Volunteering at the extensive margins in Developing Countries: Extrinsic or Intrinsic Motives?

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Abstract

The goal of this paper was to identify the reasons behind the supply for free of labor in a world where rationality requires people to avoid resource misallocation and to care mainly for their own welfare. We based the identification strategy on simple consumption and investment models with a focus on developing countries for the empirical part. Using some probability models and estimation techniques , we found an ambiguous coexistence of both intrinsic and extrinsic motives for volunteering.

Keywords : Volunteering, extensive margins, intrinsic motives, extrinsic motives

1 Introduction

Thinking economically, a scarce resource has to be priced. In particular, the supply of labor services entering the production process should be priced at least at the marginal product of labor in a competitive market. However, it is common to see some labor services supplied for "free" either in order to provide health assistance, educational support or for the provision of some other services. At a first glance volunteering might seem "irrational" economically speaking . Nevertheless there are some precise motivations behind it and the nature of those motives has instigated many studies. The majority of the studies were aimed at modeling both the volunteer's attitude regarding the supply of his services and the potential returns (pecuniary or moral satisfaction) derived from it. In parallel other empirical studies resulted in some evidences about the existence of different types of motives which could get altered depending on the specificities of the considered contexts. We review those studies later on. Conceptually, there is no consensus on what a voluntary

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activity or volunteering really means. Five key elements [2] have been identified in order to circumscribe the concept:

- The reward: whether it is a pure altruistic behavior or not;
- The free will: there should be no compulsion when engaging in those activities;
- The nature of the benefit: Is the beneficiary a stranger or not to the supplier?
- Organizational setting: Is the service provided via a formal setting or not?
- The level of commitment of the volunteer.

Similarly, depending on how people volunteer or considering the relevant motives behind their choices one can also sort volunteering in different categories. I go over the details on this in the literature review.

One clear fact is that volunteering happens both in developing and developed countries suggesting that there might exist both some economic and non- economic incentives (moral satisfaction, experience, social network,...) behind it . In fact, a satisfaction could be derived from the act of volunteering *per se* and /or some experience coupled with a social capital could be built. An additional work experience plus an extended social network could in fact strengthen a potential volunteer's human capital , increasing thereby his prospects of income and employment. Any voluntary activity involves some supply of labor services without necessarily implying some immediate reward or clear motives especially in the presence of some constraints. It is hence interesting to identify not only the main reasons driving a voluntary activity but also to distinguish pure altruistic behavior and the "warm-glow"[3] motives from the signaling motives considering the main characterictics of the social and economic environment. While concerning the former motives , the volunteers derive some internal or intrinsic benefits just due to the fact that they are volunteering, the latter in fact focus on the future returns which their involvement into voluntary activities could generate (extrinsic benefits[4]) .

In such a setting, we want to check whether people volunteer because they enjoy it *per se* or because they are just investing for prospective job opportunities, image concerns or anticipated need of assistance from other people in the future . The study is based on developing countries and focuses on the extensive margins[5] of

[2]Volunteering and Social Development A Background Paper for Discussion at an Expert Group Meeting New York, November 29-30, 1999 United Nations Volunteers.

[3]James Andreoni (1989).

[4]experience, know-how, social network...

[5]whether people decide to enter in volunteering or not.

volunteering decisions. Table 1 below displays an example of *a priori* altruistic behavior.

Table 1: **Would give part of my income for the environment**

Item	Number	Per cent
Strongly agree	7,164	21
Agree	16,789	50
Disagree	7,237	22
Strongly disagree	2,310	7
Total	33,500	100

Source:WVS

As can be seen from tables 8 and 9 in annex , both type of employed and unemployed people volunteer and at the same time there seems to be in proportion more rich people favorable to volunteering as compared to lower income scale people (table 9) . Nevertheless, this is only a simple association between those variables and we cannot pretend to draw any relevant pattern from it.

The appropriate methodological approach to address the question raised here would be developed later on in the theoretical and empirical strategy section after going through a review of the literature. The rest of the work thus consists in going through the literature, positing the identification strategy and presenting the results while discussing each of them.

2 Literature review

Roy and Ziemek (2000) argued that the motives of volunteerism could be modeled by either

- The Public Goods Model with the supply of public service or support for civic action
- The Private Consumption Model to account for the joy from the act of volunteering: this deals with the 'warm-glow' utility;
- The Impure Altruism Model which synthesizes the two previous models and
- The Investment Model which supports the gain of labor market experience, skills and networks.

In their paper "Volunteering as a weird way of making money" Hackl *et al* (2007) divided the literature of the motivational reasons to volunteer into three broad families which could be summarized into two. On the one hand we have the intrinsic motives focusing on the internal rewards derived from volunteering. This group is argued to be heeded by the consumption motives. On the other hand the motives for volunteering are not the act itself *per se* but rather the underlying external benefits or returns . This category of motives for volunteering belongs to the investment motives class. Altruism which is not easy to clarify is thought to be accounted for by the consumption motives. Hackl *et al* (2007)'s analysis indeed focused on the two types of motives and found some significant evidence of investment motives using the Upper Austrian Census built in 2001 . In Meier (2006) some examples have been provided to illustrate the intrinsic motivators for volunteering. In fact , when some individuals care for some others' well-being and are happy due to the results of their efforts (in volunteering), or see their self-determination reinforced, the motives are termed intrinsic and are dealt with in the consumption model.

However, in the presence of incentives, some biases might make it difficult to really disentangle altruistic pro-social behaviors and the constrained ones. In that respect, Bénabou and Tirole (2006) pointed out that when honor and /or stigma are the main reputational concern in a society , extrinsic incentives (rewards and punishment) might crowd out some altruistic pro-social behaviors. Elaborating more on the issue raised above, Seabright (2009) identified two types of discontinuities regarding an altruistic behavior. A discontinuity might indeed come from the distribution of the types of people concerning their willingness to accept rewards as a counterpart of their altruistic behavior and the other one consists basically in a crowding out effect. The first type of discontinuity comes from the fact that for an altruist, it is more worthwhile to offer the service for free than getting a payment as reward. The second arises from the fact people find it less worthwhile selling the services for a positive amount of money although they are ready to provide the service for free. So the presence of incentives shed a light on how people shape their behavior while deciding to volunteer .

An empirical implementation of the effects of incentives has been conducted by Carpenter and Myers (2010). They have performed an experiment in a context where people could volunteer to be a firefighter. They found that altruism and reputational concerns are key in the decision to volunteer and moreover positively correlated with it. However, this effect seems to disappear when there are some variations in stipends incentives.

Focusing on the relationship between Volunteering and Happiness, Binder and Freytag (2013) have also concluded using the British Household Survey a positive

association like previously but this seemed sustainable and increasing over time, the more people volunteer.

All of those models were designed to explain in a way some of the reasons why people would volunteer. The main drawback in this field of research is the lack of data and the requirement of individual level data. In general, the empirical implementation of the models built is based on survey data and thus are really context-specific. That could explain why the question is not widely addressed in economics.

The interest of our approach is to focus on the extensive margin in the decision of volunteering (when or whether to volunteer or not to volunteer) rather than the intensive margin (how much to volunteer) which is widespread in the literature [6] . Moreover it would allow to uncover which of the two models described above fits well in developing countries where there are a lot of frictions in the labor market and where the social networks are sometimes indispensable to get a job or get promoted. Besides, social norms and religious beliefs which are also predominant could influence significantly people's behavior and thus altruism might be thought to matter in the motives of volunteering.

3 Theoretical framework and Identification

In this section I provide the theoretical support of the analysis and then describe the identification strategy.

3.1 Theoretical framework

Let's consider an individual whose preference consists in a combination of selfishness and morality attitudes with the weight attributed to morality being the degree of morality[7].

On the one hand , the consumption motives of volunteering could be seen through the basic consumer's optimal behavior. Let's denote τ_v the time devoted to voluntary activities τ_l , the time allocated to leisure and G the consumption of goods. Volunteering is then just an argument of a utility function $U(\tau_l, \tau_v, G)$ with U increasing in volunteering ($U_v > 0$). So the utility is simply maximized given $G = w(\Gamma - \tau_l - \tau_v)$ with Γ , the total time endowment during a given period. The key assumption

[6] Although combining both would be interesting as well , but it is out of the scope of this work.

[7] The extent to which he believes he has to do the right thing in a given situation, see Alger , I. & J., W., Weibull (2013).

here is that the consumer is not a pure *homo economicus* as regards the consumption of volunteering meaning that her degree of morality should not be naught and this gives room for significant altruistic behavior in a sense. Hence , from this framework , one could conjecture that if a welfare premium could be derived from volunteering irrespective of the opportunity cost incurred by the voluntary activity, the consumption motives model is validated .That is , the consumption motives model holds exclusively when a positive effect of volunteering on wellbeing coupled with a positive effect of income on volunteering are simultaneously observed . Of course in parallel, there should be no expected external counterpart from the act of volunteering. The individual in fact does not care because he is in a sense altruist and really cares for other people well-being without requiring or expecting a direct counterpart. We come back to this in the identification strategy.

Following the previous analysis, the conjecture here about the identification strategy about the intrinsic motives is : A positive and significant effect of volunteering on wellbeing combined with a higher likelihood of volunteering when income is increasing would support the intrinsic motives.

On the other hand , the idea behind the investment motives would be accumulation of experience or human capital , the extension of social networks in order to relax some potential constraints or frictions in the labor market. So like Franz et al (2004) suggested[8] , the following simple dynamic investment model can illustrate the optimal trajectory of volunteering and serves as a baseline for our second conjecture in the empirical part . Volunteering for an individual here is just about being an *homo economicus* caring only for his own payoffs .

Let's consider the following basic optimization framework:

$$\begin{aligned} \max_{v(\tau),\ t(\tau)} \int_0^T & f(v(\tau), s(\tau), t(\tau)) e^{-r\tau}\, d\tau \\ \text{Subject to} \quad & \dot{s}(\tau) = g(v(\tau)) - \varsigma s(\tau) \\ & v(\tau) \leq \Gamma - t(\tau) - l(\tau) \\ & \text{and} \quad v(\tau) < \infty; \Gamma < \infty \end{aligned}$$

with Γ the total amount of time endowment at instant τ , $l(\tau)$ and $t(\tau)$ the time credit allocated respectively to leisure and to paid jobs . In this framework $f(\cdot)$ is the individual production function which can be seen as an income generating process, $v(\tau)$ stands for volunteering amount at time τ and g is the gross investment in

[8]Model based on Cahuc and Zylberger (2004).

experience , human capital and network thanks to volunteering .While volunteering at period τ decreases current marketable production (paid work), it increases the non-marketable production (free services...) and the underlying experience gained added to the social capital built in the same period (all of this is embedded here in s). These external benefits are not only employment status improving (especially moving from unemployment to employment) but also offer better prospects for higher income. ς is the depreciation rate of human capital and social capital (s) at each period τ mainly due to skill depletion and the breaking off some social links (or ties) especially during unemployment time . It is thus important that the marginal gain from volunteering is higher than the depreciation rate for the net gain in human capital, social networks and experience ($\dot{s}$) to be positive. It's argued (franz (2004)) that the optimal trajectory of $v(\tau)$ is a hump shaped one. In fact people with low s tend to volunteer more up to an optimal threshold after which volunteering starts decreasing for higher s.

Since volunteering in this model is expected to increase human capital , social networks and experience , it has to be the case that it increases the prospects of moving from unemployment to employment. Hence the conjecture about the identification of the investment model would be that volunteering increases the likelihood of getting employed and thereby offers a prospect for higher income.

3.2 Identification strategy

The theoretical framework described allows to test empirically the validity of the two conjectures. Concerning the intrinsic motives the individual essentially behaves as a utility maximizer without being a pure homo-economicus . In that case volunteering would be seen as a kind of service which brings some intrisic satisfaction to the consumer and thus some utility is derived from the act of volunteering *per se* . On the other hand, the extrinsic motives make people volunteer in order to increase their future income and job prospects.

Following this analysis we base the identification strategy on the framework of those two models. We would thus be testing 3 hypotheses.

Following the consumption model the first hypothesis is :

Hypothesis 1 : Intrinsic motives for volunteering
Volunteering significantly increases people's well-being and higher income level makes people more likely to volunteer .

From the investment model, we formulate the second hypothesis as follows:

Hypothesis 2 : Extrinsic motives for volunteering
Volunteering significantly increases the likelihood of moving from unemployment to employment controlling for education and other relevant covariates. At the same time it allows people to have higher prospects of income .

Hypothesis 3: A mixture of both
Neither hypothesis 1 nor hypothesis 2 is confirmed separately or exclusively.

In order to test hypothesis 1 the model to be estimated is :

$$Wellbeing_{it} = \beta_1 Volunteering_{it} + \beta_2 Income + \beta_3 Altruism + controls_{it} + countryfe \quad (1)$$

$$controls = \{education,\ gender,\ marital\ status, age...\}$$

and

$$Volunteering_{it} = \lambda_1 Income_{it} + \lambda_2 Altruism + \lambda_3 Availability + \lambda_4 workimportance + controls_{it} + countryfe \quad (2)$$

$$controls = \{education,\ gender,\ marital\ status, age...\}$$

Availability and work importance would serve as excluded variables in order to identify properly the system and would be defined in section 5.3. Altruism here is just capturing a philanthropic behavior and I am controlling this behavior by the willingness to give for general concern . In this framework, I measure it by the willingness to give part of one's income for environment (see table 1 in section 1).

I check the validity of the 2^{nd} conjecture about the investment motives by testing whether volunteering is significantly increasing the likelihood of entering into employment and in parallel whether it is improving income level (hypothesis 2). I use the following model for this purpose:

$$Employment.status_{it} = \theta_1 Volunteering_{it} + \theta_2 highest.degree + controls_{it} + countryfe \quad (3)$$

and

$$Income_{it} = \phi_1 Volunteering_{it} + \phi_2 education + controls_{it} + countryfe \quad (4)$$

$$controls = \{gender,\ marital\ status, age, health...\}$$

Note that the two previous excluded instruments would still be used here to see whether it would have been better to estimate the two equations simultaneously or not.

In either of the models , I make use of probability models framework . All of the dependent variables are categorical. So depending on the case I use a logit model (in case of binary dependent variable) , an ordered logit regression in case of a more than two categories in the dependent variable and an IV-Biprobit (instrumental variable in a bivariate probit framework) to account for the excluded instruments and perform a kind of robustness check. After the estimations both the signs of the relevant coefficients and the magnitudes of the effects recovered from the marginal effects would allow to perform the tests and discuss the results.

4 Data

The World Values Survey (WVS)[9] dataset used in this study is an individual level survey conducted in 81 countries over 5 waves and 20 years from 1981 to 2011. We focus here on a bunch of 30 developing countries.

Table 2: **Volunteering in Developing countries**

(a) **wave 4: 1999−2004**

Volunteer	Number	Per cent
No	17,125	70
yes	7,294	30
Total	24,419	100

Source:WVS

(b) **wave 5: 2005−2007**

Volunteer	Number	Per cent
No	897	90
yes	103	10
Total	1,000	100

Source:WVS

[9]Link to the dataset : http://www.wvsevsdb.com/wvs/WVSData.jsp

Concerning the variable volunteering for example , table 2 above provides some statistics for two waves of survey. Volunteering rate is between 10% to 30% of the sample . More specifically, tables 7, 8 and 9 in annex give more details about who volunteer depending on the employment status and income level. Two main facts could be emphasized from those tables. In fact, whatever the employment status , there is a substantial number of people in voluntary activities and this is even relatively more pronounced for high income level people as compared to medium and low income level.

The variable well-being is a composite measure of satisfaction with life and feeling of happiness. Satisfaction with life reveals sustainable and relevant perception of life (the outcome of an evaluation process including material and social aspirations and achievement[10]) while happiness would capture emotions (the outcome of positive experiences, particularly close personal relationship"[11]). The composite measure of well-being would be much more sensible and stable. I just adjusted the scale of "feeling of happiness" (which is of 4 points) to 10 scale points in order to weight it in the same way as "satisfaction with life". Thus we added negative 2.5 times "feeling of happiness" to "satisfaction with life" to calculate the variable well-being. Note that the 2.5 multiplying the variable "feeling of happiness" is for the adjustment to the same point scale and the minus ensures that we have the same order in both "feeling of happiness" and "satisfaction with life". It's worth noting that the composite measure of well-being using both satisfaction with life and happiness with equal weights to both variables as suggested in Inglehart et al (1998) can be interpreted the same way like satisfaction where the higher the point scale the better. However the composite indicator of well-being has to be seen on a range of points scale between -9 (the lowest level) and 7.5 (the highest level). Finally , the variable has been recategorized into a 3 scale points variable with low , medium and high level.

5 Results and discussion

As announced in the identification strategy section , the goal here is to use some probabilty estimation methods in order to test our different hypotheses. In a first step , I run the regression without caring for the excluded instruments in both models meaning a regression equation by equation . In a second step , I consider potential endogeneity and simulteneity issues and thus heed the excluded instruments.

[10] Haller and Hadler (2006), P.169
[11] Ibid.

5.1 First results for the intrinsic motives

The table 10 in annex shows the first results regarding hypothesis 1. It consists of a simple ordered logit estimation of the equation (1) in which well-being is the variable to be explained and a simple logit for the second equation where volunteering is fitted. The sign on volunteering in both column 1 and 2 is a plus (+) and it means that people who volunteer , whatever the services they provide through some professional associations , are more likely to declare they feel happier or more satisfied in life as compared to people who do not. At the same time , from column (3) we have the evidence of a positive effect of switching from lower to higher category of income on the act of volunteering. The combination of these two facts tends to support a validation of the first hypothesis in a general setting .

Table 3: **Marginal effects on wellbeing and volunteering after the ologit estimation**

	(1)	(2)	(3)	(4)
Variables	WB=low	WB=Medium	WB=High	Volunteer
volunteer	**-0.0235*** **	**-0.00342*** **	**0.0269*** **	
	(3.23e-06)	(8.49e-06)	(3.19e-06)	
health	-0.101***	-0.0147***	0.116***	-0.00197
	(0)	(0)	(0)	(0.598)
income	-0.0657***	-0.00958***	0.0753***	**0.0308*** **
	(0)	(0)	(0)	(0)
altruism	-0.0267***	-0.00390***	0.0306***	
	(0)	(0)	(0)	
empl_stat	-0.0263***	-0.00384***	0.0302***	0.0220***
	(7.38e-08)	(3.60e-07)	(7.14e-08)	(0.00119)
Fixed effects	Yes	Yes	Yes	Yes
Observations	20,122	20,122	20,122	19,523

p-values in parentheses

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

Notes: Each coefficient in columns 1 ; 2 and 3 represents a predicted probability (a marginal effect) of being or not in one of the three categories of the dependent variable well-being given a change in each covariate .Those marginal effects are computed from the first equation of hypothesis 1 (equation 1) and the underlying ordered logit estimation is on table 10 (columns 1 and 2) in annex. Column 4 displays the marginal effects from the second equation of hypothesis 1 (equation 2) and the underlying simple logit estimation is on table 10, column 3 in annex.

However this has to be taken cautiously due to possible endogeneity problem of volunteering which does not have to be true but is worth testing. In fact , happier people might be more likely to volunteer more and this makes them even happier whatever their motives (altruism or investment). I address this latter on .

For the moment let's continue with the first results and check the magnitudes. In table 3 above , each of the column displays the average effect of volunteering and other covariates in altering the likelihood of being happy or satisfied with life. In fact , the first column and the first line of the table show that when a typical agent volunteers it decreases respectively by 2.35% and 0.3% her likelihood of being in the low or in the medium category of wellbeing while there is a 2.69% more chance to fall into the highest level of well-being. On top of those effects of volunteering on wellbeing , the marginal effects from the second equation of the model designed for hypothesis 1 is a 3.08% more chance to volunteer when having higher income (column (4)). The two facts combined would support exclusively the validity of intrinsic motives for volunteering in the case of no endogeneity of the variable volunteering and of no evidence of extrinsic motives. It is however worth pointing out that it might happen that both the intrinsic and the extrinsic motives coexist (hypothesis 3) . The effects of the other variables are in the expected direction.

In the following subsections I first fit all of the equations one by one without taking into account the excluded instruments and thus. Then using the excluded instruments , I run again the regression in order to account for potential endogeneity and simultaneity.

5.2 First results for the extrinsic motives

Table 11 in annex provides the results from the estimation of the second model built for hypothesis 2. It appears from the 1st column of the table that volunteering makes people more likely to be employed and at the same time increases income. More precisely , the table 4 below gives an overview of the magnitude of the effects just described. Volunteering seems to increase the chance to get employed by 3.2 % on average . Moreover , a volunteer is less likely to be in the low income group (-2.85%) and has more chance to be in the high income category as compared to medium income level (2.7% against 0.2%).

The previous effects tend to support the extrinsic motives for volunteering , but once again one has to be cautious because the two equations of the model estimated might be simultaneously identified through employment status. So given that the estimations in columns (1) and (2) are done separately (from equations (3) and (4) described above in subsection (3.2)) it could be interesting to estimate them simul-

taneously and see whether the results are altered .

Table 4: **Investment motives : marginal effects**

	(1)	(2)	(3)	(4)
VARIABLES	Employment status	Income= low level	Income = medium level	Income=high level
volunteer	**0.0322*** **	**-0.0285*** **	**0.00165*** **	**0.0269*** **
	(2.56e-05)	(1.75e-06)	(4.80e-05)	(1.76e-06)
age	0.0572***			
	(0)			
health	0.0264***	-0.0451***	0.00261***	0.0425***
	(0)	(0)	(0)	(0)
highest_deg	0.0278***			
	(0)			
empl_stat		-0.0560***	0.00324***	0.0527***
		(0)	(1.56e-09)	(0)
Observations	20,719	21,593	21,593	21,593

p-values in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source:WVS

Notes: Each coefficient in column 1 represents a predicted probability of being employed (employment status is binary) given a change in a covariate. They are computed after a simple logit estimation of equation 3 (see table 11 column 1). The columns 2; 3 and 4 display the marginal effects related to equation 4 and the underlying ordered logit (because income is of 3 categories) estimation is in column 2 table 10 in annex.

The first results from the simple estimation (without caring for endogeneity or simultaneity) of the two models point out an ambiguous coexistence of intrinsic and extrinsic motives.

5.3 Estimation including the excluded instruments

In this section I respectively deal with the consumption model and the investment model using the excluded instruments.

5.3.1 The consumption motives: An Iv-Biprobit estimation

In order to check whether volunteering is endogenous or not in the first simple estimation of consumption motives , we recategorized wellbeing into a binary variable and instrumented volunteering by two excluded instruments.

The first used is "Availability" or the leisure time someone is able to free or forego. This variable seems to significantly affect well-being in our context mainly through volunteering given the potential satisfaction derived from behaving morally or caring for others and or the work experience gained and not via a direct channel. Of course this instrument is correlated with volunteering . The second excluded instrument is the degree of importance people assign to work in their life. It is clear that people for whom working is important in life are more likely to be tempted to volunteer and this way could improve their welfare either because they are altruistic or investing . There is absolutely no reason that work importance affects directly wellbeing in our model.

In order to run the regressions including the excludded instrument , the variable wellbeing which is of three scale points has been recategorized into a binary variable to allow the use of the model at hands . Moreover , I am constrained to use a bivariate probit estimation techniques including the instrumentation because the suspected endogenous covariate is not continuous but rather binary and this also applies for the dependent variable .

Table 11 in annex displays both the first and the second stage of the estimation . The instrument availability is rather a good predictor for volunteering and in the expected direction while the variable work importance is not . However , the most important information to derive from this Instrumental variable exercise is that it would allow to confirm or not the suspected endogeneity of the volunteering.

In fact *"at the bottom of the output is the Wald test of the exogeneity of the instrumented variables. If the test statistic is not significant, there is not sufficient information in the sample to reject the null that there is no endogeneity. Then a regular probit regression may be appropriate"*[12]. In our case , the wald statistic (at the bottom of table 12 in annex) is not significant meaning that there is no sufficient information in our model to support the endogeneity of volunteering and the simple logit or probit estimation is sufficient to significantly isolate the effect of volunteering on wellbeing .

However as can be seen from table 5 below, the signs from column (1) and (4) which are the estimation done separately from the two equations related to the consumption motives model , and the similar estimations from the columns (2) and (3) to account for potential endogeneity are consistent, except for religion. Moreover , apart from the fact that the average marginal effect of volunteering is somehow exaggerated from the Iv-biprobit estimation (column(2)) as compared to the one

[12]www.stata.com/manuals13/rivprobit.pdf

from the simple logit (in column (1)) , 6% against 2% , the marginal effect with respect to income on volunteering is significant and of roughly the same order of magnitude in both estimations (about 8%).

Table 5: **Consumption motives : Marginal effects after the IV-Biprobit estimation**

VARIABLES	(1) Simple logit wellbeing	(2) Iv-biprobit-2nd stage wellbeing	(3) 1st stage volunteer	(4) Simple logit volunteer
volunteer	**0.0218*** **	**0.0620** **		
	(0.00107)	(0.0121)		
health	0.102***	0.101***	-0.00881**	-0.00197
	(0)	(0)	(0.0208)	(0.598)
income	0.0825***	0.0807***	**0.0288*** **	**0.0308*** **
	(0)	(0)	(0)	(0)
religion	0.0136	0.0196**	-0.101***	0.00419
	(0.125)	(0.0306)	(0)	(0.649)
empl_stat	0.0375***	0.0365***	0.0300***	0.0220***
	(1.73e-09)	(7.78e-09)	(1.61e-05)	(0.00119)
Observations	20,122	19,523	19,523	19,523

p-values in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source:WVS

Notes : wellbeing is recategorized into a binary variable

5.3.2 Investment motives: A Bivariate probit estimation

The robustness check procedure here goes through the consideration of a potential simultaneity between the two equations for the extrinsic motives (see equations (3) and (4)) . Table 13 in annex provides both the first and the second stage estimation. From columns (1) and (3) for respectively a simple logit and the second stage biprobit regression of employment status ; volunteering significantly and in the same manner increases the likelihood of getting employed. At the same time , the column (2) and the first stage outcomes also show volunteering affecting income the same way. Those facts are not surprising since the wald test supports it (the wald statistic is not significant). Hence the two equations could have been consistently regressed separately in this framework.

From table 6 below concerning the marginal effects , I still get consistent magnitudes with the results just described. In fact from columns (1) and (2) , I have the same magnitude of the positive and significant effect of volunteering on the likeli-

hood of getting employed (around 3%).

Table 6: **Investment motives : biprobit marginal effects**

	(1)	(2)	(3)	(4)
	Simple probit	Simple probit	biprobit-2nd equation	biprobit-1st equation
VARIABLES	Employment status	Income	Employment status	Income
volunteer	**0.0317*** **	**0.0250*** **	**0.0317*** **	**0.0254*** **
	(3.76e-05)	(0.000411)	(3.80e-05)	(0.000650)
age	0.0535***	0.00175		
	(0)	(0.101)		
health	0.0272***	0.0443***	0.0272***	0.0430***
	(0)	(0)	(0)	(0)
highest_deg	0.0280***		0.0280***	
	(0)		(0)	
empl_stat		0.0647***		0.0702
		(0)		(0.104)
Observations	20,719	21,593	20,719	20,719

p-values in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source:WVS

Similarly , columns (2) and (4) show a 2.5% increase in the likelihood of having higher income level prospects .

The analysis provides evidence of a coexistence of both intrinsic and extrinsic motives when the decision to volunteer is made and the figures 1 and 2 give a quick graphical overview of all the results. Without necessarily being a specificity of developing countries , it is clear that morality , social cohesion and norms , religion, beliefs and the predominance of an informal regulation of social tie could force people to care for others without necessarily expecting a direct counterpart but rather and more often enjoy the act of volunteering *per se*[13]. However , at the same time the numerous frictions in labor markets and the lack or even the absence of social security and insurance systems especially regarding employment make most of the unemployed people more likely to be volunteering in a way to relax those constraints by not only building social networks but also gaining experience in order to more easily seize jobs opportunities.

[13]A simple example which I experienced myself in Africa as compared to what I have seen in Europe is that there are a bunch of services like sweeping churches , mosques... for which people (even including myself !) are pleased to volunteer for and it is strictly for free while those services are charged as any other marketable ones in Europe. There are many other examples , but this comparison is not the purpose of the work, however it clarifies in a sense the results.

6 Conclusion

The results of this work support an ambiguous coexistence of both intrinsic and extrinsic motives for volunteering at the extensive margins. It is not clear which motives dominate in the pool of developing countries considered here. While considering only the extensive margin (whether or not to volunteer) is rather weak and probably insufficient to really identify and distinguish the dominant effects, it gives a sketch of what could complement the numerous works on the extensive margins (how much to volunteer). One challenge faced in this work is that it required a lot of information but the dataset was missing some data and included mainly discrete variables. Better approaches for this work would require to have income and volunteering (in terms of hours for example) to be continuous in order to have enough variation and thus a better robustness check strategy. Moreover, an attempt to better control for the social constraints (punishment and/or reward) and the labor market frictions instead of grouping them as simple countries' fixed effects could be more informative and help to better clarify the motives of volunteering.

7 ANNEXES

Table 7: **Employment status and volunteering in developing countries**

	volunteer		
Employment status	No	yes	Total
unemployed	8,036	2,862	10,898
employed	7,550	3,716	11,266
Total	15,586	6,578	22,164

Source:WVS

Table 8: **Volunteering by employment status**

(a) **Developing countries**

	Volunteer		
Employment status	No	yes	Total
Full time	5,377	2,471	7,848
Part time	1,233	610	1,843
Self employed	2,074	948	3,022
Retired	1,578	392	1,970
Housewife	3,022	710	3,732
Students	1,491	861	2,352
Unemployed	2,650	929	3,579
Other	463	342	805
Total	17,888	7,263	25,151

Source:WVS

(b) **Developed countries**

	volunteer		
Employment status	No	yes	Total
Full time	3,313	1,153	4,466
Part time	587	289	876
Self employed	429	150	579
Retired	1,204	324	1,528
Housewife	1,062	164	1,226
Students	449	302	751
Unemployed	660	141	801
Other	93	17	110
Total	7,797	2,540	10,337

Source:WVS

Table 9: **Volunteering by income scale point in developing countries**

	Volunteer		
Income level	No	yes	Total
Low	5,408	1,860	7,268
Medium	6,084	2,515	8,599
High	4,279	2,354	6,633
Total	15,771	6,729	22,500

Source:WVS

Table 10: **Consumption motives: Wellbeing and Volunteering output**

	(1) well-being	(2) well-being	(3) volunteer
volunteer	0.157***	0.151***	
	(0.000)	(0.000)	
gender	-0.199***	-0.241***	0.172***
	(0.000)	(0.000)	(0.000)
age	-0.0337***	-0.0425***	-0.0477***
	(0.000)	(0.000)	(0.000)
age2	0.000459***	0.000561***	0.000423***
	(0.000)	(0.000)	(0.000)
health	0.654***	0.651***	-0.0116
	(0.000)	(0.000)	(0.598)
income	0.434***	0.424***	0.181***
	(0.000)	(0.000)	(0.000)
religion	0.0824*	0.0856**	0.0246
	(0.055)	(0.047)	(0.649)
altruism	0.173***	0.172***	0.197***
	(0.000)	(0.000)	(0.000)
empl_stat		0.170***	0.129***
		(0.000)	(0.001)
availability			0.505***
			(0.000)
work_importance			0.0378
			(0.251)
Country fixed effects	Yes	Yes	
N	20122	20122	

p-values in parentheses

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

Source:WVS

Table 11: **Investment motives : Simple ologit estimation**

	(1) empl_stat	(2) income
volunteer	0.158***	0.151***
	(0.000)	(0.000)
age	0.281***	0.0132***
	(0.000)	(0.007)
age2	-0.00329***	-0.000101*
	(0.000)	(0.063)
health	0.130***	0.239***
	(0.000)	(0.000)
highest_deg	0.137***	0.341***
	(0.000)	(0.000)
availability	0.114***	
	(0.000)	
work_importance	0.391***	
	(0.000)	
empl_stat		0.297***
		(0.000)
educ		0.0454
		(0.407)
gender		-0.0454*
		(0.097)
Country fixed effects	Yes	Yes
N	20719	21593

p-values in parentheses

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

Table 12: **Consumption motives : testing for endogeneity of volunteering**

	(1) wellbeing Simple-logit	(2) wellbeing Iv-biprobit-2nd stage	(3) volunteer Simple-logit
volunteer	0.146***	0.244**	
	(0.001)	(0.011)	
age	-0.0548***	-0.0303***	-0.0477***
	(0.000)	(0.000)	(0.000)
age2	0.000674***	0.000379***	0.000423***
	(0.000)	(0.000)	(0.000)
gender	-0.253***	-0.156***	0.172***
	(0.000)	(0.000)	(0.000)
health	0.688***	0.395***	-0.0116
	(0.000)	(0.000)	(0.598)
income	0.554***	0.314***	0.181***
	(0.000)	(0.000)	(0.000)
religion	0.0916	0.0769**	0.0246
	(0.125)	(0.030)	(0.649)
empl_stat	0.252***	0.142***	0.129***
	(0.000)	(0.000)	(0.001)
altruism	0.169***	0.0786***	0.197***
	(0.000)	(0.000)	(0.000)
	(0.270)	(0.245)	(0.000)
availability			0.505***
			(0.000)
work_importance			0.0378
			(0.251)
_cons	1.764***	0.885***	2.095***
	(0.000)	(0.000)	(0.000)
		First stage volunteer	
availability		0.287***	
		(0.000)	
work_importance		0.0241	
		(0.153)	

Table 12: **Consumption motives : testing for endogeneity of volunteering (continued)**

	(1)	(2)	(3)
		volunteer	
		First stage-Continued	
age		-0.0111***	
		(0.002)	
age2		0.0000527	
		(0.203)	
gender		0.113***	
		(0.000)	
health		-0.0278**	
		(0.018)	
income		0.0894***	
		(0.000)	
religion		-0.315***	
		(0.000)	
empl_stat		0.0905***	
		(0.000)	
altruism		0.145***	
		(0.000)	
_cons		0.954***	
		(0.000)	
Country fixed effects	Yes	Yes	Yes
athrho			
_cons		-0.0948	
(for Wald test of exogeneity)		(0.114)	
N	20122	19523	19523

p-values in parentheses

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

Source:WVS

Table 13: **Investment motives : Biprobit estimation**

	(1) (Simple probit)	(2) (Simple probit)	(3) (biprobit 2nd equation)
	employment status	income	employment status
volunteer	0.0935***	0.0800***	0.0935***
	(0.000)	(0.000)	(0.000)
age	0.158***	0.00560	0.158***
	(0.000)	(0.101)	(0.000)
age2	-0.00183***	-0.0000437	-0.00183***
	(0.000)	(0.252)	(0.000)
health	0.0801***	0.142***	0.0801***
	(0.000)	(0.000)	(0.000)
highest_deg	0.0824***	0.189***	0.0824***
	(0.000)	(0.000)	(0.000)
availability	0.0702***		0.0703***
	(0.000)		(0.000)
work_importance	0.239***		0.239***
	(0.000)		(0.000)
empl_stat		0.207***	
		(0.000)	
educ		0.0821**	
		(0.036)	
gender		-0.0254	
		(0.200)	
_cons	-2.475***	-0.494***	-2.475***
	(0.000)	(0.000)	(0.000)

biprobit First- equation(see next page)
Income

Table 13: **Investment motives : biprobit (continued)**

	(1)	(2)	(3)
			First stage-Continued
			Income
volunteer			0.0819***
			(0.001)
empl_stat			0.226
			(0.106)
educ			0.0805**
			(0.044)
highest_deg			0.191***
			(0.000)
age			0.00520
			(0.505)
age2			-0.0000384
			(0.665)
gender			-0.0255
			(0.210)
health			0.138***
			(0.000)
_cons			-0.500***
			(0.000)
Fixed effects	Yes	Yes	Yes
athrho			
_cons			-0.00710
(for Wald test of exogeneity)			(0.933)
N	20719	21593	20719

p-values in parentheses

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

Source:WVS

Notes : Income is recategorized into a binary variable

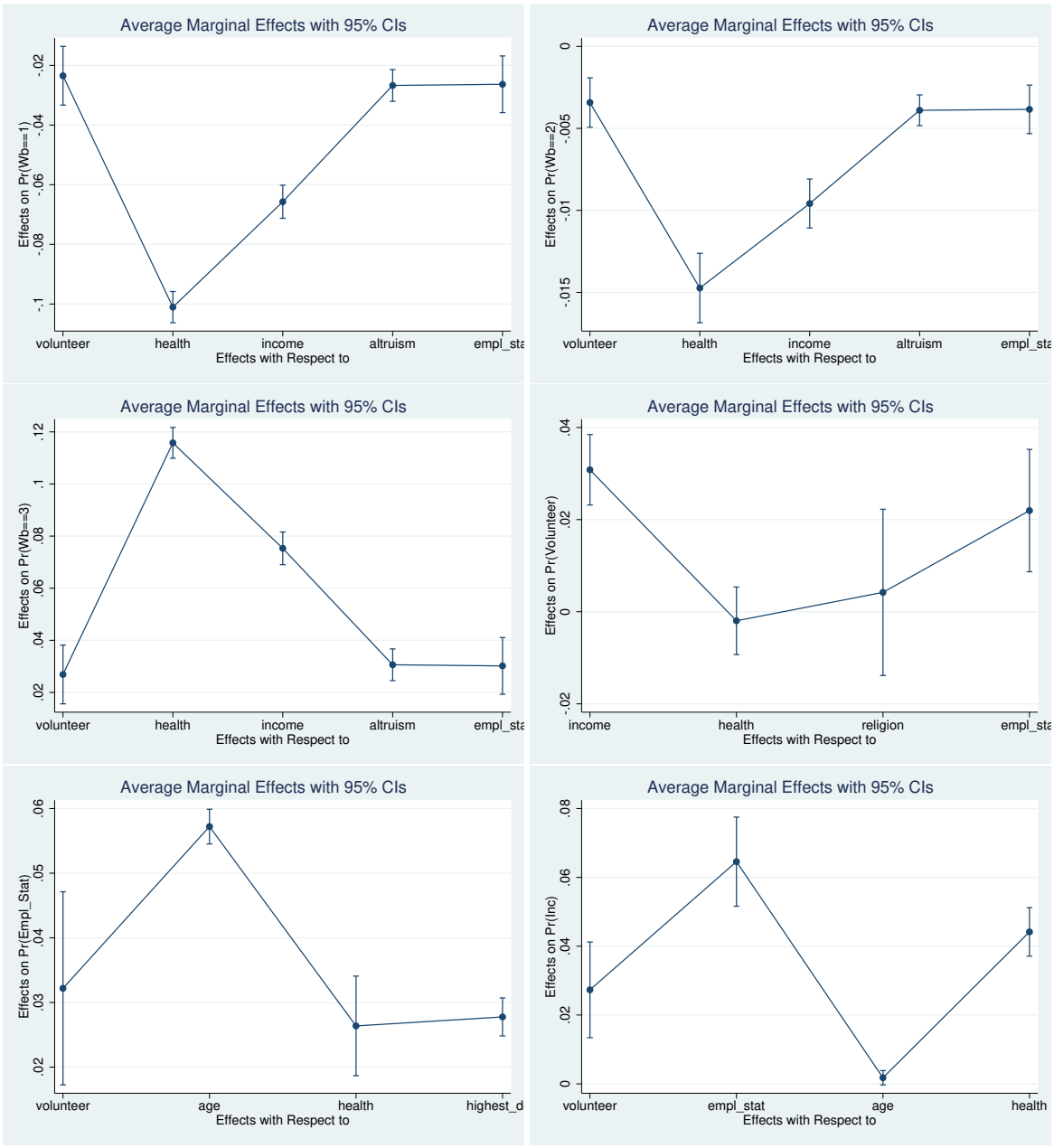

Figure 1: The marginal effects

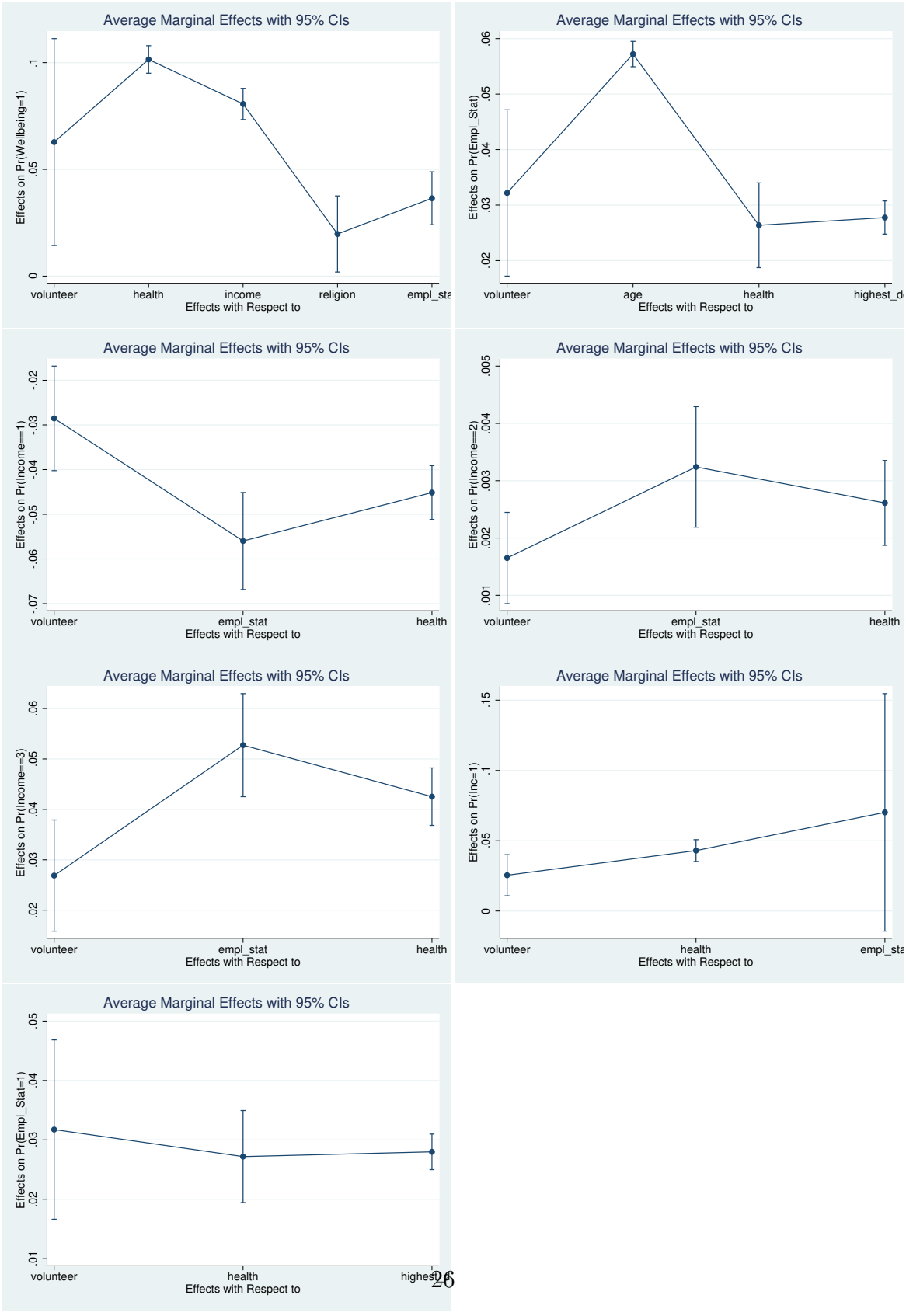

Figure 2: The marginal effects

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