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# MOTHERHOOD AND ELDERCARE PENALTIES. EVIDENCE FROM POLAND

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**ABSTRACT**. Care providers face many constraints which limit their ability to compete on labor market. Therefore, they either give up their jobs, or limit their work time, or they look for a caregiver's friendly job which usually assumes low wages. The negative effect of providing care on caregiver's wages is called care penalty. In developed countries, with relatively high percentage of female employees and population aged 65 and above, governments formulate a social policy which is to help individuals and households providing care, and to keep labor force supply on a certain level. The solutions essentially differ among states. This study aims to find out the evidence of care penalty among Polish employees. Investigation is provided applying econometric analysis using the microdata originated from the Polish Labour Force Survey. The presented research proves that motherhood and eldercare penalties exist in Poland and mostly women are penalized. This is evidenced by the negative and significant impact of the variables describing the number of unemployed children and elderly persons on monthly salaries and working hours in the models estimated for female employees, and the insignificant influence of these variables in the models estimated for male employees.

***JEL Classification:*** J16, J21, J31.

***Keywords***: labor market, wages, worktime, motherhood penalty, eldercare penalty.

## Introduction

Caregivers lose personal time or money while providing care to children, the elderly, handicapped or sick. It is also proved that caregivers miss out experiences on work and they have many constraints which limit a person's ability to compete with those who do not have to provide such care. The negative effect of providing care on caregiver's wages is called the care penalty. The primary care providers for children, aging spouses and aging parents are mostly women, who are often forced to cut back at their jobs or quit altogether. Therefore, care penalty touches women more often than men.

The problem of maternity and childcare has been crucial in the countries, where women are active at the labor market since the 1950s. To maintain the high participation rate of women in the workforce, governments formulate family policies such as family allowance, maternity

and parental leave, various cash benefits and daycare. The range of family policy and its forms vary across countries.

Ageing of societies profoundly impacts families in the majority of developed countries since the number of the elderly has been increasing rapidly. For instance, every day, 10,000 boomers turn 65, and over the next 30 years, the population of older adults will nearly double – growing from 48 million to 88 million in the USA, with the largest percentage increase among those 85 and older (Sturgeon, 2017). Therefore, a question arises how close relatives should be protected and how the care and support for them should be arranged. The problem of providing care to the elderly is also recognized by some governments and organizations which help households with organizing formal care in the form of geriatric daycare and nursing houses. The compensation for families that provide care for the needs of an elderly, infirm and sick relatives should be also available (Simon-Rusinowitz et al., 1998) although such a solution is not that popular, and eldercare leaves are less frequent than parental leaves (Colombo et al., 2011, pp. 123, 132-133.).

The research concerning childcare and the motherhood penalty has been conducted and often discussed in the literature. Whereas similar investigation concerning eldercare and its impact on caregivers' employment and incomes is rarely provided[1], especially there is no such research conducted for Polish households at all, to the best of our knowledge. Therefore, our study fills this gap as it aims to find out whether motherhood and eldercare penalties exist in Polish families and who is mostly penalized. The analysis is provided applying econometric models, estimated using microdata from the Polish Labour Force Survey (*PLFS*).

The paper is organized as follows. The first section is literature review concerning the care penalty. The second one contains information about the sample and the models' specifications. The obtained results are discussed in the third section, and the last one concludes on the findings.

## 1. Motherhood and eldercare penalty

The care penalty is the term for the sacrifice which is made by the caregiver (Folbre, 2001). Care penalty may bring about a loss of personal time, money, or professional experiences that are missed out during providing care. Parenthood is the most common source of the care penalty, although elder care also imposes costs upon the caregiver.

The opinion, that being a mother harms women's career, is a fact since mothers take care of children more often than fathers. According to the U.S. Census Bureau report of 2012, there were only 189,000 homes run by men i.e. stay-at-home-dads, compared to 5,091,000 homes run by women i.e. stay-at-home-moms. It means that nearly 27 times more women are paying child-care penalties than men.

Mothers in a workplace face additional disadvantage compared to the childless female employees. It causes a pay gap between mothers and women who are not mothers which could be even larger than gender pay gap (Correll et al., 2007). A recent American study put the motherhood penalty - the average by which women's future wages fall - at 4% per child, and 10% for the highest-earning, most skilled white women. A British mother's wages fall by 2% for each year she is out of the workforce, and by 4% if she has good school-leaving qualifications. Some new mothers leave their jobs because they prefer to be their children's main care providers, or they are influenced by the opinion that having a working mother is harmful for pre-school children.

[1] Interesting literature review, concerning different aspects of caregiving may be found in (Bauer, Sousa-Poza 2015, 33-39).

Numerous studies explain motherhood penalty, identifying several causes:

- motherhood reduces job effort and productivity;
- mother-friendly jobs usually give lower wages;
- employer discrimination against mothers which is often widened to women who are or may become mothers.

The researchers clarify motherhood penalty using several theories:

- human capital theory – mothers are less productive since they lose job experience;
- compensating wage differentials theory which let seeking;
- Becker's work effort theory;
- discrimination - based theories and
- spurious correlation hypothesis (Budig & England, 2001).

The occurrence of motherhood penalty has been found in different countries, for instance: in the USA (Anderson et al., 2003; Budig & England, 2001; Budig & Hodges, 2010; Correll et al., 2007; England, 2005; Gangl & Ziefle, 2009; Harkness & Waldfogel, 2003; Jee et al., 2018; Waldfogel, 1997, 1998; and Weeden et al., 2016), in Australia and Canada (Harkness & Waldfogel, 2003), in the European Union, namely 26 UE member states (Cukrowska-Torzewska & Lovasz, 2017), in the United Kingdom (Davies & Pierre, 2005; Gangl & Ziefle, 2009; Harkness & Waldfogel, 2003; Joshi et al., 1999; and Waldfogel, 1998), in Sweden (Angelov et al., 2013; and Harkness & Waldfogel, 2003), in Denmark (Andersen, 2018; Datta Gupta & Smith, 2002; Davies & Pierre, 2005; Simonsen & Skipper, 2006), in Finland (Harkness & Waldfogel, 2003; Napari, 2010), in Germany (Davies & Pierre, 2005; Gangl & Ziefle, 2009; Harkness & Waldfogel, 2003), in Ireland, Portugal and Spain (Davies & Pierre, 2005), in Poland (Cukrowska-Torzewska, 2015 and Cukrowska-Torzewska & Lovasz, 2016), in Hungary (Cukrowska-Torzewska & Lovasz, 2016) and in Russia (Zharikova, 2006). All discussed in the listed papers results are in line with at least one above-mentioned theories and concepts. Jee at al. (2018) estimate the wage gap between mothers and childless women for three time periods: 1986-95, 1996-2004, and 2006-14. They find that the motherhood penalty remains quite stable over time, and may have worsened for mothers with one child.

According to the World Bank, in 2016 Japan had the highest percentage of population 65 and older (27%), followed by Italy (23%), and Germany (21%) in 2016, while in the USA this share was only 15%. In general, well-developed countries have higher population aging than developing and emerging economies because of longevity and low fertility rates in the former. Ageing of societies causes that providing care for senior citizens is more and more needed. Eldercare is a broad term including everything from assisted living and nursing care to adult daycare or hospitalization. But in opposite to childcare, the elderly requires more and more care with time flow.

According to (Heitmueller & Inglis, 2004), there were 5.2. million (i.e. 10% of the whole population) informal caregivers looking after sick, disabled and elderly people in England and Wales in 2001. The Authors show that more than 14% of the working-age population provided unpaid care for parents, family, friends and neighbors. It is estimated that in the USA 36 million provide care and support for an aging relative. Among them, over 75% of caregivers have full-time jobs and care for children at home. These family caregivers often experience financial stress and health-related problems of their own (Sturgeon, 2017, February 7). It is also known that about 67% of caregivers are women. Caregiving can be a full-time job itself thus combining it with regular employment is no easy feat. 10% of caregivers reduced their hours at work, and 6% are affected so much that they leave their job. In the survey of 1,001 working women aged 45 to 60 who were caregivers; 9% of them claimed that their jobs were currently at risk due to their caregiving responsibilities (Eisenberg, 2017, June 21).

There is no doubt that informal eldercare responsibilities affect the relationship between caregiving and employment (Wolf & Soldo, 1994; Boaz, 1996; Ettner, 1996; Johnson & Lo Sasso, 2000 and 2006; Viitanen, 2010; Bauer & Sousa-Poza, 2015). In the literature, it is found that:

- Care providers substantially reduce working hours (Johnson & Lo Sasso, 2006; King, Pickard, 2013);
- Caregivers work fewer paid hours than people who do not provide care (Bittman et al., 2007; Muurinen, 1986; Soldo & Hill, 1995; Stone & Short, 1990);
- Nonworkers provide more care than workers (Boaz, 1996; Brody & Schoonover, 1986);
- Informal caregiving is found to have a significant, negative impact on the probability of employment only in Germany, among 13 UE states investigated by (Viitanen, 2010);
- The largest impact of informal caregiving is observed for middle-aged women and single women in several EU countries (Viitanen, 2010);
- Effects on working hours and employment probability vary within the European states and is larger in southern countries (Kotsadam, 2011);
- Caregivers have a significantly higher probability of falling into poverty (Butrica & Karamcheva, 2014) although the Authors did not find the evidence that caregiving affects wages or working hours;
- Time transfers to parents respond negatively to wage rates for men and unmarried women (Couch et al., 1999). While caring for elderly parents or parents-in-law had a negative but insignificant effect on married women's work hours (Wolf & Soldo, 1994).

The financial cost of caregiving is discussed by Viitanen (2007), who claims that the European Union governments' expenditure on formal residential care and home-help services for the elderly significantly reduces 45-59-year-old women's informal caregiving affecting both the extensive and the intensive margin. According to this research, an increase of the government formal care expenditure can be used to increase the labor force participation rates.

Grewiński (2012, p. 31) claims that there is a lack of a comprehensive social policy model in Poland and after transformation of the Polish economic and political system many mistakes were made. As a result, the social policy in Poland is a hybrid system where some social needs are satisfied by individuals or their families alone, and some with a huge dose of government interference (Perek-Białas & Racław, 2014).

The caregivers in Poland are usually women similarly to other countries. Family duties, as a reason of economic inactivity, are mostly pointed out by women. Niewiadomska (2013, p. 112) finds that in Poland, in the years 2007-2011 women were responsible for:

- childcare in 98.1% cases,
- housekeeping in 96.1% cases and
- care of someone with a long-term illness or disability and elderly person in 75.5% cases.

The study (Cukrowska, 2011) provides the evidence on the existence of the motherhood penalty in the years 2003-2009 using the dataset on Polish households and individuals called Social Diagnosis 2000-2009 – Objective and Subjective Quality of Life in Poland, concerning women aged 18-40. This research was continued applying the European Union Statistics on Income and Living Conditions (EU SILC) for the years 2005-2012. The results, described in the study (Cukrowska-Torzewska, 2015), reaffirm that the motherhood penalty in monthly earnings as well as in hourly wages is observed in Poland for female employees in age 16-45 years old.

We do not know any research concerning eldercare penalty in Poland although the government document (Resolution No. 238 of the Council of Ministers, 2014, p. 45) states that in Poland the majority of eldercare is given by informal caregivers, mostly women in age 50-69 who are either daughters in 37% or wives in 20%. One-third of caregivers in Poland combine

regular professional work with caregiving. Others are unemployed, or they have to give up work since there are no available solutions which let individuals to take care of elderly relatives and continue regular employment. As a result, caregivers lose their incomes, and in future, they will obtain lower pensions which will cause poverty.

To sum up, the considerations presented above, it seems that for governments childcare is more important aspect of social policy than eldercare, in terms of instruments provided for caregivers. One should also notice the former is a subject of research more often than the latter.

## 2. Methodology and data

In our research we estimate econometric models describing natural logarithms of monthly incomes (X), hourly wages (Y) and monthly working hours (Z) which are explained by: (1) individual characteristics of employees, (2) structure of the household, and (3) workplaces characteristics. In other words, we estimate the following models:

$$ln\left(y_i^j\right) = \sum_{k=1}^{K}(\alpha_k \cdot x_{ki}^1) + \sum_{l=1}^{L}(\beta_l \cdot x_{li}^2) + \sum_{n=1}^{N}(\gamma_n \cdot x_{ni}^3) + \varepsilon_i$$

where: $y_i^j$ – dependent variables ($j$=1, 2, 3), $x_{ki}^m$ – explanatory variables ($m$=1, 2, 3), $\alpha_k, \beta_l, \gamma_n$ – structural parameters, $\varepsilon_i$ – random disturbance term.

In the constructed models, explanatory variables represent both qualitative and quantitative features. The former characteristics are represented by ten dummies, which are presented in *Table 1* where the symbol of the variable together with its description, information about number of variants for each variable and the reference variant are given. For a better understanding, it should be noted, that in addition to the two-variant variables (such as GEN, i.e. the variable: Gender, which has two variants: *woman* and *man*), there are four-, six- and nine-variant variables (such as the variable: SIZ, which describes the size of an enterprise in six variants: *≤10 employees*, *11-19 employees*, *20-49 employees*, *50-100 employees*, *101-250 employees*, *and more than 250 employees*). The information about all but reference variants of variables is presented in the second column of Tables 3-6.

Table 1. List of dummies

| Variable | | | |
|---|---|---|---|
| Symbol | No. of variants | Description | Reference variant |
| GEN | 2 | Gender | *women* |
| REL | 2 | Relationship with the head of the household | *not a household head* |
| MAR | 2 | Marital status | *not married* |
| RES | 6 | Size class of the place of residence*/ | *countryside* |
| EDU | 6 | Level of education | *lower than preliminary* |
| SIZ | 6 | Size class of the workplace*/ | *20-49 employees* |
| OWN | 2 | Ownership of the workplace | *private* |
| WOR | 4 | Work-time contract*/ | *40 hours per week - full time job* |
| SEC | 4 | Sector of employment | *other* |
| OCU | 9 | Occupation | *industry workers* |

Note: */ size is described by the number of inhabitants, employees or hours, respectively
Source: *own elaboration*

Quantitative variables are defined as: hourly wages (WAG), age (AGE) and age squared, together with seven variables related to the family situation informing about the number of family members (NUM) classified to the distinguished classes. Due to the goal of

our research, the family situation is described by the number of people living in the household, especially children and the elderly. We distinguished children of different ages due to the education system in Poland. It is worth mentioning that not all variables describing the structure of the household can be included in one model simultaneously since some information is repeated by more than one variable. Therefore, we distinguish four sets of variables (denoted as V1 ÷ V4), containing 2 to 5 "family variables" which determine the model specification (as explained in *Table 2*).

Table 2. Structure of investigated households, list of variables and defined sets of variables

| Explanatory variables *NUM* describing the number of: | count | % | Symbol of variable sets | | | |
|---|---|---|---|---|---|---|
| | | | V1 | V2 | V3 | V4 |
| persons living in the household | 17005 | 100.00 | | x | | |
| children in age below 5 years old | 1034 | 6.08 | x | | | x |
| children in age 6-15 years old | 1812 | 10.66 | x | | | x |
| children in age 16-18 years old | 806 | 4.74 | x | | | x |
| elderly persons over 65 years old | 882 | 5.19 | x | x | x | x |
| unemployed children living in the household | 6093 | 35.83 | | x | x | |
| employed persons living in the household | 241 | 1.42 | | | | x |

Note: Shadow cells denote variables included in a certain set of variables.
Source: *own elaboration*

## 3. Empirical results

Full data sample includes microdata from the Polish Labour Force Survey (the first quarter of year the 2009) delivered by Statistics Poland concerning only respondents who were working during the week preceding the survey and whose records contain all necessary information. Models are estimated OLS using four estimation samples concerning: (A) all 7044 respondents, (B) male employees - 3751, (C) female employees - 3293, and (D) women 25-54 years old - 2716 respondents.

Considered models differ by the (1) dependent variable - X, Y, Z; (2) set of "family variables" – V1, V2, V3, V4[2] and (3) the estimation sample - A, B, C, D. In the paper we will present only the most interesting results concerning 15 estimated models, which can be easily recognized by the described above symbols. For instance, XV2B denotes the model describing monthly incomes of male employees. This model contains the second set of "family variables".

It is worth mentioning that models, estimated for the sample B (i.e. observations about male employees), do not fit empirical data well i.e. determination coefficients equal from 0.121 for the models describing working hours, to 0.373 and 0.446 in the models with hourly wages and monthly incomes. Whereas all models, estimated using data concerning all respondents and female employees, well describe dependent variables with $R^2$>0.977.

Parameter estimates of the regression models are presented in *Tables 3-6* where the symbol: * denotes significance level α=0.1, ** for α=0.05, and *** for α=0.01; × – denotes lack of the variable. In our study, we assume that the explanatory variable is statistically significant if the null hypothesis can be rejected at significance level α=0.05 or less.

[2] Although the majority of explanatory variables, concerning employees and workplace features, appear in each model, describing each dependent variable, there are three variables that appear only in some models. These variables are: hourly wages (*WAG*) which is present only in the models describing working hours, worktime contract (*WOR*) which appears in the model describing monthly incomes and gender (*GEN*) that is present in the models estimated for all respondents.

*Tables 3-4* contain parameter estimates of the models for monthly incomes (X) and hourly wages (Y), described by two explanatory variable sets V2 and V4 and estimated using data concerning men (B) and women (C). The set of variables V2 contains three variables, i.e. size of the family (total number of persons), number of unemployed children and number of the elderly in the household whereas the set V4 includes five variables i.e. the number of employed persons and the elderly, while the group of underage children is disaggregated into three classes i.e. children aged 5 and less, 6-15 and 16-18 years.

Taking into account variables representing: employees' attributes (i.e. age, place of residence, level of education, occupation, marital status and position in the household) and workplace controls (i.e. size of the workplace, economic branch and form of ownership), we find out that obtained results are consistent with our previous investigations of Witkowska (2012; 2013) and Kompa and Witkowska (2018) although in presented research regression models describing monthly incomes contain additional "family variables".

It is visible that the majority of employee and workplace controls influence both dependent variables representing remunerations (i.e. X and Y) in a similar way. However, there are some variables with different impact: (1) *OWN* in the models estimated for sample B, and (2) *MAR* for C, together with single variants of variables describing: (3) *RES*, (4) *SIZ* and (5) *EDU* in models estimated for women, and (6) *OCU* for samples B and C.

Comparing different estimation samples, especially men and women, significant differences are visible in case of variables representing:

- marital status in models describing monthly incomes,
- ownership in models describing hourly wages, and
- some variants of variables representing a level of education, occupation, place of residence and workplace.

In general, married women work fewer hours and obtain lower monthly incomes than unmarried ones and it is also true if the female employees 25-54 years old are taken into account (but for the model specification V2 only – *Table* 5). Whereas married men get higher monthly remuneration than unmarried ones. Although, if hourly wages are taken into account, married employees have higher earnings than unmarried regardless of gender (*Tables 3 and 4*).

*Table 5* presents the results obtained for models, describing monthly incomes by women aged 25-54, which are constructed applying four sets of variables V1÷V4. Analyzing the significance of variables, we notice that the married women earn significantly less than unmarried ones for the set of variables V2, and marital status is the only variable which has a different impact on remuneration for various sets of variables. One may also notice that when models XV2C and XV4C (*Table 4*) are compared to the ones estimated for the sample of female employees 25-54 years old, the impact of employees and workplace controls are similar with exception of marital status, two variants of variable SIZ (workplace employing from 50 to 250 employees) and OCU (unskilled workers).

In the models describing the activity of employees (*Table 6*), different factors influencing male and female employees' work time are visible. Married women work significantly longer than unmarried while this variable is insignificant in model ZV2B, together with all dummies representing a place of residence and size of the workplace. Whereas at least some variants of these variables have significantly positive impact on the worktime of female employees. One may also notice that parameters in model ZV2C have similar signs and significance as models describing monthly incomes XV2C.

Care penalty can be recognized if the variables representing number of persons requiring care causes the significant decrease of monthly incomes (as Cukrowska, 2011), hourly wages (as Harkness & Waldfogel, 2003) or working time in the regression models estimated using different estimation samples. Therefore, the parenthood penalty concerns parameter estimates

standing by the number of children in the household and eldercare penalty – number of persons aged 65 and above.

The number of unemployed children has a negative and significant impact on monthly incomes and worktime in the models specified as V2 and estimated for women (XV2C, ZV2C). If the sample of female employees is limited to women aged 25-54, a significantly negative influence on monthly incomes is visible in both models which contain this variable (*Table 5*). Negative impact is also visible in the model of worktime estimated for all observations (ZV2A). Whereas the number of children does not influence any dependent variable in models estimated for male employees (sample B). Therefore, we claim that the motherhood penalty exists in Poland.

If information about children under 19 years old is represented by three variables describing the age structure of children, structural parameters are statistically significant and negative only for the number of children aged 16-18. In other words, the increase in the number of children 16-18 years old affects in the decrease of monthly incomes, hourly wages and the number of working hours in all estimated models with set of variables V2.

Number of the elderly is statistically significant with a negative sign in all models describing monthly remuneration of women aged 25-54, and the model explaining work time of all respondents. It proves the existence of the eldercare penalty and shows that among employees mostly women share their time between caregiving and work.

## Conclusion

In Poland, family policy is dedicated mostly to parental care whereas social policy devoted to the elderly contains mostly declarations since formal care is not well developed and such solutions like money benefits for providing eldercare or long-term leave for caregivers do not exist. Therefore, senior care firmly bases on that of the family, and social services are particularly directed to those seniors without children and close relatives.

Care providers either give up their jobs and are unemployed or they limit worktime, or they look for a caregiver's friendly job which usually give low wages. Our study considers two last-mentioned situations since the investigation considers employees only, and we skip the absence on the labor market. In our research, applying econometric models, we check if caregiving has a negative impact to the earnings and working hours of Polish employees. We apply the classical approach to identify determinants of wages, adding information about the structure of the households since formal available and affordable care in Poland has not been developed to the level which is observed in richer societies.

Our research proves that the care penalty exists in Poland and women are penalized because of that. Such conclusion follows from the analysis of regression parameters. The existence of the motherhood penalty is visible in models: XV2C, XV2D, XV3D, ZV2A and ZV2C since the variable: number of unemployed children is statistically significant and causes the decrease of monthly incomes or working hours. It is worth mentioning that this variable is not significant in any model estimated for a subsample of men. Eldercare penalty is proved by all models estimated for women aged 25-54 years (i.e. XV1D-XV4D). There is also a negative impact to worktime when the models are estimated using a sample of all respondents – model ZV2A. These results are in harmony with other investigations. It is also worth mentioning that in other models, the number of elder family members does not affect dependent variables. Therefore, we claim that eldercare is mostly provided by women.

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## Appendix

Table 3. Parameter estimates of models estimated for male employees

| Variable | | Model | | | |
|---|---|---|---|---|---|
| | | Monthly incomes | | Hourly wages | |
| | | XV2B | XV4B | YV2B | YV4B |
| AGE | *age* | 0.0292 *** | 0.0297 *** | 0.0228 *** | 0.0232 *** |
| | *age*$^2$ | -0.0004 *** | -0.0004 *** | -0.0003 *** | -0.0003 *** |
| REL | *household head* | 0.0865 *** | 0.0852 *** | 0.0833 *** | 0.0824 *** |
| MAR | *married* | 0.1039 *** | 0.1006 *** | 0.1003 *** | 0.0996 *** |
| RES | *>100 thousands* | 0.0752 *** | 0.0730 *** | 0.0722 *** | 0.0693 *** |
| | *50-100 thousands* | 0.0343 | 0.0325 | 0.0362 | 0.0338 |
| | *10-50 thousands* | -0.0200 | -0.0219 | -0.0197 | -0.0219 |
| | *5-10 thousands* | -0.0802 ** | -0.0840 *** | -0.0801 ** | -0.0838 *** |
| | *2-5 thousands* | -0.0543 | -0.0559 * | -0.0598 * | -0.0609 * |
| EDU | *university* (at least Ph.D.) | 0.5771 *** | 0.5738 *** | 0.5019 *** | 0.4999 *** |
| | *university* | 0.2189 *** | 0.2145 *** | 0.2286 *** | 0.2246 *** |
| | *post secondary* | 0.0795 * | 0.0767 * | 0.0482 | 0.0462 |
| | *vocational or general secondary* | 0.0900 *** | 0.0881 *** | 0.0930 *** | 0.0910 *** |
| | primary or *lower vocational* | -0.1140 *** | -0.1091 *** | -0.1125 *** | -0.1077 *** |
| SIZ | *≤10 employees* | -0.0970 *** | -0.0994 *** | -0.0995 *** | -0.1015 *** |
| | *11-19 employees* | -0.0761 *** | -0.0771 *** | -0.0762 *** | -0.0771 *** |
| | *50-100 employees* | 0.0227 | 0.0196 | 0.0193 | 0.0166 |
| | *101-250 employees* | 0.0621 *** | 0.0607 *** | 0.0691 *** | 0.0676 *** |
| | *>250 employees* | 0.1182 *** | 0.1155 *** | 0.1353 *** | 0.1326 *** |
| OWN | *public* | 0.0206 | 0.0212 | 0.0341 ** | 0.0347 ** |
| WOR | *less than 20 hours per week* | -0.7770 *** | -0.7739 *** | × × | × × |
| | *from 21 to 40 hours per week* | -0.3623 *** | -0.3616 *** | × × | × × |
| | *more than 40 hours per week* | 0.1251 *** | 0.1250 *** | × × | × × |
| SEC | *agriculture* | 6.5701 *** | 6.5584 *** | 1.5876 *** | 1.5850 *** |
| | *industry* | 6.5907 *** | 6.5803 *** | 1.6055 *** | 1.6038 *** |
| | *service* | 6.5568 *** | 6.5477 *** | 1.5681 *** | 1.5676 *** |
| OCU | *managerial* | 0.3703 *** | 0.3703 *** | 0.3672 *** | 0.3667 *** |
| | *professional* | 0.2789 *** | 0.2800 *** | 0.3052 *** | 0.3061 *** |
| | *technical* | 0.1584 *** | 0.1586 *** | 0.1614 *** | 0.1617 *** |
| | *clerical* | -0.0442 | -0.0452 | -0.0390 | -0.0395 |
| | *sales & services* | -0.0844 *** | -0.0864 *** | -0.0988 *** | -0.1011 *** |
| | *farmers. fishers. etc.* | -0.0799 | -0.0745 | -0.0835 | -0.0788 |
| | *skilled workers* | 0.0388 ** | 0.0363 ** | 0.0280 * | 0.0258 |
| | *unskilled workers* | -0.1487 *** | -0.1514 *** | -0.1427 *** | -0.1451 *** |
| NUM | *persons in the household* | -0.0005 | × × | -0.0002 | × × |
| | *children ≤ 5 years old* | × | 0.0035 | × - | -0.0006 |
| | *children 6-15 years old* | × - | -0.0073 | × - | -0.0120 |
| | *children 16-18 years old* | × - | -0.0289 ** | × - | -0.0250 ** |
| | *elderly persons > 65 years old* | -0.0028 | -0.0035 | -0.0007 | -0.0004 |
| | *unemployed children* | -0.0067 × | × | -0.0063 | × × |
| | *employed persons* | × × | -0.0567 ** | × × | -0.0467 ** |
| | $R^2$*adjusted* | 0.444 | 0.446 | 0.371 | 0.373 |

Note: the symbols * denotes significance level α=0.1, ** for α=0.05, and *** for α=0.01; · – denotes lack of the variable

Source: *Own elaboration*

Table 4. Parameter estimates of models estimated for female employees

| Variable | | Model | | | |
|---|---|---|---|---|---|
| | | Monthly incomes | | Hourly wages | |
| | | XV2C | XV4C | YV2C | YV4C |
| AGE | *age* | 0.1439 *** | 0.1463 *** | 0.0448 *** | 0.0458 *** |
| | *age*$^2$ | -0.0016 *** | -0.0017 *** | -0.0005 *** | -0.0005 *** |
| REL | *household head* | 0.0661 *** | 0.0590 *** | 0.0557 *** | 0.0563 *** |
| MAR | *married* | -0.0600 *** | -0.0444 *** | 0.0423 *** | 0.0408 *** |
| RES | *>100 thousands* | 0.1250 *** | 0.1118 *** | 0.0783 *** | 0.0757 *** |
| | *50-100 thousands* | 0.0464 * | 0.0293 | 0.0066 | 0.0018 |
| | *10-50 thousands* | 0.0555 *** | 0.0435 ** | 0.0064 | 0.0042 |
| | *5-10 thousands* | -0.0555 | -0.0652 * | -0.0818 *** | -0.0826 *** |
| | *2-5 thousands* | 0.1043 ** | 0.0955 ** | 0.0648 * | 0.0650 * |
| EDU | *university* (at least Ph.D.) | 0.6859 *** | 0.6673 *** | 0.4781 *** | 0.4669 *** |
| | *university* | 0.4084 *** | 0.4011 *** | 0.3380 *** | 0.3307 *** |
| | *post secondary* | 0.1521 *** | 0.1539 *** | 0.0909 *** | 0.0876 *** |
| | *vocational or general secondary* | 0.1883 *** | 0.1881 *** | 0.1028 *** | 0.1017 *** |
| | primary or *lower vocational* | -0.0212 | -0.0117 | -0.0761 *** | -0.0701 *** |
| SIZ | *≤10 employees* | -0.0245 | -0.0206 | -0.0876 *** | -0.0868 *** |
| | *11-19 employees* | 0.0404 * | 0.0406 * | -0.0125 | -0.0129 |
| | *50-100 employees* | 0.0515 ** | 0.0505 ** | 0.0030 | 0.0021 |
| | *101-250 employees* | 0.0479 * | 0.0481 ** | -0.0085 | -0.0084 |
| | *>250 employees* | 0.1125 *** | 0.1118 *** | 0.0502 ** | 0.0491 ** |
| OWN | *public* | -0.0178 | -0.0151 | 0.0156 | 0.0182 |
| WOR | *less than 20 hours per week* | -0.5182 *** | -0.5175 *** | × × | × × |
| | *from 21 to 40 hours per week* | -0.1477 *** | -0.1405 *** | × × | × × |
| | *more than 40 hours per week* | 0.0594 ** | 0.0607 *** | × × | × × |
| SEC | *agriculture* | 3.5420 *** | 3.5833 *** | 0.6806 *** | 0.6631 *** |
| | *industry* | 3.6946 *** | 3.7417 *** | 0.8006 *** | 0.7863 *** |
| | *service* | 3.5733 *** | 3.6174 *** | 0.7523 *** | 0.7362 *** |
| OCU | *managerial* | 0.6458 *** | 0.6487 *** | 0.4919 *** | 0.4941 *** |
| | *professional* | 0.5072 *** | 0.5013 *** | 0.4433 *** | 0.4449 *** |
| | *technical* | 0.3959 *** | 0.3932 *** | 0.2567 *** | 0.2568 *** |
| | *clerical* | 0.3329 *** | 0.3294 *** | 0.1668 *** | 0.1668 *** |
| | *sales & services* | 0.2867 *** | 0.2857 *** | 0.0909 *** | 0.0901 *** |
| | *farmers. fishers. etc.* | 0.6532 *** | 0.6901 *** | 0.5303 *** | 0.5395 *** |
| | *skilled workers* | 0.2270 *** | 0.2245 *** | 0.1252 *** | 0.1231 *** |
| | *unskilled workers* | 0.1184 *** | 0.1178 *** | -0.0076 | -0.0090 |
| NUM | *persons in the household* | 0.0345 *** | × × | -0.0011 | × × |
| | *children ≤ 5 years old* | × × | 0.0132 | × × | 0.0033 |
| | *children 6-15 years old* | × × | 0.0058 | × × | -0.0021 |
| | *children 16-18 years old* | × × | -0.0717 *** | × × | -0.0441 *** |
| | *elderly persons > 65 years old* | -0.0071 | 0.0264 * | 0.0042 | 0.0028 |
| | *unemployed children* | -0.0373 *** | × × | -0.0041 | × × |
| | *employed persons* | × × | 0.0204 | × × | -0.0489 ** |
| | $R^2$*adjusted* | 0.997 | 0.997 | 0.978 | 0.978 |

Note: symbols explanation as for *Table 3*
Source: *Own elaboration*

Table 5. Parameter estimates of models estimated for female employees aged 25-54

| Variable | | Monthly incomes model | | | |
|---|---|---|---|---|---|
| | | XV1D | XV2D | XV3D | XV4D |
| AGE | *age* | 0.2318 *** | 0.2290 *** | 0.2293 *** | 0.2318 *** |
| | *age²* | -0.0028 *** | -0.0027 *** | -0.0027 *** | -0.0028 *** |
| REL | *household head* | 0.0463 *** | 0.0510 *** | 0.0424 *** | 0.0465 *** |
| MAR | *married* | -0.0242 | -0.0402 ** | -0.0247 | -0.0237 |
| RES | *>100 thousands* | 0.1008 *** | 0.1090 *** | 0.0986 *** | 0.1016 *** |
| | *50-100 thousands* | 0.0164 | 0.0310 | 0.0193 | 0.0172 |
| | *10-50 thousands* | 0.0372 ** | 0.0462 ** | 0.0379 ** | 0.0376 ** |
| | *5-10 thousands* | -0.0461 | -0.0366 | -0.0427 | -0.0461 |
| | *2-5 thousands* | 0.0813 ** | 0.0889 ** | 0.0828 ** | 0.0807 ** |
| EDU | *university* (at least Ph.D.) | 0.2927 ** | 0.3086 *** | 0.3127 *** | 0.2937 ** |
| | *university* | 0.3809 *** | 0.3857 *** | 0.3866 *** | 0.3815 *** |
| | *post-secondary* | 0.1432 *** | 0.1411 *** | 0.1441 *** | 0.1440 *** |
| | *vocational or general secondary* | 0.1170 *** | 0.1171 *** | 0.1170 *** | 0.1173 *** |
| | primary or *lower vocational* | 0.0317 | 0.0274 | 0.0276 | 0.0316 |
| SIZ | *≤ 10 employees* | -0.0350 | -0.0398 * | -0.0347 | -0.0350 |
| | *11-19 employees* | 0.0143 | 0.0137 | 0.0144 | 0.0144 |
| | *50-100 employees* | 0.0314 | 0.0333 | 0.0338 | 0.0311 |
| | *101-250 employees* | 0.0356 | 0.0358 | 0.0367 | 0.0354 |
| | *>250 employees* | 0.0945 *** | 0.0963 *** | 0.0978 *** | 0.0946 *** |
| OWN | *public* | -0.0159 | -0.0188 | -0.0184 | -0.0160 |
| WOR | *less than 20 hours per week* | -0.4358 *** | -0.4326 *** | -0.4315 *** | -0.4356 *** |
| | *from 21 to 40 hours per week* | -0.1655 *** | -0.1699 *** | -0.1686 *** | -0.1654 *** |
| | *more than 40 hours per week* | 0.0592 *** | 0.0578 *** | 0.0572 *** | 0.0593 *** |
| SEC | *agriculture* | 2.1095 *** | 2.1015 *** | 2.1746 *** | 2.1101 *** |
| | *industry* | 2.1766 *** | 2.1644 *** | 2.2401 *** | 2.1772 *** |
| | *service* | 2.0859 *** | 2.0764 *** | 2.1502 *** | 2.0868 *** |
| OCU | *managerial* | 0.5569 *** | 0.5542 *** | 0.5541 *** | 0.5567 *** |
| | *professional* | 0.4404 *** | 0.4457 *** | 0.4392 *** | 0.4402 *** |
| | *technical* | 0.3588 *** | 0.3619 *** | 0.3597 *** | 0.3588 *** |
| | *clerical* | 0.2946 *** | 0.2980 *** | 0.2977 *** | 0.2943 *** |
| | *sales & services* | 0.1993 *** | 0.2013 *** | 0.2015 *** | 0.1993 *** |
| | *farmers. fishers. etc.* | 0.6021 *** | 0.5670 *** | 0.5798 *** | 0.6030 *** |
| | *skilled workers* | 0.1578 *** | 0.1587 *** | 0.1566 *** | 0.1581 *** |
| | *unskilled workers* | 0.0405 | 0.0426 | 0.0468 | 0.0398 |
| NUM | *persons in the household* | × × | 0.0347 *** | × × | × × |
| | *children ≤ 5 years old* | 0.0082 × | × × | × × | 0.0079 |
| | *children 6-15 years old* | -0.0001 × | × × | × × | -0.0003 |
| | *children 16-18 years old* | -0.0892 *** | × × | × × | -0.0890 *** |
| | *elderly persons > 65 years old* | -0.0298 ** | -0.0657 *** | -0.0298 ** | -0.0296 ** |
| | *unemployed children* | × × | -0.0544 *** | -0.0180 *** | × × |
| | *employed persons* | × × | × × | × × | 0.0177 |
| | *$R^2$adjusted* | 0.979 | 0.979 | 0.979 | 0.979 |

Note: symbols explanation as for *Table 3*
Source: *Own elaboration*

Table 6. Parameter estimates of models estimated for all respondents, men and women

| Variable | | Monthly working time model | | |
|---|---|---|---|---|
| | | ZV2A | ZV2B | ZV2C |
| AGE | *age* | 0.0743 *** | 0.0259 *** | 0.1109 *** |
| | *age*$^2$ | -0.0009 *** | -0.0003 *** | -0.0013 *** |
| GEN | *man* | 0.1043 *** | × × | × × |
| REL | *household head* | 0.0143 * | 0.0076 | 0.0339 *** |
| MAR | *married* | -0.0543 *** | 0.0161 * | -0.0855 *** |
| RES | *>100 thousands* | 0.0222 ** | -0.0073 | 0.0441 *** |
| | *50-100 thousands* | 0.0140 | -0.0088 | 0.0300 |
| | *10-50 thousands* | 0.0227 ** | -0.0055 | 0.0428 *** |
| | *5-10 thousands* | 0.0100 | 0.0054 | 0.0064 |
| | *2-5 thousands* | 0.0283 | 0.0059 | 0.0716 ** |
| EDU | *university* (at least Ph.D.) | 0.3023 *** | 0.1811 *** | 0.3972 *** |
| | *university* | 0.0652 *** | 0.0120 | 0.1353 *** |
| | *post secondary* | 0.0647 *** | 0.0246 | 0.0955 *** |
| | *vocational or general secondary* | 0.0615 *** | 0.0090 | 0.1137 *** |
| | primary or *lower vocational* | 0.0036 | -0.0259 ** | 0.0255 |
| SIZ | *≤10 employees* | 0.0222 ** | -0.0059 | 0.0169 |
| | *11-19 employees* | 0.0247 ** | -0.0006 | 0.0406 ** |
| | *50-100 employees* | 0.0406 *** | 0.0120 | 0.0597 *** |
| | *101-250 employees* | 0.0523 *** | 0.0126 | 0.0833 *** |
| | *>250 employees* | 0.0683 *** | 0.0140 | 0.1099 *** |
| OWN | *public* | -0.0517 *** | -0.0377 *** | -0.0504 *** |
| SEC | *agriculture* | 3.5742 *** | 4.6878 *** | 2.7892 *** |
| | *industry* | 3.5916 *** | 4.6914 *** | 2.8128 *** |
| | *service* | 3.5653 *** | 4.6853 *** | 2.7360 *** |
| OCU | *managerial* | 0.1208 *** | 0.0501 *** | 0.2886 *** |
| | *professional* | -0.0465 *** | -0.0924 *** | 0.0836 *** |
| | *technical* | 0.0448 *** | -0.0070 | 0.1662 *** |
| | *clerical* | 0.0378 ** | -0.0273 * | 0.1660 *** |
| | *sales & services* | 0.0587 *** | 0.0084 | 0.1876 *** |
| | *farmers. fishers. etc.* | 0.0667 | 0.0341 | 0.1467 |
| | *skilled workers* | 0.0370 *** | 0.0205 ** | 0.1021 *** |
| | *unskilled workers* | -0.0088 | -0.0433 *** | 0.0851 *** |
| WAG | *hourly wages* | -0.0126 *** | -0.0064 *** | -0.0224 *** |
| NUM | *persons in the household* | 0.0195 *** | 0.0016 | 0.0310 *** |
| | *elderly persons > 65 years old* | -0.0162 ** | -0.0124 * | -0.0052 |
| | *unemployed children* | -0.0174 *** | -0.0018 | -0.0305 *** |
| | $R^2$*adjusted* | 0.9974 | 0.1211 | 0.9962 |

Note: symbols explanation as for *Table 3*
Source: *Own elaboration*