

The effects of Fair Trade on marginalised producers: an impact analysis on Kenyan farmers¹

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Abstract

We analyse the impact of affiliation to Fair Trade (FT) on monetary and non monetary measures of well-being in a sample of Kenyan farmers. Our econometric findings document significant differences in terms of price satisfaction, monthly household food consumption, (self declared) income satisfaction, dietary quality and child mortality for Fair Trade and Meru Herbs (first level local producers organisation) affiliated with respect to a control sample. Methodological problems such as the FT vis à vis Meru Herbs relative contribution, control sample bias and local cooperative and fair trade selection biases are carefully discussed and addressed.

After reconstructing the dynamics of human capital investment in the observed households we show that affiliation to the younger vintage FT project is associated with a significantly higher schooling investment.

Keywords: impact analysis, child labour, fair trade, capabilities and wellbeing
JEL Numbers:

1. Introduction

Global market integration and the compression of virtual distances led by the digital revolution is increasing the perception of interdependence across continents, raising awareness for global imbalances and stimulating bottom up action from the civil society in order to contribute to the solution of world imbalances. The rise and development of social responsibility of consumers, investors and corporations⁴ is a clear signal that self interested utility maximisation is not the only driver of economic action and that global inequality aversion is becoming an additional determinant

¹ We acknowledge financial contribution of Provincia Autonoma di Trento under the cooperation project "*Programma di sostegno all'attività produttivo - commerciale delle organizzazioni artigianali senza scopo di lucro del Kenya*", managed by Cooperativa Mandacarù (Trento) and by Consorzio Ctm altromercato, and coordinated by Lorenzo Boccagni. We thank also for precious support and cooperation in data collection the Meru Herbs team in Kenya, Andrea Botta and his family, Joseph Mwai, Florence Nkirete, Angelica Kabaara and all the farmers of the Ng'uuru Gakirwe Water Project ; Suna Elisa Chiarani for the valuable contribution to the questionnaire; Lorenzo Boccagni, Luca Palagi and all the CTM Cooperation Unit.

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⁴ In a recent survey the "*2003 Corporate social responsibility monitor*" finds that the amount of consumers looking at social responsibility in their choices jumped from 36 percent in 1999 to 62 percent in 2001 in Europe. In addition, more than one in five consumers reported having either rewarded or punished companies based on their perceived social performance and more than a quarter of share-owning Americans took into account ethical considerations when buying and selling stocks. The Social Investment Forum reports that in the US in 1999, there was more than \$2 trillion worth of assets invested in portfolios that used screens linked to the environment and social responsibility.

of individual choices.⁵ In the light of the above mentioned interdependences, social responsibility is no more being conceived just as an altruistic behaviour, but also as a long-sighted self interested attitude which hinges on the growing awareness of the negative feedbacks of global imbalances on one's own individual life. This consideration leads us to expect further growth of attention on social responsibility in the near future.

Fair trade is one of the most interesting attempts of (socially responsible consumption) based bottom-up development initiatives with which the civil society tries to complement actions of government and international institutions.

Fair trade schemes aim to promote inclusion of marginalised and poor farmers in the international markets, via consumption and trade, through a package of benefits which include anti-cyclical mark-ups on prices, long-term relationship, credit facilities and business angel consultancy aimed at capacity building.⁶ The marketing niche offered to marginalised producers by fair trade importers intends not to be exclusive, since one of the movement goals is to strengthen positions of these producers in the international markets. Scaling up and phasing out are therefore two of the most delicate issues in the relationship between fair traders and marginalised producers.

Even though it would be essential to demonstrate that the claims of the beneficial effects generated by participation to the FT circuit are well funded, the literature on FT impact analyses is surprisingly scarce.

To our knowledge, one of the very few impact studies testing the statistical significance of fair trade is performed by Bacon (2005) on a sample of Guatemalan coffee producers. The study shows with a two way Anova approach that access to certified markets has a positive and significant effect on sale price. The finding is not controlled for other potential concurring factors.

A statistical and econometric approach is also followed by Pariente (2000) who observes the positive impact of minimum price on coffee producers security in the Cococafè cooperative in Costa Rica. The research documents the narrower price variability (and a minimum price higher than the world price) when local producers sell to FT. It further relates this finding to results from two separate estimates in which investment levels are shown to be positively affected by sale prices and investment variability to be significantly correlated with sale price variability.

All other existing impact analyses are based on non-systematic, even though qualitatively very rich, evidence collected in case studies. Castro (2001) impact analysis of FT on COPAVIC in Guatemala shows that artisans which are members of the cooperative have significantly higher mean wages in the area and that FT gave significant support to the cooperative in terms of physical capital investment, technical and financial assistance and also employment benefits (introduction of life and medical insurance). An important result, which is common to almost all FT projects, is that imports from FT cover only part of the marginalised producers sales (around 42%) and that FT technical assistance helps members to strengthen their position in the international market.

⁵ For a detailed survey on theoretical, empirical and experimental evidence on reciprocity, altruism and inequity aversion see Fehr-Falk (2002).

⁶ Redfern-Snedker (2002) ILO working paper resumes elements of success in the last years by considering that FT: i) *has created a growing US \$500 million network of businesses that seeks to push the benefits of that trade to the poorest; ii) has provided a wide range of embedded services to producers who would not have been able to source or afford them locally; iii) has provided market access to groups whom mainstream business was not interested in trading with; iv) has facilitated or influenced the increasing number of fair trade products on supermarket shelves; v) has successfully campaigned at many levels of policy making to bring real propoor changes in legislation; vi) has raised the issue of trade with millions of consumers—particularly across Europe—changing attitudes to business and development; vi) has been a significant catalyst in the development of ethical issues within mainstream trade and business practices, influencing the development of Corporate Social Responsibility, approaches like Social Accounting and the development of the Ethical Trade Initiative in the UK*

The report on FT impact on the Productores de Miel Flor de Campanilla in Oaxaca, Mexico (Castro, 2001) presents mixed findings. Also in this case FT played its role of “business angel” providing financial and technical assistance and improving quality standards. Nonetheless, the author observes that results, in terms of livelihood improvement, have not been the same as in the COPAVIC case and that the cooperative is still struggling for survival in the international trade market.

Nelson and Galvez (2000) examine the impact of FT on cocoa producers being part of the MCCH cooperative in Ecuador. The authors find that MCCH cocoa farmers are paid a higher price than conventional farmers, even though the price differential is minimal, also due to a positive effect of FT prices in the area. They also describe that benefits from FT include capacity building, support on marketing skills, organisational development, production and post-harvest techniques. They finally observe that MCCH has been recently successful in breaking local middlemen monopolies.

Other impact analyses based on case studies provide very interesting conclusions which can be taken as a reference in our econometric analysis. The DFID (2000) study on the effects of FT in the Ghana KK cocoa cooperative and in the Tanzanian coffee market raises the important issue of the difficulty in discriminating between FT and non FT aspects of producers organisation activities. The study shows that in the two case studies FT has mainly relationships with first level producer organisations and not with the individual producers and also that the fair trade premium is managed by the former in order to satisfy the welfare needs of the members. In such cases the evaluation of the impact of FT crucially hinges on the evaluation of the choice to certify a given local producer organisation. The research also concludes that the main role of fair trade is in (equipment, technical and business skills) capacity building which is crucial to support inclusion of members in international trade. Hence, in the authors’ words, FT appears as a “way of empowering farmer groups to engage with non-FT marketing channels on a more favourable basis”. Similar results emerge from Hopkins (2000), who collects 18 case studies among Oxfam FT partners and calculates an economic impact ratio, that is, the ratio of earnings from fair trade activities to the opportunity cost of labour, and Ronchi (2002) who analyses a coffee FT cooperative in Costa Rica distinguishing between direct impact (impact of FT on the farmers and the cooperative) and indirect impact (the impact of the cooperative on the farmers). Both papers point out the importance of capacity building as one of the most important results of the FT commercial relationship.

Many of these papers acknowledge the importance of a rigorous impact evaluation. Nelson and Galvez (2000) conclude their work by arguing that *“as with many organisations involved in fair-trade MCCH has not yet been able to make an assessment themselves of the longer-term impact of its involvement in cocoa marketing for smallholders and their livelihoods. There is a growing recognition amongst organisations involved in fair-trade that more attention needs to be paid to impact assessment.”* On the same line, DFID (2000) agrees that it would be important to compare (level and changes of) quality of living indicators of farmers affiliated to FT and farmers being part of a randomly selected control sample.

This is the scope of our paper in which we try to evaluate econometrically the FT impact on various well-being indicators.

To do so we build a survey in which we collect information from a sample of 120 Kenyan farmers divided into four groups. The first (Bio group), includes certified organic farmers with long term affiliation to Meru Herbs and long term access to FT channels. The second (Conversion group), Meru Herbs farmers under conversion toward the organic certification with short term or starting partnership with FT. The third (Onlyfruit group), Meru Herbs farmers which are fruit producers and have non systematic relationship with FT. The fourth group is carefully selected to match closely the characteristics of the previous three (it shares with them the same environment and advantages of the local irrigation infrastructure) with the qualifying difference that its members are not part of Meru Herbs and have no relationship with FT.

The paper presents and comments descriptive and econometric findings from this survey and is divided into five sections (including introduction and conclusions). In the second section we explain

the construction of our survey and illustrate characteristics of the Meru Herbs organisation, of the three Meru Herbs projects considered in the sample and of the criteria followed for selecting the control sample.

In the third section we compare characteristics of the four groups of farmers by looking at crop variety, average market price for each product sold, sale conditions and subjective price satisfaction. The fourth section presents our econometric analysis emphasizing five main results: Meru Herbs members with access to FT channel have relatively higher price satisfaction, spend significantly more for consumption, have higher nutritional standards, invest relatively more in human capital of their children and have relatively less episodes of infant mortality in their households. The lower rate of infant mortality also applies to Meru Herbs affiliated not having systematic relationship with FT. The price satisfaction result is consistent with additional evidence showing that Meru Herbs members with access to FT suffered relatively less from price instability. All our findings are controlled for the concurring effects of landowner's size, number of seasonal employees, age, sex, ethnic affiliation, religion, schooling years, marital status, number of people living with him at home and presence of additional income sources.

The income satisfaction and dietary quality results appear the strongest as they are the only to be robust to the Meru Herbs and FT selection bias effects in a treatment regression model in which the income satisfaction equation is estimated jointly with an equation where Meru Herbs or FT affiliation are regressed on individual characteristics.

We finally try to extract from the cross-sectional information contained in our database household schooling decisions in the past 20 years in order to verify whether inclusion in Meru Herbs and in the FT trade channel had a significant impact on them. Our panel findings show that affiliation to the Conversion group is significantly and positively associated to higher human capital investment (lower child labour rates) with respect to the rest of the sample, but do not provide evidence of significant changes in human capital investment after project affiliation.

2.1 Area and project characteristics

Meru Herbs' history originates from a group of 430 families that in the 60's established themselves in some plots (from 10 up to 40 acres) given by the Kenyan Government in the Meru Central and Tharaka districts, about 200 km far from Nairobi, on the Mount Kenya's eastern slopes. The area is classified as semi-arid, with an annual rainfall level of 550-650 mm concentrated in 4 months per year. Agriculture was possible only with drought-resistant cultures like sorghum and millet.

In 1982 these families created the Ng'uuru Gakirwe Water Committee, an association composed of local farmers that started a project with the purpose of carrying the water in every house and in every farm, through the Kitheno river's canalization. In 1986 the irrigation project was supported by AES-CCC, an Italian ngo (through the FAI funds of the Italian Cooperation). The first phase was completed in 1990, benefiting 142 families and the first half of the second phase in 1994, for other 163 families. In 2000 the second and the third phases were completed, for other 174 families, thanks to the European Union's cooperation funds. The water amount supplied every day to each household is enough to cultivate intensively at least one acre.

The irrigation allowed the farmers to change drastically the kind of agriculture practiced and improved agricultural employment and food security in the area, raising the production for self-consumption and sale, and reducing the time and the job necessary for water supplying, traditionally impeding on women and children. The soil in the area is clayey and today the most cultivated products are maize, millet and beans for self-consumption and other vegetables like okra, French beans and chilies.

Meru Herbs was born in 1991, in order to generate incomes to cover the project's costs. Its activity consists in the production and the sale, especially abroad, of herbal teas and fruit jams.

In the region, products' commercialization is normally controlled by Nairobi's traders who cover all the area, collecting the products and exporting them. However, this commercial structure does not assure time continuity, being conditioned by many causes like road conditions, the demand from the European market and the possible birth of new production areas closer to Nairobi.

In order to solve these problems, Meru Herbs decided to develop a partnership with CTM (the leading Italian Fair Trade importer), which begun in an experimental way in 1991 and followed on in 1992 with the delivery of one container of karkadé, in order to diversify the households' productive structures. In 2000 the organisation got the organic certification by the English company Soil Association Certification Ltd. and today it sends a significant part of its production to the fair trade channel (in Italy and Japan) with an export turnover equal to 267.862 € in 2004.

Today, 43 out of the 479 farmers beneficiaries of the irrigation project (corresponding to a total extension of 42 acres of land) have already obtained the organic certification, and other 117 are crossing the two years conversion period, that will end in January 2006. There is also another little group, in conversion too, in the near district of Embu.

2.2 The construction of our Survey

A first crucial step of our research is in the identification of a control group. With regard to this point, the Meru Herbs case presents a relevant advantage given by the homogeneity of the population living in the irrigation project area: all the interviewed farmers benefit from the Ng'uuru Gakirwe Water Project and so they all share the same geographic area, the same availability of services and infrastructures (in particular, access to the irrigation infrastructure) and, most of them, also the same culture and economic activity, while they differ in marketing channels (Meru Herbs with or without FT partnership, local middlemen, direct sale on local markets).

More specifically, our reference population is composed by the 474 farmers who benefit from the irrigation project.

Within this population we randomly select four groups that represent respectively organic farmers (which we will call Bio farmers), farmers under conversion (Conversion farmers), fruit farmers *who have a commercial relationship with Meru Herbs that is not fully a fair trade relationship*⁷ (Onlyfruit farmers), farmers who do not sell to Meru Herbs at all (but, however, benefit from the irrigation project) (Control farmers).

The advantage of having four groups is that we can distinguish between long run and short run effects of the relationship with Meru Herbs and FT (Bio and Conversion farmers respectively), relationship with Meru Herbs which is not a full FT relationship (Onlyfruit farmers) and the absence of relationship with FT (control farmers).

The four groups have been administered a questionnaire containing 100 demands (see Appendix). From them we obtained information on demographics, product sale conditions, monetary and nonmonetary sources of income, food consumption expenditure and dietary quality, schooling years and working status of household members, various social and capability indicators, subjective measures of price satisfaction and income satisfaction, social capital indicators.

The final version of the questionnaire (see Appendix 1) has been modified with respect to an initial draft on the basis of considerations developed on the field with organisation's members and individual farmers on the quality of responses and on their possible biases.⁸

⁷ To provide additional qualification to this taxonomy consider that the organic certification, at the moment, regards only the production of karkadé, chamomile and lemongrass. The delivery of the fruit for the jams is instead absolutely free and there is not a continual relationship between the farmer and the organization. This determines other differences inside the population studied caused by the different position of the fruit suppliers towards Meru Herbs.

⁸ The research has been developed according to the following time-table: i) 1st of February 2005 – Meru Herbs, Nairobi office: research beginning; ii) 2nd – 11th of February 2005 – Meru Herbs Base Camp: community analysis and

3. Descriptive statistics

Table I describes characteristics of the four groups showing some relevant differences between them. Control group farmers are relatively younger (ten year difference on average with respect to Bio and Onlyfruit farmers), but have lower schooling years only when compared with Conversion farmers. Bio and Onlyfruit households are relatively larger.

Farmers in all of the four groups employ on average between one and two workers during the harvesting season.

With regard to the ethnic composition of our sample we consider 15 potential affiliations (Embu, Kalenjin, Kamba, Kikuyu, Kisii, Luhya, Luo, Maasai, Meru, Mijikenda, Somali, Taita, Tharaka, Turkana, Kuria) and observe that the large majority of respondents belong to the Tharaka group (between 60 to 87 percent). The second largest ethnic group is Meru (27 percent among Onlyfruit farmers).

An important difference among the three groups selling to Meru Herbs is that, as expected, Bio farmers declare a much longer commercial relationship with the organisation and FT (more than 13 years on average), while Conversion and Onlyfruit farmers have started it more recently (respectively between 1 and 3 years on average). The four groups appear quite homogeneous in terms of availability of other sources of income and other working activities (only 20 percent have other activities in any of the four groups).

The observed differences in the four groups clearly show that we cannot just compare average subgroup values to infer the impact of Meru Herbs and FT relationship on farmers livelihood. An econometric analysis is needed to single out the project affiliation and FT impact effect from those of additional controls which differentiate the four groups and are expected to affect our target variables.

We start our analysis focusing on crop variety, sale conditions and on the quality of living in the four groups by looking at indications provided by descriptive statistics (Table II). In the Survey farmers of the four groups are asked about production, sale conditions and price satisfaction relative to the following 18 products: papaw, mango, french beans, okra, karkade, camomile, lemongrass, tobacco, banana, potatoes, soia beans, maize, sorghum, millet, tomatoes, pilipili, guava, lemon.

For any of these products we have information about production and distribution channels (Meru Herbs, middlemen, directly to customers). Descriptive evidence on this point shows, as it is well known from previous research, and consistently with FT criteria, that fair trade is not an exclusive channel for affiliated farmers. Bio, Conversion and Onlyfruit farmers sell also between 17 and 28 percent of their products directly to customers, and between 7 and 12 percent of them to local intermediaries. Control farmers seem to differ markedly from those affiliated to the other three projects in terms of average sale prices and crop variety, with a relatively lower number of products sold on the market (on average 4) against a value ranging between 6 and 9 for farmers belonging to the other three groups. More specifically, papaw, mango, guava, lemon and karkade are exclusively sold by farmers affiliated to Meru Herbs who also seem to obtain better price conditions on average for many products which are sold by Control farmers as well (sorghum, maize, millet, pilipili, but not okra).

When we look at descriptive statistics in terms of various income and social development indicators we observe that the control group exhibits lower weekly household consumption expenditure and

provisional questionnaire's checking; iii) 12nd – 20th of February 2005 – Meru Herbs, Nairobi office: data collection for the indirect impact study; iv) 21st of February – 15th of March 2005 – Meru Herbs Base Camp: interviews through questionnaires (direct impact study); v) 15th – 18th of March 2005 – Meru Herbs, Nairobi office: research ending.

lower monthly earnings (Table III). We must remember, though, that Control group farmers also have relatively smaller families. This explains the levelling of monthly earnings when they are equalised for household size using the standard OECD approach⁹.

An important observation is that the share of those declaring episodes of infant mortality in the last three years is markedly higher in the Control group (around 30 percent) against values between 17 and 7 percent in the other three Meru Herbs groups. Another relevant finding is that farmers in the group with older affiliation (Bio) declare desired monthly earnings which are lower than those of the control group sample. This finding may reflect higher nonmonetary sources of income (selfproduction, livestock), but also a higher level of benefits received from Meru Herbs. The combination of average group values on perceived and desired income leads to a far higher level of income satisfaction for Bio farmers with respect to the control sample. In table III we report the level of declared income satisfaction for the four subgroups, with comparative values which correspond to differences in the quantitative indicator of the ratio between the earned and the desired income (approximately 1 to 5 for Bio farmers and approximately 1 to 9 for Control farmers).

A somewhat unexpected result is the one relative to the share of child labour (according to our definition, children between 6 and 15 not attending school on the total number of household children in that age cohort) and to the human capital investment rate (according to our definition, children between 6 and 18 going to school on the total number of household children in that age cohort). While conversion households exhibit the best figures (.55 percent the child labour rate and .35 the human capital investment rate), Bio and Onlyfruit households appear to be here in worse position than Control group households.

4. Econometric findings

Descriptive findings presented in the previous section suggest that farmers participating to the FT initiative have better price conditions and more diversified crops, higher food consumption, less episodes of child mortality and superior income satisfaction. For several reasons these findings cannot lead us to conclude *per se* that participation to the FT project had undoubtedly significant effects on these target outcomes.

First, composition effects and heterogeneous characteristics of the four groups may influence some of our findings. With this respect, one of the most obvious considerations is that control group farmers may have lower household consumption expenditure because their average number of sons is lower than the rest of the sample, they have a slightly lower surface of cultivated land and are relatively younger (if age and, presumably correlated, working experience have some effects on performance and standard of living).

Second, endogeneity and a selection bias in the affiliation to the Meru Herbs seems difficult, in principle, to disentangle from the concurring interpretation of the positive impact of FT. Do all our findings reflect advantages realised during and thanks to the affiliation to Meru Herbs and to the FT project, or do they measure characteristics which were already present at the moment in which farmers affiliated to Meru Herbs (and, presumably, contributed to affiliation) ? And, related to this point, is it possible to separate the impact of affiliation to Meru Herbs from the effect of participation to FT ?

If the two problems considered above (Meru and FT selection biases) may induce us to believe that observed findings on the FT impact may be excessively optimistic, two other arguments may counterbalance them in the opposite direction. First, if the Meru Herbs project generates positive spillovers in the area, differences between the three project groups and the control group may result

⁹ Under the OECD rule earnings are divided by a scale factor A where $A = 1 + 0.5 (N_{adults} - 1) + 0.3 N_{children}$.

flattened, thereby leading to an underestimation of the FT contribution.¹⁰ Second, a project survivorship bias may also arise since most successful farmers may be likely to get out of the project.

In what follows we try to do our best given the limits of our longitudinal database to answer at least some of these questions.

With regard to the first point (composition effects), the vast amount of information collected in the survey allows us to control our results for a wide range of concurring factors.

In a first econometric exercise we test whether findings on: i) weekly household consumption expenditure; ii) income satisfaction; iii) crop diversification; iv) price conditions; v) infant mortality; vi) dietary quality; vii) child labour are robust to the inclusion of proper control factors.

We start with price satisfaction. We build a standardised index of price conditions which is the average of the standardised prices (deviations from price mean divided by price standard deviation) for those products which the relevant farmer sells to the market.

More formally, the standardised index of price condition (SIPC) for the i -th farmer selling j

($j=1, \dots, n_i$) products on the market is equal to $SIPC_i = \frac{1}{n_i} \sum_{j=1}^{n_i} \frac{P_{ij} - \mu_{pj}}{\sigma_{pj}}$ where μ_{pj} and σ_{pj} are,

respectively, the average and standard deviation of the product j price in the overall sample. The number of products sold (n) is indexed by i to take into account that it is different for any farmer.

The index is the dependent variable in the following Tobit¹¹ specification

$$SIPC_i = \alpha_0 + \sum_{l=1}^3 \gamma_l Group_l + \alpha_1 Male + \alpha_2 Birth + \alpha_3 Married + \alpha_4 Schoolyears + \alpha_5 Sons + \alpha_6 Catholic + \alpha_7 Tharaka +$$

$$+ \alpha_8 Meru + \alpha_9 Acres + \alpha_{10} Employees + \alpha_{11} Othincome + \alpha_{12} Peoplehome + \alpha_{13} Noothact + \varepsilon_i$$

(1)

where $group_l$ is a dummy variable taking the value of one if the farmer belongs to the l -th group (Bio, Control, Conversion) and zero otherwise, $male$ is a dummy variable taking the value of one for male respondents and zero otherwise; $birth$ is the year of birth; $married$ is a dummy variable taking the value of one for married respondents and zero otherwise; $schoolyears$ are the schooling years of the respondent; $sons$ are the number of sons of the respondent; $catholic$ is a dummy variable taking the value of one if the farmer is catholic and zero otherwise; $tharaka$ (*Meru*) is a dummy variable taking the value of one if the respondent belongs to the Tharaka (*Meru*) ethnic group and zero otherwise; $acres$ is the extension in acres of the farmer land; $Othincome$ is a dummy variable taking the value of one if the respondent has additional sources of income and zero otherwise; $peoplehome$ is the number of persons living at the respondent's home; $noothact$ is a dummy variable taking the value of one if the respondent has another working activity and zero otherwise;

Our findings show a strongly significant and positive effect of affiliation to the Conversion group on the index (Table IV, column 1). No other variables result significant in the estimate.

The limit of the standardised index of price conditions is that it just looks at price levels, neglecting other important characteristics of prices which are conveyed by other questions in the survey (advanced/anticipated payment conditions, price stability, absence of sharp price declines). For instance, by taking just one of these complementary aspects of price satisfaction, we observe that farmers in the control sample declare (in a significantly higher proportion) to have suffered price decreases. Consider also that the SIPC index underweights the effect of crop diversification and is

¹⁰ The point is well discussed by Armendariz de Aghion and Morduck (2005) in their analysis of the impact of microfinance projects.

¹¹ We use a Tobit model because our dependent variable has, by construction, the value of one (zero) as upper (lower) limit.

conditioned by the fact that non control group farmers sell some additional goods at a price which is common to all of them (karkade, mango, guava, lemon).¹²

We therefore repeat the experiment by replacing the SIPC with the farmer's subjective perception of price satisfaction under the assumption that the latter can successfully incorporate the above mentioned complementary factors not included in the standardised price index. To build this second index we consider that, for each of the products sold, farmers are asked whether they are satisfied much, enough, a few, not at all. Our index of price satisfaction (IPS) is therefore equal to

$$IPS_i = (3 * muchperc + 2 * enoughperc + afewperc) / 3 \quad (2)$$

Where *muchperc* is the share of products sold on the market on which the farmer declares highest price satisfaction, *enoughperc* (*afewperc*) the share of products sold on the market on which the farmer declares next to highest (next to lowest) price satisfaction. The estimated regression is¹³

$$IPS_i = \alpha_0 + \alpha_1 Control + \alpha_2 Male + \alpha_3 Birth + \alpha_4 Married + \alpha_5 Schoolyears + \alpha_6 Sons + \alpha_7 Catholic + \alpha_8 Tharaka + \alpha_9 Meru + \alpha_{10} Acres + \alpha_{11} Employees + \alpha_{12} Othincome + \alpha_{13} Peoplehome + \alpha_{14} Noothact + \varepsilon_i \quad (3)$$

where all regressors are the same as in (1).

Our findings show that, with the subjective index of price satisfaction, and the usual controls, the impact of access to the FT distribution channel and enjoyment of FT criteria is even stronger (Table IV, column 2). Affiliation to the control group is negative and significant and participation to the Bio and Conversion groups is positive and significant. Quite interestingly to this point, the same effect does not apply to Onlyfruit affiliated whose coefficient is negative and weakly significant.¹⁴ The price satisfaction effect seems therefore related more to the FT than to the Meru Herbs project effect.

As it is well known, economic wellbeing in developing countries depends on a mix of monetary (wage income, government and local transfers) and nonmonetary output or individual resources (self production and self consumption, livestock, education, dietary quality, social capital). All of them contribute to enhance capabilities and functionalities of local farmers and therefore their quality of life. Our survey collects information on both types of indicators. Within this framework, one of the best candidates which captures both formal and informal aspects of economic wellbeing is monthly household food expenditure. We regress this variable on the usual set of controls in the following specification

$$Foodcons_i = \alpha_0 + \alpha_1 Control + \alpha_2 Male + \alpha_3 Birth + \alpha_4 Married + \alpha_5 Schoolyears + \alpha_6 Sons + \alpha_7 Catholic + \alpha_8 Tharaka + \alpha_9 Meru + \alpha_{10} Acres + \alpha_{11} Employees + \alpha_{12} Othincome + \alpha_{13} Peoplehome + \alpha_{14} Noothact + \varepsilon_i \quad (4)$$

where *foodcons* is weekly household food expenditure in shillings and the regressors are defined as in (1).

Two interesting findings here are that the dependent variable is significantly and (weakly) negatively affected by participation to the control group (declaration of the lowest degree of satisfaction for price conditions) (Table V, column 1). The significant relationship between food consumption and an indicator of price (un)satisfaction (*atallperc*) (Table V, column 2) reveals an important link between one of the most important FT criteria and economic wellbeing of local farmers in our survey.

¹² If control farmers nonparticipation to these product markets is involuntary (i.e. they would like to diversify and sell these products, but cannot because they do not have access to trade channels) we should in principle assign them a value of zero price. Our choice of assigning missing values therefore underweights the positive effect of FT on sale conditions.

¹³ Here again, the dependent variable has the upper limit of 3 and the lower limit of 0 and therefore we perform a Tobit estimate, which keeps into account its distribution characteristics.

¹⁴ The estimate is omitted for reasons of space and available upon request.

A complementary and relevant indicator of household wellbeing is the dietary quality of their food consumption. In our survey we have information about the frequency of consumption (more than once a day, once a day, once every three days, once a week, rarely, never) of the following food items (*ugali, chapati, rice, maize, beans, eggs, milk, chicken, other meat, fish, potatoes, greens, fresh fruit*).

On this basis we build an index of dietary quality giving descending values from a maximum of five to a minimum of one to the above mentioned frequency modalities and we finally calculate our synthetic index as an average of the values for each food item.¹⁵

We therefore regress the dietary quality synthetic index on the usual set of controls and on measures of affiliation to the FT projects or to the control sample. We observe in this case that affiliation to the control sample is significantly related to a lower value of the dependent variable (Table V, column 3). A second estimate in which we replace the control dummy with the years of Meru affiliation (which coincide with FT affiliation for Bio and Conversion workers) and add variables measuring ownership of different kind of domestic animals documents the significance of the project seniority, together with the availability of other sources of income and ownership of some animals (chicken and cows) (Table V, column 4).¹⁶

We finally want to investigate whether affiliation to Meru Herbs and Fair Trade project significantly affects income satisfaction. We measure this variable by directly looking at the qualitative question on the level of income satisfaction. The dependent variable is discrete and qualitative assuming values from 3 to 1 and we therefore need to estimate the following ordered logit model.

$$Livesat_i = \alpha_0 + \alpha_1 Control + \alpha_2 Male + \alpha_3 Birth + \alpha_4 Married + \alpha_5 Schoolyears + \alpha_6 Sons + \alpha_7 Catholic + \alpha_8 Tharaka + \alpha_9 Meru + \alpha_{10} Acres + \alpha_{11} Employees + \alpha_{12} Othincome + \alpha_{13} Peoplehome + \alpha_{12} Noothact + \sum_{l=1}^5 \gamma_l Cattle_l + \varepsilon_i$$

(5)

Our findings document a significant and positive effect of affiliation to the Bio project (Table VI, column 1) or seniority of project affiliation (Table VI, column 2) on the dependent variable. The only additional regressor which is significant and positive is the availability of other sources of income.

Notice that the positive relationship between income satisfaction and project seniority may depend not just from the nominator (perceived wage) but also from the denominator, since Bio farmers declare a lower desired wage (see descriptive statistics in Table III). The importance of looking at this measure is that it may help to capture provision of public or private good and services which cannot be measured by the information on perceived income. A reasonable assumption is in fact that lower desired wage is significantly related to a higher quality of monetary and nonmonetary goods and services. This assumption is supported by information on the behaviour of Meru Herbs towards its Bio farmers. These farmers in fact receive more services than the others as a reward for their strong commitment in the organic farming. They receive for free seeds and fruit trees, organic fertilisers and periodical training meetings about organic farming procedures.

¹⁵ We perform a robustness check and find that our results still holds under a different way of composing our dietary quality synthetic index (i.e. presumed number of times the food items is consumed per week). Results are omitted for reasons of space and available upon request.

¹⁶ We further focus on the frequency of consumption of fish and greens (as additional indicators of dietary quality) and observe that the negative effect of affiliation to the control sample is strong here again. The regression on the determinant of fish consumption also shows consistent signs for the number of people living in the household (negative) and the presence of additional sources of income (positive). These estimates are omitted for reasons of space and available from the authors upon request.

To find confirm of this comparative advantage we further estimate a logit model in which the dependent variable takes the value of one if the farmer declares to receive technical assistance from the buyer and zero otherwise. We regress the dependent variable on the usual set of controls, including the number of years of farmer's affiliation to the FT project. We observe that this last variable is significantly and positively correlated with access to technical assistance from the buyer, together with farmer's schooling years (Table VI, columns 3 and 4).

We finally wonder whether participation to the project generates significant differences in an important indicator such as child mortality, validating descriptive evidence provided in Table III. Econometric estimates confirm the significance of the difference in child mortality between control group farmers and Meru Herbs and FT affiliated when controlled for the usual regressors (Table VI, columns 5 and 6). Additional significant regressors in this estimate are the availability of other sources of income (negative) and ownership of chicken (negative).

6. Robustness of our findings to Meru Herbs and Fair trade selection biases: a treatment regression approach

Results presented in section 5 show a significant association between affiliation to Meru Herbs and FT project and monetary and nonmonetary objective and subjectively perceived components of individual well-being. Limits of our database do not completely allow us to answer to a few possible objections. Do these findings depend on a significant impact of FT on farmers wellbeing or are they affected by project selection and control sample bias ? On the one side, we can argue that descriptive findings show that the four groups are not so different in terms of equivalised monthly earnings, and that differences in household size, size of cultivated land and number of employees in the harvesting season are controlled for in our econometric estimates. On the other side, it is always possible that hidden variables affecting the selection of our four groups are also the determinants of differences in wellbeing, even though this is more difficult to believe for some of our findings. To this point, the link between price satisfaction and affiliation to the Meru Herbs and FT project seems an obvious direct consequence of FT criteria (Table IV, columns 1 and 2) and the link between household food consumption expenditure and price satisfaction (Table V, column 1) seems to demonstrate that FT criteria have positive effects on farmers wellbeing.

To have a more rigorous evaluation of the effects of project affiliation, net of the Meru Herbs and Fair Trade selection biases, we estimate a treatment regression model where the previously estimated model equation is reestimated jointly with a selection equation in which affiliation/no affiliation to FT is regressed on a set of individual characteristics. This estimate allows to disentangle the effect generated by the project (affiliated farmers have a superior performance for the effects of the FT project) from the selection effect (affiliated farmers have a superior performance because affiliation to FT was somewhat conditional to farmers high performance or to characteristics correlated to high performance).

The estimated two equation model is:

$$Perform_i = \alpha_0 + \alpha_1 Workyears + \alpha_2 Male + \alpha_3 Birth + \alpha_4 Married + \alpha_5 Schoolyears + \alpha_6 Sons + \alpha_7 Catholic + \alpha_8 Tharaka + \alpha_9 Meru + \alpha_{10} Acres + \alpha_{11} Employees + \alpha_{12} Othincome + \alpha_{13} Peoplehome + \alpha_{12} Noothact + \sum_{l=1}^5 \gamma_l Cattle_l + \alpha_{13} Ftrade + \varepsilon_i \quad (6.1)$$

$$Treat_i = \alpha_0 + \alpha_1 Workyears + \alpha_2 Male + \alpha_3 Birth + \alpha_4 Married + \alpha_5 Schoolyears + \alpha_6 Sons + \alpha_7 Catholic + \alpha_8 Tharaka + \alpha_9 Meru + \alpha_{10} Acres + \alpha_{11} Employees + v_i$$

(6.2)

Perform is our selected performance indicator and is the dependent variable of the first equation, while *Ftrade* is the treatment variable (affiliation to FT) which is a regressor in the first equation and the dependent variable of the second equation. Since we focus on the FT selection bias our treatment variable is one if the farmer belongs to the Bio or Conversion groups and zero otherwise.

Consider also that, to evaluate the dynamic impact of the project across years, we add in the first equation the *Workyears* variable indicating the years of affiliation to FT.

In the two equation system (v) and (ϵ) are bivariate normal random variables with zero mean and covariance matrix $\begin{bmatrix} \sigma & \rho \\ \rho & 1 \end{bmatrix}$. The likelihood function for the joint estimation of (6.1) and (6.2) is provided by Maddala (1983) and Green (2000).

Selected results of treatment regression estimates are presented in Table 7. These findings show that, for two performance variables (nutritional quality and satisfaction of living conditions), working years remain positive and significant even after controlling for both FT and Mehru Herbs selection bias.¹⁷ This implies that seniority of affiliation to the FT distribution channel has significant effects on dietary quality and declared satisfaction about living conditions, after controlling for the selection bias effect. Consider that the only other variable which is significant in the second equation is the number of employees hired in the harvesting season. This findings implies that such variable represents a distinguishing feature of FT affiliated with respect to the other three groups.

7. Fair trade and education: a tentative reconstruction of the dynamics of human capital investment

We finally investigate the impact of FT on child labour (according to our definition, children between 6 and 15 not attending school on the total number of household children in that age cohort) and human capital (according to our definition, children between 6 and 18 going to school on the total number of household children in that age cohort) investment rates in the year of the survey. The estimated specification is

$$Hcap_i = \alpha_0 + \alpha_1 Project + \alpha_2 Income + \alpha_3 Male + \alpha_4 Birth + \alpha_5 Married + \alpha_6 Schoolyears + \alpha_7 Sons + \alpha_8 Catholic + \alpha_9 Tharaka + \alpha_{10} Meru + \alpha_{11} Acres + \alpha_{12} Employees + \alpha_{13} Othincome + \alpha_{14} Peoplehome + \alpha_{15} Noothact + \epsilon_i \quad (7)$$

The difference with previous specifications is that the dependent variables ($Hcap_i$) are, alternatively, the child labour and human capital investment rates described above. Among regressors we include here a measure of *income*, which is one of the most important determinants of the dependent variable.¹⁸ As a measure of income we use alternatively equivalised (*eqincome*) and non equivalised (*montavearn*) household income. The variable *project* indicates that we alternatively verify whether affiliation to one of the four sample groups affects the dependent variable (with *project* being alternatively represented by the already defined *Bio* and *Conversion* dummies). Consider also that the *Schoolyear* variable is particularly important here as several contributions in the child labour literature have shown that parental education has a significant effect on household child labour choices.¹⁹ Consider also that the cross sectional estimate has a

¹⁷ When estimating the two equation model with other performance indicators such as weekly household food expenditure and price satisfaction we do not find the same significant results on the impact of years of project affiliation. Results are omitted for reasons of space and available upon request.

¹⁸ On the role of income among determinants of child labour see, among others, Basu, (1999) Basu and Van (1998), Baland and Robinson (2000) and Becchetti-Trovato (2005).

¹⁹ On this point consider the following quote from Marshall (1920) “*The less fully children’s faculties are developed, the less will they realise the importance of the faculties of their children, and the less will be their power of doing so.*”

lower number of observations because of the presence of households not having sons in the school age in the survey year. In column 1 the dependent variable is *CSUCAP15* (children aged between 6 and 15 attending school over the total number of household children of that age cohort), while in column 2 is *CSCHILDLAB18* (children aged between 6 and 18 not attending school over the total number of household children of that age cohort).

Our findings show that affiliation to the Conversion group is significantly and negatively (positively) related to the first (second dependent variable) (Table VIII, columns 1 to 2). The other only significant variable in the cross sectional estimate is the absence of other working activities which is also negatively / (positively) correlated with the first (second) dependent variable.

An original answer to the already discussed selection bias objection could be provided by reconstructing the behaviour of the observed households in a given performance indicator before and after affiliation to Meru Herbs or to FT value chain. In principle, we cannot provide this answer with our cross sectional survey data, with one important exception.

Since we dispose of information about age and schooling years of farmers' offspring, it is possible to reconstruct year by year the effective human capital investment of each household vis à vis its potential. We can therefore match these series with information on the seniority of affiliation to Meru Herbs and FT project and therefore evaluate whether household human capital investment rate has been affected by project affiliation. As a fundamental caveat to our exercise it must be considered that our reasoning holds under the strong assumption of absence of temporary exits and re-entries into the schooling system and entry into the schooling system when children are six year old. Moreover we do not dispose of information on yearly household income and other time varying controls with the exception of respondent age and seniority of Meru Herbs and FT affiliation. Effects of unmeasurable time invariant controls may be captured by fixed effects.

More formally, the household human capital investment rate (HHCI) is given by the following expression

$$HHCI_{it} = \frac{\sum_{j=1}^{n_i} TOTSCH_{ijt} \mid 6 \leq Sage_{ijt} \leq 18}{TOTPOT_{ijt} \mid 6 \leq Sage_{ijt} \leq 18} \quad (8)$$

or the sum of the j childrens of the farmer i in the school age cohort in a given period t which actually go to school ($TOTSCH_{ijt}$) divided by the number of j childrens of the i -th farmer being in the school age cohort in the same period ($TOTPOT_{ijt}$).²⁰

Based on our reconstructed human capital investment series, we estimate the following fixed effect panel specification

$$HHCI_{it} = \alpha_0 + \sum_{m=1}^3 \beta_m Dgroup_{mit} + \alpha_2 Totpoth_{it} + \alpha_3 Age_{it} + \alpha_4 pworkyears + \alpha_5 [pworkyears]^2 + \sum_{t=1}^{n-1} \gamma_t Dyear_t + \eta_i + \varepsilon_{it}$$

(9)

where $Dgroup$ (Bio, Conversion, Control) is vector of dummies taking the value of one if the respondent was affiliated to one of the three groups in the relevant year and zero otherwise, $Totpot$ is the total number of farmer's children which were in the school age cohort in the relevant year, Age is the age of respondent, $pworkyear$ is the project seniority of the farmer in the relevant year and $Dyear$ are year dummies capturing all factors which may hit transversally all sample respondents in a given year such as business cycle effects, meteorological shocks etc.. Finally, η_i are fixed effects capturing the joint impact of all time invariant individual characteristics (i.e. ethnic groups..).

And conversely any change that awards to the workers of one generation better" earnings, together with better opportunities of developing their best qualities, will increase the material and moral advantages which they have the power to offer to their children" and, among recent literature contributions, those of Haddad-Hoddinott, (1994) Manser-Brown (1980) and Cigno (1991).

²⁰ The total number of children for each farmer is n_i to indicate that household are heterogeneous in size.

The unbalanced panel estimate is based on information for 94 households over a 18-years period and has therefore more than 1100 observations Table VIII, columns 3 and 4).

Our findings show a clearcut positive association between affiliation to the Conversion project, together with a negative effect of the total number of sons which are in the 6-18 age cohort and a negative effect of age. This implies that older farmer parents or farmers with largest families invest less in human capital of their children. The joint significance of the fixed effects is confirmed by the F-testdiagnostics. Our findings hold irrespective of the change into the considered schooling interval (6-15 or 6-18 age cohort).

8. Conclusions

Fair traders import products from more than 700 trading partners around the world involving around 1,5 million households of marginalised producers in LDCs (EFTA, 2003). It is therefore uncautious to draw general conclusions about FT impact from an analysis developed on just one of these projects. Findings from this paper may at maximum suggest whether the partnership with Meru Herbs was a good choice for FT and whether the joint impact of FT criteria and Meru Herbs activity had a positive influence on affiliated farmers.

We believe, however, that our results, even though project specific, provide interesting evidence in the fair trade debate.

Our main conclusions are that fair trade affiliation seems to be associated with superior capabilities, economic and social wellbeing in the case of the observed Kenyan farmers, but also that more can be done on the human capital side. In the project investigated, fair trade is definitely responsible for crop diversification, creation of an additional trade channel and higher price satisfaction of marginalised producers. Fair trade and Meru Herbs affiliated have also been shown to have relatively higher food consumption expenditure and dietary quality, with the latter being seemingly related to the previously mentioned FT direct effects on price satisfaction. Another interesting result is the marked difference between fair trade affiliated and control farmers in terms of income satisfaction, not only for the higher perceived income, but mainly because of a relatively lower desired income which may be determined by a higher supply of complementary welfare services and technical assistance.

Among these findings those of higher living satisfaction and superior nutritional quality appear the most robust since the two variables are positively related to the seniority of FT affiliation and are robust to controls for the FT selection bias in a two equation treatment regression model.

A less clearcut result is the one related to the impact of fair trade on human capital investment. We observe here the positive (negative) association between affiliation to the younger Conversion project and human capital investment (child labour), but no significant association of the same variables to affiliation to the other projects.

Overall, our findings seem to suggest that FT works quite well in the static perspective and that its specific features directly contribute to the improvement of farmers wellbeing, but also that the dynamic aspect (support for human capital investment) may be further improved. Remember however that in our analysis the control group is quite homogeneous to the other three groups since it shares with them the same geographical area and basic infrastructure. This tends to flatten all differences and makes the exam of the FT impact more severe. Moreover, survivorship bias and exit of most successful farmers from the project may contribute as well to the underestimation of effects of FT.

A part from these specific results we believe that a fundamental contribution of this paper consists of the development of a full blown methodology for impact analysis which can be usefully applied

on similar projects. Such methodology tackles all phases of the impact study providing guidance for the survey design, the construction of the control sample and the descriptive and econometric analysis which can be developed from survey answers.

Further work in this direction may be needed to enrich the dataset and allow the researcher to disentangle the pure impact of FT affiliation effect from the local producer affiliation and selection bias and control sample bias effects. More specifically, a second inquiry on the same sample at a given time distance from the first could allow the researcher to perform “difference in difference” estimations which may permit comparisons of changes in quality of living indicators of FT affiliated with respect to the control sample.

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Table I Summary characteristics of the four groups

	Bio	Conversion	Onlyfruit	Control
Male (percent)	54.94	33.57	7.47	4.34
Catholics (percent)	46.23	56.6	60.24	46.24
Age	48	43	48	38
Years of affiliation to the Meru cooperative	13.3	1.1	2.8	0
Schooling years	3.9	7.4	5.4	6.5
Tharaka ethnic group (percent)	86.7	60	76.7	70
Meru ethnic group (percent)	6.6	3.3	26.7	10
Acres	10	7.16	9.36	6.8
N. of employees hired during harvesting season	1.3	1.9	1.96	0.7
N. of sons	3.1	2.5	3.6	1.9
Other income*	23.15	26.14	20.16	20.34
No other activities*	80.27	73.73	70.26	76.12
Number of respondents	30	30	30	30

Variable legend: *workyears*: years of affiliation to the Meru cooperative;

Group legend: *Bio*: certified organic farmers with long term affiliation to Meru Herbs and long term access to FT channels. *Conversion*: Meru Herbs farmers under conversion towards the organic certification with short term or starting partnership with FT. *Onlyfruit*: Meru Herbs farmers which are fruit producers and have non systematic relationship with FT. *Control*: farmers not affiliated to Meru and FT which share with them the same environment and advantages of the local irrigation infrastructure.

* share of respondents with positive answer.

Table II Crop diversification and sale conditions

	Bio	Conversion	Onlyfruit	Control
Share of prod. directly sold to customers (percent)	17	18	28	38
Share of prod. sold to intermediaries (percent)	9	7	12	20
Share of prod. sold to Meru (percent)	60	55	38	0
Highest satisfaction level about price conditions (percent)	23	24	19	11
Avg number of products sold	8.8	7.7	6.6	4
Papaw*	5 (20)	5 (18)	5 (19)	5 (1)
Mango*	7 (20)	7 (15)	7 (25)	--
Okra*	26 (6)	32 (9)	30 (10)	31 (11)
Karkade*	7 (30)	7 (1)	7 (28)	--
Sorghum*	12.2 (17)	11.7 (16)	12.4 (13)	10.2 (18)
Maize*	12.4 (15)	12.8 (15)	13 (21)	11.7 (18)
Millet*	15 (16)	12 (15)	16.7 (14)	13.5 (20)
Pilipili*	40 (13)	30.5 (19)	30.7 (13)	14 (4)
Guava*	7(18)	7(7)	7(8)	--
Lemon*	5(19)	5(10)	5(14)	--
Number of respondents	30	30	30	30

Group legend: *Bio*: certified organic farmers with long term affiliation to Meru Herbs and long term access to FT channels. *Conversion*: Meru Herbs farmers under conversion towards the organic certification with short term or starting partnership with FT. *Onlyfruit*: Meru Herbs farmers which are fruit producers and have non systematic relationship with FT. *Control*: farmers not affiliated to Meru and FT which share with them the same environment and advantages of the local irrigation infrastructure.

* Price in shillings with the number of group farmers selling the product on the market in parenthesis

Table III Price satisfaction, income, quality of living indicators

	Bio	Conversion	Onlyfruit	Control
Weekly household consumption expenditure (shillings)	425	510	429	357
Income satisfaction	0.75	0.28	0.45	0.22
Household monthly earnings	4972	5257	4394	3195
Equivalentised monthly earnings	213.7	272.6	216.1	211.6
Infant mortality	0.14	0.17	0.07	0.29
Desired monthly earnings	26,333	28,750	31,436	28,000
Share of respondents declaring highest level of price satisfaction	7.35	6.26	3.68	0
Share of respondents declaring next to highest level of price satisfaction	24	24	19	11
Child labour	0.87	0.55	0.92	0.77
Human capital investment	9	0.35	0.04	0.19
Number of respondents	30	30	30	30

Legend. *Income satisfaction*: ratio between household monthly earnings and desired income; *Equivalentised monthly earnings*: household monthly earnings scaled by AE where $AE = 1 + 0.5(N_{adults} - 1) + 0.3 N_{children}$ according to the OECD rule. *Infant mortality*: share of group respondents with a children between 1 and 5 year old died in the last three years; *child labour*: children between 6 and 15 not attending school on the total number of household children in that age cohort; *human capital*: children between 6 and 18 going to school on the total number of household children in that age cohort.

Table IV the impact of Meru and FT affiliation on the standardised index of price conditions (SIPC) and on the index of price satisfaction (IPS)

Var. Dip.	IPS	SIPC
Bio	0.177** [0.067]	0.033 [0.235]
Conversion	0.190** [0.073]	0.648** [0.253]
Control	-0.146** [0.075]	-0.020 [0.253]
Male	0.114* [0.052]	-0.152 [0.176]
Birth	0.001 [0.002]	-0.012 [0.008]
Married	-0.039 [0.053]	0.032 [0.150]
Schoolyears	-0.007 [0.006]	-0.011 [0.019]
Sons	0.009 [0.009]	-0.028 [0.032]
Catholic	-0.017 [0.049]	-0.053 [0.172]
Acres		-0.014 [0.008]
Employees		0.037 [0.055]
Othincome	0.074 [0.059]	0.062 [0.212]
Peoplehome	-0.014 [0.011]	-0.020 [0.038]
Noothact	-0.030 [0.064]	0.069 [0.219]
Constant	-1.916 [3.939]	Constant 23.311 [15.252]
LR $\chi^2(15)$	43.95	LR $\chi^2(16)$ 18.68
Prob > χ^2	0.0001	Prob > χ^2 0.2857
Pseudo R ²	0.5729	Pseudo R ² 0.0845
Obs	106.000	Obs 90.000

SIPC: standardised index of price condition (SIPC) for the i-th farmer selling j (j=1,...,n_i) products on the market where

$$SIPC_i = \frac{1}{n_i} \sum_{j=1}^{n_i} \frac{P_{ij} - \mu_{pj}}{\sigma_{pj}}$$

with μ_{pj} and σ_{pj} being, respectively, the average and standard deviation of the product j price in the overall sample.

The number of products sold (n) is indexed by i to take into account that it is different for any farmer.

$IPS_i = (3 * muchperc + 2 * enoughperc + afewperc) / 3$ where *muchperc* is the share of products sold on the market on which the farmer declares highest price satisfaction, *enoughperc* (*afewperc*) the share of products sold on the market on which the farmer declares next to highest (next to lowest) price satisfaction.

The two indexes are dependent variables (in column 1 and 2) in Tobit specifications since both dependent variables have upper and lower bounds. Legend of regressors: Control (Bio, conversion) is a dummy variable taking the value of one if the farmer belongs to the control (Bio, conversion) group and zero otherwise, *male* is a dummy variable taking the value of one for male respondents and zero otherwise; *birth* is the year of birth; *married* is a dummy variable taking the value of one for married respondents and zero otherwise; *schoolyears* are the schooling years of the respondent; *sons* are the number of sons of the respondent; *catholic* is a dummy variable taking the value of one if the farmer is catholic and zero otherwise; *tharaka* (*Meru*) is a dummy variable taking the value of one if the respondent belongs to the Tharaka (Meru) ethnic group and zero otherwise; *acres* is the extension in acres of the farmer land; *Othincome* is a dummy variable taking the value of one if the respondent has additional sources of income and zero otherwise; *peoplehome* is the number of persons living at the respondent's home; *noothact* is a dummy variable taking the value of one if the respondent has another working activity and zero otherwise.

Ethnic group variables are omitted for reasons of space* 90 percent significance, ** 95 percent significance. Robust standard errors in square brackets.

Table V the impact of FT and Meru affiliation on household weekly food expenditure and dietary quality

Dep. Var.	FOODCONS	FOODCONS	QUALCONS	QUALCONS
Atalperc		-185.903** [97.365]		
Control	-133.097** [65.947]		-0.351* [0.202]	
Workyear				0.040** [0.017]
Male	-13.396 [59.380]	-8.020 [65.202]	0.203 [0.167]	0.105 [0.198]
Birth	3.257 [2.458]	3.189 [2.208]	0.007 [0.008]	0.008 [0.008]
Married	-19.195 [33.269]	-10.549 [38.916]	0.040 [0.142]	0.189 [0.117]
Schoolyears	-2.803 [8.530]	-0.455 [8.822]	0.022 [0.022]	0.034 [0.024]
Sons	18.178 [15.361]	19.361 [14.059]	0.009 [0.033]	-0.039 [0.038]
Catholic	-93.542 [71.555]	-75.179 [63.736]	0.120 [0.167]	0.110 [0.186]
Acres	-2.225 [1.924]	-55.694 [74.683]	0.010 [0.010]	0.011 [0.009]
Employes	-0.103 [12.777]	0.770 [2.142]	0.021 [0.029]	0.103** [0.043]
Othincome	-11.402 [72.734]	45.094* [26.359]	-0.0959 [0.232]	0.018 [0.260]
Peoplehome	-13.252 [14.982]	-2.547 [14.218]	-0.043 [0.035]	-0.053 [0.052]
Noothact	-87.470 [70.467]	-95.768 [70.028]	0.381 [0.220]	0.647** [0.249]
Chicken				0.649* [0.381]
Goats				-0.500 [0.256]
Cows				0.666** [0.212]
Pigs				0.281 [0.454]
Constant	-5714.546 4815.826	-5793.393 [4332.480]	Constant -10.628 15.216	Constant -14.396 15.747
R ²	0.1007	0.13	R ² 0.1664	R ² 0.3581
Obs	102	105	Obs 103	Obs 75

For the specification of estimates in columns 1 and 2 see equation (3) in the paper. The dependent variable (*Foodcons*) is monthly household food expenditure. For variable legend see Table IV. In columns 3 and 4 the dependent variable (*qualcons*) is an index of nutritional quality built as an unweighted average of frequencies of consumption (more than once a day, once a day, once every three days, once a week, rarely, never) of the following food items (*ugali, chapati, rice, maize, beans, eggs, milk, chicken, other meat, fish, tubers (potatoes), greens, fresh fruit*). On this basis we build an index of dietary quality giving descending values from a maximum of five to a minimum of one to the above mentioned frequency modalities and we finally calculate our synthetic index as an average of the values for each food item. The third column regression is estimated with a Tobit model since the dependent variable has upper and lower bounds. Column 3 variable legend: atalperc: share of products sold on the market for which the farmer is not at all satisfied about price condition over total number of products sold on the market. For the other variables see Table IV legend. * 90 percent significance, ** 95 percent significance. Robust standard errors in square brackets.

Table VI The impact of FT and Meru affiliation on life satisfaction and on infant mortality

Dep. Var.	LIVSAT		TECHASS		INFMOR			
Bio	1.134**					-1.888*		
	[0.559]					[1.110]		
Control						1.641**		
						[0.786]		
Workyear		0.083**	0.277**	0.255**				
		[0.042]	[0.073]	[0.087]				
Male	0.073	0.081	-0.946	-0.392	1.393	0.782		
	[0.428]	[0.427]	[0.585]	[0.701]	[0.852]	[0.722]		
Birth	-0.010	-0.009	-0.033	-0.041	-0.060	-0.061		
	[0.018]	[0.018]	[0.028]	[0.031]	[0.042]	[0.038]		
Married	-0.048	-0.023	-1.221	-2.113				
	[0.319]	[0.319]	[1.054]	[1.265]				
Schoolyears	-0.051	-0.055	0.162**	0.156**	-0.010	0.009		
	[0.047]	[0.047]	[0.062]	[0.070]	[0.093]	[0.083]		
Sons	-0.055	-0.057	-0.026	0.077	0.166	0.157		
	[0.079]	[0.079]	[0.124]	[0.148]	[0.180]	[0.155]		
Catholic	0.528	0.551	-0.237	-0.271	0.004	0.042		
	[0.434]	[0.434]	[0.534]	[0.623]	[0.770]	[0.702]		
Acres	0.006	0.006	-0.021	-0.043	-0.181	-0.177		
	[0.020]	[0.020]	[0.043]	[0.051]	[0.112]	[0.089]		
Employes	-0.003	0.003	-0.058	0.008	0.170	0.120		
	[0.083]	[0.083]	[0.119]	[0.126]	[0.144]	[0.127]		
Othincome	1.781**	1.819**	0.826	0.552	-2.611**	-1.946*		
	[0.538]	[0.539]	[0.693]	[0.799]	[1.321]	[1.190]		
Peoplehome	-0.138	-0.149	0.206	0.264	-0.054	0.050		
	[0.097]	[0.097]	[0.135]	[0.155]	[0.191]	[0.160]		
Noothact	-0.259	-0.346	-0.170	-0.739	1.218	1.251		
	[0.524]	[0.521]	[0.686]	[0.843]	[1.107]	[0.997]		
Chicken	0.281	0.403		0.092	3.132**			
	[0.610]	[0.600]		[0.860]	[1.361]			
Sheep	-0.058	-0.077		-0.439	-0.226			
	[0.670]	[0.669]		[1.012]	[1.367]			
Cows	0.498	0.547		0.762	-0.497			
	[0.522]	[0.527]		[0.784]	[0.927]			
Goats	-1.210	-1.166		1.577	0.314			
	[0.636]	[0.631]		[0.920]	[1.030]			
Pigs	2.001	2.018		-1.640	-0.432			
	[1.445]	[1.451]		[1.982]	[2.300]			
/cut1	-22.007	-19.131	Constant	64.976	80.194	Constant	110.2892	114.8003
	[35.377]	[35.472]		[55.999]	[60.392]		[82.155]	[75.167]
/cut2	-20.609	-17.740						
	[35.364]	[35.460]						
/cut3	-18.350	-15.482						
	[35.342]	[35.439]						
LR $\chi^2(19)$	29.04	28.78	LR $\chi^2(20)$	15.80	46.71	LR $\chi^2(20)$	20.85 (15)	15.80
Prob> χ^2	0.0654	0.0696	Prob> χ^2	36.83	0.0006	Prob> χ^2	0.4058	0.3956
Pseudo R ²	0.1059	0.1050	Pseudo R ²	0.282	0.3582	Pseudo R ²	0.2620	0.1985
Obs	103.000	103.000	Obs	96	96	Obs	86	86

The dependent variable of the first and second column regression is the answer to the following question: Are you satisfied with your household's living conditions? The qualitative answers have been given the following points: very much=3; enough=2 a few=1 not at all=0. Given the ordinal dependent variable the specification is estimated with an ordered logit approach. For variable legend see Table 4.

* 90 percent significance, ** 95 percent significance. Robust standard errors in square brackets.

Table VII. Effects of FT affiliation on nutritional quality and living condition satisfaction when controlled for FT selection bias

Dep. Var.	QUALCONS		FTRADE		Dep. Var.	LIVSAT		FTRADE	
	coeff.	s.e.	coeff.	s.e.		coeff.	s.e.	coeff.	s.e.
Workyear	0.038**	0.018			Workyear	0.038	0.021		
Male	0.163	0.203	-0.554	0.306	Male	-0.065	0.304	-0.526	0.350
Birth	0.002	0.007	-0.007	0.013	Birth	-0.006	0.009	-0.008	0.013
Married	0.008	0.147	0.039	0.307	Married	-0.026	0.167	0.010	0.317
schoolyears	0.040*	0.020	0.035	0.031	Schoolyears	-0.014	0.026	0.031	0.030
Sons	0.011	0.030	-0.010	0.064	Sons	-0.029	0.035	-0.017	0.064
Catholic	0.114	0.158	0.065	0.288	Catholic	0.228	0.190	0.088	0.296
Embu	-0.837	0.576	-0.485	1.113	Embu	-1.563*	0.697	-0.408	1.246
Meru	0.217	0.314	-0.695	0.588	Meru	-0.068	0.400	-0.635	0.587
Tharaka	-0.112	0.230	0.293	0.397	Tharaka	-0.406	0.287	0.273	0.387
Acres	0.003	0.011	0.057	0.027	Acres	0.018	0.017	0.059	0.032
Employes	0.046	0.091	0.361**	0.123	Employes	0.104	0.161	0.355**	0.128
Othincome	0.054	0.194			Othincome	0.904**	0.221		
peoplehome	-0.034	0.037			Peoplehome	-0.058	0.042		
Noothact	0.397*	0.201			Noothact	-0.171	0.230		
Ftrade	-0.163	0.639			Chicken	0.142	0.274		
Constant	-1.695	13.751	13.072	26.394	Sheep	-0.033	0.287		
					Cows	0.161	0.216		
N. of obs				106	Goats	-0.581*	0.260		
Log L				-176.201	Pigs	1.159	0.601		
					Ftrade	-0.362	1.376		
					Constant	12.756	17.748	3.756	5.728
					N. of obs				106
					Log L				-186.418

Legend: the two equation treatment regression model is described in section 6 (equations 6.1 and 6.2). Variable legend: see Tables V and VI. * 90 percent significance, ** 95 percent significance. Robust standard errors in square brackets.

Table VIII The impact of Meru and FT affiliation on human capital investment and child labour

	CSUCAPH15		CSCHILDLAB18		PUCAP15		PUCAP18
Conversion	1.022*	Conversion	-1.230*	Totpoth	-0.006		-0.004
	[0.559]		[0.671]		[0.007]		[0.007]
Bio	-0.027	Bio	-0.350	Bio	-0.035		-0.036
	[0.655]		[0.813]		[0.060]		[0.060]
Eqincome	-0.001			Conversion	0.164**		0.167**
	[0.001]				[0.077]		[0.076]
		Montavearn	0.0001	Onlyfruit	-0.025		-0.025
			[0.0001]		[0.053]		[0.054]
Male	0.536	Male	-0.928	Age	-0.049**		-0.049**
	[0.470]		[0.592]		[0.003]		[0.003]
Birth	0.049	Birth	-0.044	Workyear	-0.004		-0.004
	[0.034]		[0.038]		[0.016]		[0.016]
Married	-0.989	Married	0.132	[Workyears] ²	0.000		0.000
	[0.845]		[0.430]		[0.001]		[0.001]
schoolyears	-0.009	schoolyears	-0.016	Constant	2.477**		2.4637**
	[0.041]		[0.048]		[0.125]		[0.1247]
Sons	-0.064	Sons	0.086				
	[0.097]		[0.119]				
Catholic	-0.322	Catholic	0.593				
	[0.445]		[0.613]				
Acres	-0.006	Acres	0.023				
	[0.034]		[0.043]				
Employes	-0.024	Employes	0.098				
	[0.201]		[0.245]				
Othincome	0.785	Othincome	-0.460				
	[0.567]		[0.683]				
Peoplehome	0.046	Peoplehome	-0.141				
	[0.110]		[0.138]				
Noothact	-1.063*	Noothact	1.318*				
	[0.510]		[0.643]				
Constant	-95.767	Constant	87.222				
	[67.295]		[74.415]				
/sigma	0.926		0.3149667	sigma_u	0.554605	sigma_u	0.554773
	0.259		0.3670505	sigma_e	0.217777	sigma_e	0.2173
LRchi(19)	30.490		30.770	F(93,996) #	8.41	F(93,994) #	8.28
			0.050	F(25,996)	45.03	F(25,994)	45.31
Pseudo R	0.310		0.350	Obs	1115		1113
N of obs	70.000		69.000	Groups	94		94

The first two columns present cross-sectional Tobit estimates and the second two columns panel fixed effect estimates. The specifications are described in section 7 (equations 6-8). Dependent variables: *csucaph18*: children between 6 and 18 attending school on the total number of household children in that age cohort; *cschildlab15*: children between 6 and 15 not attending school on the total number of household children in that age cohort; *pucaph15*: children between 6 and 15 attending school on the total number of household children in that age cohort; *pucaph18*: children between 6 and 18 attending school on the total number of household children in that age cohort
F- test on the null hypothesis of the joint insignificance of the fixed effects. * 90 percent significance, ** 95 percent significance. Robust standard errors in square brackets.

Appendix 1 Survey questionnaire

N°	Question	Alternatives
1	Case number	number (001-100 TG) (101-200 CG) (phase)
2	How long have you been working with Meru Herbs? (Have you never worked with Meru Herbs? If you had, how long?)	years (never worked: 0)
3	Sex	female [1] male [3]
4	When were you born?	year
5	Which ethnic group do you belong to?	embu [1] kalenjin [3] kamba [5] kikuyu [7] kisii [9] luhya [11] luo [13] maasai [15] meru [17] mijikenda [19] somali [21] taita [23] tharaka [25] turkana [27] kuria [29] altro [31]
6	Which is your civil status?	unmarried [1] cohabiting [3] divorced [5] separated [7] married [9]
7	How long have you attended to school?	years
8	Which religion do you practise?	catholic [9] protestant [7] muslim [5] other [3] no religion [1]
9	How many sons do you have?	sons
10	How old are they? How many school years have they attended? What kind of job do they do? No sons: [0]	age [], school years [], kind of job [] inside family [1] irregular outside family [3] regular autonomous [5] regular dependent [7] no job [9]
	<i>first son</i>	
	<i>second son</i>	
	<i>third son</i>	
	<i>fourth son</i>	
	<i>fifth son</i>	
	<i>sixth son</i>	
	<i>seventh son</i>	
	<i>eighth son</i>	
	<i>nineth son</i>	
11	Generally speaking do you consider yourself:	very happy [7]

12 Usually, whom do you apply to, in case of illness?	happy enough [5] not very happy [3] not happy at all [1] yourself, at home [1] traditional doctors [3] dispensary [5] public hospital [7] private clinic [9] other [11].....
13 Where was your last son born? (no sons:[9])	at home [1] in a clinic [3] in hospital [5] other [7].....
14 Who did help you/your wife during last birth? (no sons: [11])	nobody [1] friends/relatives [3] traditional doctor [5] nurse [7] doctor [9]
15 Your sons have been vaccinated? (no sons:[9])	yes [3] no [1]
16 Have you lost sons in tender age in last five years? (no sons:[9])	yes [3] no [1]
17 When did they die? (no sons lost:[9])	during the birth [1] in the 1st year [3] 2nd-5th year [5] after the 5th year [7]
<i>first son</i>	
<i>second son</i>	
<i>third son</i>	
18 In the last year how many working days have you lost for illness?	none [1] less than 5 days [3] 6-15 days [5] more than 15 [7]
Have you never seriously injured yourself on your work place during the last 19 year?	no, never [1] one time [3] two times [5] more than 2 times [7]
During the last year have you bought one or more of these things for your 20 sons? (no sons in school age:[9])	yes [3] no [1]
<i>books</i>	
<i>pens and pencils</i>	
<i>uniforms</i>	
<i>workbooks</i>	
<i>bags</i>	
21 Usually do you manage to have the following meals during the day?	yes [3] no [1]
<i>breakfast</i>	
<i>lunch</i>	
<i>dinner</i>	
22 How many times do you usually eat the following food?	more than once a day [11] once a day [9]

	once every three days [7]
	once a week [5]
	rarely [3]
	never [1]
<i>ugali</i>	
<i>chapati</i>	
<i>rice</i>	
<i>maize</i>	
<i>beans</i>	
<i>eggs</i>	
<i>milk</i>	
<i>chicken</i>	
<i>other meat</i>	
<i>fish</i>	
<i>tubers (potatoes)</i>	
<i>greens</i>	
<i>fresh fruit</i>	
23 How many hectares do you/your family own?	hectares
24 How many workers do you employ during the harvesting season?	employees
25 Which of the following food do you grow for self-consumption?	yes [3]
	no [1]
<i>maize</i>	
<i>other cereals</i>	
<i>beans</i>	
<i>tubers (potatoes)</i>	
<i>greens</i>	
<i>fruit</i>	
26 Which of the following animals do you breed?	yes [3]
	no [1]
<i>chicken</i>	
<i>sheep</i>	
<i>cows</i>	
<i>goats</i>	
<i>pigs</i>	
<i>horses/donkeys</i>	
27 Usually how much do you spend in food for all your family in a week?	shillings
28 When has been your house built?	year
29 In the last five years have you renewed your house?	yes [3]
	no [1]
30 If you had, what? (if not: [9])	yes [3]
	no [1]
<i>roof</i>	
<i>floor</i>	
<i>walls</i>	
<i>more rooms</i>	
<i>other</i>	
31 How many people do usually live in your house?	people
32 Which is the main building material used for your house?	straw and mud [1]
	timbers [3]
	bricks [5]
	other [7]
33 Which kind of floor is there in the house?	bare ground [1]

	cement [3]
	wood boards [5]
	tiles [7]
	other [9]
34 Does your family have access to electricity?	yes [3]
	no [1]
35 Bathroom location and sharing:	inside and exclusive [9]
	inside and shared [7]
	outside and exclusive [5]
	outside and shared [3]
	no bathroom [1]
36 Which is the main light source you have at home?	electricity [9]
	gas [7]
	oil lamp [5]
	other [3].....
	nothing [1]
37 What type of fuel does your household mainly use for cooking?	wood [1]
	coal [3]
	gas [5]
	electricity [7]
	other [9].....
38 Which is your main activity?	agriculture [1]
	handicraft [3]
	working in Meru Herbs [5]
	other [7].....
39 Besides this, Do you do another activity?	no [0]
	agriculture [1]
	handicraft [3]
	working in Meru Herbs [5]
	other [7].....
40 Please, tell me, for each activity the kind of payment:	per kilo/piece work [1]
	per day [3]
	fixed weekly [5]
	fixed monthly [7]
	other [9].....
	shillings
<i>main activity</i>	
<i>second activity (no: [0])</i>	
41 Please, tell me, for each activity your monthly average earning:	
<i>main activity</i>	
<i>second activity (no: [9])</i>	
42 How many weeks have you worked for each activity last year?	all the year [1] or number of weeks
<i>main activity</i>	
<i>second activity (no: [9])</i>	
43 Whom do you usually sell your products to?	not sold [0]
	directly to clients at the market [1]
	to middlemen [3]
	to Meru Herbs (your organization) [5]
<i>papaw</i>	
<i>mango</i>	
<i>french beans</i>	
<i>okra</i>	
<i>karkade</i>	

camomille
lemongrass
tobacco
banana
potatoes
soia beans
maize
sorghum
millet
tomatoes
pilipili
guava
lemon

44 How much are you paid per kilo for the following?

sh/kg

papaw
mango
french beans
okra
karkade
camomille
lemongrass
tobacco
banana
potatoes
soia beans
maize
sorghum
millet
tomatoes
pilipili
guava
lemon

45 When are you paid for your products?

in advance [1]
upon delivery [3]
after the delivery [5]

papaw
mango
french beans
okra
karkade
camomille
lemongrass
tobacco
banana
potatoes
soia beans
maize
sorghum
millet
tomatoes
pilipili
guava

lemon
46 Are you satisfied by the price of the following? very much [7]
enough [5]
a few [3]
not at all [1]

papaw
mango
french beans
okra
karkade
camomille
lemongrass
tobacco
banana
potatoes
soia beans
maize
sorghum
millet
tomatoes
pilipili
guava
lemon

47 Has the price of the following decreased in the last 3 crops? yes [3]
no [1]

papaw
mango
french beans
okra
karkade
camomille
lemongrass
tobacco
banana
potatoes
soia beans
maize
sorghum
millet
tomatoes
pilipili
guava
lemon

48 Have it never happened to you to not manage to sell the crop? yes [3]
no [1]

papaw
mango
french beans
okra
karkade
camomille
lemongrass

<i>tobacco</i>	
<i>banana</i>	
<i>potatoes</i>	
<i>soia beans</i>	
<i>maize</i>	
<i>sorghum</i>	
<i>millet</i>	
<i>tomatoes</i>	
<i>pilipili</i>	
<i>guava</i>	
<i>lemon</i>	
49 Have you ever been asked by Meru Herbs (your organization) to:	yes [3] no [1]
<i>to participate in meetings to take decisions</i>	
<i>to vote your representatives</i>	
50 When you sell your products to Meru Herbs (your buyers):	yes [3] no [1]
<i>are you sure to sell always your crop?</i>	
<i>do you sign contracts for selling the crop?</i>	
51 Have you never received technical assistance by Meru Herbs (your buyer)?	yes [3] no [1]
52 Does your family have other incomes than the work income?	yes [3] no [1]
53 If it does, where do they come from? (if not: [9])	yes [3] no [1]
<i>from the community</i>	
<i>from the state</i>	
<i>from the church</i>	
<i>from private persons</i>	
<i>from ngos</i>	
<i>from development agencies</i>	
<i>other</i>	
54 Are you satisfied with your household's living conditions?	very satisfied [7] satisfied enough [5] satisfied a little [3] not satisfied [1]
In your opinion, how much should your monthly wage be to live in a	
55 satisfactory way?	shillings
56 Which of the following things does your family own?	yes [3] no [1]
<i>tv</i>	
<i>radio</i>	
<i>fridge</i>	
<i>bicycle</i>	
<i>motorcycle</i>	
<i>car</i>	
<i>truck</i>	
<i>mobile phone</i>	
57 Which of the following things have you bought in the last two years?	yes [3] no [1]
<i>tv</i>	
<i>radio</i>	

<p><i>fridge</i> <i>bicycle</i> <i>motorcycle</i> <i>car</i> <i>truck</i> <i>mobile phone</i></p>	<p>58 Have you ever asked/received loans in last three years/before?</p>	<p>asking [] receiving [] in last 3 years; asking [] receiving [] before asked in last three years si [3]/no [1] received in last three years si [3]/no [1] asked before si [3]/no [1] received before si [3]/no [1]</p>
<p><i>friends/relatives</i> <i>privates</i> <i>community funds</i> <i>Meru Herbs (your Organization)</i> <i>ngos</i> <i>bank</i> <i>S.A.C.C.O.</i> <i>financial institutions</i> <i>other.....</i></p>	<p>59 Last year have you managed saving a part of your earning?</p> <p>60 Last year have you bought the following tools for your activity?</p> <p><i>seeds</i> <i>manures (concimi)</i> <i>ploughs (aratri)</i> <i>other tools</i></p> <p>61 How do you buy the raw materials necessary for your work?</p> <p><i>with your work earnings</i> <i>asking a loan</i> <i>receiving a part of the payment in advance</i> <i>other</i></p> <p>62 Whom do you buy from the raw materials and the tools for your work?</p> <p><i>from the trader</i> <i>at the local market</i> <i>from Meru Herbs (your organization) for free</i> <i>from Meru Herbs (your organization) discounted</i> <i>from private persons, used</i> <i>other.....</i></p>	<p>a lot [7] enough [5] a little [3] no [1] yes [3] no [1]</p> <p>yes [3] no [1]</p> <p>yes [3] no [1]</p> <p>yes [3] no [1]</p> <p>yes [3] no [1]</p>
<p><i>other districts of the same province.....</i> <i>other provinces.....</i> <i>bordering countries.....</i> <i>other countries.....</i></p>	<p>63 Have you ever been in one of the following places in the last five years?</p> <p>64 Why? (if not: [9])</p>	<p>yes [3] no [1]</p> <p>for work reasons [1] to visit parents/relatives [3]</p>

65 In your family has someone never moved for work reasons?

66 If he/she had, where? (if not: [9])

Actually, would you be ready to move outside your community for work reasons?

in a rural area in Kenya

in a city in kenya

abroad

69 How do you carry on your job?

70 If 69>[3] or [5]: How do you consider working in group?

71 If 69>[1]: Would you be ready to work in group?

72 If 70>[3] or 71>[3]: Why?

73 If 70>[1] or 71>[1]: Why?

74 In your opinion, people that do your same job in your province are:

75 With your job you try to improve the conditions of:

76 In last two years have you attended training courses?

77 If 76>[1];[3] or [5]: If you had, what kind of courses? If not: [9]

78 If 76>[0]: If you had not, why? If yes: [9]

79 In your opinion education is:

80 Besides your mother-tongue, which languages do you speak?

other local languages

ki-swahili

other [5].....

yes [3]

no [1]

in a rural area in kenya [1]

in a city in kenya [3]

abroad [5]

never [1]

for a little period [3]

forever [5]

alone [1]

with your relatives [3]

with other farmers [5]

useful [3]

unuseful [1]

yes [3]

no [1]

because working in group is more enjoyable [3]

because it is possible helping each other [1]

because you don't trust other people [3]

because you have to think for yourself [1]

too many [7]

a lot [5]

enough [3]

a few [1]

yourself [1]

your family [3]

your community [5]

your country [7]

no [0]

yes, one time [1]

yes, two times [3]

yes, three times or more [5]

they don't interest me [1]

I don't have time [3]

I can't afford them [5]

there aren't training courses [7]

very important [7]

important enough [5]

not very important [3]

not important at all [1]

yes [3]

no [1]

<i>english</i>	
<i>other foreign languages</i>	
If possible, would you like to learn another language? If he/she knows other languages: [9]	yes [3] no [1]
82 Do you know fair trade?	yes [3] no [1]
83 If 82>[3]: In your opinion, what does fair trade mean? If not: [9]	non responde [0]
84 If 82>[3]: Which of the following statements do you agree the most? If not: [9]	fair trade is sponsoring individuals [1] fair trade means getting a better earning[3] fair trade is an equal commercial relationship [5] fair trade is an alternative approach to conventional international trade which aims at sustainable development for excluded and disadvantaged producers[7]
85 How much are you interested in what happens in the national politics?	very much [7] enough [5] a few [3] not at all [1]
86 In your opinion how much is it important to vote?	very much [7] enough [5] a few [3] not at all [1]
87 Did you vote in last elections?	yes [3] no [1]
88 Which groups or associations do you participate in or are you more interested in?	yes [3] no [1]
<i>sporting groups</i>	
<i>religious groups or associations</i>	
<i>cooperative associations (only control group)</i>	
<i>local community action groups or associations/women groups</i>	
<i>trade unions</i>	
<i>political parties</i>	
<i>other.....</i>	
89 How much do you feel proud of your work?	very much [7] enough [5] a few [3] not at all [1]
90 How much do you trust the following?	very much [7] enough [5] a few [3] not at all [1]
<i>the church</i>	
<i>government</i>	
<i>school</i>	
<i>Meru Herbs (your organization)</i>	
<i>trade unions</i>	
<i>political parties</i>	
91 During last five years have you changed your production system?	yes [3]

- 92 Do you use the same techniques of your grandfather?
no [1]
yes [3]
- 93 If possible, would you be ready to use new tools?
no [1]
yes [3]
- 95 How important is it to preserve the environment?
no [1]
very much [7]
enough [5]
a few [3]
not at all [1]
- 96 What do you do with your production's wastes?
yes [3]
no [1]
- You burn it*
You throw it
You re-use it as manure
other
- 97 Do you use the following things?
yes [3]
no [1]
- fertilizers*
pesticides
- 98 Would you like that your sons going on studying? No sons: [9]
You wouldn't like at all [1]
You wouldn't like but You would allow them doing it if they worked to pay their studies [3]
You would like and You would help them with the school taxes [5]
- 99 In your opinion, your community's development should be based on:
people's care [1]
groups and local movements care [3]
local institutions care [5]
government's care [7]
international organizations, ngos, foreign countries care [9]
- 100 In your opinion, on what does the family well-being depend:
destiny and social origin [1]
occurring opportunities [3]
personal care and fate [5]
only personal care [7]

Var. Dip.	UCAPH		UCAPH
Conversion	0.256**		0.220*
	[0.088]		[0.120]
Man	0.099		0.052
	[0.077]		[0.109]
Birthday	0.004		0.005
	[0.005]		[0.008]
Married	-0.039		-0.118
	[0.060]		[0.073]
Schoolyears	-0.008		0.006
	[0.009]		[0.010]
Sons	-0.010		0.005
	[0.015]		[0.024]
Catholic	-0.025		-0.037
	[0.074]		[0.101]
Hectares	-0.003		-0.007
	[0.005]		[0.008]
Employes	-0.057		-0.060
	[0.028]		[0.041]
Othincome	0.150		
	[0.102]		
Peoplehome	-0.010		
	[0.017]		
Noothact	-0.265		
	[0.095]		
Constant	-7.834	Constant	-9.404
	[9.342]		[14.992]
F (18,50)	2.31	F (14,42)	1.51
Prob>F	0.0103	Prob>F	0.1504
R-squared	0.4539	R-squared	0.3345
Adj R-sq	0.2574	Adj R-sq	0.1127
Root MSE	0.26719	Root MSE	0.33625
Obs	69	Obs	57

