributes to explain Fairtrade consumption a little bit further in the next section.

### 4.3 Distribution of the Fairtrade budget across goods: insights into the importance of product attributes

As explained in section 3.2, the fourth stage of our separability assumption (see figure A-1) allow us to estimate how Fairtrade consumer allocate their Fairtrade budget between products. To do this, we estimate system II on an annual basis for the 2,053 households that bought at least one Fairtrade-labelled good between October 2006 and October 2007, and that have been followed throughout the whole period. For each product, we then compute Fairtrade expenditures elasticities to see if some products approach necessities for Fairtrade consumers. Table 3 give these elasticities drawn from two set of estimates discussed above in section 3.2.3. Elasticities given in column (1) result from Tobit equation-by-equation estimates of system II, and those reported in column (2) are drawn from 3SLS estimatation of system II (in each case, given our

stepwise budgeting assumption, the total expenditure for Fairtrade goods $ln\ x^{FT}$ are instrumented by the total expenditure for grocery products, as well as the person in charge of purchases' age and its square). Column (3) gives the share of Fairtrade budget that Fairtrade consumer allocated to the different products between 2006 and 2007.

Results indicate that coffee seems to be the only necessity. When the Fairtrade budget increases, households consume more coffee, but proportionally more cacao, tea, rice, sugar, and cosmetics. In fact, Fairtrade necessities are these products for which there is a large number of variants. Indeed, in France, the number of Fairtrade-labelled products is more important for coffee, tea and chocolate, whereas the other type of goods are less available in their Fairtrade variant.

These results suggest that a discrete choice analysis should deserve attention in the sector of responsible consumption: What are the characteristics more valued by consumer? Do they buy Fairtrade coffee "by chance", because Fairtrade-labelled coffee is also well-packaged, tasty, etc.? What are the complementarity between Fairtrade or responsible characteristic and the others?

**Table 3 – Average expenditure elasticities for Fairtrade products (Tobit and OLS estimates)**

| Product | Tobit estimates[a] | OLS estimates[b] | | Share in Fairtrade budget[c] |
|---|---|---|---|---|
| (1) | (2) | (3) | | (4) |
| Coffee | 0,99*** | 0,89*** | (0%) | 40% |
| Cocoa | 1.28*** | 1,13*** | (0%) | 17% |
| Tea | 1,77*** | 1,58*** | (1%) | 13% |
| Juices | 1.05** | 0,78 | (0%) | 8% |
| Rice | 1.11*** | 0,88 | (0%) | 7% |
| Sugar | 1.29*** | 0,97 | (0%) | 5% |
| Jams | 0,54 | -0,11 | (0%) | 4% |
| Cosmetics | 2,09** | 2,65*** | (4%) | 1% |
| Biscuits | 2.74*** | 1,33 | (0%) | 1% |
| Fruits | 3.79*** | -3,83 | (9%) | 1% |
| Spices | 3.32*** | 2,05 | (4%) | 1% |
| Honey | 2.89 | 2,73* | (5%) | <0.5% |
| Chocolate | 1.51 | 1,1 | (0%) | <0.5% |
| Ice cream | 5.49 | -0,06 | (16%) | <0.5% |

*** p<0.01 ; ** p<0.05 ; * p<0.1 (standard errors computed with the delta-method)

(a) Tobit estimates for each equation of system II, left-censored (0) and right-censored (1).

(b) In brackets: % of negative predicted values for dependent variable.

(c) Between 2006 and 2007, Fairtrade coffee represented 40% of the amount spent by French households for Fairtrade products

## V. Conclusion and implications

Taking the example of Fair Trade consumption, this article tries to disentangle research directions that should be worth exploring to better understand responsible consumption behaviour. Relying on scanner data on real purchases made by a 12,000 households' panel representative of the French population, a set of demand systems estimations provide the following results. First, Fairtrade consumption sharply depends on the household budget constraint, and while Fair Trade actors often underline sales high growth rates, Fairtrade goods can still be considered as luxury goods. Second, 'standard' consumer attributes such as occupation, age and education appear not that relevant to Fairtrade consumption, especially compared to their 'attitudes' towards alternative consumption, and food security questions. Third, as suggested by the influence of period and region dummies, and by the allocation of Fairtrade budget among different products (coffee, tea, etc.), consumer information about Fair Trade

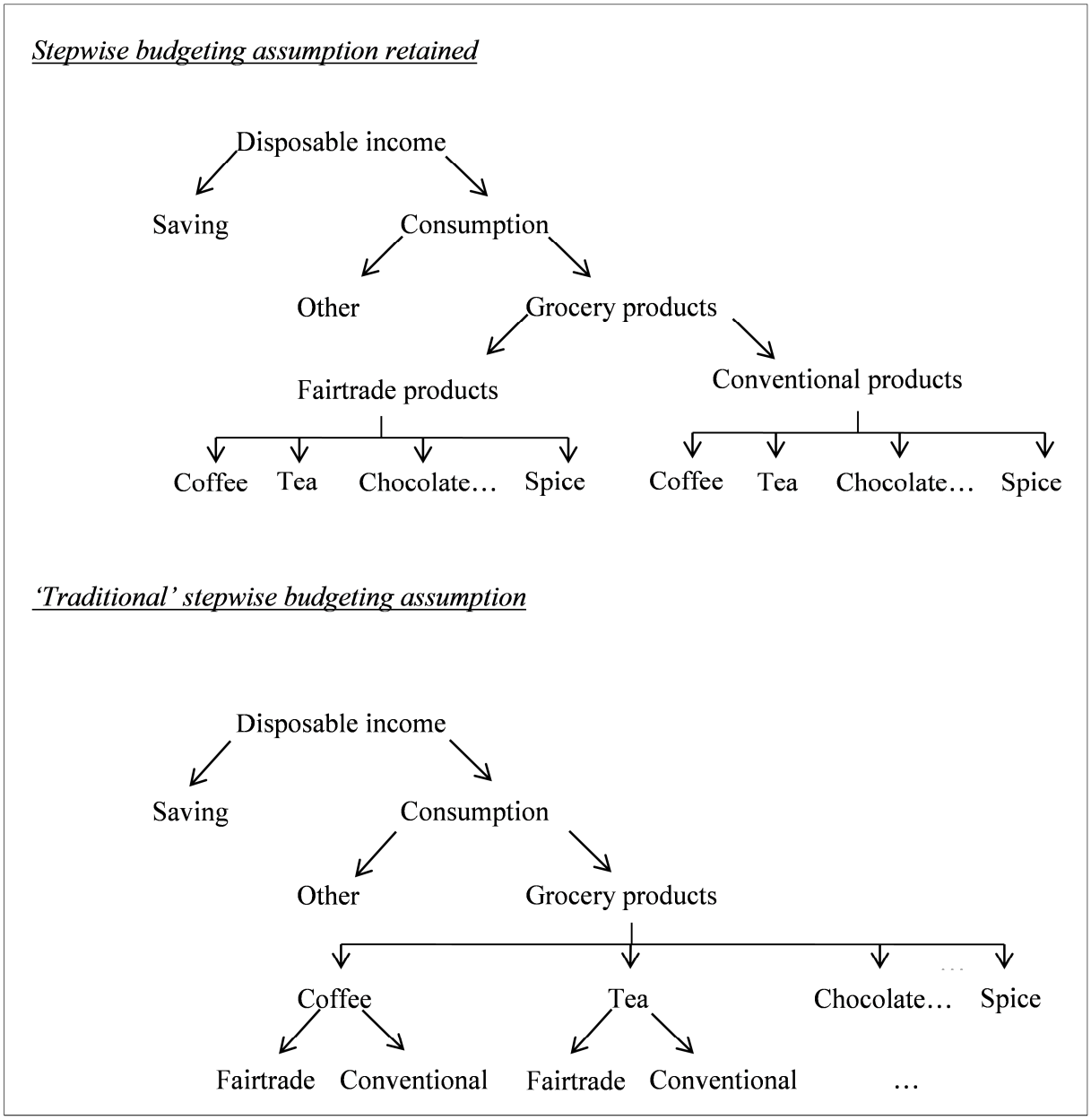
and the availability of Fairtrade products may be essential to understand Fair Trade consumption.

Though generalization of our results on Fairtrade to responsible consumption in general should be taken with caution, we can draw some conclusions about what economics can bring to the study of responsible consumption and mention some research orientations that should deserve more attention in the future. First, the role of information on consumption behaviours, while investigated in lab (Marette *et al.*, 2012) or with data on media exposure (Smed, 2012), may be better understood through some experiments designed to assess treatment effects of information received about eco- or socially responsible-labelled product. Second, a deeper investigation of the role of products' attributes may evidence new stylized facts about what consumers are looking for. It could also find complementary or substitutability among different responsible claims (locally grown, carbon footprint, fair trade, organic, etc., see Onozaka *et al.*, 2011). Third, the link between information, standard consumer attributes and attitudes should be better investigated. More precisely, beyond the well-established fact declarations do not systematically match intentions and behaviours because of multiple biases in surveys (particularly the social desirability and hypothetical bias); understanding why consumers do not translate their intentions in actual behaviour should deserve more intention. As underlined by Balineau and Dufeu (2010), the concept of credence goods, well-known by economists, is fundamental to understand these research questions and should help conduct innovative empirical works and understand the "attitude-behaviour gap".

As underlined by Unnevehr *et al.* (2010) for the economics food consumption in general, these suggestions for future research call for a deeper collaboration both between different disciplines (economics, business, marketing, psychology, etc.) and with market research companies or institutions that record data through innovative technologies such as the in-home scanner one. Lastly, the use of experiments to assess treatment effects of information for example should not be neglected.

# Appendix

**Figure A-1: Illustrations of the different stepwise budgeting assumptions ('traditional')**



## Table A-1 – Instrumentation equation: the different specifications

$$\ln x_{i,t} = \sum_{j=2}^{18} a^j income^j{}_{i,t} + b.trend_t + \sum_{l=1}^{3} c^l S^l{}_t + d.age_{i,t} + e.age^2{}_{i,t} + \omega_{i,t} \quad (eq.\ \text{A-1})$$

Dependent variable = *lnx* (log of grocery expenditures)
OLS estimates

| Instruments | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *Income category (dummies, see table 1; first category omitted)* | | | | | | |
| income_2 | -0.262 | -0.262 | -0.378* | | -0.377* | -0.377* |
| | (0.218) | (0.218) | (0.216) | | (0.216) | (0.216) |
| income _3 | -0.140 | -0.140 | -0.252 | | -0.251 | -0.251 |
| | (0.210) | (0.210) | (0.207) | | (0.206) | (0.206) |
| income _4 | -0.0740 | -0.0740 | -0.171 | | -0.171 | -0.171 |
| | (0.205) | (0.205) | (0.201) | | (0.200) | (0.200) |
| income _5 | 0.0290 | 0.0290 | -0.0695 | | -0.0689 | -0.0689 |
| | (0.203) | (0.203) | (0.199) | | (0.199) | (0.199) |
| income _6 | 0.106 | 0.106 | -0.0137 | | -0.0133 | -0.0133 |
| | (0.202) | (0.202) | (0.198) | | (0.197) | (0.197) |
| income _7 | 0.168 | 0.168 | 0.0454 | | 0.0458 | 0.0458 |
| | (0.202) | (0.202) | (0.198) | | (0.198) | (0.198) |
| income _8 | 0.245 | 0.245 | 0.120 | | 0.120 | 0.120 |
| | (0.201) | (0.201) | (0.197) | | (0.197) | (0.197) |
| income _9 | 0.305 | 0.305 | 0.170 | | 0.171 | 0.171 |
| | (0.201) | (0.201) | (0.197) | | (0.197) | (0.197) |
| income _10 | 0.410** | 0.410** | 0.271 | | 0.271 | 0.271 |
| | (0.201) | (0.201) | (0.196) | | (0.196) | (0.196) |
| income _11 | 0.522*** | 0.522*** | 0.377* | | 0.378* | 0.378* |
| | (0.200) | (0.200) | (0.196) | | (0.196) | (0.196) |
| income _12 | 0.613*** | 0.613*** | 0.468** | | 0.469** | 0.469** |
| | (0.200) | (0.200) | (0.196) | | (0.196) | (0.196) |
| income _13 | 0.673*** | 0.673*** | 0.521*** | | 0.522*** | 0.522*** |
| | (0.201) | (0.201) | (0.196) | | (0.196) | (0.196) |
| income _14 | 0.721*** | 0.721*** | 0.570*** | | 0.571*** | 0.571*** |
| | (0.200) | (0.200) | (0.196) | | (0.196) | (0.196) |
| income _15 | 0.763*** | 0.763*** | 0.599*** | | 0.599*** | 0.599*** |
| | (0.201) | (0.201) | (0.197) | | (0.197) | (0.197) |
| income _16 | 0.816*** | 0.816*** | 0.648*** | | 0.648*** | 0.648*** |
| | (0.202) | (0.202) | (0.198) | | (0.198) | (0.198) |
| income _17 | 0.788*** | 0.788*** | 0.606*** | | 0.607*** | 0.607*** |
| | (0.204) | (0.204) | (0.200) | | (0.200) | (0.200) |
| income _18 | 0.829*** | 0.829*** | 0.648*** | | 0.648*** | 0.648*** |
| | (0.207) | (0.207) | (0.203) | | (0.202) | (0.202) |
| *Period (dummies, see table 1; omitted period: 200611)* | | | | | | |
| 200612 | | | | | 0.0951*** | 0.0937*** |
| | | | | | (0.00827) | (0.00795) |
| 200613 | | | | | 0.236*** | 0.234*** |
| | | | | | (0.00875) | (0.00821) |

| | | | | | | |
|---|---|---|---|---|---|---|
| 200701 | | | | | -0.0542*** | -0.0585*** |
| | | | | | (0.00838) | (0.00756) |
| 200702 | | | | | 0.0528*** | 0.0471*** |
| | | | | | (0.00828) | (0.00729) |
| 200703 | | | | | 0.0278*** | 0.0206*** |
| | | | | | (0.00826) | (0.00711) |
| 200704 | | | | | 0.0248*** | 0.0163** |
| | | | | | (0.00857) | (0.00740) |
| 200705 | | | | | 0.0620*** | 0.0521*** |
| | | | | | (0.00841) | (0.00720) |
| 200706 | | | | | 0.0929*** | 0.0815*** |
| | | | | | (0.00878) | (0.00750) |
| 200707 | | | | | 0.00231 | -0.0105 |
| | | | | | (0.00904) | (0.00807) |
| 200708 | | | | | -0.00452 | -0.0188** |
| | | | | | (0.00964) | (0.00885) |
| 200709 | | | | | 0.0131 | -0.00253 |
| | | | | | (0.00930) | (0.00870) |
| 200710 | | | | | 0.0171* | 0 |
| | | | | | (0.00893) | (0) |
| age | | -0.00072** | 0.0480*** | 0.0474*** | 0.0480*** | 0.0480*** |
| | | (0.00034) | (0.00225) | (0.00225) | (0.00225) | (0.00225) |
| age² | | | -0.00047*** | -0.00046*** | -0.00047*** | -0.00047*** |
| | | | (2.16e-05) | (2.16e-05) | (2.16e-05) | (2.16e-05) |
| trend | 0.0393*** | 0.0393*** | 0.0395*** | 0.0394*** | | 0.00142* |
| | (0.00185) | (0.00185) | (0.00185) | (0.00185) | | (0.000744) |
| *Seasonal dummies (civil quarters, 4th quarter omitted).* | | | | | | |
| S1 | 0.478*** | 0.477*** | 0.479*** | 0.478*** | | |
| | (0.0184) | (0.0184) | (0.0183) | (0.0184) | | |
| S2 | 0.259*** | 0.259*** | 0.258*** | 0.258*** | | |
| | (0.0130) | (0.0130) | (0.0129) | (0.0129) | | |
| S3 | 0.192*** | 0.192*** | 0.191*** | 0.191*** | | |
| | (0.00811) | (0.00811) | (0.00809) | (0.00809) | | |
| Year | 0.000715** | | | | | |
| | (0.000340) | | | | | |
| Income | | | | 0.0698*** | | |
| | | | | (0.00179) | | |
| Constant | 0.841 | 2.276*** | 1.258*** | 0.861*** | 1.705*** | 1.704*** |
| | (0.704) | (0.201) | (0.201) | (0.0599) | (0.200) | (0.200) |
| Nb of obs. | 127284 | 127284 | 127284 | 127284 | 127284 | 127284 |
| $R^2$ | 0.084 | 0.084 | 0.101 | 0.099 | 0.104 | 0.104 |
| F | 133.2 | 133.2 | 151.1 | 488.2 | 129.1 | 129.1 |

In parentheses: standard errors robust to intra-individual serial correlation
*** p<0.01, ** p<0.05, * p<0.1

**Table A-2: Marginal effects of the Tobit estimation of equation (I.1') on annual data (9,901 households followed over the whole period only)**

| | Right-hand side variable: share of grocery budget dedicated to Fairtrade products ($w^{FT}$) | | | |
|---|---|---|---|---|
| Left-hand side variables | (1) | (2) | (3) | (4) |
| *Ln x (x=grocery expenditures)* | 0.0216*** | 0.0203*** (0.0055) | 0.0182*** | 0.0161*** |
| | (0.0056) | | (0.0054) | (0.0055) |
| *Ln* $x^2$ | -0.0008* | -0.0007 (0.0005) | -0.0006 | -0.0006 |
| | (0.0005) | | (0.0005) | (0.0005) |
| $v$ (residuals) | -0.0087*** | -0.0089*** | -0.0060*** | -0.0043*** |
| | (0.0012) | (0.0013) | (0.0013) | (0.0013) |
| ***Age group (omitted : 18-29)*** | | | | |
| 45-59 | | 0.0017 | 0.0043*** | 0.0021 |
| | | (0.0014) | (0.0015) | (0.0014) |
| 60-74 | | 0.0027* | 0.0042** | 0.0016 |
| | | (0.0015) | (0.0018) | (0.0016) |
| 75-89 | | 0.0041** | 0.0054** | 0.0021 |
| | | (0.0018) | (0.0022) | (0.0019) |
| 90+ | | -0.0095*** | -0.0086*** | -0.0074*** |
| | | (0.0005) | (0.0004) | (0.0004) |
| ***Profession (omitted : farmers)*** | | | | |
| Executives | | | 0.0137*** | 0.0058 |
| | | | (0.0046) | (0.0036) |
| Intermediary | | | 0.0098*** | 0.0038 |
| | | | (0.0036) | (0.0030) |
| Employees | | | 0.0052* | 0.0011 |
| | | | (0.0029) | (0.0025) |
| Retired | | | 0.0059** | 0.0014 |
| | | | (0.0029) | (0.0026) |
| w/o prof | | | 0.0123** | 0.0033 |
| | | | (0.0053) | (0.0037) |
| ***Region (omitted: Alsace)*** | | | | |
| Aquitaine | | | -0.0035*** | -0.0025* |
| | | | (0.0012) | (0.0014) |
| Bourgogne | | | -0.0034*** | -0.0015 |
| | | | (0.0013) | (0.0016) |
| Champagne | | | -0.0037*** | -0.0018 |
| | | | (0.0013) | (0.0015) |
| Franche-Comté | | | -0.0047*** | -0.0040*** |
| | | | (0.0011) | (0.0011) |
| Midi Pyrénées | | | -0.0031** | -0.0020 |
| | | | (0.0012) | (0.0014) |
| Nord Pas de Calais | | | -0.0043*** | -0.0023* |
| | | | (0.0010) | (0.0013) |
| Basse-Norrmandie | | | -0.0030** | -0.0010 |

| | | | | |
|---|---|---|---|---|
| | | | (0.0015) | (0.0019) |
| Haute-Normandie | | | -0.0042*** | -0.0024 |
| | | | (0.0012) | (0.0014) |
| Picardie | | | -0.0040*** | -0.0020 |
| | | | (0.0012) | (0.0014) |
| PACA | | | -0.0025** | -0.0011 |
| | | | (0.0012) | (0.0014) |
| ***Other socio-demographics*** | | | | |
| Education | | | 0.0014*** | 0.0008*** |
| | | | (0.0002) | (0.0002) |
| Hsize | | | -0.0023*** | -0.0018*** |
| | | | (0.0003) | (0.0003) |
| ***Attitudes*** | | | | |
| Organic | | | | 0.0030*** |
| | | | | (0.0004) |
| Earth | | | | 0.0006* |
| | | | | (0.0004) |
| GMO | | | | 0.0007*** |
| | | | | (0.0003) |
| Food security | | | | -0.0010*** |
| | | | | (0.0003) |
| Fair Trade | | | | 0.0039*** |
| | | | | (0.0004) |
| Nb. of obs. | 9,901 | 9,901 | 9,901 | 7,719 |
| Pseudo R2 | 0.124 | 0.153 | 0.345 | 0.700 |
| | | Expenditures elasticities | | |
| Mean | 3.32*** | 2.82*** | 4.30*** | 8.75*** |
| | [0.369] | [0.238] | [0.610] | [2.16] |
| 1st quartile of $x$ | 10.37*** | 6.28*** | 14.90*** | 46.54*** |
| | [1.93] | [0.901] | [3.26] | [14.24] |
| 2nd quartile | 2.69*** | 2.77*** | 3.24*** | 3.92*** |
| | [0.165] | [0.182] | [0.253] | [0.437] |
| 3rd quartile | 2.16*** | 2.23*** | 2.56*** | 2.86*** |
| | [0.110] | [0.122] | [0.175] | [0.282] |
| 4th quartile | 1.83*** | 1.91*** | 2.16*** | 2.34*** |
| | [0.094] | [0.103] | [0.149] | [0.242] |

Notes:
- In parentheses: standard errors robust to intra-individual serial correlation. *** p<0.01, **p<0.05, *p<0.1.
- $v$ is the residual from the reduced form for *lnx*, where the instruments include household's income category and the age of the person in charges of purchases and is square (see table A-1 in Appendix).
- It should be noted that we report only marginal effects of variables which are significant at least in one specification (*i.e.* column). For example, in col2-4, we have introduced 12 period-dummies but only four of them are significant in at least one specification.
- All marginal effects are then used to compute budget elasticities as in eq. (3) (at the mean of the variables and by quartiles of grocery budget). In square brackets: standard errors computed with the delta-method (see Cooch and White, 2010 and Greene 1993, p.765).

**Table A-3 – Expenditure elasticities for Fairtrade and conventional goods drawn from the traditional stepwise budgeting assumption**

| **Product** | Fairtrade | Conventional |
|---|---|---|
| Sugar | 3.79*** | 1.00*** |
| Rice | 2.02*** | 0.99*** |
| Jams | 1.81*** | 1.00*** |
| Coffee | 1.58*** | 0.98*** |
| Fruits | 32.12*** | 1.00*** |
| Biscuits | 23.89*** | 1.00*** |
| Honey | 15.23* | 1.00*** |
| Juices | 1.80*** | 1.00*** |
| Ice cream | 0.26 | 1.00*** |
| Cocoa | 1.65*** | 1.00*** |
| Chocolate | 11.03** | 1.00*** |
| Cosmetics | 12.95*** | 1.00*** |
| Tea | 2.54*** | 0.99*** |
| Spices | 5.46*** | 1.00*** |

*** p<0.01, ** p<0.05, * p<0.1

## Table A-4 Traditional stepwise budgeting assumption estimation (2-equations system (7) in text)

| | Right-hand side variable: share of product budget dedicated to Fairtrade variants ($w\_coffee^{FT}$ $w\_rice^{FT}$) | |
|---|---|---|
| Left-hand side variables | (1) coffee | (2) rice |
| *Ln x (x=product expenditures)* | 0.0133*** | 0.0050*** |
| | (0.0049) | (0.0017) |
| *v* (residuals) | -0.0055** | -0.0012 |
| | (0.0022) | (0.0011) |
| ***Age group (omitted : 18-29)*** | | |
| 90+ | -0.0206*** | -0.0045*** |
| | (0.0012) | (0.0006) |
| ***Region (omitted: Alsace)*** | | |
| Champagne | -0.0106** | -.0009471 |
| | (0.0044) | .00239 |
| Franche-Comté | -0.013*** | -.0023918 |
| | (0.0038) | .00185 |
| Haute-Normandie | -0.0088* | .000479 |
| | (0.0047) | .00302 |
| Nord Pas-de-Calais | -.0053501 | -0.0029** |
| | .00476 | (0.0013) |
| Picardie | -0.0119*** | -.0008871 |
| | (0.0039) | .00228 |
| ***Other socio-demographics*** | | |
| Education | 0.0028*** | .0006758** |
| | (0.0006) | .00028 |
| Hsize | -0.0030*** | -0.0019*** |
| | (0.0082) | (0.0004) |
| ***Attitudes*** | | |
| Organic | 0.0089*** | .0026409*** |
| | (0.0013) | .0006 |
| Earth | .002152 | .0014009** |
| | .00144 | .00064 |
| Quality | 0.0023* | .0003921 |
| | (0.0014) | .00058 |
| Food Security | -0.004*** | -.0005631 |
| | (0.0011) | .00048 |
| Fair Trade | 0.0144*** | .0015984*** |
| | (0.0012) | .00052 |
| Nb. of obs. | 9,094 | 8,471 |
| Pseudo R2 | 0.1450 | 0.1587 |

Notes:
- In parentheses: robust standard errors, *** p<0.01, **p<0.05, *p<0.1.
- *v* is the residual from the reduced form for *lnx*, where the instruments include household's income category and the age of the person in charges of purchases and is square (see table A-1 in Appendix).
- It should be noted that we report only marginal effects of variables which are significant at least in one specification (*i.e.* column).

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