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**Women's care responsibilities,  
employment and health:  
a two countries' tale**

Chiara Mussida  
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Quaderno n. 141/dicembre 2018

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## *Abstract*

Persistently low employment of women in some countries can still be attributed to a traditional perception of women's role in society. According to observed data and prevailing social and cultural norms, women have been bearing the primary burdens of housework, childcare and other family responsibilities. The unequal share of these care responsibilities between women and men further worsens the disadvantages of women in balancing public and private life, with an impact on their employment and health outcomes. In this paper we investigate the role of family responsibilities in shaping employment and health outcomes by gender, in Italy and France before and after the economic downturn. We find results supporting the fact that gender differences in the share of responsibilities roles in the public and private sphere influence the employability and health perception of women.

Keywords: Employment; gender gap; Care responsibilities; Health.

JEL classification: C33, D13, I10, J13, J21



## *1.Introduction*

The debate on the relation between health and labour market outcomes dates back to the seminal work of Grossman (1972) who built his model based on Becker's (1964) analogy between investment in health capital and investment in other forms of human capital to explain labour performance.

Over the years, the question remained important because for groups as diverse as men, women, single parents and older people, health is thought to be a major determinant of labour force participation, wages and time use (Currie and Madrian, 1999).

Following this strand of studies, the purpose of this paper is to investigate which role family responsibilities play in jointly shaping employment and health outcomes for adult women compared to men, in particular for those living in France and Italy.

Women worldwide continue to experience inequalities in many fields, as stated in many annual international reports (ILO and WEF, 2017; EC, 2018), and their underrepresentation is one of the most persistent issue in the labour markets and modern societies (Goldin, 2006). This underrepresentation in the economic and active life finds one of its major explanations in the overload of family tasks women have always carried in their private lives (Suh, 2016). These two opposite attitudes have both been found negatively impacting the employment and income of women (Del Boca and Vuri, 2007). Furthermore, social scientists, epidemiologists and health researchers have highlighted extra physical, mental and psychological stress for caregivers, especially when the care is solely borne by one family member and involves both children and other types of family dependents, such as disabled or elderly people (Coe and Van

Houtven, 2009; Bauer and Sousa-Poza, 2015; Dukhovnov and Zagheni, 2015).

The 2018 report of the European Commission on the development of childcare facilities for young children with a view to increase female labour participation (EC, 2018) highlights that a major role in explaining the inactivity or the involuntary decision to work part-time of women is played by the circumstance of having to look after children or incapacitated adults and other family or personal responsibilities. All the more so, when public or publicly funded provision of care is lacking. Together with the availability, also the affordability and the quality of the care facilities have an impact on these choices. The recent rising trend in childcare coverage rates of those EU countries – most of which used to have a low coverage of childcare before the 2002 European Council (Barcelona) targets’ for childcare coverage - show that the demand for these services can be triggered up by the public provision of these services,<sup>1</sup> thus cancelling the above mentioned negative effect.

It is widely reckoned that there is an economic gain in reducing the gender employment gap: according to the International Labour Office report (ILO, 2017), reducing the employment gender gap by 25% by 2025, *coeteris paribus*, would increase global employment by 5.3% and thus increase the global income of women. In the EU in particular, Eurofound (2016) estimated a EU GDP loss of 370 billion Euro per year due to the existing overall gender employment gap. Nevertheless, gender gaps in the labour market can be

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<sup>1</sup> Also legal entitlement starting from an age rather than from another one can play a role in determining the game of demand and supply of these services, thus impacting on the women’s performance in employment levels

self-reinforcing and finally affect even the decision to participate in labour market (Cuberes and Teignier, 2014).

In fact, these gender gaps make the burden of total work (domestic and on-the-market) unbalanced for women, affecting their employment, their income and their health. Actually, women work more than men, impacting thus on their health status, but remain unpaid for a large part of their worked hours (Dinh et al. 2017).

Employment and health conditions of women are therefore crucial to the attainment of substantial equality between women and men, especially when taking into consideration the shares of the family responsibilities held by all members of the family.

An overall study on the intertwining links of the different dimensions related to health and employment of women would help to shed some light on the actual conditions and possible paths of evolution. Understanding the rise and the persistence of gender gaps increases the understanding of what has led some countries to higher gender equality with respect to countries which still fare low.

In our study, we have chosen to analyse the case of Italy and France, based upon their recent policy choices and the outcomes of their relevant measures, as reported in the international statistical database and international organisation reports.

There are analogies and differences among the two countries that make them appealing to a possible comprehensive comparison. Italy, for example, in 2017 has recorded an overall employment rate of around 58%. France, on the other hand, has an employment rate of 67%.<sup>2</sup> More interestingly,

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<sup>2</sup> Figures available online at [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsq\\_organ&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsq_organ&lang=en).

the gender gap in employment is more than twofold: 7.2 percentage points (pp.) for France 18.2 pp. for Italy (both compared to an EU28 gender gap of 10.5 pp.). Furthermore, according to OECD survey data on time use (2017)<sup>3</sup>, these women work more hours per day than men with an even stronger disadvantage for Italian women. Actually, Italian women work more than Italian men and French counterparts, totalling only 2.2 hours on paid work but 5.1 hours in unpaid work, in contrast with 2.9 paid work hours and 3.7 unpaid work hours for French women. The gender gaps in total work exist in both countries but the greater involvement of French men in unpaid work makes the total gender gap in France a third of the Italian one (0.5 and 1.4, respectively).

Moreover, the funds allocated to policies in support of the families - especially to childcare services provision - help to better highlight the differences in the social preferences of the two countries and the recorded outcomes (Del Boca and Wetzels, 2008).

In the realm of childcare - a strategic field of considerable interaction between family policy and labour market policy - the 2002 EU targets for childcare coverage (0-3 years)<sup>4</sup> seem now finally attained for both these two countries: France raised it from 44% (2011 ) to 49% (2016) and Italy from 25% to 35% in the same period, with both countries suffering a

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<sup>3</sup> Figures available at <http://stats.oecd.org/index.aspx?queryid=54757#>.

<sup>4</sup> In 2002, the European Council (Barcelona) set two main targets for childcare coverage in the EU by 2010: 33% of children under the age of 3 and 90% of children between 3 and mandatory school age. In 2013 these two targets were not reached in the EU28, and were reaffirmed and reiterated in Europe2020 objectives. In 2018, the 33% target has been reached on average, though several countries stay well below it, and the 90% target is almost closed, with again some considerable heterogeneity for several countries.

temporary contraction in the post-crisis years 2012-2014. Yet, the 2017 coverage rate still highlights a difference in the availability of childcare services, which can considerably help to understand the different attitudes of the two countries. The lack of childcare facilities, actually, determines to a great extent whether women with children will continue to work after the mandatory/optional leave (Romito et al., 2002; Gornick and Meyers, 2003; De Henau et al., 2008).

As for childcare expenditure specifically, we see that in 2013 France has spent a threefold amount on early childhood and education care in terms of GDP with respect to Italy: 1.3% against 0.5%. While France allocated the public funds evenly between the two age groups, Italy, out of its low 0.5% of GDP, has allocated 0.1 for the youngest cohort (the more problematic one) and 0.4 for the oldest.

This study adds up to existing literature by analysing micro data of two similar countries but with different gender gap closing paths, trying to understand what role is played by existing differences in sharing family care responsibilities among women and men on employment and health status. The approach is quite innovative in that it comparatively looks at a multidimensional approach of gender gaps, which is not so common in gender studies. This is relevant because there are overlaps between professional and family life and looking together at employment and health allows further insights on this socio-economic phenomenon.

The paper proceeds as follows. Section 2 describes the most important literature on employment and health and their link to family care responsibilities. Section 3 describes the microdata used and the empirical strategy to simultaneously estimate employment and health. Section 4 discusses the main results, and Section 5 concludes.

## *2. Literature review*

Care responsibilities are distributed unevenly within the family between women and men, especially when in paid employment.

The 2015 European Working Conditions Survey shows that in the EU countries households with the youngest child under 7, women spend on average 32 hours a week on paid work and 39 hours on unpaid work, whereas men spend 41 hours a week on paid work and 19 hours on unpaid work (Eurofound, 2016). When other dependents, such as disabled children or grandparents, are present in the same household, the burden is even heavier: disabled children and grandparents are (life)long or medium-short term care responsibilities in modern ageing society, even when young children are grown up. Based upon this, scholars have carried their studies in many fields.

Important and consolidated studies have been published on the impact of time taking family care responsibilities on employment and participation of women since the seminal work of Mincer (1962). Women's participation and employment are strongly and negatively affected by the presence of children (Coe and Van Houtven, 2009; Dukhovnov and Zagheni, 2015; Bauer and Sousa-Poza, 2015) and more simply by the event of a marriage (Del Boca et al., 2008).

Some studies, for instance, focused on the relationship between availability of childcare services and labour market performance of women. The feminist and institutional literature looking at the role of family policies has proved that the provision of formal childcare and lower childcare prices are positively associated with the labour market performance

of women. In contrast, informal childcare is usually associated with a lower employment propensity of women. Addabbo et al. (2012), for example, find a positive association between the availability of childcare services and women's labour market opportunities. They examine EU-SILC data for Italy in 2007 and note that, consistent with the literature on female labour supply, the availability of childcare services positively affects women's participation, as well as their hours of paid work. Additionally, Erhel and Guergoat-Larivière (2013), examine twenty-four European countries using the 2005/2006 EU-SILC data and find that women's employment is positively associated with formal childcare and with characteristics of national labour market regimes, whereas the use of informal childcare is associated with lower women's employment rates.

The presence of elderly members in the household has also been studied in terms of negative effect on women's employment (Johnson and Lo Sasso, 2006, Bolin et al., 2008; Van Houtven et al., 2013), as well as in terms of opportunity cost between intra-family money transfer and employment outcomes (Cox, 2003, 2007). Additionally, various studies investigated the impact of childcare provided by grandparents on mothers' labour market perspectives, and therefore the joint effect of the presence of child and elderly not disabled (grandparents) in the same household (Lewis et al., 2008; Settles et al., 2009). The findings suggest that many grandparents provide care for their grandchildren when the parents are unable to do so or cannot afford formal paid care, because most of this care is unpaid (Carmichael and Charles, 2003; Viitanen, 2010). The help of grandparents can be crucial for working mothers (and fathers) especially during years when both work and the care of children are very demanding (Tobío et al., 2010).

Family care responsibilities also include the possible presence of disabled household members. The sparse literature (Berger and Fleisher 1984; Haurin 1989; Charles 1999; Siegel 2006; Parodi and Sciulli 2008; Braakmann 2014) has mainly focused on wives' responses to their husbands' health deterioration, illness and disability and has found heterogeneous results on the existence of a "disability employment penalty" (Berthoud 2008) that identifies the impact of living with a disabled person on the employment probabilities of the disabled person's relatives. Some contributions focused on how the presence of children with chronic conditions affects mothers' labour supply. Evidence supports the view for which disability of children is detrimental for mothers' employment, but the negative effects are especially related to the role of maternal characteristics and the nature of childhood disability (e.g. Brandon 2000, Zan and Scharff 2018).

An important determinant is then the distribution of family tasks and responsibilities in the household. This implies that women have often a more restricted access to labour market with considerable negative consequences on economic status, through the reduction of factor accumulation and their productivity (Klasen, 2002; Klasen and Lamanna, 2009). Even if in most countries the dual earner model (both partners working full-time), or the modified breadwinner model (one partner working part-time – the so called secondary earner – and the other one full-time), have replaced the traditional male breadwinner model, the gender gap in terms of inactivity and part-time work remains significant (Ciccia and Bleijenbergh, 2014).

Another relevant gender biased determinant of women's employment is given by the role of social institutions and social preferences. The social institutions build the

surrounding context within which men and women interact, make their choices and in so doing differentiate, also unconsciously, their behaviours. The public provision of family services is then influenced by the previously built social institutions. The lack of these care services and measures has been widely recognised as one of the more persistent obstacle to equalise the burden of family responsibilities (Del Boca and Vuri, 2007; Brilli et al., 2016). The existence of these unfavourable gender gaps in society and in particular in the labour markets has been proved to constitute additional constraints for women, detrimental to the elimination of those factors, hampering the freedom of women to choose to work according to the expectations developed throughout the investment in education (Bratti, 2003). Studies on fertility and participation (Del Boca et al. 2005), on investment in - and relevant fields of - education (Kabeer and Natali, 2013), on family formation and composition (Fernandez et al. 2005, Choo and Siow, 2006), besides other factors normally accounting for gender related employment analysis (geographical area, educational attainment, age, experience, etc.) have contributed to this literature.

Health is also well renown to be an important determinant of economic performance, and in particular employment (Grossman, 1972; Currie and Madrian, 1999; Garcia-Gomez et al. 2010). Anyway, family responsibilities not only limit employment opportunities; they also alter women's health status, playing a self-reinforcing impact on both variables.

Women's greater hours of unpaid work make them experience more stress than men. The unbalanced share of family care responsibilities increases the magnitude of the negative effect of care duties on health and employment: equalising gender roles and sharing activities would improve women's health

(McDonald et al., 2005). Paternity leave, for instance, is correlated with shorter career breaks, longer working hours, fewer penalties in terms of promotions and wages and improved labour market positions for mothers (Pylkkänen and Smith, 2004; Keck and Saraceno, 2013). Additionally, fathers' involvement in childcare is positively associated with children's social, emotional, physical and cognitive development (Tamis-LeMonda and Cabrera, 2002; Allen and Daly, 2007).

The studies on the relation between employment and health status suggest that health has a pervasive effect on most labour market outcomes, including wages, income, participation and hours worked (Currie and Madrian, 1999).

Direct and indirect health impacts on women's employment have been taken into consideration. Epidemiological and psychological literature have shown that caregivers may end up suffering high stress during an intense period of care, often leading to a worsening of the caregivers' health (Miller et al., 1991; Hooyman and Gonyea, 1995; Gallagher and Mechanic, 1996; Pinquart and Sörensen, 2011).

In particular, the psycho-physical stress facing women in their multiple burden has been linked to adverse effects on physical and mental health (Henretta et al., 2002; Do et al., 2014), and associated with higher economic costs (Pierret, 2006; Wiemers and Bianchi, 2015; Suh, 2016), at individual and collective level.

It is undeniable that the largest part of the studies on health and labour outcomes (Bound et al., 1999; Au et al., 2005; Disney et al., 2006) has focused on the role played by health in retirement decisions, showing that a worse/ning health status has explanatory power for exiting labour market. Differentiating by age (older versus younger worker), indeed, has been one of the main strands of research. However,

differentiating by gender adds a lot of insights to the analysis of the relation between employment and health (García-Gómez et al., 2010).

At comparative level, relevant studies investigate our interest variables, that are employment, family responsibilities, and health, in pair (employment and family responsibilities or health and family responsibilities). Much to our knowledge, not many studies analyse these three variables together at a comparative level (in Italy and France). For instance, the lack of employment opportunities in some Southern European countries, such as Italy, has been shown to have undeniable negative consequences on female employment and especially on women's re-entry to work after childbirth (Haas and Rostgard, 2011). Similarly, a rigid labour market has been argued to reduce women's opportunities to return to the labour market (Del Boca et al., 2005). Studies in Italy and France jointly investigating health and employment effects have been limited to maternal health and after birth re-entry (see Saurel-Cubizolles et al., 2000; Romito et al., 2002).

The novelty of this paper is that it offers a comprehensive and comparative analysis of three important indicators between Italy and France. These countries represent interesting case studies because of their analogies and differences explained above (see the Introduction), and they can be seen as 'representative' of two different welfare regimes.

Western European countries, such as France, belong to the Corporatist welfare state regime and are usually characterized as providing relatively high financial support for families but more limited support to working parents, with young children (Korpi, 2000; Leitner, 2003; Thévenon, 2011). Italy's welfare system, instead, corresponds to the Mediterranean model (Sapir, 2006; Torrìsi, 2011), traditionally characterised by strong job protection for the head of the household, and a low

level of transfers among the working age population (Kuitto, 2011; Fabrizi et al., 2014), as well as a conservative and protectionist role of the family (Bambra and Eikemo, 2009; Saraceno, 2017), much to the disadvantage of female population.

### *3. Empirical Strategy and Data*

#### 3.1 Empirical strategy

As explained in the Introduction, we are interested in estimating the impact of health on the employment opportunities by gender in Italy and France before and after the economic crisis. Because the health status possibly guides employment decisions, an endogeneity problem due to simultaneity possibly arises.

In order to take this endogeneity issue into account, we estimated a two-equation system model. One equation modelled the employment (probability) choice suspected of being endogenous - this is our main equation of interest - while the other modelled the health status, and included the employment indicator on its right side. This resulted in a two-equation system model (see Altonji et al., 2005 for a similar application) that can be consistently and efficiently estimated by limited information maximum likelihood.

We simultaneously estimate two binary regression models (probit models) for the probability of being employed and the health status to be good by gender in Italy and France for individuals aged between 25 and 64 years for the time windows 2007-2010 and 2011-2014, before and after the crisis, respectively. The choice of binary regression models

reflects the need to obtain a simplified and convenient representation of employment probabilities of both women and men to employment opportunity as well as good health chance. In terms of employment, our dependent variable is *one* if the individual is employed and *zero* otherwise. For the health status analysis, the outcome is a binary variable with a value of *one* for good health and *zero* for chronic disease.

The probit model used to estimate the employment equation was derived from a latent continuous variable ( $y_{1i}^*$ ) related to a set of explanatory variables  $x^5$  according to a standard linear model that can be represented as follows:

$$y_{1i}^* = \beta x_i + v_i, \quad (1)$$

where  $\beta$  is a vector of associated parameters to  $x$  and  $v$  is an error term drawn from a standardized normal distribution.

While  $y_{1i}^*$  is unobserved,  $y_{1i}$  would be observed, and related to  $y_{1i}^*$  by the following relationship:

$$y_{1i} = \begin{cases} 1 & \text{if } y_{1i}^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

The probit model for the health status equation was also derived from a latent continuous variable  $y_{2i}^*$  related to a set of explanatory variables  $z$  according to a standard linear model as follows:

$$y_{2i}^* = \alpha y_{1i} + \gamma z_i + u_i, \quad (3)$$

where  $\alpha$  is the coefficient associated with the endogenous employment variable,  $\gamma$  is a vector of associated parameters to

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<sup>5</sup> The vector  $x$  includes a variable, the regional unemployment rate, introduced for identification purposes.

$z$ , including some  $x$ -variables, and  $u$  is an error term drawn from a standardized normal distribution.

The two-equation system model allowed the error terms of both equations to be correlated. Accordingly, we also estimated a correlation term  $\rho_{vu}$  measuring the correlation between residuals related to health with that of the employment equation. In particular, a positive correlation would be indicative that an unobserved term increased both the health and employment outcomes, and *vice versa* in the case of negative correlation. Finally, for identification purposes, we use a variable (see Section 3.2) which explains employment but not health.

### 3.2 Data and Sample

Our data are from the EU-SILC panel. It is a panel survey based on harmonized methodology and definitions across most members of the European Union.<sup>6</sup> The topics covered by the survey are living conditions, income, social exclusion, housing, work, demography, health and education. We select data for Italy and France by gender in the time periods 2007-2010 and 2011-2014, before and after the economic downturn. Our samples include people aged between 25 and 64 years. In order to avoid to get mixed up with education enrolment and early retirement issues, we exclude from our analysis individuals under the age of 25 years and over the age of 64 years.

We also drop individuals with missing values for some variables used in the econometric analysis. Considering both the non-employed and the employed in the age range

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<sup>6</sup> See Eurostat (2010) for further and technical details about the EU-SILC data.

examined, in Italy 9,373 (7,688) female and 9,000 (6,893) male observations, and in France 12,592 (12,123) female and 11,172 (11,000) male observations remain over the period 2007-2010 (2011-2014). Tables 1 and 2 report summary statistics of the variables used in the econometric analysis computed on the samples of women and men disaggregated by time period for Italy and France, respectively.

The dependent variable of our main equation (see Section 3.1) is the probability of being employed. Italian women suffer from a double penalization, as they show the lowest employment rates, with respect to both Italian men and French women. We find that 56.4% (57.9%) of the active women in Italy are employed in 2007-2010 (2011-2014), with respect to 84.1% of active men in the first period (78%). Interestingly, French women show relatively high employment rate (73.1% in 2007-2010 and 72.3% in 2011-2014) and low gender gap compared to Italy. The definitions of employment and non-employment do not match the ILO definition. In the EU-SILC questionnaire, the respondents are indeed asked to self-define the main economic status in the current year.<sup>7</sup>

However, the magnitude of the employment gender gaps is well represented. According to the official statistics (see Eurostat data available at [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsq\\_ergan&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsq_ergan&lang=en)), in Italy the employment gender gap varies between a peak of 25.1 p.p. in 2007-2011 and 21.9 p.p. in 2011-2014. In France the gender gap is lower compared to Italy, and it decreases from 10 p.p. in the first period to 8.8 after the economic downturn.

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<sup>7</sup> The variable PL031 contains information on the self-defined economic status. People are asked whether they are working, unemployed, students, in retirement, disabled, in military service, or fulfilling domestic task.

The dependent variable for the health equation is the perceived health status (variable PH020 in the EU-SILC code). It is a dummy indicator that equals *one* for good health or absence of chronic (long-standing) illness condition, *zero* for chronic disease.

The overall age range considered [25, 64] is divided in four dummies for the age brackets [25, 34], [35, 44], [45, 54], and [55,64] as these different age ranges are characterized by different employment probabilities as well as different health status and different burdens of responsibilities).

Table 1. Descriptive statistics of individuals and households' characteristics for health and employment equations by gender in Italy for the periods 2007-2010 and 2011-2014

	Women 2007-2010		Men 2007-2010		Women 2011-2014		Men 2011-2014	
	Mean	S. D.	Mean	S. D.	Mean	S. D.	Mean	S. D.
<i>Employment equation</i>								
Employed	56.4	49.6	84.1	36.5	57.9	49.4	78.0	41.4
Age [25, 34]	18.3	38.7	18.0	38.4	15.0	35.7	15.0	35.7
Age [35, 44]	31.4	46.4	29.0	45.4	27.8	44.8	16.6	37.2
Age [45, 54]	28.0	44.9	31.7	46.5	32.3	46.7	27.3	44.5
Age [55, 64]	22.3	41.6	21.4	41.0	24.9	43.2	31.6	46.5
Primary education	44.2	49.7	47.3	49.9	34.1	47.4	35.6	47.9
Secondary education	35.7	47.9	35.0	47.7	42.1	49.4	45.2	49.8
Tertiary education	20.1	40.1	17.7	38.2	23.8	42.6	19.2	39.4
Married	71.8	45.0	67.2	47.0	66.0	47.4	64.1	48.0
Densely populated area	33.8	47.3	33.1	47.1	37.6	48.5	35.7	47.9
Experience in paid work	13.8	10.7	20.7	10.9	15.4	11.2	21.1	11.3
Presence kids [0, 6]	16.6	37.2	16.4	37.0	14.0	34.7	14.6	35.3
Presence elderly no disabled	8.7	28.1	6.9	25.3	6.9	25.4	5.2	22.3
No disabled in household	77.4	41.8	77.5	41.8	75.2	43.2	74.8	43.4
Disabled in household	15.4	36.1	15.8	36.5	18.2	38.6	18.9	39.1
Strongly disabled in household	7.2	25.8	6.7	25.0	6.6	24.8	6.4	24.5
Household components	2.0	5.2	1.9	5.5	3.2	7.3	3.2	1.2
Regional unemployment rate	7.44	3.49	7.28	3.44	11.14	4.78	11.1	4.74

2007/2011	25.0	43.3	25.0	43.3	25.0	43.3	25.0	43.3
2008/2012	25.0	43.3	25.0	43.3	25.0	43.3	25.0	43.3
2009/2013	25.0	43.3	25.0	43.3	25.0	43.3	25.0	43.3
2010/2014	25.0	43.3	25.0	43.3	25.0	43.3	25.0	43.3
<i>Health equation<sup>(a)</sup></i>								
Good health	84.3	36.4	85.9	34.8	81.0	39.2	83.3	37.3
Employed	56.4	49.6	84.1	36.5	57.9	49.4	78.0	41.4
North	42.1	49.4	43.7	49.6	47.6	49.9	47.6	49.9
Centre	22.0	41.4	22.7	41.9	21.7	41.3	22.6	41.8
South	35.9	48.0	33.6	47.2	30.7	46.1	29.8	45.8
Observations	9,373		9,000		7,688		6,893	

Notes: <sup>(a)</sup> For the health equation we only report the descriptive statistics of the variable not included in the employment equation.

Figures are in percentage, apart from household components in units, and experience in paid work in years.

Source: Authors' calculations on 2007-2010 and 2011-2014 EU SILC data.

Table 2. Descriptive statistics of individuals and households' characteristics for health and employment equations by gender in France for the periods 2007-2010 and 2011-2014

	Women		Men		Women		Men	
	2007-2010		2007-2010		2011-2014		2011-2014	
	Mean	S. D.						
<i>Employment equation</i>								
Employed	73.1	44.3	82.5	38.0	72.3	44.7	80.8	39.4
Age [25, 34]	17.1	37.7	16.1	36.7	17.3	37.8	16.9	37.5
Age [35, 44]	28.3	45.0	29.3	45.5	27.1	44.4	28.0	44.9
Age [45, 54]	29.4	45.5	28.8	45.2	29.9	45.8	29.1	45.4
Age [55, 64]	25.2	43.4	25.9	43.8	25.8	43.7	26.0	43.9
Primary education	27.9	44.8	22.1	41.5	21.0	40.7	16.7	37.3
Secondary education	41.1	49.2	50.1	50.0	32.2	46.7	39.0	48.8
Tertiary education	30.9	46.2	27.8	44.8	35.9	48.0	31.6	46.5
Married	62.2	48.5	63.4	48.2	58.2	49.3	57.8	49.4
Densely populated area	44.5	49.7	41.8	49.3	40.4	49.1	39.4	48.9
Experience in paid work	18,5	11.8	23,5	11.8	19,7	11,7	23,8	11,6
Presence kids [0, 6]	21.0	50.2	22.3	51.8	21.7	51.5	22.6	52.4
Presence elderly no disabled	17.0	37.6	17.8	38.2	17.2	37.7	17.8	38.2
No disabled in household	3.9	19.3	1.6	37.8	4.0	19.7	2.0	14.0
Disabled in household	11.5	31.9	11.8	32.2	11.4	31.8	12.6	33.2

Strongly disabled in household	5.9	23.4	5.5	22.7	6.4	24.5	6.3	24.3
Household components	1,9	0.5	1,9	0.6	3,0	1.3	3,0	1.3
Regional unemployment rate	8,35	2,53	8,31	2,47	9,74	0,85	9,74	0,85
2007/2011	25.0	43.3	25.0	43.3	25.0	43.3	25.0	43.3
2008/2012	25.0	43.3	25.0	43.3	25.0	43.3	25.0	43.3
2009/2013	25.0	43.3	25.0	43.3	25.0	43.3	25.0	43.3
2010/2014	25.0	43.3	25.0	43.3	25.0	43.3	25.0	43.3
<i>Health equation<sup>(a)</sup></i>								
Good health	68.0	46.7	69.8	45.9	66.4	47.2	68.7	46.4
Employed	73.1	44.3	82.5	38.0	72.3	44.7	80.8	39.4
North	59.2	49.2	58.9	49.2	56.0	49.6	55.2	49.7
Centre	20.9	40.6	23.0	42.1	24.5	43.0	25.6	43.6
South	19.8	39.9	18.0	38.4	19.4	39.5	19.2	39.4
Observations	12,592		11,172		12,123		11,000	

Notes: <sup>(a)</sup> For the health equation we only report the descriptive statistics of the variable not included in the employment equation.

Figures are in percentage, apart from household components in units, and experience in paid work in years.

Source: Authors' calculations on 2007-2010 and 2011-2014 EU-SILC data.

Educational variables are defined according to UNESCO's International Standard Classification of Education (ISCED). The EU-SILC distinguishes between education completed in the lower secondary stage (ISCED 0–2), upper secondary education (ISCED 3), and post-secondary or tertiary education (ISCED 5–7). In our samples we find increasing levels of education especially for women between the two time periods. This might partly reflect the fact that, after the economic crisis, the number of job opportunities increased only in highly skilled professions and this has contributed to modify the composition of employed workers by educational level both within and between the countries examined (see, for instance, van der Ende et al., 2014). There is a reduction of women with primary education (from 44.2% in 2007-2011 to 34.1% in 2011-2014 for Italy, and from 27.9% to 21% for

France), and an increase of tertiary educational attainment rates (from 20.1% in 2007-2011 to 23.8% in 2011-2014 for Italy, and from 30.9% to 35.9% for France).

Three dummy variables for the geographical area of residence (North, Centre, and South) are included in the model specification for health. More than 40 % of the samples live in the North of Italy, followed by those living in the South (more than 30%) and in the Centre (more than 20%). In France, we find that more than 55 % of the samples live in the North, around 25 % in the Centre, and the remaining 20 % in the South. In the employment equation we include regional unemployment rate, which, as it will be explained later, is used for identification purposes. Indicators for densely populated area, marital status, and experience in paid work (measured in years) are included in the model, as they likely affect job opportunities.<sup>8</sup>

The focus of this work is on the effects of caring activities on women employment (and perceived health status). First, caring activities refer to the presence of children in the household. Second, we include controls for the presence of elderly (individuals aged 65 or over) in the household. Third, we account for possible extra caring due to the presence of disabled household members with different degrees of activity limitations (some activity limitations and strong activity limitations). Finally, the household composition - i.e., number of its components - also offers important insights. We examine the impact of such caring activities also on the employment probabilities of men to pinpoint differences/gaps and room for improvements.

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<sup>8</sup> Work experience is not included in the equation for perceived health status.

A set of covariates are used to capture the effects of some very important caring activities (pertaining to the four main categories just described) on employment opportunities and perceived health. We included an indicator for the presence and number of kids aged between 0 and 6 in our analyses. The data offered the opportunity to distinguish between different age classes of children and we chose the [0, 6] range because this age class tacitly implies the highest intensity of caring activities. We account for the presence of elderly not disabled in the household as they might generate opposite effects. On the one hand, they might need care (burden-increasing), but on the other hand they might support the caring activities of the other household members, that is for instance taking care of child (burden-decreasing). Additionally, we consider the presence of disabled household members with different degrees of disability. The EU-SILC defines disability as limitation in daily activities of different degree (variable PH030 in the EU-SILC code). We used indicators for the presence of household members with both some limitation in activities and strong limitation in activities. Similarly to what happens with kids, different degrees of disability presumably entail different degrees of caring duties.

We also offer information on the household size measured by the number of its components as this might affect both the decision to work and the (perceived) health status of women.

In the employment equation, we added an indicator to approximate the demand-side effect, that is the annual regional unemployment rate (available from <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tps00203>).

The unemployment rate was used for identification purposes. The estimates of the health equation, as explained above, could be problematic because of the

potential endogeneity of the employment decision. To deal with this problem we estimated a two-equation system model. Our identification strategy relies on the effects of labour market conditions on the employment decisions on women. The regional unemployment rate is thus used for identification because it affects the labour market outcomes/employment probabilities but not the individual health. Variations in local labour market conditions have been used as an identification strategy in a number of works on labour market outcomes, education and training choices, skill acquisition including, among others, Campolieti et al. (2010), Parent (2006), and Riddell and Riddell (2014).

Finally, because we are using panel data, we included yearly dummy variables in our set of covariates.

## 4. Results

We adopted a two-equation system model to estimate the impact of health on both women and men employment probability, accounting for endogeneity of employment. Tables 3 and 4 report the average marginal effects (AME) related to the main equation on employment by gender in the two periods examined for Italy and France, respectively. Tables 5 and 6 show the AME for the health equation. The use of the AME allows an interpretation of the effects in percentage terms. For dummy variables, the AME give the impact (in percentage terms) of a change from zero to one of the dummy variable on the dependent variable. For continuous variables, such as the number of years of experience in paid work and household components, the marginal effects give the impact (in percentage terms) of an infinitesimal change of these variables on the dependent variable. In the next subsections we report and comment on the impact of the regressors described in Section 3.2 (and in Tables 1 and 2) on employment probability (Section 4.1) and health status (Section 4.2).

### 4.1 Employment equation

Tables 3 and 4 report the AME for the employment equation by gender before and after the economic crisis for Italy and France, respectively. Employment probabilities are positively associated to education in both countries. Interestingly, in Italy we find that female employment is more importantly affected by education with respect to male employment. The positive role of education for women is confirmed by similar studies on Italian female labour force participation (Di

Tommaso, 1996; Del Boca et al., 2005; Bratti and Staffolani, 2012).

The employment probability of women with secondary educational attainment levels are on average 14% higher with respect with those with primary education and the percentages increase to around 25% for tertiary level educated ones (+24.4% in 2007-2010 and +25.1% in 2011-2014). The gender gap with respect to the positive role of education is higher in Italy compared to France. There is evidence, hence, that women (especially in Italy) are overall and strongly more positively selected into employment: women who stayed out of employment were those who would have earned the lowest returns from the market work with a higher probability than that of men (see Table 3). This is in line with the existing literature showing that female participation rates in Catholic countries, such as Italy and Spain, and Greece are low and concentrated among highly educated women (Blau and Kahn, 2003).

Employment opportunities are also higher for people with experience in paid work. We find that employment probabilities of both genders decrease with age, but the differences between age ranges differ across genders. This pinpoints the importance of analysing and considering dummy variables for each age range (and not only a continuous variable for age). Specifically we find higher discrepancies between relatively younger women (aged between 25 and 34) and relatively older women (aged between 55 and 64) with respect to (corresponding) differences between younger and older men. Age is therefore a crucial factor when analysing female employment probabilities.

Italy and France show an interesting similarity across gender for the impact of marriage. In both countries we find that the status “married” has opposite effects on work participation

between men and women. Employment probabilities for women are negatively associated to marriage (-9.8% in 2007-2010 and -6.5% in 2011-2014 in Italy, and -1.7% in 2007-2011 in France), while probabilities for men are positively associated to marriage (4.1% in 2007-2010 and 5.8% in 2011-2014 in Italy, and 1.7% in 2007-2010 in France).

The degree of urbanization does not exert a clear role on employment probabilities in both countries (see Tables 3 and 4).

Moving to caring responsibilities, having kids aged between 0 and 6 years reduces women's employment probability especially before the economic downturn (the substitution effect is still works before the crisis) and in France (-5.8 % and -11.1% in 2007-2010, and -2.2 % and -8% in 2011-2014 in Italy and France, respectively). Male employment probabilities are instead positively associated to the presence of kids in both countries. This different sign of the impacts of the presence of kids between genders, and especially the negative effect on women employability, is confirmed by the existing literature (e.g., Addabbo et al., 2012; Erhel and Guergoat-Larivière, 2013). Moreover, the negative effect of the presence of kids on female employment pinpoints that childcare coverage as well as childcare expenditure, discussed in the Introduction, is not enough to allow women of both countries fully participating in the labour market.

The presence of elderly not disabled, where significant, negatively affects the employment probabilities of both genders. To better explain the sign and significance of the presence of elderly and kids in the household, we have estimated, where possible (sample sizes), the joint effect of the two indicators on employment by using interaction variables. Interestingly, we found that for women, when either an elderly or a kid is present, the impact on employment is

negative, suggesting that women act as elderly or child carer. When both are present, instead, the effect on women employment probabilities was not significant, suggesting that likely elderly members help to take care of the kids. The same negative effect of elderly on employment probabilities was found for men, but a positive impact was instead found for the presence of kids. This might be due to the fact that often childcare is almost entirely borne by women (Coe and Van Houtven, 2009; Dukhovnov and Zagheni, 2015; Bauer and Sousa-Poza, 2015). Again, when both kinds of dependents are present, there is not a significant effect on men employment probabilities. This suggests that quite often elderly (not disabled) are a source of (free) informal care that can alleviate the overall responsibilities of both men and women, reducing also the total cost of external childcare (see, for instance, Carmichael and Charles, 2003; Viitanen, 2010).

The presence of disabled in the household (with some and strong activity limitations) negatively affects the employment probabilities in both countries. Specifically, the impact is higher for men compared to women, especially in France. This is confirmed by the existing literature on the indirect employment effects of disability, that are the effects of the presence of a cohabiting disabled individual on the employment perspectives of the other household components (see, for instance, Berger and Fleisher 1984; Haurin 1989; Charles 1999; Siegel 2006; Parodi and Sciulli 2008; Braakmann 2014).

The household composition measured by the number of household components, exerts an opposite effect on the employment probabilities of men and women. The larger is the household the lower the employment probabilities of women and the higher the employment probabilities of men. This might reflect the gender roles in the private sphere

(division of responsibilities and work within the household) discussed above, as women are almost the only responsible of caring, while men are responsible of the paid labour market activity.

The estimates of our main model suggest that caring activities negatively and significantly affect the employment probability, especially of women, and the effect only slightly changes with the economic downturn, implying a structural fault in the phenomenon. Our findings are in line with similar previous works examining the effect of caring activities on labour force participation and employment both in Italy and France (for Italy see, for instance, Marenzi and Pagani, 2005, and Bratti and Staffolani, 2012; for France, see Kocourková, 2002, and Robila, 2012).

As regards demand-side factors, a high (regional) unemployment rate (used for identification purposes, see Section 3.2) reduces employment probabilities, and this is in line with expectations.

Table 3. Employment equation for Italian women and men: average marginal effects, 2007/2011; 2011/2014

	AME	S. E.						
	Women		Men		Women		Men	
	2007/2010		2007/2010		2011/2014		2011/2014	
<i>Dependent variable: employment probability</i>								
<i>Age dummies- Reference [55, 64]</i>								
[25, 34]	.610	.015 ***	.337	.016 ***	.500	.019 ***	.424	.021 ***
[35, 44]	.542	.013 ***	.343	.012 ***	.473	.015 ***	.428	.017 ***
[45, 54]	.408	.013 ***	.288	.009 ***	.359	.013 ***	.335	.013 ***
<i>Education: Reference - Primary</i>								
Secondary education	.149	.009 ***	.055	.008 ***	.134	.010 ***	.100	.010 ***
Tertiary education	.244	.010 ***	.097	.010 ***	.251	.012 ***	.176	.014 ***
Married	-.098	.010 ***	.041	.009 ***	-.065	.011 ***	.058	.012 ***

Densely populated area	.002	.009	.009	.007	.010	.010	-.002	.010	***			
Experience in paid work	.021	.000	***	.005	.001	.022	.000	***	.012	.001		
<i>Caring activities: children, disabled, household composition</i>												
Kids [0, 6]	-.058	.009	***	.020	.009	*	-.022	.011	***	.039	.013	*
Elderly not disabled	-.071	.015	***	-.051	.013		-.103	.018	***	-.044	.019	***
Disabled in household	-.036	.012	***	-.056	.009	***	-.039	.012	***	-.057	.011	***
Strongly disabled in household	-.055	.016	***	-.038	.012	*	.021	.019		-.090	.017	***
Household components	-.019	.009	*	.000	.007		-.009	.004	*	.011	.004	
Regional unemployment rate	-.006	.001	***	-.001	.001	**	-.005	.001	***	-.006	.001	***
<i>Yearly dummies</i>												
2008/2012	.001	.012		.013	.011		-.014	.013		-.013	.013	
2009/2013	-.090	.012	***	-.081	.010	***	-.012	.014		-.009	.013	
2010/2014	-.085	.012	***	-.077	.010	***	-.009	.014		-.002	.014	
Observations	9,373		9,000		7,688		6,904					
Log likelihood	-8198.437		-6381.33		-7138.93		-5851.06					

Note: Average marginal effects, Standard errors, and significance levels: § p < 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' calculations on 2007-2010 and 2011-2014 EU SILC data.

Table 4. Employment equation for French women and men:  
average marginal effects, 2007/2011; 2011/2014

	AME	S. E.						
	Women		Men		Women		Men	
	2007/2010		2007/2010		2011/2014		2011/2014	
<i>Dependent variable: employment probability</i>								
<i>Age dummies- Reference [55, 64]</i>								
[25, 34]	.512	.013 ***	.390	.015 ***	.535	.015 ***	.461	.017 ***
[35, 44]	.444	.010 ***	.346	.011 ***	.489	.012 ***	.414	.013 ***
[45, 54]	.346	.009 ***	.282	.008 ***	.364	.010 ***	.314	.009 ***
<i>Education: Reference - Primary</i>								
Secondary education	.063	.008 ***	.048	.007 ***	.081	.010 ***	.042	.009 ***
Tertiary education	.183	.009 ***	.141	.009 ***	.175	.009 ***	.156	.009 ***
Married	-.017	.008 *	.017	.007 *	-.004	.008	.006	.008
Densely populated area	-.014	.007 *	.006	.006	-.004	.007	.011	.007
Experience in paid work	.012	.000 ***	.005	.000 ***	.014	.000 ***	.010	.001 ***
<i>Caring activities: children, disabled, household composition</i>								
Kids [0, 6]	-.111	.007 ***	.013	.009	-.080	.013 ***	.021	.009 *
Elderly not disabled	-.076	.017 ***	-.075	.019 ***	-.079	.029 ***	-.171	.019 ***
Disabled in household	-.001	.011	-.033	.009 ***	-.005	.011	-.044	.010 ***
Strongly disabled in household	.015	.014	-.026	.012 *	-.029	.014 *	-.067	.012 ***
Household components	-.014	.008 *	.050	.006 ***	-.012	.003 ***	.023	.003 ***
Regional unemployment rate	-.003	.001 ***	-.005	.001 ***	-.003	.001 ***	-.011	.005 *
<i>Yearly dummies</i>								
2008/2012	-.011	.010	-.018	.009 *	-.008	.011	.004	.010
2009/2013	-.079	.010 ***	-.084	.009 ***	-.026	.012 *	-.001	.011
2010/2014	-.077	.010 ***	-.091	.009 ***	.015	.013	.024	.013 *
Observations	12,590		11,169		12,123		10,998	
Log likelihood	-12631.97		-9891.22		-12847.13		-5851.06	

Note: Average marginal effects, Standard errors, and significance levels: § p < 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' calculations on 2007/2010 and 2011/2014 EU SILC data.

## 4.2 Health equation

The AME of the probit model for the health status of Italian and French women and men are reported in Tables 5 and 6. The results suggest that employment exerts a significant role on perceived health status, in that employment positively affects the subjective health status of both genders. We note similarities across countries for the individual/household characteristics positively affecting health status of women and men. Being younger, (secondary) high educated, married, and living in larger households (number of household components) positively affect the health status. The relevance and signs are maintained after the crisis. In Italy we find that health status is positively associated to residing in the South, while in France we do not find a clear role for the macro region of residence.

As far as caring activities are concerned, the presence of kids aged from 0 to 6 years exerts a negative impact on women health after the economic recession in Italy (-2% in 2011-2014), while the impact is positive for French women both before and after the crisis (+4% before and +9.6% after the recession). There is no association instead between the presence of kids in the household and men's health. The presence of cohabiting elderly not disabled does not affect health in Italy, while it exerts a positive impact on both genders health in France thus deserving further research on the possible explanations. Caring of disabled, both with some and strong limitation in activities, negatively affects the health of women and men in both time periods (see Tables 5 and 6). According to our findings from the employment equation and to those of health status analysis, caregiving activity negatively affects not only employment probability but also

(and significantly) perceived health status especially of women.

Our estimation results also reveal that employment is endogenous in the health equation. The estimated *rho* parameters are negative and significant for both countries and the time periods analysed. A negative sign of the *rho* parameters suggests that confounding factors increasing the employment probability decrease the (perceived or subjective) health status. It is therefore essential to take endogeneity into account.

Table 5. Health equation for Italian women and men: average marginal effects, 2007/2011; 2011/2014

	AME S. E.		AME S. E.		AME S. E.		AMES. E.	
	Women		Men		Women		Men	
	2007/2010		2007/2010		2011/2014		2011/2014	
<i>Dependent variable: health status</i>								
Employed	.043	.019 *	.199	.034 ***	.054	.019 ***	.050	.041
<i>Age dummies- Reference [55, 64]</i>								
[25, 34]	.124	.015 ***	.096	.018 ***	.202	.017 ***	.199	.019 ***
[35, 44]	.071	.012 ***	.058	.017 ***	.097	.013 ***	.118	.017 ***
[45, 54]	.047	.012 ***	-.005	.015	.036	.012 ***	.061	.015 ***
<i>Education: Reference - Primary</i>								
Secondary education	.024	.010 *	.030	.008 ***	.045	.011 ***	.033	.011 ***
Tertiary education	.002	.012	.006	.010	.028	.014 *	.008	.014
Married	.032	.009 ***	.018	.009 *	.018	.010 *	.010	.012
<i>Geographical area of residence: Reference - South</i>								
North	-.053	.009 ***	-.018	.008 *	-.052	.011 ***	-.041	.012 ***
Centre	-.012	.011	.025	.010 *	-.036	.013 ***	-.007	.013
<i>Caring activities: children, disabled, household composition</i>								
Kids [0, 6]	.010	.012	-.015	.012	-.020	.012 *	.005	.012
Elderly not disabled	.011	.013	-.008	.016	.032	.018 *	.018	.022
Disabled in household	-.068	.010 ***	-.043	.010 ***	-.109	.011 ***	-.101	.011 ***
Strongly disabled in household	-.106	.013 ***	-.093	.013 ***	-.105	.017 ***	-.048	.018 ***
Household components	.029	.008 ***	.024	.007 ***	.031	.004 ***	.021	.004 ***
<i>Yearly dummies</i>								
2008/2012	.000	.011	-.015	.010	.039	.012 ***	.039	.012 ***
2009/2013	.004	.011	.001	.010	.039	.012 ***	.028	.012 *

2010/2014	-0.006	.011	.003	.010	.056	.012	***	.030	.012	*	
Rho	-.033	.052	**	-.279	.094	-.018	.051	**	.096	.105	*
Observations	9,373		9,000		7,688		6,904				

Note: Average marginal effects, Standard errors, and significance levels: § p < 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' calculations on 2007/2010 and 2011/2014 EU SILC data.

Table 6. Health equation for French women and men: average marginal effects, 2007/2011; 2011/2014

	AME	S. E.										
	Women		Men		Women		Men					
	2007/2010		2007/2010		2011/2014		2011/2014					
<i>Dependent variable: health status</i>												
Employed	.125	.025	***	.138	.042	***	.198	.024	***	.223	.036	***
<i>Age dummies- Reference [55, 64]</i>												
[25, 34]	.127	.017	***	.164	.024	***	.098	.017	***	.116	.020	***
[35, 44]	.068	.015	***	.098	.021	***	.040	.016	*	.089	.018	***
[45, 54]	-.010	.014		.033	.020		-.003	.014		.028	.017	*
<i>Education: Reference - Primary</i>												
Secondary education	.069	.010	***	.028	.050	***	.036	.012	***	.023	.012	
Tertiary education	.115	.012	***	.005	.045	***	.062	.012	***	.048	.013	***
Married	.044	.009	***	.013	.003		.019	.009	*	-.020	.010	*
<i>Geographical area of residence: Reference - South</i>												
North	-.002	.010		.002	.011		.015	.011		.021	.011	*
Centre	.012	.012		.020	.013		-.014	.012		.015	.012	
<i>Caring activities: children, disabled, household composition</i>												
Kids [0, 6]	.040	.011	***	-.017	.009	*	.096	.014	***	-.001	.010	
Elderly not disabled	.043	.021	*	.019	.034	***	.059	.022	***	.065	.032	***
Disabled in household	-.112	.012	***	-.091	.013	***	-.085	.013	***	-.076	.013	***
Strongly disabled in household	-.096	.017		-.102	.018	***	-.109	.016	***	-.094	.017	***
Household components	.080	.009	***	.034	.009	***	.021	.004	***	.019	.004	***

<i>Yearly dummies</i>										
2008/2012	-.030	.011	***	-.021	.012	*	.005	.012	.013	.012
2009/2013	-.030	.011	***	-.015	.013		-.002	.012	.010	.012
2010/2014	-.020	.011	*	-.007	.013		.008	.013	.026	.013
Rho	-.043	.047	**	.053	.075	**	-.182	.046	**	-.177
Observations	12,590			11,169			12,123		10,998	

*Note: Average marginal effects, Standard errors, and significance levels: § p < 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.*

*Source: Authors' calculations on 2007/2010 and 2011/2014 EU SILC data.*

## *5. Concluding remarks*

In all industrialised countries, the labour force participation rate of women has increased rapidly over the past decades. Nonetheless, it continues to stand well below that of men. Moreover, women in most countries continue to have a discontinuous pattern of employment over their life-course, resulting in substantial income loss and experiencing a much greater stress from family-work conciliation issues.

Lower levels of female employment together with lower participation in the active economic life, and other undue gender economic gaps (for instance, the pay gap), imply a lower income expectation and return over the whole life cycle of women. This generates a persistent vicious circle through which women, by earning systematically less, even when they work at same level, have access to lower personal income, lower autonomy and wealth, thus perpetrating their vulnerability over time and through generations. This is not only an individual loss: this contributes to keep low the potential aggregate income of a country, no matter if advanced or less developed.

To support and encourage an increased participation of women in the labour market, governments in most countries have adopted various work-family reconciliation policies in recent decades. Despite these, major obstacles to women's employment persist. Actually, care responsibilities - such as childcare, disabled or elderly care, housework - still remain considerably on women's side and go beyond pre-school age of children, thereby constituting strong barriers to employment and its continuity through the life course. These caring responsibilities also negatively affect women's health.

Women's greater hours of unpaid work for caring activities make them experience more stress than men. The unbalanced share of family care responsibilities increases the magnitude of the negative effect of care duties on health and employment.

In order to capture the relationship between employment, caring activities and health outcomes for women (and men, as well as the related gender gap), in this work we simultaneously analysed employment probabilities and health status by gender in Italy and France.

We found that employment, especially for women, is negatively associated to caring responsibilities, such as the presence of kids aged between 0 and 6 years, elderly, and disabled with some and strong activity limitations in the household. The effect for women and men employment probability only slightly changes with the economic downturn, implying a structural weakness.

Summing up the analyses, we ran in the two countries, we noted that employment probabilities are positively associated to education in both countries. Interestingly, especially women's employment in Italy benefits from high education, thereby suggesting possible positive selection of women into employment. We also interpret this as a possible strong channel of reverting those cultural norms and socio-institutional barriers that we found to constitute a big difference between the two countries' societies and economies, out of which apparently many gender gaps find their source.

This interpretation is supported further when we found that the presence of kids as well as elderly still has a negative impact on the employment performance of women in both countries implying that the trade-off is entirely weighing on women's shoulders, while having the effect of promoting

employability for men in Italy and France. There is still a large scope for intervention to help families in the sharing of family responsibilities, especially when we read this effect together with that on health. Interestingly, we found that presence of kids positively affects health for French women (implying the children as a source of health/happiness/non stress). Also very interestingly, the presence of children has no impact on men's health, being them French or Italian.

The presence of elderly, instead, negatively affects the employment probability of both genders. A further family responsibility, that is the presence of disabled people, has a negative impact for both the studied phenomena, suggesting that extra efforts on the measures conceived for families with disabled member have to be put in both countries.

In conclusion, hampering - or simply not supporting and empowering - an equal set of employment opportunities together with an equal share of family burdens and responsibilities yields a threefold stumbling block for the whole development of a socio-economic system: the costs of inactive population and the unbalanced share between working and not working people in term of pensions sustainability and health outcomes; the waste of talents; the missed return to human capital investments and the missed earning opportunities of women.

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