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Por: Lina Cardona-Sosa
Luz Adriana Flórez
Leonardo Morales Zurita

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Intra-household labour supply after an unemployment event: The added worker effect

Lina Cardona-Sosa[†]
lcardoso@banrep.gov.co

Luz Adriana Flórez[‡]
lflorefl@banrep.gov.co

Leonardo Morales Zurita[‡]
lmoralzu@banrep.gov.co

Banco de la República[§]

Abstract

In this paper we explore one of the oldest labour market phenomena documented in the literature: the added worker effect, which refers to the labour supply response of secondary workers to main earners' job losses. To do so we take advantage of the panel data survey conducted by a Colombian Foundation, *Fedesarrollo* between 2007 and 2010, using a fixed effects model to account for household's specific time invariant unobserved heterogeneity. Our results suggest that when the head of the household becomes unemployed, the labour force participation rate of their female partner increases between 9 and 20 percentage points. Such response appears during the first six months of household head's unemployment. In addition, within one year of the head of the family becoming unemployed, their children are more likely to enter the labour market and less likely to be in tertiary education.

JEL Classification Code: J20, J22, J38.

Keywords: unemployment, labour force participation, labour supply, fixed effects.

[†] Corresponding author. Researcher of the Applied Microeconomic Unit of the Central Bank of Colombia, Medellín (*Banco de la República*). Calle 50 No. 50-21, Medellín.

[‡] Researchers of the Applied Microeconomic Unit of the Central Bank of Colombia, Medellín (*Banco de la República*).

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1. Introduction

The added worker effect is the labor supply response of secondary workers (usually the spouse of the head of the household) when the main worker of the household becomes unemployed. The literature has identified this event as one of the phenomena which could occur mainly during an economic downturn. During recessions, the probability of losing a job is higher and it may be difficult for individuals who are looking for a job to find one. During this period, secondary workers may then be discouraged from participating in the labour market. Similarly, if a household member faces an unemployment event, this may affect the household income pushing other household members to look for a job, which is what we know as the added worker effect.

It is difficult to evaluate which of these two effects, the added or the discourage worker effect explains the observed changes in the labor force participation when looking at aggregate data. Aggregate figures could hide the reallocation of work and leisure that occurs within the household. As it was mentioned by Lundberg (1985), long run average measures of labour supply do not show household's decisions to compensate for the household temporal income fluctuations (in the US context, Lundberg define the husband's unemployment spells to be brief, so the added worker effect is considered to be a temporal response). Thus, a dataset containing individual information varying over time, would provide a better understanding of both phenomenons.

To the best of the authors' knowledge, this paper is the first to study the added worker effect for Colombia. To do so we use the longitudinal information collected by *Fedesarrollo* (Foundation for Higher Education and Development) between 2007 and 2010 for three Colombian cities: Bogotá, Cali and Bucaramanga. This dataset has been previously used by Goñi (2013) to calculate employment transitions and by Ayala et al.(2011) to study youth employment in Colombia. One of the main advantages of this dataset is that is the only consecutive panel available in Colombia for this period of time⁴. The panel structure of the data allows us to observe the changes in individuals' economic activity from one year to the next. By following individuals during several years, it also allows us to deal with permanent unobserved factors affecting both, the unemployment of the household head and the participation decisions of other household members. Hence, this paper contributes with evidence about the added worker effect in Colombia and it contributes to the international literature by identifying the timing of households' members labour supply response by using different unemployment spells of the household head. The results suggest the existence of a considerable labour supply response of female partners when the household head loses the job. When the household head

⁴ From 2010 a longitudinal study was launched in Colombia (*ELCA*) with a second wave in 2013, i.e., the data is not collected every year.

becomes unemployed, female partners increase their probability of participating in the labor market between 9 and 20 percentage points which correspond to a labour supply increase of about 36% among wives, which is a similar figure to the evidence found for Brazil (between 37% and 74%). Similarly, such increase occurs during the first six months after the household head became unemployed. Our findings support the idea that, in the absence of other type of insurance, the increase of the labour supply of secondary members is the behavioral response of the household to its income reduction. This effect is larger for households with low educated household heads and appears in the first six months of the unemployment spell.

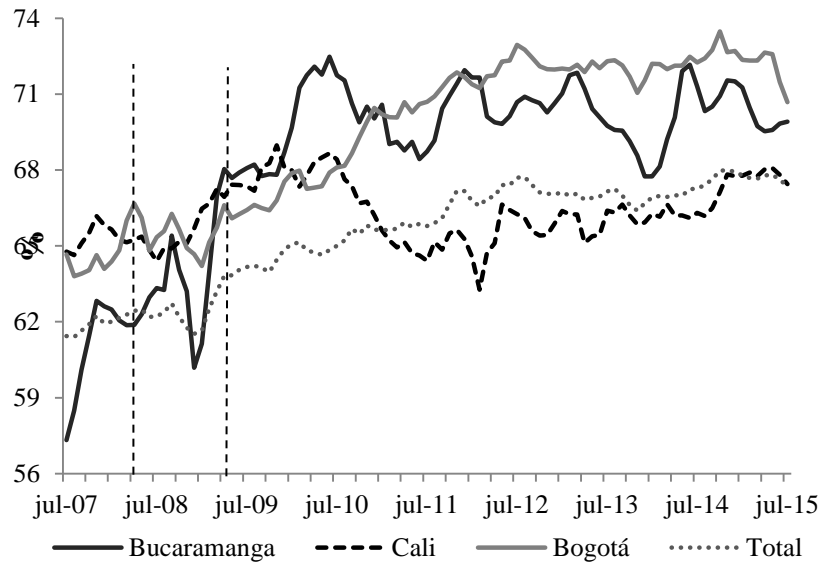
This paper is organized as follows. Section one describes some stylized facts of the labour force participation in Colombia. Section two presents a review of previous studies that examine the existence of the added worker effect. Section four discusses the model and the empirical specification used. Section five describes the data. Sections six and seven present the results while Section eight proposes a simple model to quantify how the unemployment rate is affected by the increase in the participation rate of secondary workers. Finally, section nine concludes.

2. Stylized facts

Previous literature has shown how the participation rate in Colombia changes during the economic cycle. Arango et al. (2015) show that the participation rate of the country does not only increase in periods of recessions but it does so with large variability across different periods. The study reports that the highest increase occurred among women, individuals living in couples, and individuals living in the capital city, Bogotá. During 2007-2015 the labor force participation rate in the country has continually increased, in particular for female partners as shown in Figures 1 to 3. The first figure reports the quarterly participation rate as measured by the National Department of Statistics for the whole country and for three of the main cities (Bogotá, Bucaramanga and Cali). Since January 2007, the labour force participation rate in Colombia has followed a positive trend with a lot of variability between cities: while the national participation rate reached 67% in 2015, Bogotá experienced the highest participation rate (71%) in the same year.

Figure 2 shows the participation rate of the aggregate of the main 13 cities in addition to the one for some members of the household: the head of the household, and children. The graph shows that the participation rate of the household head has been around 80% while the participation rate of female partners has been growing during the whole period, reaching the rate of 68% in the first half of 2015, trend that was observed also for children at a smaller scale (59%) in the same period.

Figure 1. Labour force participation rate

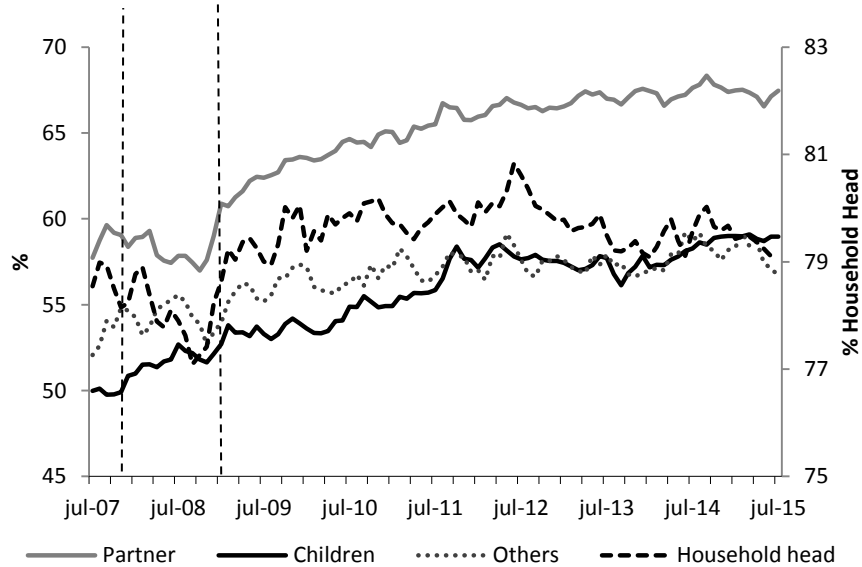


3 month moving average, seasonally adjusted

Source: National Department of Statistics (DANE) .

Note: the dashed lines correspond to the recession period: January 2008 to March 2009 (Alfonso et al., 2013 updated by Jaulín, 2013).

Figure 2. Labour force participation rate



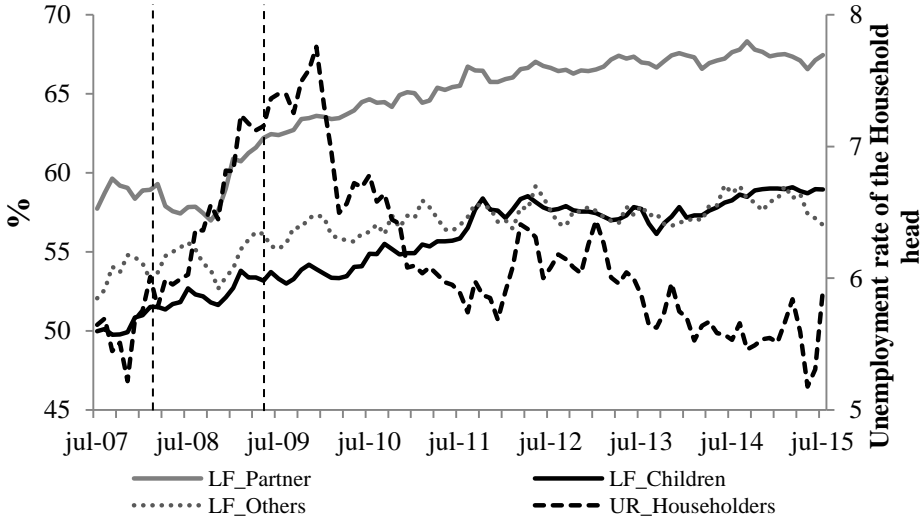
3 month moving average, seasonally adjusted

Source: DANE Household survey

Note: the dashed lines correspond to the recession period: January 2008 to March 2009 (Alfonso et al., 2013 updated by Jaulín, 2013).

The positive trend observed in the labour participation among women has previously been attributed to an increase in their level of education, and to better job opportunities, as documented by Posada et al. (2003), Castro et al. (2011), among others. However, an aspect that has not been studied in the literature is the labor supply response of women when the household head loses his job. Figure 3 shows the unemployment rate of the household head and the participation rate of different household members. From the graph it can be seen that in the second half of 2008, where there was a slowdown in the economy, the unemployment rate of the household heads increased, while the participation rate of female partners increased after a lag of some months.

Figure 3. Unemployment rate of the household head and the labour force participation of family members



3 month moving average, seasonally adjusted series
 Source: DANE . Household survey

Note: the dashed lines correspond to the recession period: January 2008 to March 2009 (Alfonso et al., 2013 updated by Jaulín, 2013).

3. The Added Worker Effect and its evidence

In 1940s, Woytinsky and Humphrey defined the added worker effect as the labour supply response of wives to their husband’s job losses. The authors checked whether wives were encouraged to work by their husbands’ unemployment or they were discouraged by the poor labor market conditions observed. To better understand how spouses respond to the unemployment of the household head, a household model of labor supply is needed. In a static version of the model, the husband’s unemployment spells may cause a temporal loss in household’s income due to the time reduction in market related activities

which increases his time in nonmarket related activities (i.e., leisure) more than the desired amount. By increasing his time in nonmarket activities, the price of such activities reduces, leading to other household members to allocate more time in the alternative activity: the market (assuming that wives' leisure is a normal good). By increasing their time in market related activities, wives increase their labour supply. If the wife is out of the labour force, the increase in market time will be her entrance to the labour market. If she is already working, she will provide more hours of work. Thus, the increase of labor supply among wives will result if leisure of wives and husbands are substitutable through home production⁵ (Cullen and Gruber, 2000).

In a life-cycle model with perfect capital markets, the added worker effect will be lower if family's income loss is small in contrast to husband's life time earnings (Heckman and MaCurdy, 1980). In the latter case if unemployment risk is high, the increase of wives' earnings would happen at all times during their life time and not only after the unemployment of the household head. Household could use savings and borrowing to smooth their consumption (Cullen and Gruber, 2000). Moreover, as stated by Dynarski and Sheffrin (1987), even in such cases, there could be household's behavioral responses to a job loss. In contrast to the above, in a life-cycle version of the model with credit-constraints, the added worker effect will appear (Lundberg, 1985).

Following Maloney (1987) the husband's unemployment event is a disequilibrium that increases wife's labor supply as a result of an income effect or a cross-substitution effect. The income effect results from the loss in lifetime wealth due to the husband's unemployment. The partner of the household head is encouraged to work more in future periods to compensate for the wealth reduction. The income effect could lead to an increase in the number of hours of work from zero to a positive number (extensive margin). The unemployment of the husband increases his nonmarket time and reduces the relative value of wives' time in nonmarket activities (Lundberg, 1985). The cross-substitution effect refers to the substitutability between partners leisure time. Husbands allocate less hours to the labour market leading the partner to increase the number of hours already working to compensate the reduction in income. The magnitude of the labour supply response of wives to their husbands' unemployment, or the added worker effect will depend on other's household methods to cover the family's income loss: government benefits, borrowing, etc.

Recent literature has examined the increase in wives' labor supply as a way to smooth consumption in the presence of imperfect capital markets [See Spletzer (1997); Cullen and Gruber (2000); Stephens

⁵ Using a family labor supply framework, Ashenfelter (1980) provides the theoretical support for the added worker effect by treating unemployment as a labor supply constraint rather than a result.

(2002); Fernandes (2005); Ortigueira et al. (2013)]. For instance, Ortigueira et al. (2013) presents a model for a household made by two workers who pooled their risks and make decisions on consumption, savings and labor supply. The same model states that once a household faces risks of unemployment, it reduces the amount of their assets and/or increases the labor supply of their spouse. In this case, the labor market entrance of second earners can be considered as a safety net (insurance) when families are affected by the unemployment of their household head, and at the same time is evidence of how marriage plays a risk sharing role (Gong, 2011). In the model proposed by Ortigueira et al. (2013), wives of unemployed husbands increased their labour supply in 8%, recovering up to 9% of the income lost in the household.

The first empirical studies analyzing the added worker effect focused on developed countries and mainly produced in the 1980s and 1990s. Moreover, the conclusions are mixed [See Lundberg (1985), Spletzer (1997); Cullen and Gruber (2000); Gong (2011), for some evidence]. One of the main studies is the one by Lundberg (1985) who finds that for 100 men losing their jobs in the US, 3 wives would enter to the labour force. Later on, Cullen and Gruber (2000) find that after the unemployment of their husbands, wives in the US increased their hours of work by 30% and reduced their non-employment rate by 45% in the absence of unemployment insurance (the presence of unemployment insurance would crowd out the added worker effect). Positive effects were also found by Gong (2011) for Australia. Nevertheless, another set of studies did not find a statistically significant response of wives to the unemployment of the household head [see for instance Spletzer (1997)]. Moreover, the absence of the effect has been attributed to the presence of unemployment insurance in countries like the US (Cullen and Gruber, 2000). Positive evidence for the added worker effect is supported by European data. Bredtman et al. (2014) using longitudinal information across Europe, find that after the unemployment of the spouse, there is an increase of 3 ppts in wives labour market participation, which in this case was translated in more unemployed wives.

One of the main challenges in identifying the added worker effect is that in some cases it is not possible to assure that causality comes from husbands' unemployment towards partner's labor supply. In fact, one of the main difficulties of previous studies has been to distinguish between a continuous unemployed person and an individual who recently lost his job. In the first case, unobserved household characteristics could be determining his unemployment and the labour supply of all the family members. Similarly, it could be the case that family members share their working preferences towards work or that their employability is affected by the same factors that lead to the unemployment of the head of the household (Cullen and Gruber, 2000). In the latter case, a job loss could be the result of an exogenous market shock. Similarly, unemployed individuals could have been in that state for a long

period of time, allowing the anticipation response of their families who may use other sources, different to the spouse labor supply to smooth consumption (Cullen and Gruber, 2000). In order to isolate the effect of the husband's unemployment on household's members labour supply, a different set of studies have exploited changes in macroeconomic conditions that could lead to unemployment events. Addabbo et al. (2013) and Congregado et al. (2013) explore the added worker effect for Spain using the 2007-2009 recession as a natural experiment. While the study by Addabbo et al. (2013) observed an increase in labour supply among wives of 21%; Congregado et al. (2013), found evidence of the existence of the effect only for periods when the unemployment reached values below the 11%, above this threshold, the authors found the coexistence of this effect with the discouraged effect (in the economic slowdown, individuals discouraged themselves to look for a job), cancelling out each other.

Another difficulty of previous studies has been to distinguish between a continuous unemployed person and an individual who recently lost his job. In the first case, unemployed individuals that have been in that state for a long period of time, allow the anticipation response of their families who may use other sources different to the spouse labor supply to smooth consumption (Cullen and Gruber, 2000). In relation to this, Stephens (2002) examines whether or not the time of the wives' response could vary according to the information acquired in relation to the displacement event. The study finds not only that the effect of unemployment on wives' labour market status can last more than two years but that 25% of the income lost due to their husband's unemployment is compensated by the increase in the wife's labor supply in the following years.

Little is known about the added worker effect in developing countries. The evidence found for Argentina suggests an increase in wives' labour supply of 3,2 ppts (Martinoty, 2015) after an unemployment spell of their husbands, effect that is small in magnitude in contrast to what was found for Brazil (between 7,6 ppts and 12 ppts equivalent to an increase between 36% and 74% in wives' labour supply (Fernandes et al., 2005) with the largest effect experienced during the crisis). In the case of Mexico, Parker and Skoufias (2004) also found a range for the added worker effect equivalent to an increase of 7,7% in wives labour supply, or 16% during the peso crisis. For the Colombian case, there are, to the authors' knowledge, no economic studies exploring the added worker effect using microdata, which is the objective of the present study. To estimate the effect this study follows the theoretical framework of Gong (2011) and Stephens (2002). We also solve the problem of simultaneity on the labour supply decision within the households by exploiting the panel structure of the data as it will be show in the following section.

4. Methodology and empirical specification

The general framework of our empirical specification is in the fashion of Gong (2011) and Stephens (2002) for Australia and the US respectively. The framework starts with the utility maximization process of both partners during its life time and their decision about how to allocate time between leisure and consumption (labour market hours). The female partner's labour supply is determined by the labor income of the household head, the future values of wage offers, the marginal utility of income and the evolution of its distribution, in addition to previous experiences of job losses.

We are interested in the probability of a household member participating in the labor market when the household head becomes unemployed. We start by analyzing the probability of the female partner working, modeling it as a function of the wage offered, the marginal utility of wealth, and taste modifiers of female's leisure time (such as children younger than 5) as follows:

$$LS_{it} = \alpha_i + \sum_{s=-1}^0 \beta_s UH_{it-s} + \beta_1 UH_{it} UH_{it-1} + \beta_2 \ln W_{it} + \beta_3 X_{it} + \beta_4 Z_{it} + \varepsilon_{it}$$

The unit of analysis is the household i (in contrast to previous works such as the one by Cullen and Gruber (2000) who analyze the couple, we explore behavioral responses from additional household members). LS_{it} is an indicator variable for whether or not a member of household i and other than the household head (e.g., female partner, children above 18 years old) participates in the labour market (i.e., supply a positive amount of hours of labour). UH_{it-s} , our variable of interest, indicates whether or not in household i , there is an unemployed household head in the current period ($s=0$) and/or in the previous one ($s=-1$). The interaction term, $UH_{it} UH_{it-1}$ accounts for the unemployment persistence of the head of the household. The vector X_{it} includes individual's characteristics that determine a person's labour supply, among others. The wage offered ($\ln W_{it}$), which is unobserved, is replaced for the main wage determinants: age, age squared, individual's education and the local unemployment rate. We include also indicators for taste modifiers which might affect the participation decision of female partners: children under the age of five, presence of children under the age of 1 and children in schooling age (6-17). Z_{it} accounts for some characteristics of the household head, such as age and education. Similarly, when studying the labour supply of other members, the gender of the individuals is considered through dummy variables. α_i is the household specific effect reflecting the initial marginal utility of wealth, the marginal utility of the female's leisure time and so on. Finally, ε_{it} accounts for those unobserved variables that affect the household members' decision of supplying work.

The main coefficient of interest is $\beta_{s=0}$ which estimates the effect of household head becoming unemployed on the others members' labor supply. The magnitude of the effect is obtained by comparing the labour supply response of individual's living in households with a household head who became unemployed with the response of individuals in households whose head of the household has been continuously employed in two consecutive years (including the current one), which is possible due to the inclusion of the indicators for current and previous unemployment state. Hence $\beta_{s=0}$ recovers the added worker effect. The coefficient $\beta_{s=-1}$ refers to the effect of the previous year's unemployment experience. This allows us to take into account lagged effects and persistence. To estimate the previous equation, we follow a linear probability approach. To account for individuals' heterogeneity, we conduct a multivariate analysis and include, in addition to the demographic variables mentioned above, individual's fixed effects.

One concern in the estimate is the existence of unobserved factors such as individuals' productivity, job commitment or risk taking behavior affecting the unemployment status of the household head and the labour supply of other household members. In such cases the composite error term ($\alpha_i + \varepsilon_{it}$) includes unobserved factors (invariant over time) affecting household members labour supply and household head unemployment, leading to the correlation between the unemployment of the household head and this error term. This could lead to bias in the estimates in at least two ways: OLS estimators would underestimate the added worker effect in the presence of households with low taste for work. Household heads with a high probability of being unemployed could be matched with partners who are less likely to participate in the labor market. On the other hand, the added worker effect could be overestimated when households facing particular disadvantages that cannot be controlled for are related positively with the unemployment of the household head. To account for this, we estimate our model using fixed effects which eliminates the unobserved individual heterogeneity that could be correlated with the unemployment of the spouse and that is invariant overtime.

5. Data

The information used in this study comes from the Social Longitudinal Survey (*Encuesta Social Longitudinal, ESLF*) developed by the Foundation for Higher Education and Development, Fedesarrollo, an institution with large experience conducting economic research. The survey collects longitudinal data on health, living conditions and labor market variables for urban households over seven years. The labor market module of the survey asks whether or not working age individuals are employed, searching for a job, studying or dedicated to the household chores. The demographic module includes information about individuals' education, age, marital status, household consumption, among others. This is the only data with a panel component that allows us to conduct a dynamic

analysis during two consecutive years of the labor market in the country. The survey has a rotating panel design, meaning 25% of the households interviewed were replaced in every stage. Although *Fedesarrollo* conducted its first social survey in 1999, it was only since 2004 that the panel component was included, covering three cities during seven years until 2010, the last year of the survey, and the moment when a new longitudinal survey was announced by a private university with higher coverage. The longitudinal component has been previously used to evaluate different policies such as: 1) the law that regulates employment opportunities for recent graduates in Colombia (Ayala et al., 2011) and 2) the impact of anti-poverty strategies (Quiroga et al., 2010). It has also been used to examine the Colombian unemployment trends (Parra, 2010), and the labor market transitions of the population (Goñi, 2013).

Even though in 2008, 10 more cities were added to the survey and, by 2010, the whole 13 main cities were also interviewed (see Table 1), the only three cities which were continuously interviewed during the whole period were Bogotá, Bucaramanga, and Cali. Hence we will focus on those cities. Tables 1-3 offer a better description of the data. Table 1 shows that between 2004 and 2007 the interviewed sample consisted of 1,865 households while in 2008 the survey covered 4,506 households, (i.e., 18,072 individuals). Moreover, 67% of the households observed in 2008 counts with longitudinal information from 2004. By 2010, the last year when the survey was conducted, 3,492 households were interviewed. After analyzing the strata⁶ classifications of the households, we find it is possible to infer that between 2004 and 2007 most of the households belong to the middle income group of the population, while in 2008 low income households gained participation in the survey. In this paper we use information from 2007 to 2010 due to two reasons: the main reason is that from 2007 the survey adopts the country's National Statistics Office methodology and the International Labour Organization guide to build the labour market questions. Even though the adopted methodology improves the labour market indicators in the survey, the objective is not to make them directly comparable to the ones produced by the country's National Statistics Office (Millán et al., 2009); the second reason is due to the small sample size of the longitudinal component before this period. Around 1,500 households can be followed consecutively between 2007 and 2010

Table 4 presents the main statistics of household's heads by their unemployment status and according to the number of wages they are followed in the survey. The first set of three columns presents the statistics pooling all the data (6.715 household heads). The next set of columns restricts the analysis to those household heads who are followed during 2007 and 2010 only (1.260). The final set reports the

⁶ A stratum is a house classification according to its location and amenities. The houses are classified in six levels where the first level or strata 1 corresponds to houses in poor conditions or with low quality amenities. The strata system is used to define the household charge for the public utilities.

statistics for those followed during 2008 and 2010, allowing us to have a bigger sample from the panel (3.248). From the first set of columns that uses the information of individuals followed during the entire period, it is possible to infer that most of household heads belong to low and middle class (Strata 1,2 and 3) and are classified in Sisben 1, 2, 3 and 4 a means tested system that classified individuals in 6 levels according to their socioeconomic conditions, being level 1 the most vulnerable group of individuals⁷. On average, the real income per capita⁸ was around COP\$ 462,000 (USD 160 assuming an exchange rate of COP\$ 2.900/USD) with a total household income of COP\$ 1,750,000 (USD 603) per month. The average household has 4 members with 30% of them including at least one child younger than 5. Regarding households' wealth, around 55%-59% of them reported living in their own house. The Table also compares household's heads that became unemployed with household's heads continuously employed. Following the comparison, it is possible to see how household's heads who are unemployed exhibit some disadvantage conditions in contrast to households continuously employed: unemployed husbands have less years of education, have reached lower educational levels, are older, and, are in households with lower income per capita and total real income. Similarly most of them belong to the lowest strata. The above comparison suggests that, on average, unemployed household heads are not a random sample of the population.

Table 5 presents the main statistics for female partners by unemployment status of the household head and for the different number of waves the individuals are followed in the survey. As before the Table reports the results pooling the data (6.143 wives) and by the number of waves the individuals are followed in the survey (3.044 wives when using the 2008-2010 panel component). From the first set of columns it is possible to observe that 52% of wives whose partners are continuously employed participates in the labour market in contrast to the 55% observed among those whose husbands became unemployed (i.e., a difference of 3 ppt that increases to 6 ppt and 7 ppt when using information only for those followed in the panel). Depending on the number of waves spouses are interviewed, between 58% and 62% of spouses are dedicated to household chores. Similarly, spouses with unemployed husbands are older (age 43 vs. age 40 observed among those with employed husbands). Similarly, a higher proportion of them have incomplete secondary education (31%) in contrast to the ones with employed partners (24%). Female partners with unemployed husbands live in households with more unemployed individuals, less total income and in lower strata. Hence as previously stated, households with unemployed head could have particular characteristics that make them a non-random sample of the population. In addition to this, spouses of those husbands are likely to be matched in some of those characteristics (i.e., less years of education).

⁷ See Bottia et al. (2012) for a better explanation about the system and its evolution.

⁸ Prices of 2008.

Characteristics of sons/daughters under tertiary education age are presented in Table 6. As before, the Table compares young individuals in households with an unemployed head with those with a continuously employed household head. The labour force participation rate of sons and daughters between 18 and 25 years old is higher in those households with an unemployed household head (73% vs. 65% among households with employed heads followed during four years). The percentage of young Sons/daughters in the household who are studying is 32% in households with employed dads in contrast to the 24% observed in households whose dad became unemployed. In contrast to what was observed among female partners or spouses (between 8 and 9 years), young individuals in the household have more years of education (between 10 and 11 years), with a considerable percentage of them having completed secondary education (between 60% and 72% depending on the unemployment condition of the household head).

Hence following our descriptive analysis, there is, on average some difference in the participation rates of household's members when the household head becomes unemployed, being larger the percentage of spouses and sons and daughters who participate in the labour market after the household head become unemployed. Moreover a multivariate analysis taking into account individuals' heterogeneity is needed and is conducted as presented in the next section.

6. Empirical estimates of the added worker effect.

The main estimates of the added worker effect or the household's members' response to the unemployment of the household head are shown in Tables 7 to 9. Each table presents the labour supply response of different family members to the unemployment of the head of the household. Table 7 reports the set of coefficients for female partners or spouses using different specifications. Column (1) to (4) presents the pooled OLS estimates. The dependent variable corresponds to an indicator variable for whether or not she participates into the labour market. The first two columns suggest that when the husband is unemployed, the spouse increases their labour supply in 9 ppts after controlling for individual and husband characteristics. Once we take into account the previous unemployment status of the husband and, the persistence of the effect (whether he has been unemployed for two consecutive periods) the effect increases to 11 ppts, which means that, in contrast to households whose heads are continuously employed in two periods, spouses in households whose head became unemployed in the current period (conditional on being employed in the previous period), increases their labour supply in 11 ppt. Once we take into account individual's heterogeneity and exploit the panel component of the survey, Columns (5) onwards estimate the model using fixed effects. Column (8) reports the estimates adding the whole set of controls and the persistence of the unemployment of

the husband. The coefficient of interest suggests an increase in wives' labour supply of about 20 ppts (which is almost a 36% increase in wives' labour supply). When we disaggregate the effect by the number of months the husband has been unemployed (Columns (9) and (10)), we observe a significant response when the husband has been unemployed for less than 3 months and between 3 and 6 months. The wife's participation response peak at six months was also found in the study by Lundberg (1985) using US data. Thus, our preferred specifications, Columns (8) and (10) provides evidence not only of the added worker effect between 2007 and 2010 but it shows that the wives response to an unemployment event of the husband occurs during the first six months after the event occurred. Our findings are above the ones found for Argentina by Martinoty (2015) of 3,2 ppts but close to the evidence found for Brazil (an equivalent increase in wives labour supply of about 37%-74%, depending on the analyzed period).

By comparing the results using the OLS and fixed effects main specifications (i.e., Columns (4) and (8)), it is possible to see the importance not only of individual's heterogeneity but of knowing that the unemployment event has occurred recently, which in this case is captured through the unemployment status of the husband in different periods and through its interaction. This shows the strong and immediate response of wives and the need to recover the household income lost after this event.

The remind set of tables includes only three sets of two columns, i.e., we exclude the pooled OLS estimates and report only the ones using fixed effects. The first set of two columns show the contemporaneous effect, i.e., the response given during the year the household head became unemployed. The next set of two columns, (3 and 4) add the lagged employment status of the household head and the interaction term of the current and previous unemployment condition, while the next two columns (5 and 6) estimate the response using the unemployment duration (in months) of the household head. As before, the interpretation of the effect is given by comparing the labour supply of individuals living in households whose household head become unemployed with the labour supply of individuals living in households with a household head employed in the last and in the current period. In each set of columns we present two specifications: a basic one with only the individual's characteristics, and a second specification that adds the demographics of the household head.

The estimated coefficients for the labour supply response of other household members to the unemployment of the household head were not found to be statistically significant. However, once we disentangle the effect by the unemployment duration of the household head, we found a significant response 12 months after the head become unemployed. To understand this finding, we estimate the model for the subsample of children above 18 years old, finding a labour supply response of 14 ppts.

This is slightly below the response observed among female partners (20 ppts). Once we differentiate by the unemployment duration of the head, we find a higher increase in the labour force participation of these household members, and a response 18 months after the unemployment occurred (See results in Table 9). In Table 10 we conduct the same analysis but restricting the sample among those between 18 and 25 years old (age for being in tertiary education). For this subsample we do not observe a significant effect when using the different indicators for unemployment of the household head. Nevertheless we observe a response in month 18th (10% of significance level), suggesting a considerable high increase in youth's participation rate. Once we separate the sample for boys and girls, we found that the significant labour supply response occurs among boys between 18 and 25 years old without finding evidence for girls.

One of the potential implications of the labour supply increase observed among tertiary education age individuals is the reduction in the probability of studying among those household members. To check whether this is the case, we estimate the same model explained in the previous section but using as dependent variable an indicator for whether or not the individual is studying. The estimates for individuals above 18 years old are presented in Tables 11 and 12. We do not find evidence of a significant effect of the unemployment of the household head in terms of lowering the probability to study. Nevertheless, after restricting the estimation to those individuals between 18 and 25 years old (i.e., those in age for being in tertiary education), our estimates suggest that one year (12 months) after the household head became unemployed individuals under technical/university age reduce their probability of studying by 15 ppts.

The results we have mentioned were conducted with an unbalanced panel (all data). This is due to the rotating nature of the survey (25% of interviewed households are replaced every year) in which case, even though we include individuals between 2007 and 2010, not all of them are observed during the four years. To see whether our results change when using a balanced subsample, we can estimate the same exercise for a smaller but a balanced sample. The results of this (using waves between 2008 and 2009⁹) are shown in Tables 13-16, and the magnitude and significance of the coefficients support our previous findings.

7. Heterogeneous effects of an unemployment event

The labour supply response observed within the household might differ in their response to an unemployed head according to their demographics. The probability an individual supplies labour could increase for economically disadvantaged households which have a higher probability of being credit-

⁹ We also conduct the estimations using the set of waves between 2008 and 2010 and the conclusions still holds

constrained (Skoufias et al., 2005). Tables 17 and 18 report the results for households whose household head has a low level of education. We define low as less than secondary education and high as having a technical/university study. The estimates for female partners in low educated households show a 22 ppts increase in their participation rate, higher than the average increase (20 ppts). Nevertheless among households with husbands with technical or degree studies, we cannot provide evidence of an increase in their participation rate after the event occurs. This result is evidence about the liquidity constraints faced by low income (low educated) households. For the subsamples of children, the labour supply response is not only higher than the one observed for the average household but it occurs at the time the unemployment occurs.

The estimates using the balanced panel (2008-2009 and 2008-2010) cover the period “during the crisis” (which, following Alfonso (2013) and Jaulín (2013) is defined to be between January 2008 and March 2009). Nevertheless to be able to consider the response of households to unemployment events due to the crisis, we need to consider individuals who are observed in 2007 and followed onwards. In this way we include husbands who were employed in 2008 and become unemployed in 2008, the year of the crisis. The specification including all individuals followed since 2007 until 2010 are presented in Table 19. Column (4) and (8) (OLS and FE estimates respectively), reports a higher estimate than before, i.e., during a period of crisis the labour supply response of wives is higher (28 ppts) than before, suggesting an increase of about 50% (considering a wives’ labour supply rate of 55%).

8. A simple model of the AWE on the unemployment rate

For policy makers, it is important to understand how the continuous increase in the participation rate (in part provoked by the added worker effect, AWE), affects the unemployment rate of the whole economy. If an increase in the number of people entering the labor market does not come with an increase in available jobs, this could lead to an increase in the unemployment level of the country. To see how the AWE affects the unemployment rate of the economy, we propose a simple model along the following lines.

To estimate the AWE we use the following regression model:

$$Y_{it} = P(\alpha_{i0} + \sum_{s=1}^0 \beta_s D_{it-s} + \gamma D_{it} D_{it-1} + \phi \ln w + \beta X_{it})$$

Where Y_{it} is the partner’s labour force participation status, α_{i0} is the household specific effect reflecting the initial marginal utility of wealth, the marginal utility of the female’s leisure time and so on.

D_{it} indicates the unemployment of the household head, which could have happened one period before ($s=-1$) we observe the female partner's labour status in the current period ($s=0$). We also include an interaction term to account for the effect of unemployment persistence. The reference group of the analysis are those individuals whose household head is currently employed and was employed last year. The effect on the partner's labour force participation when the household head becomes unemployed in the previous period is captured by β_0 , which we refer to as the AWE. Similarly, the effect on the partner's labour force participation when the household head has been unemployed since the previous period is captured by $\beta_{-1} + \beta_0 + \gamma_0$, which accounts for the persistence of the unemployment effect on the secondary workers' participation decision.

A job destruction shock in the economy affects the unemployment rate through two channels¹⁰. The first is the change in composition of the pool of employed and unemployed workers. The job destruction shock moves employed workers to the pool of unemployed, causing a natural increase in the unemployment rate. The second and indirect effect is the AWE. When a job is destroyed, the effect of a reduction in the household income may yield an increase in the labour participation of other family members, specially the partners. According to our estimation, if the household head lose his job, this implies an increase on partner's earners labor supply of about 20 percentage points.

An interesting analysis is to decompose the change in the unemployment through these different channels. The following part of the paper formalizes the decomposition of the unemployment rate.

Consider an economy where there are only spouses (S) and household heads (H) participating in the labor market. In this case, we normalize the total labour force to 1, where:

$$1 = S + H$$

Defining the participation rate as θ_J and the unemployment rate as μ_J for each group with $J = \{S, H\}$, the number of employed (E_J) and unemployed (U_J) workers of each group is defined as:

$$\begin{aligned} E_S &= S\theta_S(1 - \mu_S) \\ E_H &= H\theta_H(1 - \mu_H) \\ U_S &= S\theta_S\mu_S \end{aligned}$$

¹⁰ According with the search models, the steady state of unemployment depends on the job creation and job destruction rates. In this analysis we just focus on the respond of the unemployment rate given a job destruction shock, which allow us to focus on the AWE.

$$U_H = H\theta_H\mu_H$$

We can represent the total unemployment rate of this economy as the ratio between the unemployed workers and the participants in the labor market. The total number of unemployed spouses: $S\theta_S\mu_S$ and the total unemployed number of husbands is: $H\theta_H\mu_H$. The number of participants in this economy is defined as: $S\theta_S + H\theta_H$. Then, the total unemployment rate of this can be described by:

$$\mu = \frac{S\theta_S\mu_S + H\theta_H\mu_H}{S\theta_S + H\theta_H} \quad (1)$$

The hypothesis of the AWE describes an increase in the participation of spouses given an increase in the unemployment rate of household heads. Using the following equation, we can establish a connection between the estimated AWE and the spouses' participation rate:

$$\theta_S \cong \hat{\theta}_S = \mu_H(\hat{\theta}_{S|D=0} + \beta_0) + (1 - \mu_H)\hat{\theta}_{S|D=0} \quad (2)$$

Note that in (2) the predicted spouses' participation rate in the economy is the weighted average of the predicted participation rate for the share of spouses of an household head who experienced an episode of unemployment ($\hat{\theta}_{S|D=0} + \beta_0$) and the predicted participation rate for the rest of the population of spouses ($\hat{\theta}_{S|D=0}$). This share is defined by the household head unemployment rate μ_H . As we can see from equation (1) the difference between the predicted participation rates for these two groups is the AWE.

This implies that the labour participation of the spouse is a function of unemployment of the household heads. Changes in the employment status of household heads has an effect β_0 on their partner's labor supply, where $\beta_0 > 0$. This is, the change in the labour participation of the spouses, given an increasing in unemployment of the household head is positive. More specifically,

$$\frac{\partial \theta_S}{\partial \mu_H} = \beta_0 \quad (3)$$

Equation (1) can therefore be written as:

$$\mu = \frac{Sf(\mu_S)\mu_S + H\theta_H\mu_H}{Sf(\mu_S) + H\theta_H}$$

Therefore, we can define the total derivative of the unemployment rate as:

$$d\mu = \frac{\partial\mu}{\partial\mu_H} d\mu_H + \frac{\partial\mu}{\partial\mu_S} d\mu_S + \frac{\partial\mu}{\partial\theta_H} d\theta_H$$

Let us assume that in the short term $d\theta_H=0$. After some simplifications, the total change in the global unemployment rate can be written as:

$$d\mu = \frac{H\theta_H}{S\theta_S + H\theta_H} d\mu_H + \frac{S \left[\frac{\partial\theta_S}{\partial\mu_H} \right] \theta_H H (\mu_S - \mu_H)}{(S\theta_S + H\theta_H)^2} d\mu_H + \frac{S\theta_S}{S\theta_S + H\theta_H} d\mu_S$$

Using equation (3) and substituting in the previous one we have:

$$d\mu = \frac{H\theta_H}{S\theta_S + H\theta_H} d\mu_H + \frac{S\theta_S}{S\theta_S + H\theta_H} d\mu_S + \frac{\beta_0 S H \theta_H (\mu_S - \mu_H)}{(S\theta_S + H\theta_H)^2} d\mu_H \quad (4)$$

Thus the total change of the unemployment rate can be divided in three effects: the effect of a change in the unemployment rate of the household head, the effect of a change in the unemployment rate of the spouses, and the third is the effect of AWE on unemployment rate given a change in the household head's unemployment rate. We can use this decomposition to measure the effect of the AWE on the general unemployment rate of the economy in comparative statics exercises.

Numerical exercise

In the empirical estimation we conclude that the AWE for the sample of spouses is an increase of 20 percentage points in their probability of participating in the labor market. This is an important response, but this increase in participation only affects the share of spouses with partners who became unemployed. In order to have an idea of the impact that AWE has on the total unemployment rate of the economy, we can use the decomposition of a change in unemployment rate given a symmetrical increase in household heads and spouses represented in equation (4). Under some specific conditions, there will be an additional effect of household heads' unemployment on total unemployment through the channel of AWE. This can be expected because the share of the spouse's population (the ones with partners who are unemployed) present an important boost in participation. Some of this increase in labor supply will not be absorbed by the market, and because of this reason unemployment can increase. In a comparative statics exercise using equation (4), we can find the impact that the AWE has on global unemployment. Table 20 summarizes the parameters $S, H, \theta_H, \theta_S, \mu_S, \mu_H$ observed in the

sample used in the estimation of equation 1.

As can be seen from last term of equation (4) the AWE has a positive impact on marginal unemployment, as long as the terms $(\mu_S - \mu_H) > 0$ and $\beta_0 > 0$. That should be the case because changes in the unemployment status of the household heads generates an increase in the participation rate of their spouses, but, given that the spouses' unemployment rate is higher than the one of the household head, this increase in the participation rate is not absorbed by the labor market. Therefore, unemployment rises.

Table 20. Parameters from the Sample

Parameter/Population	Household Heads	Spouses	Total
Population	11046	7435	18481
Employed	8420	3074	11494
Unemployed	638	487	1125
PEA	9058	3561	12619
participation rate	82%	48%	68%
unemployment rate	7%	14%	9%

In this exercise we simulate a symmetric increase of 1 percentage point in unemployment of spouses and household heads. We compute the last term of equation (4) with the parameters summarized in Table 20. For a symmetrical increase in unemployment of 1 percentage, there will be an additional increase in unemployment of 0.01 percentage points (this account for just a 1pp of the total change in the whole unemployment rate, produced by the symmetrical increase in unemployment of spouses and household heads).

This shows that even though the AWE can represent a substantial increase in the participation of spouses in the labor market, the impact of the AWE on total unemployment can be small. This is the case because the AWE only affects a small share of the population, in this exercise the 7% of spouses of unemployed household heads. Furthermore, theoretically it can be possible that the impact of AWE on unemployment is positive, in the case $(\mu_S - \mu_H) < 0$, however this is not usually the case because the unemployment of household heads is lower than total unemployment in the economy.

Even though the AWE estimated for urban labor market during 2008-2010 is important, an increment of 20 percentage points in spouses' participation implies a small increase in the global unemployment rate of the economy. This conclusion should be interpreted cautiously because in both cases this interpretation is limited to a marginal ceteris paribus effect, which ignores dynamic or general equilibrium effects. For example, we are not taking into account that the rate at which people find a job

may change during period of crisis. Then, when the spouses' of the household head increase their participation, the job creation is low; this may imply a higher effect in the whole unemployment rate. Moreover, this estimation is taking into account just the respond of spouses, while we find evidence that other members of the family may respond with son lag. In this way our estimation is a lower bound of the AWE.

9. Concluding remarks

This study analyzes how the labor supply of different household members changes when the household head faces an unemployment event. Our study contributes to the previous literature by providing evidence about the added worker effect using longitudinal information for the Colombian case and, simulates how the changes in participation rate contributes to the increase in the unemployment rate.

After controlling for individual heterogeneity and exploiting the longitudinal component of our survey, our results suggest that wives respond immediately to an event of unemployment of the household head, increasing their participation rate in 20 ppts (or in 36%). The magnitude of the effect observed among female partners is similar to the effect found for Brazil by Fernandes et al., (2005) who found an increase in wives labor supply between 37% and 74% (Fernandes et al., 2005).

Sons and daughters do also respond to the unemployment of the household head by increasing their probability of participating in the labour market one year later (increasing their participation rate in 15 ppts). Moreover, sons and daughters under tertiary education age, reduce their probability of being studying after 6-12 months of the unemployment of the household head. By gender, our results suggest that the boys under age of being in tertiary education are the ones increasing their labor force participation rate.

We also found that the response is even higher for those households whose household head is low educated, and the effect was higher for sons/daughters during the previous economic crisis. This result provide evidence of the existence of liquidity constraints in Colombian households in the short run in contrast to what was observed for developed countries, where the AWE is lower and occur one year after the unemployment event. These results are not surprising given that in the case of Colombia the households are not protected against the risk of unemployment, as it is the case of developed economies, where workers received an unemployment benefit when they lose their jobs.

Moreover, using a simple static model that explains the unemployment rate, we found that the AWE

and the increase in the participation rate observed among female partners or wives represent a very subtle contribution to the increase in the general unemployment rate of the economy. This is an expected result because even the magnitude of the AWE is considerable (20 ppts) it only affects the population of female partners with an unemployed husband, which in our sample is only 7% of the population of wives. However, these results are lower bound estimation given that we are not taking into account the respond of other members of the family, and additionally general equilibrium effects.

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Tables

Table 1. Number of Households interviewed per city and year

Municipality included in the sample	2004	2005	2006	2007	2008	2009	2010
Bogotá	765	765	765	765	1100	1090	1089
Cali	550	550	550	550	1100	1100	1100
Bucaramanga	550	550	550	550	1108	458	78
Medellín					506	383	377
Barranquilla					330	228	214
Manizales					70	68	69
Pereira					46	38	38
Cartagena					73	73	73
Cúcuta					49	49	48
Montería					25	25	25
Ibagué					41	41	41
Villavicencio					31	31	32
Pasto					27	27	27
Soacha						10	11
Floridablanca						109	22
Bello						60	62
Envigado						35	36
Itagüí						28	27
Soledad						102	115
Dosquebradas						8	8
Total	1865	1865	1865	1865	4506	3963	3492

Source: Ayala, et al., (2011). Social Longitudinal Survey (ESLF 2004-2010)

Table 2. Number of Households interviewed per Socio Economic Strata.

	Low Social Strata	Middle Social Strata	High Social Strata	Total
2004	693	1017	155	1865
2005	686	1023	152	1865
2006	686	1023	156	1865
2007	736	949	180	1865
2008	2070	2005	431	4506
2009	1861	1678	424	3963
2010	1667	1473	352	3492

Source: Ayala, et al., (2011). Social Longitudinal Survey (ESLF 2004-2010)

Table 3. % of Household that were followed up

	2005	2006	2007	2008	2009	2010
Same Household, same house	85%	72%	58%	69%	72%	71%
Same Household, different house	6,5%	4,1%	3,7%	5,1%	4,9%	4,7%
New Household, new house	1,5%	1,4%	0,6%	2,6%	2,1%	1,2%
New Household, different house	7,0%	22,9%	37,3%	22,7%	21,2%	23,4%

Source: Ayala, et al., (2011). Social Longitudinal Survey (ESLF 2004-2010)

Table 4. Household head characteristics by unemployment status

Household head characteristics	Pooled data			Balanced panel 2007-2010			Balanced panel 2008-2010		
	Continuously employed	Became unemployed	Diff. (in ppt)	Continuously employed	Became unemployed	Diff. (in ppt)	Continuously employed	Became unemployed	Diff. (in ppt)
Age	43.92	46.94	-3.02***	46.29	48.69	-2.40**	45.13	47.16	-2.03***
Years of education	9.65	8.34	1.31***	9.02	8.88	0.15	9.31	8.62	0.69**
Secondary incomplete	24%	23%	0	26%	25%	0.01	26%	22%	0.03
Secondary complete	30%	26%	0.03	27%	30%	-0.02	28%	28%	0
Technical studies	8%	5%	0.03*	5%	6%	-0.01	8%	6%	0.02
University/Degree studies	13%	9%	0.05***	11%	9%	0.02	11%	10%	0.01
Experience	29.15	33.41	-4.25***	32.27	34.82	-2.55**	30.82	33.54	-2.72***
No labor income (real)	114,057	139,991	(25,934)	121,329	193,806	-72477.11*	102,020	174,343	-72322.40***
Sisben 0, 1	49%	46%	0.02	38%	31%	0.08	50%	43%	0.06
Sisben 2	40%	42%	-0.02	52%	61%	-0.1	40%	48%	-0.07
Sisben 3	10%	11%	-0.01	10%	8%	0.02	10%	9%	0.01
Strata 1	19%	26%	-0.08***	15%	31%	-0.16***	22%	31%	-0.08***
Strata 2	33%	34%	-0.01	43%	43%	0	37%	37%	-0.01
Strata 3	30%	31%	-0.01	30%	19%	0.11**	29%	24%	0.04
Strata 4	10%	5%	0.05***	7%	5%	0.02	7%	4%	0.04**
Real income percapita	462,721	178,112	284609.55***	402,890	208,889	194000.16***	389,535	185,727	203808.56***
Total real income in the household	1,750,109	679,381	1070728.36***	1,649,101	847,934	801166.75***	1,623,920	760,460	863459.98**
Household size	4.32	4.37	-0.06	4.62	4.6	0.01	4.51	4.66	-0.15
Having kids <1 year old	11%	12%	-0.01	9%	14%	-0.05	10%	13%	-0.02
Having kids <5 years old	32%	29%	0.04	30%	24%	0.06	30%	28%	0.02
Having kids between 6 and 17 years old	61%	60%	0.01	67%	67%	0	64%	68%	-0.04
People older than 60 years old	19%	29%	-0.10***	26%	39%	-0.13***	21%	32%	-0.11***
House ownership	55%	59%	-0.04*	66%	74%	-0.08	62%	65%	-0.03
Rented house	40%	32%	0.08***	29%	19%	0.10**	32%	26%	0.06*
Number of rooms in the hhold	2.54	2.44	0.10*	2.62	2.36	0.26**	2.54	2.39	0.15**
Number of unemployed individuals in the hhold	0.16	1.05	-0.89***	0.19	1.2	-1.02***	0.2	1.15	-0.95***
Having a car	20%	7%	0.13***	15%	3%	0.12***	16%	6%	0.11***
Having mobile phone	93%	86%	0.06***	89%	83%	0.06*	92%	87%	0.05**
Having internet	31%	17%	0.14***	28%	16%	0.12**	29%	18%	0.11***
Observations			6715			1260			3248

Notes: *, **, and *** corresponds to 10%, 5% and 1% level of significance respectively. Author's own calculations with the information contained in the Social Longitudinal Study (ESLF 2008-2010).

Table 5. Spouse characteristics by unemployment status of the household head

Spouse Characteristics	Pooled data			Balanced panel 2007-2010			Balanced panel 2008-2010		
	Husband continuously employed	Husband became unemployed	Diff. (in ppt)	Husband continuously employed	Husband became unemployed	Diff. (in ppt)	Husband continuously employed	Husband became unemployed	Diff. (in ppt)
Labour force participation	52%	55%	-0.03	53%	60%	-0.07	51%	57%	-0.06*
Student	1%	1%	0.01	1%	1%	-0.01	1%	1%	0
Household chores	58%	62%	-0.03	57%	60%	-0.03	61%	61%	-0.01
Disabled	1%	1%	0	1%	0%	0.01	1%	0%	0
Working	46%	42%	0.04	48%	46%	0.02	43%	42%	0.01
Age	40.54	43.81	-3.27***	43.34	46.19	-2.85**	41.82	44.18	-2.35***
Years of education	9.39	8.08	1.32***	8.62	7.87	0.75	8.9	7.88	1.02***
Secondary incomplete	24%	31%	-0.07***	28%	37%	-0.10*	27%	37%	-0.10***
Secondary complete	32%	22%	0.10***	28%	17%	0.11*	29%	16%	0.13***
Technical studies	8%	6%	0.02	6%	6%	0.01	7%	7%	0
University/Degree studies	10%	6%	0.04**	6%	4%	0.02	8%	5%	0.02
Having kids <1 year old	12%	14%	-0.02	10%	16%	-0.06	11%	14%	-0.03
Having kids <5 years old	34%	32%	0.02	32%	26%	0.06	32%	30%	0.02
Having kids between 6 and 17 years old	64%	66%	-0.02	69%	73%	-0.04	67%	72%	-0.05

No labor income (real)	110,092	137,919	(27,827)	110,641	197,507	-86865.87*	102,345	167,648	-65303.68**
Household head experience	29.24	34.1	-4.86***	32.58	35.6	-3.02**	30.88	34.36	-3.47***
Household head education	9.55	8.11	1.44***						
Years of education	24%	24%	0	8.86	8.89	-0.03	9.23	8.4	0.83***
Secondary incomplete	29%	24%	0.05*	28%	30%	-0.02	27%	24%	0.03
Secondary complete	8%	5%	0.03*	27%	27%	-0.01	28%	27%	0
Technical studies	13%	9%	0.04**	4%	3%	0.01	7%	4%	0.03*
College/degree	0.17	1.07	-0.90***	10%	11%	-0.01	11%	10%	0.01
Number of unemployed individuals in the hhold	431,627	174,143	257483.67***	19%	121%	-1.02***	20%	115%	-0.95***
Real income percapita	1,748,559	712,104	1036455.66***	391,802	218,494	173307.60***	378,594	179,925	198669.18***
Total real income in the household	19%	27%	-0.08***	1,667,245	950,422	716823.94***	1,653,911	778,046	875864.61**
Strata 1	34%	35%	-0.01	15%	31%	-0.16***	23%	33%	-0.10***
Strata 2	30%	30%	-0.01	44%	43%	0.01	37%	37%	0
Strata 3	10%	4%	0.05***	30%	19%	0.11**	28%	23%	0.05
Strata 4	55%	60%	-0.05*	7%	6%	0.01	7%	4%	0.03*
House ownership	2.56	2.46	0.10*	66%	73%	-0.07	63%	64%	-0.02
Number of rooms in the hhold	20%	7%	0.13***	2.64	2.33	0.31**	2.55	2.41	0.14**
Having a car	93%	87%	0.05***	16%	3%	0.13***	16%	5%	0.11***
Having mobile phone	31%	19%	0.12***	89%	81%	0.07*	92%	88%	0.04*
Having internet	28%	26%	0.02	28%	17%	0.11**	29%	18%	0.12***
Local unemployment rate				15%	17%	-0.02	18%	17%	0.01
Observations			6143			1166			3044

Notes: *, **, and *** corresponds to 10%, 5% and 1% level of significance respectively. Author's own calculations with the information contained in the Social Longitudinal Study (ESLF 2008-2010).

Table 6. Sons and daughters characteristics by unemployment status of the household head.

Sons/Daughter characteristics	Pooled data			Balanced panel 2007-2010			Balanced panel 2008-2010		
	Household head Continuously employed	Household head Became unemployed	Diff. (in ppt)	Household head Continuously employed	Household head Became unemployed	Diff. (in ppt)	Household head Continuously employed	Household head Became unemployed	Diff. (in ppt)
Labour force participation	60%	67%	-0.08***	65%	73%	-0.08	60%	68%	-0.08**
Student	36%	26%	0.10***	32%	20%	0.12**	36%	24%	0.12***
Household chores	12%	11%	0.01	11%	9%	0.02	12%	13%	-0.01
Disabled	1%	1%	0	2%	4%	-0.02	1%	2%	-0.01
Working	45%	46%	-0.01	49%	55%	-0.05	44%	44%	0
Age	21.12	20.91	0.21	21.09	20.9	0.19	21.05	20.74	0.31*
Years of education	11.61	10.64	0.97***	11.41	10.17	1.24***	11.46	10.24	1.22***
Secondary incomplete	14%	21%	0.07***	14%	22%	-0.08**	16%	27%	0.12***
Secondary complete	68%	62%	0.06**	72%	62%	0.09*	68%	57%	0.10***
Technical studies	8%	7%	0.01	7%	5%	0.03	8%	6%	0.02
University/Degree studies	5%	2%	0.03***	3%	1%	0.01	4%	1%	0.03**
Experience	4.53	5.28	-0.75***	4.68	5.73	-1.05**	4.6	5.5	0.90***
Observations			3939			838			2043

Table 7. Labor Force Participation of Wife/Partner

	Pooled OLS				Panel FE Contemporaneous Effect		Panel FE + Lagged Effect		Panel FE Duration of the Effect	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Hhold Head unemployed	0.09*** (0.03)	0.09*** (0.03)	0.11*** (0.04)	0.11** (0.04)	0.09*** (0.03)	0.09*** (0.03)	0.20*** (0.06)	0.20*** (0.06)		
Hhold Head unemployed(t-1)			0.02 (0.04)	0.01 (0.04)			0.09 (0.06)	0.08 (0.06)		
Hhold Head unemployment*Hhead unemployment(t-1)			-0.05 (0.10)	-0.05 (0.10)			-0.09 (0.11)	-0.08 (0.11)		
<i>Unemployment Head Duration</i>										
0-3 months									0.11** (0.05)	0.10** (0.05)
3-6 months									0.17* (0.09)	0.18** (0.09)
6-9 months									0.02 (0.15)	0.05 (0.15)
9-12 months									0.05 (0.10)	0.04 (0.10)
12-18 months									0.06 (0.31)	0.07 (0.31)
18-24 months									0.02 (0.22)	-0.01 (0.23)
More than 2 years									-0.42	-0.43
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	5970	5970	2666	2666	5970	5970	2666	2666	5970	5970

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head and its respective categories as previously mentioned above. The unemployment duration categories must be read in contrast to households with employed head.

Table 8. Labor Force Participation of Other Family Members

	Contemporaneous Effect		Lagged Effect		Duration Effect	
	(1)	(2)	(3)	(4)	(5)	(6)
Hhold Head unemployed	-0.01 (0.01)	-0.01 (0.01)	0.03 (0.02)	0.03 (0.02)		
Hhold Head unemployed(t-1)			0.05** (0.02)	0.05** (0.02)		
Hhold Head unemployment*Hhead unemployment(t-1)			-0.00 (0.04)	-0.01 (0.04)		
<i>Unemployment Head Duration</i>						
0-3 months					-0.00 (0.02)	-0.01 (0.02)
3-6 months					-0.01 (0.04)	-0.01 (0.04)
6-9 months					-0.05 (0.06)	-0.05 (0.06)
9-12 months					0.00 (0.03)	-0.00 (0.03)
12-18 months					-0.01 (0.09)	-0.04 (0.09)
18-24 months					0.03 (0.06)	0.05 (0.06)
More than 2 years					0.10 (0.09)	0.09 (0.09)
Duration not reported					-0.03 (0.02)	-0.03 (0.02)
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	22160	22160	9404	9404	22160	22160

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. See notes from Table 7.

Table 9. Labor Force Participation of Sons/Daughters >18

	Contemporaneous Effect		Lagged Effect		Duration Effect	
	(1)	(2)	(3)	(4)	(5)	(6)
Hhold Head unemployed	0.01	0.00	0.14**	0.14**		
	(0.03)	(0.03)	(0.07)	(0.07)		
Hhold Head unemployed(t-1)			0.12*	0.13*		
			(0.07)	(0.07)		
Hhold Head unemployment*Hhead unemployment(t-1)			-0.00	-0.03		
			(0.12)	(0.12)		
<i>Unemployment Head Duration</i>						
0-3 months					-0.01	-0.02
					(0.05)	(0.05)
3-6 months					-0.06	-0.06
					(0.10)	(0.10)
6-9 months					-0.10	-0.09
					(0.18)	(0.18)
9-12 months					0.02	0.03
					(0.07)	(0.07)
12-18 months					-0.30	-0.31
					(0.49)	(0.49)
18-24 months					0.40**	0.41**
					(0.17)	(0.17)
More than 2 years					0.08	0.08
					(0.19)	(0.19)
Duration not reported					0.05	0.04
					(0.06)	(0.06)
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	5483	5483	2475	2475	5483	5483

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. See notes from Table 7.

Table 10. Probability of Study for Sons/Daughters 18-25 years old

	ALL				WOMEN				MEN			
	Lagged Effect		Duration Effect		Lagged Effect		Duration Effect		Lagged Effect		Duration Effect	
	(3)	(4)	(5)	(6)	(3)	(4)	(5)	(6)	(3)	(4)	(5)	(6)
Hhold Head unemployed	0.12	0.11			0.07	0.09			0.25	0.20		
	(0.09)	(0.09)			(0.10)	(0.11)			(0.17)	(0.17)		
Hhold Head unemployed(t-1)	0.09	0.11			0.08	0.10			0.08	0.09		
	(0.10)	(0.10)			(0.12)	(0.12)			(0.17)	(0.17)		
Hhold Head unemployment*Hhead unemployment(t-1)	0.05	0.03			-0.03	-0.06			0.11	0.10		
	(0.14)	(0.14)			(0.18)	(0.18)			(0.24)	(0.24)		
<i>Unemployment Head Duration</i>												
0-3 months			-0.04	-0.05			0.02	0.01			-0.09	-0.11
			(0.06)	(0.06)			(0.08)	(0.08)			(0.09)	(0.09)
3-6 months			-0.05	-0.05			-0.12	-0.12			0.11	0.11
			(0.12)	(0.12)			(0.15)	(0.14)			(0.21)	(0.21)
6-9 months			-0.16	-0.15			-0.14	-0.14			-0.26	-0.26
			(0.19)	(0.19)			(0.21)	(0.21)			(0.44)	(0.45)
9-12 months			0.07	0.08			0.20	0.21			-0.19	-0.18
			(0.11)	(0.11)			(0.14)	(0.14)			(0.21)	(0.22)
12-18 months			-0.40	-0.39							-0.26	-0.27
			(0.53)	(0.53)							(0.56)	(0.56)
18-24 months			0.41**	0.43**			0.39	0.43			0.44*	0.44*
			(0.19)	(0.19)			(0.31)	(0.31)			(0.25)	(0.25)
More than 2 years			0.08	0.08			0.16	0.16			0.02	0.02
			(0.21)	(0.21)			(0.32)	(0.32)			(0.29)	(0.29)
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	1771	1771	3797	3797	914	914	1947	1947	857	857	1850	1850

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. See notes from Table 7.

Table 11. Probability of Study for Sons/Daughters >18

	Contemporaneous Effect		Lagged Effect		Duration Effect	
	(1)	(2)	(3)	(4)	(5)	(6)
Hhold Head unemployed	-0.03	-0.02	-0.03	-0.02		
	(0.03)	(0.03)	(0.06)	(0.06)		
Hhold Head unemployed(t-1)			-0.06	-0.06		
			(0.06)	(0.06)		
Hhold Head unemployment*Hhead unemployment(t-1)			0.03	0.02		
			(0.10)	(0.10)		
<i>Unemployment Head Duration</i>						
0-3 months					-0.02	-0.01
					(0.04)	(0.04)
3-6 months					-0.06	-0.05
					(0.09)	(0.09)
6-9 months					-0.06	-0.06
					(0.16)	(0.16)
9-12 months					-0.03	-0.03
					(0.07)	(0.07)
12-18 months					0.37	0.36
					(0.45)	(0.45)
18-24 months					-0.07	-0.08
					(0.16)	(0.16)
More than 2 years					0.15	0.15
					(0.18)	(0.18)
Duration not reported					-0.05	-0.05
					(0.05)	(0.05)
<i>Individual Variables</i>						
	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>						
	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	5483	5483	2475	2475	5483	5483

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head and its respective categories as previously mentioned above. The unemployment duration categories must be read in contrast to households with employed head.

Table 12. Probability of Study for Sons/Daughters between 18 and 25 years old

	Contemporaneous Effect		Lagged Effect		Duration Effect	
	(1)	(2)	(3)	(4)	(5)	(6)
Hhold Head unemployed	-0.00	0.00	-0.07	-0.05		
	(0.04)	(0.04)	(0.08)	(0.08)		
Hhold Head unemployed(t-1)			-0.15*	-0.15*		
			(0.09)	(0.09)		
Hhold Head unemployment*Hhead unemployment(t-1)			0.10	0.08		
			(0.13)	(0.13)		
<i>Unemployment Head Duration</i>						
0-3 months					0.02	0.03
					(0.06)	(0.06)
3-6 months					-0.10	-0.09
					(0.12)	(0.12)
6-9 months					-0.00	-0.00
					(0.19)	(0.19)
9-12 months					-0.13	-0.13
					(0.11)	(0.11)
12-18 months					0.50	0.50
					(0.51)	(0.51)
18-24 months					-0.10	-0.11
					(0.18)	(0.18)
More than 2 years					0.17	0.18
					(0.21)	(0.21)
<i>Individual Variables</i>						
	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>						
	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	3797	3797	1771	1771	3797	3797

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head and its respective categories as previously mentioned above. The unemployment duration categories must be read in contrast to households with employed head.

Table 13. Labor Force Participation of Wife/Partner (balanced panel)

	Contemporaneous Effect		Lagged Effect		Duration Effect	
	(1)	(2)	(3)	(4)	(5)	(6)
Hhold Head unemployed	0.10***	0.10***	0.20***	0.20***		
	(0.03)	(0.03)	(0.06)	(0.06)		
Hhold Head unemployed(t-1)			0.09	0.08		
			(0.06)	(0.06)		
Hhold Head unemployment*Hhead unemployment(t-1)			-0.09	-0.08		
			(0.11)	(0.11)		
<i>Unemployment Head Duration</i>						
0-3 months					0.11**	0.10**
					(0.05)	(0.05)
3-6 months					0.21**	0.21**
					(0.09)	(0.09)
6-9 months					0.03	0.03
					(0.16)	(0.16)
9-12 months					0.05	0.05
					(0.10)	(0.10)
12-18 months					0.07	0.07
					(0.31)	(0.31)
18-24 months					0.03	0.03
					(0.22)	(0.22)
More than 2 years					-0.42	-0.42
					(0.45)	(0.45)
Duration not reported					0.07	0.07
					(0.06)	(0.06)
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	3967	3967	2470	2470	3967	3967

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head and its respective categories as previously mentioned above. The unemployment duration categories must be read in contrast to households with employed head.

Table 14. Labor Force Participation of Other Family Members (balanced panel)

	Contemporaneous Effect		Lagged Effect		Duration Effect	
	(1)	(2)	(3)	(4)	(5)	(6)
Hhold Head unemployed	-0.01	-0.01	0.03	0.03		
	(0.01)	(0.01)	(0.02)	(0.02)		
Hhold Head unemployed(t-1)			0.05**	0.05**		
			(0.02)	(0.02)		
Hhold Head unemployment*Hhead unemployment(t-1)			-0.00	-0.01		
			(0.04)	(0.04)		
<i>Unemployment Head Duration</i>						
0-3 months					-0.01	-0.02
					(0.02)	(0.02)
3-6 months					-0.01	-0.01
					(0.04)	(0.04)
6-9 months					0.02	0.02
					(0.07)	(0.07)
9-12 months					0.01	0.00
					(0.03)	(0.03)
12-18 months					-0.01	-0.03
					(0.10)	(0.10)
18-24 months					0.11	0.13*
					(0.07)	(0.07)
More than 2 years					0.10	0.10
					(0.09)	(0.09)
Duration not reported					-0.03	-0.02
					(0.02)	(0.02)
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	14690	14690	8728	8728	14690	14690

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head and its respective categories as previously mentioned above. The unemployment duration categories must be read in contrast to households with employed head.

Table 15. Probability of Study for Sons/Daughters >18 (balanced panel)

	Contemporaneous Effect		Lagged Effect		Duration Effect	
	(1)	(2)	(3)	(4)	(5)	(6)
Hhold Head unemployed	-0.05	-0.05	-0.03	-0.02		
	(0.03)	(0.03)	(0.06)	(0.06)		
Hhold Head unemployed(t-1)			-0.06	-0.06		
			(0.06)	(0.06)		
Hhold Head unemployment*Hhead unemployment(t-1)			0.03	0.02		
			(0.10)	(0.10)		
<i>Unemployment Head Duration</i>						
0-3 months					-0.02	-0.02
					(0.04)	(0.04)
3-6 months					-0.07	-0.06
					(0.09)	(0.09)
6-9 months					-0.44**	-0.45**
					(0.19)	(0.19)
9-12 months					-0.06	-0.06
					(0.07)	(0.07)
12-18 months					0.36	0.36
					(0.45)	(0.45)
18-24 months					-0.11	-0.11
					(0.16)	(0.16)
More than 2 years					0.15	0.15
					(0.18)	(0.18)
Duration not reported					-0.07	-0.06
					(0.06)	(0.06)
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	3730	3730	2293	2293	3730	3730

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head and its respective categories as previously mentioned above. The unemployment duration categories must be read in contrast to households with employed head.

Table 16. Probability of Study for Sons/Daughters between 18 and 25 years old (balanced panel)

	Contemporaneous Effect		Lagged Effect		Duration Effect	
	(1)	(2)	(3)	(4)	(5)	(6)
Hhold Head unemployed	-0.04	-0.03	-0.07	-0.05		
	(0.05)	(0.05)	(0.08)	(0.08)		
Hhold Head unemployed(t-1)			-0.15*	-0.15*		
			(0.09)	(0.09)		
Hhold Head unemployment*Hhead unemployment(t-1)			0.10	0.08		
			(0.13)	(0.13)		
<i>Unemployment Head Duration</i>						
0-3 months					0.01	0.02
					(0.06)	(0.06)
3-6 months					-0.11	-0.11
					(0.12)	(0.12)
6-9 months					-0.40*	-0.40*
					(0.22)	(0.22)
9-12 months					-0.20*	-0.20*
					(0.11)	(0.11)
12-18 months					0.49	0.48
					(0.51)	(0.51)
18-24 months					-0.16	-0.16
					(0.18)	(0.18)
More than 2 years					0.16	0.17
					(0.20)	(0.20)
Duration not reported					-0.01	-0.00
					(0.08)	(0.08)
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	2608	2608	1641	1641	2608	2608

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head and its respective categories as previously mentioned above. The unemployment duration categories must be read in contrast to households with employed head.

Table 17. Labor Force Participation of Female Partner by education level of the household head

	Low Educated Husbands				High Educated Husbands			
	Lagged Effect		Duration of the Effect		Lagged Effect		Duration of the Effect	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Hhold Head unemployed	0.22*** (0.07)	0.22*** (0.07)			-0.01 (0.10)	-0.01 (0.10)		
Hhold Head unemployed(t-1)	0.09 (0.06)	0.08 (0.06)			-0.01 (0.10)	-0.01 (0.10)		
Hhold Head unemployment* Hhead unemployment(t-1)	-0.06 (0.12)	-0.06 (0.12)			-0.12 (0.18)	-0.12 (0.18)		
0-3 months			0.13** (0.05)	0.13** (0.05)			-0.00 (0.09)	0.00 (0.09)
3-6 months			0.22** (0.11)	0.22** (0.11)			-0.04 (0.09)	-0.05 (0.09)
6-9 months			0.02 (0.18)	0.02 (0.18)			-0.01 (0.18)	-0.02 (0.18)
9-12 months			0.06 (0.11)	0.06 (0.11)			-0.01 (0.10)	-0.02 (0.10)
12-18 months			0.02 (0.47)	0.01 (0.47)			-0.07 (0.21)	-0.08 (0.21)
18-24 months			0.02 (0.32)	0.03 (0.32)			0.04 (0.21)	0.00 (0.21)
More than 2 years			-0.40 (0.46)	-0.41 (0.46)			0.24 (0.20)	0.24 (0.20)
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	2158	2158	4772	4772	1535	1535	3759	3759

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head The unemployment duration categories must be read in contrast to households with employed head.

Tabla 18. Labor Force Participation of Sons/Daughters above 18 years old with Household Head with Low Education

	Sons/Daughters above 18 years old				Sons/Daughters 18-25 years old			
	(1) All households	(2) All households	(3) Households Household head without higher education	(4) Households Household head without higher education	(5) All households	(6) All households	(7) Households Household head without higher education	(8) Households Household head without higher education
Household head Unemployed	0.13** (0.06)	0.10* (0.06)	0.14** (0.06)	0.10 (0.06)	0.12 (0.07)	0.10 (0.08)	0.09 (0.08)	0.06 (0.08)
Household head Unemployed (t-1)	0.12** (0.06)	0.14** (0.06)	0.16*** (0.06)	0.20*** (0.07)	0.12 (0.08)	0.15* (0.08)	0.16** (0.08)	0.22** (0.09)
Household head Unemployed*Year2008		0.22* (0.13)		0.29** (0.13)		0.23 (0.17)		0.37** (0.18)
Household head Unemployed(t-1)*Y2008		-0.07 (0.13)		-0.12 (0.14)		-0.09 (0.17)		-0.21 (0.18)
year== 8.0000	0.04 (0.07)	0.03 (0.07)			0.06 (0.11)	0.06 (0.11)	0.10 (0.12)	0.09 (0.12)
year== 9.0000	-0.03 (0.04)	-0.03 (0.04)	-0.10* (0.05)	-0.08* (0.05)	-0.03 (0.05)	-0.03 (0.05)	-0.01 (0.06)	-0.01 (0.06)
Age	0.21*** (0.07)	0.21*** (0.07)	0.27*** (0.08)	0.27*** (0.08)	0.42** (0.20)	0.42** (0.20)	0.54** (0.22)	0.56** (0.22)
Age2	-0.00** (0.00)	-0.00** (0.00)	-0.00** (0.00)	-0.00** (0.00)	-0.01* (0.00)	-0.01* (0.00)	-0.01** (0.00)	-0.01** (0.00)
Years of education	-0.01 (0.01)	-0.01 (0.01)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)	-0.04** (0.02)	-0.04** (0.02)
Secondary Education – incomplete-	-0.05 (0.14)	-0.05 (0.14)	0.03 (0.14)	0.03 (0.14)	0.11 (0.18)	0.10 (0.18)	0.24 (0.19)	0.23 (0.19)
Secondary Education – complete-	-0.03 (0.16)	-0.02 (0.16)	0.10 (0.16)	0.11 (0.16)	0.15 (0.21)	0.14 (0.21)	0.34 (0.22)	0.33 (0.22)
Technical	0.15 (0.18)	0.15 (0.18)	0.26 (0.18)	0.27 (0.18)	0.35 (0.23)	0.35 (0.23)	0.54** (0.24)	0.54** (0.24)
Higher education	0.23 (0.19)	0.23 (0.19)	0.37* (0.21)	0.38* (0.21)	0.43* (0.26)	0.44* (0.26)	0.71** (0.28)	0.72*** (0.28)
Dummy children with 1 year	-0.04 (0.06)	-0.04 (0.06)	-0.06 (0.06)	-0.05 (0.06)	-0.02 (0.07)	-0.02 (0.07)	-0.03 (0.08)	-0.03 (0.08)
Dummy children with 5 years	0.04 (0.06)	0.04 (0.06)	0.06 (0.06)	0.05 (0.06)	0.01 (0.07)	0.01 (0.07)	0.04 (0.08)	0.03 (0.08)
Dummy children with 6 to 17 years	0.04 (0.05)	0.03 (0.05)	0.03 (0.06)	0.02 (0.06)	0.03 (0.06)	0.02 (0.06)	0.02 (0.07)	0.01 (0.07)
Total real non-labor income	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Household head experience	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.01 (0.02)	-0.01 (0.02)
Household head years of education	0.04 (0.04)	0.04 (0.04)	0.05 (0.04)	0.06 (0.04)	0.00 (0.04)	0.01 (0.04)	0.01 (0.05)	0.02 (0.05)
Household head without Completing secondary education	-0.31 (0.25)	-0.31 (0.25)	-0.40 (0.26)	-0.42 (0.26)	-0.14 (0.27)	-0.16 (0.28)	-0.24 (0.29)	-0.27 (0.29)
Household head secondary education	-0.86** (0.34)	-0.87** (0.34)	-1.10*** (0.37)	-1.13** (0.37)	-0.71* (0.41)	-0.74* (0.41)	-0.92** (0.45)	-0.97** (0.46)
Household head with technical education	-0.55 (0.41)	-0.58 (0.41)			-0.24 (0.48)	-0.28 (0.48)		
Household head with higher education	-0.87 (0.53)	-0.91* (0.53)			-0.91 (0.64)	-0.97 (0.64)		
Local Unemployment	0.12** (0.06)	0.12** (0.06)	0.08 (0.07)	0.08 (0.07)	0.11 (0.07)	0.11 (0.07)	0.05 (0.08)	0.05 (0.08)
Constant	-2.57** (1.26)	-2.60** (1.27)	-3.29** (1.39)	-3.30** (1.39)	-4.42* (2.40)	-4.50* (2.40)	-5.68** (2.67)	-5.89** (2.66)
Observations	2475	2475	2032	2032	1771	1771	1448	1448

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head and its respective categories as previously mentioned above. The unemployment duration categories must be read in contrast to households with employed head.

Table 19. Labor Force Participation of Wife/Partner (balanced panel 2007-2010: including the crisis period)

	Pooled OLS				Panel FE Contemporaneous Effect		Panel FE + Lagged Effect		Panel FE Duration of the Effect	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Hhold Head unemployed	0.10*	0.10*	0.17**	0.15**	0.13**	0.13**	0.28***	0.28***		
	(0.06)	(0.06)	(0.07)	(0.08)	(0.06)	(0.06)	(0.08)	(0.08)		
Hhold Head unemployed(t-1)			0.07	0.07			0.19**	0.19**		
			(0.08)	(0.08)			(0.09)	(0.09)		
Hhold Head unemployment* Hhead unemployment(t-1)			-0.28	-0.24			-0.24	-0.23		
			(0.17)	(0.17)			(0.19)	(0.19)		
Household head experience		-0.01***		-0.01**		-0.03		-0.02		-0.02
		(0.00)		(0.00)		(0.04)		(0.04)		(0.04)
Household year years of education		-0.06***		-0.07***		-0.02		-0.01		-0.02
		(0.01)		(0.02)		(0.04)		(0.07)		(0.04)
Unemployment Head Duration										
0-3 months									0.03	0.04
									(0.08)	(0.08)
3-6 months									0.41***	0.41***
									(0.13)	(0.13)
6-9 months									0.40	0.40
									(0.44)	(0.44)
9-12 months									0.18	0.18
									(0.16)	(0.16)
12-18 months									0.28	0.28
									(0.43)	(0.43)
18-24 months									0.48	0.48
									(0.44)	(0.44)
More than 2 years									0.00	0.00
<i>Individual Variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Household Head Education Variables</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Observations	1166	1166	823	823	1166	1166	823	823	1166	1166

Notes: Standard Errors are shown in parenthesis. *, **, and *** corresponds to 10%, 5% and 1% level of significance, respectively. The sample used exclude households whose head is not participating in the labour market. Individual Variables includes age, age squared, years of education and the following education categories: Secondary, Technic Education, University or its equivalent. It also includes presence of kids of different ages and Household total income. The Household Head Education variables include the years of education of the household head and its respective categories as previously mentioned above. The unemployment duration categories must be read in contrast to households with employed head.

