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# The effect of unconditional cash transfers on adult labour supply: a unitary discrete choice model for the case of Ecuador[1]

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**Abstract** – We examine the effect of unconditional cash transfers by a unitary discrete labour supply model. We argue that there is no negative income effect of social transfers in the case of poor adults because leisure could not be assumed to be a normal good under such conditions. Using data from the national employment survey of Ecuador (ENEMDUR) we estimate the effect of the *Bono de Desarrollo Humano* (BDH). Results show that cash transfers, unconditional in labour, do not produce labour disincentives in the case of household heads, but may be paying for housework and childcare provided by partners and single adults. However, labour market and care work gender inequality must be addressed by complementary policies.

**Keywords** – Basic income, Cash transfers, Labour supply, Ecuador.

**JEL classification** – H24, H30, J22, O12

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# I. INTRODUCTION

Income maintenance schemes can be classified by their basis (cash or work) and the method (conditional or unconditional) of provision. Jackson (1999) identifies four (pure) possible schemes. First, unemployment benefits provided in cash but conditioned on employment status. Second, basic income provided in cash to all citizens as an entitlement.[2] Third, guaranteed work provided to anyone who is unemployed; in this case the State takes the role of employer of last resort for specially created jobs. Finally, unconditional basic work offering a minimum amount of work as a duty attached to citizenship (1999). All these alternative schemes have as objectives to guarantee a certain income level and to promote labour.[3]

Unconditional cash transfers are a mixed mechanism, neither universal nor conditional on employment status. In some cases they are seen as a potential first stage for the implementation of basic income in developing countries (see, e.g., Van Parijs (2004); Suplicy (2003); Standing (2008); LoVuolo (2012)). This paper generates a theoretical framework and provides empirical evidence on the effect of unconditional cash transfers on adult labour supply. It is a key discussion regarding the economic effects of cash transfers, because non-negative labour effects are desired in order to foster positive economic returns.[4]

Next to the positive effects of social transfers on social outcomes[5], they also foster economic performance, at different levels. At the micro level, social transfers alleviate credit constraints by enabling savings, investments and access to credit. They contribute to consumption and assets

[2] "A basic income is an income paid by a political community to all its members on an individual basis, without means test or work requirement" (Van Parijs, 2004, p. 8). Boarder definitions also include benefits affected by household's situation or administered in the form of tax credit. In any case it is paid in cash, on a regular and individual basis, financed by a progressive tax system (2004).

[3] For a discussion on alternative schemes to promote labour see, for example, Jackson (1999), Van Parijs (2004), Colombino et al (2010), Standing (2013) and Harvey (2013).

[4] Non-contributory social protection (social transfers) should not be seen as a cost to the economy but as a support to inclusive growth and economic productivity, and as an instrument for socio-economic inclusion. Social protection provides resources to overcome socioeconomic risks as poverty and vulnerability and to support human and physical capital accumulation, fostering economic capacity at the micro level (Cherrier, Gassmann, Mideros, & Mohnen, 2013).

[5] Recent literature reviews regarding the effects of social transfers on different social outcomes can be found in Barrientos and Scott (2008), Barrientos and Nino-Zarazua (2010), Arnold et al (2011), UNICEF (2012), Alderman and Yemtsov (2012) and Mideros et al (2013).

security, by helping poor households and individuals to access economic opportunities. Finally, social transfers help to cover transaction costs and to protect assets, while facilitating their accumulation, enhancing labour supply and fostering local economy effects (Barrientos (2012), Alderman & Yemtsov (2012), Mideros et al (2013) and Tirivayi (2013)).

The empirical evidence regarding economic effects of social protection is inconclusive. In the case of labour effects, while there is agreement on the reduction of child labour,[6] in the case of adults there is still theoretically ambiguity, so it remains an empirical question (Alzúa, Cruces, & Ripani, 2013). There are at least four channels to explain the effects of social transfers on labour supply. First, a pure income effect due to the increment on non-labour income may reduce labour supply, but the transfer may also help to cover transaction and opportunity costs increasing labour supply. Second, conditionalities may enforce behavioural responses. If children have to go to school it may free up time used for childcare. Third, if child labour is reduced, adults may increase their labour supply in order to compensate for the reduction of income. Finally, spill-over effects may affect non-beneficiary households and the local economy (2013).

Posel et al (2006) found that a person, between 15 and 50 years old, living in a household with a non-contributory pension recipient has a 3.2 percentage point higher probability of employment in South Africa. They relate this effect to the possibility to cover migration costs and increased support from grandmothers to childcare. In the case of Mexico, Skoufias and Di Maro (2008) exploiting the experimental deign of the cash transfer programme PROGRESA found no significant effect on adult labour force participation and leisure time, but substantial reduction in poverty.

Foguel and de Barros (2010) found positive effects of a conditional cash transfer programme on male labour participation in Brazil. Similar results were found by Barrientos and Villa (2013) using data from Colombia. They found marginal positive effects on the participation of males and single adults with children and on employment of women in formal jobs. In addition, evidence suggesting

[6] It is broadly accepted that social transfers enhance child school attendance and reduce child labour (e.g. Bourguignon et al (2003); Mideros et al (2013); Edmonds & Schady (2009); Barrientos & Nino-Zarazua (2010)). However, supply side education policies are needed to guarantee these effects.

no disincentives to work has been also found in Argentina, Uruguay and Chile (Maurizio & Vázquez, 2014) and in Ethiopia, Bangladesh (Barrientos & Nino-Zarazua, 2010) and Cambodia (Mideros, Gassmann, & Mohnen, 2013). Some negative effects have been found by Fernandez and Saldarriaga (2014) in the case of Peru. They found a reduction in working hours in the week following the pay date (short-term effect). However, they did not find any significant long-term effect on labour participation.

Finally, Alzúa et al (2013) comparing results from three different experimental evaluations done in Mexico, Nicaragua and Honduras found no statistically significant effect of social transfers on labour supply, but a positive labour supply effect and increase in wages in some specific cases. Using the same data Novella et al (2012) did not find any significant labour effect in the case of Honduras, a positive effect on working hours of males but negative for female labour participation in Mexico, and a negative effect on working hours of males but no effect on labour participation in Nicaragua.

In this paper, we estimate a unitary discrete choice labour supply model for the case of the Ecuadorian *Bono de Desarrollo Humano* (BDH). It is an unconditional cash transfer programme introduced in 1998 by the Government of Ecuador. The BDH is not conditioned on labour. However it has conditions on children health care and school attendance, but the accomplishment of those requirements is not supervised. Because of that reason the BDH is considered as a cash transfer with soft conditions, which can be related with a concept of basic income targeted to the poor (Cecchini & Martínez, 2011). Currently, the BDH is targeted using a proxy-means test index and provides a flat transfer (USD 35 per month in 2012).[7] The case is relevant to analyse labour effects of social transfers in developing countries where these kinds of instruments are largely being implemented as a poverty reduction strategy.

[7] At January 2013, 1.2 million households received the BDH, while 594 thousand old-age and 118 thousand disables persons received a social pension. The transfer was increased to USD 50 per month in 2013 (it was USD 35 per month in 2012), given a total budget around USD 1 billion in 2013 (around 1.2 per cent of GDP).

The rest of the paper is organized as follows: section two discusses the theoretical framework. Section three presents the data and the empirical strategy. Section four presents the results and final remarks are presented in section five.

## II. THEORETICAL FRAMEWORK

Receiving a social transfer increases household disposable income and subsequently affects the labour supply of its members. Following mainstream labour supply theory it can be argued that social transfers discourage labour due to the income effect. Additional non-labour income promotes more leisure (less work) and more consumption. However, this idea assumes that a person can work as much as she wants, and that leisure is a normal good. These are unlikely assumptions in the case of individuals in poor households.

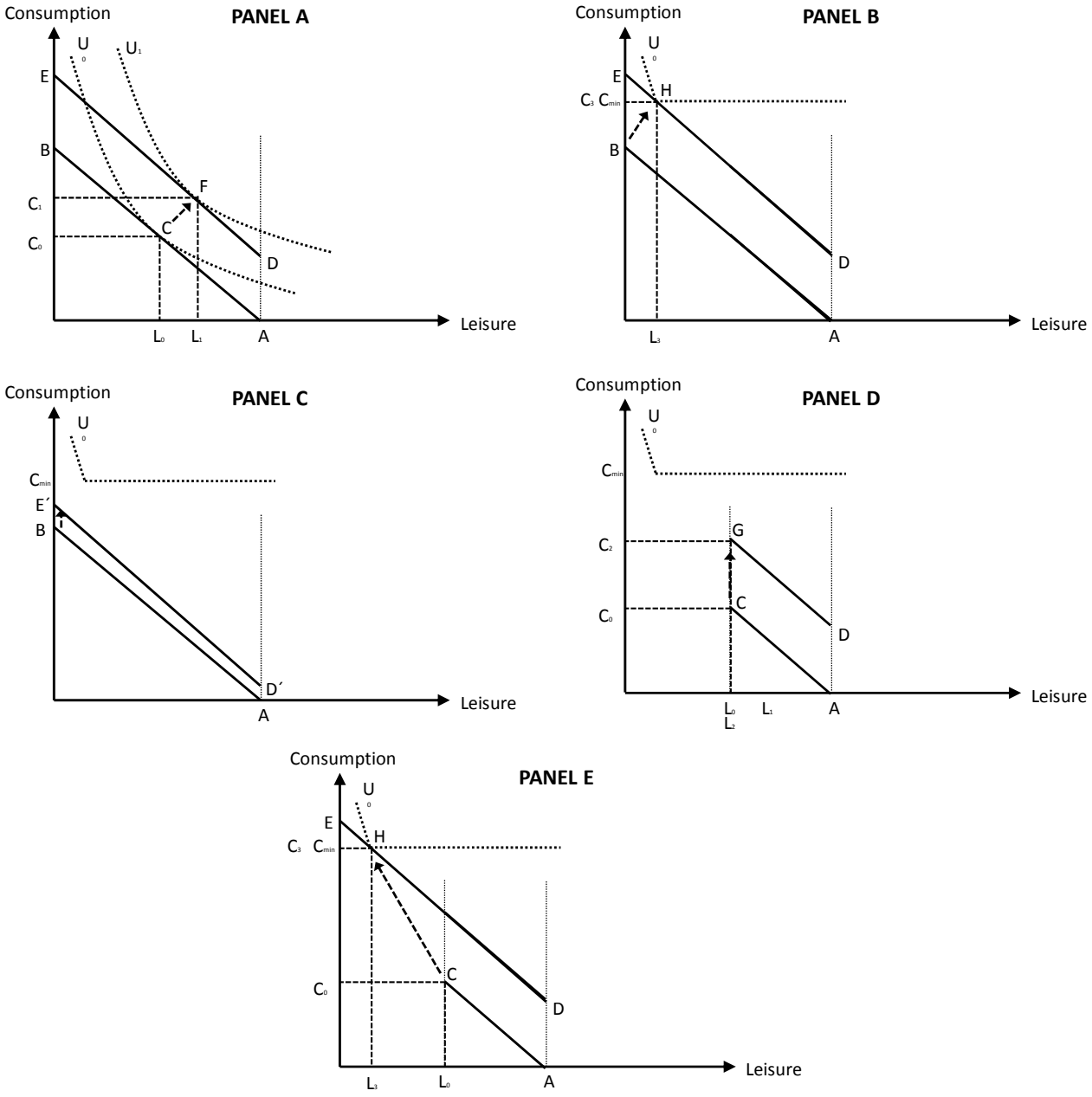
Figure 1 presents the income effect of an increase in non-labour income.[8] Panel A shows the general case where an increase in real income due to a non-contributory social transfer moves the budget constraint from AB to DE (transfer size is AD which is equivalent to BE) allowing an individual to increase both consumption and leisure, and then reducing labour time allocation.[9] This produces an increase on the level of utility moving from $U_0$ (at point C) to $U_1$ (at point F).

However, it is likely to assume a minimum level of consumption ($C_{min}$) below which there is not any level of utility (maybe levels of disutility). We believe that there cannot be utility if a person cannot consume a minimum level of basic goods like water, food and clothing. Even more, it is hard to think on a person who values leisure if she cannot satisfy her basic needs. In this case time allocation will result in a corner solution at the maximum level of possible work-time (minimizing the gap to achieve $C_{min}$, whit horizontal indifference curves). It is the case of point B in panel B. Then, if a social transfer is enough to reach $C_{min}$, it is likely that a person will assign time

[8] While an increase in real wage (labour income) may discourage work due to an income effect, it also encourages labour due to a substitution effect. However, in the case of a non-contributory social transfer there is only an income effect, if the transfer is received independently of labour.
[9] Time is constrained at point A as it is limited, for example, to 24 hours a day.

for leisure reducing labour by moving to point H in panel B. On the other hand, if the transfer is not enough to reach $C_{min}$, the effect is higher consumption without any change on labour-leisure time assignation, moving to point E´ as in panel C.

**Figure 1: Income effect**




Source: Own elaboration.

In addition, access to and opportunities on the labour market may be constrained because of labour demand limitations but also due to personal and household conditions (i.e. opportunity and transaction costs). It means a person may not be on paid-labour as much as she wants or needs. It is

the case of panel D, where the budget constrain is restricted to the segment AC (it is not possible to allocate more time to labour than that for point C). In this case social transfer does not affect labour at all, if $C_{min}$ stills not reachable. The result of introducing a social transfer is a movement from point C to point G.

Finally, if social transfers help individuals to overcome labour constrains by, for example, covering transaction and caring cost, financing labour search or acquiring productive assets, the final effect may be positive on labour supply.[10] While the budget constrain stills restricted without a social transfer (segment AC in panel E), it is not with the transfer (budget constrain becomes DE). Result is a movement from point C to point H in panel E.

Given this theoretical framework, social transfers may negatively affect labour supply in the case of individuals with income/consumption higher than $C_{min}$, while producing positive or zero effects in the case of persons with income/consumption below it. In this sense, our hypothesis is that social transfers produce no-negative labour effects in the case of poor adults.

### 2.1. The unitary discrete choice model

We rely on an unitary discrete choice model of household labour supply, which has been developed followed van Soest (1995) and van Soest et al (2002), and is widely used in the literature for similar analyses (e.g. Haan (2004), Beninger et al (2007), Kornstad and Thoresen (2007), Bloemen (2010), Breunig and Gong (2010), Blundell and Shephard (2012), Löffler et al (2013), Aaberge and Colombino (2013), Kabátek et al (2014) and Dagsvik et al (2014)). It is quite intuitive that labour decisions are constrained on the choices of jobs and working hours, and then we prefer a discrete rather than a continuous labour supply model. Furthermore, as this study aims to analyse the effect of a social transfer delivered to households, we base our model on a household utility function (unitary model) rather than an individual utility function (collective model).[11]

[10] Positive labour supply effects are likely to happen when social transfers lift credit and care constrains (Barrientos & Scott, 2008), and help to overcome transportation and other transaction costs (Posel, Fairburn, & Lund, 2006).
[11] While the unitary approach is most commonly used for policy analysis, some scholars argue in favour of a collective model in order to examine bargaining relations within households (e.g. Blundell et al (2007) and Bloemen (2009)).

We define household utility as a function of a couple's time allocation and household income. We assume zero leisure ($t_i^{ls} = 0$) in the case of poor households (those with a level of consumption below $C_{min}$). Further, given that total time endowment ($T$) is fixed (at a maximum of 24 hours per day) we take paid-labour participation as the decision variable ($t_i^l$) for the household's head ($i = h$) and her partner ($i = p$). In this sense, housework (including care-work) time is the complement in the case of poor adults ($t_i^{hw} = T - t_i^l$), and a mix of housework and leisure in the case of non-poor adults ($t_i^{hw} + t_i^{ls} = T - t_i^l$). Paid-labour participation options are defined by the elements of the choice set ($L$). In addition, we decompose total household income ($y_j$) into labour income for the household head ($w_h t_h^l$) and her partner ($w_p t_p^l$) considering income from wages ($w_i$), social transfers ($St$), and other non-labour income ($Y_0$).

The budgeting problem is then described by equation (1). The utility function $U_j(.)$ is expected to increase with income; but to decrease with labour if household income is equal to or higher than $C_{min}$, while it is independent of labour otherwise.

$$max\ U_j(.) = \begin{cases} \left(t_h^l,\ t_p^l,\ y_j\right),\ y_j \geq C_{min} \\ \left(y_j - C_{min}\right),\ y_j < C_{min} \end{cases} \qquad (1)$$

$$subject\ to\ y_j = w_h t_h^l + w_p t_p^l + St + Y_0$$

## III. DATA AND EMPIRICAL STRATEGY

We use data from the Urban and Rural National Survey of Employment, Unemployment and Underemployment (ENEMDUR) of the National Institute of Statistics and Censuses (INEC) of Ecuador.[12] The ENEMDUR is a cross section survey conducted quarterly for urban households and

[12] Ecuador is a middle-income country with a GNI per-capita (Atlas method, current) of USD 5,190 in 2012 (World Bank, 2013). Total population accounts for 15.8 inhabitants in 2013 (INEC, 2013). In December 2012, active population was 6.8 million people. Unemployment was 4.1 per cent and underemployment 51.4 per cent (SIISE, 2013). Poverty headcount by income is 27.3 per cent and inequality is represented by a Gini coefficient of 0.47, in December

twice a year (June and December) for urban and rural households, excluding the Galapagos Islands. The sample framework is representative at the province level in the case of the Coast and the Sierra regions, and at the regional level in the case of the Amazon. The ENEMDUR's first objective is to collect labour and income data, but it also provides relevant information about individuals and households. Available income information includes, but is not limited to, social transfers. In this paper we use the round of December 2012. The sample includes 73,686 individual observations within 19,840 households; using weights the sample represents the national population, accounting for 14.7 million inhabitants in 3.9 million households.

The BDH is a monthly cash transfer targeted at deprived households by consumption, using a proxy means test index.[13] Targeting was done in 2008-2009 and it has not been updated afterwards. The BDH is part of household disposable income, and thus it affects poverty and inequality measures. Own estimations show that the BDH (USD 35 per month, in 2012) reduces the extreme poverty head count by 20.8 per cent, the poverty head count by 9.0 per cent and the Gini coefficient by nearly 2.0 per cent.[14]

As aforementioned the BDH accomplish the basic income's principles of unconditionality on labour and of being paid in cash on a regular basis. While it is not universal neither individual, it was targeted based on past characteristics but up to the date of our data there were not entry and exit procedures. Because of these reasons our study of the BDH's effects on adult labour supply generates insights for the analysis unconditional basic income.

There are some studies evaluating the effects of the BDH on different dimensions of wellbeing (Figure 2). However, the effect on labour supply and economic returns has not been analysed. An exception is the study of Gonzales-Rozada and Llerena (2011), who studied the duration of

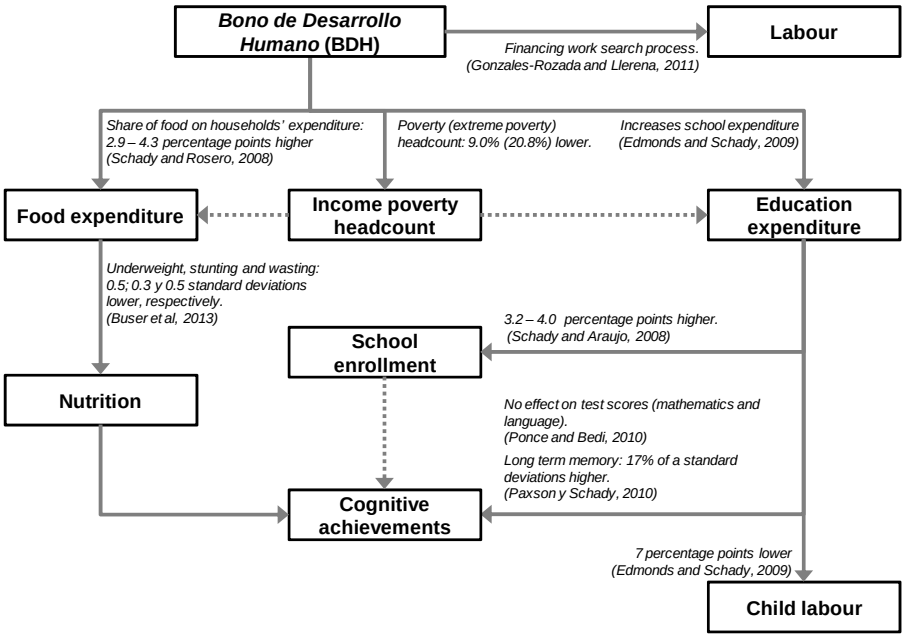
2012 (SIISE, 2013). From a multidimensional perspective, main poverty dimensions are related with basic services (safe water and sewerage), social protection and inequalities (Mideros, 2012).

[13] The BDH also includes pensions for old-age and disabled persons.

[14] At December 2012, poverty head count was 27.3 per cent, extreme poverty head count 11.2 per cent and the Gini coefficient 0.477; if the BDH is discounted these figures increases to 30.0 per cent, 14.1 per cent and 0.486 respectively. Poverty and extreme poverty lines are USD 76.35 (2.55) and USD 43.03 (1.43) monthly (daily) per-capita, at December 2012. Official poverty lines in Ecuador were estimated in 2006 (using the Life Conditions Survey, ECV-2006) and then updated according to the consumer's price index (CPI). The extreme poverty line approximates the cost of food needed to cover a defined norm of kilocalories per-person; the poverty line adds up non-food goods and services expenses.

unemployment for those around the eligibility threshold (exploiting a regression discontinuity setting). They found that the BDH may be financing job search which is related with longer periods of unemployment but with higher future income.

**Figure 2: Effects of the *Bono de Desarrollo Humano* in Ecuador (Literature review)**




Source: Own elaboration based on Schady and Rosero (2008), Edmonds and Schady (2009), Schady and Araujo (2008), Ponce and Bedi (2010), Paxson and Schady (2010), Gonzalez-Rozada and Llerena (2011) and Buser et al (2013).

The BDH has been proved to generate positive effects especially for individuals at the bottom of the income distribution (Oosterbeek et al (2008), Ponce (2008), Edmonds and Schady (2009) and Paxson and Schady (2010)). First, the BDH does increase school enrolment. In this sense it helps to reduce long-term poverty trough human capital accumulation. Second, the BDH does increase food expenditure (Schady & Rosero, 2008). However, León and Younger (2007) found rather small effects on child nutrition, and no difference with other kind of income effect.

Third, the BDH does reduce child labour (Edmonds & Schady, 2009). Finally, it may improve cognitive achievements. Ponce and Bedi (2010) found no statistically significant positive impact on test scores among children close to the program eligibility threshold.[15] Nevertheless, Paxson and Schady (2010) found significant effects on developmental and health outcomes, especially for the

[15] The authors used data collected between November 2004 and February 2005 and relayed on a regression discontinuity model.

poorest children in rural areas.[16] The study found positive effects on long term memory (17 per cent of a standard deviation).[17]

### 3.1. Descriptive statistics

In order to estimate the effect of the BDH on adult labour supply we use three subsamples, restricting to households with a couple of non-unemployed adults (between 18 and 64 years old).[18] The first subsample (BDH recipients) includes only adults living in a BDH recipient household, accounting for 1,417 households (with a couple of adults). We use this subsample to analyse the effect of the transfer size among those receiving it. The second subsample (all adults) includes also individuals living in a non-recipient household, accounting for 2,853 couples (households). This subsample is used to estimate the effect of receiving the BDH. Finally, the third subsample includes single adults, accounting for 1,086 observations (households). In total we include 3,939 household-level observations, including 1,800 BDH recipient households.[19]

Table 1 presents summary statistics. Household size is 4.4 in the BDH recipients subsample, while it is 3.9 and 2.8 for all adults and single adults subsamples. Average age is around 40 years old. BDH recipient adults have, on average, three years less of education. Women represent 50 per cent of adults in both subsamples of couples, and 76 per cent in the single adults subsample. Minority groups (indigenous, Afro-Ecuadorians and Montubios) represent a higher percentage in the BDH recipients subsample; this is also the case for individuals in rural areas. BDH recipient

[16] The authors used data from a base line survey collected between October 2003 and March 2004, and a follow up collected between September 2005 and January 2006.

[17] In addition the study found and elevation-adjusted haemoglobin (29 per cent of a standard deviation), for households in the bottom quartile. Furthermore, poorest children in the treatment group had a 12 percentage points higher probability to received parasite treatments. Moreover, mothers in the treatment group perceive their selves to be better-off.

[18] Age range is defined according with Ecuadorian legislation. While legal working age starts at 15 years old, they are excluded in order to analyse pure effects on adult labour supply. The subsamples include employed, underemployed and inactive adults. We leave out unemployed households because their paid-labour choice is not clear. Moreover, they represent a rather low percentage of adults (Table 2). By excluding them we drop out 18, 32 and 22 observations from each subsample, respectively.

[19] Excluded BDH recipient households have an old-age household head (53 per cent of cases), more than two adults (30 per cent of the cases), two adults who are not partners (9 per cent of the cases) or inconsistent/incomplete data for the model (8 per cent of the cases).

households have on average a higher number of school-age children (between 6 and 17 years old) and old-age persons, while they have less assets and more number of unsatisfied basic needs.[20]

Average labour income per month is USD 174.72, USD 376.43 and USD 286.05 for the BDH recipients, all adults and single adults subsamples, respectively, including the inactive with zero income. Labour income per hour is, on average, USD 1.69, USD 2.74 and USD 2.21 for each subsample. 46.4 per cent (13.6 per cent) of adults in the BDH recipients subsample are poor (extreme poor), in comparison with 21.4 per cent (6.3 per cent) in the all adults subsample, and 31.3 per cent (13.0 per cent) in the single adults subsample.

[20] Official index of unsatisfied basic needs is calculated by the National Institute of Statistics (INEC) and includes: i) low quality of dwelling (floor and walls materials), ii) inadequate access to basic services (water and sewerage), iii) children, between 6 and 12 years old, do not attending school, iv) economic dependence (schooling of the head of house lower than four years, and more than 3 dependent members per active person), and v) more than 3 persons per bedroom. A household/person is defined as poor if she is deprived in only one indicator, as extreme poor if deprived in two or more, and as non-poor otherwise.

**Table 1: Descriptive statistics (ENEMDUR – December 2012)**

| Variable | BDH recipients | | | | | All adults | | | | | Single adults | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Obs. | Mean | s.d. | Min | Max | Obs. | Mean | s.d. | Min | Max | Obs. | Mean | s.d. | Min | Max |
| Household size (number of persons) | 2834 | 4.4 | 1.4 | 2.0 | 7.0 | 5706 | 3.9 | 1.3 | 2.0 | 7.0 | 1086 | 2.8 | 1.0 | 2.0 | 7.0 |
| Age | 2834 | 39.8 | 10.2 | 18.0 | 64.0 | 5706 | 39.4 | 10.4 | 18.0 | 64.0 | 1086 | 42.6 | 11.4 | 18.0 | 64.0 |
| Schooling (Years of education) | 2834 | 6.3 | 3.3 | 0.0 | 18.0 | 5706 | 9.4 | 4.7 | 0.0 | 20.0 | 1086 | 8.7 | 5.0 | 0.0 | 20.0 |
| Sex (Female=1 / Male=0) | 2834 | 0.500 | 0.500 | 0.000 | 1.000 | 5706 | 0.500 | 0.500 | 0.000 | 1.000 | 1086 | 0.762 | 0.426 | 0.000 | 1.000 |
| Member (Head=1 / Partner=0) | 2834 | 0.500 | 0.500 | 0.000 | 1.000 | 5706 | 0.500 | 0.500 | 0.000 | 1.000 | 1086 | 1.000 | 0.000 | 1.000 | 1.000 |
| Married (Yes=1 / No=0) | 2834 | 0.995 | 0.070 | 0.000 | 1.000 | 5706 | 0.995 | 0.067 | 0.000 | 1.000 | 1086 | 0.136 | 0.343 | 0.000 | 1.000 |
| Indigenous (Yes=1 / No=0) | 2834 | 0.105 | 0.307 | 0.000 | 1.000 | 5706 | 0.060 | 0.238 | 0.000 | 1.000 | 1086 | 0.059 | 0.235 | 0.000 | 1.000 |
| Afro-Ecuadorian (Yes=1 / No=0) | 2834 | 0.056 | 0.230 | 0.000 | 1.000 | 5706 | 0.046 | 0.209 | 0.000 | 1.000 | 1086 | 0.063 | 0.242 | 0.000 | 1.000 |
| Montubio (Yes=1 / No=0) | 2834 | 0.129 | 0.335 | 0.000 | 1.000 | 5706 | 0.062 | 0.242 | 0.000 | 1.000 | 1086 | 0.037 | 0.190 | 0.000 | 1.000 |
| White or mestizo (Yes=1 / No=0) | 2834 | 0.709 | 0.454 | 0.000 | 1.000 | 5706 | 0.830 | 0.375 | 0.000 | 1.000 | 1086 | 0.841 | 0.366 | 0.000 | 1.000 |
| Number of children (younger than 3 years old) | 2834 | 0.208 | 0.442 | 0.000 | 2.000 | 5706 | 0.198 | 0.423 | 0.000 | 3.000 | 1086 | 0.116 | 0.331 | 0.000 | 3.000 |
| Number of children (between 3 and 5 years old) | 2834 | 0.213 | 0.427 | 0.000 | 2.000 | 5706 | 0.185 | 0.399 | 0.000 | 2.000 | 1086 | 0.107 | 0.329 | 0.000 | 2.000 |
| Number of children (between 6 and 11 years old) | 2834 | 1.035 | 0.925 | 0.000 | 4.000 | 5706 | 0.803 | 0.859 | 0.000 | 4.000 | 1086 | 0.566 | 0.739 | 0.000 | 4.000 |
| Number of children (between 12 and 17 years old) | 2834 | 0.870 | 0.893 | 0.000 | 5.000 | 5706 | 0.697 | 0.829 | 0.000 | 5.000 | 1086 | 0.744 | 0.796 | 0.000 | 4.000 |
| Number of young (between 18 and 29 years old) | 2834 | 0.302 | 0.618 | 0.000 | 2.000 | 5706 | 0.357 | 0.668 | 0.000 | 2.000 | 1086 | 0.137 | 0.344 | 0.000 | 1.000 |
| Number of adults (between 30 and 64 years old) | 2834 | 1.698 | 0.618 | 0.000 | 2.000 | 5706 | 1.643 | 0.668 | 0.000 | 2.000 | 1086 | 0.863 | 0.344 | 0.000 | 1.000 |
| Number of old-age (older than 64 years old) | 2834 | 0.053 | 0.249 | 0.000 | 2.000 | 5706 | 0.034 | 0.197 | 0.000 | 2.000 | 1086 | 0.245 | 0.480 | 0.000 | 3.000 |
| Number of unsatisfied basic needs | 2834 | 1.008 | 0.857 | 0.000 | 4.000 | 5706 | 0.499 | 0.759 | 0.000 | 4.000 | 1086 | 0.428 | 0.678 | 0.000 | 4.000 |
| Number of televisions | 2834 | 0.885 | 0.471 | 0.000 | 3.000 | 5706 | 1.275 | 0.802 | 0.000 | 8.000 | 1086 | 1.074 | 0.645 | 0.000 | 4.000 |
| Number of telephones | 2834 | 1.416 | 0.916 | 0.000 | 11.000 | 5706 | 2.067 | 1.168 | 0.000 | 11.000 | 1086 | 1.444 | 1.075 | 0.000 | 13.000 |
| Area (Rural=1 / Urban=0) | 2834 | 0.677 | 0.468 | 0.000 | 1.000 | 5706 | 0.364 | 0.481 | 0.000 | 1.000 | 1086 | 0.296 | 0.457 | 0.000 | 1.000 |
| Labour income per-month | 2834 | 174.72 | 284.23 | 0.00 | 6,359 | 5706 | 376.43 | 513.15 | 0.00 | 17,000 | 1086 | 286.05 | 331.70 | 0.00 | 4,194 |
| Labour income per-month per-capita | 2834 | 44.39 | 105.56 | 0.00 | 2,740 | 5706 | 111.91 | 181.49 | 0.00 | 8,500 | 1086 | 116.20 | 152.94 | 0.00 | 2,097 |
| W = Labour income per-hour (if W > 0) | 1793 | 1.69 | 1.56 | 0.06 | 26 | 4566 | 2.74 | 2.99 | 0.04 | 106 | 925 | 2.21 | 2.00 | 0.03 | 21 |
| Household's social transfer (BDH) per-month | 2834 | 37.19 | 8.85 | 35.00 | 105 | 5706 | 15.17 | 19.13 | 0.00 | 105 | 1086 | 11.82 | 18.52 | 0.00 | 70 |
| Household's social transfer (BDH) per-month per-capita | 2834 | 9.47 | 4.08 | 5.00 | 35 | 5706 | 3.86 | 5.34 | 0.00 | 35 | 1086 | 4.48 | 7.41 | 0.00 | 35 |
| Household's other non-labour income per-month | 2834 | 4.53 | 26.31 | 0.00 | 1,000 | 5706 | 26.51 | 139.41 | 0.00 | 2,550 | 1086 | 104.08 | 190.59 | 0.00 | 2,000 |
| Household's other non-labour income per-month per-capita | 2834 | 1.22 | 7.66 | 0.00 | 333 | 5706 | 9.51 | 57.32 | 0.00 | 1,275 | 1086 | 43.29 | 87.60 | 0.00 | 1,000 |
| Poor (Yes=1 / No=0) | 2834 | 0.464 | 0.499 | 0.000 | 1.000 | 5706 | 0.214 | 0.410 | 0.000 | 1.000 | 1086 | 0.313 | 0.464 | 0.000 | 1.000 |
| Extreme poor (Yes=1 / No=0) | 2834 | 0.136 | 0.343 | 0.000 | 1.000 | 5706 | 0.063 | 0.242 | 0.000 | 1.000 | 1086 | 0.130 | 0.336 | 0.000 | 1.000 |

Note: Yes/No and Rural/Urban variables are dummy, while others are continuous. Income and transfers are expressed in U.S. dollars (USD). Poverty and extreme poverty lines are USD 76.35 (2.55) and USD 43.03 (1.43) monthly (daily) per-capita, at December 2012.

Source: Own calculation based on ENEMDUR – December 2012.

Table 2 shows that unemployment is low in all the subsamples, ranging between 0.4 per cent and 2.8 per cent. The rate is almost zero for household heads in the couple subsamples, while it is higher in the case of poor single adults.[21] On the other hand, underemployment affects 40.9 per cent, 36.2 per cent and 48.1 per cent of adults in the BDH recipients, all adults and single adults subsamples, respectively. Underemployment is defined by labour-income below the minimum wage or working less than 40 hours per week.[22] In the case of BDH recipient adults, 60 per cent of underemployed comply with both conditions. This percentage is 59 per cent and 68 per cent in the all adults and single adults subsamples, respectively. Underemployed is higher in the case of poor adults in the couple subsamples, as they may be more willing to take any available job.

Finally, inactivity is higher in the case of the BDH recipients subsample and for the poor, but it is concentrated among partners, while it is only 1.8 per cent in the case of household heads. Paid-labour participation rate (including unemployed, underemployed and employed) for all adults is 83 per cent. In the BDH recipient subsample the paid-labour participation rate is 64 per cent, while it is 84 per cent for single adults. Paid-labour participation is higher for non-poor individuals (70 per cent) compared to the poor (57 per cent) among those receiving the BDH. For household heads the participation rate is 98 per cent in both subsamples of couples, while it is substantially lower for partners in BDH recipient households (30 per cent) than in the all adults subsample (68 per cent). This difference is related with access to other income sources and with household's needs of care work. While 96 per cent of inactive partners in the BDH recipient households do housework, this percentage is 64 per cent in the case of partners in non-recipient households, but landlords and pensioners represent 26 per cent. It means that in the case of BDH recipients households no participation on the labour market does not mean more leisure but more housework, while in the case of non-BDH recipient households it is also due to more leisure and thanks to other non-labour-income sources. In the case of inactive single adults 61 per cent do housework and 20 per cent are pensioners.

[21] While unemployment is not a real issue in most of the cases it is rather high in the case of poor single adults.
[22] According with Ecuadorian legislation, the minimum wage was USD 292 per-month in 2012.

**Table 2: Paid-labour condition (ENEMDUR – December 2012)**

| Paid-labour condition | BDH recipients | | | All adults | | | Single adults | | |
|---|---|---|---|---|---|---|---|---|---|
| | Non-poor | Poor | All | Non-poor | Poor | All | Non-poor | Poor | All |
| **All** | | | | | | | | | |
| Inactive (% of persons) | 30.1 | 42.6 | 35.9 | 11.0 | 38.1 | 16.8 | | | |
| Unemployed (% of persons) | 0.6 | 0.3 | 0.5 | 0.4 | 0.3 | 0.4 | | | |
| Underemployed (% of persons) | 35.5 | 47.1 | 40.9 | 31.7 | 52.4 | 36.2 | | | |
| Employed (% of persons) | 33.7 | 9.9 | 22.7 | 56.9 | 9.2 | 46.7 | | | |
| **Household head** | | | | | | | | | |
| Inactive (% of persons) | 1.4 | 2.2 | 1.8 | 1.9 | 2.3 | 2.0 | 12.0 | 23.1 | 15.6 |
| Unemployed (% of persons) | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.1 | 0.9 | 6.7 | 2.8 |
| Underemployed (% of persons) | 41.8 | 78.2 | 58.7 | 28.1 | 79.7 | 39.2 | 39.0 | 67.0 | 48.1 |
| Employed (% of persons) | 56.8 | 19.6 | 39.6 | 69.9 | 18.0 | 58.7 | 48.2 | 3.3 | 33.5 |
| **Partner** | | | | | | | | | |
| Inactive (% of persons) | 58.8 | 83.0 | 70.0 | 20.1 | 73.9 | 31.6 | | | |
| Unemployed (% of persons) | 1.3 | 0.7 | 1.0 | 0.6 | 0.7 | 0.6 | | | |
| Underemployed (% of persons) | 29.2 | 16.0 | 23.1 | 35.4 | 25.0 | 33.1 | | | |
| Employed (% of persons) | 10.7 | 0.3 | 5.9 | 44.0 | 0.4 | 34.7 | | | |

Source: Own calculation based on ENEMDUR – December 2012.

Housework depends on household composition. If there are more dependent persons, then more care work will be necessary. Table 3 presents the average dependency ratio by paid-labour condition for different subsamples. In the case of household heads there is a positive correlation between paid-labour participation and the number of dependents. It means that a person is expected to be more active in paid-activities if there are more members of the household to be taken care of, because of more resources are needed to satisfy their needs. However, it also means that the head of the household has the role of generating income. Nevertheless, the behaviour of partners is not clear. Looking at partners at the all adults subsample, it appears that they reduce labour-participation if the number of dependents increases, which may be related with a higher role on work care.[23]

Based on the theoretical framework presented in section two and these empirical data, we establish as hypotheses that the BDH has non-negative effects on labour participation of household heads, while it may finance care work done by the partners and single adults. It is important to mention that in the all adults subsample 96 per cent of partners are women (97 per cent in the BDH recipients subsample).

[23] Kornstad and Thoresen (2007) estimated that mothers' labour supply could be reduced by 9 per cent by cash transfers in Norway. In the same way Breunig and Gong (2010) found that women living in regions with lack of adequate childcare facilities work less than their peers in opposite conditions, in Australia.

**Table 3: Dependency ratio (ENEMDUR – December 2012)**

| Paid-labour participation | Head of house | Partner | Total |
|---|---|---|---|
| **BDH recipients** | | | |
| Inactive | 0.31 | 0.49 | 0.49 |
| Active | 0.49 | 0.48 | 0.49 |
| Total | 0.49 | 0.49 | 0.49 |
| **All adults** | | | |
| Inactive | 0.20 | 0.47 | 0.46 |
| Active | 0.43 | 0.40 | 0.42 |
| Total | 0.43 | 0.43 | 0.43 |
| **Single adults** | | | |
| Inactive | 0.58 | | 0.58 |
| Active | 0.61 | | 0.61 |
| Total | 0.60 | | 0.60 |

Note: Dependency ratio is estimated as the relation between the total number of dependents (children under 18 years old and persons older than 64 years old) and the total number of household's members. The difference between head of house and partners is due to the inclusion of single adults.
Source: Own calculation based on ENEMDUR – December 2012.

### 3.2. Empirical specification

For the empirical model we divide the utility function ($U_j = V_j + \varepsilon_j$) of the household in an observable part ($V_j$) and unobserved characteristics ($\varepsilon_j$). We assume the latest to be independent and identically distributed (i.i.d.) which leads us to follow distribution assumptions for a conditional logit type probability of household $j$ to choose $t_j^{l,k}$ from a discrete and finite set of options: $L = \{t_j^{l,1}, \dots, t_j^{l,k}, \dots t_j^{l,L}\}$. Furthermore we assume the observed part of the utility function ($V_j = X`_j^s \beta$) to be linear in parameters, with vectors $X`_j^s$ of observable variables and $\beta$ of parameters. In the same way as described by Haan (2004), Kornstad and Thoresen (2007), Löffer et al (2013) and Kabátek et al (2014), the logit choice probability can be then defined as:

$$Pr_j^k = \frac{exp\left(X`_j^k \beta\right)}{\sum_{s=1}^{L} exp\left(X`_j^s \beta\right)}, t_j^{l,k} \in L, s = \{1, \dots, k, \dots, L\} \quad (2)$$

We specify 16 alternatives of working hours for the combinations between non-paid labour, part-time, full-time and more than full-time labour for the household head and her partner, and four

choices in the case of single adults (Table 4).[24] Choices with inactive partners are the most frequents, while full-time and full-time-plus options are more common in the case of households heads. Based on empirical data we use the median number of working hours per week for each individual choice. It is zero hours for no paid-labour, 28 and 20 hours for part-time paid-labour of household heads and partners respectively, 24 hours for part-time paid-labour of single adults, 40 hours for full-time paid-labour and 50 hours for full-time-plus paid-labour.

**Table 4: Distribution of households across labour choices**

| | | BDH recipients | | | | |
|---|---|---|---|---|---|---|
| | | | | Household head | | |
| | | **No paid-labour** | **Part-time paid-labour** | **Full-time paid-labour** | **Full-time-plus paid-labour** | **Total** |
| **Partner** | **No paid-labour** | 9 (1,275) | 185 (30,184) | 380 (56,209) | 439 (70,742) | 1,013 (158,410) |
| | **Part-time paid-labour** | 5 (730) | 41 (8,352) | 62 (9,458) | 77 (10,805) | 185 (29,345) |
| | **Full-time paid-labour** | 7 (993) | 6 (1,156) | 70 (10,259) | 37 (5,814) | 120 (18,222) |
| | **Full-time-plus paid-labour** | 7 (1,060) | 13 (1,911) | 16 (2,955) | 63 (12,142) | 99 (18,068) |
| | **Total** | 28 (4,058) | 245 (41,603) | 528 (78,881) | 616 (99,503) | 1,417 (224,045) |
| | | **All adults** | | | | |
| | | | | Household head | | |
| | | **No paid-labour** | **Part-time paid-labour** | **Full-time paid-labour** | **Full-time-plus paid-labour** | **Total** |
| **Partner** | **No paid-labour** | 21 (5,283) | 189 (31,437) | 402 (60,267) | 470 (77,769) | 1,082 (174,756) |
| | **Part-time paid-labour** | 7 (970) | 86 (17,591) | 201 (40,662) | 219 (39,381) | 513 (98,604) |
| | **Full-time paid-labour** | 17 (2,352) | 44 (9,092) | 532 (106,829) | 230 (56,794) | 823 (175,067) |
| | **Full-time-plus paid-labour** | 13 (2,320) | 33 (8,975) | 100 (21,026) | 289 (68,447) | 435 (100,768) |
| | **Total** | 58 (10,925) | 352 (67,095) | 1,235 (228,784) | 1,208 (242,391) | 2,853 (549,195) |
| | | **Single adults** | | | | |
| | | | | Household head | | |
| | | **No paid-labour** | **Part-time paid-labour** | **Full-time paid-labour** | **Full-time-plus paid-labour** | **Total** |
| | | 161 (33,831) | 303 (56,049) | 340 (66,331) | 282 (54,923) | 1,086 (211,134) |

Note: Numbers of households expanded by population weights are presented between brackets.
Source: Own calculation based on ENEMDUR – December 2012.

We estimate paid-labour income per hour by a Heckman selection equation (Annex 1). Results are used to define household labour income for each possible choice. In this sense we use paid-

[24] As aforementioned we exclude households with unemployed adults.

labour income and working hours as the choice specific variables, and we interact them with other household specific characteristics. Income variables (including transfers) are presented in USD per week, and we use per capita values in order to take into account household size. Finally, we use population weights for all the estimations.

# IV. RESULTS

## 4.1. Utility function coefficients

Table 5 presents results of a standard conditional logit estimation of the above derived labour supply model. As it is expected the average marginal utility of paid-labour income is positive, but decreasing on labour, except for the case of single adults where it is positive only in 23 per cent of the observations. The marginal utility of paid-labour is positive for household heads and single adults, but it decreases with working hours and paid-labour income. It is consistent with our hypothesis that leisure is not a normal good until a certain level of income/consumption is achieved. On the other hand, marginal utility of paid-labour is negative in the case of partners.

**Table 5: Reduced utility function coefficients**

| Variable | BDH recipients | | | All adults | | | Single adults | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | | Standard error | Coefficient | | Standard error | Coefficient | | Standard error |
| y = Paid-labour income per week per capita | 0.128 | *** | (0.004) | 0.097 | *** | (0.001) | -0.030 | *** | (0.001) |
| y^2 | 0.001 | *** | (0.000) | 0.000 | *** | (0.000) | 0.000 | *** | (0.000) |
| y * lj | -0.002 | *** | (0.000) | -0.001 | *** | (0.000) | 0.001 | *** | (0.000) |
| y * l_j | -0.001 | *** | (0.000) | 0.001 | *** | (0.000) | | | |
| lj = Paid-labour working hours per week of the head | 0.066 | *** | (0.002) | 0.062 | *** | (0.001) | 0.056 | *** | (0.001) |
| l_j = Paid-labour working hours per week of the partner | -0.148 | *** | (0.001) | -0.081 | *** | (0.001) | | | |
| lj^2 | 0.000 | *** | (0.000) | -0.001 | *** | (0.000) | -0.001 | *** | (0.000) |
| l_j^2 | 0.002 | *** | (0.000) | -0.000 | *** | (0.000) | | | |
| lj * l_j | 0.001 | *** | (0.000) | 0.001 | *** | (0.000) | | | |
| Number of observations | 224,045 | | | 549,195 | | | 52,784 | | |
| Pseudo R2 | 0.270 | | | 0.150 | | | 0.023 | | |

Note: Heteroskedasticity consistent standard errors are between brackets.
*** Significance at 1 per cent, ** significance at 5 per cent, * significance at 10 per cent
Source: Own calculation based on ENEMDUR – December 2012.

Table 6 extend the model by including interactions with different household characteristics. We consider the BDH as exogenous as it is a flat transfer with any condition on household composition neither on labour.[25] However, this assumption can be relaxed with no relevant effects on the main results.[26] Consistent with our hypothesis the BDH has non-negative effects on the marginal utility of the paid-labour working hours in the case of household heads. The amount of the BDH has not significant effect in the BDH recipients subsample, while receiving the social transfer has positive but decreasing (on transfer size) labour effects in the all adults subsample. It means that negative effects may appear if the transfer is big enough. Using the coefficients of the all adults subsample, we estimate that negative effects occur at a transfer level of USD 4.53 per week per person (around USD 71 per month, for an average household size).

However, the BDH generates negative effects on the marginal utility of paid-labour working hours of partners and single adults. Nevertheless, partners and single adults paid-labour participation is determinate by other household needs (i.e. care work) which can be been paid by the BDH.[27] The marginal utility of paid-labour working hours decreases if the household dependency ratio increases in the case of partners. It is also the case if the number of children under 5 years old rises. However, the effect is lower or not significant if children attend to a public nursery than if they do not, except for single adults. It means that partners allocate more time to childcare. Finally, there is a positive effect related with the presence of old-age persons in the household. We interpret these results in the sense that paid-labour participation of partners and single adults may be promoted by increasing access to childcare facilities and by the presence of additional carers (i.e. old-age persons) because the burden of care work is reduced.

[25] In order to analysis potential endogeneity bias we estimate a linear probability model for paid-labour participation. The difference between the BDH's coefficients in the OLS and the 2SLS (with IV) is not statistically significant. In this sense even assuming endogeneity bias, it does not change the interpretation of our results. The IV procedure to estimate programme participation follows Ponce & Bedi (2010) by including a third-degree polynomial of the replicated proxy means test index, and the decision rule (It is 1 if the index is below the cut-off of 36.5, and 0 otherwise) in the first stage. All the models can be obtained from the authors upon request.

[26] Utility function coefficients using an IV approach, to estimate program participation, are lower in magnitude but signs and significance level remains the same. All the models can be obtained from the authors upon request.

[27] It is consistent with evidence found by Kornstad and Thoresen (2007) and Breuning and Gong (2010) on the relation between childcare and labour supply.

**Table 6: Utility function coefficients**

| Variable | BDH recipients | | | All adults | | | Single adults | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | | Standard error | Coefficient | | Standard error | Coefficient | | Standard error |
| y = Paid-labour income per week per capita | 0.063 | *** | (0.009) | 0.035 | *** | (0.004) | -0.141 | *** | (0.007) |
| y^2 | 0.000 | *** | (0.000) | 0.000 | *** | (0.000) | -0.001 | *** | (0.000) |
| y * lj | -0.002 | *** | (0.000) | -0.001 | *** | (0.000) | 0.003 | *** | (0.000) |
| y * l_j | -0.002 | *** | (0.000) | -0.001 | *** | (0.000) | | | |
| lj = Paid-labour working hours per week of the head | 0.205 | *** | (0.007) | 0.176 | *** | (0.004) | 0.104 | *** | (0.005) |
| l_j = Paid-labour working hours per week of the partner | -0.017 | *** | (0.004) | 0.051 | *** | (0.002) | | | |
| lj^2 | -0.002 | *** | (0.000) | -0.002 | *** | (0.000) | -0.002 | *** | (0.000) |
| l_j^2 | 0.001 | *** | (0.000) | -0.000 | *** | (0.000) | | | |
| lj * l_j | 0.001 | *** | (0.000) | 0.002 | *** | (0.000) | | | |
| lj * other non-labour-income per week per capita | -0.007 | *** | (0.000) | -0.001 | *** | (0.000) | -0.002 | *** | (0.000) |
| lj * social transfer (BDH) per week per capita | 0.000 | | (0.001) | 0.001 | | (0.001) | 0.022 | *** | (0.001) |
| lj * (social transfer (BDH) per week per capita)^2 | -0.002 | *** | (0.000) | -0.002 | *** | (0.000) | -0.002 | *** | (0.000) |
| lj * BDH (Yes = 1 / No = 0) | | | | 0.032 | *** | (0.001) | -0.056 | *** | (0.002) |
| l_j * other non-labour-income per week per capita | 0.000 | | (0.000) | -0.001 | *** | (0.000) | | | |
| l_j * social transfer (BDH) per week per capita | -0.006 | *** | (0.001) | 0.004 | *** | (0.001) | | | |
| l_j * (social transfer (BDH) per week per capita)^2 | 0.000 | *** | (0.000) | -0.001 | *** | (0.000) | | | |
| l_j * BDH (Yes = 1 / No = 0) | | | | -0.091 | *** | (0.001) | | | |
| lj * age | 0.002 | *** | (0.000) | 0.001 | *** | (0.000) | 0.006 | *** | (0.000) |
| lj * age^2 | 0.000 | *** | (0.000) | 0.000 | *** | (0.000) | 0.000 | *** | (0.000) |
| lj * schooling (years of education) | 0.000 | | (0.000) | -0.004 | *** | (0.000) | -0.003 | *** | (0.000) |
| lj * sex dummy (Female = 1 / Male = 0) | -0.141 | *** | (0.002) | -0.115 | *** | (0.001) | -0.079 | *** | (0.001) |
| lj * indigenous dummy (Yes = 1 / No = 0) | -0.030 | *** | (0.001) | -0.024 | *** | (0.001) | -0.005 | *** | (0.001) |
| lj * afro dummy (Yes = 1 / No = 0) | -0.029 | *** | (0.001) | -0.022 | *** | (0.001) | 0.008 | *** | (0.001) |
| lj * montubio dummy (Yes = 1 / No = 0) | -0.023 | *** | (0.001) | -0.020 | *** | (0.001) | -0.057 | *** | (0.003) |
| l_j * age | 0.002 | *** | (0.000) | 0.005 | *** | (0.000) | | | |
| l_j * age^2 | 0.000 | *** | (0.000) | 0.000 | *** | (0.000) | | | |
| l_j * schooling (years of education) | 0.000 | *** | (0.000) | 0.001 | *** | (0.000) | | | |
| l_j * sex dummy (Female = 1 / Male = 0) | -0.081 | *** | (0.002) | -0.095 | *** | (0.001) | | | |
| l_j * indigenous dummy (Yes = 1 / No = 0) | 0.010 | *** | (0.001) | 0.037 | *** | (0.001) | | | |
| l_j * afro dummy (Yes = 1 / No = 0) | 0.008 | *** | (0.001) | 0.004 | *** | (0.001) | | | |
| l_j * montubio dummy (Yes = 1 / No = 0) | -0.011 | *** | (0.001) | -0.021 | *** | (0.001) | | | |
| y * head's age | 0.001 | *** | (0.000) | 0.000 | *** | (0.000) | 0.000 | | (0.000) |
| y * head's age^2 | 0.000 | *** | (0.000) | 0.000 | *** | (0.000) | 0.000 | ** | (0.000) |
| y * head's schooling (years of education) | 0.003 | *** | (0.000) | 0.003 | *** | (0.000) | 0.010 | *** | (0.000) |
| y * head's sex dummy (Female = 1 / Male = 0) | 0.025 | *** | (0.004) | 0.029 | *** | (0.001) | 0.012 | *** | (0.002) |
| y * head's indigenous dummy (Yes = 1 / No = 0) | 0.094 | *** | (0.003) | 0.016 | *** | (0.001) | -0.013 | *** | (0.003) |
| y * head's afro dummy (Yes = 1 / No = 0) | 0.016 | *** | (0.002) | 0.010 | *** | (0.001) | -0.008 | *** | (0.002) |
| y * head's montubio dummy (Yes = 1 / No = 0) | -0.031 | *** | (0.003) | -0.020 | *** | (0.001) | 0.069 | *** | (0.005) |
| lj * household dependency ratio | -0.029 | *** | (0.003) | 0.035 | *** | (0.002) | 0.009 | *** | (0.003) |
| lj * number of children under 5 attending a public nursery | -0.015 | *** | (0.001) | -0.014 | *** | (0.000) | -0.019 | *** | (0.001) |
| lj * number of children under 5 not attending a public nursery | 0.005 | *** | (0.001) | 0.006 | *** | (0.000) | -0.010 | *** | (0.000) |
| lj * number of old age persons (65+) | 0.013 | *** | (0.001) | -0.007 | *** | (0.001) | 0.022 | *** | (0.001) |
| l_j * household dependency ratio | -0.095 | *** | (0.003) | -0.080 | *** | (0.001) | | | |
| l_j * number of children under 5 attending a public nursery | -0.001 | ** | (0.000) | -0.001 | | (0.000) | | | |
| l_j * number of children under 5 not attending a public nursery | -0.012 | *** | (0.000) | -0.006 | *** | (0.000) | | | |
| l_j * number of old age persons (65+) | 0.029 | *** | (0.001) | 0.034 | *** | (0.001) | | | |
| y * number of unsatisfied basic needs | -0.029 | *** | (0.000) | -0.018 | *** | (0.000) | -0.034 | *** | (0.001) |
| y * number of televisions | 0.021 | *** | (0.001) | 0.007 | *** | (0.000) | 0.002 | *** | (0.000) |
| y * number of telephones | 0.015 | *** | (0.000) | 0.007 | *** | (0.000) | 0.008 | *** | (0.000) |
| y * area dummy (Rural = 1 / Urban = 0) | -0.005 | *** | (0.001) | -0.009 | *** | (0.000) | 0.006 | *** | (0.001) |
| y * parish's poverty by basic needs head count | -0.044 | *** | (0.003) | 0.047 | *** | (0.001) | -0.122 | *** | (0.003) |
| lj * parish's poverty by basic needs head count | -0.036 | *** | (0.002) | -0.044 | *** | (0.001) | 0.057 | *** | (0.002) |
| l_j * parish's poverty by basic needs head count | -0.009 | *** | (0.001) | -0.038 | *** | (0.001) | 0.000 | | (0.000) |
| Number of observations | 224,045 | | | 549,195 | | | 52,784 | | |
| Pseudo R2 | 0.339 | | | 0.260 | | | 0.152 | | |

Note: Heteroskedasticity consistent standard errors are between brackets.
*** Significance at 1 per cent, ** significance at 5 per cent, * significance at 10 per cent
Source: Own calculation based on ENEMDUR – December 2012.

Finally, it has to be noted that the marginal utility of paid-labour working hours is lower for women than for men. We relate this effect with childcare role but also due to paid-labour income

inequality against women (Annex 1). In this sense both childcare and gender equity policies may be seen as complements of social transfers if paid-labour participation is to be promoted.

All these results are consistent with our hypotheses that the BDH does not generate negative labour effects in the case of household heads. Even more, we find positive effects under some conditions. However, the size of the transfer does matter because if it is big enough paid-labour disincentives may be generated. In the case of partners and single adults we argue that households may be using social transfers to finance childcare.

### 4.2. Average marginal effects

Relying in a multinomial logit equation we estimate average marginal effects (AME) on the probability of choosing a specific paid-labour option. In this case we assume the decision of one adult as given. It means that we estimate the effects independently for household heads and partners, considering four possible choices. Summary results are presented in Table 7.

Among those adults receiving the BDH, an increase of USD 1 (42 per cent at the mean level) per week per capita on the transfer size increases the probability of no paid-labour by 1.1 and 5.6 percentage points in the case of household heads and partners, respectively. However there is not any significant effect on other choices in the case of household heads, but a reduction of 5.9 percentage points on full-time paid-labour in the case of partner. On the other hand, looking at the all adults subsample, receiving the BDH reduces the probability of no paid-labour by 2.1 percentage points for household heads, and increases the probability of full-time-paid labour by 9.2 percentage points (but not significantly). However, as aforementioned the transfer size reduces the positive effect, as an additional USD 1 increases the probability of no paid-labour by 0.6 percentage points. In the case of partner, receiving the BDH increases the probability of no paid-labour by 34.6

percentage points. Finally, we find that receiving the BDH has not significant effects in the case of single adults.[28]

**Table 7: Average marginal effects of the BDH on paid-labour**

| Variable | Choice | BDH recipients | | All adults | | Single adults | |
|---|---|---|---|---|---|---|---|
| **Household heads** | | | | | | | |
| Social transfer (BDH) per week per capita | Pr(no paid-labour) | 0.011 | *** | 0.006 | ** | 0.015 | |
| | | (0.002) | | (0.003) | | (0.014) | |
| | Pr(part-time paid-labour) | 0.026 | | 0.022 | *** | 0.010 | |
| | | (0.017) | | (0.008) | | (0.025) | |
| | Pr(full-time paid-labour) | 0.008 | | -0.032 | | -0.038 | * |
| | | (0.026) | | (0.025) | | (0.023) | |
| | Pr(full-time-plus paid-labour) | -0.046 | | 0.004 | | 0.013 | |
| | | (0.029) | | (0.024) | | (0.021) | |
| BDH (Yes = 1 / No = 0) | Pr(no paid-labour) | | | -0.021 | ** | 0.002 | |
| | | | | (0.010) | | (0.057) | |
| | Pr(part-time paid-labour) | | | -0.059 | * | -0.043 | |
| | | | | (0.031) | | (0.089) | |
| | Pr(full-time paid-labour) | | | -0.012 | | 0.058 | |
| | | | | (0.081) | | (0.084) | |
| | Pr(full-time-plus paid-labour) | | | 0.092 | | -0.018 | |
| | | | | (0.079) | | (0.071) | |
| **Partners** | | | | | | | |
| Social transfer (BDH) per week per capita | Pr(no paid-labour) | 0.056 | * | 0.001 | | | |
| | | (0.034) | | (0.010) | | | |
| | Pr(part-time paid-labour) | 0.009 | | 0.028 | * | | |
| | | (0.018) | | (0.017) | | | |
| | Pr(full-time paid-labour) | -0.059 | ** | -0.031 | | | |
| | | (0.028) | | (0.022) | | | |
| | Pr(full-time-plus paid-labour) | -0.007 | | 0.002 | | | |
| | | (0.022) | | (0.021) | | | |
| BDH (Yes = 1 / No = 0) | Pr(no paid-labour) | | | 0.346 | *** | | |
| | | | | (0.026) | | | |
| | Pr(part-time paid-labour) | | | -0.162 | *** | | |
| | | | | (0.050) | | | |
| | Pr(full-time paid-labour) | | | -0.061 | | | |
| | | | | (0.058) | | | |
| | Pr(full-time-plus paid-labour) | | | -0.123 | ** | | |
| | | | | (0.062) | | | |

Note: Heteroskedasticity consistent standard errors are between brackets. All specifications include as explanatory variables (even if not reported): paid-labour income (household head and partner), other non-labour income, age, age square, schooling, sex dummy, ethnic group dummy, household dependency ratio, number of children under 5, number of old-age persons, number of unsatisfied basic needs, assets (number of televisions and telephones), are dummy and parish's head count of poverty by unsatisfied basic needs.
*** Significance at 1 per cent, ** significance at 5 per cent, * significance at 10 per cent
Source: Own calculation based on ENEMDUR – December 2012.

In the case of partners, if the dependency ratio of the household increases by 0.01 (between 1.7 per cent and 2.3 per cent at the mean level) the probability of no paid-labour increases by 0.5

[28] In addition to the results presented in this paper we estimate different models for the probability of paid-labour participation using logit, probit and linear regressions (with and without IV) for each subsample, as well as average treatment effect of the BDH using propensity score matching. In all the cases the BDH has non-negative effect on household heads and single adults labour participation, but negative effects in the case of partners. All the models can be obtained from the authors upon request.

percentage points in the BDH recipients subsamples, while the effect is not significant for the all adults subsample, and it is negative (reduction of 0.2 percentage points) in the case of single adults (Table 8). On the other hand, the presence of an additional old-age person in the households reduces the probability of no paid-labour by 18.4, 8.3 and 6.5 percentage points in each subsample, respectively, by increasing the probability of full-time paid-labour by 9.3 and 12.2 percentage points in the BDH recipients and the all adults subsamples, respectively, and the probability of full-time-plus paid-labour by 6.6 percentage points in the case of single adults. Finally, the number of children under 5 years old increases the probability of no paid-labour by between 3.4 and 6.4 percentage points in the subsamples of couples, if the children do not attend to a public nursery. However, this effect is not significant if the children attend to a public nursery. In the case of single adults, one additional child under 5, not attending to a public nursery, increases the probability of no paid-labour by 4.6 percentage points; however additional estimations show that this negative labour effect does not happen in the case of men.[29]

**Table 8: Average marginal effects on paid-labour (partners)**

| Variable | Choice | BDH recipients | | All adults | | Single adults | |
|---|---|---|---|---|---|---|---|
| Household dependency ratio | Pr(no paid-labour) | 0.513 | ** | 0.047 | | -0.233 | ** |
| | | (0.225) | | (0.088) | | (0.112) | |
| | Pr(part-time paid-labour) | -0.057 | | -0.110 | | 0.103 | |
| | | (0.143) | | (0.087) | | (0.242) | |
| | Pr(full-time paid-labour) | -0.323 | ** | 0.163 | * | 0.085 | |
| | | (0.149) | | (0.087) | | (0.302) | |
| | Pr(full-time-plus paid-labour) | -0.133 | | -0.100 | | 0.044 | |
| | | (0.123) | | (0.097) | | (0.188) | |
| Number of children under 5 attending a public nursery | Pr(no paid-labour) | 0.026 | | 0.011 | | 0.072 | |
| | | (0.043) | | (0.020) | | (0.044) | |
| | Pr(part-time paid-labour) | -0.016 | | -0.017 | | 0.012 | |
| | | (0.034) | | (0.035) | | (0.074) | |
| | Pr(full-time paid-labour) | 0.001 | | 0.022 | | 0.071 | |
| | | (0.021) | | (0.030) | | (0.077) | |
| | Pr(full-time-plus paid-labour) | -0.011 | | -0.016 | | -0.155 | * |
| | | (0.030) | | (0.029) | | (0.089) | |
| Number of children under 5 not attending a public nursery | Pr(no paid-labour) | 0.064 | ** | 0.034 | *** | 0.046 | * |
| | | (0.028) | | (0.013) | | (0.024) | |
| | Pr(part-time paid-labour) | -0.004 | | -0.029 | | 0.006 | |
| | | (0.024) | | (0.018) | | (0.035) | |
| | Pr(full-time paid-labour) | -0.037 | ** | 0.028 | | -0.002 | |
| | | (0.017) | | (0.019) | | (0.027) | |
| | Pr(full-time-plus paid-labour) | -0.023 | | -0.033 | * | -0.050 | |
| | | (0.015) | | (0.020) | | (0.042) | |
| Number of old age persons (65+) | Pr(no paid-labour) | -0.184 | *** | -0.083 | *** | -0.065 | * |

[29] In the case of households heads in the subsamples of couples, average marginal effects of the dependency ratio, number of children and number of old-age persons are not statistically significant on the probability of no paid-labour.

| | | | | | | |
|---|---|---|---|---|---|---|
| | (0.059) | | (0.028) | | (0.036) | |
| Pr(part-time paid-labour) | 0.035 | | -0.073 | | -0.040 | |
| | (0.043) | | (0.047) | | (0.055) | |
| Pr(full-time paid-labour) | 0.093 | *** | 0.122 | *** | 0.039 | |
| | (0.031) | | (0.040) | | (0.040) | |
| Pr(full-time-plus paid-labour) | 0.055 | | 0.034 | | 0.066 | * |
| | (0.036) | | (0.043) | | (0.037) | |

Note: Heteroskedasticity consistent standard errors are between brackets. All specifications include as explanatory variables (even if not reported): paid-labour income (household head and partner), other non-labour income, social transfers (BDH), the probability of receiving the BDH, age, age square, schooling, sex dummy, ethnic group dummy, number of unsatisfied basic needs, assets (number of televisions and telephones), are dummy and parish's head count of poverty by unsatisfied basic needs.
*** Significance at 1 per cent, ** significance at 5 per cent, * significance at 10 per cent
Source: Own calculation based on ENEMDUR – December 2012.

All our estimations show that the BDH does not generate negative labour supply effects on household heads, while we find positive effects in some cases. However, the amount of the transfer should be defined at an optimal level. From our theoretical framework we relate this effect with the idea that leisure cannot be considered a normal good in the case of poor individuals, and that a social transfer may help households to solve liquidity constrains and to cover different transaction costs. Nevertheless, we find negative paid-labour effects for partners and in some cases for single adults. The BDH may be paying for childcare, as we relate this effect with lack of access to alternative childcare options, and because of paid-labour income inequality against women. If paid-labour participation is to be promoted social transfers should be complemented by policies addressing gender equity and childcare.

## V. FINAL REMARKS

Social transfers are largely being implemented as a poverty and inequality reduction strategy. Recent literature provides new analytical frameworks to rely on social transfers as an instrument to generate positive economic returns. However, empirical evidence remains scarce in this field. This study provides a theoretical framework and contributes with empirical evidence on the effects of unconditional cash transfers on adult labour supply, which we believe is a key question to understand the economic effects of social transfers. Moreover, results are relevant to discuss

unconditional cash transfers as a first stage for the implementation of universal basic income in developing countries.

Following traditional labour supply theories, it can be argued that social transfers discourage labour due to an income effect, assuming that leisure is a normal good. We argue that it is not the case for poor individuals which cannot cover her basic needs. For example, it is difficult to value leisure without sufficient water, food and clothing. In this sense, social transfers may not generate such an income effect in the case of poor households. Furthermore, international evidence suggests non-negative labour effects of social transfers under certain circumstances.

We estimate a unitary discrete labour supply model using data from Ecuador. Results for the utility function and average marginal effects are consistent with our theoretical framework, and prove our hypothesis, as we find non-negative effects of social transfers on household heads labour supply, but limited to a certain transfer level. Moreover, we find positive effects which we relate with the idea of social transfers helping poor households to solve liquidity constraints and to cover different transaction costs. On the other hand, we find negative labour supply effects on partners (who are mainly women) and single adults where a social transfer may be paying for childcare, but also because of idiosyncratic characteristics and labour market inequality against women. We believe that policies addressing gender equity and childcare should complement social transfers if paid-labour participation of partners is a final objective; however, it should be carefully thought through regarding child wellbeing and the freedom to choose any kind of work.

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**Annex 1: Paid-labour income (Heckman selection equation)**

| Log of labour income per-hour | BDH recipients | | All adults | | Single adults | |
|---|---|---|---|---|---|---|
| Age | 0.020 | | 0.026 | * | 0.019 | |
| | (0.019) | | (0.014) | | (0.025) | |
| Age squared | 0.000 | | 0.000 | | 0.000 | |
| | (0.000) | | (0.000) | | (0.000) | |
| Schooling (Years of education completed) | 0.033 | *** | 0.078 | *** | 0.064 | *** |
| | (0.006) | | (0.003) | | (0.007) | |
| Sex (Female=1 / Male=0) | -0.232 | *** | -0.144 | *** | -0.183 | ** |
| | (0.062) | | (0.039) | | (0.077) | |
| Indigenous (Yes = 1 / No = 0) | -0.131 | * | -0.104 | | -0.366 | *** |
| | (0.078) | | (0.064) | | (0.124) | |
| Afro-Ecuadorian (Yes = 1 / No = 0) | 0.107 | | -0.122 | ** | -0.186 | ** |
| | (0.078) | | (0.055) | | (0.089) | |
| Montubio (Yes = 1 / No = 0) | -0.076 | | 0.023 | | -0.001 | |
| | (0.070) | | (0.060) | | (0.137) | |
| Number of persons by age group | Yes | | Yes | | Yes | |
| Rural-urban dummy | Yes | | Yes | | Yes | |
| Province dummy | Yes | | Yes | | Yes | |
| Parish's rate of poverty by unsatisfied basic needs | Yes | | Yes | | Yes | |
| Constant | Yes | | Yes | | Yes | |
| **Selection equation** | | | | | | |
| Number of unsatisfied basic needs (between 0 and 5) | -0.244 | *** | -0.384 | *** | -0.259 | *** |
| | (0.051) | | (0.039) | | (0.080) | |
| Number of televisions | 0.005 | | 0.239 | *** | -0.237 | * |
| | (0.106) | | (0.055) | | (0.124) | |
| Number of telephones | 0.088 | * | 0.165 | *** | -0.099 | |
| | (0.049) | | (0.033) | | (0.095) | |
| Age and age square variables | Yes | | Yes | | Yes | |
| Schooling (Years of education completed) | Yes | | Yes | | Yes | |
| Sex dummy | Yes | | Yes | | Yes | |
| Married dummy | Yes | | Yes | | Yes | |
| Constant | Yes | | Yes | | Yes | |
| Number of observations: | 2,834 | | 5,706 | | 1,086 | |
| Inverse mills ratio | 0.617 | | 0.316 | | 0.275 | |
| | (0.012) | | (0.005) | | (0.006) | |

Interpretation: Combining the final and selection equations, an additional year of education is related with an 8.1 per cent higher labour income per-hour for all adults. This result is at international levels (Psacharopoulos & Patrinos, 2002). However, the return is lower in the case of the single adults (6.4 per cent) and the BDH recipients (3.3 per cent) subsamples, which may be related with both lower quality of education and lower access to labour opportunities. Results also show gender disparities against women. Being woman is related with a between 12 per cent and 29 per cent lower labour-income.

Note: Heteroskedasticity consistent standard errors (between brackets) are estimated clustering at the parish level. We use columns two and three to estimate labour-income for the labour supply model.

*** Significance at 1 per cent, ** significance at 5 per cent, * significance at 10 per cent

Source: Own calculation based on ENEMDUR – December 2012.

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