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Unpaid Work, the Household and the Value of Time

An Analysis of the Effects of the Unequal Distribution of Unpaid Care and Domestic Work within the Household and Beyond

European PhD in Socio-Economic and Statistical Studies

XV ciclo

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To Letizia,

who taught me the meaning of 'care'

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Preface and Acknowledgments

A long journey brought me to the writing of this doctoral thesis. It started back in 2005, when in the University of Turin I was first introduced to the concept of gender applied to economic analysis, and it led me to the University of Rome Sapienza, where I met the wonderful group of colleagues who supported me during my PhD studies.

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On my way back from IAFFE 2019 Annual Conference, Erica Aloè

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Introduction

> *"We hear a lot of talk today about "the crisis of care." Often linked to such phrases as "time poverty," "family/work balance," and "social depletion," this expression refers to the pressures from several directions that are currently squeezing a key set of social capacities: the capacities available for birthing and raising children, caring for friends and family members, maintaining households and broader communities, and sustaining connections more generally. Historically, this work of "social reproduction" has been cast as women's work […]. [I]t is indispensable to society. Without it there could be no culture, no economy, no political organization. No society that systematically undermines social reproduction can endure for long. Today, however, a new form of capitalist society is doing just that. The result […] is a major crisis—not simply of care, but of social reproduction in this broader sense."* (Fraser, 2017)

The analyses that are presented in the following pages focus on a form of work that has often been excluded from economic analysis: unpaid care and domestic work. This form of work is performed within the household mainly by women, and for this reason it largely remains invisible and undervalued. When words such as inactive are used to refer to persons outside the labour market, the indifference toward unpaid care and domestic work becomes clear.

Nonetheless, this form of work is fundamental for the wellbeing of individuals and of societies. Independently from our capacities the wellbeing of each of us depends at some degree from the unpaid care and domestic work performed by someone else. Sometimes we are the providers. Other times we are the recipients. There are phases in life, when we are too young or too old, for example, when we are completely dependent on the unpaid care and domestic work provided by someone else. While there are other phases, especially if we are women, in which we are squeezed between the care we must provide to our children and the care required by our elderly parents.

Care responsibilities have a wide impact on our experience of life. They can impact our ability to enjoy free time, or even compromise our capacity to undertake paid employment. This might happen because care responsibilities are not equally shared within the household between partners, nor within society. Societies can be more or less *familistic* depending on the degree to which they depend on households for responding to the care needs of their citizens.

A focus on the allocation of unpaid care and domestic work by gender highlights a major imbalance between women and men. The latest ILO report on unpaid care work (ILO, 2018) highlights that the time spent by women in unpaid care work[1] varies enormously across countries, ranging from a maximum of 5 hours and 45 minutes per day for Iraq to a minimum of 2 hours and 48 minutes per day in Taiwan, but the gap between the time that women and men devote to unpaid care work is wide in every country that ILO analysed. On average, men spend 1 hour and 23 minutes per day in unpaid care work while women spend 4 hours and 25 minutes, more than three times the time spent by men in this activity.

The unequal division of unpaid care and domestic work between women and men represents an economic issue. In particular, Arlie Hochschield (Hochschield and Machung, 1989) coined the definition of "second shift", that became popular in feminist economics, to suggest that employed women often experience a double day of work if we consider both their paid and unpaid work.

The quantity of time spent in unpaid care and domestic work by the members of a household also depends on the amount of services provided by the state. What states do and the conditions in which benefits are made available and services are provided carry implicit objectives and significant consequences. By these means the states can support particular models of family and of gender relations, while delegitimizing others. For example, welfare systems may have implication for the form and development of households depending on how the state looks at women: primarily as mothers, primarily as workers, or primarily as citizens (Rubery *et al.*, 2001).

This thesis is comprised of four parts, among which there are two empirical analyses. Behind each empirical analysis there is an underlying question: is a better division of unpaid care and domestic work possible? Would our societies benefit from it?

In the first empirical analysis (chapter 3), I employ the most advanced measure of time and income poverty developed by the Levy Economics Institute – the LIMTIP – for analysing the Italian case and exploring the linkages between gendered time allocation, employment patterns and wellbeing. This attempt represents the first time that the LIMTIP has been applied to a developed context. The peculiarity of the LIMTIP methodology stands in the fact that its analysis of households' wellbeing is grounded on the analysis of individuals' wellbeing. And this provides the possibility to bring forward an analysis on two different levels – household and individual. This characteristic makes the LIMTIP a gender-sensitive poverty measure, and this represents a major innovation in

[1] In ILO definition, unpaid care work includes caregiving to household members, domestic services for own final use and community services to other households.

terms of poverty measurement. Additionally, the complexity of LIMTIP allows a deeper examination of the roots of poverty, offering a better understanding of its possible solutions. As several previous LIMTIP studies pointed out (Zacharias, Antonopoulos and Masterson, 2012; Zacharias, Masterson and Kim, 2014; Zacharias, Masterson and Memis, 2014; Zacharias *et al.*, 2018), providing jobs is not always the most efficient solution for alleviating poverty in a population. In particular, this means that when we take into account both the income and the time dimension of poverty, decreasing income poverty (especially through jobs creation) might result in an increase in time poverty. From a gender-sensitive perspective this means that in a country such as Italy, where the division of paid work and unpaid care and domestic work between women and men is deeply unequal, providing more jobs for women belonging to the poorest households would not reduce their poverty if the state does not take over a part of their care responsibilities through the offer of affordable and quality social care services.

In the second empirical analysis (chapter 4), we look at the effects that the fiscal consolidation measures, together with the public reforms and the austerity measures adopted by European countries to avoid the risk of a sovereign debt crisis, may have had on women through their impact on unpaid care and domestic work. In most European countries, austerity policies tended toward spending cuts – with social protection and public administration predominating among the areas of public expenditure that governments targeted for expenditure reduction. Since women are the main beneficiaries of public expenditure schemes and providers of services that complement or substitute for public provisioning, and they are also overrepresented in the public sector, a vast literature – see, for example, the edited books by Karamessini and Rubery (2014) and Bargawi, Cozzi and Himmelweit (2017) – expect these measures to have a stronger negative impact on women. However, in examining the effect of austerity measures on gender inequality, only a small share of the literature to date has dealt with unpaid work. Much depends on the fact that international harmonized time-use data are still unavailable. Therefore, scholars that decided to employ time-use data were forced to focus on a single country (Bahçe and Memiş, 2013; Berik and Kongar, 2013), while others based their assessment on an evaluation of public spending cuts without providing an empirical analysis at the micro level (Ortiz and Cummins, 2013; Barry, 2017; Gonzales Gago, 2017; Reed, 2017; Vertova, 2017). The distinctive feature of this analysis is an assessment of the effects of the cuts to public expenditure in social protection on time poverty at the European level based on micro data. This was possible thanks to a question present in the European Union Survey on Income and Living Conditions that can be linked to time-use and time poverty, in particular.

In the measurement and evaluation of unpaid care and domestic work, time is a fundamental variable. A large part of chapter 2 is devoted to presenting the time-use surveys and the methodologies

used for giving a monetary value to unpaid care and domestic work. This chapter can be considered to be a toolbox, which collects the equipment necessary for an analysis of unpaid care and domestic work. First of all, this form of work finds in it a definition through the union of its economic and social meanings. Second, the way of measurement and valuation of unpaid care and domestic work are presented in order to offer possible solutions according to the goals of the research. Third, I present how the employment of time-use data offered a solution to scholars interested in developing new ways of estimating poverty including the value of household production (the LIMTIP that I use in the third chapter is a result of this search). Finally, I present an analysis of time-use data which highlights a relevant imbalance in the division of paid and unpaid work between women and men in the two geographical context subjects of the empirical studies in chapter 3 and 4.

However, in order to be able to analyse the value of unpaid care and domestic work in the economic system, we also need a theoretical framework in which to include it. The first chapter of this thesis provides the reader with the theoretical background that can be employed for positioning this thesis with regards to the economic theory. The general framework adopted in this work is inspired by the work of many scholars that, through the adoption of a feminist approach, provided a theoretical structure for the analysis of the unpaid care and domestic work performed within the household. The work of feminist economists is characterized by the use of gender lenses for making economic analyses and by the focus on social provisioning as the ultimate goal in the study of economics (Nelson, 1993; Todorova, 2015; Beneria, Berik and Floro, 2016). A vast part of the first chapter is, nonetheless, devoted to present the analysis of the household under the Marxian perspective of Friedrich Engels and the Neoclassical one of Gary Becker. There are two reasons: first, it contextualizes feminist thought; second, it offers the occasion to present the relation that feminist economists had with these ideas. The theory developed by feminist economists considers the household as a unit of production, provisioning and consumption – functions that, as we will see, could be summarized under the concept of reproduction. The feminist analysis of the household highlights that unpaid care and domestic work represents a source of wellbeing for the household and for society, but at the same time, also of gender inequality (Picchio, 2003). This largely depends on the relations that take place among families, the State, the market, and the community (Razavi, 2007). The feminist approach to the study of the household and of unpaid care and domestic work will be presented in the third section of chapter three.

Finally, at the end of this thesis there is a concluding section, which summarizes the findings, the achievements, the (unavoidable!) limits and the avenues for future research.

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Chapter 1

The Household as an Economic Agent

The Economic Theory of Unpaid Care and Domestic Work

As it will be explored in this thesis, unpaid care and domestic work is a variable of fundamental importance in the analysis of economic phenomena. It is not only relevant from the empirical point of view – as it will be underlined in chapter 2, but it is a fundamental factor from a theoretical point of view, too.

Throughout this thesis the concepts of unpaid care and domestic work and of household, as the site where unpaid care and domestic work takes place in response to the needs of household's members, will be developed in several directions. For this reason, each chapter of this thesis includes a literature background that describes the theoretical approaches applied case by case. Nonetheless, the first chapter, rather than serving as an exhaustive literature review, aims to provide the reader with theoretical background knowledge that is integral to this work. This task is particularly relevant because unpaid care and domestic work has been often overlooked by economic theory, being considered as a pre- or post-economic activity (Jochimsen, 2003). Hence, the general framework adopted in this work is inspired by the work of many scholars that, through the adoption of a feminist approach, has provided a theoretical structure for the analysis of the unpaid care and domestic work performed within the household.

Feminist economics cannot be clearly identified as a distinct school of thought in economics, but two main characteristics differentiate it from other approaches: first, its use of gender lenses for making economic analysis; second, its focus on social provisioning as the ultimate goal in the study of economics. Social provisioning describes a vision of the economy that is broader than markets and a vision of markets as socially evolving institutions, where the object of study is the way in which societies organize the activities involved in making a living (Nelson, 1993; Todorova, 2015; Beneria,

Berik and Floro, 2016). In this context, the household represents one of the key sites of interest for feminist economists.

The feminist approach to economic analysis "has emerged from disparate histories of engagement with gender questions in the discipline. Mainstream (neo-classical) economics, Marxian theory, and institutional economics are distinct strands that contributed to the questions raised by feminist economics" (Beneria, Berik and Floro, 2016, p. 61). These theories are primarily relevant to feminist economists for the way in which they analyze the household. For this reason, before presenting the feminist approach, in this first chapter I will introduce the theory of the household developed in Neoclassical and Marxian economics focusing on the work of two figures: Friedrich Engels and Gary Becker.

Both Engels ([1884] 1902) and Becker (1965) include the household in their economic theories and acknowledge the value of the work performed by women within it. For Engels, the family has both a production and a reproduction function that are strictly connected and that are achieved through the exploitation of women's unpaid work. For Becker, the household is a unit of consumption and of production, and, in order to understand women's and men's behavior with regard to labor market participation, economic analysis needs to take the value of the unpaid work performed within the household into consideration.

For feminist economists, the household represents a unit of production, provisioning and consumption – functions that could be summarized under the concept of reproduction, as it will be presented in the third section of this chapter. Here, their analysis of the household highlights that unpaid care and domestic work represents a source of wellbeing for the household and for the society, but, at the same time, a source of gender inequality (Picchio, 2003). This largely depends on the relationships that takes place among the four welfare pillars: families, the State, the market, and the community (Razavi, 2007).

This chapter does not intend to retrace the history of feminist economics – for a history of feminist economics see Peterson and Lewis (1999), Beneria, Berik and Floro (2016) and Becchio (2019). Even so, it cannot be completely avoided seeing as a remarkable part of the feminist perspective on economics has emerged from the gender questions raised in the analysis of Marxian and Neoclassical economics, which here are represented by Engels and Becker, especially with regard to their theories of the household and of unpaid care and domestic work. For this reason, the first two parts of this literature review present Engels' and then Becker's analysis of the household and include a feminist perspective on how these ideas have been developed by the two scholars. The third section is devoted to the presentation of the feminist approaches to the analysis of the household and of unpaid care and domestic work that represent the framework at the basis of this thesis. They are the extended living standard flow of Antonella Picchio (2003) and the care diamond of Shahra Razavi (2007). Both Picchio's and Razavi's approaches bridge the gap between the micro and the macro levels. Ultimately, their analysis of social provisioning overcomes the boundaries of the household and helps to contextualize the household's dynamics in a wider perspective.

I. Engel's Capitalist Family

Before beginning our analysis of Engels' concept of family, we should briefly outline what Marx wrote on this topic. In the Marxian theory, the family is a historical concept. The family and its activity are strictly connected to a certain historical period, and in capitalism, the role of the family is that of providing the maintenance and the reproduction of the working class. In this context, the family becomes a metastructure, a social structure that allows capitalists to disregard the need to reproduce the working class. According to Marx ([1867] 1982), the maintenance and reproduction of the working class are the preconditions for the reproduction of the capital, but it is the worker's instinct of self-preservation and of propagation that makes it possible for this precondition to be realized. Therefore, the nuclear family and its economic nature emerged for the sake of the capitalist system.

Marx distinguished two types of productive labor (Marx ([1867] 1982): labor that is productive in the general sense, and labor that is productive from the capitalist point of view. The first type of productive labor is any labor that produces socially useful goods and services – use-values. Productive labor from the capitalist point of view is labor that has generated commodities with exchange-value, which means that they can be sold at a profit. For this reason, Marx considered domestic labor as unproductive from a capitalist point of view. The goods and services produced within the family for their own consumption are use-values, because they do not enter the market.

At the same time, for Marx ([1867] 1982, pp. 274-275), labor-power is a commodity and it has a value. Its value is determined by the value of the means of subsistence necessary for reproducing it. For Marx, the natural needs of the worker include food, clothing, fuel and housing, and they can be measured in terms of the labor-power necessary for their production. Therefore, he assumed that the capitalist sector provides everything necessary for the reproduction of labor-power (Gardiner, 1997). Regarding the subsistence work performed by the members of the family, Marx believed that the family "*possesses its own spontaneously developed division of labour [...] regulated by differences of sex and age*" (Marx [1867] 1982, p. 171).

Engels's book *The Origin of the Family, Private Property and the State* (Engels, [1884] 1902) may be seen as an attempt to address a lacuna in Marx's writings (Beneria, Berik and Floro, 2003), where in his analysis of the capitalist production process, Marx considered the family and unpaid work only marginally. Engels' book filled this gap by analyzing the role of reproduction[2] activities organized around the family. For him, the family and its function of production of life, that he intended both as one's own and as procreation, is twofold: natural and social. For this reason, in

[2] Reproduction is a term used by feminist economists, that does not only refers to the process of having babies, but also to the process of regenerating life by taking care of individual needs, from feeding to taking care of the emotional wellbeing, provisioning individuals and communities on a daily basis and reproducing the labor force in an intergenerational sense. More details about the concept of reproduction in a feminist perspective are presented in section 3 of this chapter.

different historical ages the family took different forms, and there is an indissoluble relation between the modern monogamous family and the capitalistic system.

In *The Origin of the Family* ([1884] 1902), Engels made an analysis of the family through the perspective of materialistic understanding. Inspired by the work of the American anthropologist Lewis H. Morgan, Engels examined the different forms of family that took place along the path of humankind towards civilization, focusing especially on the analysis of the rise of the modern nuclear monogamous family in capitalism.

> *"According to the materialistic conception, the decisive element of history is pre-eminently the production and reproduction of life and its material requirements. This, implies, on the one hand, the production of the means of existence (food, clothing, shelter and the necessary tools); on the other hand, the generation of children, the propagation of the species. The social institutions, under which the people of a certain historical period and of a certain country are living, are dependent on these two forms of production, partly on the development of labor, partly on that of the family. The less labor is developed, and the less abundant the quantity of the production and, therefore, the wealth of society, the more society is seen to be under the domination of sexual ties. However, under this formation based on sexual ties, the productivity of labor is developed more and more."* (Engels, [1884] 1902, pp. 9–10)

For Engels, the nuclear monogamous family was founded on economic conditions, and it originated with the appearance of private property from the man's desire to leave his wealth to his offspring alone. For this reason, there was no equality between husband and wife within the family, neither from the social point of view nor from the sexual one. The supremacy of the man over the wealth of the family also determined the sexual inequality. In fact, the endeavour to bequeath the wealth to the children necessitated monogamy from the woman's side, but not from the man's.

Engels anticipated a social revolution that would transform the family by transforming the means of production – and therefore the inheritable wealth – into collective property. The family would cease to be the economic unit of society, and the woman would no longer be forced to surrender to a man. In fact, Engels recognized that within the modern capitalist family there is a strong component of inequality, and he pointed out the patriarchal gender relations that take place within this kind of household, which can be considered as the first form of class oppression.

> *"In the great majority of cases the man has to earn a living and to support his family, at least among the possessing classes. He thereby obtains a superior position that has no need of any legal special privilege. In the family, he is the bourgeois, the woman represents the proletariat."* (Engels, [1884] 1902, p. 89)

He defined the condition of the woman within the family as "domestic slavery" (Engels, [1884] 1902, p. 89), a condition of slavery on which the modern monogamous family is founded upon. Therefore, within the monogamous family the burden of the care and education of children falls on the mother, who for this reason is excluded from all participation in social production. For this last reason, he predicted that the emancipation of women would primarily depend "on the reintroduction of the whole female sex into the public industries", and on the end of the monogamous family as "the industrial unit of the society."

Engels' ideas of patriarchal oppression and the importance of the unpaid work performed by women within the family for the reproduction of life felt out of the interest of Marxian scholars until feminist scholars developed them into the *Patriarchy* and *Domestic Labour Debates* from the late 1960s to the 1980s.

Several feminist economists, whose focus was on marriage and reproduction, developed the idea of women's oppression in the household in what was called the *Patriarchy Debate* (Gardiner, 1997). They underlined the ways in which Marxian analysis failed to explain why particular people

fill particular places (Hartmann, 1979) and argued that women constitute a distinct class, because the domestic mode of production is distinct from the capitalist mode of production (Delphy, 1980). Here, they highlighted how it is in the interest of the male, the head of the household, to provide for his wife's basic needs in order to maintain her labor power. Hence, the domestic mode of production is separate from the capitalist one because those who are exploited in domestic work are not paid but maintained (Delphy, 1980).

In regard to the idea of the reproductive role held by the family, feminist scholars underlined the one-dimensional approach under which it has been conceived. Marxian economics, in fact, mainly focused on how the capitalist mode of production exploits housework, "while failing to give an adequate characterisation of the social relations under which women work in the home, social relations generated by the reproductive role of women" (MacKintosh 1977, 119). Moreover, the role of women in the family cannot be merely related to their distinctive biological capacities, "it is the social and historical context of childbearing and childrearing that largely determines their structure and meaning. [...] The social relations which govern human reproduction often reinforce the domination of women and the exploitation of women's labour" (Folbre, 1983, 261). The result is that the gender relations inherent in domestic work and the household division of labor, which Marxian scholars failed to identify and analyze (Molyneux, 1979; Benería, 1979; MacKintosh, 1977), affect the condition of women from the family to society in general (Elson and Pearson, 1981).

However, throughout the critique to the limits of the Marxian theory in the analysis of the relations that happen in the family, some feminists integrated Marxian categories within a feminist framework (Hartmann, 1981; Folbre, 1982). Hartmann (1981) postulated that the family is a "locus of struggle", anticipating the idea of household as a unit of conflict, which will be later developed by household bargaining models[3]. Furthermore, Folbre (1982) examined the extent to which the concept

[3] See next sections.

of exploitation can be applied to work carried out at the domestic level, which will be later developed in the question of substitution of work at home with market work.

The other stream of thought within feminism that derived its intellectual program from the development of Marxian theory in the late 1960s and 1970s, the *Domestic Labour Debate*, focused on uncovering the material conditions of women's oppression using an interpretation of Marx's method of historical materialism. Therefore, where Marx's historical materialism supported the idea that the social relations under which work is organized provide the basis upon which all other aspects of society depend, feminists adopted the idea that the analysis of domestic labor would provide the material basis for an understanding of women's oppression in all its forms (Himmelweit, 1999).

As Jean Gardiner underlines when she explains the origins of the *Domestic Labour Debate*, which she participated in, "most Marxist writings in the 1960s and 1970s about twentieth century industrial capitalism continued to apply the assumptions about domestic labor that had been implicit when Marx developed his analytical framework one hundred years previously" (Gardiner, 1997, p.83-84). However, if domestic labor was supposed to disappear with the development of capitalism, why have women continued to devote their time to it, and what relationship does this invisible labor have to the economic system as a whole and to women holding subordinate positions within it?

> *"The argument is often advanced that, under neocapitalism, the work in the home has been much reduced. Even if this is true, it is not structurally relevant. Except for the very rich, who can hire someone to do it, there is for most women, an irreducible minimum of necessary labour involved in caring for home, husband, and children. For a married woman without children this irreducible minimum of work probably takes fifteen to twenty hours per week; for a woman with small children the minimum is probably seventy or eighty hours a week. […] The reduction of housework to the minimum given is also expensive; for low-income families more labour is required. In any case, household work remains structurally the same – a matter of private production."* (Benston, 1969 p. 6)

The *Domestic Labour Debate's* response to these questions was that the household is a unit of production, and that the Marxian concept of use-value is an inadequate tool to analyze domestic labor (Gardiner *et al*, 1975). In fact, even if the products of domestic labour are not exchanged on the market but consumed within the household, they contribute to household's wellbeing as well as market goods and public services, and, therefore, domestic labour should also be considered productive from the capitalist point of view. At the same time, even if the *Domestic Labour Debate* recognized the household as a unit of production, it also pointed out that the household and the market are analytically distinct, and that domestic labour cannot be equated with wage labour.

> *"The great fear that women may reject their traditional child-rearing responsibilities embodies more than a desire to preserve the patriarchal status quo. It grows, at least in part, out of the recognition that no other persons and no other institutions are apparently willing to assume these responsibilities. Feminists must continue their exploration of the relationship between patriarchy and motherhood. But we must also move beyond this critical analysis to a much more explicit consideration of the ways in which parenthood could and should be organized. Such considerations lead far beyond the division of labor within the family to an economic issue which is of overarching importance for society as a whole. Who should pay the costs of rearing the next generation?"* (Folbre, 1983 p.279)

This explains why in some cases feminist investigations, following the domestic labour debate, shifted from production to reproduction (MacKintosh, 1977), which will be presented in the third section of this chapter.

Before exploring the feminist approach to the role of unpaid care and domestic work in the household in relation to reproduction, in the next section, Becker's Neoclassical approach to the theory of the household will be presented followed by its' feminist critique

II. Becker's Household

One of the fundamental ideas of the neoclassical theory on labour supply is that all individuals have to choose how they allocate their time between work and leisure, and the determinant of this allocation is the price paid for every hour of work. The result is that, for any individual the labour force participation is the outcome of two effects: the income effect (which, through the rise of income, allows for a higher purchase of leisure time) and the substitution effect (which, at the rise of earnings, determines the desire to exchange hours of leisure for hours of work). Neoclassical economists extended this individual analysis to the household and maintained that the income effect usually prevails inside the household. Hence, if the wage of the husband would rise, the wife would consequently be encouraged to stay at home using the leisure time that she could "purchase" with her husband's wage (Marshall, [1920] 2013).

Therefore, when in the early 1960s the time series analyzed by Jacob Mincer (1962) demonstrated that from the end of the nineteenth century to the middle of the twentieth century, women's employment continued to increase despite the concurrent rise of (men's) salaries, the analysis of the phenomenon required the new generation of economists to depart form the theory proposed by early neoclassical economists. Mincer's explanation was that the rising educational level of women and increased demand for labour raised the opportunity costs of staying at home[4].

In the same years, a colleague of Mincer in Chicago, Gary Becker, began to consider the household not only as a consumer but also as a productive unit. Neoclassical theory, until that moment, had not taken into account the work performed inside the household; thus, it considered all the time not spent in the labor market as leisure time. Based on these new ideas, Becker and Mincer founded and developed *New Home Economics*. This approach applied key concepts and models of

[4] In the same period when Mincer formulated this analysis, Betty Friedan wrote *Feminine Mystique* (1963) – a detailed analysis of the multiple problems full-time homemakers in America's growing suburban society faced. There was a sharp contrast between Friedan's detailed description of women's experiences and the simplistic economic analysis of opportunity costs brought forward by Mincer.

neoclassical microeconomics to household production and decision-making. The household became an economic unit, where decisions are taken following the predictions of a 'household decision model' (Becker, 1965).

In particular, Becker (1965) explored the allocation of time by married couples and the traditional gender division of labour within the household. Using a model of rational choice in which family is trying to maximize joint utility with the constraints of income and time, he theorized a number of advantages supporting the specialization of its members in one of the two kinds of work – paid work and unpaid domestic work. In fact, Becker considered the man's specialization in paid work and the woman's specialization in unpaid domestic work to enable the household to achieve the highest utility on its production possibilities frontier. Therefore, domestic work, carried out mostly by women, was recognized as productive. Consequently, in Becker's theory, for a married woman, an increase in her salary would no longer represent a rise in the opportunity cost of leisure time, as it was earlier theorized, but a rise of the opportunity cost of domestic production compared to market goods. At the same time, an increase of the market efficiency of one of the two partners would lead the other one to reallocate her/his time toward a higher domestic production.

Having an advantage in one of the two activities brings forward specialization. According to Becker, men have a comparative advantage in market activities, therefore, they decide to make bigger investments in human capital. The higher investment in human capital increases their comparative advantage. Conversely, women have a comparative advantage in domestic production, and, consequently, they invest less in human capital accumulation while their comparative advantage in domestic production increases. Becker thought that women also have a biological advantage toward the care of children (Becker, 1993). In fact, the biological commitment that they have in producing and feeding children is transformed in a comparative advantage over men in caring activities and in the household sector in general. Therefore, in Becker's opinion, it is simpler for a woman to take care of her other children or do domestic work while she is bearing a child than doing other kinds of labor.

"The analysis of specialized investments [...] implies that women invest mainly in human capital that raises household efficiency, especially in bearing and rearing children, because women spend most of their time at these activities. Similarly, men invest mainly in capital that raises market efficiency, because they spend most of their working time in the market. Such sexual differences in specialized investments reinforce any biologically induced sexual division of labor between the market and household sectors and greatly increase the difficulty of disentangling biological from environmental causes of the pervasive division of labor between men and women." (Becker, 1993, 39)

Therefore, Becker associated women's specialization in unpaid domestic work to their role in the reproduction of humans and, more specifically, to their biological differences. Women would be, by nature, more inclined than men to perform those caring activities, and this would result in women's specialization for unpaid domestic work. Thus, taken together, the human capital theory of the gender wage gap and the analysis of division of labor in the household provided strong justification for gender inequality.

Becker (1965) presents the traditional gender division of labor as a rational decision, which allows the maximization of the well-being of the household. Even if he considered the household and not the individual as the subject of the decision-making process, he also contended that within the household a benevolent decision maker is managing the labor allocation in the constraints of income and time on the basis of a principle of joint utility (Becker, 1964).

Despite the success of Becker's theories among economists, in the 1970s, feminist concerns started to raise on the narrowness of the standard models adopted by Becker and on their assumptions on exogenous preferences, freedom to make choices and utility maximization. At least two strands of critique can be outlined. The first pointed to the fact that specialization in paid or unpaid domestic work within married couples is not supported by empirical evidence. The second highlighted the

theoretical inconsistency of the mix of generosity and self-interest that characterize Becker's male head of the household.

Starting from the idea of the efficiency of the gender division of labour, feminist scholars demonstrated that it is disattended by empirical evidence. The profitability of women's specialization for household production is indeed easily negated by the observation of family dynamics. In fact, the advantages of women's specialization in household duties, which reach their peak when there are young children in the household, are reduced as children grow up. There is evidence that the returns of household specialization do not increase with time but instead decrease (Ferber and Birnbaum, 1977). Therefore, there is no economic explanation to the allocation of time within the family following a traditional breadwinner model. For this reason, feminist scholars pointed out that Becker's model of allocation of time does not do anything more than propose, from a theoretical point of view, the traditional breadwinner model of the household, with the result of consolidating the naturalization of the gendered division of labour (Barker and Feiner, 2004). They also sustained that Becker pushed economic theory toward the attempt of providing a unified framework for all behavior involving scarce resources, without taking into consideration the fact that other disciplines (sociology, in particular) may help us to better understand the way in which preferences are shaped by social norms and individual psychology (Sawhill, 1977).

Moreover, Becker's theory presents a static model which assumes gendered skills (differential productivities in domestic versus market work) as a given, unchanging through time and space. On the contrary, the level of unpaid care and domestic work and the gender division of labor are not static (Beneria, Berik and Floro, 2016). They change in response to labor market conditions, household composition, policy reforms, and according to the context of demographic and social factors (as urbanization, migration, and divorce rates). Additionally, changes in technology, earnings, and access to social services can cause households and individuals to shift time between activities. Time use estimates highlights that, in several industrialized countries, the time allocated to unpaid care and

domestic work by men and women tended to converge between the 1960s and 1980s (Gershuny and Robinson, 1988). The change is primarily due to the reduction in mothers' unpaid work and an increase in the case of fathers' as mothers' labor force participation has continued to rise (Beneria, Berik and Floro, 2016).

For his analysis of the behaviour of the male head of the household, Becker followed Adam Smith's idea of the man as a mix of generosity and self-interest. When Becker presented the figure of the household's benevolent decision maker who manages the labour allocation in the constraints of income and time on the basis of a principle of joint utility, he replicated Smith's paradox of the man who is dominated by self-interest in the market and becomes completely selfless within the household[5]. Besides underlining the dichotomy between separative and soluble selves in neoclassical economic theory, Paula England (2003) highlights Becker's incapacity to think that who earns the most money will affect distribution or consumption within the household. For this reason, feminist critique renamed Becker's altruist head of the household a "benevolent dictator" dominated by self-interest (Evenson, 1976).

In their critiques to Becker's household theory, feminist economists contrasted the idea of unitary household. As a result, a wide range of feminist studies focused on bargaining models within the household. These studies question the idea of the household as a single harmonious unit, and introduce, in different forms, a household where cooperation and conflict coexist, and where resources determine whose interests prevail in decision making within the household and affect each person's utility (England, 2003). A renowned outcome of this reinterpretation of household's dynamics is represented by the "cooperative conflicts" approach, developed first by Sen (1987) and then by Agarwal (1997).

[5] However, Smith believed that society needed morality in social relations.

The assumptions of this approach are that the members of the household gain from cooperation, but also that they are in conflict over the division of the resources, and the result will depend on the fall-back position of each member of the household – what the individual has to fall back on if the marriage dissolves. This approach refuses to employ a mathematical modeling whose simplicity is achieved at considerable sacrifice of informational sensitivity (Sen, 1987), and includes in its analysis qualitative aspects, which are able to capture "the complexity and historic variability of gender relations in intra- and extra-household dynamics" (Agarwal, 1997, p. 2). In fact, the intuition of Sen and Agarwal is that the intuitive simplicity that the mathematical modeling is able to achieve compromises the sensitivity of information collected. Through the inclusion of the qualitative aspects, Sen and Agarwal are able to describe the asymmetries that characterise gender relations inside and outside the household.

Household bargaining theories highlight the possible disadvantages, for women in particular, of specialization in either paid or unpaid labor within the couple (England, 2003). If men are not entirely altruistic, the result of the specialization in unpaid labor for women will be having less decision-making power and receiving a smaller share of the household available resources.

In this context, feminist studies also brought attention to the effects of the intra-household inequalities on resource allocation and the wellbeing of the other members of the household. They highlighted that the woman's income has more beneficial effects on the family, particularly for children, than the man's income (Beneria and Roldan, 1987), and that in low-income households it is a common practice for women to use the domestic budget they control for family's needs and to diminish their own consumption (food, clothes, heating when alone, leisure, etc.) to preserve the living standards of their male partners and children (Agarwal 1997).

Women's contribution to the wellbeing of the members of their household is also a central factor in the capabilities approach (Robeyns, 2003). The capabilities approach (Sen, 2012; Nussbaum, 2000; Robeyns, 2003) – as it will be further explained in the next chapter – overcomes the income-

based measures of poverty and provides a normative framework for evaluating the well-being of individuals. In doing so, this approach is able, through the analysis of capabilities, which represent the multi-dimensional potential of individuals, to evaluate the effectiveness of policies on people's experiences.

In particular, Robeyns (2003) included domestic work and nonmarket care in the list of central capabilities. Both are understood twofold: as central capabilities, but also as something that could affect the capabilities of the caregiver. In adopting Robeyns' perspective, both paid work and unpaid care and domestic work contribute to people's well-being and are included and employed in the measurement of poverty, allowing an assessment of gender differences in poverty within the household.

The feminist perspective on intra-household resource allocation together with the expansion of the question of well-being found in the development of the capabilities approach provided the groundwork for the development of new gender-aware poverty measures, which will be presented in the next chapter and applied in chapter 3.

III. The Feminist Approach(es) to the Analysis of the Household and of the Unpaid Care and Domestic Work

After introducing the ways that the household and the unpaid care and domestic work performed within it have been presented in the Neoclassical and Marxian schools of thought and reviewing the ways that feminist scholars have looked at these works, I will now present two crucial feminist approaches to the analysis of the household and of unpaid care and domestic work. While they do not have a specific place in the other chapters of this thesis, they nonetheless represent the framework at the basis of this work. They are the extended living standard flow of Antonella Picchio (2003) and the care diamond of Shahra Razavi (2007).

Feminist scholars challenged the mainstream economics paradigm that paid employment is the exclusive mode of securing a living for oneself and one's family. Feminist theory considers the

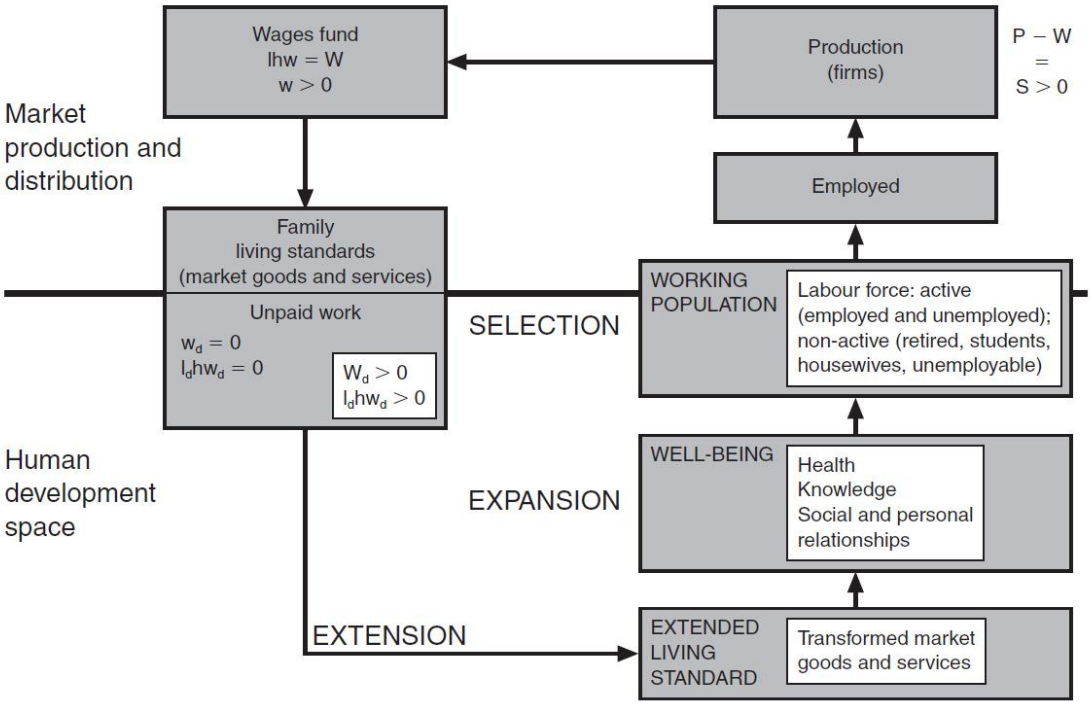
importance of non-market activities —from care work to subsistence production— that form the prerequisites for labor market activities, putting the emphasis on reproduction.

The term reproduction, from a feminist perspective, assumes three different connotations (Gardiner, 1997). It is used alternatively to mean 'social reproduction', as the reproduction of the ideological and material conditions sustaining a social system, 'reproduction of the labour force', as the daily maintenance of workers and future workers together with their education and training, and 'human reproduction', as childbearing. Through unpaid care and domestic work, the household takes charge of reproduction in the three aforementioned connotations.

Feminist economists have framed unpaid care and domestic work as a central economic issue and, in particular, as a necessary and dynamic component of the economic system represented by the process of social reproduction of the population (Humphries and Rubery 1984). Concepts such as "total work", i.e. the sum of paid and unpaid work, and "extended income", i.e. the sum of money income and services derived from unpaid work, have drawn attention to the fact that necessities of life cannot be secured just by market transactions and money income (Folbre 2008; Picchio 2003; Suh and Folbre 2016).

Picchio (2003) inserted the unpaid labor of social reproduction into the basic analytical framework of the economic system by including unpaid work into the circular flow of income. She argues that at the basis of the profound tensions which persist within the economic system, there are the gender differences. The link between gender differences and the economic system is indicated in the living conditions of the working population, and in their role as social capital. For this reason she proposed to include unpaid work in macroeconomic analysis.

Fig. 1.1: Extended living standard flow



Source: Picchio (2003), p. 15

Picchio alters the traditional diagram of the circular flow of income by adding a part (figure 1.1) that she called the "space of human development" or "space of social reproduction", where the work force goes under a process of creation and sustenance. In this space, three economic functions are undertaken by the households through unpaid work. These functions include: the extension of monetary income in the form of expanded living standards (i.e. cooked food, washed clothes); the expansion of extended living standards in the form of an effective welfare condition (i.e. ensuring that children go to school, assuring well-being to specific people); the reduction or selection of population segments and individual capabilities to be used as a factor in the commodities and services production process in the market economy (which means to select the individuals who will participate in the market and make sure that they are there with their care needs resolved).

Consequently, the economic system becomes a set of two parts: the space of the market and the space of the reproduction, which compete over resources. In this new context, the labor market is

strictly related to care, because the worker is not self-sufficient and she/he has to respond to her/his care needs and responsibilities before entering the labor market. Therefore, the person who oversees the fulfilment of the care needs of the members of the household cannot behave like a self-sufficient worker.

The "extension" of the circular flow of income allows us to include in the economic analysis the "space of human development". Using the concept of human development, advanced by Picchio, we are able to include in our analysis the complexity of the process of social reproduction. As Picchio highlighted:

> *"we propose to extend the human development approach to include unpaid labour and to place it in a classical political economy macro approach. In doing so we juxtapose it to a neoclassical analytical framework that is basically ahistorical and spacial non-specific, with human subjects free from bodily needs. Thus conventional necessities are treated as simple 'frictions', i.e. non-necessities for the economic system. Moreover, in the neoclassical framework, social conventions and power relationship may be seen only as rigidities. In fact, they cannot be included as a general feature of the economic system without contradicting the basic generalisations of the theory embodied in its axioms. The problem is that in the process of social reproduction, by definition, conventions, personal interrelationship and social power relationships are fundamental persistent features. In the process of social reproduction the micro and macro aspects interact dynamically and cannot be separated, although there are many potential tensions which operate at both individual and collective level."* (Picchio 2003, pp. 15-16)

In fact, Beneria already in 1981 highlighted the misinterpretation of the concept of economic activity created by orthodox economists. She pointed out that for Neoclassical economics, "the market becomes the formal expression of economic activity" (Beneria 1981, 16). That is to say that only when work becomes commoditized (when it has an exchange value) is it viewed as an economic

activity. On the contrary, she supported the idea that "any conceptualization of economic activity should include the production of both use and exchange values, and that active labor should be defined in relation to its contribution to the production of goods and services for the satisfaction of human needs" (Beneria 1981, 17).

Therefore, unpaid care and domestic work might assume different and opposite values. On the one hand, unpaid care and domestic work contributes to wellbeing, income and consumption of individuals and households – or lack thereof, aggravates poverty (Floro 1995). On the other hand, its unbalanced distribution acts as a fundamental source of intersectional gender inequalities (Picchio, 2003). In other words, unpaid care and domestic work represents a source of goods and services and, therefore, of wellbeing for the family, but at the same time, it may represent a source of time poverty and stress for whoever is in charge of producing these goods and services for the household's consumption, especially when it is not equally shared.

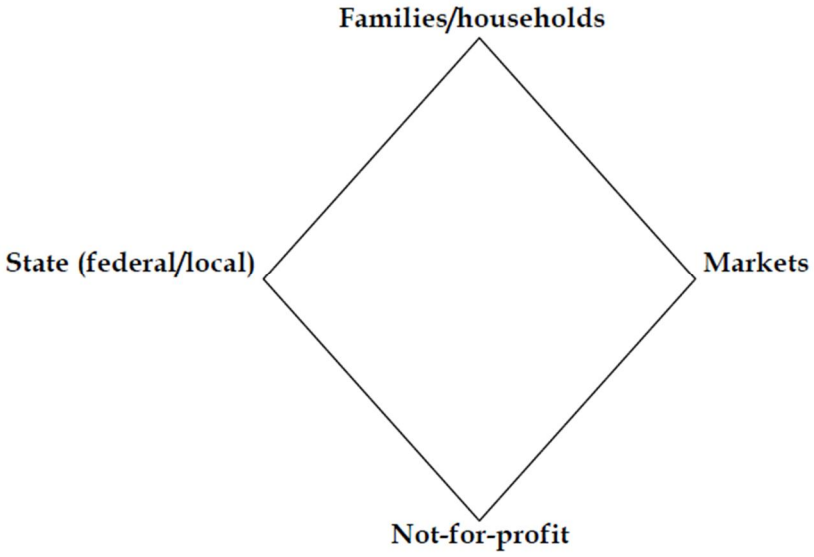
The need for fair redistribution of unpaid care and domestic work for the achievement of gender equality is one of the most important outcomes of the feminist analysis of economics. As underlined by Diane Elson[6], if unpaid care and domestic was (1) recognized, (2) reduced and (3) redistributed, its costs and benefits would be more equally divided.

The redistribution of unpaid care and domestic work does not only represent a more equal sharing of this kind of activities between women and men, but also a fairer sharing within society. Razavi (2007) introduced the 'care diamond' (see figure 1.2) as the framework through which care is provided, especially for the dependent people – those who are not able to respond autonomously to their care needs, such as small children, the frail elderly, the chronically ill and people with physical and mental disabilities. She represents the actors involved in the provision of care in a stylized fashion

[6] In the "Triple R Framework", presented by Diane Elson in 2008 at a workshop on unpaid work organized by UNDP, the first R stands for the recognition of the nature, extent and role of unpaid work. The second R stands for the reduction of unpaid care work, which should be sought through the investment in labor saving technology. The third R stands for the redistribution of unpaid care work within the household and within the society.

by the metaphor of a care diamond. The care diamond includes the family/household, markets, the public sector and the not-for-profit sector (including voluntary and community provision). Forms of provisioning do not always fit perfectly into one of the categories. Sometimes they may fall through the cracks, as in the case of paid "voluntary" care work or family care provided by parents while on paid leave. Similarly, market provision might be subsidized and regulated by the state. Nonetheless, there are important institutional differences across the care provisioning found in each corner of the diamond.

Figure 1.2: Care diamond



Source: Razavi (2007, p. 21)

Razavi underlines that "the role of the state in the welfare architecture is of a qualitatively different kind, compared to, say, families or markets, because the state is not just a provider of welfare, but also a significant decision maker of the responsibilities to be assumed by the other three sets of institutions" (Razavi 2007, p. 20). The concept of 'caring regimes' can be used to typologize various types of welfare states according to the ways in which care responsibilities are assigned and the costs of providing care are assumed. Indeed, all welfare regimes have a 'caring regime' (Razavi 2007). There are two parameters to measure the degree of the welfare that the State provides,

'commodification' (Esping-Andersen, 1990) and 'familization' (MacLaughlin and Glendinning, 1994), and they could be usefully employed to analyze the provision of care. The degree of commodification refers to the relationship between the State and the market. When welfare is completely covered by the State, this is the maximum degree of 'decommodification.' Or, when it is necessary to 'buy' all services from the market, this is total commodification. The degree of 'familization' refers to the relationship between the State and households. In this case, responsibilities may fall back on households or may be taken on by the State.

The welfare system may also have implications for the form and development of households depending on how the State looks at women: primarily as mothers; primarily as workers; or primarily as citizens (Rubery *et al.*, 2001). From this perspective, feminist economics also underlined the crucial role of macroeconomic policies in affecting conditions for provisioning of livelihoods and well-being. Households, markets and states should be analyzed as interrelated sectors of the economy (Gardiner, 1997). The point of departure for a gender-aware political economy is the domestic area of life and work and the demonstration that a gender-aware analysis can be relevant even when the focus is not individual men and women (Elson, 2000). For example, the basic macroeconomic policy instruments of fiscal policy, monetary policy, exchange rate and trade policy are designed to address the problems of unemployment, inflation, and economic stagnation, but they also impact households through their effect on unpaid care and domestic work (Elson and Cagatay, 2000). Both the policy objectives and the instruments are assumed to be gender neutral, because the impacts are assumed to be confined to the monetary economy. On the contrary, one major issue of concern is the impact of fiscal policies on unpaid work and total work burdens. The male-bread-winner bias has a fundamental role in this context (Elson and Cagatay, 2000). If complementary policies to ensure work–family balance are overlooked, the providers of unpaid care and domestic work will be excluded for the possibility of entering decent work.

The role of unpaid care and domestic work and, more generally, of social reproduction, as fundamental to the production of human capacities but also as a driver of employment and other macro-level outcomes is increasingly becoming a focus of research, and highlights a bidirectional relation between the macro and the micro levels. The goal of a growing feminist economics branch[7] is the transformation of established economic models and economic policies based on concepts of the productive economy, that overlook social reproduction and, therefore, a large part of the contribution of women to the economy.

The necessity of systematically assessing the gendered effects of all policy emerged from the observation that policy designed for targeting issues that are apparently not related to gender eventually have important impacts on gender relations, power structures, and the socio-economic situation of women and men, as well as on access to and control of resources (O'Hagan and Klatzer, 2018). For example, several analyses to date highlight that the impacts of austerity measures imposed by European governments in order to shrink fiscal deficit had a severe impact on women through the reduction of benefits and pensions, employment opportunities, access to public services, and the increase in their unpaid work (Bargawi et al. 2017; Bettio et al. 2012; Karamessini and Rubery 2014).

Feminist researchers have modified existing macroeconomic models to incorporate unpaid and paid care of children, the sick, disabled and the elderly in order to examine gendered impacts of specific economic policies on employment, inequality, and growth. These new macromodels demonstrate that care is economically important and help us better understand and more effectively model the links between care and standard economic variables and concerns.

The issue of the impact of macroeconomic policies on unpaid care and domestic work is further explored in the empirical analysis presented in the fourth chapter of this thesis, which focus on the gendered impact of austerity policies in EU countries. As we will see, while the feminist

[7] Two examples are the Women's Budget Group in the UK and the Care Work Network in the USA.

macroeconomics analysis has been developed and expanded in recent years presenting an alternative policy program and highlighting the risk of the application of neoliberal macroeconomic policies, the policy responses to the 2007-08 global financial crisis show that gender blindness of macroeconomic policies continues.

IV. Conclusions

Unpaid care and domestic work is a category often overlooked by economics. Nonetheless, from a social provisioning perspective, it represents a fundamental factor. Starting from the late 1960's a number of economists that adopted a feminist approach developed an economic framework that includes and recognizes the centrality of unpaid care and domestic work and its interlinkages with other economic spheres. This group of feminist economists analyzed and, often, challenged economic theory paradigms.

Two examples are the vast debates that feminist economists developed around the theory of the family elaborated by Friedrich Engels, in Marxian economics, and the New Household Economics of Gary Becker, in the Neoclassical school of thought.

Engels and Becker should be applauded for the inclusion of the role of the household and the acknowledgment of the work performed by women within it in their respective economic theories. For Engels, the family has a production and a reproduction function that are strictly connected. On one side, it produces use-values for its own consumption, and, on the other side, it reproduces the working class. Both functions are achieved through the exploitation of women's unpaid work, which Engels recognizes. For Becker, the household is a unit both of consumption and of production, and in order to understand women's and men's behavior with regard to labor market participation, the economic analysis needs to take the value of unpaid care and domestic work into consideration.

At the same time, feminist economists overcame those theories. Through the employment of heterodox economic approaches and feminist research in other disciplines, feminist economists began

to look at economics in a new perspective – that of exploring and understanding social provisioning for human life (Nelson, 1993; Todorova, 2015; Beneria, Berik and Floro, 2016).

In the feminist perspective the concept of reproduction assumed a holistic meaning that overcomes the boundaries of the household. Care responsibilities are distributed across four different welfare pillars, families, the State, the market, and the community, and the way in which they are distributed determines the 'care regime' (Razavi, 2007). The interdependence of paid and unpaid economic activities mediated by these four actors became a key research issue and the analysis of the "space of social reproduction" (Picchio, 2003) opened the road to the study of the contribution of unpaid care and domestic work to wellbeing, income and consumption of individuals and households, as well as to the analysis of the effects of its unbalanced distributions as a fundamental source of intersectional gender inequalities, as it will be presented in the next chapters.

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Chapter 2

Unpaid, Unequal and Undervalued

Essential Tools for Economic Analysis
Entailing Unpaid Care and Domestic Work

Unpaid care and domestic work is an important aspect of economic activity and the well-being of the population. Tasks such as caring for dependents (children, the elderly or disabled persons) and household chores are indispensable in our daily lives. While we spend a significant part of our day, and of our lives, in unpaid activities, unpaid care and domestic work mostly falls outside current statistics and its value is often not accounted for in economic research.

Unpaid care and domestic work falls mostly on women and, as has been presented in the previous chapter, this is one of the reasons why this form of work has often been undervalued and overlooked in economic studies. Another reason for its invisibility to economic research is that it is performed mainly within the household. Finally, its measurement and valuation represent a significant obstacle when research approaches this topic, as it will be presented in this chapter.

On the other hand, there are two reasons that analyzing unpaid care and domestic work from an economic perspective is important. First, unpaid care and domestic work generate goods and services that do, indeed, have an economic value. The unpaid work performed within the household has a fundamental role in the reproduction[8] of human beings and, therefore, also of workers. The second aspect is related to the unequal division of work between women and men. As section 4 of this chapter will explore, women tend to devote the majority of their time to unpaid care and domestic work, which causes both micro and macro issues, as the studies performed in chapter 3 and 4 of this thesis demonstrate.

In order to include unpaid care and domestic work in economic analysis, we need to establish how to define, measure and value this type of work. The objective of this chapter is to resolve this multiplicity of issues by collecting the tools that we need to include unpaid care and domestic work in a gender-sensitive analysis.

To start, we need to determine the definition of unpaid care and domestic work from an economic perspective. In section 1, I propose a solution to the issue of its definition by defining unpaid care and domestic work through the union of its economic and social meanings.

Once we gave a definition to unpaid care and domestic work, the main tool for gathering information about it are time-use surveys. In section 2, I present this tool and the methodologies used

[8] For a definition of reproduction see previous chapter.

for giving a monetary value to unpaid care and domestic work. Time-use data collect information on individual time-use and allow the analysis to connect time-use with other variables of interest.

Valuation is highly sensitive to the choice of method, both from the point of view of how we define unpaid activities and how we impute their monetary value. This means that the assessment of unpaid care and domestic work performed by women and men, even when it is performed on the same population, could return a wide range of different results. Therefore, it is very important to select the appropriate methodology in accordance with the goals of the analysis[9].

Thanks to the availability of time-use surveys, several scholars that work on poverty measurement were able to assess the conflict between minimum necessary time for household production (in other words, unpaid care and domestic work) and time available to individuals. The results showed that time poverty impacts material poverty and that, due to the unequal division of unpaid care and domestic work, women suffer from time poverty more often than men. Their approaches are presented in section 3.

Finally, in section 4, I analyze data on time-use in two country-specific areas, which will be covered in chapters 3 and 4, and highlight the unequal division of unpaid care and domestic work between women and men.

I. Definition of Unpaid Care and Domestic Work

Many different terms are used to describe the work done for free in the household that embraces all the daily activities involved in the reproduction of individual wellbeing. With slightly different meanings the same concept could be identified with the terms: 'unpaid work' (Antonopoulos and Hirway 2010; Picchio 2003), 'housework' (Oakley 2018), 'unpaid care work' (Ilkkaracan 2018), 'unpaid care and domestic work' (Elson 2017), 'reproductive work' (Federici 2012), 'work in the household' (Grossbard 2014), 'household production' (Reid 1934), 'domestic labor' (Gardiner 1997). 'Unpaid care and domestic work' is the definition that is used in this analysis because it describes all of the different activities that are included in this form of work.

'Unpaid care and domestic work' includes the care of family members and the labor involved in maintaining living spaces, buying and transforming commodities used in the household, and

[9] For example, in the analysis of time and income poverty performed in chapter 3 we always chose a lower-bound approach, both in terms of minimum necessary time devoted to unpaid activities and in terms of replacement cost. In fact, our goal is not that of demonstrating an overwhelming difference between standard poverty assessment and our time and income poverty approach, but that of highlighting the value of time poverty (caused by the excessive burden of work that falls onto women) in economic terms.

supplementing services provided to family members by the public and the private sector (Picchio 2003). Antonopuolos and Hirway (2010) define four domains that are part of unpaid work within the household:

> *"- Unpaid work of family workers in family enterprises. These workers, usually women and frequently children, are engaged in productive activities of family enterprises, while men perform the core production tasks, as well as sale- and purchase-related tasks. These workers are frequently underreported in workforce statistics and also suffer from low productivity and poor working conditions;*
>
> *-Subsistence work. Subsistence workers are usually engaged in nonmarket SNA[10] work, including collection of free basic necessities like fuel wood, water and so on, as well as raw materials for family enterprises (fodder for animal husbandry, bamboo or wood for craft, leaves for manufacturing household products and so on). Primarily because of the poor public provisioning of these goods, these workers spend long hours collecting and transporting these goods, tasks that become all the more time consuming due to the depletion and degradation of environmental resources;*
>
> *-Unpaid household (non-SNA) work. Household maintenance, such as cleaning, washing and general household up-keep and grueling sanitation is another category of work. This work, particularly in the case of marginalized sectors of the population, is low technology/low productivity work, which is frequently drudgery for housewives. There is a need to improve the technology and productivity of this work;*
>
> *-Care of children, the sick, the old and others within the household. This work is highly time consuming in developing countries, as there are few public services available for child care or for taking care of the sick, the old and the disabled. Also, the care taken within families is not satisfactory, as families are not always equipped to give quality services to children and others. Apart from this, the time spent on these services restricts the access of the service providers (mainly women) to productive employment in the labor market."* (Antonopoulos and Hirway 2010, 16–17)

Although the last two categories are the most common in developed country contexts, the first two cannot be excluded. In fact, in developed countries family enterprises are also present, even if

[10] System of national accounts.

less common, and involve the unpaid work of family members. Subsistence work could also still appear, especially in rural areas.

There is an additional dimension of unpaid work. It crosses the boundaries of the household. It is volunteer work. When analyzing unpaid care and domestic work, we can also focus on how care needs are covered and by whom. According to Razavi (2007), there are four actors that may be involved at different degrees in the provision of care – the so-called 'care diamond'. The care diamond includes the household, markets, the public sector and the community. Markets and the public sector cover care provision through channels that differ from unpaid work, while the community, similarly to the household, may provide care through unpaid work in the form of voluntary work. This 'unpaid community work' is the additional component of unpaid care work. It refers to

> *"unpaid working activities provided to households which are not linked to the provider through immediate kinship. It includes work undertaken for friends, neighbours, or more distant family members, and work undertaken out of a sense of responsibility for the community as a whole. The activity content of unpaid community work is very broad and may include care for friends, relations or community members; housework – such as cooking in a community kitchen; or activities that are closer to paid work, such as unpaid community works."* (Esquivel 2013, 6)

As unpaid community work, also the care for the environment in which we live becomes part of the broad concept of 'Caring Economies' (Ilkkaracan 2017). From this point of view, care can be seen "as a species activity that includes everything that we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible" (Tronto 2013, 19).

Even though in this work we will limit our analysis to the unpaid care and domestic work that takes place within the household, it is evident that the task of identifying what unpaid care and domestic work represents is the first challenge when researching this topic. There are at least two ways for distinguishing unpaid care and domestic work from other activities (such as leisure activities) performed in the household. The first looks at output and has its origins in the definition of household production given by Margaret Reid in the 1930s (Reid 1934). The second looks at the characteristics of this kind of work and was first presented by Ann Oakley in the 1970s (Oakley 1974).

Starting with Reid, a domestic activity is considered work if a third person can be paid to perform that activity (1934) – the so-called third-party criterion. Therefore, cooking for one's family or taking care of the children must be considered work because one could pay a third person (a

domestic worker or a nanny) to take over these tasks. With this new definition of work, the first in the history of economics that included unpaid care and domestic work, Reid made a great contribution to the discipline. Until that moment those activities were considered unproductive, and only thanks to Reid's definition of work did they start to be considered as bearers of economic value. Using Reid's words,

> *"[i]f an activity is of such character that it might be delegated to a paid worker, then that activity shall be deemed productive… [H]ousehold production … consists of those unpaid activities which are carried on, by and for the members, which activities might be replaced by market goods, or paid services, if circumstances such as income, market conditions, and personal inclinations permit the service being delegated to someone outside the household group."* (Reid 1934, p. 11)

Reid's third-party criterion is generally used in the quantification of unpaid care and domestic work, because it can include tasks such as shopping, cleaning, food preparation and childcare; while allowing the exclusion of leisure or personal activities such as watching television or getting dressed. Nonetheless, concerns have been expressed in the past that it relies on a strict market definition of economic activity (Wood 1996), which means that if an activity does not have a market correspondent it cannot be considered household production. Moreover, it overlooks the fact that substitutability between home-produced goods and commodities might be imperfect (Folbre and Nelson 2000) in the sense that the commodification of these special kinds of activities, that often include a relationship between two human beings, cannot be complete. As Folbre and Nelson present it:

> *"In hypothetical idealized markets, in which purely self-interested autonomous agents interact mechanically, commodification is a given. In contrast, real-world markets are often domains of rich and complex social relationships, including aspects of reward, appreciation, reparation, gift, and so on. The extent to which commodification actually occurs is shaped by societal norms and public policies, which may put particular and specialized limits on the way in which some things— say, health care—can be bought and sold on markets."* (Folbre and Nelson 2000, pp.133-134)

In particular, when the analysis deals with care work, it is impossible to imagine a perfect substitution between unpaid work and paid work. From a feminist perspective, Ilkkaracan (2016) highlights that, since capitalism is led by commodification and productivity increase, while care work continues to be labor- and time-intensive, a substantial share of caregiving cannot be transferred from non-market to market form. In addition to its incompressible labour intensity, caring labor is

embedded in human relationships and as such resists entire commodification by nature (Ilkkaracan 2012).

> *"If we were to purchase all childcare on market conditions, then why have children to start with? Or if we are going to turn over the entire task of care for the elderly to market provided services, where does that leave us in terms of our humanity? Otherwise, we would be living in a futuristic society familiar only from science fiction films such as the Matrix, where human beings are produced outside of women's bodies and raised to adulthood in a factory environment."* (Ilkkaracan 2012, p.136)

Therefore, one of the major challenges in measuring "caring labor" lies in its emotional connotations.

> *"Caring labor is a colloquial term that carries many different connotations. It is sometimes used to refer to specific activities (such as childcare or eldercare), or end-results (such as feeling cared for). Virtually any form of labor can be described as "caring" in the sense that it results in activities that help meet the needs of others.*
>
> *[…] But the real challenge of the phrase lies in its emotional connotations, as a type of labor distinct from that which most economists analyze in terms of measurable output per hour… [T]he term caring labor … denote[s] a caring motive: labor undertaken out of affection or a sense of responsibility for other people, with no expectation of immediate pecuniary reward."* (Folbre 2003, 214)

If we focus on what determines the supply of caring labor and the motivations behind it, the word "care" may assume two similar but slightly different meanings. On the one hand, care refers to caring activities, such as feeding infants or telling stories. On the other, it indicates caring feelings that represent the incentive behind those activities; for example, the feelings of concern or affection on the part of a caregiver. Care, therefore, can be both an activity and a motivation.[11] As a consequence, in some cases it is problematic to identify caring activities as work when they take place outside the market.

Considering the limits of the identification of unpaid care and domestic work through the principles of the third-party criterion, we could explore the possibility of temporarily putting aside the economic perspective and trying to exploit the sociological approach to the identification of unpaid care and domestic work. In the milestone study of unpaid work in the household -*The*

[11] A vast analysis on the distinction between care as an activity and care as a motivation can be found in Jochimsen (2003).

Sociology of Housework (1974)- the sociologist Ann Oakley finds two common dimensions of housework among women: standards and routine.

She based her analysis on interviews she had collected from housewives in the UK in the early 1970s. Pursuing the aim of studying housework as work, Oakley wanted to know how women managed to make sense of housework as an occupation combined with their awareness of the low social value attached to housework. She wrote:

> *"The housewife is her own supervisor, the judge of her own performance, and ultimately the source of her own job definition.*
>
> *The two dimensions of this job definition are standards and routines. In describing her daily life every woman interviewed outlined the kind of standards she thought it important to stick to in the housework, and the type of routine she used to achieve this end."* (Oakley 2018, p. 94)
>
> *"This process has a number of origins and functions. First, it appears to be a means of creating unity out of a collection of heterogeneous work tasks. Secondly, it is a way for expressing the feeling of personal responsibility for housework. Thirdly, it establishes a means of obtaining reward in housework – satisfaction can be gained daily from successful adherence to these standards and routines."* (p.176)

This definition offers significant help in identifying and distinguishing unpaid care and domestic work from leisure time, especially when care for a household's members is involved. In fact, even though the standards applied by each person to unpaid work might be different, they still represent a requirement, though personal. Moreover, similarly to paid work, domestic tasks are characterized by a routine that must be respected. Hence, unpaid care and domestic work cannot be mistaken for other activities because it requires a level of performance from the persons responsible for fulfilling it.

To summarize the concepts presented in this section, we could say that unpaid care and domestic work includes those household productive activities that are carried out by and for the household's members, and that are characterized by their standards and routine, and that, ultimately, might (in most instances) be replaced by market goods or paid services.

Now that activities that pertain to unpaid care and domestic work are defined, we need to determine how these activities should be measured and valued if we want to include them in an economic analysis. This is the focus of the next two sections.

II. Measurement and valuation of Unpaid Care and Domestic Work

There are two main approaches to estimating the value of domestic work. One is based on the imputation of value to labor time (an input-related method), and the other is based on the imputation of market prices to goods and services produced in the domestic sphere (an output-related method). The input-related method multiplies the time input in unpaid work with an appropriate wage rate. The output-related method presents unpaid work in output terms so as to compute its value by multiplying the output produced with market prices. Both methods need information on time-use.

The main tool for collecting information on time devoted to unpaid care and domestic work is the Time-use Survey. Time-use survey (TUS) data has served as an essential tool in quantitative assessments of the contribution of unpaid care and domestic work to wellbeing and its interconnections to other economic variables of interest. There are a variety of ways for measuring time-use.[12] The most common and least problematic is the collection of time-use diaries (Gershuny 2011). Maintained continuously throughout a specified period (usually 24 hours, but sometimes two, five or seven days), time-use diaries provide a substantial record of development and a collection of representative annual national samples, by both academic researchers and national statistical institutes. According to Gershuny and Robinson:

> "*There are several reasons why the time diary is an appropriate self-report method for collecting time-use information. First, the diary minimizes the reporting burden on the respondents by allowing them to report behavior straightforwardly in their own words and in its naturally occurring order. The respondents need only provide a verbatim listing, or "script," of their daily activities and not more extensive reconstructions of (or rationales for) "typical" daily behavior.*
>
> *In addition to minimizing the respondents' burden and allowing them to describe their daily behavior in their own words, the time diary's structure forces the respondents to respect the important measurement features of the time variable, namely, that all 24 hours of the day must be accounted for, that at every point in time "everybody has to be somewhere," and that activities occur in a series of sequences (including the preparation, waiting, and clean-up times necessary for work or other tasks and the travel necessary to perform an activity in a particular location). At the same time, a properly designed time diary form allows the respondents the*

[12] Alternative forms are: questionnaire items, that are "stylised" time-use items within conventional questionnaires; experience-sampling method approach, in which respondents are prompted, at random instants through the day and week, by a signal from an electronic device, to describe their current activities and affective circumstances; direct continuous observation, that may be human or electronic; and diary studies.

opportunity to report on the periods of the day when more than one activity is occurring or is the subject of attention." (Gershuny and Robinson 1988, 539)

Time-use diaries are the main tool used by time-use surveys for collecting information on human activities. Subsection 2.1 describes how time-use surveys originated and the motivations behind the use of this kind of survey. Subsection 2.2 presents how time-use surveys are structured and the methodology for data collection. Finally, subsection 2.3 illustrates how time-use data are employed in the valuation of unpaid care and domestic work.

2.1 History and Motivations behind Time-use Data Collection

Time diary studies have a long history (see Antonopoulos and Hirway 2010 and Gershuny 2011). They originated from the activities of the late nineteenth century Russian official "zemstvo" (county) researchers investigating the daily life of peasant families. In the early years of the twentieth century, time-use statistics were produced in social surveys reporting on the living conditions of working-class families. In the 1920s, TUSs were carried out in some centrally planned economies, as well as in some industrialized countries (the United Kingdom and the United States). In the 1930s, public and private broadcasting organizations developed interests in diary studies. However, until the advent of computers in the 1960s, it could take several months to produce the simplest table on mean durations in an activity. Therefore, it was only in the 1960s that, in a major initiative funded by various UN agencies, a working group led by the Hungarian Alexander Szalai developed a standard time diary instrument. The first comprehensive multinational comparative time-use research project consisted of data collected in twelve European countries, and the main objective was to understand the use of people's free time regarding hobbies, recreation, mass media and childcare. Virtually all of the subsequent time diary data collections across the world, including the Harmonised European Time-use Study (HETUS), have developed from that model (Gershuny 2011).

Initially, as mentioned above, the main objective of TUSs was to understand the use of free time by people. But later, starting from the 1970s, due to interest from feminist groups, the objective shifted to studying unpaid care and domestic work.

"[…] unpaid domestic work came to center stage as a particular interest emerged from within feminist groups in industrialized countries in the North to measure the 'invisible' unpaid care work of women to assess both the emerging 'double day' and to estimate women's contribution to human welfare. Subsequently TUS emerged as a tool of projecting the uneven distribution of total (paid and unpaid) work between men and women in an economy and a large number of industrialized countries, such as the United Kingdom, Germany, the

Netherlands, Finland, Japan, Australia, Canada and others, started conducting periodical TUS. Over the years, the objectives behind conducting TUS have expanded to cover many socioeconomic objectives, including satisfaction with public services and overall happiness, with the objective of estimating the contribution of unpaid domestic work still remaining important." (Antonopoulos and Hirway 2010, p.10)

Nowadays, TUSs are increasingly used for collecting comprehensive information on human activities.[13] Human activities can be broadly divided into three categories: economic activities; unpaid activities falling outside the market; and personal care and leisure activities, which cannot be delegated to others. All three categories of activities contribute to human well-being, and national policies have an impact on all the categories of activities (Antonopoulos and Hirway 2010, p.11).

2.2 Methodology for Data Collection and Analysis

TUSs usually consist of diaries associated with questionnaires. The special diaries designed for time-use studies involve the continuous registration of an individual's sequence of activities throughout a defined observation period (hence producing exhaustive accounts throughout the observation period). The diary covers 24 hours and information are, usually, recorded in intervals of ten minutes. In general,[14] the diary instrument registers four recording domains:

1. Main activity: "What did you do?"

2. Parallel or secondary activity: "Did you do anything else? If so, what?"

3. Who with: "Were you alone or together with somebody you know, if so, who?"

4. Location (incl. mode of transport)

As a result, the data consists of a sequence of episodes or events, each characterized by these four recording domains. The respondents record their activities in time diaries using their own words. In the case that two activities were carried out simultaneously, there is space in the diary to record both, a main and a secondary (or parallel) activity. The third recording domain is the presence of other people. Consequently, each recorded episode in the diary is characterized by a main activity, and possibly by a secondary activity and by information on the presence of other people. A temporal identifier carries information on the time and duration for the episode. At the stage when the activities

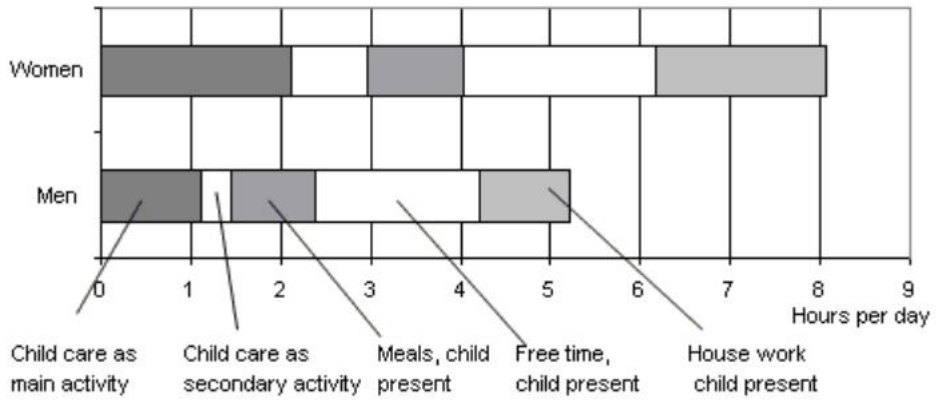
[13] In developing countries TUS is useful, also, in measuring unpaid work of family workers in family enterprises and subsistence work.
[14] HETUS standards, https://www.h6.scb.se/tus/tus/default.htm

in the diaries are coded, information on location (i.e. where the activity took place) is coded into several different categories.

Background information is collected by means of questionnaires. The purpose of this information is to form the population groups for which the time-use estimates are to be calculated. The background information includes demographic information on the respondents relevant to the objectives of the survey. Generally, it collects information about the socio-economic characteristics of the household as well as the individual and any other information related to their time-use that can be used to understand the time-use better.

Analyzing time-use data may entail dealing with issues of concurrence of actions. An example of a somewhat intricate activity is childcare. The meaning of the concept determines how to extract it from the diary record. If childcare is defined as activities that directly involve and are directed to the child, such as feeding, putting a child to bed, changing nappies, and more, it might be satisfactory to select episodes characterized by main activity codes that indicate these particular activities. If, on the other hand, childcare is given a broader meaning, overcoming explicit child-related activities, then additional episodes must be added, and the recording domains parallel activities and "who with" will also have to be considered.

Figure 2.1: Mean time for various sorts of childcare. Married or cohabiting parents with small children, 0-6 years. Swedish population 2000/01



Source: HETUS, https://www.h6.scb.se/tus/tus/introduction2.html

For example, looking at figure 2.1, that refers to the Swedish TUS data, we can clearly see that if we measure childcare only as primary or secondary activity women on average perform almost three hours per day of childcare while men less than one and a half hours. However, when we look at all the activities that an adult does in the presence of a child, women spend on average around eight hours per day with children while men just over five hours.

The opportunity to assess concurrent activities that time-use diaries offer represents a useful tool, but also one that is not always employable, at least in a straightforward manner. As we will see in the next subsection, taking into account concurrent activities might 'overestimate' the value of these activities in economic terms, especially when we use time-use data for the valuation of unpaid care and domestic work.

2.3 Valuation of Unpaid Care and Domestic Work

In her classic book, *Woman's Role in Economic Development,* Ester Boserup pointed out that "the subsistence activities usually omitted in the statistics of production and income are largely women's work" (Boserup 1970, 163). Domestic production and related activities are excluded, rather than underestimated, in statistics, because such activities have been perceived as simply falling outside the conventional definition of work (Beneria 1999).

As anticipated in the previous pages, there are different methods for converting unpaid care and domestic work into monetary value. The main approaches to measuring the value of domestic work are the input-related method and the output-related method. The input-related method multiplies the time input in unpaid work with an appropriate wage rate, which might be a specialized wage rate, a generalized wage rate or the opportunity cost. The output-related method presents unpaid work in output terms so as to compute its value by multiplying the output produced with market prices.

Each of these methods has advantages and disadvantages as presented by Beneria (1999). The use of a generalized wage tends to give very low estimates, given the low salaries of domestic workers. The use of a specialized wage tends to generate high estimates, even though it is more indicative of the market value of household production. However, it entails the need to disaggregate each task, with the corresponding problems of comparing unpaid and paid work, and without taking into consideration that some activities take place simultaneously. The use of an opportunity cost gives the widest range of estimates, depending on the skills and opportunity wage of the individual involved. This can result in rather unreasonable estimates when we estimate the value of the household production of a high-earning person. On the other hand, when the activity is performed by a full-time housewife, her opportunity cost would be correlated to her condition as a full-time housewife.

As for output-related estimates, the first issue regards the method for imputing value to domestic production and deducting the cost of inputs from it. Determining which market goods and services are equivalent to those produced at home can be problematic. Moreover, disparities in the quality of goods and services produced cannot be captured by an imputed "price".

Table 2.1: Alternative estimates of Karen's one hour of household production

	From 18:00 to 19:00 babysitting two children (1 hour)	From 18:30 to 19:00 cooking dinner (30 mins)	TOTAL
INPUT			
Specialized wage rate	15 €	10 €	25 €
Generalized wage rate	8 €	-	8 €
Opportunity cost	100 €	-	100 €
OUTPUT			
Market prices	?	30 €	?

Source: author's elaboration.

Table 2.1 attempts to exemplify the different methods for estimating the value of household production. For example, let us imagine estimating the value of Karen's one hour of unpaid work. Karen is a manager and has two children. After she arrives at home from her job, she looks after her two children and cooks dinner for herself, her partner and the children. If we evaluate her work with a specialized wage rate, we should consider the cost of hiring a babysitter for one hour and a cook for 30 minutes. The total would hypothetically be equal to 25 euros. If we use a generalized wage rate the value would be considerably lower, because it would be equal to hiring a domestic worker for one hour. In general, domestic workers earn low salaries, therefore, this option could have a value of approximately eight euros. On the other hand, if we consider the opportunity cost of Karen's one hour of employment, the value would be considerably higher. Karen is a manager and she earns a high wage, so one hour at her wage rate would mean 100 euros. Finally, the most difficult task is that of evaluating the output of Karen's unpaid work. If we consider the dinner, we should estimate the value of four meals and subtract the cost of the ingredients. We could estimate that the value of the dinner is equal to 30 euros. However, it is still difficult to give a complete estimate of the output, because with regards to babysitting it is very difficult to establish a value. In fact, apart from the immediate value of the service, we should also consider the long-term effects of care, and the results of good care should be taken into consideration and evaluated. As Folbre and Nelson point out,

> *"care creates important externalities that cannot always be captured in individual transactions. Many people share in the benefits when children are brought up to be responsible, skilled, and loving adults who treat each other with courtesy and respect.*
>
> *[…] These gains cannot be captured fully by those who created them. Parents can't demand a fee from employers who hire their adult children and benefit from their productive efforts. Nor can they send a bill to the spouses and friends of those children for the value of*

parental services consumed. When child care workers or elementary school teachers genuinely care for their students, they foster an eagerness to learn and willingness to cooperate from which later teachers and employers will benefit." (Folbre and Nelson 2000, p.137)

There is no one method of estimating the value of household production that is better than the others. The decision of which one to use depends on the goals of the analysis. In the next chapter a generalized wage rate will be used for estimating the value of household production, because the scope of the analysis is to determine the minimum cost of outsourcing household production that, due to time constraints, households are not able to produce on their own.

If we are able to estimate the quantity of unpaid care and domestic work and to assign it a value, then we can estimate the impact of unpaid care and domestic work on the economic wellbeing of the household, including any impacts on a household's poverty level.

III. Employment of Time-use Data in Poverty Assessment

Economic theory increasingly recognizes that measures that link poverty exclusively to monetary income and consumption are not satisfactory[15]. Therefore, over the years both feminist and mainstream economists proposed alternative methods for measuring poverty. The approach developed by Sen (1992) and undertaken by the UNDP in the *Human Development Reports*[16], stresses the importance of focusing on 'capabilities to achieve functionings' instead of on income, which means to look at the 'richness of human life' (Sen 2012) instead of richness alone. The capabilities approach postulates that when making normative evaluations, the focus should be on what people are able to be and to do, and not on their incomes or on what they can consume. For example, Sen would not focus on the fact of owning a bicycle but rather on the possibility of using it.

The capability approach was further developed by Martha Nussbaum (2000). Nussbaum went beyond the comparative use of the capabilities to define a threshold level of capabilities. She does so by presenting a list of central capabilities that can command a broad cross-cultural consensus. The list enumerates a series of capabilities that goes from life and bodily health and integrity to control over one's political or material environment.

In a feminist perspective, Robeyns (2003) applies the approach of Sen and Nusbaum to conceptualize and assess gender inequality. In doing so, she writes her own list of central capabilities,

[15] For a review on the measurement and analysis of poverty see the corresponding contribution in The Elgar Companion to Feminist Economics (Shaw 1999).
[16] http://www.hdr.undp.org/

which includes domestic work and nonmarket care. Both are categorized as central capabilities, but also as something that could affect the capabilities of the caregiver.

In adopting Robeyns' perspective, time becomes a crucial factor in the measurement of poverty. Moreover, with this new approach, both paid work and unpaid care and domestic work are included and employed in the measurement of poverty, allowing an assessment of gender differences.

Time is one of the basic inputs in the production of goods and services. We need time for producing marketable goods, but we also need time for producing self-consumed goods. In the life of every human being time is a limited resource. In fact, no one has more than 24 hours in a day. Simultaneously, time is a necessary input into anything that one cares to do or to become[17]. As Goodin, et al. (2008) pointed out: time is an egalitarian, scarce, and necessary input.

If we are willing to include unpaid care and domestic work and, therefore, time-use in the measurement of poverty, we should start from a preliminary definition of time. According to Harvey and Mukhopadhyay (2007) there are four main time categories: contracted time, committed time, necessary time and free time. Contracted time is time reserved for undertaking paid work or education. Once one is involved in employment or education one is obliged to allocate a certain amount of time to these activities. Committed time is the necessary time for taking care of the maintenance of one's home and family. Necessary time is the time one needs for personal maintenance (eating, sleeping, personal hygiene). Free time consists of the residual time[18].

Both contracted and committed activities represent productive work. The first, excluding education, takes the form of paid work; the second takes the form of unpaid work.

Statistics at national and international levels have long overlooked the fundamental role of unpaid care and domestic work as productive activities. The fact that even nowadays Eurostat[19] continues to use terms as active and inactive to define people inside and outside the labor force gives a realistic picture of the neglect that is still surrounding unpaid work from the point of view of the recognition of its value.

Only recently did the ILO (International Conference of Labour Statisticians 2013) decide to abandon the terms active and inactive in favor of a neutral terminology, replacing them with the terms "labor force" and "outside the labor force" in recognition that persons outside the labor force may be

[17] See, for example, the theory on the investment in human capital developed by Mincer (1958).
[18] Free time has been defined also as 'discretionary time' (Goodin et al. 2008), and it can become the measure for the temporal autonomy that one can enjoy.
[19] https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Inactive

involved in forms of work other than employment, that contribute to the national production and to the household's livelihoods and well-being[20].

The majority of people, as it will be presented later in this chapter, are involved both in paid and unpaid work. In terms of time-use, when the sum of the time devoted to paid activities and to the minimum necessary unpaid activities clashes with the minimum necessary amount of personal and discretionary time we may register the effects of time poverty.

Harvey and Mukhopadhyay (2007), who analysed time poverty in an economic perspective, define it as follows:

> *"from the allotted 24 hours, necessary time (including the necessary component of free time) must be subtracted, in order to give a supply of time (Tm) which a person is free to allocate between work and leisure. However, a person's freedom to allocate time is constrained by the requirement to maintain the household. The minimum time required to run the household is considered as the committed time (T1). After further reducing their supply of time by that required for household commitments, a person is left with allocatable time (TA). It is with this supply of time that a person can exercise his or her work-leisure choice. If a person contracts more time than they have available, it is assumed that they have cut into their committed time and have therefore not met the minimum amount of time required to tend to their household. People who do not meet this minimum requirement are considered to be time poor."* (Harvey and Mukhopadhyay 2007, 61)

Therefore, individual time poverty has an impact on the whole household, because when the time allocated to unpaid work is not enough to meet the requirement of the household, the whole household will suffer from it.

This idea was first translated by Vickery (1977) into an index that represents the time and money inputs a household needs in order to maintain the physical and mental well-being of their members. For Vickery, the attainment of the poverty threshold requires the household to have a minimal input of time, regardless of the amount of money available, and a minimal input of money, regardless of the amount of time available. Moreover, Vickery affirms that the number and characteristics of the household members determines the necessary amount and combination of time and money. Vickery's poverty standard identifies those households that appear to have insufficient

[20] https://www.ilo.org/global/statistics-and-databases/statistics-overview-and-topics/WCMS_470304/lang--en/index.htm

resources to maintain the physical and mental well-being of their members by taking into consideration their characteristics.

The difference between the available and actual amounts of time for paid work is what determines time deficit/surplus (Vickery 1977). Harvey and Mukhopadhyay (2007) calculated the money value of the time deficit by imputing a monetary equivalent of the time deficit amount and adjusting the usual poverty threshold by the amount obtained, implementing a replacement cost set at the minimum wage rate in the market. Here Harvey and Mukhopadyay assume that paid work time cannot be changed or substituted by unpaid work time due to the contracted nature of paid work time. However, unpaid work time, except for the minimum non-substitutable amount, is perfectly substitutable with paid work time/money income.

Antonopulos and Memis (2010) used the framework presented by Vickery for working on time-adjusted poverty thresholds in developing contexts. In particular, they highlighted that in developing countries the non-substitutable amount of unpaid work time can be as binding as contracted paid work time, where unpaid work includes activities such as collecting fuel and fetching water. Thus, given the possibility of lower or zero degrees of substitutability of unpaid work time in many developing countries, estimates for the required unpaid work time explained above become problematic. Therefore, Antonopoulos and Memis support the idea that in some instances people exchange part of their required personal needs time for time for work (for example, they sometimes compromise their sleep). They especially considered this might be true when people, as in a developing country context, cannot substitute either the paid or unpaid work time they need to spend.

In this regard, studies on time poverty and time deprivation show that chronic and severe time pressure, which are experienced in particular by women due to their double-burden of work (paid and unpaid), have serious implications on a person's health (Hunt and Annandale 1993). And for working women there is a relationship between the length of the domestic work week and reported levels of exhaustion and insomnia (Tierney, Romito, and Messing 1990).

On the basis of the frameworks created by Vickery (1977) and Harvey and Mukopadhyay (2007), the Levy Economics Institute developed an innovative poverty measure (Zacharias 2011): the Levy Institute Measure of Time and Income Poverty (LIMTIP). The LIMTIP takes as its starting point a measure of monetary poverty, that is then integrated and modified by taking into account time and household production. The key idea of the LIMTIP is that, similar to a minimum amount of income that secures access to a basic "basket" of goods and services available in markets, a minimum amount of unpaid care and domestic work time is equally necessary and must also be specified

(Antonopoulos et al. 2017). In fact, daily reproduction of a household's members requires that some amount of time must be dedicated to necessary household production activities. Consequently, households might not be able to achieve minimum living standards, not only because they have an income deficit, but also because they have a time deficit (Zacharias 2011). In fact, households with time deficits will have to purchase market substitutes to fill gaps in household production. Therefore, in addition to income inadequacies, the LIMTIP accounts for the negative impact time-deficits exert on living standards and translates them into a new poverty threshold[21].

An analysis of poverty that includes the value of unpaid care and domestic work has important gender implications. In fact, women perform more unpaid care and domestic work than their male partners, even when they are both employed. And, while men have compensated for the time they spend in paid activities by delegating housework to others in the household, women have to cope with it by finding different solutions, sometimes by reducing their time for leisure (Burchardt 2008) or even for rest (Antonopoulos and Memis 2010).

IV. Differences in Time-use between Women and Men

There is a significant gender difference in the allocation of time by type of work (see ILO 2018). Men tend to allocate the majority of their time to paid activities, while women devote the majority of their time to unpaid work. Focusing on the EU countries included in the ILO report (2018), it emerges that on average women spend almost double the amount of time in unpaid care work[22] than men (see figure 2.2). In fact, women spend on average 4 hours and 26 minutes per day in unpaid care work, while men spend only 2 hours and 23 minutes, representing an average gender gap in unpaid care work of more than 2 hours. The country with the smallest gender gap in time devoted to unpaid care work is Sweden, where women spend 46 minutes per day more than men in unpaid care work. In Portugal, women do almost four times as much unpaid care work as men, with a gender gap of almost 4 hours.

Italy, which is the focus of the next chapter, presents one of the most unequal divisions of unpaid care work between women and men among the EU countries analysed by ILO. In Italy women spend on average 5 hours and 5 minutes per day in unpaid care work, while men spend only 1 hour and 48 minutes. Therefore, the gender gap in unpaid care work is more than 3 hours, and is the second biggest gender gap among the EU countries analysed by ILO.

[21] More details about LIMTIP methodology are presented in Chapter 3.
[22] In the ILO report unpaid care work includes unpaid domestic work.

Figure 2.2: Gender gap in time spent in unpaid work in EU countries, daily minutes spent in unpaid care work by gender

Source: author's calculations based on ILO report (2018)

As mentioned in the previous section, time poverty is caused by the lack of time that may arise when the sum of the time necessary for paid and unpaid care and domestic work is larger than the time available. Due to the heavier burden of household responsibilities that women carry, they are more frequently affected by time poverty. Women's time poverty, together with its consequences on household wellbeing, could be relieved by an increase in the availability of public services. This can be demonstrated in different contexts. In particular, the following chapters of this thesis will present two case studies – Italy in chapter 3 and the European Union in chapter 4. As highlighted in the figure above, all EU countries are affected by an important gender inequality regarding the division of unpaid care and domestic work to different degrees. In the following pages I will present the most recent data on time-use and unpaid care and domestic work in Italy (subsection 4.1) and in the European Union (subsection 4.2) in order to outline the situation and make the case for the two empirical studies.

4.1 Italy

The last available time-use data for Italy[23] highlights that women perform on average 20 more weekly hours of unpaid care and domestic work than men (Table 2.2). Women spend an average of 32.4 hours per week in unpaid care and domestic work (the average for employed women is slightly lower at 28.8 hours), while men only spend around 12 hours per week on average in unpaid care and domestic work (the average is similar for employed men). On average unpaid working hours represent almost 70 percent of working time for women, and only 32.6 percent for men.

Table 2.2: Average weekly hours of work by sex and employment, 18-64 years old (Italy 2013-2014)

Weekly number of hours of work	**Men**					
	Employed			All		
	mean	st. dev.	median	mean	st. dev.	median
Paid	36.8	18	40	25	22.7	31.5
Unpaid	12.5	14.8	7	12.1	14.7	7
Total	49.3			37.1		
Percentage of total working time						
Paid working hours	74.6			67.4		
Unpaid working hours	25.4			32.6		
Weekly number of hours of work	**Women**					
	Employed			All		
	mean	st. dev.	median	mean	st. dev.	median
Paid	28.9	17.2	31.75	14.1	18.8	0
Unpaid	28.8	20.8	25.7	32.4	23.4	31.5
Total	57.7			46.5		
Percentage of total working time						
Paid working hours	50.1			30.3		
Unpaid working hours	49.9			69.7		

Source: author's calculations IT-TUS 2013-2014

As a result, women on average work almost 10 hours per week more than men. In fact, although women devote a lower number of hours to paid work on average, their total working time is higher than men's when unpaid care and domestic work is added to the sum (on average women work 46.5

[23] Here I analyse the data of the last available wave Italian Time-use Survey (IT-TUS 2013-2014).Time-use data were collected for the first time in Italy in 1989 by the Time Budget Survey of Italian National Institute of Statistics (ISTAT), but the ISTAT only started to collect time-use data on a regular basis from 2002.
For the purposes of this analysis, I selected the population between 18 and 64 years of age and I disaggregated unpaid care and domestic work into three types of activity: housework, caring for other family members, shopping and house administration work.
A descriptive analysis of the dataset can be found in the annex, table A.1.

hours per week, while men only 37.1). The difference persists even when the analysis is confined to employed people: employed women work on average almost 58 hours per week (paid plus unpaid work), while employed men work less than 50 hours per week.

A distinction among different types of households (by employment status of the person of reference and the partner, if present) and between households with and without children (tables 2.3 and 2.4) allows us to see that in general women work more hours than men (with an exception only for male-earner households without children). The most relevant part of unpaid work consists of domestic work[24], and is also the category of unpaid work where the largest difference between women and men is found. Moreover, the presence of children in the household increases the total number of working hours (because of an increased number of hours devoted to care work), and it has a stronger impact on women's time-use. In fact, women's total working time in the presence of children increases by an average of 10 hours (10.5 hours in male-earner households, 10 hours in female-earner households, and more than 7 hours in double-earner households). On the other hand, in double-earner households with children, men tend to work more hours than women in paid work. Nonetheless, as underscored above, women still work more hours than men in total, due to women's higher number of unpaid working hours. In double-earner households in particular, women's average number of weekly hours of domestic work is almost three times that of men.

Table 2.3: Average number of weekly hours of work by sex and household type – adult persons living in couple or single, households with children (Italy 2013-2014)

	non-earner	male-earner	female-earner	double-earner
Paid work				
M	0.0	37.1	0.0	37.7
W	0.0	0.0	29.0	26.0
Care work				
M	6.4	6.3	7.7	8.4
W	10.9	13.4	9.3	11.7
Domestic work				
M	5.8	4.2	9.8	6.8
W	30.5	32.6	21.5	22.7
Procurement[25]				
M	4.9	4.1	4.9	4.3
W	5.0	6.3	4.7	4.6
Total M	17.1	51.7	22.4	57.2
Total W	46.6	52.3	64.5	65.0

Note: Only reference person and partner, if present. Persons 18-64 years old. Source: author's calculations IT-TUS 2013-2014

[24] See figure A.1 in the annex.
[25] Procurement represents all those activities that involve buying or obtaining all necessary goods and services, like food shopping or going to the post office to pay the bills.

Table 2.4: Average number of weekly hours of work by sex and household type – adult persons living in couple or single, households without children (Italy 2013-2014)

	non-earner	male-earner	female-earner	double-earner
Paid work				
M	0.0	37.1	0.0	37.0
W	0.0	0.0	31.3	29.2
Care work				
M	1.1	1.1	1.3	1.3
W	1.0	1.4	1.0	1.1
Domestic work				
M	8.6	6.0	11.4	6.1
W	31.7	33.0	17.7	22.0
Procurement				
M	4.8	3.7	6.7	4.8
W	5.6	7.4	4.7	5.4
Total M	14.5	47.9	19.4	49.2
Total W	38.3	41.8	54.5	57.7

Note: Only reference person and partner, if present. Persons 18-64 years old. Source: author's calculations IT-TUS 2013-2014

For further evidence, we can look to the first time-use data collected in Italy in 1989 and analyzed by Addabbo and Caiumi (2003). The analysis of the Time Budget Survey of 1989 highlighted that, apart from weekdays for households without children where women were not employed, women always devoted more time to total work (the sum of paid and unpaid work) than men did.

When we compare the latest data with that collected in 1989 (table 2.5), it emerges that, in general[26], the average time that women devote to unpaid work, and to domestic work in particular, decreased between 1989 and today. On the contrary, the average time that men devote to unpaid work increased, and this was due mainly to activities other than domestic work (as care work and procurement). The outcome is that on average the percentage of time that women devote to paid work increased in comparison to the time devoted to unpaid work, while the opposite happened for men. Nonetheless, women still devote the vast majority of their time to unpaid work and men to paid work.

[26] Unfortunately, it is not possible to directly compare the results because the time-use collection that ISTAT uses nowadays came into effect only from 2002. When ISTAT, or other institutions, analyze the time-use diaries the activities registered by each individual are codified into comparable variables. ISTAT adopted the current methodology only starting from 2002, and therefore it is not possible to create a variable in the newest datasets that is identical and perfectly comparable to the ones created before 2002.

Moreover, even if men increased the time that they devote to care work, women did not decrease the time they devote to it. On the contrary, in comparison to the other unpaid activities performed by women, care work now covers a larger percentage of time.

Table 2.5: Weekly hours of work by sex, adults living in couple or single (Italy 1989 and 2013-14)

Year 1989	**W**		**M**	
	hours	*%*	hours	*%*
Housework	36.11	*74.6*	5.56	*61.6*
Care Work	5.25	*10.8*	1.53	*17*
Constrained Time	7.06	*14.6*	1.94	*21.4*
Total Unpaid Work	48.42	*100*	9.03	*100*
Unpaid Work	48.42	*78.5*	9.03	*18.6*
Paid Work	13.29	*21.5*	39.45	*81.4*
Total Work	61.71	*100*	48.48	*100*

Year 2014	**W**		**M**	
	hours	*%*	hours	*%*
Domestic Work	26.17	*69.8*	6.47	*43.8*
Care Work	5.89	*15.7*	3.91	*26.5*
Procurement	5.44	*14.5*	4.38	*29.7*
Total Unpaid Work	37.5	*100*	14.76	*100*
Unpaid Work	37.5	*71.1*	14.76	*33.7*
Paid Work	15.24	*28.9*	29.03	*66.3*
Total Work	52.74	*100*	43.79	*100*

Source: for 1989 Addabbo and Caiumi (2003); for 2014 author's calculations IT-TUS 2013-2014

Finally, the comparison highlights that over time the total time devoted to work decreased for both sexes. Nevertheless, the total working time for women in 2013-14 was still higher than the total working time for men in 1989.

Addabbo (2003), who analyzed the 1989 data, was particularly interested in comparing the pattern of unpaid work performed by men and women who live in a couple or individually. She found out that women who live in a couple perform a greater amount of unpaid work than single women do (even when couples without children are taken into account). The analysis of the most recent time-use data reaffirms this pattern (table 2.6). Women living in a couple in households without children perform on average 16.4 hours of unpaid work more than single women living alone in households without children. On the other hand, even if there is almost no difference in the average number of weekly hours of paid work between women and men for single persons living alone, the average number of weekly hours of paid work of women living in a couple drops to almost half of the number of hours of paid work performed by men. Nonetheless, on average the total number of weekly hours of work (paid and unpaid) performed by women is always higher than that of men.

Table 2.6: Average weekly hours of work by sex and marital status, 18-64 years old, only households without children (Italy 2013-2014)

	single living alone		**in couple**	
Weekly average number of working hours	Men	Women	Men	Women
Paid	26	25.9	25.5	13
Unpaid	12.5	19.7	12.4	36.1
Total	38.5	45.6	37.9	49.1

Source: author's calculations IT-TUS 2013-2014

In conclusion, it emerges that in Italy there is a pronounced disequilibrium in the distribution of time-use by gender, in which the unequal division of work between the sexes has not changed much over the last 25 years (from 1989 to 2013-14). On average women work almost 10 hours per week more than men when unpaid care and domestic work is taken into consideration. Women spend on average 32.4 hours per week in unpaid care and domestic work, while men spend only about 12 hours. The largest share of unpaid care and domestic work consists of domestic work. That is also the category of unpaid care and domestic work where the largest difference between women and men is found. Moreover, the presence of children in the household increases the total number of working hours, and it has a stronger impact on women's time-use. Finally, women who live in a couple perform a greater amount of unpaid care and domestic work than single women do, even when only households without children are considered. This also affects the number of hours of paid work that they perform.

4.2 Europe

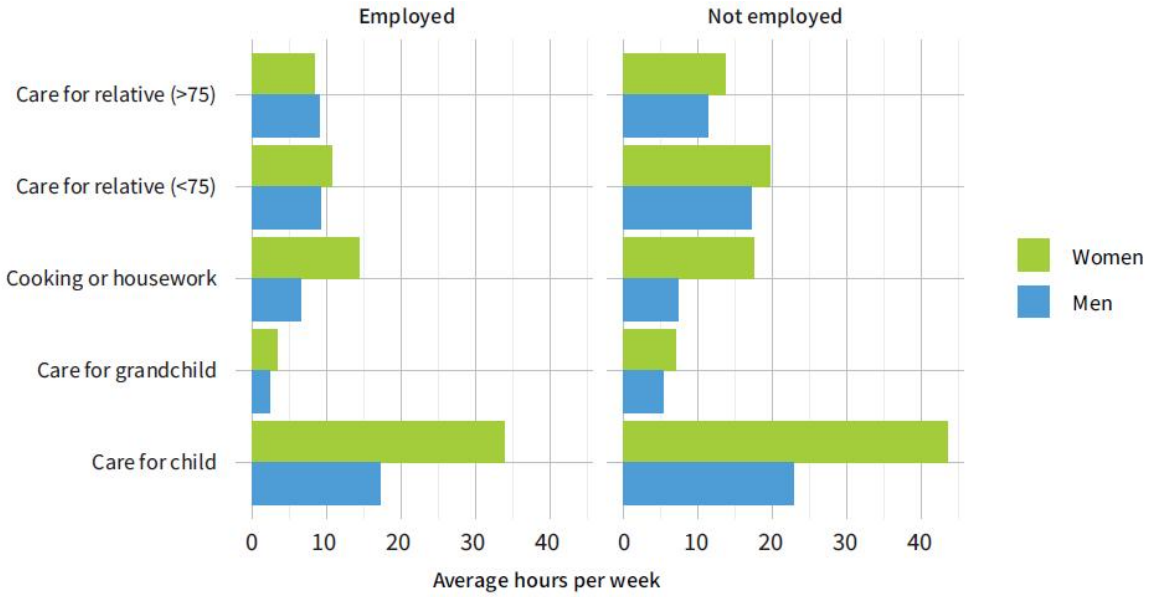
An assessment of the time that women and men devote to unpaid care and domestic work at the European level is, unfortunately, not so simple. In fact, the HETUS project, which was mentioned in section 2.1 of this chapter, has been abandoned and currently there is no European database for time-use data. For this reason, the analysis performed in chapter 4 is based on data made available though the European Union Survey on Income and Living Conditions (EU-SILC).

In these pages unpaid care and domestic work in the European Union will be analyzed using the information made available by Eurofound's reports on working conditions in Europe (Eurofound 2017a, 2017b, 2018). The three Eurofund reports include a focus on work-life balance and are based

on data coming from two surveys, the 2015 European Working Conditions Survey (EWCS)[27] and the 2016 European Quality of Life Survey (EQLS)[28].

Data collected by Eurofound show that in the 28 European Union countries women, employed or not employed, spend significantly more time than men on unpaid care and domestic work (figure 2.3). It also emerges that the average time spent in unpaid care and domestic work by non-employed people is higher than that of employed people. It is notable that, regardless of their activity status, men always spend less time than women in unpaid care and domestic activities, with the only exception of a slightly larger average time spent by men compared to women in caring for a relative over 75 years of age.

Figure 2.3: Average weekly hours spent in unpaid work by sex and employment status (EU28 2016)



Note: Figures presented refer only to individuals who report caring for a relative or for child or grandchild at least once or twice per week.

Source: Eurofound 2018

[27] The EWCS assesses and quantifies the working conditions of employees and the self-employed, analyzes relationships between different aspects of working conditions, identifies groups at risk and issues of concern, and monitors progress and trends. The survey aims to contribute to EU policy development, particularly regarding quality of work and employment issues. The EWCS has been carried out by Eurofound every five years since 1991. This sixth survey (EWCS 2015) interviewed nearly 44,000 workers in 35 countries. In addition to measurements of work–life balance, the survey covers a wide array of topics, including working time, working time arrangements, job intensity and support.

[28] The EQLS is a representative, questionnaire-based survey that interviews individuals aged 18 years and older, across all EU Member States, about work and life circumstances. The survey was first carried out in 2003, and was repeated in 2007, 2011 and 2016. The EQLS 2016 asked participants about 262 different items covering topics ranging from socioeconomic background, resources and living conditions, to social ties and the use of social services. The latest wave of the EQLS covers many topics that are of particular relevance to work–life balance, including numerous indicators that describe how work and care can be reconciled, as well as information on other long-term care (LTC) services offered across EU Member States.

Table 2.7 highlights that, besides the wide differences in time-use among countries, women always spend more time on average in unpaid activities than men (with very few exceptions), while men always spend more time on average than women in paid work.

It is important to notice that in contrast with the data usually found in time-use surveys (see for example the data reported in table 2.7 for Italy in comparison with the those reported in the previous section), the EWCS and EQLS report that people spend a larger amount of weekly hours in unpaid care (especially care for children) than in other unpaid domestic activities (such as cooking and other housework)[29]. This is probably due to the fact that in the two Eurofound surveys respondents provided a self-assessment of the average time they spend in different activities, which likely skewed the results.

Data collected by Eurofound highlights that unpaid working hours of women and men vary through the course of their lifetime. Not surprisingly, unpaid work peaks for both men and women during the phase of life in which there are young children in the household, with women being particularly affected. The number of hours spent in unpaid work reported by women with a partner and young children (39 hours per week) is more than double the hours reported by men in the same situation (19 hours) (Figure 2.4).

[29] The amount of time spent in general in unpaid and paid activities appears larger, too, but this might be due to the method used for calculating the average values.

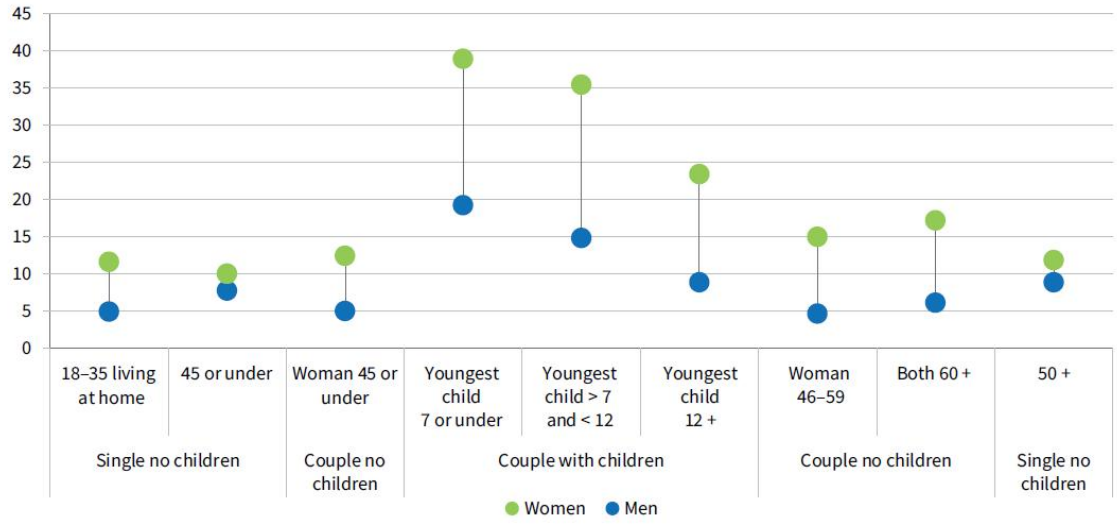
Table 2.7: Average time spend in paid and unpaid work by sex and country (EU28 2015)

	Care children		Care grandchildren		Cooking and housework		Care disable<75		Care disable>=75		Total paid work	
Country	**W**	**M**	**W**	**M**	**W**	**M**	**W**	**M**	**W**	**M**	**W**	**M**
AT	51.9	27.2	12.2	14.2	15.8	9.6	25	9.6	15.2	14.8	32	43.7
BE	35.8	17.2	11.4	8.3	15.6	9.1	11.5	9.1	6.4	6	34.5	43.1
BG	38.7	22.7	24.1	12.6	17.8	10.3	25.1	10.3	13.2	22.5	43.2	46.5
CY	29.8	17.6	22.3	12.7	20.5	10.3	14.4	10.3	14.7	10	38.2	42.5
CZ	31.7	11.3	11.5	9.4	15.6	8.3	18.2	8.3	8.1	8.9	43.3	47.6
DE	39.2	19.6	10.7	9.7	15.4	9.2	8.6	9.2	4.9	6.7	33.7	41.6
DK	27.8	16.3	9.2	6.1	10.9	7.9	10	7.9	4.1	3.4	34.9	40.8
EE	35.8	22.3	12.5	10.7	14.3	11.4	8.6	11.4	9	12.5	40	43.6
EL	34.7	16.9	20.5	17.1	19.2	9.1	25.5	9.1	18.9	9.8	41.9	49.1
ES	38.4	23.2	16.7	16.1	20.1	11.1	20.3	11.1	18	13.6	38.6	43.5
FI	36.2	20	10.2	11.5	12.8	8	6.7	8	7.6	4	37	44
FR	33.5	20	14.1	16.2	14.3	8.6	10.5	8.6	9.8	6.7	35.2	40.5
HR	34.3	16.3	16.4	13	17.6	8.9	14.9	8.9	9.2	9.9	43.2	45.1
HU	39.4	17.9	13.8	12.3	16.6	10.5	14.9	10.5	21.2	8.8	42.1	45.5
IE	47.2	29.4	17.8	11.3	20.5	11.3	24.9	11.3	13.5	9.1	32.4	43.6
IT	39.9	18.4	15.7	10	19.2	8.8	10	8.8	12.3	13	35.9	43.3
LT	39.1	18.3	16.2	7.6	15.2	8.2	18.1	8.2	12.9	13.2	40.6	46.8
LU	37.9	22	15.7	8.8	16.1	8.3	15.6	8.3	9.2	5	34.9	42.8
LV	36.4	26.3	17.5	14.1	17.3	13.1	9.8	13.1	13	12.8	41.9	45.2
MT	34.1	18.2	21.1	12.3	22.4	11.2	18	11.2	18.9	15.6	38.5	45.8
NL	50.1	24.1	9.4	8.1	14.4	8.5	10.5	8.5	7.2	6.4	29.2	40.2
PL	43.8	23.1	15.5	13.2	17.1	12.5	28.7	12.5	18.7	13.8	43.3	47.2
PT	29.4	19.3	15.4	19.3	16.1	10.5	14.7	10.5	8.4	16	40.2	44.6
RO	31.9	19.1	24.4	13	22.5	19.8	27.3	19.8	20.7	13.9	46.1	48.5
SE	43.2	30.1	7.8	5.2	11.9	9.3	9.8	9.3	7	2.9	38.2	41.8
SI	28.9	18	13	9.4	16.3	8	13.5	8	13.6	10.3	41.8	45.8
SK	28.6	14.6	12.4	11.6	14.4	9.2	26	9.2	13.2	11.9	41.1	45.9
UK	40.3	22.5	13.5	11.4	14.7	8.8	17.2	8.8	10.2	13.9	31.7	41.2

Note: Figures presented refer only to individuals who report caring for a relative or for child or grandchild at least once or twice per week.

Source: author's calculation EQLS 2015

Figure 2.4: Average weekly hours spent in unpaid work by life stage and sex, only employees and self-employed (EU28 2015)

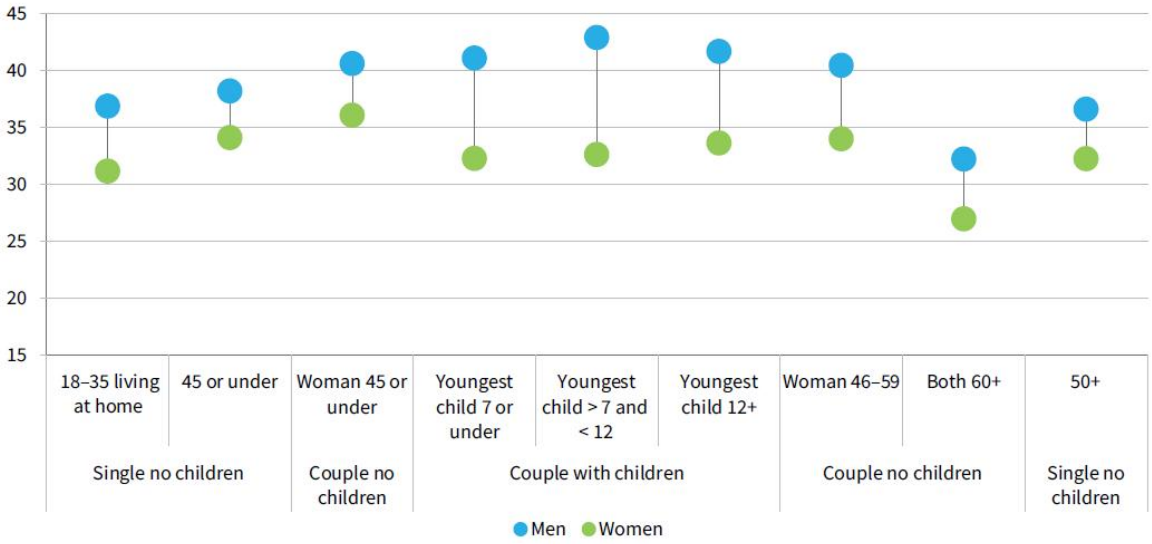


Source: Eurofound 2018

With regards to paid work, Eurofound studies point to the fact that weekly paid working hours of those in employment are decreasing. In all EU countries, the average weekly number of working hours has been in decline for at least the last two decades. On average in the EU, normal weekly hours amounted to 41.2 for men and 34.3 for women in 2002, falling to 40 for men and 33.7 for women by 2017. In this regard, Eurofound studies suggest that working fewer hours a week should make balancing work and private life easier. On the other hand, the fact that more and more people are taking up employment makes balancing work and life more difficult for individual households.

In order to cope with their caring responsibilities, employed and self-employed women in the EU reduce the amount of hours spent in paid work when they have to take care of young children (figure 2.5). In contrast, men have a tendency to spend longer hours in paid work during the parenting phase of their lives. Besides the role of gender norms in childrearing, this is a clear reflection of the gender pay gap. Given their lower salaries compared to men women will be likelier to reduce the amount of hours spent in paid work when required time for unpaid care - childcare in particular - increases.

Figure 2.5: Average weekly working hours by life stage and sex, only employees and self-employed, (EU28 2015)



Note: Average weekly hours comprise both the worker's main job plus any other job they may hold.
Source: Eurofound 2018

The data highlights that on average women spend more time in unpaid care and domestic work than men, while the opposite is true for paid work. But again, when we combine the time spent in paid and unpaid work, the Eurofound analysis confirms that employed women work more than employed men. The Eurofound analysis shows that in 2015, men spent on average nearly 53 weekly hours in paid work, unpaid work and commuting, while women spent over 58 hours, representing a difference of nearly five hours per week between women and men.

In conclusion, it emerges that in European countries, as we already noticed for the analysis of Italian data in the previous section, there is a pronounced disequilibrium in the division of paid and unpaid activities by gender. Women, employed or not employed, spend significantly more time than men on unpaid care and domestic work. While, regardless of their activity status, men always spend less time than women in unpaid care and domestic activities, with the only exception of a slightly larger average time spent by men compared to women in caring for a relative over 75 years of age.

On the other hand, men always spend more time on average than women in paid work. Data at EU level also highlights that unpaid working hours vary through the course of the lifetime with a peak of unpaid work during the phase of life in which there are young children in the household. This is mirrored by a reduction on the average number of hours spend by women in paid work when they have to take care of young children.

V. Conclusions

Unpaid care and domestic work is a crucial aspect in economic analysis. At the same time, the fact that it is mainly performed by women and within the household has meant that economic research has often overlooked or undervalued it. Nonetheless, its investigation is fundamental for a gender-sensitive assessment of economic issues.

For defining unpaid care and domestic work and distinguishing it from other activities that take place within the household we can adopt the definitions developed by Reid (1934) and Oakley (1974), respectively in economics and sociology, and say that unpaid care and domestic work includes those household productive activities that are carried out by and for the household's members, and that are characterized by their standards and routine, and that, ultimately, might (in most instances) be replaced by market goods or paid services.

The main tool for the analysis of unpaid care and domestic work are time-use surveys. Time-use surveys collect information on individual time-use and allow the analysis to connect time-use with other variables of interest. However, these data are not always available or collected on a regular basis. Moreover, the issue of simultaneity, which can be accepted in the mere analysis of time, becomes problematic when we want to estimate the value of unpaid household activities. In any case, the choice best method for estimating the monetary value of unpaid activities is linked to the objective of the analysis, as we will see in the next chapter.

Analyzing time-use opens new opportunities in economic research, including, as highlighted in section 3 of this chapter, new methods for poverty assessment including time poverty. Time poverty is caused by the lack of time that may arise when the sum of the time necessary for paid and unpaid care and domestic work is larger than the time available. Due to the heavier burden of household responsibilities that women carry, they are more frequently affected by time poverty.

As highlighted in section 4, all EU countries, are affected by an important gender inequality regarding the division of work to different degrees. The data highlights that in EU28 women on average spend more time in unpaid care and domestic work than men, while the opposite is true for paid work. And, when we combine the time spent in paid and unpaid work, the Eurofound analysis confirms that employed women work more than employed men. The analysis also shows that in 2015, men spent on average nearly 53 weekly hours in paid work, unpaid work and commuting, while women spent over 58 hours, which represents a difference of nearly five hours per week between women and men.

When we focus on Italy the difference in working time between women and men is even more striking. In Italy, women on average work almost 10 hours per week more than men when unpaid care and domestic work is taken into consideration. This is due to the fact that even if women spend less time on average than men in paid work, they also spend an average of 32.4 hours per week in unpaid care and domestic work, while men spend only about 12 hours.

Women's time poverty, together with its consequences on household wellbeing, could be relieved by an increase in the availability of public services. This can be demonstrated in different contexts. The following chapters of this thesis will analyse two case studies – Italy in chapter 3 and the European Union in chapter 4.

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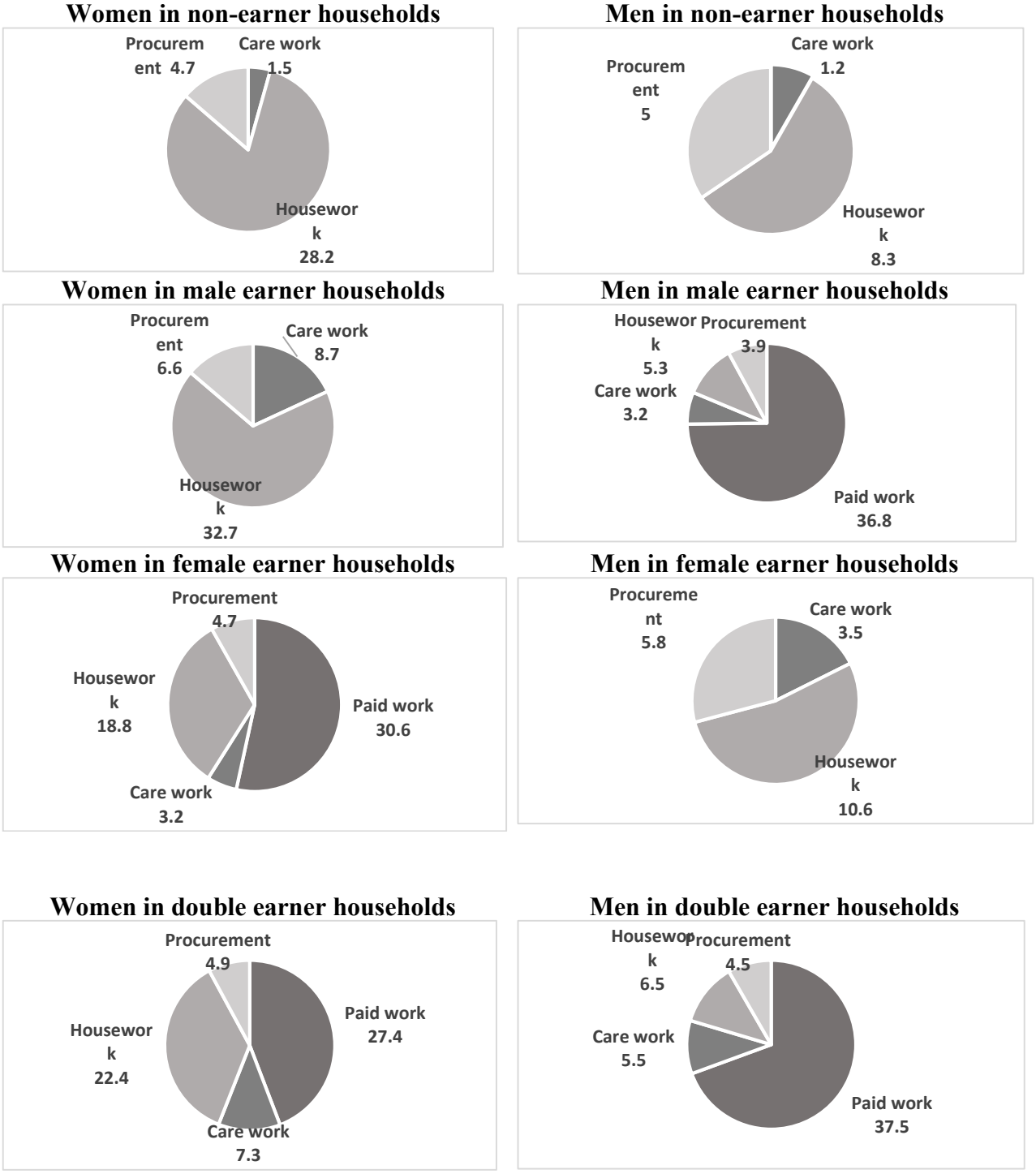
ANNEX

Figure A.1: Allocation of time by sex, average number of hours of work per week (Italy 2013-2014)



Note: Only reference person and partner, if present. Persons 18-64 years old.

Source: author's calculations IT-TUS 2013-2014

Table A.1: Descriptive analysis of IT-TUS 2013-14

	Freq	%		Freq	%
MEN	21,478	47.9	WOMEN	23,385	52.1
0-14	3,128	14.56	0-14	2,938	12.56
15-17	665	3.1	15-17	620	2.65
18-24	1,532	7.13	18-24	1,602	6.85
25-34	2,315	10.78	25-34	2,367	10.12
35-44	3,136	14.6	35-44	3,285	14.05
45-54	3,492	16.26	45-54	3,805	16.27
55-64	2,837	13.21	55-64	3,033	12.97
65-74	2,403	11.19	65-74	2,680	11.46
75+	1,970	9.17	75+	3,055	13.06
North-West	4,658	21.69	North-West	5,102	21.82
South	6,050	28.17	South	6,498	27.79
Islands	2,293	10.68	Islands	2,471	10.57
North-East	4,622	21.52	North-East	5,032	21.52
Central	3,855	17.95	Central	4,282	18.31
pre-primary	1,446	7.13	pre-primary	1,903	8.53
primary	3,218	15.87	primary	4,452	19.96
lower secondary	6,658	32.84	lower secondary	6,026	27.01
upper secondary	6,681	32.95	upper secondary	7,017	31.45
tertiary and over	2,273	11.21	tertiary and over	2,912	13.05
employed full-time	6,103	33.26	employed full-time	4,019	19.66
employed part-time	491	2.68	employed part-time	1,820	8.9
self-employed full-time	2,956	16.11	self-employed full-time	1,184	5.79
self-employed part-time	296	1.61	self-employed part-time	439	2.15
unemployed	1,528	8.33	unemployed	1,588	7.77
student	1,407	7.67	student	1,559	7.62
retired	4,690	25.56	retired	4,243	20.75
disable or unfit or other inactive	879	4.79	disable or unfit or other inactive	405	1.98
fulfilling domestic tasks	0	0	fulfilling domestic tasks	5,190	25.38
single	7,738	38.16	single	6,845	30.68
married	9,986	49.25	married	9,987	44.76
separated/divorced	1,125	5.55	separated/divorced	1,583	7.1
widowed	592	2.92	widowed	3,060	13.72
de facto	835	4.12	de facto	835	3.74

Source: author's calculations IT-TUS 2013-2014

Chapter 3

The Dual Problem of Poverty and Low Labor Market Participation of Women in Italy. An analysis of matched time-use and income data

In the previous chapter the concept of unpaid care and domestic work has been defined and the importance of the gendered dimension of time-use has been presented. In this context, the work done by several scholars in order to develop a measurement of poverty that can include the time-use variable has been introduced. As noted, the most advanced measure of time and income poverty is the one that has been recently developed by the Levy Economics Institute – the LIMTIP.

The inclusion of unpaid care and domestic work among the other variables in poverty measurement allows for a broader and more complex analysis of poverty. Hence, the main objective of this analytical chapter is to apply the LIMTIP to the Italian case in order to explore the linkages between gendered time allocation, employment patterns and wellbeing.

There are three main motivating factors to conduct a LIMTIP analysis of Italy. The first one is that previous LIMTIP studies focused on developing countries (Mexico, Chile, Argentina, Turkey, Korea, Ghana and Tanzania), but the LIMTIP uses a distinctive methodology for poverty analysis that can and should be applied to the developed context, too. As will be presented below, the LIMTIP methodology is distinct because its analysis of households' wellbeing is grounded on the analysis of individuals' wellbeing. Thus, this allows for analysis on two different levels – household and individual. Ultimately, this characteristic makes the LIMTIP a gender-sensitive poverty measure, which represents a major innovation in terms of poverty measurement.

Indeed, it is important to recall that indicators focusing on income poverty may underestimate the magnitude of women's greater risk of poverty. Usually these indictors assume that household resources are pooled and shared equally, even though research has demonstrated resource inequalities between individual members of the same household. For instance, developing-country evidence

shows that in low-income households it is common practice for women to use the domestic budget they control for the family's needs, diminishing their own consumption (food, clothes, heating when alone, leisure, etc.) to preserve the living standards of their male partners and children (Agarwal 1997). However, unequal power over household's resources is not uncommon in Europe, too. Corsi, Botti, and D'Ippoliti (2016) demonstrated that when the individual control over household resources is considered the gender gap in poverty in Europe is significantly higher than the one assessed by the standard at risk of poverty rate[30].

Hence, also in developed contexts it becomes interesting to investigate the results of the application of individual and, therefore, gendered poverty measures, because they could help in the analysis of the phenomena that are interconnected with poverty, but are linked to the individual, such as labor market participation decisions. The LIMTIP can achieve this goal using the time variable.

The second reason for this LIMTIP analysis on Italy is the focus this measure has on the time dimension. As the time-use analysis in the previous chapter highlighted, in Italy the division of paid work and unpaid care and domestic work between women and men is deeply unequal, and this results in women working longer hours on average than men (46.5 hours per week versus 37.1). Even though women perform less hours of paid work per week compared to men (around 11 hours per week less than men), they greatly outperform men with regard to unpaid care and domestic work, working almost three times as many hours (around 32.5 hours per week compared to 12). This unequal division of work, as will be illustrated in the following pages, is the basis of the higher percentage of time poor women, compared to men.

[30] The financial dependency rate (FDR), that they created in contrast with the at risk of poverty rate (ARPR) – which considers individuals' access to goods and services under the assumption of perfect income sharing within the household – takes into account individuals' control over the household's resources and sheds new light over the gendered nature of poverty. The FDR explores the risk of poverty under the "pessimistic" assumption of very little sharing of resources in the household. The analysis of European data that followed highlighted that while the gender gap in poverty assessed using ARPRs oscillates between 1.5 and 2.4 percentage points. The gender gap in FDRs is substantially higher and ranges between 20.6 and 22.8 percentage points.

In Italy poverty has an important gender dimension, both from the point of view of time, as we will explore in section 3 of this chapter, and income. According to Eurotat, in Italy about 29 percent of women in Italy over 18 years of age are at risk of poverty or social exclusion[31]. However, when we consider only unemployed women this percentage increases to almost 38 percent[32], and in Italy almost 44 percent of women between 15 and 64 years of age are outside the labor market[33].

Finally, the third reason for this analysis is that the complexity of LIMTIP allows a deeper examination of the roots of poverty, offering a better understanding of its possible solutions. As several previous LIMTIP studies pointed out (Zacharias et al. 2018; Zacharias, Antonopoulos, and Masterson 2012; Zacharias, Masterson, and Kim 2014; Zacharias, Masterson, and Memis 2014), providing jobs is not always the most efficient solution for alleviating poverty in a population. In fact, when we take into account both income and the time dimension of poverty, decreasing income poverty (especially through jobs creation) might result in an increase in time poverty. In Italy it has been estimated that the unpaid care and domestic work performed within the household has a value of 557 billion euro[34], and that women perform around 70 percent of this type of work (ISTAT (2019). This means that if we substitute time devoted to unpaid work with time devoted to paid work, the forgone household production needs to be compensated by additional income.

[31] This indicator corresponds to the sum of persons who are: at risk of poverty or severely materially deprived or living in households with very low work intensity. Persons are only counted once even if they are present in several sub-indicators. At risk-of-poverty are persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income (after social transfers). Material deprivation covers indicators relating to economic strain and durables. Severely materially deprived persons have living conditions severely constrained by a lack of resources, they experience at least 4 out of 9 following deprivations items: cannot afford i) to pay rent or utility bills, ii) keep home adequately warm, iii) face unexpected expenses, iv) eat meat, fish or a protein equivalent every second day, v) a week holiday away from home, vi) a car, vii) a washing machine, viii) a colour TV, or ix) a telephone. People living in households with very low work intensity are those aged 0-59 living in households where the adults (aged 18-59) work 20% or less of their total work potential during the past year. The indicator is based on the EU-SILC (statistics on income, social inclusion and living conditions). https://ec.europa.eu/eurostat/web/products-datasets/-/tepsr_lm410

[32] Eurostat ilc_peps02. Data refers to year 2017.

[33] Population outside the labor market as a percentage of the total population, by sex and age (%) [lfsa_ipga], year 2018.

[34] The value of unpaid care and domestic work has been calculated by adopting the method of a generalized wage rate. Therefore, it has been assumed that every hour of unpaid care and domestic work has same value of the hourly wage of a domestic worker.

As feminist economists in particular pointed out, "the ability of money to mobilize labor power for 'productive work' depends on the operation of some non-monetary set of social relations to mobilize labor power for reproductive work" Elson (1994, 40). Therefore, the unequal distribution of unpaid care and domestic work between women and men – but also between households and the State[35] – becomes a central element in the analysis of poverty and women's participation in the labor market.

The analysis below focuses on gendered time allocation, employment patterns and wellbeing among Italian households, and it questions the differences and similarities in the analysis of poverty between Italy and the countries that have been the focus of previous LIMTIP studies. Moreover, for the first time the LIMTIP includes two time reference points for the same country that can be used for analyzing the developments of poverty.

In the first section, I describe the measure of time and income poverty that I will use for implementing a gender sensitive assessment of poverty. In section 2, I present the process for creating an *ad hoc* dataset that includes information both on the income and the time-use of the household and its members. In section 3, I use the *ad hoc* dataset for estimating time and income poverty in Italy. Finally, in section 4, I compare the estimates obtained for Italy with those coming from the previous LIMTIP studies with a focus on women and labor market participation.

I. The Levy Institute Measure of Time and Income Poverty

The Levy Economics Institute developed and applied the LIMTIP to a series of countries, including Argentina, Chile, Mexico, Ghana, Tanzania, Korea and Turkey[36]. Focused on the measurement of poverty, the LIMTIP framework provides a measure of wellbeing that has made an

[35] The role of the State and of publicly provided care services is a central issue.
[36] For Turkey, Ghana and Tanzania the measure adopted is the LIMTCP (Levy Institute Measure of Time and Consumption Poverty).

important contribution in two respects: first, it introduces a combined measure of poverty at the household level that takes into account not only money and income (hence access to consumption of commodities), but also the amount of unpaid care and domestic work (hence access to consumption of household produced goods and services); second, the inclusion of unpaid care and domestic work in the very conceptualization and calculations of poverty sheds new light on the differences in poverty among households, and the differences between men and women in time poverty within the household.

The first step of the LIMTIP estimation deals with the definition of two poverty thresholds, one for income poverty and one for time poverty. With regard to income poverty, the LIMTIP modifies the standard poverty threshold[37] to take into account time deficits. In order to assess time poverty, the LIMTIP builds a poverty threshold for the minimum necessary time required for household production and then uses it for the assessment of time deficits. The construction of these thresholds is explained below step by step.

First of all, before building the threshold for minimum required household production, we have to classify time into four categories:

1. time for paid work, which includes the time spent in employment plus the time for commuting;
2. time for personal care and leisure, which includes time spent sleeping, eating and on personal hygiene, plus leisure time;

[37] For Italy, I use as a reference point the at risk of poverty measure as defined by Eurostat. Eurostat considers at risk of poverty everyone living in a household that stands below the 60 percent of the median equivalized disposable income. In the EU case, household equivalised disposable income is calculated as follow:
Equivalised household size = 1 + (0.5* number of persons 14 years old and over) + (0.3*number of persons below 14 years old)
Equivalised disposable income = total household disposable income / equivalised household size.

3. time for substitutable household production, which includes the time spent in unpaid care and domestic work, but only with regard to activities that one could pay a third person to provide;
4. time for non-substitutable household production, which includes the time spent in unpaid care and domestic work, but only with regard to the share of unpaid care and domestic activities that one does exclusively oneself[38].

Then, the LIMTIP uses these four time categories for estimating time poverty and, in order to avoid overestimation of time poverty, it creates time thresholds not only for household production but also for personal care and leisure. In fact, the time devoted to personal care and leisure, and to both substitutable and non-substitutable household production, could create issues in the assessment of time poverty. This will be explained better by means of an example. If a person has a preference for sleeping 12 hours per day and, therefore, when time categories are summed up, that person falls short of time, this could lead to a misinterpretation of time poverty. Hence, we need to use a threshold for personal time. Similarly, in the case a person enjoys a spotless house and spends a large amount of hours cleaning it. When time categories are summed up, that person could be misrepresented as time poor. Therefore, we need a threshold that tells us how much the minimum required time for household production is (which includes time for cleaning) for that person. Thresholds for household production are created on the basis of the household composition, and the process through which the thresholds for this study have been built will be explained in section 2.

[38] Non-substitutable household production does not refer to any activity in particular, but more generally to that minimum share of household activities that, in any case, will not be externalized. Especially with consideration to care work a perfect substitution between unpaid work and paid work is not possible. Ilkkaracan (2016) highlights that, since capitalism is led by commodification and productivity increase, while care work continues to be labor and time intensive, a substantial share of caregiving cannot be transferred from non-market to market form. In addition to its uncompressible labor intensity, caring labor is embedded in human relation and as such it resists entire commodification by nature (Ilkkaracan 2012). “If we were to purchase all childcare on market conditions, then why have children to start with?” (Ilkkaracan 2012 p.9 check).

After the time categories have been defined, the LIMTIP assesses time poverty and translates it into a new income poverty threshold. The definition of time poverty can be represented in three equations (Zacharias 2011):

$$A_i = 168 - \bar{C} - \alpha_i \bar{D} - \gamma_i \bar{R} \quad (1)$$

$$X_i = A_i - L_i \quad (2)$$

$$X' = \sum_{i=1}^{n} min(0, X_i) \quad (3)$$

Equation 1 represents the time available to individual *i*, where 168 are the hours of the week, C is the minimum required amount of time for personal care, D is the minimum required amount of non-substitutable time for household production, and R is the amount of essential substitutable household production time required to subsist at the poverty level of income. α[39] and γ are respectively individual shares within household's members in D and R.

A dash (-) is added to the symbols on the right side of the equation because they represent, as I mentioned above, the norms for the group that the household belongs to rather than the actual observed values for the household. They are the time allocation parameters for the household which, in principle, are similar to the parameters (such as minimum expenditure on food and nonfood items) used in the construction of income/consumption absolute poverty measures (Zacharias 2011).

Equation 2 is the individual time deficit, with L representing the weekly hours of employment of individual *i*. This step is fundamental in a gender perspective because it allows to make a distinction between who in the household directly suffers from time deficit and who is only indirectly affected.

[39] In the empirical application of the LIMTIP it is impossible to apply the individual share of non-substitutable household production (α), because it is not possible to distinguish in the data the part of household production that is substitutable from the part that is not. Therefore, we define a minimum threshold of non-substitutable household production that is the same for every adult person in the household.

Finally, equation 3 represents the household time deficit. The household is defined as time-poor if the hours of employment exceed the available time for at least one of the adult members of the household. And, it is based on the idea that an individual time deficit has an impact on the whole household from a monetary point of view.

Unlike Vickery (1977), whose method was presented in the previous chapter, the household time deficit equation in the LIMTIP sets the value of time deficit equal to zero for time non-poor households, thereby ignoring the disparities that would exist among such households in the free time available to them. However, Zacharias (2011) highlights that such disparities do not play any role in the definition of the threshold for income poverty, and they also do not matter in drawing the line between time-poor and time-non-poor households.

The logical corollary of this new definition of time poverty is that the threshold of income poverty needs to be modified to take into account that where a time deficit exists, that time deficit needs to be compensated by the additional income necessary to pay for the unmet part of substitutable household production. Therefore, the income poverty threshold will look as follows (Zacharias 2011):

$$y' = \bar{y} - X'p \qquad (4)$$

In equation 4, y' is the poverty threshold adjusted to account for time poverty, $\bar{y}$ is the unadjusted income poverty threshold, and p is the unit replacement cost of household production. The adjusted poverty threshold, y', is specific for every time-poor household, because it reflects time deficits.

With regards to intra-household disparities, the LIMTIP adopts two different approaches for income and time. Income poverty is measured at the household level, while time poverty is measured at the individual level. In fact, even if the data reports provided detailed income information, it would still be impossible to define the degree of pooling. The inability to categorically define the share of

household income available to each person in the household leads the LIMTIP to assume the option of complete pooling. On the other hand, the individual is the unit of analysis for the time dimension. In fact, time-use data gives detailed information on the amount of time that each person in the household devotes to different kinds of activities. Intra-household disparities in the division of unpaid care and domestic work and paid work are, therefore, visible and assessable. An analysis that does not take these elements of disparity into account can be fundamentally inequitable towards the individuals in the households. As Zacharias describes this issue:

> *"Consider two households that are identical in all respects, A and B, who also happen to possess the same amount of money income and the same amount of available time. The household A is "egalitarian" in the sense that the division of domestic labor and paid labor among its members does not result in time deficit for any of its members. On the other hand, the household B is non-egalitarian and at least one of its members end up with a time deficit, defined as the amount by which their hours of employment exceed the time that they have available. Defining the two households as equally time-nonpoor is inequitable toward the individuals in household B who actually face time deficit."* (Zacharias 2011, 12-13)

Moreover, the LIMTIP recognizes that the time deficit of a member of the household affects the whole household. In fact, if the division of unpaid care and domestic work and paid work are unequal among household members and this inequality results in a time deficit for one of its members, that time deficit translates into forgone household production that has an impact on the whole household. Actually, the forgone household production needs to be replaced by goods or services purchased from the market. This decreases household disposable income.

The main finding when we analyse poverty taking time-use into account is that standard measures of poverty fail to capture hardships caused by time deficits. This could be summarized in three main points, which were all confirmed by previous LIMTIP studies: poverty rate is higher than

shown by standard poverty measures; poverty is a gendered phenomenon; and creating new jobs for poor people is not a sufficient solution for alleviating poverty. In the subsection below I present how these elements emerged in previous LIMTIP studies. Then, in sections 3 and 4 of this chapter I will assess whether the same results were found in Italy.

1.1 Earlier Country Applications

As mentioned above, in the past the LIMTIP (or the LIMTCP[40]) has been applied to a series of countries: Argentina, Chile and Mexico (Zacharias, Antonopoulos, and Masterson 2012), Korea (Zacharias, Masterson, and Kim 2014), Turkey (Zacharias, Masterson, and Memis 2014), Ghana and Tanzania (Zacharias et al. 2018).

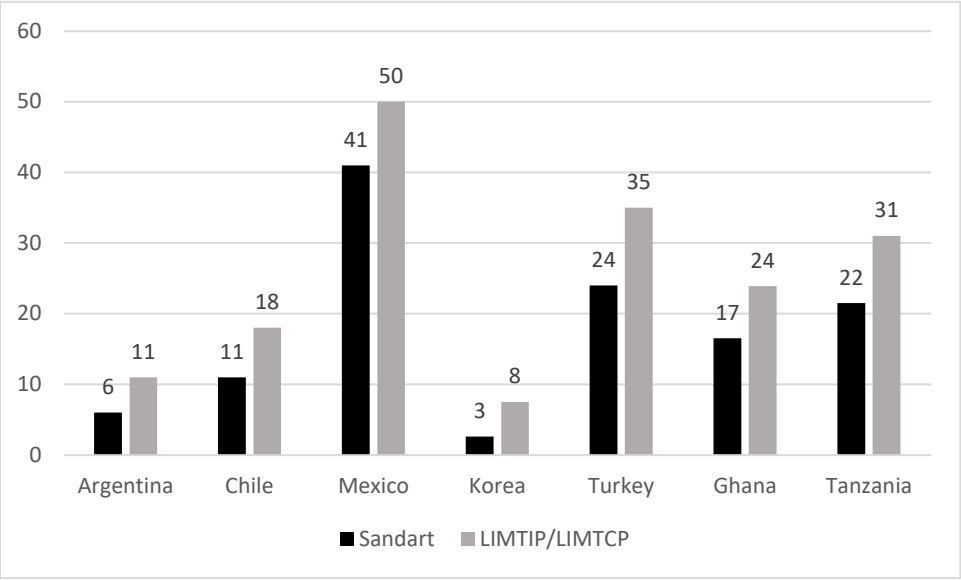
The first important finding of these studies is that the LIMTIP is able to uncover the extent of poverty. Earlier applications of the LIMTIP highlighted that poverty is higher when measured by the LIMTIP than by official income-based (or expenditure-based) poverty measures, both in terms of extent (the number of poor persons) and depth (the difference between the income of poor persons and the poverty threshold). The result is the emergence of a substantial amount of hidden poverty. Hidden poverty is represented by the difference between the official and LIMTIP rate of income poverty. According to the LIMTIP methodology, official poverty measures underestimate the true extent of wellbeing deprivation because they fail to acknowledge that household production, and hence, access to time (or lack of access to time), also contributes to wellbeing. Hidden poverty refers to the proportion of households in the total number of households that are classified as income-nonpoor according to the official poverty line but face some level of time deficits that cannot be covered by income without falling below the poverty line. Clearly, if these households (time-poor

[40] Levy Institute Measure of Time and Consumption Poverty.

and officially income nonpoor) had high enough income to compensate for the monetized value of their time deficits, then the official and LIMTIP rate of income poverty would be identical.

The time-adjusted poverty rate (see figure 3.1) shows that when poverty is calculated taking time-use into account the poverty rate is always higher. For Argentina the LIMTIP assesses that 11 percent of the households are poor, compared to 6 percent for the official poverty line. For Chile, adjusting for time poverty increases the poverty rate to 18 percent from the 11 percent official line. In Mexico, the poverty rate increases to 50 percent from an already high 41 percent. And in Turkey, LIMTCP estimates show that, in contrast to the official poverty rate of 24 percent, the adjusted poverty rate is 35 percent.

Figure 3.1: Poverty rate at household level Argentina (2005), Chile (2006), Mexico (2008) Korea (2009), Turkey (2014), Ghana (2009) and Tanzania (2006)[41]: LIMTIP/LIMTCP versus standard.



Source: LIMTIP/LIMTICP country reports

[41] For Korea, Ghana and Tanzania the poverty rate is calculated only for employed households, which are the households where at least one adult person is employed.

The studies on Korea, Ghana and Tanzania focused on employed households[42], because these households represent almost all of the time poor households. In the case of Korea, even though the poverty rate is the lowest recorded among the LIMTIP studies, the LIMTIP still highlights a wide hidden poverty. The percentage of employed households below the time-adjusted poverty threshold (almost 8 percent) is almost triple the percentage of employed households below the standard poverty threshold (less than 3 percent). In Ghana and Tanzania, the LIMTCP highlights a poverty rate among employed household respectively of 24 and 31 percent compared to the lower 17 and 22 percent reported with standard poverty measures based only on income.

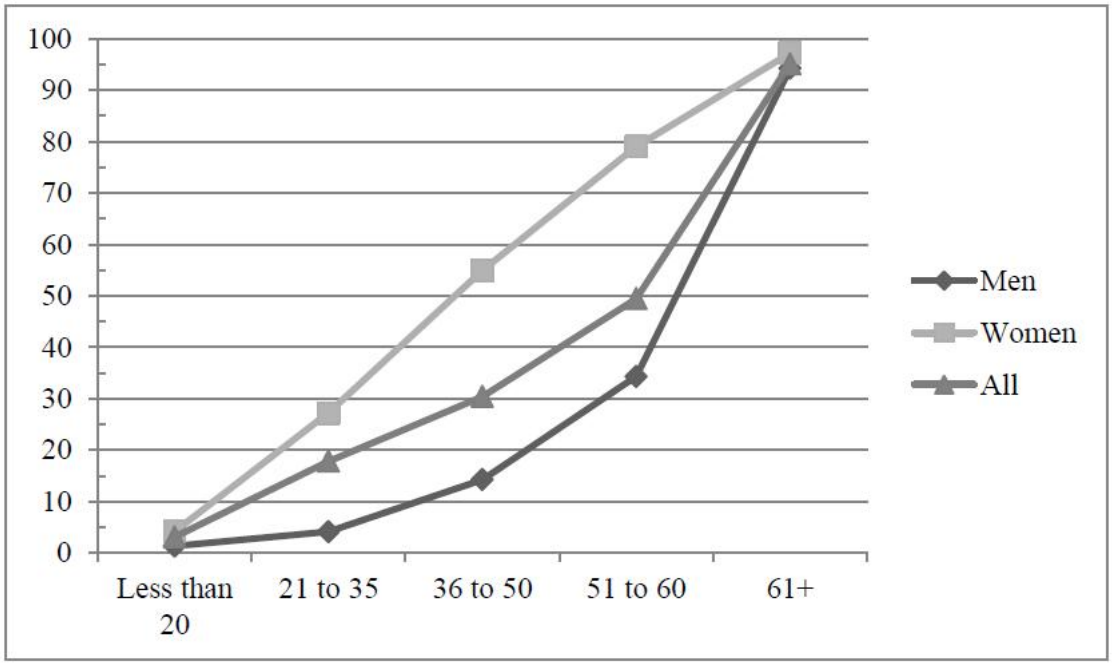
From the point of view of poverty depth and severity, the estimates showed that the average LIMTIP income deficit for poor households was 1.5 times higher than the official income deficit in Argentina and Chile, and 1.3 times higher in Mexico. In Korea, the estimates highlighted that the average monthly LIMTIP income deficit for all poor households was 1.8 times higher than the official income deficit, which is the largest difference recorded by any previous LIMTIP study. The average LIMTCP deficit for poor households in Turkey was 1.4 times higher than the official deficit. Finally, in Tanzania and Ghana the average adjusted poverty gap was between 1.2 and 1.3 times higher than the average official poverty gap.

The second important element highlighted by the previous LIMTIP studies is that poverty is a gendered phenomenon. Due to the unequal division of unpaid care and domestic work between women and men, women are more likely to suffer from time poverty when they are employed. This is exemplified by the case of Korea. As shown by figure 3.2, the rate of time poverty increases as the weekly hours of employment rise for both men and women. But, the gender gap is significant: 33 percent of time poor men versus 55 percent of time poor women. The gender gap is visible in every hour interval, which means that for each additional hour of paid work, the percentage of time poor

[42] See previous footnote.

women increases more than that of time poor man. In Korea, the gender gap in the incidence of time poverty is accompanied by a stark difference in the hours of required household production. In fact, women were responsible for more than two thirds of household production.

Figure 3.2: Incidence of time poverty by weekly hours of employment and sex



Source: Zacharias, Masterson, and Kim 2014

Therefore, once women enter employment they face a much higher risk of time poverty than men. Moreover, for women living in poor households, time poverty has a relevant impact on the income poverty status of the whole household. In particular, the study on Korea highlighted that:

"The potential impact that time deficits may have on the income poverty status of low-income earners and their families can be seen by considering the ratio of monetized value of the time deficit to earnings, expressed in percentage terms […]. In order to escape time poverty, the average female worker in the bottom quintile would have to spend almost all (95 percent) of her earnings on purchasing market substitutes while her counterpart in the second quintile would have to spend about 43 percent. The average male workers in the bottom two quintiles

also have fairly substantial median values of the value-of-time-deficit-to-earnings ratio, though they are not as high as their female counterparts on account of the lower time deficits and higher earnings of men. Even for those with "middle-class" earnings (i.e., those in the middle quintile) the ratio was as high as 19 percent for men and 27 percent for women." (Zacharias, Masterson, and Kim 2014, 28)

This could give us insights on why women may remain outside the labor market to the extent that they can afford it – not only for their own wellbeing but also for their families' wellbeing. This leads us to the third consideration that arose from the LIMTIP analysis, that giving poor people jobs by itself is not a sufficient solution to poverty alleviation.

An important part of the LIMTIP analysis is represented by the possibility of producing policy simulations. In order to estimate the likely effect of increased employment on time and consumption poverty, previous LIMTIP studies simulated the impact of an employment promotion policy on poor households. The results highlighted that at the existent conditions the earnings gained from employment would be very limited and the increased number of employment hours would in turn result in impoverishing time deficits. As demonstrated by the study on Turkey (Zacharias, Masterson, and Memis 2014), these results are due to the absence of decent work conditions (especially for low skilled women workers), to the inequalities in employment opportunities, and to the lack of or limited public provisioning of social care services.

LIMTIP studies underline that women carry a greater responsibility for household production due to the severely unequal division of unpaid care and domestic work within the household. Therefore, increasing the employment of women, given current market conditions, does not guarantee an adequate rise in household income for all. On the contrary, LIMTIP simulations demonstrated that the cost of the market substitutes that these workers would need to purchase to meet the long hours at work has an impoverishing effect. Hence, unless supported by additional policies such as

introducing public provisioning of social care services and policies to eliminate occupational and sectoral job segregation, these employment creation measures are not able to contrast poverty.

The study on Ghana and Tanzania (Zacharias et al. 2018) showed that time deficits due to household production are especially acute in these countries due to the poor state of social and physical infrastructure, which constrains the time allocation people can choose. Their consequences are particularly serious for women, due to the disproportionate cost of household responsibilities they bear, which are closely intertwined with labor market outcomes.

The LIMTCP study on Turkey concluded that,

> *"without such policies [as, in particular, public provisioning of social care services and policies to eliminate occupational and sectoral job segregation], many women would fall into time poverty while not escaping consumption poverty. Additionally, raising the opportunity costs of the household production work of women through an equitable wage policy and increasing decent employment opportunities may trigger a transformation in the division of household labor, motivating household members to adopt more equal sharing of household production that could reduce time poverty and, hence, help improve quality of life in general."* (Zacharias, Masterson, and Memis 2014, 88–89)

In conclusion, the assessment of the higher risk of time and income poverty that poor and low skilled women especially face might help to shed new light on the reason why their inclusion in the labor market remains a challenge for policy makers. It is an element that has been underlined by all the previous LIMTIP attempts and that, as the analysis of the Italian data will show, emerges also in developed contexts.

II. Statistical Match Used for Imputing Time-use

The LIMTIP methodology entails the need of collecting information on income and time-use of the population. For this reason, the first step for applying the LIMTIP is that of creating an *ad hoc* dataset that contains all the information required. In order to obtain this result, I applied the matching algorithm developed at the Levy Economics Institute[43].

The EU-SILC represents a valuable source of data on income and living conditions[44] of the population, but it is not able to give any information about the amount and the division of unpaid care and domestic work in the household. In order to have information about the household, its income and the use of time by its members, I created a synthetic data file by statistically matching two dataset sources. I used the Italian data of the EU-SILC of 2009 and 2015 (IT-SILC) for the information on demographics and income[45] and the Italian *Indagine Multiscopo sull'Uso del Tempo* of 2008-2009 and 2013-2014 (IT-TUS)[46] for time-use data.

Particularly, the LIMTIP is interested in observing the number of hours of unpaid care and domestic work performed by household's members. Therefore, I grouped domestic activities in three categories: to provide unpaid care for household members (care), to source necessary goods and services from outside the household (procurement), and to carry out unpaid domestic work (core).

[43] In this section I explain how I applied the matching methodology developed at the Levy Economics Institute to the Italian data, and in which cases I drifted apart from it.
[44] For a detailed description see chapter 4 of this thesis.
[45] For IT-SILC I selected years 2009 and 2015 because the survey uses the previous calendar year as the income reference period.
[46] The Italian Institute of Statistics (ISTAT) regularly collects data on time use from 2002. The IT-TUS is carried out every five years and it is composed of three questionnaires: the individual questionnaire contains general information on family members and their household, the daily diary records the daily use of time of all members aged three years or more, and the weekly diary records, and the hours of paid work for all members that hold a job. Individuals are required to fill in the daily diary for week-days, Saturdays, and Sundays randomly. Sample weights are used to obtain statistics representative of the whole Italian population. The IT-TUS survey contains a great deal of information regarding the household use of childcare and adult care. Activities are classified in 10 groups: physiological needs, professional work, education activity, household activities, voluntary work in organizations and beyond, social life and entertainment, sport and recreation activities, personal hobbies, using mass-media, time spent on moving and transportation. This classification enables a detailed analysis of the time each household member spends on each activity. The Italian time use survey does not include information on income and earnings.

In particular, care relates to all caring activities for other members of the household, as eldercare and childcare, but also, for example, the time spent taking children to school. Procurement represents all those activities that involve buying or obtaining all necessary goods and services, like food shopping or going to the post office to pay the bills. Core includes domestic work such as cleaning, laundering, cooking, etc. All these three categories are grouped under the set of household production. Moreover, I computed time for personal maintenance, that includes sleeping, eating and personal hygiene, and time for commuting from work to home and vice versa.

The imputation for time-use is conducted using the Propensity Score Matching. *Propensity score statistical matching* (PSSM) is used in observational studies to generate suitable control groups that are similar to the treatment groups when a randomized experiment is not available (Rubin and Thomas 1996). In the imputation context, the propensity score estimates the 'likelihood/probability' of 'having the outcome observed' for any subject with a similar background measured by the independent variables. The target variable is regressed on common variables in both files and the predicted value is used to rank records in each file (Kum and Masterson 2008). Subjects with close propensity scores are considered 'similar' and are matched together. The procedure adopted for the PSSM is the 'Nearest neighbours matching'. The intuition behind this procedure is to assign to each individual who performs unpaid care and domestic work in the IT-SILC the time-use of the individual observed in the IT-TUS with the closest characteristics[47]. To make matching feasible two conditions must hold: (i) the two surveys must be random samples of the same population; (ii) there must be a common set of conditioning variables in the recipient and in the donor data set. In this case, the first condition is satisfied since both IT-SILC and IT-TUS data sets are randomly selected from the Italian population. The second condition is also satisfied after some recoding of the common information in the data sets.

[47] Individual characteristics are described in the annex.

Once this common set of characteristics is chosen and propensity scores computed, observations in the IT-SILC are matched with observations in IT-TUS controlling for all their relevant observable background characteristics. The matching is explained step by step in the following sub-sections.

2.1 Data and Alignment

Both IT-TUS and IT-SILC are representative at the national level and contain information for individuals for all age classes. IT-TUS 2008-09 has 44,605 observations, representing 59,426,798 individuals when weighted, while IT-SILC 2009 has 51,196 observations, representing 60,108,862 individuals when weighted. IT-TUS 2013-14 has 44,866 observations, representing 60,410,793 individuals when weighted, while IT-SILC 2015 has 42,987 observations, representing 60,843,061 individuals when weighted.

In order to match the most similar observations, I had to select several variables. Following the example of Masterson (2014), I identified a number of strata variables that are significant for the purpose of determining how many hours of unpaid care and domestic work (divided by the categories described above) are performed by each household's member. These variables include, at household level, the number of children and of adults, the presence of a non-employed adult, the income category and, at individual level, the sex, and the employment status. Additionally, other variables might be relevant, as, for example, age, citizenship, region of residence, level of education, etc. These additional variables are selected on the basis of their comparability in the two data files. The goal is that of having as much comparable variables as possible in order to match the most similar observations.

Therefore, first of all, I extensively worked on the two separate files in order to align the common variables in terms of definition and measurement. For example, in IT-TUS the only income information present is the main source of income at individual level. Therefore, based on the

categories provided by the variable in the IT-TUS, I constructed a corresponding variable in the IT-SILC where, instead, I found detailed information about different sources of income, both at household and individual level. I proceeded according to this principle until I harmonized all the definitions of strata and relevant variables.

Then, to maximize the matching quality, I checked that the distributions of the common variables were comparable. I expected comparable distributions because both data sets are big as number of observations and they are both nationally representative. When common variables did not align, then I doublechecked the definitions and harmonized them, where possible. I found an excellent comparability for all the selected variables (see tables B.1 and B.2 in the annexes). After the harmonization, I adjusted the sum of the attached weights for records, in order to make them comparable.

2.2 Matching

At this point I need to transfer the variables related to time-use from the IT-TUS to the IT-SILC. Considering which are the factors that mostly affect the variation of the amount of unpaid care and domestic work, I divided the reference group into 12 subgroups based on the number of children (0, 1, 2 and 3 or more) and the number of adults (1, 2 and 3 or more).

According to the strata variables I selected (the number of children in the household, the number of adults in the household, the presence of a non-employed adult in the household, the marital status, the presence of children under 3 years of age in the household, the sex, the main source of income, the activity status and the number of earners in the household), I separated the data within each file in 38,400 discrete cells.

Then I carefully selected the common variables in the logistic regression model for propensity scores in order to maximize the explanatory power. In the end, my selection of significant variables

included, besides the strata variables: age, level of education, being in education, having a second job, citizenship, region, household tenure, head of the household, spouse[48].

After running the model, all records for each file were sorted by estimated propensity score and attached weight. For every recipient in the recipient file (IT-SILC), an observation in the donor file (IT-TUS) was matched with the same or nearest neighbour, based on the rank of their propensity scores[49]. Under this sorting scheme, I assigned records with larger weights in the donor file to multiple records in the recipient file until all of their weight has been used up.

2.3 Test of Quality of Matching

In order to check the quality of the matching I compared the marginal and the joint distributions in the matched file and in the donor file (see tables from 5 to 8 in the annex). The constraints of the matching scheme should lead to identical marginal distributions, and the joint distribution of variables not jointly observed should be nearly the same.

Therefore, I checked that the mean and the median values for the transferred variables by each strata variable were similar in the matched and the donor files. Specifically, I checked if there were discrepancies in time devoted to unpaid care and domestic work by type of household and sex of the individual. The ratio of the average time spent by women and men for different household activities in the matched file, to the average value in the donor file and the distribution of weekly hours of unpaid care and domestic work for each of the 12 cells, differentiated by number of adults in the household and number of children in the household (see figures from 1 to 4 in the annexes), give me confidence that the marginal distributions have been well preserved in the statistical matching

[48] We refer to head of the household as to the person who responded to the survey, and to the spouse as her/his partner.
[49] In this match, a penalty weight is assigned to the propensity score according to the size and ranking of the coefficients of strata variables not used in a particular matching round (see tables B.3 and B.4 in the annexes).

process. Divergences are related in particular to the limited number of observations with three or more children.

III. LIMTIP Estimates for Italy

The first step for assessing the LIMTIP is to calculate time deficit at the individual level. To estimate time deficits (see equation (1) in section 1 of this chapter), we require information on:

1. weekly hours of *required* personal maintenance and non-substitutable household production;
2. weekly hours of *required* substitutable household production;
3. *actual* weekly hours the individual spends on income generation; and
4. *required* weekly hours of commuting[50].

With this information I built the thresholds for all the categories, excluding the time spent in income generation, where I use the actual number of hours. The hours of required personal maintenance were estimated as the sum of minimum necessary leisure time (assumed to be equal to 14 hours per week[51]) and the weekly average of the time spent on essential activities of personal care. The method assumes that the hours of non-substitutable household activities are equal to 7 hours per week[52]. The resulting estimates from the Italian Time-use Survey (IT-TUS) data are shown below in Table 3.1. The line labelled "Total" is the estimate of the weekly hours of required personal maintenance and non-substitutable household production and applies uniformly to every adult person.

[50] The LIMTIP method assumes a threshold for commuting if it is applicable.
[51] It should be noted that 14 hours per week was approximately 20 hours less than the mean value of the time spent on leisure (sum of time spent on social, cultural activities, entertainment, sports, hobbies, games and mass media). LIMTIP methodology sets the threshold at a substantially lower level than the observed value for the average person in order to ensure that it does not end up "overestimating" time deficits due to "high" thresholds for minimum leisure.
[52] It is not possible to determine from the data how much of the household production is non-substitutable (see footnote 9). For this reason, and in order to be able to compare the results from this study with the results obtained in previous studies, I decided to adopt the 7 hours threshold used in previous LIMTIP studies, which means one hour per day for each adult person in the household. Further research could improve the estimates of the non-substitutable household production both from the point of view of the total amount of weekly hours and from the one of the sharing among the household's members.

Table 3.1: Thresholds of Personal Maintenance and Non-substitutable Household Activities, weekly hours, persons aged 18 years old and up (Italy 2008 and 2014)

	Year 2008	Year 2014
Personal maintenance	90.8	91.6[53]
Personal care	76.8	77.6
Sleep	57.2	57.3
Eating and drinking	13.6	13.9
Hygiene and dressing	6	6.4
Necessary minimum leisure	14	14
Non-substitutable household activities	7	7
Total	97.8	98.6

Source: author's calculations based on IT-TUS 2008 and 2014

The hours of required household production depend on the household-level threshold of household production and the individual's share in the household-level threshold. The thresholds for household production hours are set at the household level; that is, they refer to the total weekly hours of household production to be performed by the members of the household, taken together. In principle, they represent the average amount of minimum required household production. In order to identify the minimum required amount of household production, the LIMTIP takes as a standard the average time spent in household production of those households that have an income around the poverty line (income ± 25 percent of the poverty line). Therefore, the minimum required household production is the household production that is required to subsist at the poverty level of income. Moreover, the reference group in constructing the thresholds consists of households with at least one non-employed adult. This was done because, in general, income poverty thresholds used in poverty

[53] The change in the average time spent for personal maintenance registered between 2008 and 2014 might be due or to a real change in time use or to a change in how the variables for time devoted to sleep/eat/hygiene were registered or assembled. In fact, when computing the values for these categories it was impossible to find identical variables in the two datasets.

assessments rest on the implicit assumption that households around or below the poverty line possess the required number of hours to spend on household production (Zacharias, Antonopoulos, and Masterson 2012).

The estimate of necessary household production is based on the sum of the average time devoted to three forms of unpaid care and domestic work as described in section 2. On the basis of household composition (number of adult members and number of children), I calculated the minimum necessary household production to subsist with an income around the poverty line. I used the synthetic dataset for estimating the household production thresholds because in the time-use survey no information about income level is provided. The results are presented in table 3.2.

Table 3.2: Minimum weekly hours of household production by number of adults and number of children (Italy 2008 and 2014)

	Year 2008			Year 2014		
Adults / Children	**1**	**2**	**3+**	**1**	**2**	**3+**
0	23.9	49.6	68.4	24.8	50.6	68.7
1	39.7	62.0	75.0	41.9	64.7	82.0
2	39.9	64.0	83.8	47.1	68.1	84.1
3+	71.2	65.9	102.4	59.5	73.8	100.6

Source: author's calculations based on matched data sets

Lastly, I derived the required time for commuting to work from the time-use survey. The exploratory analysis showed that the hours of employment have an important impact on the hours of commuting. Therefore, it did not seem appropriate to use the average time for employees without taking into account the hours of employment. After analysing how commuting time varies in relation to the hours of work, I determined the average commuting time for persons working less than 30 hours per week and the average commuting time for persons working 30 or more hours. Estimates

showed that the average commuting time is around 3 hours per week for employees working less than 30 hours per week, and around 4 hours per week for those working 30 or more hours[54].

With the information derived as described above. I was then able to estimate the time available at an individual level. The total number of hours in a week is 168. From the total number of weekly hours I subtracted the weekly hours of required personal maintenance and non-substitutable household production, the personal share of weekly hours of required substitutable household production[55], and for employed persons, the weekly hours of paid work and the required weekly hours of commuting. As a result, I was able to obtain individual time deficits for adults (18 years old and up). If the sum of paid and unpaid work is higher than the time available (the time left after personal maintenance and non-substitutable household production are fulfilled), the person suffers from time poverty.

The first significant result of this analysis is that in Italy women on average suffer from time poverty more than men. As shown in figure 3.3, in 2008 21.2 percent of women were time-poor versus 12 percent of men. In 2014 the percentage of time-poor women remained approximatively the same (20.8), but the percentage of time-poor men increased to 14.5. Therefore, a considerable shrinking (almost three percentage points) of the gap in time poverty between women and men was registered. This gap shrinkage was only marginally due to a decrease in time poverty among women, and mainly due to an increase of time poverty among men[56]. Considering only employed adults, the analysis

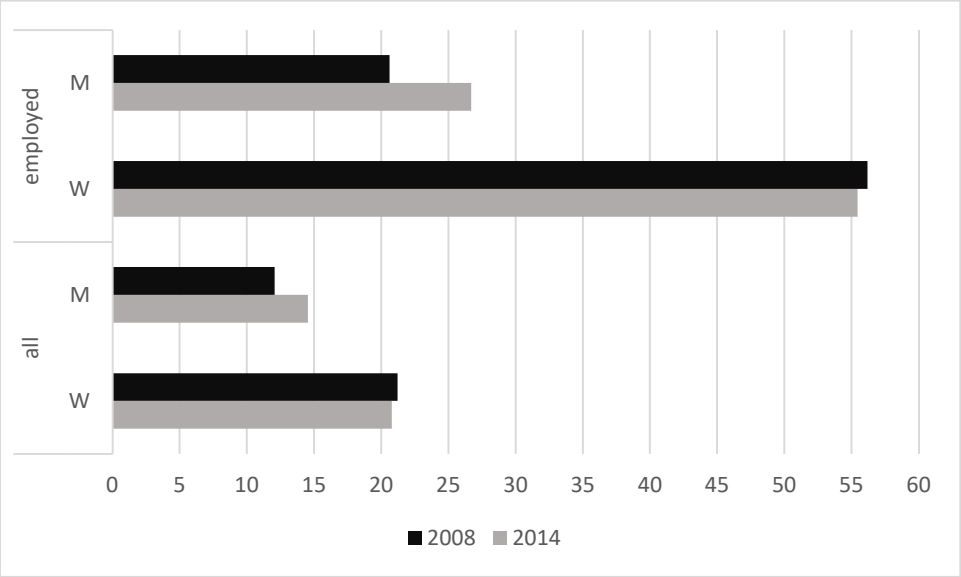
[54] Estimates for 2008 and 2014 are very close, proving that we can adopt these threshold for commuting with a good degree of confidence. In 2008 the weekly average commuting time is 2.8 hours for employed persons working less than 30 hours per week and 4.1 for those working 30 or more hours per week. For 2014 the weekly average commuting time is respectively 3.1 and 4 hours.

[55] After I estimated the threshold hours of household production, I determined the share of hours of household production of each individual in the household. This was done using the matched data. The method assumes that the share of an individual in the threshold hours would be equal to the share of that individual in the observed total hours of household production in their household. Consider the hypothetical example of a household with only two adult persons, a woman and a man. If the synthetic data show that the two persons spent an equal amount of time in household production, I divide the threshold value of 50 hours of household production that I have for households with two adults and no children equally between them.

[56] The increase in time poverty among men could be due to different elements (an increase in the amount of hours of paid work, an increase in men's share of household production, that could be due to a change in households composition, for example). To disentangle the causes that are at the origin of this phenomenon a specific analysis is needed, but, at this stage, it goes beyond the scope of this work.

highlights that the majority (more than 55 percent) of employed women are time poor. That is around double the time poverty rate registered for employed men (20.6 percent in 2008 and 26.7 percent in 2014). Again, data shows that for employed women time poverty did not considerably change over the period under analysis[57], while for employed men data registered an increase in the incidence of time poverty.

Figure 3.3: Percentage of time-poor individual by gender and employment status for persons 18 years old and up (Italy 2008-2014)



Source: author's calculations based on matched data sets

The results on time poverty in Italy are in line with the findings registered for the other countries. First of all, time poverty concerns almost exclusively employed persons. Second, the poverty rate among women is always higher.

The LIMTIP framework allows for the analysis of another type of time poverty, too. This occurs when the time available to the individual, even before taking into account their hours of employment, turns out to be negative. The LIMTIP study on the three Latin American countries found that in

[57] Nonetheless, as we will see later in this chapter, for women, in particular, the burden of time deficits became heavier in 2014 compared to 2008.

Argentina and Mexico, such individuals (almost entirely women) made up roughly 20 percent of all time-poor individuals, while in Chile, they constituted a smaller fraction at 13 percent (Zacharias, Antonopoulos, and Masterson 2012, 54). This type of time poverty can be thought of as a "housework time-bind" because it results exclusively from the higher burden of household production that falls upon women. In Italy, only between 3 and 4 percent of the time poor adults are not in employment (4.2 percent in 2008 and 3.4 percent in 2014), but nine out of ten of them are women (92 percent in 2008 and 90.3 percent in 2014).

Coming back to LIMTIP estimates for Italy, the household-level value of time deficits can then be obtained in a straightforward manner by summing the time deficits of individuals in the household. First, I designate the household as time poor if at least one of its members is time poor. Then, I proceeded to calculate for each household a new poverty threshold that considers time deficits. Accounting for time deficits requires the modification of the official poverty threshold (equation (4) in section 1). The modification consists in adding the monetized value of household time deficit to the threshold. As a replacement cost of the forgone household production that accompanies the time deficits, I took the hourly minimum salary for domestic workers in Italy, which was equal to 6 euro (including taxation)[58].

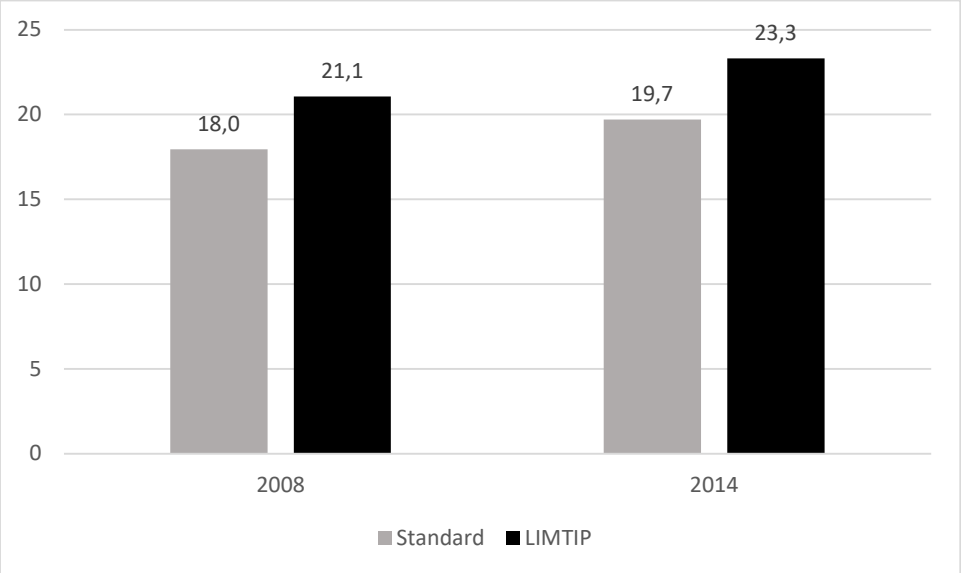
In the context of this two-dimensional measure, being time-poor can affect the income poverty status of the individual and their household. High-income families can use their income for covering their time deficits, *i.e.*, purchasing market substitutes (e.g., restaurant meals and housekeeper services), while low-income families may not be able to afford them, at least to the extent that the wealthier can. The monetized value of time deficits can raise the poverty line to an extent that some of those who are above the official poverty threshold can now be seen to be poor. For those that are

[58] The minimum wage for domestic workers is established by the "Contratto Collettivo Nazionale di Lavoro sulla Disciplina del Rapporto di Lavoro Domestico". I use the minimum hourly wage for non-cohabiting domestic workers at A level (the lowest) that is equal to 4.57 euros. Then, I sum contribution and taxation and I approximate the total to 6 euros. I decided to use the minimum wage in order to avoid overestimation of poverty. The Contract is available at the following link: https://www.assindatcolf.it/wp-content/uploads/2018/06/CCNL-15X21-Assindatcolf-2018.pdf

already below the official poverty line, time deficits can make their income deficit (i.e., the difference between poverty line and income) larger.

Standard poverty analysis highlights that 19.7 percent of Italians were at risk of poverty in 2014. The incidence of poverty increased by almost two percentage points from 2008 (when it was equal to 18 percent). But if we take into account time deficits and the ability to purchase market substitutes, 23.3 percent of the population lived in a poor household (see figure below). Thus, when the new poverty threshold is introduced, an additional 3.6 percent of the population moves below the poverty line. This phenomenon is called hidden poverty because if we do not take into account the necessary household production and the time that it requires, the condition of these persons looks good enough to statistics. It should be noted that between 2008 and 2014, not only did the percentage of persons at risk of poverty based on standard poverty analysis increase (from 17.95 to 19.7 percent), but the percentage of hidden poverty also rose (from 3.1 to 3.6 percent).

Figure 3.4: Percentage of individuals living in poor households, (Italy 2008-2014)

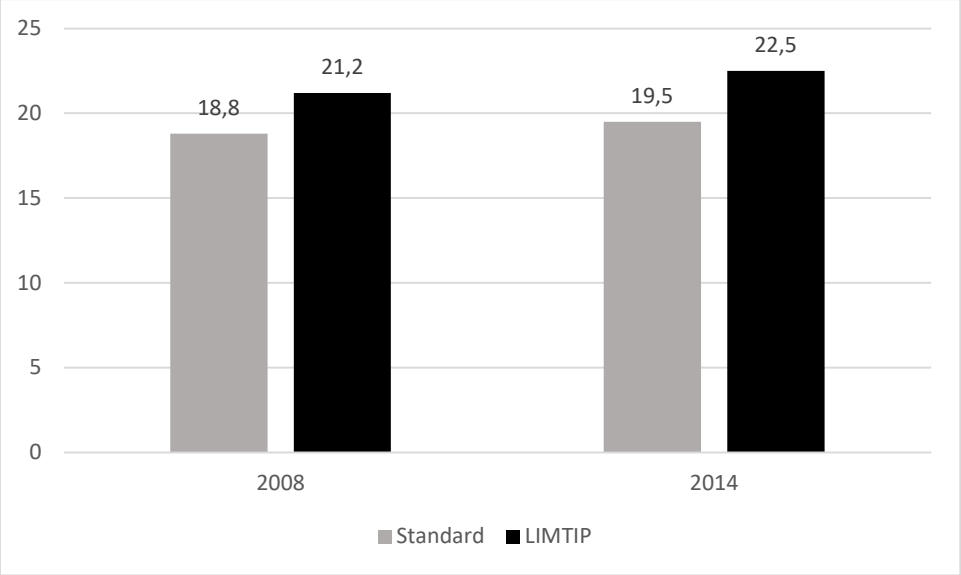


Source: author's calculations based on matched data sets

From a gender perspective, in Italy more than half of the persons who live in a poor household are women (around 55 percent). This result is confirmed both by standard poverty measures and by the LIMTIP. While, a focus on hidden poverty highlights that there are slightly more men (around 52 percent) than women among the hidden poor persons.

The LIMTIP analysis translates individual time deficits into household shortfalls. The analysis of poverty at the household level (see figure below) shows a result similar to analysis at an individual level. The LIMTIP highlights that more households than those reported by standard poverty measures face poverty. In Italy hidden poverty among households was equal to 2.4 percent in 2008 and 3 percent in 2014. Again, the LIMTIP underlines a larger increase in the poverty rate of Italian households between 2008 and 2014 than the one registered by the at risk of poverty measure.

Figure 3.5: Percentage of poor households, (Italy 2008-2014)



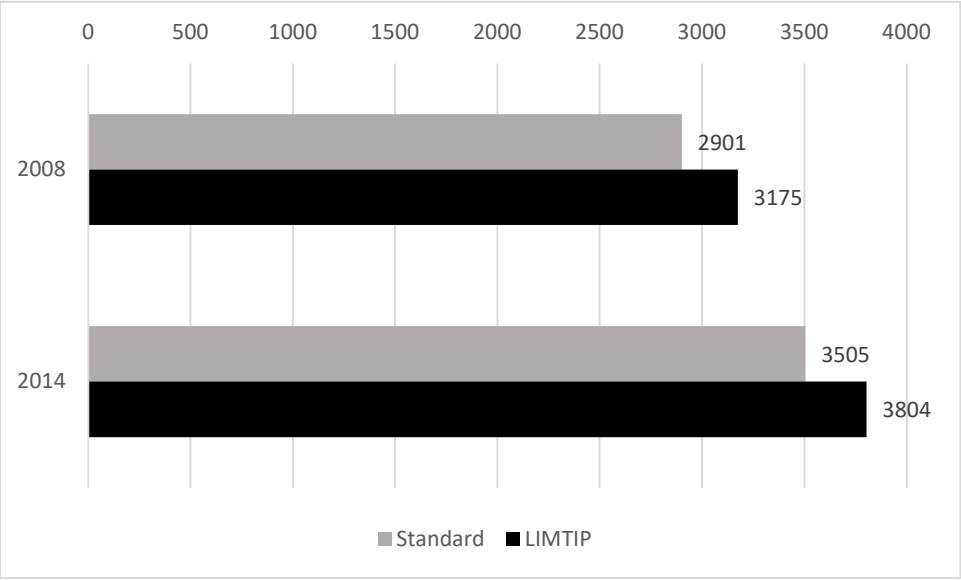
Source: author's calculations based on matched data sets

When we make a comparison with the other countries analyzed under the framework it emerges that hidden poverty in Italy looks smaller than in previous LIMTIP studies. This might be because, in order to minimize problems of overestimation, the minimum price for the replacement cost of time

deficits was adopted in this case, while as a general rule, the LIMTIP methodology assumes that the replacement cost of time deficits is equal to the average hourly rate of a domestic worker. This decision impacts the poverty threshold. Nonetheless, despite the use of this conservative parameter, the analysis still highlights a higher poverty rate than standard poverty measures.

If we focus on the depth of poverty (see figure below), data highlights that when we use our new adjusted poverty threshold the depth of poverty is considerably larger. In 2008, persons at risk of poverty were on average 2900 euro below the poverty line, but when we use our new adjusted poverty threshold, poor persons were on average almost 3200 euro below the poverty line. In 2014, the depth of poverty increased. Persons at risk of poverty were on average 3500 euro below the poverty line, while poor persons below the LIMTIP poverty threshold were on average almost 3800 euro below the line.

Figure 3.6: Average income deficit by poverty threshold (Italy 2008-2014)



Source: author's calculations based on matched data sets

The depth of poverty is strongly connected to household composition. Even if standard poverty measures are able to highlight a difference between households with children and households without

children in terms of depth of poverty, they underestimate it. Between 2008 and 2014 there was a rise of poverty, both in terms of the number of the poor households (as shown above) and in terms of the magnitude of the poverty these households suffer. The estimates show that in 2014, the average monthly income deficit for households with children was almost 10 percent higher in the LIMTIP than the official income deficit – 4005 euro compared to 3654 euro (table below).

Table 3.3: Average income deficit by poverty threshold and type of household expressed in euro (Italy 2008-2014)

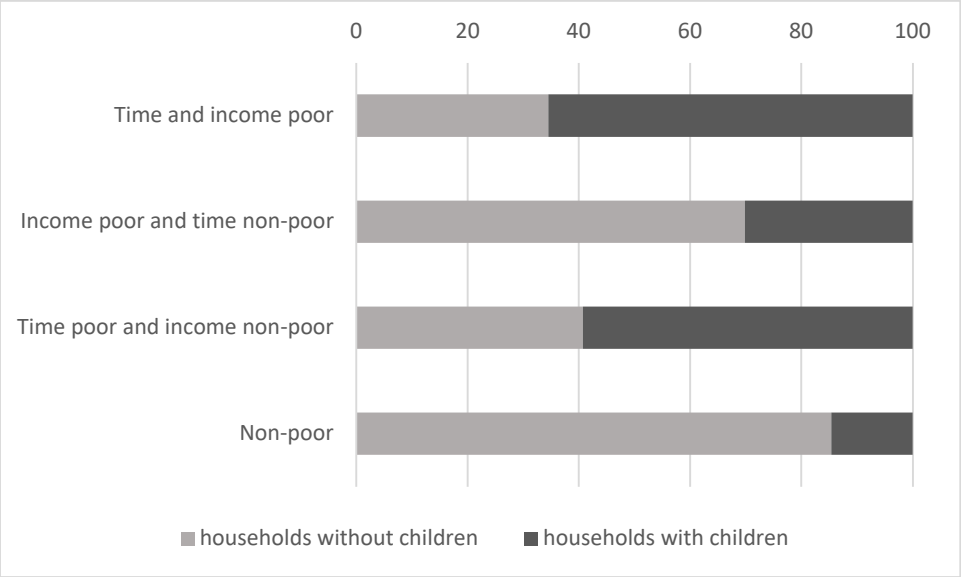
		2008	**2014**
Standard	without children	2833	3360
	with children	2967	3654
LIMTIP	without children	2966	3586
	with children	3360	4005

Source: author's calculations based on matched data sets

Finally, the LIMTIP allows us to distinguish among four poverty categories: both income- and time-poor households; income-poor households; time-poor households; and non-poor households. Figure 3.7 highlights this distinction and confirms the relevance of household composition. Among households that do not suffer from either time or income poverty, around 85 percent is represented by households without children. While households with children represent the majority among time- and income-poor households (around 65 percent).

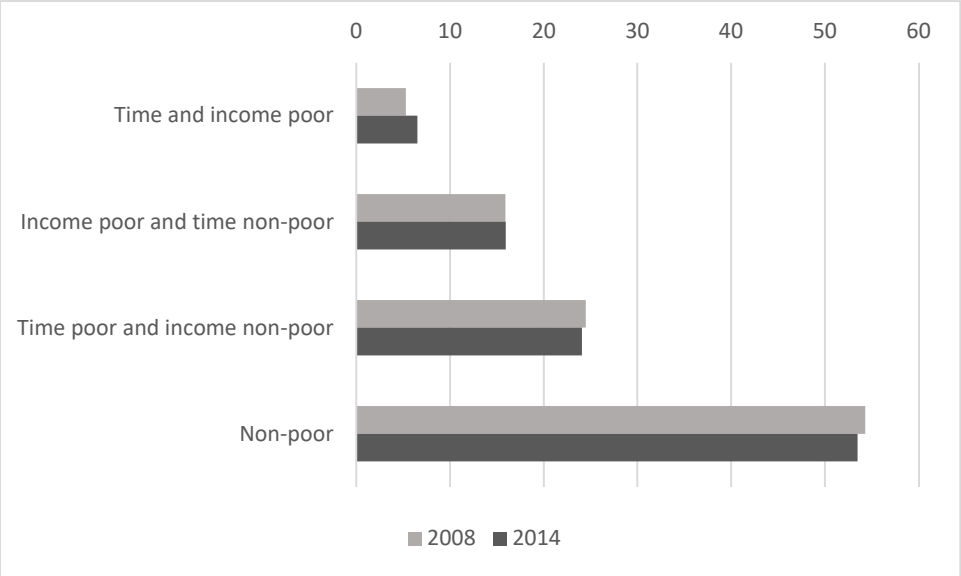
If we look at the distribution of households by the four LIMTIP categories (figure 3.8), we notice that between 2008 and 2014 the percentage of income non-poor households decreased, while the percentage of time- and income-poor household increased (+1.24 percent).

Figure 3.7: Households with or without children by LIMTIP category (Italy 2014)



Source: author's calculations based on matched data sets

Figure 3.8: Percentages of households by LIMTIP category (Italy 2008 and 2014)



Source: author's calculations based on matched data sets

These firsts results highlight that using the LIMTIP allows for a more complex analysis of poverty. We are therefore not only able to make a distinction between income-poor and income non-poor households and between time-poor and time non-poor households, but also to assess how

household time deficits impact their disposable income. From the point of view of a gender sensitive analysis this is important. Due to the larger share of women's household production, women suffer from higher time poverty than men, and this cannot be inconsequential to the opportunity of being employed.

IV. The Link among Women's Low Labor Market Participation, Poverty and Unpaid Care and Domestic Work

As was outlined at the beginning of this chapter, in Italy women suffer from a higher risk of falling into poverty (or being "financially dependent" (Corsi, Botti, and D'Ippoliti 2016)) compared to men. The LIMTIP estimates confirm that women are affected by a higher time poverty (see figure 3.4), and they also represent the majority (55 percent) of persons living in poor households.

In the introduction of this chapter, it was also underlined that in Italy more than 4 out of 10 women are outside the labor market. We could easily speculate, therefore, that creating more jobs for women could be a solution to poverty in general, and to women's higher risk of poverty in particular. However, the policy simulations carried out by the previous LIMTIP studies demonstrated that the creation of new jobs is not a sufficient strategy to alleviate poverty. In fact, there are a number of factors that act as obstacles between jobs creation and a decrease in poverty. As was presented in section *1.1* of this chapter, LIMTIP simulations underlined that the absence of decent work conditions, inequalities in employment opportunities, and the lack of or limited public provisions of social services not only limit the earnings gained from employment, but also increase the required time for household production as well as employment hours, which in turn results in impoverishing time deficits.

In the following pages, the analysis will not go as far as conducting a policy simulation; however, through the assessment of the Italian data we will see how the same conclusion may apply

to Italy. In order to have a clearer presentation, the analysis will focus only on the most recent data available (2014).

4.1 A Gendered Analysis of Time Poverty

The LIMTIP allows us to translate the data on unpaid care and domestic work into a measure of time poverty and, as the LIMTIP reports have shown in the past (see section 1.1 in this chapter), time poverty is generally related to employment. In Italy, while time poverty is around 1 percent among non-employed adults, among employed adults time poverty reaches 39 percent. On the one hand, the employment rate among working-age women is lower (48.9 percent) than men (67.1)[59], so we would expect time poverty to be lower among women than among men. On the contrary, the LIMTIP analysis highlights that time poverty is higher among women (20.8 percent) then among men (14.5 percent). And if we focus on employed persons only, 55.4 percent of women are time poor compared to 26.7 percent of men. This result underlines that employed persons are more likely to be time-poor, and among time-poor persons the source of time poverty is the sum of paid and unpaid work; therefore women, who perform the majority of unpaid care and domestic work, are more often affected by time poverty.

Focusing on employed adults only (see table below), time-use data underlines that women always provide more household production than men, and in certain circumstances (households with two adults and one or more children) the average number of hours of women's household production is more than double that of men. Therefore, the higher vulnerability to time poverty of employed women is due to their higher number of hours of unpaid care and domestic work.

[59] Source: EIGE's Gender Statistics Database https://eige.europa.eu/gender-statistics/dgs

Table 3.4: Average number of hours of individual weekly household production by sex, number of adults and number of children in the household, for employed persons 18 years old and up (Italy 2014)

	Adults / Children	1	2	3+
M	**0**	13	11	8.5
	1	26	18.5	11
	2	33.5	19	13
	3+	2.3	17.5	10.5
W	**0**	19	27	25.5
	1	36.5	38.5	32
	2	40	42.5	36.5
	3+	31	45.5	15.5

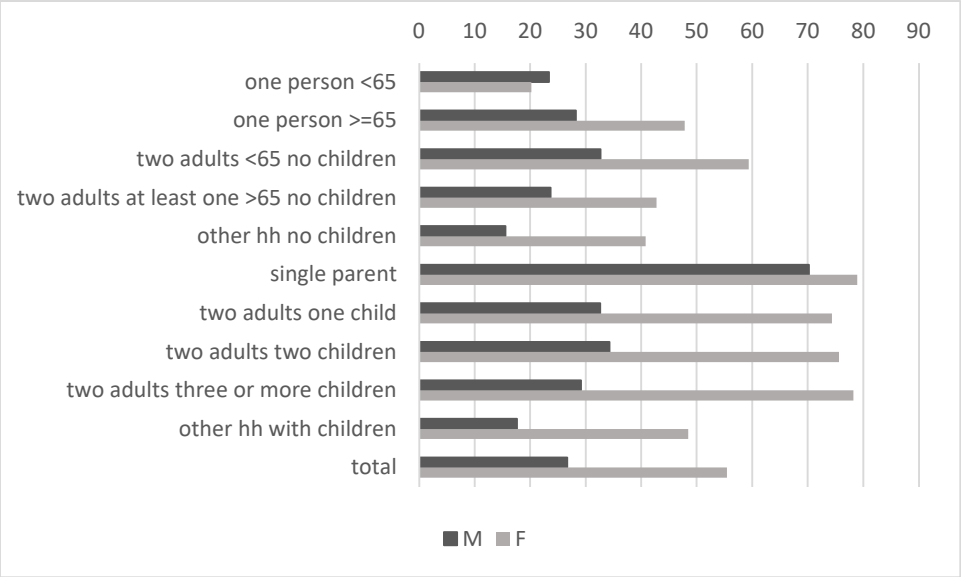
Source: author's calculations based on IT-TUS 2014

Moreover, the table above tells us that the number of adults in the household have a different effect on the number of hours of unpaid care and domestic work for employed women and employed men. For employed men the number of hours of household production decreases together with the increase of the number of adults in the household. On the contrary, for employed women the number of hours of household production is lower for households where there is only one adult, compared to household where there are two adults. This is true also for households with one or more children. The analysis highlights that the presence of adult men increases women's unpaid workload – hence it is not simply a matter of care-dependent groups (children, elderly, etc.) but also of the load imposed by healthy working-age men. This finding represents one element that should receive more attention when we look at the obstacles to gender equality, and it is one that has not received attention in the previous LIMTIP studies.

It should be also noted that the number of hours of household production performed by women decreases only when there are three or more adults in the household. This is probably due to the third person being an older daughter, grandmother, sister, aunt, etc. who helps with the domestic work.

Therefore, if we look at the incidence of time poverty by sex and type of household among employed persons (Figure 3.9) we can see that the percentage of time-poor women is always higher than that of men, except that for one-person households. Indeed, regardless of employment status, women tend to take on the responsibly of unpaid work.

Figure 3.9: Incidence of time poverty among employed persons from 18 years old and up, by sex and type household (Italy 2014)



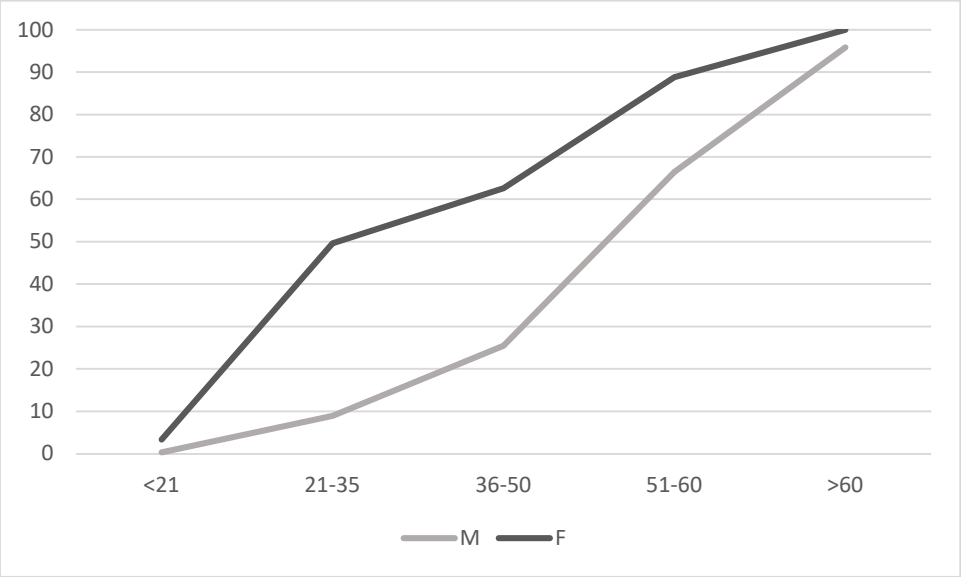
Source: author's calculations based on matched data sets

This analysis actually shows an overwhelming time poverty rate among employed persons in Italy. Among employed women with children time poverty can reach almost 80 percent. These results are not unexpected. In fact, in the other countries where the LIMTIP has been implemented results are similar. For example, in Korea 56 percent of the households where at least one person is employed are time-poor, and for households where both partners are employed time poverty reaches 78 percent (Zacharias, Masterson, and Kim 2014, 31). In the three Latin American countries analysed by the LIMTIP (Argentina, Chile and Mexico), the percentage of employed women that live in a time-poor household ranges between 50 and 46 percent, while the percentage of employed men that live in a

time-poor household is lower for all three countries at around 35 percent (Zacharias, Antonopoulos, and Masterson 2012).

The data in Figure 3.10 highlights that time poverty increases for both men and women when the number of hours of employment are taken into consideration, but with a fairly wide gender gap to the disadvantage of women (as shown also by the results of the study in Korea presented above, section 1.1). This result underlines how, when keeping the number of hours of paid work equal for men and women, it is the amount of hours of unpaid care and domestic work that determines the higher time poverty rate among women compared to men. This evidence supports the hypothesis that, due to higher women's time poverty in Italy, if publicly provided care services are lacking and working conditions for low skilled women are not decent, employment might not represent a way out of poverty because it substantially increases time poverty, therefore creating a cost in terms of time deficits.

Figure 3.10: Percentage of time-poor individuals over 18 years of age by sex and hours of paid work (Italy 2014)



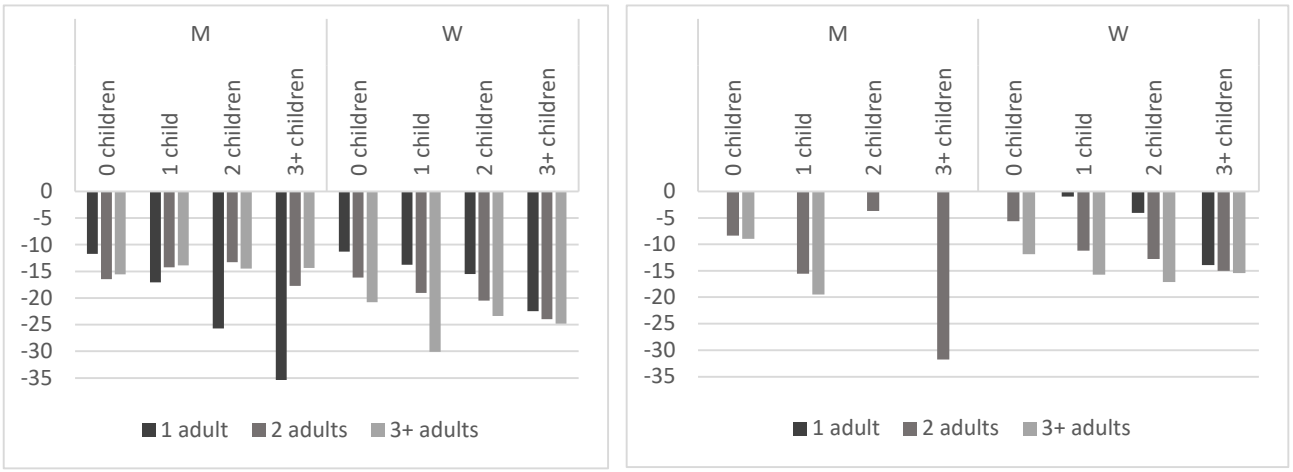
Source: author's calculations based on matched data sets

4.2 The Economic Value of Time Deficits

The LIMTIP method also allows us to measure the depth of time poverty. Comparing the amount of hours of necessary household production to the amount of available time (the time left after we subtract the minimum necessary time for personal care and leisure and the hours of paid work), we are able to determine if a person has a time deficit and how large it is.

For employed adults time deficits are on average around 18 hours for women and 14 hours for men. If we analyse time deficits taking into account household composition and number of hours of paid work (figure 3.11), we can see that with regard to individuals that perform 30 or more hours of paid work per week, single men have larger time deficits compared to single women, while women have larger time deficits when there is more than one adult in the household. Time deficits among persons that are employed less than 30 hours per week are generally smaller, and they mostly involve women with children.

Figure 3.11: Average number of hours of time deficit by sex, number of children and number of adults in the household, for employed full-time (left) and part-time (right) persons of 18 years old and up (Italy 2014)[60]



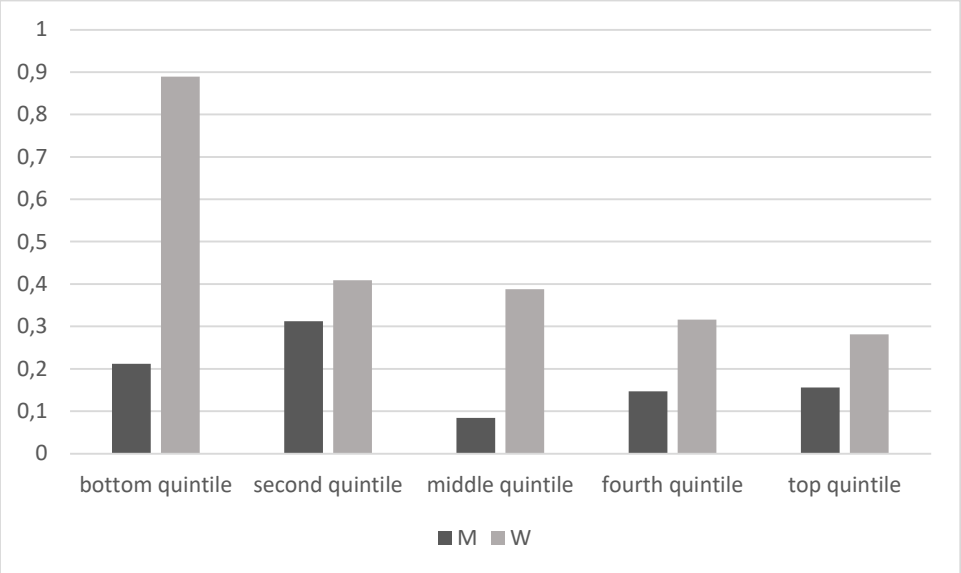
Source: author's calculations based on matched data sets

[60] Part-time is intended as less than 30 hours of work per week. For men employed full-time living in a household with one adult and three or more children the average number of hours of time deficit is 54 hours and is the result of one observation.

The impact that time deficits have on poverty for households in lower income quintiles might be overwhelming in relation to their earnings. The impact can be assessed by considering the ratio of monetized value of the time deficits to net wages for full-time[61] workers (Figure 3.12). In order to escape time poverty, the average female worker in the bottom income quintile would have to spend almost 90 percent of her earnings on purchasing market substitutes. Even for those women in the second and middle-income quintile the ratio remains around 40 percent. In contrast, the ratio for men is lower for all income quintiles, on average 17 percent of their net wages.

There are two explanations for this result. The first one is related to the size of time deficits. As reported in Figure 3.11, time deficits for women working full-time are on average larger than men's, except for single persons. The second explanation regards the level of salaries. Our data highlights that on average the net wages of women employed full-time are 6.3 percent lower than those of men.

Figure 3.12: Average values of the ratio of monetized value of time deficits to net wages for full-time workers (2014), by sex and income quintile of the household



Source: author's calculations based on matched data sets

[61] In this case, 30 hours or more of paid employment per week.

The analysis of 2008's data underlines that it became more difficult to cover the time deficits with wages for women in the bottom quintile of the income distribution. In fact, in 2008 women in the bottom income quintile were able to cover their time deficits with roughly 65 percent of their net wages on average.

It is helpful to underline that the result of this analysis has much in common with data obtained in the past for Korea. Indeed, also in the case of Korea the ratio of monetized values of time deficits to earnings was higher for women than for men for all income quintiles. In particular, the ratio was as high as 90 percent for women belonging to households in the bottom income quintile.

Analogously, when we use the LIMTIP methodology for assessing the working poor[62] rate, the results acknowledge the impact of the unpaid care and domestic work. If we measure the working poor rate using the standard threshold of income poverty, the result is that 10.5 percent of employed women, and 13.5 percent of employed men are working poor. However, if we account for the monetized value of time deficits there is an additional 5.4 percent of employed women, and 2.5 percent of employed men that fall into poverty, levelling the share of working poor by sex. Again, the data highlights that time poverty has a stronger impact on women's life.

Therefore, it is possible to argue that, in the presence of poor working conditions for low skilled workers and with scarcity of publicly provided social care services, the value of household production might represent an obstacle in the employability of women due to the unequal division of unpaid care and domestic work within the household. The conflict between the value of household production and the wage that one could earn in the labor market clearly emerges from the analysis presented above, where it becomes clear that women employed full-time who belong to a household in the bottom quintile of the income distribution earn on average just enough to cover the cost of the time deficits that their employment creates.

[62] 'Working poor' refers to persons that are at risk of poverty although they have a paid job.

V. Conclusions

The LIMTIP analysis of the Italian data confirmed all the three main results found in the previous LIMTIP studies. First of all, the poverty rate estimated by the LIMTIP is higher than the one recorded by the at risk of poverty measure. In 2014, 22.5 percent of households were below the LIMTIP poverty threshold compared to 19.5 percent that were recorded as "at risk of poverty". Hidden poverty amounted, therefore, to 3 percent, which was 0.6 percent higher than in 2008. This means that standard poverty measures not only underestimated the poverty rate, but also its rise during the years following the 2008's global economic crisis. This might be due to two factors. On one side, households became poorer on average because their incomes decreased. On the other side, austerity policies affected the provision of publicly provided social care services increasing the amount of household production required of the household. These aspects will be the object of the analysis in the next chapter.

Secondly, the study on Italy confirms that poverty has important gender components. Especially with regards to time poverty, the analysis highlights that in 2014 in Italy, 20.8 percent of women were time-poor compared to 14.5 percent of men. In the same year, more than 55 percent of employed women were time poor. That is approximately double the time poverty rate registered for employed men (26.7 percent).

Data highlights that time poverty rises for both men and women as the number of hours of employment increases, but with a fairly wide gender gap to the disadvantage of women. This result underlines how, when keeping the number of hours of paid work equal for men and women, it is the amount of hours of unpaid care and domestic work that determines the higher time poverty rate among women compared to men.

Finally, the third conclusion of the LIMTIP studies is that creating new jobs for poor people is not a sufficient solution for alleviating poverty. In Italy, time deficits for employed adults are on

average around 18 hours for women and 14 hours for men. The impact that time deficits have on poverty for households in lower income quintiles might be overwhelming in relation to their earnings. Considering the ratio of the monetized value of the time deficits to the net wages for full-time[63] workers, the analysis highlights that the average female worker in the bottom income quintile would have to spend almost 90 percent of her earnings on purchasing market substitutes. Differently, men in the lower income quintile would have to spend on average around 20 percent of their net wages to cover their time deficits. This result has two explanations. The first one is related to the size of the time deficits. As data show, time deficits for women working full-time are on average larger than for men. The second explanation regards the level of salaries. Our data highlights that on average the net wages of women employed full-time are 6.3 percent lower than those of men.

Therefore, as demonstrated by the policy simulations performed in the previous LIMTIP studies, poor working conditions for low-skilled workers (women, especially) together with the lack of publicly provided quality social care services linked with the unequal division of unpaid care and domestic work within the household represent an important obstacle to overcoming poverty. Building a link to the concept of 'unemployment trap' (Corsi et al. 2010), we could call this a 'household production trap'. In fact, is in the case of the unemployment trap income support measures may result in benefits levels substantially high relative to minimum wages and, therefore, preventing the recipients from finding an employment, in the case of women outside the labor market the replacement cost of their forgone household production could play the same role. On these premises, the value of household production together with the unequal share of unpaid care and domestic work represents an obstacle to women's inclusion in the labor market. In fact, if publicly provided care services are lacking and/or work conditions are far from being decent, the cost of women's forgone household production may become higher than their salaries.

[63] In this case, 30 hours or more of paid employment per week.

Public investment in social care services and infrastructures represent an indispensable tool for the reduction of unpaid care and domestic work[64]. Social care expansion carries the potential to meet policy objectives beyond the reduction of unpaid work, too. It can serve as an effective strategy for the generation of decent employment, especially for women, poverty reduction and the elimination of inequalities by socioeconomic status (Ilkkaracan 2018).

Another aspect that should be more publicly addressed is the redistribution of unpaid care and domestic work among household members. Balancing unpaid work between women and men within the domestic sphere would require interventions in terms of targeting labor market regulation for work-life balance, and eliminating gender discrimination in hiring, job trainings, promotions and salaries (Ilkkaracan 2018).

These proposals are no longer strictly related to economics, but instead cross the boundaries of public policies. As Joan Tronto pointed out in her book *Caring Democracy. Markets, Equality and Justice*,

> *"[…] once a democratic society makes a commitment to the equality of all of its members, then the ways in which the inequalities of care affect different citizens' capacities to be equal has to be a central part of the society's political tasks. And furthermore, making care into a political concern will improve not only the quality of care, but also the quality of democratic life."* (Tronto 2013, 10)

[64] When we mention reduction and redistribution of unpaid care and domestic work, we acknowledge the importance of the "Triple R Framework" presented for the first time by Diane Elson in 2008 (Elson 2017). The first R stands for the recognition of the nature, extend and role of unpaid care work. The second R stands for the reduction of unpaid care work which should be seek through the implementation of laborsaving infrastructure. The third R stands for the redistribution of unpaid care work within the household and within the society.

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Annexes

Figure B.1: Ratio of imputed values to IT-TUS values, average by number of children and sex (2008)

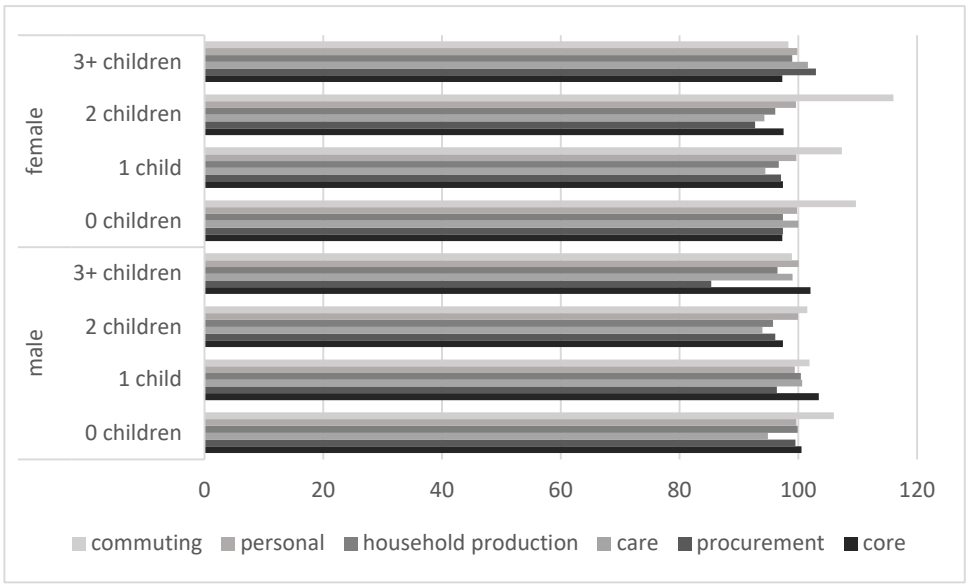


Figure B.2: Ratio of imputed values to IT-TUS values, average by number of children and sex (2014)

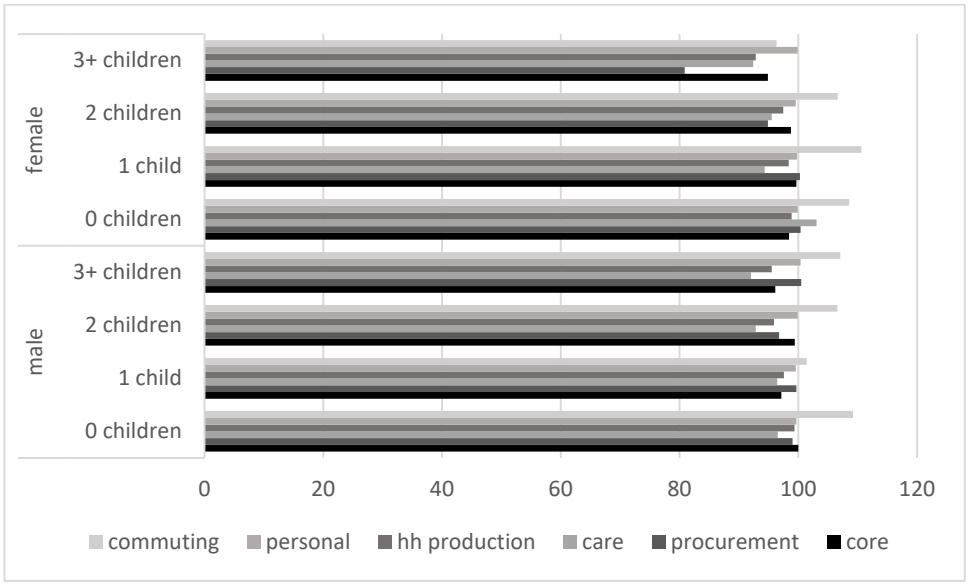


Figure B.3: Distribution of weekly hours of household production by cell (2008)

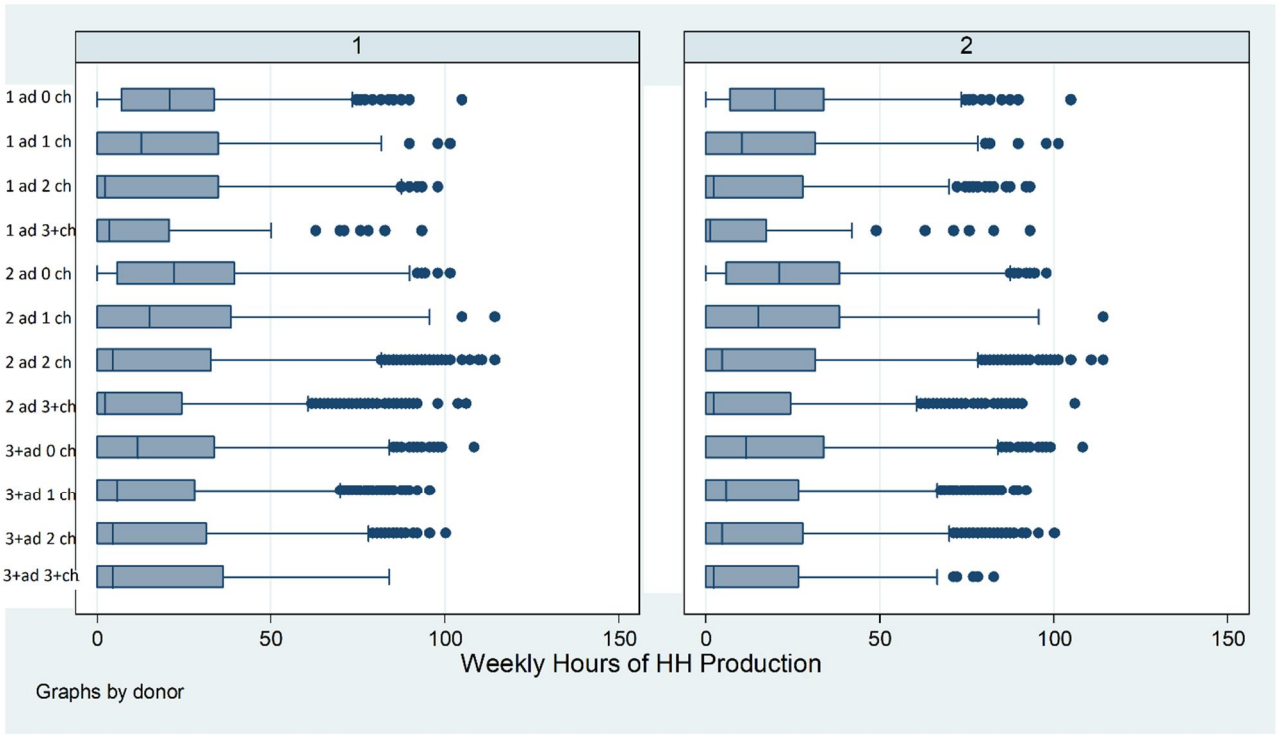


Figure B.4: Distribution of weekly hours of household production by cell (2014)

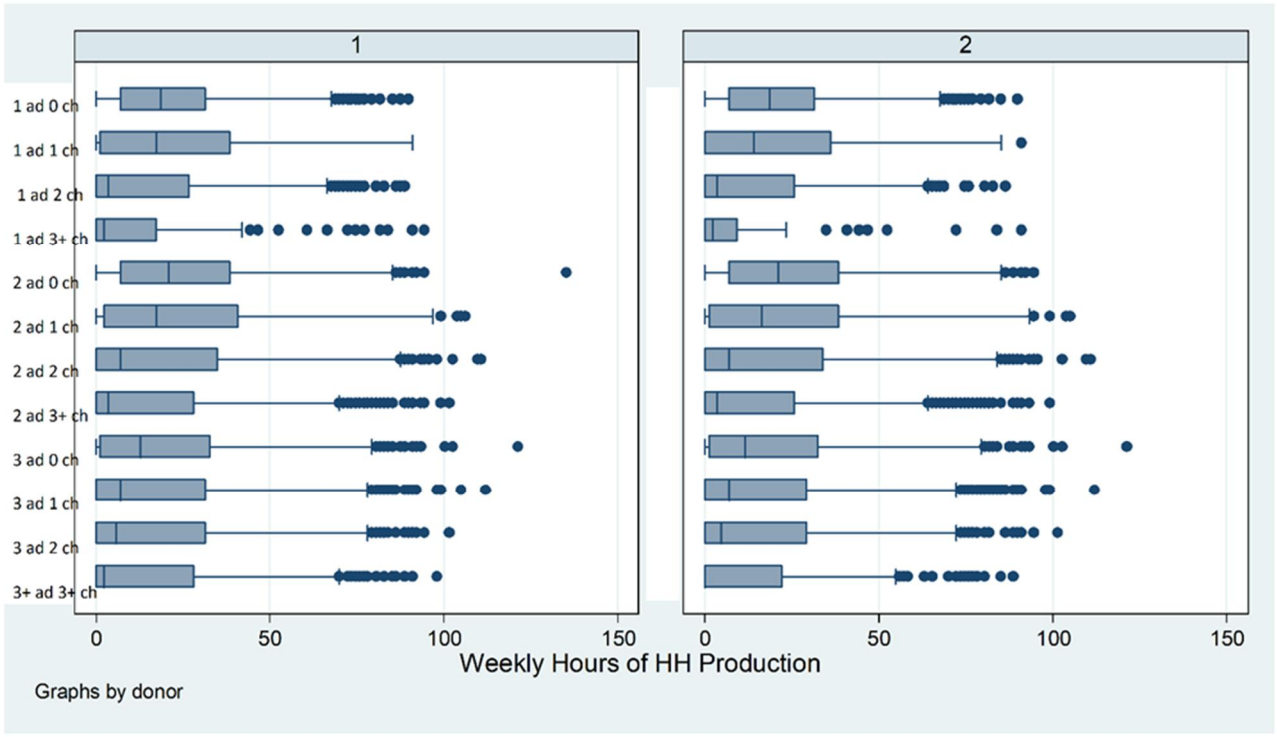


Table B.1 Alignment of strata variables 2008

Number of adults			
1	14.58	13.47	1.11
2	47.65	49.18	-1.53
3+	37.77	37.35	0.42
Number of children			
0	58.89	57.77	1.12
1	20.94	20.1	0.84
2	16.5	17.78	-1.28
3+	3.67	4.35	-0.68
Presence of non-employed adult in household			
0	16.12	14.55	1.57
1	83.88	85.45	-1.57
Presence of children younger than 3 years old			
0	91.18	89.9	1.28
1	8.82	10.1	-1.28
Main source of income			
employment	42.89	38.42	4.47
pension	22.7	23.37	-0.67
benefits	3.05	1.97	1.08
family	31.36	36.24	-4.88
Activity status			
working full-time	33.69	34.3	-0.61
working part-time	4.18	5.29	-1.11
unemployed, retired, inactive	40.74	39.31	1.43
student	16.08	15.29	0.79
pre-school	5.3	5.81	-0.51
Number of earners in the household			
0	14.36	12.03	2.33
1	27.76	25.39	2.37
2	30.26	30	0.26
3	27.63	32.58	-4.95
Marital status			
never married	37.88	37.8	0.08
married	47.5	46.83	0.67
separated/divorced	2.92	4.8	-1.88
widowed	8.1	7.86	0.24
de facto	3.59	2.71	0.88
Sex			
male	48.79	48.61	0.18
female	51.21	51.39	-0.18

Table B.2: Alignment of strata variables 2014

Number of adults	**IT-SILC**	**IT-TUS**	**difference**
1	15.83	15.57	0.26
2	48.2	48.25	-0.05
3+	35.97	36.18	-0.21
Number of children			
0	60.67	58.39	2.28
1	19.01	19.93	-0.92
2	16	16.97	-0.97
3+	4.33	4.7	-0.37
Presence of non-employed adult in household			
0	32.1	32.07	0.03
1	67.9	67.93	-0.03
Presence of children younger than 3 years old			
0	92.98	90.74	2.24
1	7.02	9.26	-2.24
Main source of income			
employment	41.69	35.46	6.23
pension	18.28	23.07	-4.79
benefits	7.62	3.78	3.84
family	32.4	37.7	-5.30
Activity status			
working full-time	30.93	30.45	0.48
working part-time	5.95	6.36	-0.41
unemployed, retired, inactive	41.74	41.47	0.27
student	16.6	16.33	0.27
pre-school	4.77	5.39	-0.62
Number of earners in the household			
0	27.94	28.16	-0.22
1	38.75	38.21	0.54
2	28.43	27.91	0.52
3	4.88	5.72	-0.84
Marital status			
never married	38.01	38.29	-0.28
married	46.42	44.24	2.18
separated/divorced	3.72	5.89	-2.17
widowed	8.23	7.83	0.40
de facto	3.63	3.75	-0.12
Sex			
male	48.58	48.55	0.03
female	51.42	51.45	-0.03

Table B.3: Distribution of matched records by matching rounds 2008

Round	**Matched individuals**
1	47507008
2	4752298
3	258107
4	1293644
5	116548
6	221074
7	46196
8	51037
9	1658437
10	1781008
11	46940
12	234829
13	160003
14	227897
15	17540
16	583261
17	129776
18	11514
19	62401
20	7603
21	12594
22	7655
23	15285
24	14371
25	13143
26	11899
27	19597
28	8740
29	12089
30	23471
31	92779
32	69632
33	5752
34	4514
Total	59478642

Table B.4: Distribution of matched records by matching rounds 2014

Round	**Matched Individuals**
1	48646142
2	3886754
3	513977
4	1297739
5	130502
6	235498
7	72756
8	92320
9	1061537
10	1048758
11	116697
12	304379
13	235238
14	203647
15	51790
16	2539570
17	149019
18	12070
19	126672
20	10161
21	3624
22	12809
23	15132
24	250
25	2794
26	7406
Total	60777241

Table B.5: Average weekly hours of household production in IT-TUS and Matched file 2008

survey	core	procurement	care	household production	personal	commuting
IT-TUS	14.59	3.85	2.44	20.88	82.82	1.59
MATCH	14.31	3.77	2.29	20.38	82.56	1.7

Table B.6: Average weekly hours of household production in IT-TUS and Matched file 2014

survey	core	procurement	care	hh production	personal	commuting
IT-TUS	13.91	3.95	3.04	20.9	83.86	1.41
MATCH	13.81	3.94	2.82	20.57	83.65	1.51

Table B.7: Ratio of imputed values to IT-TUS values by strata variable 2008

Variable	core	procurement	care	hh production	personal	commuting
Number of children						
0 children	97.69	98.02	98.36	97.78	99.76	107.74
1 child	98.27	96.54	96.41	97.55	99.57	104.04
2 children	97.04	93.92	93.94	95.62	99.80	105.84
3+ children	92.66	93.87	98.01	94.41	99.89	102.50
Number of adults						
1 adult	99.45	96.57	83.17	98.11	99.58	104.29
2 adults	98.15	98.40	97.08	98.01	99.86	105.84
3+ adults	97.06	97.89	93.65	96.95	99.52	108.72
Presence of non-employed adult						
0	100.00	99.71	92.02	98.48	99.53	99.60
1	98.37	97.96	93.91	97.82	99.75	108.39
Activity status						
working full-time	104.08	100.00	96.04	101.58	100.08	96.35
working part-time	104.10	100.65	96.93	102.25	99.61	96.91
unemployed, retired, inactive	94.36	95.48	94.16	94.53	99.26	883.33*
student	104.76	129.41	138.89	109.91	99.35	833.33*
pre-school	170.00	0.00	300.00*	185.71	99.33	0.00
Sex						
male	101.44	98.79	95.27	99.72	99.67	104.25
female	97.87	97.48	93.33	97.35	99.69	111.01
Marital status						
never married	100.38	103.68	107.32	101.46	99.23	112.12
married	96.87	96.81	91.13	96.02	99.88	108.24
separated/divorced	108.52	104.27	88.68	105.74	99.40	101.80
widowed	99.35	97.66	101.49	99.11	100.06	90.32
de facto	102.92	105.24	95.80	101.69	99.72	79.60
Main source of income						
employment	103.90	98.75	93.75	100.94	99.99	97.32
pension	102.08	99.39	93.62	101.28	100.05	71.43
benefits	100.35	92.57	109.77	99.75	99.49	148.65
family	90.24	88.21	84.52	89.26	100.22	71.43
Number of earners in the household						
0	95.74	97.41	101.68	96.25	99.08	975.00*
1	94.11	95.82	97.52	94.80	99.30	121.88
2	96.23	96.62	91.99	95.65	99.71	106.04
3+	98.85	99.46	95.63	98.53	99.88	103.24
Presence of children under 3 years old in the household						
0	97.90	98.20	98.15	97.93	99.69	106.45
1	97.93	96.35	96.83	97.29	99.42	111.17

*Very high ratios are due to very small values.

Table B.8: Ratio of imputed values to IT-TUS values by strata variable 2014

Variable	core	procurement	care	hh production	personal	commuting
Number of children						
0	98.74	99.57	100.00	98.98	99.78	108.39
1	98.23	100.00	94.59	97.41	99.69	104.97
2	99.61	95.70	94.94	97.50	99.75	105.79
3+	94.63	89.59	92.05	93.23	100.15	105.56
Number of adults						
1	99.13	101.79	89.61	98.92	100.25	96.10
2	99.72	97.97	94.02	98.30	99.95	103.05
3+	98.71	101.26	89.95	98.38	99.22	118.37
Presence of non-employed adult						
0	100.96	101.76	96.46	100.11	99.98	97.54
1	98.72	99.05	90.38	97.77	99.63	120.88
Activity status						
working full-time	100.49	101.88	96.10	99.78	100.09	98.07
working part-time	102.39	100.23	87.80	99.01	100.46	95.96
unemployed, retired, inactive	98.32	97.89	91.55	97.59	99.41	315.38*
student	110.16	119.30	96.30	108.63	99.74	533.33*
pre-school	107.69	100.00	105.41	107.89	99.55	100.00
Sex						
male	100.36	99.72	93.03	98.70	99.69	107.07
female	99.12	100.00	92.78	98.51	99.80	108.00
Marital status						
never married	103.19	104.81	88.62	101.66	99.55	112.93
married	98.10	97.95	93.54	97.32	99.72	109.49
separated/divorced	105.30	103.75	82.59	102.13	99.44	95.93
widowed	96.23	101.52	143.75	97.99	99.81	155.00
de facto	101.57	100.80	88.98	97.91	100.09	99.21
Main source of income						
employment	104.26	101.40	92.97	101.24	100.29	94.37
pension	98.53	100.60	85.22	98.33	100.01	75.00
benefits	103.85	99.12	71.64	99.58	99.35	94.87
family	95.29	90.29	81.72	92.37	100.42	64.71
Number of earners in the household						
0	99.79	100.44	89.31	99.19	99.51	254.55*
1	97.73	98.72	90.57	96.68	99.88	108.88
2	101.53	100.28	96.87	100.27	99.73	100.00
3+	97.46	102.12	73.71	95.87	100.00	102.28

Presence of children under 3 years old						
0	99.07	99.49	98.21	99.06	99.73	108.63
1	100.08	103.46	101.73	101.25	99.72	96.84

*Very high ratios are due to very small values.

Chapter 4

The Gendered Impact of Austerity Policies in Europe

A gender analysis of the impact of austerity policies on time poverty through the intercession of unpaid care and domestic work

With the 2008 global economic crisis and the ensuing Great Recession, in particular in Europe, many economists and social scientists, especially in the field of feminist studies, had foreseen severe repercussions on women (Bettio et al. 2012; Karamessini 2014; Pearson and Elson 2015; Rubery 2014). Yet, during the first years of the Euro-crisis it appears that the most tangible effects affected men, who experienced a peak in unemployment. In contrast, the data showed a slow but steady growth in women's labor market participation. As a consequence, the outcome of the crisis would seem to be a decrease of gender gaps in employment, wages, and poverty, mainly caused by the worsening of men's situation (Bettio and Verashchagina 2014; Cirillo, Corsi, and D'Ippoliti 2015).

This picture, however, is strongly affected by what scholars have been looking at, namely the formal economy and the labour market. When we broaden the view to consider unpaid work, we cannot exclude that the effects of fiscal consolidation may have acted in a different direction, and public reforms and austerity measures may have had a stronger negative impact on women (Bargawi, Cozzi, and Himmelweit 2017; Karamessini and Rubery 2014). In fact, if such measures had an effect on that part of the economic activity that takes place within the household, *i.e.* unpaid care and domestic work, then austerity could have worsened gender inequality. However, in examining the effect of austerity measures on gender inequality, only a smaller share of the literature to date has dealt with unpaid work. Those who did could not employ internationally comparable data on time-use because, at least at European level, they do not exist, therefore, their analysis either focus on single countries (Bahçe and Memiş 2013; Berik and Kongar 2013) or

assess the effect of public spending cuts without providing an empirical analysis on time-use (Barry 2017; Gonzales Gago 2017; Ortiz and Cummins 2013; Reed 2017; Vertova 2017). The distinctive feature of this analysis is an evaluation of the effects of the cuts to public expenditure in social protection on time poverty at European level based on micro data.

As mentioned in the previous chapters, work is not represented only by the paid employment that takes place in the market, but also by unpaid work, which takes on different forms, [65] among which unpaid care and domestic work. Therefore, an analysis of the effects of macroeconomic measures cannot be limited to the analysis of the impact on paid work but must include unpaid care and domestic work. This change in the analysis' perspective has important gendered aspects, since unpaid care and domestic work largely falls on to women.

As the review of the literature discussed below highlights, unpaid care and domestic work is the main channel of transmission of the effects of austerity policies, especially in the form of cuts to social expenditure, onto women. If austerity measures affected the amount of unpaid care and domestic work performed by household's members, this may have had a more severe impact on women. Specifically, to the extent that austerity has made an increase in women's unpaid work, it may have increased women's time poverty and the gender gap in time poverty. As explained in the previous chapters (see, in particular, the definition given in chapter 2), in this work we mean by time poverty a situation in which a person's number of hours of paid employment is larger than his/her allocatable time. The allocatable time is represented by the time left when we subtract from the allotted 24 hours the minimum time required for household commitments and the minimum time for personal care. If the number of hours of employment is larger than the allocatable time the person results time-poor. This means that the person does not have enough time to meet the

[65] See section 1 of chapter 2.

households minimum requirements, therefore, as presented in the previous chapter, time poverty could cause or worsen economic poverty, and/or the inability to attend to the minimum personal care, as supported by Antonopulos and Memis (2010).

Individual workload, as the sum of paid and unpaid work, is influenced by several factors (marital status, presence in the household of dependent persons, as children, disabled and elderly people, age, sex, etc.), not lastly, the availability of public services. This is why among the several dimensions of austerity we focus here on public spending cuts, especially on social expenditure. The expectation is that a decrease in government's expenditure in social protection will increase the demand of unpaid care and domestic work within the household, and, therefore, the individuals responsible for providing unpaid work for household's members will have to deal with an increased amount of work, increasing their probability of experiencing time poverty.

Ideally, to quantify the impact of austerity on time poverty we would need harmonized data on time use across countries. Unfortunately, as mentioned in the previous chapters, this information is not currently available at the European level. To overcome this obstacle, we focus on a specific manifestation of time poverty: a person's inability to seek medical/dental treatment due to lack of time. Data on such self-assessed unmet medical/dental needs are provided by Eurostat within the European Union Survey on Income and Living Conditions (EU-SILC). As mentioned above, Antonopoulos and Memis (2010) support the idea that in some instances people exchange part of their required time for personal needs for time for work. In particular, they considered this might be true when people cannot substitute both paid and unpaid work time they need to spend. Therefore, individuals overloaded with paid and unpaid work may sacrifice the care of their personal health. In EU-SILC, respondents are asked if during the last year there was at least one occasion when they really needed medical/dental examination or treatment but did not receive it because they could not take time because of work, care for children or for others. On the

basis of their answers, we identify individuals who suffer from time poverty. Evidently, many other people may suffer from time poverty, even though they do not (perceive they) have unmet medical needs, as well as many people who have unmet medical needs do for reasons different from time poverty. We treat here the issue as a problem of sample selection and adapt the method proposed by Heckman (1979) to obtain unbiased estimates of the impact of austerity measures on time poverty.

Previous studies have focused on the gendered impact of the austerity policies following the 2008 global financial crisis. A review of these works is presented in the first section. In the second section, the economic context is introduced through an analysis of paid work, public expenditure in social protection and time poverty in the EU. In the third section, the methodology is described. In the fourth section, the results obtained by the empirical analysis are presented. The final section is devoted to draw the conclusions.

I. Women and Austerity

Between 2009 and 2013, in order to respond to an imminent fiscal and sovereign debt crisis several OECD countries, and European Union countries among them, retreated from the fiscal stimulus policies sparked immediately after the 2008's global economic and financial crisis began and adopted some sort of deficit reduction policy (Alesina et al. 2015), often referred to as fiscal austerity. The focus of the states moved from providing fiscal stimulus to trying to reduce the deficit by fiscal tightening. The consequence of these policies is that in most countries citizens faced significant cutbacks in public expenditure with consequences for both jobs and for public services and benefits (Rubery 2014). Austerity policies could be defined as:

> *"discretionary measures whose objective is fiscal consolidation and that affect the structure of the welfare state in terms of social security, public administration, the public*

sector, public services, the taxation system, labour market institutions, and so on" (Périvier 2018, 30-31)

These policies are not gender-neutral, and depending from the sexual division of labour, segregation in the labor market and gender inequalities prevailing in each society their consequences differ for women and men (Périvier 2018). Therefore, they have the potential of shifting the burden of the adjustment to the debt crisis "on to women as they have most to lose from cutbacks to both services and public sector jobs" (Rubery 2014, 25).

More generally, Elson and Cagatay (2000) identify three main gender biases in macroeconomic policies. The first is the 'male breadwinner bias'. This bias is present when nuclear families headed by a man are taken for granted in economic policies, which assume that women and children will have, and should have, their livelihoods provided by the incomes earned by husbands and fathers. The result is that the 'male breadwinner' becomes the owner of the rights to make claims on the state for social benefits, and many women – but not only – are excluded from entitlements. This makes women dependent upon their male partners, especially when they are intensively involved in taking care of children and elders, and when they themselves are elders. The second is the 'commodification bias', that takes place when the state decides to cut state-based entitlements, that are replaced by market-based, individualized entitlements for those who can afford them, and cause poverty and overwork for those who cannot. This affects women more than it affects men, because women are more tightly linked to public services than men from three sides. First, public sector jobs represent a large share of women's employment. Second, cuts to public health and care services affect women more severely than man, because they make use of these services not only for their own needs, but also for taking care of others (Pearson 2019). Finally, and consequently, women's unpaid care and domestic work represents a cushion to the cuts of public provisioning (Addabbo et al. 2018). The third bias is represented by the 'deflationary bias',

that occurs when governments adopt policies aimed at maintaining their "credibility", such as high interest rates, tight monetary policies, and fiscal restraint, that prevent them from dealing effectively with recession. Such macroeconomic policies prioritize the financial rights of the creditors and represent a harm for those with a worst access to a social safety net – poor women, in particular.

With regard to the austerity measures applied in European countries, the literature is mainly in line with what was described as a 'commodification bias'. In most European countries, austerity policies tended toward spending cuts – with social protection and public administration predominating among the areas of public expenditure which governments targeted for expenditure reduction, rather than tax rises (Theodoropoulou and Watt 2011).

Women are the main beneficiaries of public expenditure schemes and provider of services that complement or substitute for public provisioning, and they, also, are overrepresented in the public sector (Corsi and D'Ippoliti 2013). Therefore, cuts to public sector positions and salaries may affect women more than men (Périvier 2018). But not only. The progress toward gender equality in its whole might be affected by austerity measures. Austerity policies have the potential to impact all known forms of gender inequality -from the gender pay gap and the difference in employment rates to the less obvious variables, as the share of unpaid care and domestic work, or, more generally, gender roles and opportunities (Bargawi, Cozzi, and Himmelweit 2017).

Neither recovery nor consolidation measures have been assessed from a gender perspective in the vast majority of cases, while the evidence suggests that the specific impact of fiscal consolidation on gender equality had, in some EU countries, a considerable effect on employment, social transfers and social services and therefore may be rolling back past progress in gender equality (Bettio et al. 2012). Among the range of consolidation measures some are more likely to

have an impact on gender equality than others. A group of experts, part of the ENEGE consortium, created a list of the measures adopted by EU countries that are more likely to have a negative impact on gender equality (see box1).

Box 1: List of consolidation measure with an impact on gender equality

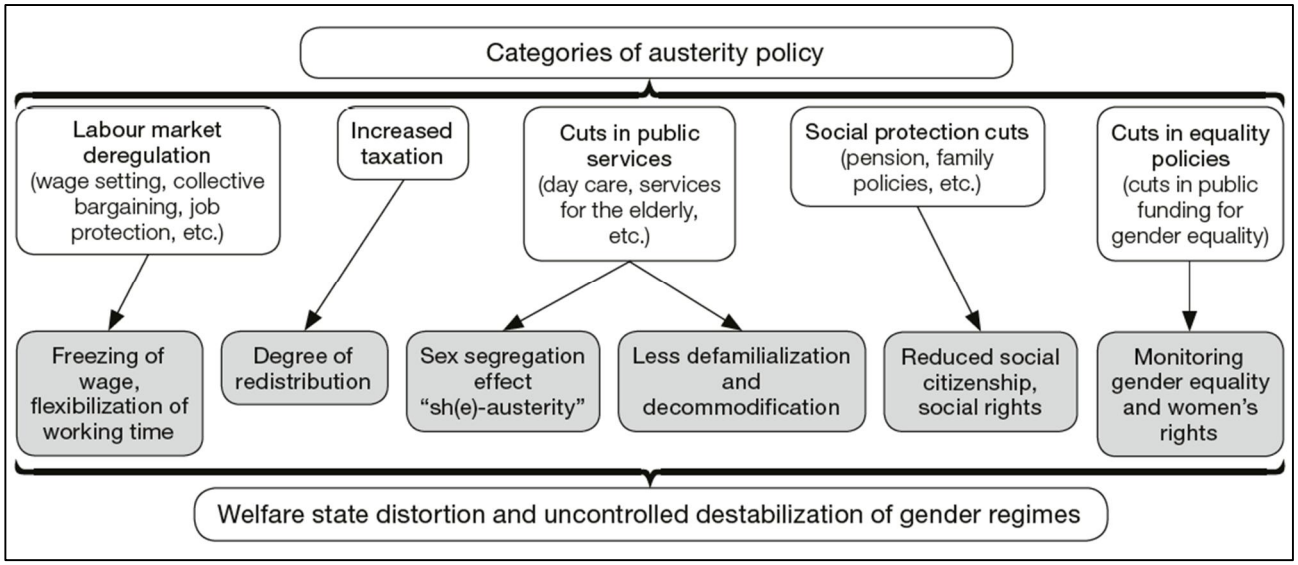
1. Wage freezes or wage cuts in the public sector;
2. Staffing freezes or personnel cuts in the public sector;
3. Pension reforms;
4. Cuts and restrictions in care related benefits/allowances/facilities;
5. Reduction of housing benefits or family benefits;
6. Tightening of eligibility criteria for unemployment and assistance benefits or reductions in replacement rates;
7. Tax measures;
8. Vat increases;
9. Increases in fees for publicly subsidized services.

Source: (Bettio et al. 2012)

The consolidation measures reported in the box above have the potential to negatively affect women more than men. This happens because the effects of the austerity policies follow different transmission channels from those that belong to the economic crisis, and, therefore, have a different gender effect. Périvier (2018) identifies five austerity policies categories (box 2) and highlights four channels of transmission that affect gender equality and the situation of women. The first channel is represented by employment losses in the public sector, because it is dominated by female workers. The second channel relates to work-life balance, which is affected by the combined effect of cuts to public services (that lead to familization and commodification of care) and labor market deregulation (with the increase of labor market flexibility and greater leeway to

distribute working hours irregularly). The third channel involves the alteration of social citizenship, which means a contraction of social rights that affects more women than men because the withdrawal of compensations for inequalities that derives from the gender gap in careers and wages will worsen the condition of the most unprivileged women. Moreover, reduced family support affects women through the increasing of the amount of unpaid care and domestic work. Finally, the fourth channel is represented by reduced support for equality bodies, in the form of cuts in public funding for gender equality.

Box 2: Typology of austerity policies in the EU



Source: Périvier (2018)

An additional channel of transmission of gender inequalities could be represented by the reconfiguration of decision-making processes in the context of EU economic governance, that has resulted in changing power structures, weakening democratic institutions, and increasing of the power of male-dominated institutions (Addabbo et al. 2018). This means that budget policy decisions are transferred to small groups within bureaucracies, which lack democratic legitimacy, while national parliaments have lost much of their influence over economic policymaking. These

shifts are implicitly gendered because men are overrepresented in these functions and institutions, and because masculine norms tend to prevail in these areas (Addabbo et al. 2018).

Most of the studies about the unequal gender impact of the austerity measures could be integrated in the framework described by Périvier (2018) and presented above. The loss of jobs in the public sector and the alteration of social citizenship are the channels of transmission that more often – and frequently jointly – have been the focus of researchers. Bettio et al. (2012), McKay et al. (2013), Karamessini and Rubery (2014), Gonzales Gago (2017), Vertova (2017), Piazzalunga and Di Tommaso (2019) among others, underline that spending cuts and welfare reforms affected (or may affect) women more than men.

It has been demonstrated that women's work-life balance has been altered by the extended recession. Bahçe and Memiş (2013) with their analysis of time-use data in Turkey support the argument that economic crises reinforce the pre-existing gender gap in work time. They estimate a substantial increase in women's unpaid work burden in periods of crisis. Despite, women have considerably higher initial levels compared to men in terms of time devoted to unpaid work, yet still, the effects of an economic crisis cause an increase in women's unpaid work of approximately four times more than that of men. This translates into an increase in women's total work burden of approximately eight times more than that of men.

In the analysis of US time-use data, similar conclusions were highlighted by Berik and Kongar (2013). In particular, they found out that the extended recession widened the disparity in total workloads among full-time employed fathers and mothers, with full-time employed mothers working still longer hours than fathers. They notice that despite men's loss of labor market hours caused by the recession, fathers substituted only about one-fifth of this time for household work and allocated the rest to personal care and leisure.

The studies that specifically focus on the cuts to public services and social protection (Ortiz and Cummins 2013; Reed 2017) underline that women are the majority among the groups that are worst affected by the cuts, such as lone parents and lone pensioners. In fact, according to their focus, spending cuts may impact to a different level different categories. Cuts on school and early years education are largely borne by households with school-age children. The impact of cuts to health budget are largest for pensioners. Cuts to social care have the largest impact on households with elderly or disabled people. It has been assessed that in percentage terms the cuts are most severe for lone parents (Reed 2017).

Cuts to public expenditure in social protection have also been analyzed from the point of view of Counties' resilience. The Joint Research Centre of the European Commission highlights, in its recent report on resilience in EU countries after the 2008's economic and financial crisis (Joint Research Centre 2018), that public expenditure on social protection is associated with less dramatic crisis impact and higher resilience. The research fund out that high values of pre-crisis public expenditures on social protection were the most important feature in predicting the country absorptive capacity.

For what concerns the cuts in equality policies, many warned that austerity measures risk reversing progress towards gender equality by undermining important employment and social welfares measures (Addabbo et al. 2018; Antonopoulos 2009; Barry 2017; Bettio and Verashchagina 2014; Rubery 2014). Progressive policies adopted prior to the recession may be converted into more oppressive and coercive policies. For example, the stress on women's right to integrate into paid work "may be converted into a policy which stresses not the right to work but the obligation to work combined with a reinforced lack of a right to care unless supported by a partner" (Rubery 2014, 29–30).

On a macroeconomic perspective, social reproduction is an essential aspect of sustainability that has been affected by the financial crisis (Fukuda-parr, Heintz, and Seguino 2013) and it should be taken into consideration in order to formulate effective and sustainable policy responses. The crisis could, therefore, become an opportunity for creating a new economic model which recognizes care work (Ilkkaracan 2017). But, in order to achieve this goal, as demonstrated by the literature presented above, there is a need for an assessment of macroeconomic policies that is gender-aware and that goes across the boundaries of paid work.

In conclusion, as the literature highlights, the paths of transmission of the consequences of austerity policies may differ across gender lines, and unpaid care and domestic work has a fundamental role in transmitting the effects of macroeconomic measures on to women.

The review of the literature on the gender impact of austerity policy also points out to some groups, among which women represent the majority of persons, that might be more severely affected. In particular, these are households that more strongly rely on public services for covering their care needs. If care burdens that were previously supported by public services or public transfers shift on to the household the effect is an increase of the amount of unpaid care and domestic work required to women, which result in an increase of their total workload and that, finally, might cause a condition of time poverty.

However, the lack of harmonized time-use data at European Union level prevented the development of analyses on the effects of austerity measures on time poverty at EU level. The present study overcomes this gap by the employment of a specific question in the most comprehensive survey at EU level. The methodology will be described in section 3. While, in the next section a descriptive analysis of the context is presented.

II. Descriptive Data Analysis

This study combines micro data from EU-SILC (European Union Statistics on Income and Living Conditions) with macro data from ESSPROS (European System of Integrated Social Protection Statistics), to assess the impact of cuts to social expenditure on individual time poverty through their influence on the amount of unpaid care and domestic work. The assessment is performed covering the 28 European Union member states from 2007 to 2015. [66]

EU-SILC (see annex for details on the survey) collects timely and comparable cross-sectional and longitudinal multidimensional microdata on income, poverty, social exclusion and living conditions. For the purposes of this analysis the cross-sectional part[67] of the dataset is employed. ESSPROS is an instrument of statistical observation which enables international comparison of the administrative national data on social protection in the EU Member States.

In this section, using the information provided by these two data sources, we explore how paid work, public expenditure in social protection and time poverty evolved in the EU between 2007 and 2015.

Starting from paid work, the data on employment highlight that in EU28[68] in the years following the global financial crisis both the percentage of employed men and women in the working age (between 18 and 64 years old) decreased. [69] The percentage of employed men decreased from 73.8 in 2008 to 70.6 in 2013 with a loss of almost 3 percentage points. The

[66] Greece and Malta from 2008. Croatia from 2010.
[67] The only variable found in EU-SILC that is able to assess an excessive workload including both paid and unpaid work is collected only in the cross-sectional survey and, unfortunately, not in the longitudinal.
[68] Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.
[69] For detailed statistics on employment, unemployment and labor market participation see figures F.1, F.2 and F.3.

percentage of employed women presented a smaller decrease between 2008 and 2010 (0.8 percent from 59.6 to 58.8 percent), then it started to increase, and in 2014 the percentage of employed women (60.8 percent) exceeded that of 2008. On the contrary, the percentage of employed men (72.1 percent) was in 2015 still below that of 2008.

The result was that the gender employment gap narrowed down. In fact, in 2007 the gap was equal to 14.8 percentage points, while in 2015 it was 'only' 11.3 percent. Another relevant record, with regard to paid work, is that the percentage of men employed part-time reported an increase. Even if men in part-time jobs are still a small percentage compared to women, [70] from 2007 to 2015 the percentage of men with a part-time employment increased from 4.2 to 5.4 percent.

On the side of unemployment, data illustrate that unemployment grew more for men than for women. Men's unemployment increased from 6.6 percent in 2007-8 to 10.9 percent in 2013. In the case of women, the increase in unemployment was more limited, from 6.1 in 2008 to 8.9 in 2014. At the same time, the trend of an increasing women's participation in paid work did not come to a halt. From 2007 to 2015 the percentage of women in the labor market (including employed and unemployed persons) raised of 4.4 percentage points (from 65.1 to 69.4 percent). While, the percentage of women outside the labor market – that were not undertaking education or training, retired, disabled or in compulsory military service, decreased of 2.4 percentage points.

As presented in previous studies (Bettio et al. 2012; Bettio and Verashchagina 2014), the global economic crisis had a stronger impact on men's employment in Europe. With regard to the fact that women suffered less than men the effects of the crisis from the point of view of paid work,

[70] In EU men are around the 20 percent of all the part-time workers.

it was noticed that occupational and sectoral gender segregation played a sheltering role with respect to women's employment (Bettio and Verashchagina 2014).

As the data highlight, if austerity policies might have influenced men's employment, that remained below pre-crisis levels even during the last years of the period under analysis, the negative effect on women's employment is not evident. In fact, as mentioned above, the percentage of employed women increased between 2011 and 2015, and women's participation to the labor market slowly but steadily increased during the whole analyzed period. The austerity policies' impact might be visible from the point of view of unemployment, that reached the highest levels, both for men and for women, in 2013 and 2014.

But, as mentioned above, focusing on paid work provides only a partial assessment of the effects of a change at macro level. In order to obtain a complete and gender-aware picture we must include unpaid care and domestic work in our analysis. In fact, a number of studies, presented in the previous section, emphasize that austerity measures, and especially public spending cuts, have a stronger negative impact on women through their effect on the required amount of unpaid care and domestic work.

If, on one hand, it is easy to provide statistics regarding paid work, on the other hand, it is much more difficult to provide an assessment on unpaid care and domestic work.[71] In EU-SILC a variable that is able to assess the quantity of unpaid care and domestic work is not available. Therefore, it would seem that, unless the analysis employs time-use data – but at EU level they are neither harmonized neither collected on a regular basis, it is impossible to assess a variation in the individual amount of unpaid care and domestic work.

[71] For an assessment of the time that women and men devote to paid and unpaid work at European level see section 4.2 of chapter 2, which draws on the information made available by Eurofound's reports on working conditions in Europe.

A solution to this limit might be found using a variable that is associated with the health of the respondent and to the capacity of taking care of it. This variable has never been used before, to the knowledge of the author, for making an assessment on time poverty or on unpaid care and domestic work. In EU-SILC respondents are asked if during the last year there was at least one occasion when the respondent really needed medical/dental examination or treatment but did not receive it, among the possible explanation for the unmet medical/dental examination of treatment there is the lack of time. [72] The lack of time, in the variable description, might be due to work, care for children or for others, hence an excessive workload. On the basis of this answer a dummy variable in which the responded is positive if time-poor and negative if otherwise is created. [73]

First of all, table 4.1 and 4.2 highlight that the percentage of persons reporting unmet medical or dental needs, and, among those, of time-poor persons widely vary across years and countries. At EU level, when we explore the evolution of the percentage of persons reporting unmet healthcare needs due to time poverty during the period under analysis (Figure 4.1), we are surprised to see that from 2008 to 2015 it was characterized by a decline, for women and men both.

[72] The questions as in the EUSILC are PH040, PH050, PH060 and PH070:
PH040-060: Was there any time during the past 12 months when you really needed medical/dental examination or treatment (excluding dental) for yourself?

a) Yes (I really needed at least at one occasion medical examination or treatment)
b) No (I did not need any medical examination or treatment)

PH050-070: What was the main reason for not having a medical/dental examination or treatment?

a) Could not afford to (too expensive)
b) Waiting list
c) Could not take time because of work, care for children or for others
d) Too far to travel or no means of transportation
e) Fear of medical doctors, hospitals, examination or treatment
f) Wanted to wait and see if problem got better on its own
g) Didn't know any good medical doctor
h) Other reasons

[73] The dummy variable is created only for the observations that answered "yes" to questions PH040 or PH060 (unmet medical or dental need).

This might be an effect of the changes in the labor market, but the explanation could also be found in the lower or higher percentages and different trends of unmet healthcare needs due to time poverty across countries. [74] Apart from these different trends in time at country level, there are several factors that have an impact on time poverty regardless of the country. The main factors that have a relation with time poverty are age, employment (we analyse, in particular, the number of weekly hours of paid work), household composition (including the presence of persons with higher care needs, as small children, disabled and elderly persons) and, as presented later in this chapter, government's expenditure in social protection.

[74] It is not possible to address country specific factors in the limited space of this dissertation, but they can be the focus of future work.

Table 4.1: Percentage of persons reporting unmet healthcare needs by year, sex and country (18-65 years old, EU-SILC)

	2007		2008		2008		2010		2011		2012		2013		2014		2015	
	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W
AT	4.2	3.7	8.5	6.8	5.2	4.7	6.7	5.8	6.6	4.9	4.7	3.6	3.9	3.5	1.5	0.8	1.6	1.7
BE	2.6	2.7	3.6	3.3	3.6	3.0	3.5	2.7	7.8	6.9	7.1	5.9	8.3	7.2	7.2	7.1	6.9	7.2
BG	33.1	34.4	26.4	27.2	22.0	23.2	20.0	19.1	17.3	17.7	15.3	15.2	15.9	15.4	10.6	11.4	9.5	9.0
CY	15.5	15.2	11.4	11.5	14.4	15.1	17.5	16.5	16.8	14.5	12.8	12.2	12.5	12.4	13.8	12.6	10.5	9.5
CZ	7.9	6.4	8.2	5.7	7.3	5.8	8.3	6.7	8.1	7.1	7.4	6.8	8.7	8.3	7.6	7.8	8.0	7.0
DE	18.8	16.1	10.2	9.4	10.0	9.5	9.2	9.0	8.2	8.8	8.2	7.8	8.2	8.9	8.5	8.8	3.7	3.6
DK	9.5	7.9	6.9	8.0	13.6	10.9	10.7	8.6	10.9	11.0	14.3	10.8	13.9	11.5	15.4	12.8	15.6	13.0
EE	17.8	20.6	12.0	14.6	8.6	8.7	11.0	11.0	12.2	15.0	14.3	16.8	13.9	17.6	14.8	20.7	19.3	23.4
EL	0.0	0.0	10.1	10.9	10.4	11.2	10.1	11.6	11.3	12.0	12.7	13.4	14.9	15.4	17.4	19.4	18.1	19.1
ES	8.4	7.4	13.2	11.8	16.6	14.9	14.9	12.7	10.4	10.9	13.6	13.7	16.2	16.2	15.0	14.2	13.8	12.8
FI	4.3	3.4	4.1	4.9	11.3	13.4	9.2	12.8	8.9	12.7	10.1	12.9	9.7	12.2	7.4	9.8	18.1	17.1
FR	9.3	8.6	10.1	9.5	12.3	10.9	11.9	11.2	11.7	12.1	12.3	12.4	13.9	13.0	13.4	13.4	12.8	12.9
HR	0.0	0.0	0.0	0.0	0.0	0.0	18.2	18.1	14.2	10.8	7.9	7.5	8.7	8.3	8.0	7.0	11.4	9.6
HU	18.2	17.1	16.2	14.9	14.2	12.6	11.3	10.2	12.6	11.3	12.1	11.6	10.9	10.5	11.6	10.8	11.4	10.3
IE	6.1	7.5	4.2	6.5	5.3	5.8	6.3	8.0	7.7	9.6	10.2	11.4	8.8	11.4	8.8	11.3	7.5	9.7
IT	12.1	14.0	13.8	16.3	12.8	14.7	12.6	14.8	13.4	14.6	11.8	12.7	13.1	14.4	13.7	14.3	13.2	14.2
LT	12.6	14.9	7.9	10.0	5.7	7.7	4.2	5.5	4.6	7.4	4.9	6.6	5.6	8.4	6.3	8.7	5.9	8.1
LU	7.3	5.4	6.7	5.0	4.8	4.0	6.5	5.5	5.9	4.6	6.0	5.0	6.8	6.1	8.0	6.1	11.1	7.7
LV	31.2	32.2	26.8	24.4	23.5	23.5	29.2	29.8	29.7	30.7	26.8	26.3	28.1	27.1	28.5	26.5	21.6	20.2
MT	0.0	0.0	2.2	2.7	6.8	6.0	7.5	9.5	4.9	6.1	4.3	5.2	3.2	4.3	3.4	3.9	3.4	3.5
NL	11.8	11.1	4.0	3.4	3.7	4.0	4.3	3.6	3.6	4.3	3.6	4.0	5.8	4.3	5.7	4.7	6.7	4.9
PL	19.1	20.6	17.2	17.4	18.8	20.5	19.1	19.1	17.2	17.6	17.2	18.4	16.8	18.1	15.9	17.2	15.4	17.1
PT	14.3	15.6	9.3	10.7	15.7	17.0	14.0	16.2	11.6	12.4	19.7	20.2	19.6	21.7	20.3	22.5	28.1	27.9
RO	21.3	23.3	16.8	18.8	16.0	18.0	15.0	18.5	16.5	19.3	14.0	16.6	14.7	16.6	13.0	14.8	14.9	16.8
SE	23.7	26.1	23.5	25.0	22.2	25.1	20.6	21.4	19.0	23.3	21.4	22.1	23.0	26.5	15.9	17.7	17.4	17.8
SI	0.5	0.7	1.5	0.8	1.0	1.3	1.6	1.3	1.5	1.2	1.9	1.4	1.5	1.3	2.5	1.5	4.1	2.1
SK	7.0	6.2	6.5	6.0	6.5	6.5	7.5	7.8	7.5	7.5	7.3	7.5	7.0	7.3	8.3	7.5	7.8	8.1
UK	7.7	7.7	7.8	7.2	6.9	7.9	6.4	7.0	5.5	6.9	6.0	6.7	7.0	8.1	8.2	8.7	9.1	10.1

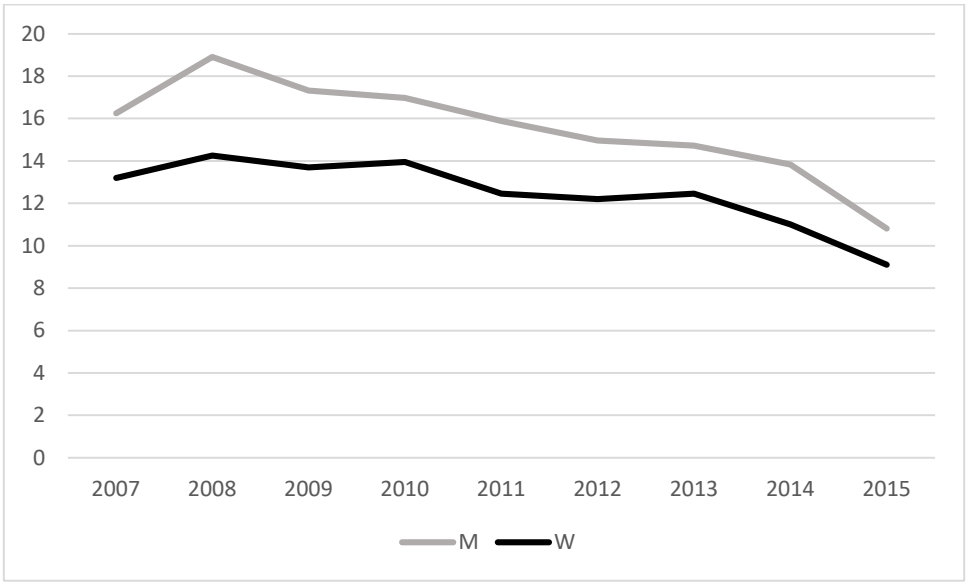
Source: author's calculation based on EU-SILC 2007-2015

Table 4.2: Percentage of persons reporting unmet healthcare needs due to time poverty by year, sex and country (18-65 years old, EU-SILC)

	2007		2008		2008		2010		2011		2012		2013		2014		2015	
	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W
AT	18.0	17.2	11.0	12.0	11.6	7.7	8.0	6.8	10.6	12.1	15.1	13.5	19.7	13.1	5.6	6.1	15.1	11.8
BE	20.9	12.4	13.1	6.5	21.9	8.6	21.3	14.3	19.0	15.8	17.4	11.8	16.7	8.0	8.7	7.6	11.6	6.5
BG	8.3	7.6	13.2	8.9	13.1	9.3	9.9	7.3	9.4	10.1	6.9	7.4	7.3	7.2	8.5	5.5	6.7	3.0
CY	13.1	14.8	11.6	11.8	17.5	11.5	12.5	11.2	14.0	12.0	4.8	3.3	3.0	4.0	4.7	4.6	3.7	3.4
CZ	23.8	23.0	23.2	20.8	22.1	17.6	15.5	23.9	23.7	19.4	23.1	22.1	18.5	27.2	16.2	17.2	24.4	18.5
DE	14.6	12.3	24.8	18.5	21.1	19.3	22.5	18.6	24.7	18.9	21.3	21.5	22.4	20.7	20.6	19.0	4.0	16.6
DK	19.6	17.6	22.9	15.0	12.7	15.5	10.6	12.3	16.4	5.2	10.3	5.6	8.0	5.5	6.6	11.7	12.5	8.8
EE	15.8	5.0	7.2	5.1	6.5	2.6	7.9	4.5	4.6	2.8	5.0	2.3	4.2	3.0	2.1	2.4	3.4	2.1
EL	0.0	0.0	13.6	8.9	14.1	13.1	19.0	14.1	8.7	7.3	13.0	7.5	10.8	8.5	9.1	5.3	6.4	4.7
ES	22.6	20.4	30.7	25.2	21.7	19.4	22.1	21.0	21.7	18.0	20.8	16.2	17.8	16.9	16.9	11.2	4.7	6.4
FI	1.3	3.0	2.8	0.6	0.5	0.2	2.2	0.6	1.3	1.0	0.9	2.0	2.1	0.7	0.7	0.4	0.0	0.8
FR	16.5	12.9	21.2	12.2	21.6	12.7	21.2	16.2	21.9	15.3	21.7	15.9	21.9	15.6	20.2	15.1	22.8	12.9
HR	0.0	0.0	0.0	0.0	0.0	0.0	21.8	24.2	20.5	18.0	20.1	15.6	20.4	18.1	20.4	16.3	22.6	18.6
HU	17.8	22.8	20.3	21.0	22.5	27.1	17.4	19.7	16.7	16.1	17.7	15.9	15.3	16.7	17.5	19.9	21.3	16.7
IE	10.0	7.0	8.8	1.8	6.0	6.8	2.8	0.8	2.1	1.3	4.3	1.6	2.6	1.1	4.0	3.0	2.5	2.3
IT	13.3	9.4	13.8	10.7	13.5	10.0	14.2	10.7	8.4	6.9	7.2	4.9	5.8	5.5	5.4	3.7	4.7	3.4
LT	8.4	7.3	8.3	6.8	5.4	2.5	3.5	2.3	11.2	4.5	7.9	5.1	8.1	3.3	6.2	3.0	8.4	5.1
LU	18.5	19.8	12.2	18.4	17.4	14.3	9.5	15.1	12.0	9.9	11.2	7.8	19.3	9.9	15.6	10.1	17.8	15.9
LV	15.4	15.9	22.6	18.4	13.8	12.1	10.1	8.1	8.1	7.9	9.6	6.9	9.8	9.0	11.0	9.8	10.1	6.3
MT	0.0	0.0	18.9	14.4	6.3	9.3	5.8	6.1	12.1	10.2	11.2	6.5	11.4	10.2	14.2	10.0	10.1	10.6
NL	24.7	19.5	10.5	8.0	8.3	10.3	10.0	6.4	7.3	8.8	14.4	4.3	16.4	6.7	11.8	6.2	0.0	0.0
PL	26.6	21.3	22.6	19.9	21.8	20.1	20.8	19.7	20.0	18.8	18.5	16.5	17.0	17.3	19.2	18.0	20.7	20.6
PT	14.2	6.3	8.4	6.9	9.6	6.0	9.0	5.6	9.3	5.9	9.8	7.0	9.6	6.7	9.4	6.9	10.6	5.5
RO	14.8	10.9	11.6	10.6	12.4	8.0	8.8	7.0	7.6	5.2	5.9	6.4	10.4	5.6	7.0	4.8	5.2	6.7
SE	20.0	14.7	19.2	12.2	15.8	13.5	17.1	14.5	18.3	13.9	18.7	14.4	20.2	14.7	15.4	14.2	14.4	13.6
SI	7.8	2.0	2.0	3.1	0.0	9.7	11.0	9.5	7.5	16.0	6.9	7.7	3.3	8.2	11.2	14.7	0.0	14.4
SK	35.3	30.1	20.0	19.0	18.6	19.0	17.5	17.1	14.9	18.0	15.1	16.5	19.7	24.3	18.2	19.3	22.4	21.1
UK	3.0	3.2	4.9	3.4	4.2	1.9	4.3	2.0	5.2	2.9	3.1	3.5	6.4	4.6	8.2	4.8	7.2	4.9

Source: author's calculation based on EU-SILC 2007-2015

Figure 4.1: Percentage of persons reporting unmet healthcare needs due to time poverty by sex and year EU28 (EU-SILC)

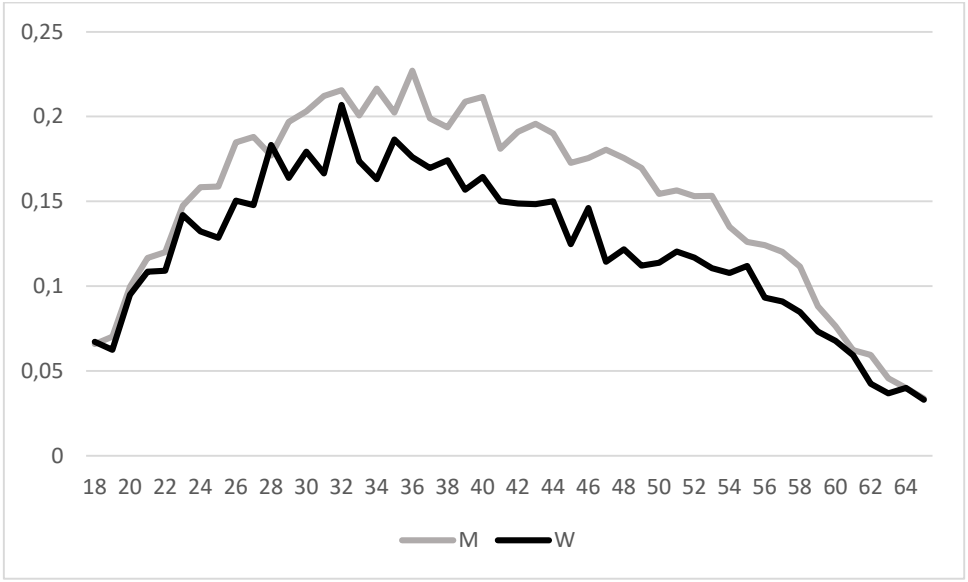


Source: author's calculation based on EU-SILC 2007-2015

Figure 4.2 shows how the percentage of persons reporting unmet healthcare needs due to time poverty is sensitive to the age of respondents. Persons in working age report higher levels of time poverty. Not surprisingly the peak is around 30 years old for women and 35 years old for men. While time poverty decreases for both sexes when age increases. Therefore, the link between time poverty and the amount of paid work clearly appears.

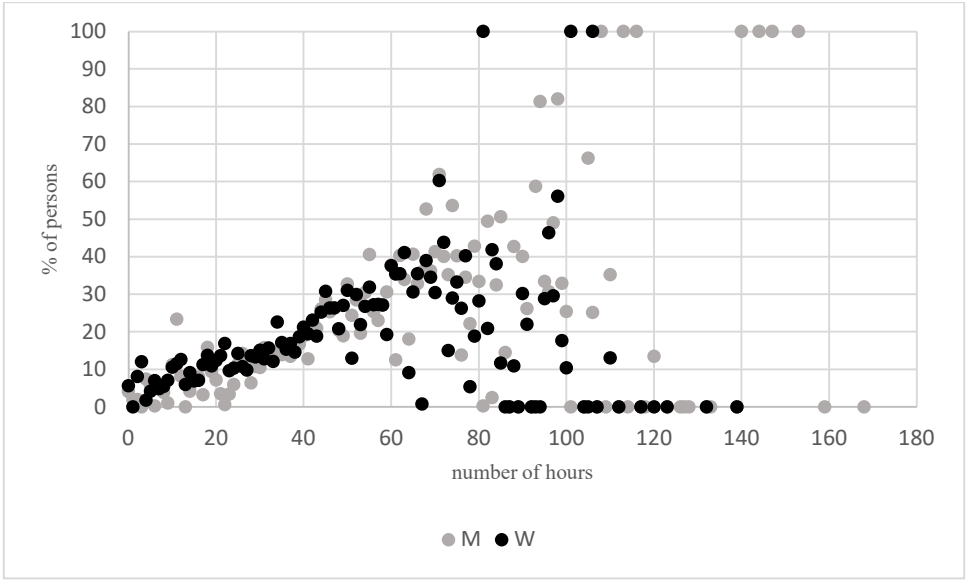
This is confirmed by the fact that, the percentage of time-poor persons increases together with the number of weekly hours of paid work, as shown in figure 4.2. The graph also highlights that for lower numbers of weekly hours of paid work the percentage of time-poor women is higher than that of time-poor man.

Figure 4.2: Percentage of persons reporting unmet healthcare needs due to time poverty by sex and age, EU28 (EU-SILC)



Source: author's calculation based on EU-SILC 2007-2015

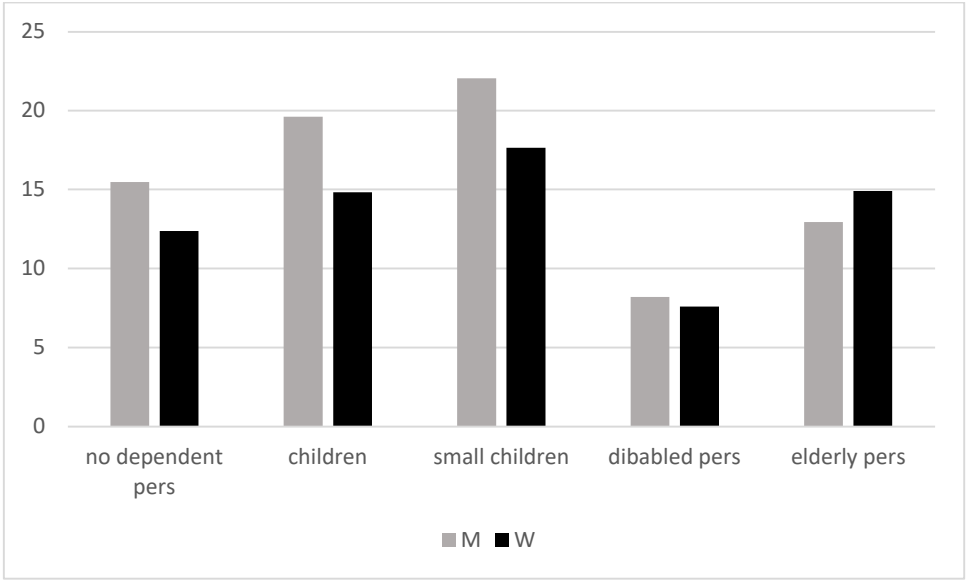
Figure 4.3: Percentage of persons reporting unmet healthcare needs due to time poverty by sex and number of weekly hours of paid work, EU28 population between 25 and 65 years of age (EU-SILC)



Source: author's calculation based on EU-SILC 2007-2015

Clearly, time poverty is linked to the number of hours of paid work, but not only. Another important factor connected to time poverty is the presence of dependent persons in the household, and, therefore, to the amount of unpaid care and domestic work. If in the household there is at least one child, the percentage of time-poor persons increases (see figure 4.4). And if in the household there is at least one child less than 7 years old, the percentage of time-poor persons increases even more. Interestingly when children are present in the household, time poverty increase more for men than for women. This might be linked to the fact that if children are present in the household men tend to be employed for more hours, while for women the opposite happens. Another relevant element highlighted by figure 4.4 is that on average more persons that live with no dependents report an unmet need due to time poverty than those who live with a disabled person.

Figure 4.4: Percentage of persons reporting unmet healthcare needs due to time poverty by sex and by presence of dependent persons in the household (children (0-17 years old), small children (0-6 years old), disabled persons or elderly persons), EU28 population between 18 and 65 years old (EU-SILC)



Source: author's calculation based on EU-SILC 2007-2015

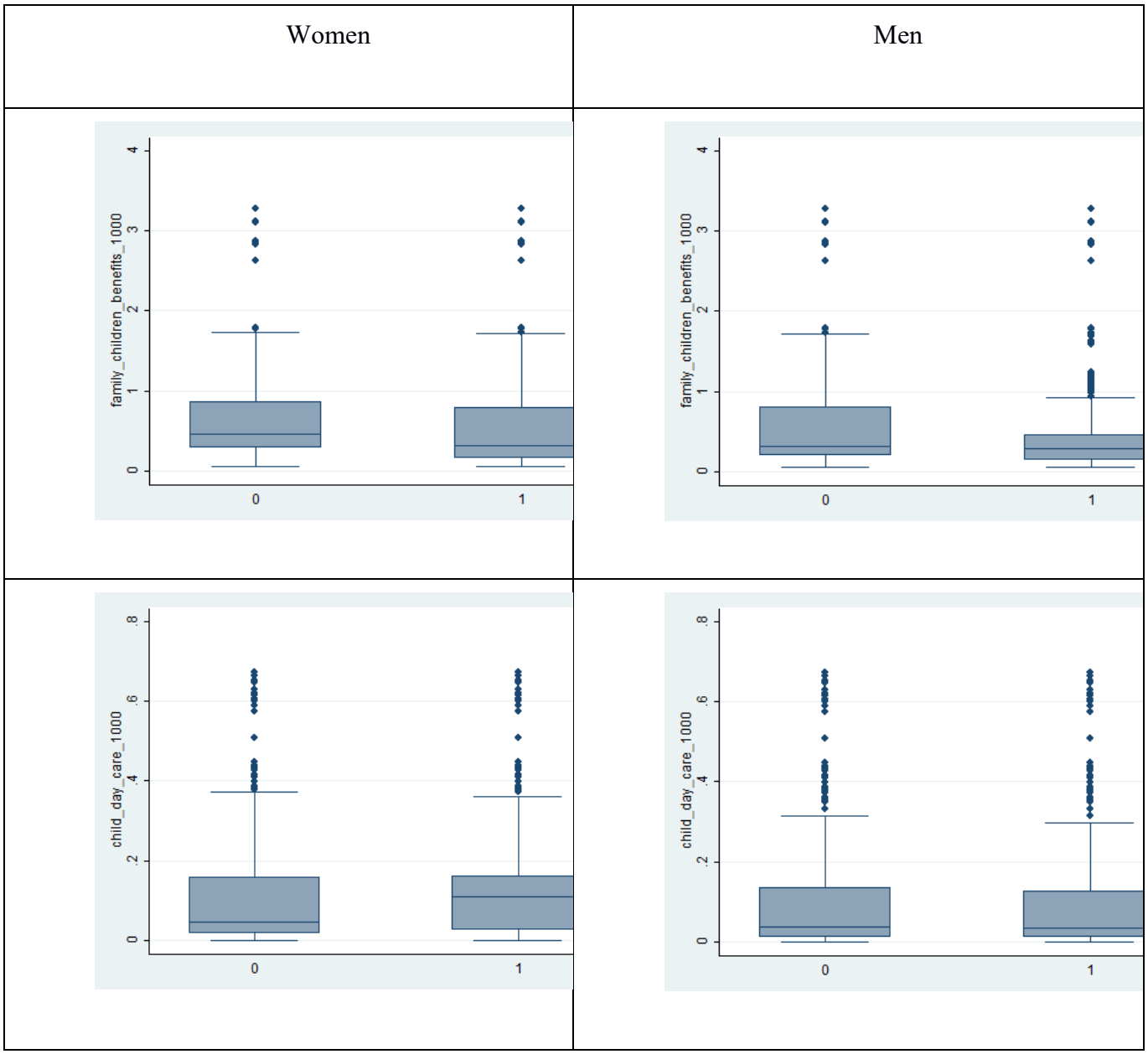
Public expenditure in social protection, [75] that includes family and children related benefits, children day care, old age benefits, sickness and health care benefits and disability benefits, is expected to influence time poverty. Here public expenditure in social protection is represented by the national yearly amount by category harmonized and divided by the number of inhabitants. If a decrease in government's expenditure in social protection increases the demand of unpaid care and domestic work within the household, the individuals responsible for providing unpaid work for household's members have to deal with an increased amount of work, increasing their probability of experiencing time poverty.

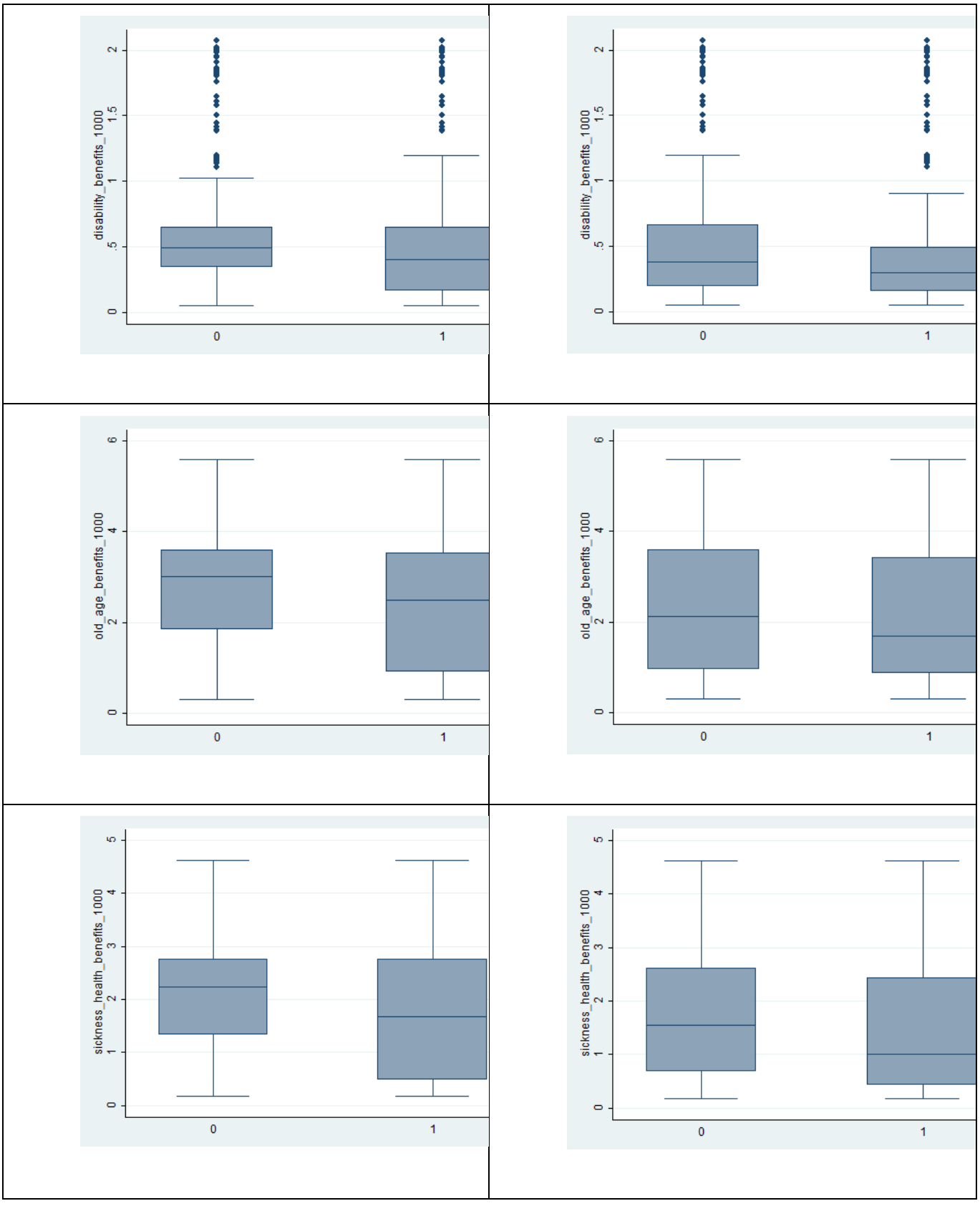
As shown in figure 4.5, higher government spending in social protection is generally associated with less reported unmet healthcare needs due to time poverty. An important exception is represented by the effect on women reported unmet healthcare needs due to time poverty of public spending for child day care. In this case higher spending is associated with more time poverty.

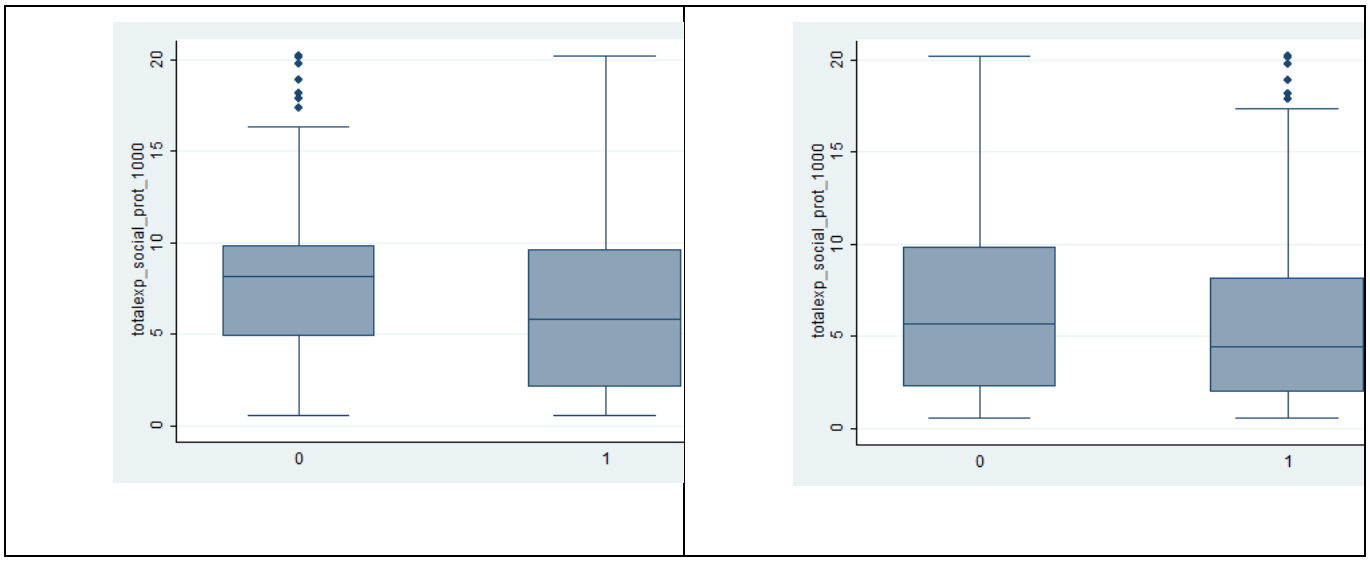
The link between public spending in social protection and unmet healthcare needs due to time poverty is confirmed at country level. [76] In general, over the analyzed period of time, higher levels of public spending in social protection were associated with lower percentages of persons reporting unmet healthcare needs due to time poverty. [77] On the contrary, higher percentages of persons reporting unmet healthcare needs due to time poverty were generally associated with lower levels of public spending in social protection.

[75] See table T.3 in the appendix for yearly values by country.
[76] See figure F.4 in the appendix.
[77] It was not true only for five member states: Estonia, France, Lithuania, Slovenia and United Kingdom.

Figure 4.5: Distribution of public expenditure in social protection per-capita (by category) by reported unmet need due to time poverty (0-1) and by sex, EU28 population between 18 and 65 years old (EU-SILC)




disability_benefits_1000
0
.5
1
1.5
2
0
1
disability_benefits_1000
0
.5
1
1.5
2
0
1
old_age_benefits_1000
0
2
4
6
0
1
old_age_benefits_1000
0
2
4
6
0
1
sickness_health_benefits_1000
0
1
2
3
4
5
0
1
sickness_health_benefits_1000
0
1
2
3
4
5
0
1



Source: author's calculation based on EU-SILC 2007-2015

Public expenditure in social protection is directed to family and children related benefits, children day care, old age benefits, sickness and health care benefits and disability benefits. Therefore, if the public expenditure in social protection is higher household have the possibility either to directly access public services (in kind benefits) that decrease the amount of unpaid care work that the household has otherwise to provide, or to buy equivalent services from the market (in cash benefits).

Where austerity policies entailed the cut to government spending in social protection, we expect that the households had to compensate for the lack of care services with more unpaid care and domestic work. Since, as presented in chapter 2, women perform most of the unpaid care and domestic work in the household, we expect that the cut to public expenditure in social protection had a gendered impact.

III. Methodology

In light of this evidence, the hypothesis analyzed is that cutbacks to social protection benefits (in the form of family and children related benefits, children day care, old age benefits, sickness and health care benefits and disability benefits) increased the amount of unpaid care and domestic work required to the households, with a consequent gender impact on time poverty.

The variable that is used to assess the impact of austerity policies in the form of the cut to public expenditure in social protection is the above-mentioned time poverty variable. It is a dummy variable that is positive if during the last year there was at least one occasion when the respondent really needed medical/dental examination or treatment but did not receive it because he/she could not take time because of work, care for children or for others. Among the explanatory variables, besides the variables related to public expenditure on social protection (table T.3 in the appendix), there is a number of factors that might have an influence at micro level (see table T.2 in the appendix for a descriptive analysis of the variables).

The independent variables selected at micro level are the age of the respondent, the type of household (one person, two adults without children, two adults with children, single parent, others), the presence in the household of dependent persons (small children, disabled or elderly persons), the number of weekly hours of paid work, [78] the number of weekly hours of paid work of the partner, [79] the level of education and the equivalized income, [80] year and country. [81]

The independent macro variables[82] are represented by the national yearly public expenditure in social protection for family and children related benefits, children day care, old age benefits, sickness and health care benefits and disability benefits. Two additional variables are total public expenditure in social protection and austerity. [83] All the macro variables are harmonized and divided by the number of inhabitants.

The methodology adopted must take into account that there could be a sample selection bias in the time poverty variable. In fact, the information on time poverty is only available for the observations

[78] If the person does not have a paid employment the variable is equal to 0. This variable has been selected because it is more relevant in relation to time-poverty than a variable that reports the employment status.
[79] This variable has been employed only in the separate regressions for observations that reported having a partner.
[80] In the EU case, household equivalised disposable income is calculated as follow:
Equivalised household size = 1 + (0.5* number of persons 14 years old and over) + (0.3*number of persons below 14 years old)
Equivalised disposable income = total household disposable income / equivalised household size.
[81] Year and country are separately used for 'absorbing' the effects of the variations in time and space and together for clustering standard errors.
[82] Described in section 4 of this chapter.
[83] Austerity is the variable that describes the government deficit/ surplus in terms of net borrowing (-) or net lending (+);

reporting an unmet medical/dental need. For all the other observations that answer to the question declaring the absence of an unmet medical/dental need it is not clear if they had the ability to access medical/dental treatment or examination, hence they did not suffer from time poverty, or they were not in need of any medical/dental treatment or examination. In the latter case, some observations could have been suffering from time poverty but were excluded from the sample because they did not need any medical/dental treatment or examination. Moreover, among these observations there could even be someone that due to time poverty was not able to perceive the need of receiving medical/dental treatment or examination. In other words, it is possible that a larger number of observations suffered from time poverty, but because their health was good and they did not need any medical or dental examination during the period, they were not recorded as being time-poor. On the other hand, individuals with a bad health status might be more likely of incur into the inability to take care of their health if they experience time poverty.

In order to avoid the bias linked to a non-randomly selected sample, the estimated values of the omitted variables are used as regressors (Heckman 1979). The probit model with sample selection (Van de Ven and Van Praag 1981) assumes that there exists an underlying relationship (Statacorp 2013)

$$y_j^* = x_j\beta + u_{1j} \qquad \text{latent equation}$$

such that we observe only the binary outcome

$$y_j^{probit} = (y_j^* > 0) \qquad \text{probit equation}$$

The dependent variable, however, in not always observed. Rather, the dependent variable for observation *j* is observed if

$$y_j^{select} = (z_j\gamma + u_{2j} > 0) \qquad \text{selection equation}$$

where

$$u_1 \sim N(0,1)$$

$$u_2 \sim N(0,1)$$

$$\text{corr}(u_1, u_2) = \rho$$

When ρ≠0, standard probit techniques applied to the first equation yield biased results. Heckman probit provides consistent, asymptotically efficient estimates for all the parameters in such models.

In this specific case, we want to estimate which variables have an impact on time poverty (y_j^*), but we are able to observe time poverty only on the observations that reported an unmet medical/dental need (y_j^{select}). Therefore, before estimating the impact of the independent variable on time poverty, we run a regression to estimate the impact of the independent variables of having an unmet medical/dental need. The selection equation should have at least one variable that is not in the probit equation (in our case these are three variables related to the health of the respondent). [84] The Inverse Mills Ration obtained through this equation is than used in the estimate of time poverty.

IV. The Gendered Impact of Austerity Measures

vii.a The Impact of Individual characteristics

Before analyzing how public expenditure on social protection influences unmet healthcare needs due to time poverty, we look at the impact of individual characteristics.

The individual characteristics employed in the model are presented in table 4.3. As mentioned above, unmet healthcare needs are reported only for those observations that stated an unmet healthcare need. Additional individual characteristics included in the equation are: age and age squared – employed for capturing the difference between the youngest and the oldest part of the sample; household type; presence of dependents (disabled persons, elderly persons, and small children); weekly hours of paid work; partner's weekly hours of paid work – employed only for observations reporting having a partner; highest education achieved; equivalized income – reported as the total household disposable income divided by equivalized household size. Three addition variables are included only in the sample selection equation,

[84] In EU-SILC the two variables are described as follows:
PH010: General health;
PH020: Suffer from any chronic (long-standing) illness or condition;
PH030: Limitation in activities because of health problems for at least the past six months.

because they are assumed to have an impact on unmet healthcare needs. They are: self-reported health status; chronic illness; limitation in activities.

Table 4.3: Description of micro variables employed in the model

	freq.	%		freq.	%
MEN	1,321,805	49.22	**WOMEN**	1,363,650	50.78
Unmet healthcare need due to time poverty: YES	23,227	15.69		20,987	12.58
NO	124,786	84.31		145,896	87.42
Unmet healthcare need: YES	151,045	11.73		167,858	12.01
NO	1,136,455	88.27		1,230,098	87.99
Household type: one person	178,188	13.84		163,264	11.68
two/more adults no children	505,974	39.3		530,564	37.95
two/more adults with children	576,515	44.78		620,621	44.39
single parents	21,943	1.7		76,698	5.49
other households	4,877	0.38		6,807	0.49
Presence disabled person/s: YES	191,882	14.9		203,057	14.53
NO	1,095,617	85.1		1,194,899	85.47
Presence elderly person/s 80+: YES	31,438	2.44		31,078	2.22
NO	1,256,062	97.56		1,366,877	97.78
Presence child/ren 0-6: YES	192,180	14.93		229,027	16.38
NO	1,095,319	85.07		1,168,929	83.62
Highest education achieved: less than second stage of secondary education	332,484	26.05		364,718	26.32
second stage of secondary education (ISCED 3)	640,775	50.21		665,124	48.01
recognized third level of education (ISCED 5-7)	302,845	23.73		355,665	25.67
Self-reported health status: very good	342,015	27.27		334,024	24.26
good	622,975	49.66		683,112	49.62
fair	213,776	17.04		270,606	19.66
bad	61,582	4.91		74,149	5.39
very bad	14,024	1.12		14,808	1.08
Chronic illness: YES	297,388	23.24		356,183	25.63
NO	982,361	76.76		1,033,584	74.37
Limitation in activities: NO	1,056,731	82.59		1,117,519	80.43
YES	154,661	12.09		198,821	14.31
YES, STRONGLY	68,150	5.33		73,127	5.26
	mean	**std.dev.**		**mean**	**std.dev.**
Age	41.59	13.33		42.12	13.33
Age 2	1907.85	1117.57		1952.09	1125.47
Weekly hours of paid work	29.6	21.16		20.41	19.48
Partner's weekly hours of paid work	10.97	17.43		31.38	20.97
Equivalized income (thousand euro)	17.01	15.33		16.39	14.99

Source: author's calculation based on EU-SILC 2007-2015

Table 4.4 reports the results of a regression that includes only micro variables. Separate regressions are run for women and men and for persons with or without a partner.[85] This was done for two reasons. First, because women and men experience time poverty in different ways, as the analysis will show. Second, because for persons with a partner the amount of time that the partner spends in paid work significantly increases the probability of reporting unmet healthcare needs due to time poverty.

Table 4.4 shows the impact of the independent variables on unmet healthcare needs due to time poverty and on unmet healthcare needs in general. As highlighted in the previous section the Heckman selection model runs two regressions, the first for the sample selection on unmet healthcare needs; the second on unmet healthcare needs due to time poverty. The first result highlighted by the model is that age has a different effect on persons that have a partner compared to those that do not. The probability of unmet healthcare needs due to time poverty increases with every year of age during the first half of the distribution, then it slowly decreases in the second half (age2). On the contrary, for persons that do not have a partner the probability of unmet healthcare needs due to time poverty decreases with every year of age during the first part of the age distribution, and it is not significant in the second. This could be due to household composition. Household composition is relevant from the point of view of experiencing unmet healthcare needs due to time poverty and has a different effect on women and men. For women belonging to a couple with one or more children the probability of unmet healthcare needs due to time poverty increases with respect to those belonging to a couple without children – the same is not true for men. Interestingly, when women single parents[86] have a lower probability of unmet healthcare needs due to time poverty than women belonging to a couple without children.[87]

[85] For a comparison with the regression run for persons with and without a partner together see tables T.13-T.19 in the appendix.
[86] There is a few observations reporting at the same time having a partner and being single parents. The hypothesis is that the partner does not live in the same household.
[87] This is the same finding that we have in the LIMTIP analysis in chapter 3. The presence of a partner in the household increases women time-poverty.

Focusing on persons that do not have a partner, the probability of unmet healthcare needs due to time poverty increases for women single parents compared to women single persons. While, for men to be a single parent it not significant in relation to the probability of unmet healthcare needs due to time poverty.

The presence of dependent persons has a different effect in relation to the category of the dependent. The presence of disabled persons in the household decreases the probability of unmet healthcare needs due to time poverty for all. On the contrary the presence of a small children increases the probability of unmet healthcare needs due to time poverty for all. The presence of an elderly person increases the probability of unmet healthcare needs due to time poverty for persons with a partner. While, it decreases the probability of unmet healthcare needs due to time poverty for women without a partner.

Table 4.4: Results of Heckman selection model for unmet healthcare needs due to time-poverty (marginal effects)

	Persons with a partner					Persons without a partner			
	Women		Men			Women		Men	
	Unmet needs due to time-poverty	Selection eq. Unmet needs	Unmet needs due to time-poverty	Selection eq. Unmet needs		Unmet needs due to time-poverty	Selection eq. Unmet needs	Unmet needs due to time-poverty	Selection eq. Unmet needs
Age	0.0146**	0.00860**	0.0264***	0.000964	**Age**	-0.0295**	0.0489***	-0.0222*	0.0316***
	(0.00629)	(0.00373)	(0.00874)	(0.00429)		(0.0136)	(0.00409)	(0.0132)	(0.00409)
Age2	-0.000197***	-0.000260***	-0.000384***	-0.000152***	**Age 2**	0.000235	-0.000646***	8.07e-05	-0.000454***
	(7.14e-05)	(4.07e-05)	(9.47e-05)	(4.59e-05)		(0.000158)	(4.99e-05)	(0.000153)	(4.70e-05)
Household type (Baseline: two/more adults no children): two/more adults with children	0.0943***	0.00637	0.0297	-0.00715					
	(0.0197)	(0.00922)	(0.0225)	(0.0101)					
single parent	-0.722*	-0.102	0.0352	-0.230	**Household type (Baseline: single person): single parent**	0.160***	0.0335**	0.0751	-0.140***
	(0.404)	(0.240)	(0.458)	(0.238)		(0.0376)	(0.0156)	(0.0759)	(0.0233)
other households	-0.0363	0.157***	-0.284***	0.212***	**other households**	0.123	0.155*	-0.742	0.0696
	(0.0932)	(0.0601)	(0.104)	(0.0731)		(0.163)	(0.0837)	(0.456)	(0.114)
Presence disabled person/s	-0.0652***	0.104***	-0.152***	0.108***	**Presence disabled person/s**	-0.235***	-0.108***	-0.228***	-0.161***
	(0.0250)	(0.0163)	(0.0271)	(0.0168)		(0.0624)	(0.0362)	(0.0690)	(0.0403)
Presence elderly person/s (80+)	0.169***	-0.0605***	0.0937*	-0.0834***	**Presence elderly person/s (80+)**	-0.891**	-0.266	-0.458	0.0686
	(0.0542)	(0.0177)	(0.0508)	(0.0166)		(0.409)	(0.226)	(0.625)	(0.350)
Presence small child/ren (0-6)	0.295***	0.0301***	0.0641***	0.0309***	**Presence small child/ren (0-6)**	0.197***	0.125***	0.368**	0.133**
	(0.0223)	(0.0104)	(0.0240)	(0.0112)		(0.0518)	(0.0204)	(0.187)	(0.0641)
Weekly hours paid work	0.0156***	0.000678**	0.0194***	0.000404	**Weekly hours paid work**	0.0182***	-0.000476	0.0203***	-0.00102*
	(0.000594)	(0.000278)	(0.000631)	(0.000308)		(0.00136)	(0.000517)	(0.00125)	(0.000543)
Partner's weekly hours paid work	0.00285***	-0.00172***	0.000985**	-0.000534**					
	(0.000446)	(0.000219)	(0.000493)	(0.000230)					
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.218***	-0.119***	0.218***	-0.122***	**Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)**	0.222***	-0.107***	0.127*	-0.0932***
	(0.0244)	(0.0108)	(0.0344)	(0.0120)		(0.0447)	(0.0183)	(0.0703)	(0.0187)
recognized third level education (ISCED 5-7)	0.440***	-0.151***	0.378***	-0.167***	**recognized third level education (ISCED 5-7)**	0.509***	-0.119***	0.336***	-0.175***
	(0.0299)	(0.0158)	(0.0400)	(0.0184)		(0.0446)	(0.0268)	(0.0744)	(0.0217)
								Continues	

Continuing from previous page	Women		Men			Women		Men	
	Unmet needs due to time-poverty	Selection eq. Unmet needs	Unmet needs due to time-poverty	Selection eq. Unmet needs		Unmet needs due to time-poverty	Selection eq. Unmet needs	Unmet needs due to time-poverty	Selection eq. Unmet needs
Equivalized income	0.00480***	-0.00682***	0.00660***	-0.00652***	Equivalized income	0.00496***	-0.00467***	0.00664***	-0.00535***
	(0.000987)	(0.00134)	(0.00107)	(0.00121)		(0.00131)	(0.00166)	(0.00141)	(0.00132)
Self-reported health status (Baseline: very good): good		0.261***		0.250***	Self-reported health status (Baseline: very good): good		0.237***		0.283***
		(0.0133)		(0.0121)			(0.0196)		(0.0316)
fair		0.594***		0.571***	fair		0.571***		0.646***
		(0.0213)		(0.0190)			(0.0259)		(0.0391)
bad		0.733***		0.645***	bad		0.739***		0.824***
		(0.0253)		(0.0215)			(0.0409)		(0.0446)
very bad		0.870***		0.752***	very bad		0.885***		1.033***
		(0.0311)		(0.0307)			(0.0488)		(0.0573)
Chronic illness		0.167***		0.151***	Chronic illness		0.138***		0.0697***
		(0.0164)		(0.0150)			(0.0221)		(0.0243)
Limitation in activities (Baseline: no): yes		0.174***		0.178***	Limitation in activities (Baseline: no): yes		0.185***		0.214***
		(0.0211)		(0.0206)			(0.0203)		(0.0258)
yes, strongly limited		0.143***		0.119***	yes, strongly limited		0.363***		0.387***
		(0.0299)		(0.0378)			(0.0463)		(0.0536)
Constant	-2.474***	-1.824***	-2.597***	-1.527***	Constant	-1.178***	-2.583***	-1.665***	-2.080***
	(0.189)	(0.126)	(0.250)	(0.139)		(0.380)	(0.142)	(0.315)	(0.145)
Corr	0.0824**		-0.00596		Corr	-0.0332		0.138*	
	(0.0399)		(0.0543)			(0.0786)		(0.0825)	
Observations	858,434	858,434	772,710	772,710	Observations	202,510	202,510	142,573	142,573
Robust standard errors in parentheses					Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1					*** p<0.01, ** p<0.05, * p<0.1				
Note: robust standard errors clustered by group(country year)					Note: robust standard errors clustered by group(country year)				

Source: author's calculation based on EU-SILC 2007-2015

The amount of weekly hours of paid work increases the probability of unmet healthcare needs due to time poverty for all. The same as the amount of weekly hours of paid work of the partner. However, the probability increases of almost 0.3 percent for every hour of partner's paid work for women and much less for men (less than 0.1 percent).

Finally, education and equivalized income, that are strictly related to the number of hours of paid work, increase the probability of unmet healthcare needs due to time poverty for all.

vii.b The Impact of Public Expenditure in Social Protection

After presenting the role of individual characteristics on the probability of unmet healthcare needs due to time poverty, the results obtained by including the macro variables relative to austerity policies in the model are presented in this section.

There are seven variables related to public expenditure in social protection that have been included in the model (also described in table 4.5 below): [88]

1. austerity, it is the variable that describes the government deficit/surplus in terms of net borrowing (-) or net lending (+);

2. total social protection expenditure, it is the variable that includes all social protection benefits and transfers, [89] made to relieve households and individuals of the burden of one or more social risks or needs;

3. family and children related benefits, it is the variable that reports the yearly public expenditure in family children benefits;

[88] All the variable on public expenditure were employed considering the Harmonised Index of Consumer Prices (HICP). They represent the early value at national level. They were divided by the population, and the amount obtained was assigned to each observation according to year and country. They are expressed in thousand euros.
[89] For more information see https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Government_expenditure_on_social_protection#Expenditure_on_.27social_protection.27

4. child day care, it is the variable that reports the yearly public expenditure in day care services for children;

5. sickness and health care benefits, it is the variable that reports the yearly public expenditure in sickness and health care benefits;

6. old age benefits, it is the variable that reports the yearly public expenditure in old age benefits;

7. disability benefits, it is the variable that reports the yearly public expenditure in disability benefits.

Table 4.5: Description of macro variables included in the model (thousand euro per capita)

Variable	Obs	Mean	Std. Dev.	Min	Max
Austerity	2,685,455	-37.0245	578.0247	-6281.57	6696.038
Family and children related benefits	2,685,455	0.573384	0.363365	0.05391	3.27449
Child day care	2,685,455	0.09027	0.095069	0	0.67166
Sickness and healthcare benefits	2,685,455	1.953579	0.978193	0.16862	4.63102
Old age benefits	2,685,455	2.677334	1.189565	0.29188	5.59584
Disability benefits	2,685,455	0.487289	0.270527	0.05159	2.07095
Total expenditure in social protection	2,685,455	7.203598	3.389889	0.57696	20.19602

Source: author's calculation based on ESPROSS 2007-2015

The macro variables are included one by one in the model presented above together with the individual characteristics' variables. I run separate regressions for each macro variable.[90] In table 4.6, I report the results exclusively for these variables. In fact, it should be noticed that when I include the macro variables in the regression the results for the individual characteristics' variables do not vary substantially.

There are three main results that are shown by the model. First of all, the public expenditure in social protection increases the probability of unmet healthcare needs due to time poverty, especially for women. In particular, for each thousand euro spent in child day care the probability of unmet healthcare needs due to time poverty for women with a partner almost quadruplicates. Something similar, even if on

[90] For the complete results for each regression see tables T.5-T.12 in the appendix.

a smaller measure (+119 percent) happens for family children benefits. In general, for each thousand euro spent in social protection the probability of unmet healthcare needs due to time poverty increases of 18 percent for women with a partner.

For what concerns men with a partner, only sickness and health care benefits have an impact (+50 percent) on the probability of unmet healthcare needs due to time poverty. For them, too, total expenditure in social protection increases the probability of unmet healthcare needs due to time poverty (+11 percent).

For women without a partner the impact of public expenditure in social protection on the probability of unmet healthcare needs due to time poverty is similar to that reported for women with a partner. For men without a partner the impact of expenditure in social protection on the probability of unmet healthcare needs due to time poverty is the smallest. Each thousand euro spent in social protection increases their probability of unmet healthcare needs due to time poverty of 9 percent.

The second relevant result is that public expenditure in social protection decreases the probability of unmet healthcare needs, with the only exception of old age benefits, that have the opposite effect.

Finally, the austerity variable shows that more austerity entailed higher probability of unmet healthcare needs for the population, for women more than for men. For what concerns the probability of unmet healthcare needs due to time poverty, austerity decreased that of women without a partner.

The negative impact of public expenditure in social protection on unmet healthcare needs caused by time poverty, in the sense that expenditure in social protection increases time poverty, goes in the opposite direction from our expectations. However, an explanation could be found in possible relation between public expenditure in social protection and hours of paid work. Expenditure in social protection could have a double effect. On one side, it could contribute creating new jobs in the public services sector. On the other side, lifting people from a part of the care responsibilities it could encourage more people to enter the labour

market or to increase their amount of hours of paid work[91], for example, working full-time instead that part-time.

In order to understand these results, I run a simple linear regression for assessing the impact of the macro variables on the weekly hours of work.[92] The results presented in table 4.7 highlight that public expenditure in social protection increases the number of weekly hours of work both for women and for men. In particular, child day care and family children benefits have larger coefficients.

[91] This is not uncommon. For example, increasing difficulties experienced by women in terms of work-life balance linked with measures of empowerment were highlighted, especially in developed countries, by a study on microfinance (Corsi et al. 2006).
[92] See tables T.20-T.25 in the appendix.

Table 4.6: Results of Heckman selection model for unmet healthcare needs due to time-poverty, only macro variables reported (marginal effects)

	Persons with a partner					Persons without a partner			
	Women		Men			Women		Men	
	Unmet needs due to time-poverty	**Selection eq. Unmet needs**	**Unmet needs due to time-poverty**	**Selection eq. Unmet needs**		**Unmet needs due to time-poverty**	**Selection eq. Unmet needs**	**Unmet needs due to time-poverty**	**Selection eq. Unmet needs**
Austerity	1.66e-06	3.16e-05**	-1.60e-05	3.51e-05*	**Austerity**	-7.49e-05*	4.46e-05**	3.52e-05	3.34e-05
	(3.30e-05)	(1.60e-05)	(3.61e-05)	(1.88e-05)		(4.18e-05)	(1.89e-05)	(5.05e-05)	(2.44e-05)
Family children benefits	1.192**	-1.172***	0.733	-1.286***	**Family children benefits**	0.761*	-1.578***	-0.480	-1.826***
	(0.605)	(0.386)	(0.715)	(0.475)		(0.459)	(0.421)	(0.527)	(0.476)
Child day care	3.966***	-1.895**	2.285	-2.160**	**Child day care**	2.936***	-2.992***	-1.367	-3.578***
	(1.145)	(0.961)	(1.496)	(1.074)		(0.965)	(0.934)	(1.153)	(0.910)
Sickness and health benefits	0.664***	-0.226*	0.501***	-0.314**	**Sickness and health benefits**	0.526***	-0.332**	0.257	-0.485***
	(0.112)	(0.135)	(0.154)	(0.145)		(0.106)	(0.156)	(0.166)	(0.172)
Old age benefits	0.491**	0.511***	0.234	0.477***	**Old age benefits**	-0.0894	0.516***	0.163	0.398*
	(0.207)	(0.126)	(0.220)	(0.151)		(0.214)	(0.160)	(0.220)	(0.218)
Disability benefits	0.909	-0.249	0.723	-0.545	**Disability benefits**	0.594	-0.538	0.0881	-0.387
	(0.654)	(0.547)	(0.722)	(0.608)		(0.438)	(0.538)	(0.459)	(0.564)
Total expenditure for social protection	0.182***	0.0220	0.111**	0.00342	**Total expenditure for social protection**	0.128***	-0.0289	0.0956*	-0.0451
	(0.0384)	(0.0377)	(0.0488)	(0.0423)		(0.0475)	(0.0432)	(0.0558)	(0.0415)
Robust standard errors in parentheses					**Robust standard errors in parentheses**				
***** p<0.01, ** p<0.05, * p<0.1**					***** p<0.01, ** p<0.05, * p<0.1**				
Note: robust standard errors clustered by group(country year) The impact of each variable is estimated with a separate regression. All variables are shown together here for ease of reading.					**Note: robust standard errors clustered by group(country year) The impact of each variable is estimated with a separate regression. All variables are shown together here for ease of reading.**				

Source: author's calculation based on EU-SILC 2007-2015

Table 4.7: Results for the regressions on weekly hours of paid work

	persons with a partner		**persons without a partner**	
	Women	**Men**	**Women**	**Men**
Austerity	-0.000129	-0.000432*	-0.000382*	-0.000595***
	(0.000117)	(0.000230)	(0.000195)	(0.000217)
Family children benefits	5.299**	10.04***	6.468***	10.75***
	(2.210)	(3.196)	(2.190)	(2.836)
Child day care	24.83***	28.20***	18.38***	28.14***
	(3.487)	(6.441)	(4.440)	(5.470)
Sickness and health benefits	3.302***	4.906***	2.880***	4.750***
	(0.336)	(0.748)	(0.547)	(0.604)
Old age benefits	1.634**	0.477	-2.351**	-3.149**
	(0.777)	(1.266)	(0.994)	(1.315)
Disability benefits	5.698*	3.626	3.366	3.167
	(2.935)	(3.672)	(3.290)	(3.684)
Total expenditure for social protection	1.149***	1.245***	0.935***	1.124***
	(0.181)	(0.220)	(0.172)	(0.219)
Robust standard errors in parentheses ***** p<0.01, ** p<0.05, * p<0.1** **Note: robust standard errors clustered by group(country year)** **The impact of each variable is estimated with a separate regression. All variables are shown together here for ease of reading.**				

Source: author's calculation based on EU-SILC 2007-2015

V. Conclusions

The review of the literature on the gender impact of austerity measures suggests that women should suffer more than men the effects of austerity measures because these would follow the channel of transmission of unpaid care and domestic work. However, to date, the empirical literature on this topic remains limited. This is due to the difficulties of assessing variations in the amount of time devoted to unpaid care and domestic work, especially at international level, due to the limited availability of time-use data.

The present study tries to overcome this limit by the employment of a question present in the EU-SILC that is linked to the experience of time poverty. Using the answer to this question the author built a variable that reports the possibility of unmet healthcare needs caused by time poverty. In order to use this variable a Heckman probit model has been employed to solve the issue of sample selection.

The model run on individual characteristics shows that the dependent variable is a good exemplification of time poverty. In fact, the results show that sex, household composition, presence of dependent persons in the household and number of weekly hours of work impact the probability of unmet healthcare needs due to time poverty. Therefore, the variable is able to capture the effects of both paid and unpaid work. Moreover, the results are in line with the time-use analysis presented in the second chapter of this thesis.

However, the data analysis on macro variables revealed an unexpected result. The model, in fact, shows that the higher the public expenditure in social protection the higher the probability of unmet healthcare needs due to time poverty, for women in particular. The variables directed to family and children (family and children benefits and child day care) have the highest coefficients among all the macro variables, highlighting that public expenditure in social protection increases for women more than for men and for women with a partner more than for single women the probability of unmet healthcare needs due to time poverty.

This might be due to the fact that the same variables have a positive impact on the number of weekly hours of work – as confirmed by the analysis. Therefore, the impact of expenditure in social protection on time poverty could be mediated by the number of hours of paid work. Expenditure in social protection could, on one side, contribute to increasing the number of hours of paid work among the population by creating new jobs in the public services sector, on the other side, lift people from a part of the care responsibilities encouraging more persons to enter the labor market or to increase their amount of hours of paid work, for example, working full-time instead that part-time. In this case, we could hypothesize, for what concerns women, that the hours of unpaid care and domestic work that public services are able to lift are overcompensated by an increased engagement in the labor market.

These hypotheses deserve to be tested in future research, together with a second element, the effect of the increased engagement of women in the labor market on the division of unpaid care and domestic work between women and men. In fact, our analysis also highlights that every additional hour of paid work of the partner increases women's probability of unmet healthcare needs due to time poverty more than that of men. This could be signal of the limited redistribution of unpaid care and domestic work between the partners when women increase their engagement in the labor market.

In the end, the present analysis is limited by the fact that it could not employ time-use data, which represent the best data source for the analysis of unpaid care and domestic work and time poverty, as shown in the previous chapter. A second limit is represented by the fact that the question used for this work is not collected in EU-SILC panel data but only in the cross-sectional part, putting important constraint to the analysis of the phenomenon across time.

On the other hand, the results show that the employment of the unmet need due to time poverty variable for the assessment of time poverty is an opportunity that could be further developed in future research. In particular, the model adopted in this analysis could be developed for including the impact, for

example, of benefits and social transfers at recorder at household level or evaluating the links between time poverty and labor market participation.[93]

[93] For this analysis the author decided to adopt the hypothesis, shares by the LIMTIP studies, that there is a direct causality between hours of paid work and time-poverty. Therefore, if the sum of paid and unpaid work exceeds the available time the individual either find market substitutes for household production or reduce time devoted to leisure and personal care.

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Annex

European Survey on Income and Living Conditions (EU-SILC)

The European Survey on Income and Living Conditions (EU-SILC)[94] has been progressively implemented since 2003. EU-SILC represents a powerful instrument for the analysis of the economic and social condition of the European Union population. EU-SILC has boosted the possibilities of carrying out comparative analyses of income distribution and living conditions in Europe.

In the 1990s Eurostat launched the first EU-scale survey — the European Community Household Panel (ECHP). The ECHP ran from 1994 to 2001 in 14 of the then 15 Member States (the exception being Sweden). Despite a high level of overall harmonisation in most countries, the ECHP suffered from some comparability and timeliness issues. It was with the triple aim of solving the ECHP's technical problems, conforming to the internationally agreed definition of income and extending the data collection to the enlarged EU (and beyond) that in 2003 Eurostat stopped the ECHP and launched EU-SILC.

The EU-SILC covers only people living in private households. It was launched in 2003 in seven countries and later was gradually extended to all EU countries and beyond (it is implemented in Iceland, Norway, Switzerland and Turkey, and tested the Former Yugoslav Republic of Macedonia and Serbia).

All EU Member States are required to implement EU-SILC, which is based on the idea of a common 'framework' as opposed to a common 'survey'. The common framework consists of common procedures, concepts and classifications, including harmonised lists of target variables to be transmitted to Eurostat. Two types of annual data are collected through EU-SILC and provided to Eurostat: cross-sectional data pertaining to a given time period, and longitudinal data pertaining to changes over time at the individual level are observed periodically over a four-year period.

[94] The survey is extensively described in Atkinson and Marlier (2010), that is the reference for this paragraph.

EU-SILC is a multi-dimensional dataset focused on income but at the same time covering housing, labour, health, demography, education and deprivation, to enable the multidimensional approach of social exclusion to be studied. It consists of primary (annual) and secondary (*ad hoc* modules) target variables, all of which are forwarded to Eurostat. The primary target variables relate to either household or individual (for persons aged 16 and more) information is grouped into areas: at the household level basic/core data, income, housing, social exclusion and labour information; at the personal level basic/demographic data, income, education, labour information and health. The secondary target variables are introduced every four years or less frequently only in the cross-sectional component.

Data are based on a nationally representative probability sample of the population residing in private households within the country, irrespective of language, nationality or legal residence status. All private households and all persons aged 16 and over within the household are eligible for the operation. Representative probability samples must be achieved both for households and for individual persons in the target population. The sampling frame and methods of sample selection should ensure that every individual and household in the target population is assigned a known probability of selection that is not zero.

Appendix

Table T.1: Descriptive analysis of EU-SILC 2007-2015

	Freq.	%		Freq.	%
Male	1,321,805.1	49.22	**Female**	1,363,650.9	50.78
18-24	169,427	13.16	18-24	170,159	12.17
25-34	261,977	20.35	25-34	281,892	20.16
35-44	295,082	22.92	35-44	315,272	22.55
45-54	289,160	22.46	45-54	315,862	22.59
55-65	271,854	21.11	55-65	314,771	22.52
AT	24,417.93	1.9	AT	25,774.64	1.84
BE	30,568.90	2.37	BE	32,096.45	2.3
BG	21,874.98	1.7	BG	23,051.93	1.65
CY	2,258.29	0.18	CY	2,538.82	0.18
CZ	20,389.76	1.58	CZ	26,722.20	1.91
DE	212,563.02	16.51	DE	228,765.65	16.36
DK	9,470.00	0.74	DK	9,772.45	0.7
EE	3,676.03	0.29	EE	4,183.14	0.3
EL	27,765.61	2.16	EL	29,351.22	2.1
ES	127,534.16	9.91	ES	133,284.16	9.53
FI	7,822.79	0.61	FI	8,268.85	0.59
FR	159,833.28	12.41	FR	175,492.07	12.55
HR	5,652.05	0.44	HR	6,616.41	0.47
HU	28,701.32	2.23	HU	31,577.21	2.26
IE	12,633.98	0.98	IE	13,480.89	0.96
IT	169,780.37	13.19	IT	179,946.39	12.87
LT	8,300.31	0.64	LT	9,730.10	0.7
LU	1,387.71	0.11	LU	1,441.17	0.1
LV	5,636.64	0.44	LV	6,508.88	0.47
MT	1,111.94	0.09	MT	1,140.43	0.08
NL	22,950.31	1.78	NL	24,431.95	1.75
PL	103,138.53	8.01	PL	115,795.55	8.28
PT	27,991.88	2.17	PT	31,069.51	2.22
RO	61,366.25	4.77	RO	65,564.91	4.69
SE	15,170.49	1.18	SE	15,012.34	1.07
SI	2,373.22	0.18	SI	2,457.48	0.18
SK	16,299.53	1.27	SK	17,777.98	1.27
UK	156,830.75	12.18	UK	176,103.27	12.6
2007	144,708.53	11.24	2007	155,218.61	11.1
2008	148,182.44	11.51	2008	159,730.30	11.43
2009	146,602.88	11.39	2009	159,067.15	11.38
2010	147,225.20	11.43	2010	160,212.11	11.46
2011	146,499.20	11.38	2011	159,649.50	11.42
2012	151,525.15	11.77	2012	163,494.98	11.7
2013	149,788.07	11.63	2013	161,886.59	11.58
2014	149,706.62	11.63	2014	161,007.77	11.52
2015	103,261.90	8.02	2015	117,689	8.42

Source: author's calculation based on EU-SILC 2007-2015

Table T.2: Summary of variables used in the Heckman probit model (population aged 18 up to 65 years old) EUSILC

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	2685806			2007	2015
Country	2685806			1	28
Unmet need reported	2685806	0.117522	0.322042	0	1
Unmet need caused by time poverty reported	314955	0.127612	0.333658	0	1
Weekly hours paid work	2685806	24.26535	20.9992	0	198
Partner weekly hours paid work	1684223	21.10742	21.8183	0	198
Age	2685806	42.86008	13.61224	18	65
Female	2685806	0.520566	0.499577	0	1
Presence disabled person	2685806	0.154655	0.361575	0	1
Presence child under 7 yo	2685806	0.150509	0.35757	0	1
Presence of person over 80yo	2685806	0.030964	0.17322	0	1
Max level of education	2661955	1.97618	0.707549	1	3
Type of household	2685806	2.463624	0.727652	1	5
Equivalized income[95]	2685806	14.70736	15.09695	-23.932	344.6197
General health	2631424	2.106265	0.882353	1	5
Chronic illness	2669867	0.246673	0.431075	0	1
Limitation in activity	2669361	1.240128	0.53179	1	3
Austerity	2685806	-45.9478	706.0349	-6281.57	6696.038
Family children benefits[96]	2666586	0.513155	0.528192	0.05391	3.27449
Children day care	2666586	0.084627	0.127589	0	0.67166
Sickness benefits	2666586	1.586723	1.084826	0.16862	4.63102
Old age benefits	2666586	2.260246	1.373828	0.29188	5.59584
Disability benefits	2666586	0.45539	0.410758	0.05159	2.07095
Total expenditure in social protection	2666586	6.052075	4.127455	0.57696	20.19602

Source: author's calculation based on EU-SILC 2007-2015

[95] Equivalized income is expressed in thousand euros. The upper one percent of the upper one percent of the income distribution is used as upper bound limit. The lower one percent of the income distribution is used as the lower bound limit. This was required for normalizing the distribution.

[96] All variables related to benefits and childcare are expressed in thousand euros.

Table T.3: Public expenditure in social protection by year and by country (euro per capita at 2010 prices) ESSPROS

GEO/ TIME	2007	2008	2009	2010	2011	2012	2013	2014	2015
AT	9684.86	9971.79	10385.24	10479.03	10350.31	10458.33	10534.57	10601.49	10658.88
BE	9043.28	9398.26	9867.89	9849.13	9882.97	9795.45	9939.03	10090.74	10259.76
BG	644.37	762.56	829.45	879.26	898.03	889.16	965.82	1035.66	1054.63
CY	4039.35	4358.83	4511.70	4368.05	4551.22	4493.03	4612.27	4013.98	4115.07
CZ	2766.11	2791.64	3004.33	2998.05	2981.11	2990.37	2959.18	3009.85	3071.71
DE	8490.30	8657.68	9376.55	9433.07	9492.28	9556.59	9730.77	9909.64	10180.46
DK	13294.34	13225.55	13955.23	14219.88	14074.45	14062.68	14417.54	14806.24	14785.81
EE	1623.95	1856.39	2042.47	1944.88	1865.25	1863.86	1888.56	1976.33	2181.44
EL	4892.21	5201.91	5431.61	5264.56	5018.39	4790.35	4381.44	4395.07	4483.04
ES	5067.44	5261.12	5800.68	5715.80	5663.85	5399.84	5360.19	5340.32	5411.83
FI	9312.65	9506.06	9999.23	10223.45	10195.74	10403.65	10643.64	10825.01	10991.31
FR	9500.56	9583.96	10084.43	10212.37	10284.45	10513.14	10651.63	10801.58	10886.40
HR		2174.46	2250.80	2233.83	2193.82	2181.43	2143.40	2206.05	2281.56
HU	2307.47	2347.49	2249.68	2225.83	2162.48	2067.64	2096.70	2121.58	2172.17
IE	7458.14	7814.26	8805.48	9138.86	8940.98	8727.87	8415.61	8202.61	8305.16
IT	7363.80	7489.81	7762.70	7809.69	7701.92	7601.70	7532.76	7555.50	7691.29
LT	1144.06	1234.79	1424.58	1549.36	1416.52	1404.49	1495.89	1526.77	1641.28
LU	16110.81	16840.36	17777.33	17870.51	17506.32	17774.32	18366.57	18545.70	18570.88
LV	1505.56	1706.34	1801.66	1730.54	1684.94	1707.99	1689.67	1767.35	1856.40
MT	2737.60	2849.92	2990.98	3078.93	3048.42	3126.92	3210.00	3342.00	3371.10
NL	10123.47	10434.02	11184.09	11285.56	11468.15	11558.28	11568.04	11518.77	11522.03
PL	1586.47	1725.46	1882.18	1874.38	1837.93	1866.59	1961.74	2013.42	2135.34
PT	3940.64	3971.26	4344.36	4386.00	4260.33	4170.97	4389.23	4339.32	4296.75
RO	785.12	929.73	1051.66	1083.57	1057.01	1003.80	1012.67	1043.05	1091.07
SE	11043.68	11110.80	11408.18	11335.76	11332.50	11590.72	11895.93	11918.86	12229.14
SI	3983.01	4057.98	4277.50	4322.33	4341.22	4240.29	4167.10	4183.68	4304.06
SK	1955.19	2031.83	2217.47	2285.56	2248.02	2256.47	2305.65	2385.87	2436.37
UK	7741.38	7887.48	8313.54	8496.06	8484.58	8548.24	8474.39	8399.48	8590.07

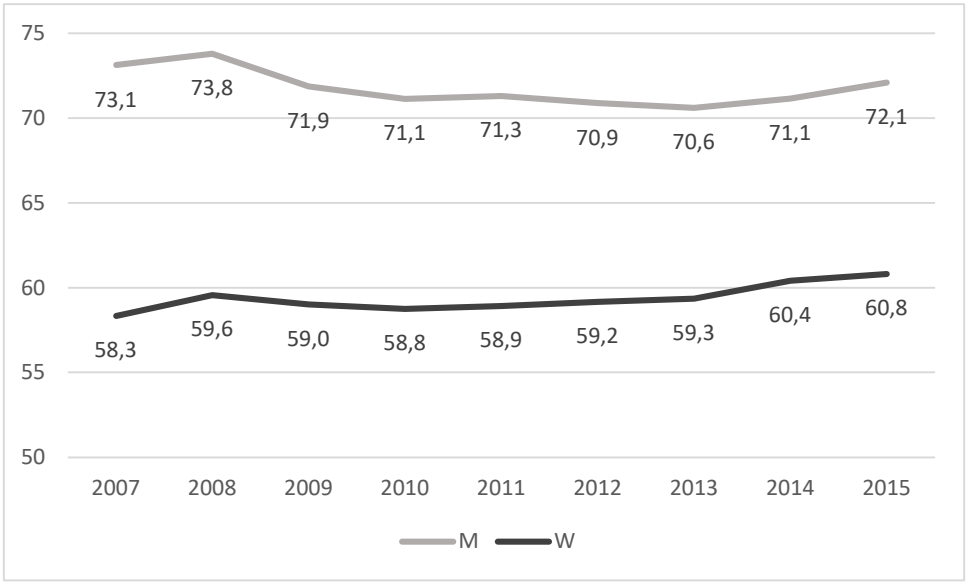
Source: author's calculation based on EU-SILC 2007-2015

Table T.4: Percentage of unmet need caused by time poverty by year and country (18-65 years old), EU-SILC

	2007	2008	2009	2010	2011	2012	2013	2014	2015
AT	17.63418	11.412	9.74343	7.40635	11.20377	14.43762	16.59034	5.79371	13.39443
BE	16.61673	9.96734	15.82157	18.2509	17.44927	14.82964	12.66457	8.15996	8.95962
BG	7.96862	11.01596	11.15693	8.63088	9.7868	7.17979	7.2765	7.00263	4.88704
CY	13.91993	11.70955	14.39391	11.85773	13.06121	4.08374	3.53679	4.6617	3.53303
CZ	23.41279	22.15718	19.90352	19.68324	21.42203	22.57978	23.366	16.73681	20.93899
DE	13.52016	21.81398	20.24818	20.53001	21.6373	21.37928	21.49316	19.76349	10.8747
DK	18.68344	18.64288	13.97999	11.35018	10.83365	8.33946	6.91183	8.83371	10.85297
EE	9.75744	6.0021	4.47389	6.14147	3.59734	3.49426	3.48291	2.31738	2.64035
EL	0	11.17222	13.58682	16.38474	7.95558	10.19147	9.6246	7.11934	5.53009
ES	21.53778	28.11744	20.60041	21.5757	19.82689	18.52213	17.32458	14.12958	5.62189
FI	2.05661	1.61207	0.29964	1.25479	1.08914	1.54673	1.32036	0.54221	0.45366
FR	14.73004	16.75943	17.33491	18.69607	18.51438	18.71256	18.79414	17.60776	17.32479
HR	0	0	0	23.17444	19.22848	17.88016	19.277	18.46058	20.46575
HU	20.28715	20.63397	24.7465	18.52829	16.39278	16.78114	15.98092	18.66085	19.05076
IE	8.32322	4.5613	6.40984	1.66522	1.64965	2.82838	1.76276	3.44648	2.42101
IT	11.22221	12.12548	11.63859	12.33803	7.58867	5.99905	5.64407	4.52953	4.0274
LT	7.77705	7.40216	3.6057	2.77232	6.94704	6.1964	5.14029	4.24219	6.41609
LU	19.02416	14.84751	15.96368	12.07058	11.12623	9.66569	14.89471	13.27036	17.03566
LV	15.66941	20.46998	12.89633	9.02761	7.97693	8.20871	9.41291	10.41275	8.19053
MT	0	16.48227	7.69698	5.99111	11.04153	8.62471	10.74412	11.99983	10.37395
NL	22.11792	9.32796	9.36432	8.36504	8.13283	9.06078	12.35983	9.38168	0
PL	23.81685	21.22772	20.8981	20.23322	19.36633	17.46635	17.16727	18.56641	20.66688
PT	10.02145	7.56327	7.6913	7.12839	7.55532	8.32286	8.0376	8.07717	7.6887
RO	12.76094	11.07816	10.06187	7.79688	6.34367	6.17171	7.85302	5.81434	5.99495
SE	17.26516	15.6556	14.60841	15.7996	15.9442	16.57256	17.35636	14.77563	13.99979
SI	4.40689	2.33621	5.28825	10.31297	11.1563	7.24396	5.53586	12.45118	5.44811
SK	32.75636	19.46536	18.78864	17.28919	16.44816	15.80984	22.07101	18.71075	21.74006
UK	3.10339	4.14362	2.91292	3.03905	3.80171	3.34823	5.39874	6.45575	5.97942

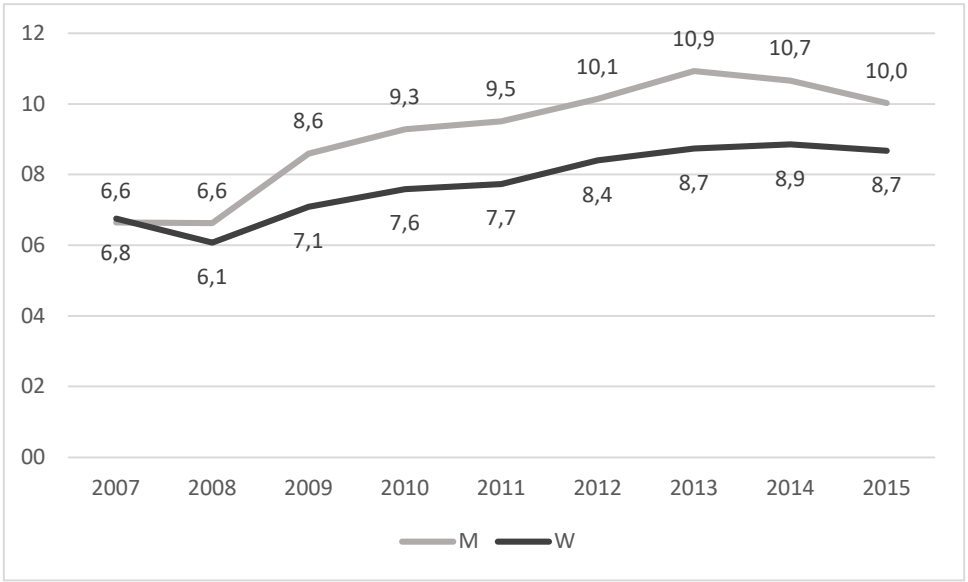
Source: author's calculation based on EU-SILC 2007-2015

Figure F.1: Percentage of employed persons on total population by sex, EU28[97] population between 18 and 64 years old (EU-SILC 2007-2015)



Source: author's calculation based on EU-SILC 2007-2015

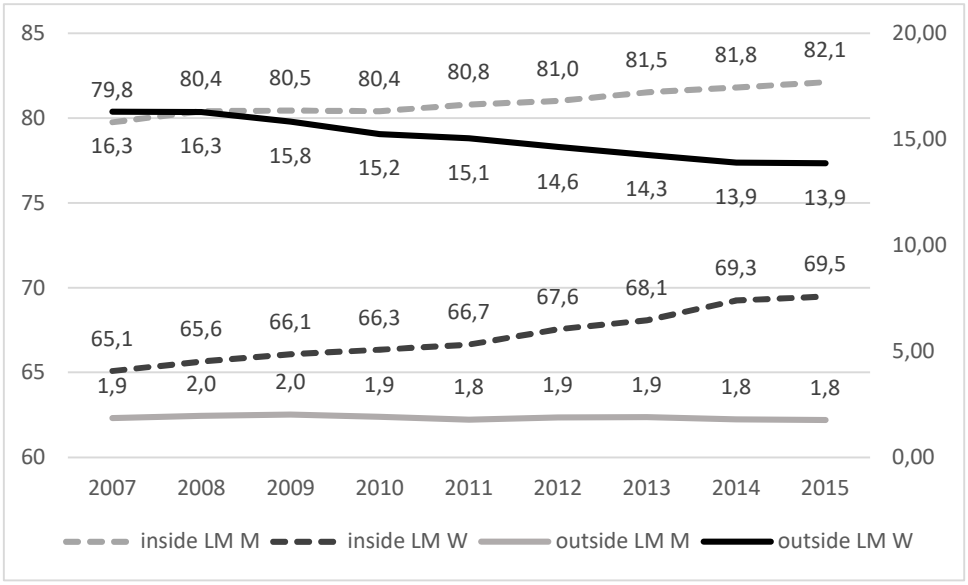
Figure F.2: Percentage of unemployed persons on total population by sex, EU28[98] population between 18 and 64 years old (EU-SILC 2007-2015)



Source: author's calculation based on EU-SILC 2007-2015

[97] Greece and Malta from 2008. Croatia from 2010.
[98] Greece and Malta from 2008. Croatia from 2010.

Figure F.3: Percentage of persons inside and outside labour market[99] on total population by sex, EU28[100] population between 18 and 64 years old (EU-SILC 2007-2015)

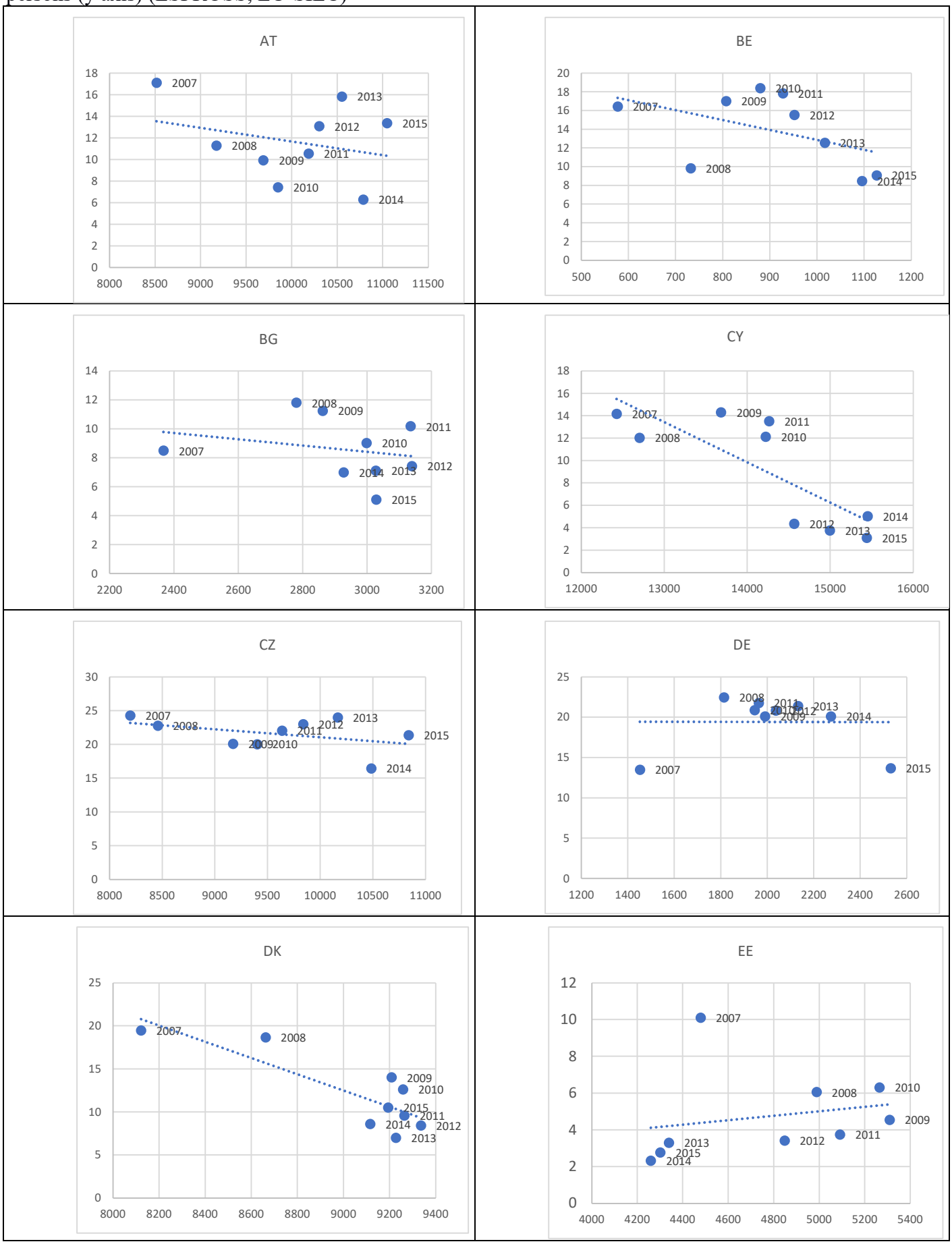


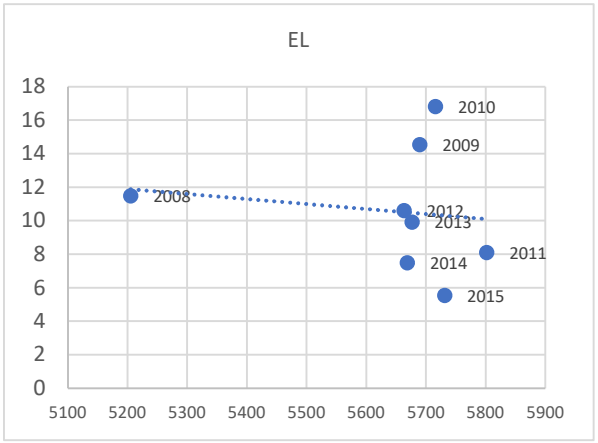
Source: author's calculation based on EU-SILC 2007-2015

[99] The definition of persons inside labour market include employed and unemployed persons. The definition of persons outside labour market include only individuals that are not undertaking education or training, retired, disabled or in compulsory military service.

[100] Greece and Malta from 2008. Croatia from 2010.

Figure F.4: Public spending in social protection (euro per capita, x axis) and percentage of time-poor persons (y axis) (ESPROSS, EU-SILC)

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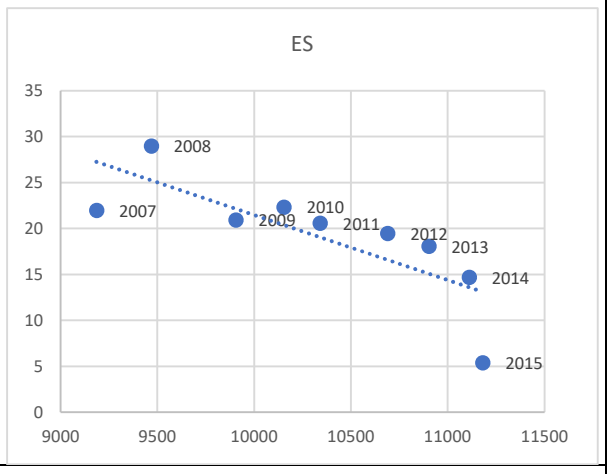
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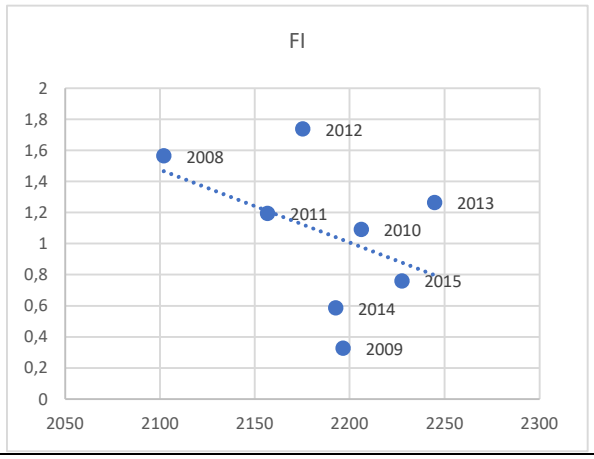
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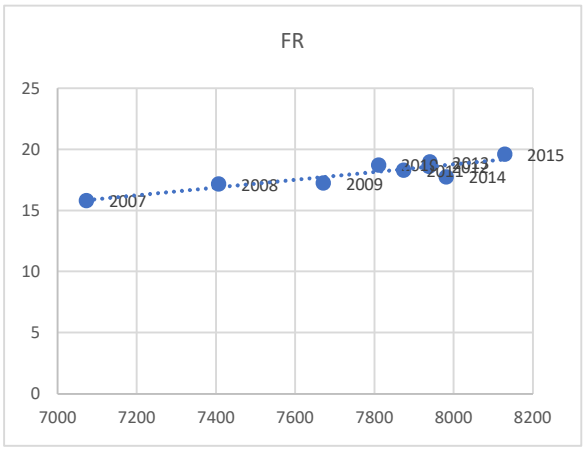
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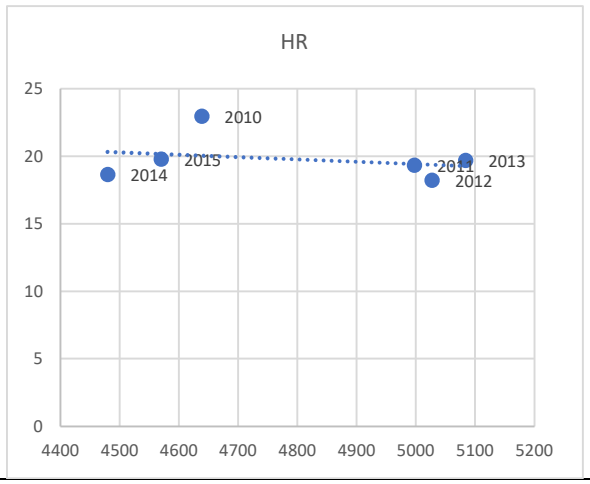
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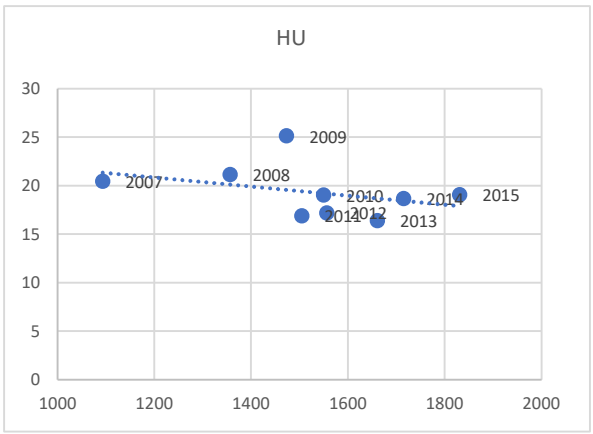
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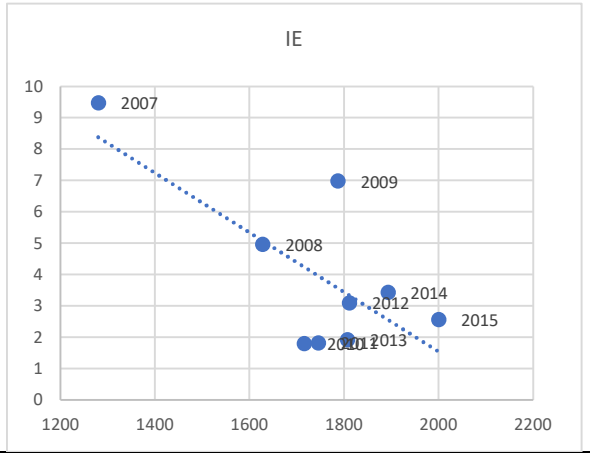
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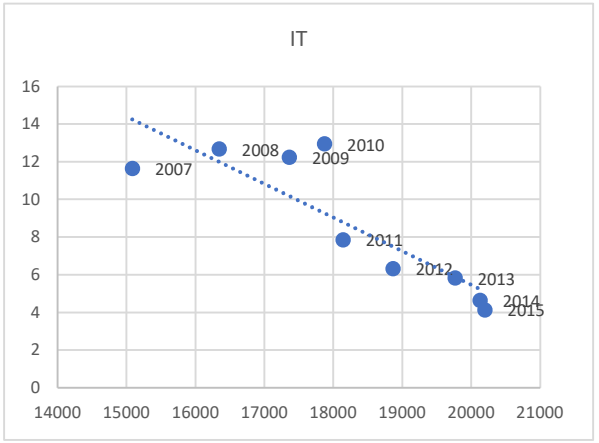
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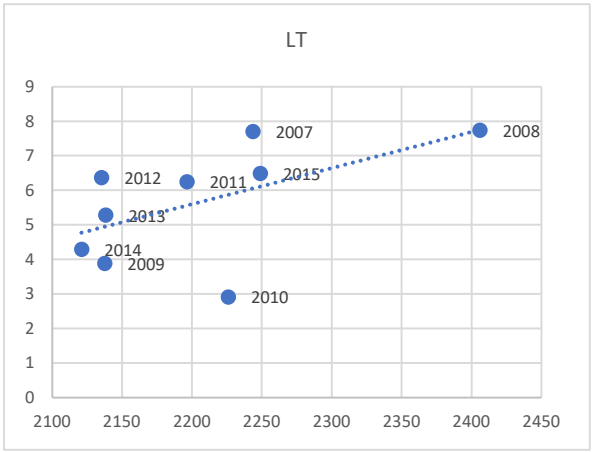
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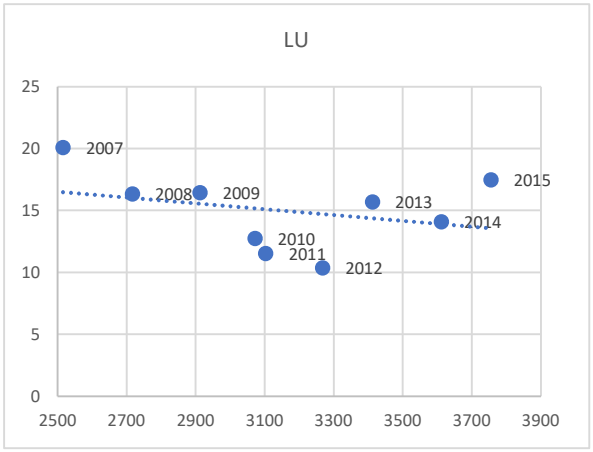
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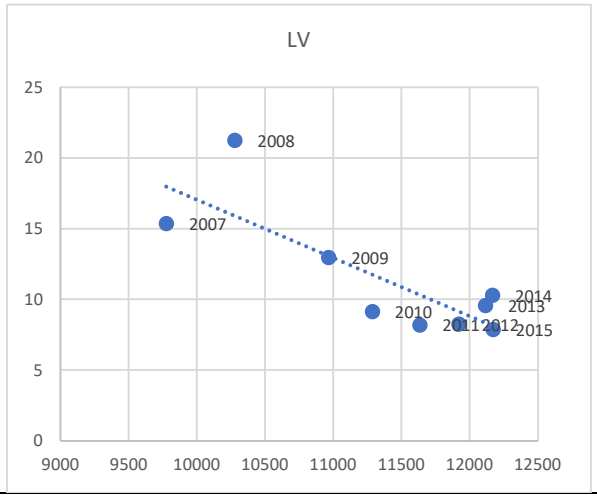
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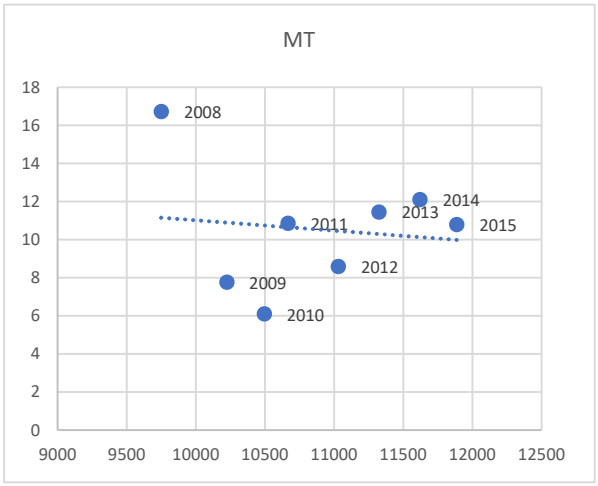
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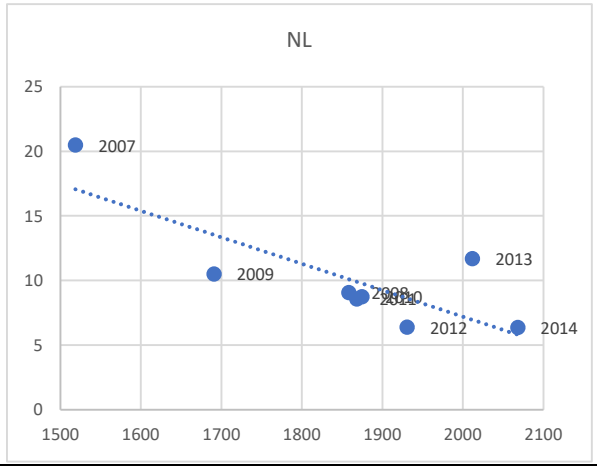
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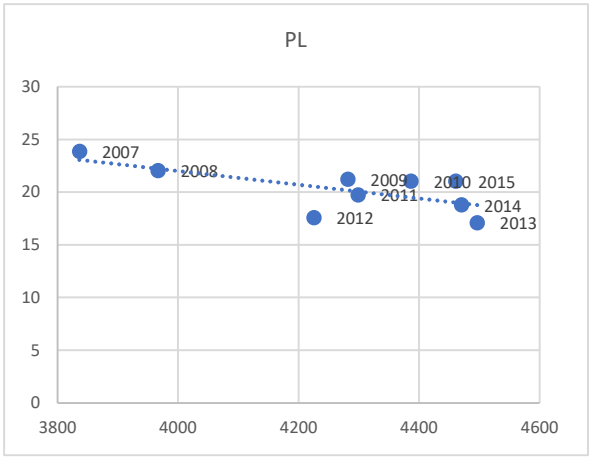
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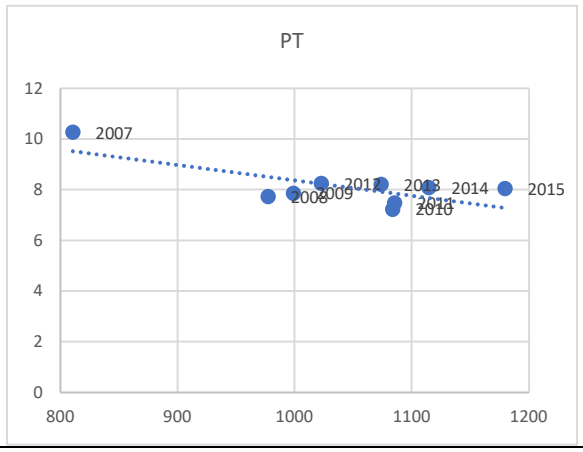
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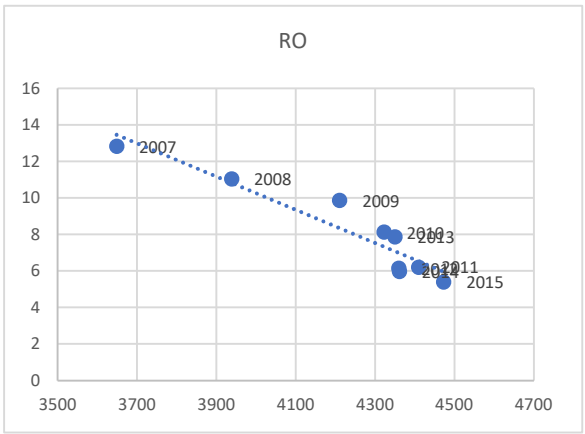
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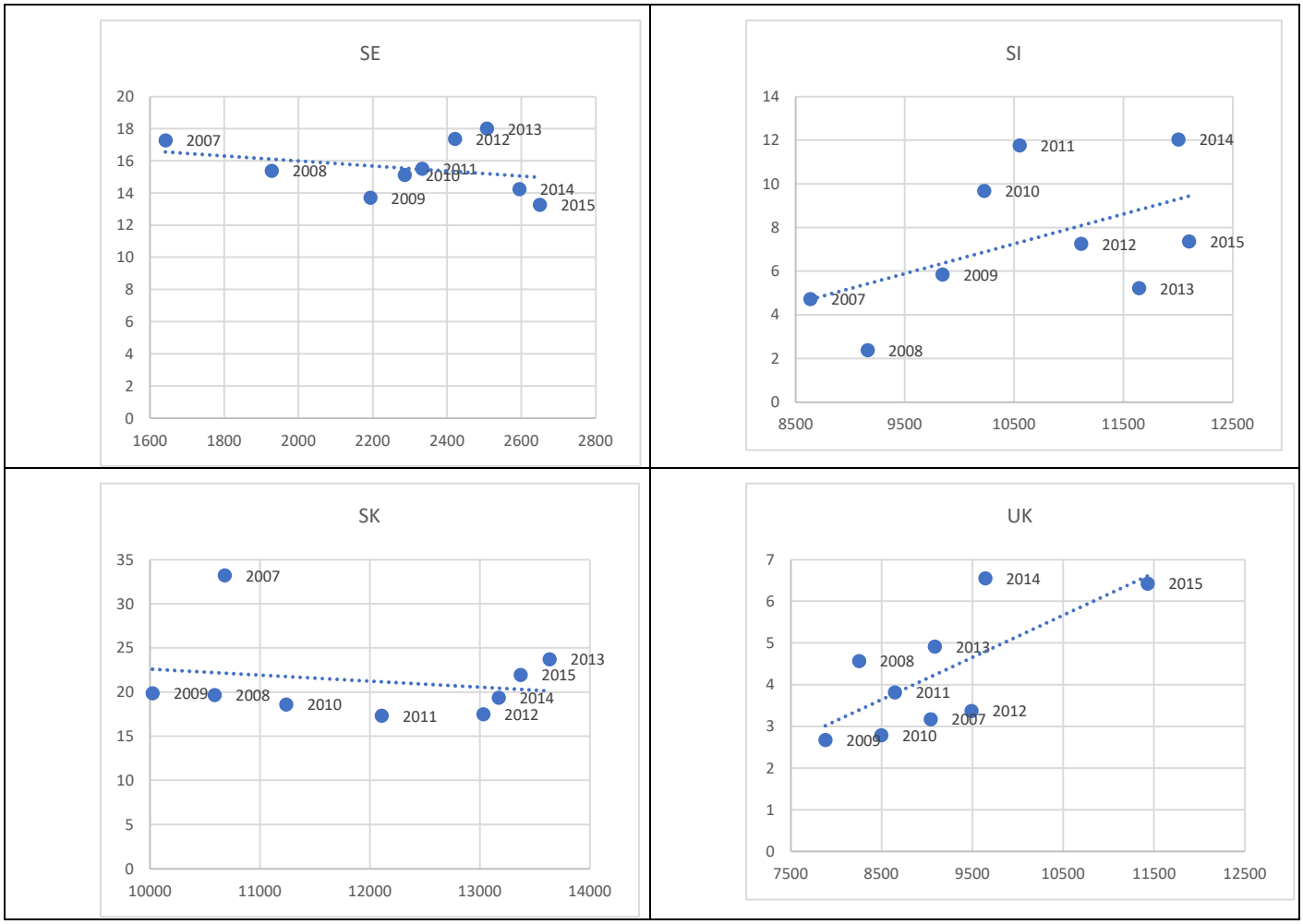

Source: author's calculation based on EU-SILC 2007-2015

Table T.5: Heckman model for persons with a partner

With partner	AUSTERITY				FAMILY CHILDREN BENEFITS			
	Women		Men		Women		Men	
	Unmet needs due to time poverty	Unmet needs	Unmet needs due to time poverty	Unmet needs	Unmet needs due to time poverty	Unmet needs	Unmet needs due to time poverty	Unmet needs
Age	0.0146**	0.00854**	0.0264***	0.000880	0.0147**	0.00794**	0.0266***	-6.58e-05
	(0.00629)	(0.00372)	(0.00875)	(0.00429)	(0.00639)	(0.00373)	(0.00894)	(0.00429)
Age2	-0.000197***	-0.000259***	-0.000384***	-0.000151***	-0.000197***	-0.000253***	-0.000386***	-0.000140***
	(7.14e-05)	(4.07e-05)	(9.48e-05)	(4.59e-05)	(7.27e-05)	(4.07e-05)	(9.66e-05)	(4.56e-05)
Household type (Baseline: two adults no children): two/more adults with children	0.0943***	0.00640	0.0299	-0.00719	0.0950***	0.00686	0.0287	-0.00590
	(0.0197)	(0.00923)	(0.0225)	(0.0101)	(0.0200)	(0.00930)	(0.0227)	(0.0101)
single parent	-0.722*	-0.105	0.0361	-0.233	-0.675*	-0.111	0.0379	-0.238
	(0.403)	(0.240)	(0.457)	(0.239)	(0.404)	(0.239)	(0.458)	(0.238)
other households	-0.0362	0.158***	-0.284***	0.213***	-0.0838	0.151**	-0.273**	0.224***
	(0.0932)	(0.0600)	(0.104)	(0.0729)	(0.0993)	(0.0663)	(0.107)	(0.0793)
Presence disabled person/s	-0.0651***	0.104***	-0.152***	0.108***	-0.0664**	0.109***	-0.156***	0.111***
	(0.0250)	(0.0163)	(0.0271)	(0.0168)	(0.0261)	(0.0160)	(0.0272)	(0.0168)
Presence elderly person/s (80+)	0.169***	-0.0603***	0.0935*	-0.0830***	0.144***	-0.0628***	0.0955*	-0.0795***
	(0.0542)	(0.0177)	(0.0508)	(0.0165)	(0.0512)	(0.0181)	(0.0529)	(0.0166)
Presence small child/ren (0-6)	0.295***	0.0300***	0.0640***	0.0309***	0.294***	0.0289***	0.0635***	0.0316***
	(0.0223)	(0.0104)	(0.0240)	(0.0111)	(0.0228)	(0.0104)	(0.0244)	(0.0112)
Partner's weekly hours paid work	0.00285***	-0.00171***	0.000984**	-0.000535**	0.00289***	-0.00165***	0.000969*	-0.000509**
	(0.000445)	(0.000219)	(0.000494)	(0.000230)	(0.000452)	(0.000220)	(0.000507)	(0.000233)
Weekly hours paid work	0.0156***	0.000680**	0.0194***	0.000414	0.0155***	0.000693**	0.0194***	0.000475
	(0.000594)	(0.000277)	(0.000629)	(0.000308)	(0.000598)	(0.000284)	(0.000629)	(0.000309)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.218***	-0.119***	0.218***	-0.123***	0.215***	-0.120***	0.219***	-0.123***
	(0.0245)	(0.0108)	(0.0344)	(0.0119)	(0.0246)	(0.0108)	(0.0347)	(0.0120)
recognized third level education (ISCED 5-7)	0.440***	-0.151***	0.379***	-0.168***	0.443***	-0.153***	0.380***	-0.169***
	(0.0299)	(0.0158)	(0.0400)	(0.0184)	(0.0305)	(0.0160)	(0.0403)	(0.0189)
Equivalized income	0.00480***	-0.00682***	0.00660***	-0.00652***	0.00480***	-0.00683***	0.00658***	-0.00654***
	(0.000988)	(0.00134)	(0.00107)	(0.00121)	(0.000988)	(0.00135)	(0.00108)	(0.00122)
Self-reported health status (Baseline: very good): good		0.261***		0.250***		0.260***		0.249***
		(0.0133)		(0.0121)		(0.0133)		(0.0123)
fair		0.593***		0.571***		0.591***		0.570***
		(0.0213)		(0.0190)		(0.0212)		(0.0193)
bad		0.732***		0.644***		0.730***		0.645***
		(0.0252)		(0.0215)		(0.0250)		(0.0216)
very bad		0.870***		0.752***		0.868***		0.749***
		(0.0312)		(0.0307)		(0.0312)		(0.0309)
Chronic illness		0.167***		0.151***		0.164***		0.149***
		(0.0164)		(0.0150)		(0.0156)		(0.0144)

Limitation in activities (Baseline: no): yes		0.174***		0.179***		0.177***		0.181***
		(0.0211)		(0.0206)		(0.0209)		(0.0205)
yes, strongly limited		0.143***		0.120***		0.147***		0.123***
		(0.0299)		(0.0377)		(0.0297)		(0.0375)
Austerity	1.66e-06	3.16e-05**	-1.60e-05	3.51e-05*				
	(3.30e-05)	(1.60e-05)	(3.61e-05)	(1.88e-05)				
Family children benefits					1.192**	-1.172***	0.733	-1.286***
					(0.605)	(0.386)	(0.715)	(0.475)
Constant	-2.474***	-1.829***	-2.595***	-1.533***	-3.674***	-0.664	-3.314***	-0.252
	(0.189)	(0.124)	(0.250)	(0.137)	(0.630)	(0.421)	(0.805)	(0.519)
Corr	0.0825**		-0.00570		0.0891**		-0.0109	
	(0.0399)		(0.0543)		(0.0396)		(0.0548)	
Observations	858,434	858,434	772,710	772,710	851,672	851,672	766,755	766,755
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								
Note: robust standard errors clustered by group(country year)								

Table T.6: Heckman model for persons with a partner

With partner	CHILD DAY CARE				SICKNESS HEALTH BENEFITS			
	Women		Men		Women		Men	
	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.0150**	0.00812**	0.0266***	0.000138	0.0160**	0.00779**	0.0275***	-0.000267
	(0.00643)	(0.00370)	(0.00892)	(0.00424)	(0.00646)	(0.00365)	(0.00902)	(0.00426)
Age2	-0.000200***	-0.000255***	-0.000385***	-0.000143***	-0.000212***	-0.000252***	-0.000395***	-0.000139***
	(7.31e-05)	(4.03e-05)	(9.65e-05)	(4.52e-05)	(7.33e-05)	(3.97e-05)	(9.75e-05)	(4.53e-05)
Household type (Baseline: two adults no children): two/more adults with children	0.0952***	0.00686	0.0290	-0.00613	0.0942***	0.00707	0.0286	-0.00593
	(0.0199)	(0.00923)	(0.0228)	(0.0101)	(0.0197)	(0.00922)	(0.0226)	(0.0101)
single parent	-0.664*	-0.111	0.0281	-0.236	-0.620	-0.112	0.0208	-0.236
	(0.403)	(0.238)	(0.458)	(0.239)	(0.403)	(0.238)	(0.457)	(0.238)
other households	-0.0847	0.164***	-0.275**	0.238***	-0.0852	0.151**	-0.268**	0.222***
	(0.0986)	(0.0636)	(0.107)	(0.0767)	(0.0980)	(0.0663)	(0.106)	(0.0801)
Presence disabled person/s	-0.0643**	0.107***	-0.155***	0.110***	-0.0687***	0.108***	-0.159***	0.111***
	(0.0258)	(0.0162)	(0.0275)	(0.0170)	(0.0264)	(0.0159)	(0.0272)	(0.0167)
Presence elderly person/s (80+)	0.142***	-0.0623***	0.0948*	-0.0791***	0.146***	-0.0632***	0.0983*	-0.0810***
	(0.0513)	(0.0182)	(0.0529)	(0.0168)	(0.0510)	(0.0178)	(0.0528)	(0.0165)
Presence small child/ren (0-6)	0.293***	0.0293***	0.0626**	0.0321***	0.293***	0.0290***	0.0634***	0.0314***
	(0.0228)	(0.0104)	(0.0243)	(0.0113)	(0.0228)	(0.0104)	(0.0242)	(0.0112)
Partner's weekly hours paid work	0.00289***	-0.00170***	0.000964*	-0.000519**	0.00274***	-0.00164***	0.000901*	-0.000503**
	(0.000444)	(0.000219)	(0.000504)	(0.000233)	(0.000456)	(0.000212)	(0.000508)	(0.000232)
Weekly hours paid work	0.0155***	0.000687**	0.0194***	0.000447	0.0154***	0.000693**	0.0193***	0.000489
	(0.000602)	(0.000282)	(0.000633)	(0.000307)	(0.000603)	(0.000279)	(0.000633)	(0.000298)
Education (Baseline: lees than secondary stage of secondary educatio): second stage of secondary level education (ISCED 3)	0.215***	-0.120***	0.219***	-0.122***	0.219***	-0.123***	0.223***	-0.126***
	(0.0246)	(0.0108)	(0.0348)	(0.0121)	(0.0248)	(0.0109)	(0.0348)	(0.0122)
recognized third level education (ISCED 5-7)	0.444***	-0.153***	0.380***	-0.170***	0.448***	-0.155***	0.385***	-0.172***
	(0.0304)	(0.0159)	(0.0403)	(0.0187)	(0.0307)	(0.0160)	(0.0405)	(0.0188)
Equivalized income	0.00472***	-0.00673***	0.00651***	-0.00643***	0.00461***	-0.00664***	0.00637***	-0.00632***
	(0.000979)	(0.00133)	(0.00108)	(0.00119)	(0.000961)	(0.00132)	(0.00107)	(0.00118)
Self-reported health status (Baseline: very good): good		0.261***		0.250***		0.262***		0.250***
		(0.0134)		(0.0122)		(0.0133)		(0.0121)
fair		0.592***		0.572***		0.594***		0.574***
		(0.0214)		(0.0192)		(0.0214)		(0.0191)
bad		0.731***		0.645***		0.734***		0.649***
		(0.0253)		(0.0217)		(0.0253)		(0.0216)
very bad		0.869***		0.748***		0.872***		0.754***
		(0.0313)		(0.0310)		(0.0311)		(0.0306)
Chronic illness		0.164***		0.149***		0.163***		0.148***

		(0.0158)		(0.0145)		(0.0160)		(0.0146)
Limitation in activities (Baseline: no): yes		0.176***		0.180***		0.177***		0.180***
		(0.0211)		(0.0206)		(0.0210)		(0.0205)
yes, strongly limited		0.147***		0.122***		0.147***		0.121***
		(0.0297)		(0.0378)		(0.0297)		(0.0376)
Child day care	3.966***	-1.895**	2.285	-2.160**				
	(1.145)	(0.961)	(1.496)	(1.074)				
Sickness and health benefits					0.664***	-0.226*	0.501***	-0.314**
					(0.112)	(0.135)	(0.154)	(0.145)
Constant	-3.085***	-1.513***	-2.931***	-1.174***	-4.126***	-1.259***	-3.824***	-0.743*
	(0.283)	(0.206)	(0.375)	(0.235)	(0.338)	(0.357)	(0.472)	(0.407)
Corr	0.0896**		-0.00983		0.0945**		-0.00405	
	(0.0401)		(0.0549)		(0.0398)		(0.0559)	
Observations	851,672	851,672	766,755	766,755	851,672	851,672	766,755	766,755
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								
Note: robust standard errors clustered by group(country year)								

Table T.7: Heckman model for persons with a partner

With partner	OLD AGE BENEFITS				DISABILITY BENEFITS			
	Women		Men		Women		Men	
	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.0140**	0.00861**	0.0258***	0.000577	0.0142**	0.00839**	0.0261***	0.000512
	(0.00637)	(0.00373)	(0.00881)	(0.00432)	(0.00638)	(0.00373)	(0.00887)	(0.00429)
Age2	-0.000187***	-0.000260***	-0.000377***	-0.000147***	-0.000191***	-0.000258***	-0.000380***	-0.000147***
	(7.24e-05)	(4.08e-05)	(9.55e-05)	(4.62e-05)	(7.24e-05)	(4.08e-05)	(9.61e-05)	(4.57e-05)
Household type (Baseline: two adults no children): two/more adults with children	0.0944***	0.00526	0.0286	-0.00743	0.0947***	0.00662	0.0286	-0.00605
	(0.0200)	(0.00936)	(0.0229)	(0.0102)	(0.0200)	(0.00922)	(0.0227)	(0.0100)
single parent	-0.699*	-0.0932	0.0142	-0.238	-0.701*	-0.104	0.0189	-0.235
	(0.406)	(0.241)	(0.458)	(0.238)	(0.403)	(0.241)	(0.457)	(0.239)
other households	-0.0757	0.160**	-0.269**	0.234***	-0.0822	0.157**	-0.273**	0.233***
	(0.0992)	(0.0635)	(0.107)	(0.0770)	(0.0992)	(0.0642)	(0.107)	(0.0775)
Presence disabled person/s	-0.0615**	0.107***	-0.153***	0.110***	-0.0646**	0.107***	-0.155***	0.110***
	(0.0257)	(0.0164)	(0.0274)	(0.0170)	(0.0259)	(0.0162)	(0.0273)	(0.0168)
Presence elderly person/s (80+)	0.142***	-0.0612***	0.0958*	-0.0782***	0.143***	-0.0626***	0.0961*	-0.0803***
	(0.0510)	(0.0182)	(0.0529)	(0.0168)	(0.0511)	(0.0181)	(0.0529)	(0.0166)
Presence small child/ren (0-6)	0.294***	0.0293***	0.0628**	0.0321***	0.293***	0.0289***	0.0630***	0.0317***
	(0.0227)	(0.0104)	(0.0244)	(0.0112)	(0.0227)	(0.0104)	(0.0243)	(0.0113)
Partner's weekly hours paid work	0.00297***	-0.00171***	0.00101**	-0.000530**	0.00296***	-0.00171***	0.000988**	-0.000529**
	(0.000445)	(0.000220)	(0.000502)	(0.000233)	(0.000445)	(0.000222)	(0.000501)	(0.000233)
Weekly hours paid work	0.0155***	0.000662**	0.0194***	0.000416	0.0155***	0.000661**	0.0194***	0.000409
	(0.000599)	(0.000282)	(0.000635)	(0.000311)	(0.000601)	(0.000281)	(0.000633)	(0.000310)
Education (Baseline: lees than secondary stage of secondary educatio): second stage of secondary level education (ISCED 3)	0.214***	-0.119***	0.218***	-0.123***	0.213***	-0.119***	0.218***	-0.122***
	(0.0244)	(0.0108)	(0.0345)	(0.0120)	(0.0244)	(0.0108)	(0.0348)	(0.0120)
recognized third level education (ISCED 5-7)	0.441***	-0.152***	0.378***	-0.169***	0.441***	-0.151***	0.379***	-0.168***
	(0.0301)	(0.0160)	(0.0402)	(0.0187)	(0.0301)	(0.0159)	(0.0403)	(0.0186)
Equivalized income	0.00474***	-0.00701***	0.00656***	-0.00670***	0.00485***	-0.00681***	0.00659***	-0.00652***
	(0.000976)	(0.00136)	(0.00108)	(0.00121)	(0.000984)	(0.00134)	(0.00108)	(0.00121)
Self-reported health status (Baseline: very good): good		0.259***		0.248***		0.261***		0.249***
		(0.0132)		(0.0124)		(0.0133)		(0.0122)
fair		0.587***		0.566***		0.591***		0.570***
		(0.0214)		(0.0195)		(0.0212)		(0.0192)
bad		0.724***		0.639***		0.730***		0.645***

		(0.0252)		(0.0217)		(0.0251)		(0.0216)
very bad		0.861***		0.741***		0.868***		0.748***
		(0.0315)		(0.0311)		(0.0313)		(0.0312)
Chronic illness		0.163***		0.148***		0.163***		0.148***
		(0.0161)		(0.0146)		(0.0159)		(0.0146)
Limitation in activities (Baseline: no): yes		0.180***		0.184***		0.177***		0.181***
		(0.0211)		(0.0206)		(0.0211)		(0.0206)
yes, strongly limited		0.150***		0.124***		0.147***		0.121***
		(0.0299)		(0.0378)		(0.0299)		(0.0379)
Old age benefits	0.491**	0.511***	0.234	0.477***				
	(0.207)	(0.126)	(0.220)	(0.151)				
Disability benefits					0.909	-0.249	0.723	-0.545
					(0.654)	(0.547)	(0.722)	(0.608)
Constant	-4.481***	-3.927***	-3.528***	-3.483***	-3.133***	-1.639***	-3.098***	-1.130**
	(0.888)	(0.508)	(0.898)	(0.596)	(0.511)	(0.430)	(0.638)	(0.488)
Corr	0.0846**		-0.0137		0.0853**		-0.0122	
	(0.0412)		(0.0548)		(0.0402)		(0.0547)	
Observations	851,672	851,672	766,755	766,755	851,672	851,672	766,755	766,755
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								
Note: robust standard errors clustered by group(country year)								

Table T.8: Heckman model for persons with a partner

With partner	TOTAL EXPENDITURE IN SOCIAL PROTECTION			
	Women		Men	
	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.0149**	0.00854**	0.0264***	0.000572
	(0.00638)	(0.00368)	(0.00889)	(0.00427)
Age2	-0.000198***	-0.000259***	-0.000383***	-0.000148***
	(7.23e-05)	(4.03e-05)	(9.63e-05)	(4.57e-05)
Household type (Baseline: two adults no children): two/more adults with children	0.0928***	0.00605	0.0278	-0.00653
	(0.0198)	(0.00921)	(0.0226)	(0.0101)
single parent	-0.643	-0.103	0.0117	-0.232
	(0.405)	(0.238)	(0.457)	(0.238)
other households	-0.0798	0.154**	-0.266**	0.228***
	(0.0977)	(0.0645)	(0.106)	(0.0778)
Presence disabled person/s	-0.0652**	0.107***	-0.156***	0.110***
	(0.0260)	(0.0163)	(0.0273)	(0.0169)
Presence elderly person/s (80+)	0.147***	-0.0620***	0.0983*	-0.0796***
	(0.0510)	(0.0181)	(0.0528)	(0.0166)
Presence small child/ren (0-6)	0.293***	0.0290***	0.0627***	0.0318***
	(0.0228)	(0.0104)	(0.0243)	(0.0112)
Partner's weekly hours paid work	0.00287***	-0.00172***	0.000973*	-0.000531**
	(0.000448)	(0.000220)	(0.000502)	(0.000233)
Weekly hours paid work	0.0154***	0.000654**	0.0194***	0.000402
	(0.000601)	(0.000281)	(0.000633)	(0.000308)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.216***	-0.119***	0.219***	-0.122***
	(0.0246)	(0.0107)	(0.0347)	(0.0121)
recognized third level education (ISCED 5-7)	0.446***	-0.150***	0.381***	-0.168***
	(0.0305)	(0.0161)	(0.0403)	(0.0188)
Equivalized income	0.00454***	-0.00689***	0.00640***	-0.00654***
	(0.000965)	(0.00133)	(0.00109)	(0.00119)
Self-reported health status (Baseline: very good): good		0.261***		0.250***
		(0.0136)		(0.0123)
fair		0.591***		0.571***
		(0.0220)		(0.0196)
bad		0.729***		0.645***
		(0.0261)		(0.0224)
very bad		0.867***		0.749***
		(0.0313)		(0.0310)
Chronic illness		0.163***		0.148***
		(0.0162)		(0.0147)
Limitation in activities (Baseline: no): yes		0.178***		0.181***
		(0.0212)		(0.0207)
yes, strongly limited		0.147***		0.120***
		(0.0299)		(0.0381)
Total expenditure for social protection	0.182***	0.0220	0.111**	0.00342

	(0.0384)	(0.0377)	(0.0488)	(0.0423)
Constant	-4.265***	-2.038***	-3.665***	-1.554***
	(0.433)	(0.411)	(0.589)	(0.481)
Corr	0.0896**		-0.00936	
	(0.0402)		(0.0553)	
Observations	851,672	851,672	766,755	766,755
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				
Note: robust standard errors clustered by group(country year)				

Table T.9: Heckman model for persons without a partner

No partner	AUSTERITY				FAMILY CHILDREN BENEFITS			
	Women		Men		Women		Men	
	Unmet needs due to time poverty	Unmet needs	Unmet needs due to time poverty	Unmet needs	Unmet needs due to time poverty	Unmet needs	Unmet needs due to time poverty	Unmet needs
Age	-0.0292**	0.0488***	-0.0222*	0.0315***	-0.0290**	0.0482***	-0.0212	0.0316***
	(0.0136)	(0.00409)	(0.0132)	(0.00408)	(0.0138)	(0.00410)	(0.0132)	(0.00402)
Age 2	0.000231	-0.000645***	8.16e-05	-0.000454***	0.000232	-0.000638***	6.72e-05	-0.000455***
	(0.000158)	(4.99e-05)	(0.000153)	(4.68e-05)	(0.000160)	(5.00e-05)	(0.000152)	(4.61e-05)
Household type (Baseline: single person): single parent	0.160***	0.0335**	0.0751	-0.140***	0.159***	0.0335**	0.0650	-0.142***
	(0.0377)	(0.0156)	(0.0759)	(0.0233)	(0.0381)	(0.0158)	(0.0758)	(0.0233)
other households	0.120	0.157*	-0.740	0.0711	0.119	0.153*	-1.180**	0.0701
	(0.163)	(0.0839)	(0.456)	(0.114)	(0.181)	(0.0901)	(0.573)	(0.122)
Presence disabled person/s	-0.236***	-0.108***	-0.229***	-0.162***	-0.243***	-0.104***	-0.227***	-0.159***
	(0.0621)	(0.0362)	(0.0689)	(0.0403)	(0.0616)	(0.0364)	(0.0698)	(0.0405)
Presence elderly person/s (80+)	-0.901**	-0.263	-0.457	0.0682	-0.883**	-0.200	-0.287	0.280
	(0.408)	(0.226)	(0.624)	(0.350)	(0.416)	(0.214)	(0.634)	(0.346)
Presence small child/ren (0-6)	0.197***	0.126***	0.369**	0.133**	0.190***	0.127***	0.381**	0.133**
	(0.0519)	(0.0204)	(0.187)	(0.0640)	(0.0521)	(0.0204)	(0.187)	(0.0648)
Total number of hours working per week	0.0182***	-0.000462	0.0204***	-0.00100*	0.0181***	-0.000363	0.0202***	-0.000931*
	(0.00136)	(0.000518)	(0.00125)	(0.000540)	(0.00137)	(0.000526)	(0.00125)	(0.000522)
Education (Baseline: lees than secondary stage of secondary educatio): second stage of secondary level education (ISCED 3)	0.222***	-0.107***	0.127*	-0.0930***	0.224***	-0.107***	0.122*	-0.0948***
	(0.0446)	(0.0183)	(0.0704)	(0.0187)	(0.0447)	(0.0188)	(0.0705)	(0.0190)
recognized third level education (ISCED 5-7)	0.509***	-0.119***	0.336***	-0.175***	0.509***	-0.122***	0.330***	-0.179***
	(0.0446)	(0.0268)	(0.0744)	(0.0217)	(0.0448)	(0.0273)	(0.0743)	(0.0221)
Equivalized income	0.00496***	-0.00467***	0.00665***	-0.00534***	0.00492***	-0.00467***	0.00741***	-0.00540***
	(0.00131)	(0.00166)	(0.00141)	(0.00132)	(0.00133)	(0.00171)	(0.00157)	(0.00134)
Self-reported health status (Baseline: very good): good		0.237***		0.282***		0.238***		0.278***
		(0.0196)		(0.0315)		(0.0194)		(0.0308)
fair		0.571***		0.646***		0.571***		0.642***
		(0.0259)		(0.0390)		(0.0261)		(0.0387)
bad		0.739***		0.824***		0.741***		0.821***
		(0.0409)		(0.0445)		(0.0408)		(0.0440)
very bad		0.885***		1.033***		0.886***		1.029***
		(0.0488)		(0.0572)		(0.0491)		(0.0565)
Chronic illness		0.138***		0.0698***		0.140***		0.0719***
		(0.0221)		(0.0242)		(0.0217)		(0.0239)
Limitation in activities (Baseline: no): yes		0.186***		0.215***		0.187***		0.218***

		(0.0203)		(0.0257)		(0.0204)		(0.0257)
yes, strongly limited		0.364***		0.388***		0.363***		0.390***
		(0.0461)		(0.0536)		(0.0460)		(0.0532)
Austerity	-7.49e-05*	4.46e-05**	3.52e-05	3.34e-05				
	(4.18e-05)	(1.89e-05)	(5.05e-05)	(2.44e-05)				
Family children benefits					0.761*	-1.578***	-0.480	-1.826***
					(0.459)	(0.421)	(0.527)	(0.476)
Constant	-1.161***	-2.593***	-1.673***	-2.087***	-1.923***	-1.056**	-1.217**	-0.318
	(0.378)	(0.139)	(0.315)	(0.142)	(0.646)	(0.464)	(0.542)	(0.507)
Corr	-0.0321		0.137*		-0.0360		0.137*	
	(0.0788)		(0.0827)		(0.0802)		(0.0828)	
Observations	202,510	202,510	142,573	142,573	201,373	201,373	141,994	141,994
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								
Note: robust standard errors clustered by group(country year)								

Table T.10: Heckman model for persons without a partner

No partner	CHILD DAY CARE				SICKNESS HEALTH BENEFITS			
	Women		Men		Women		Men	
	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	-0.0292**	0.0486***	-0.0211	0.0318***	-0.0278**	0.0484***	-0.0200	0.0310***
	(0.0138)	(0.00410)	(0.0132)	(0.00407)	(0.0141)	(0.00408)	(0.0134)	(0.00400)
Age 2	0.000233	-0.000642***	6.61e-05	-0.000457***	0.000215	-0.000641***	5.43e-05	-0.000450***
	(0.000159)	(5.01e-05)	(0.000153)	(4.67e-05)	(0.000163)	(4.97e-05)	(0.000154)	(4.59e-05)
Household type (Baseline: single person): single parent	0.160***	0.0331**	0.0652	-0.140***	0.156***	0.0342**	0.0644	-0.142***
	(0.0382)	(0.0157)	(0.0758)	(0.0234)	(0.0383)	(0.0158)	(0.0756)	(0.0232)
other households	0.105	0.180**	-1.182**	0.0936	0.126	0.149*	-1.189**	0.0576
	(0.181)	(0.0893)	(0.575)	(0.120)	(0.180)	(0.0875)	(0.577)	(0.122)
Presence disabled person/s	-0.244***	-0.105***	-0.227***	-0.158***	-0.253***	-0.103***	-0.236***	-0.157***
	(0.0620)	(0.0365)	(0.0698)	(0.0406)	(0.0612)	(0.0365)	(0.0706)	(0.0401)
Presence elderly person/s (80+)	-0.876**	-0.210	-0.290	0.253	-0.873**	-0.197	-0.316	0.263
	(0.416)	(0.213)	(0.631)	(0.341)	(0.415)	(0.212)	(0.636)	(0.343)
Presence small child/ren (0-6)	0.191***	0.126***	0.379**	0.131**	0.191***	0.127***	0.382**	0.136**
	(0.0521)	(0.0205)	(0.187)	(0.0643)	(0.0522)	(0.0204)	(0.188)	(0.0647)
Total number of hours working per week	0.0181***	-0.000391	0.0202***	-0.000963*	0.0180***	-0.000389	0.0200***	-0.000906*
	(0.00137)	(0.000524)	(0.00126)	(0.000532)	(0.00138)	(0.000517)	(0.00126)	(0.000515)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.221***	-0.106***	0.122*	-0.0934***	0.225***	-0.110***	0.124*	-0.0991***
	(0.0447)	(0.0189)	(0.0704)	(0.0192)	(0.0445)	(0.0187)	(0.0709)	(0.0191)
recognized third level education (ISCED 5-7)	0.510***	-0.122***	0.330***	-0.178***	0.514***	-0.125***	0.333***	-0.186***
	(0.0448)	(0.0273)	(0.0742)	(0.0222)	(0.0442)	(0.0271)	(0.0752)	(0.0216)
Equivalized income	0.00488***	-0.00463***	0.00744***	-0.00531***	0.00479***	-0.00453***	0.00737***	-0.00523***
	(0.00133)	(0.00166)	(0.00157)	(0.00131)	(0.00132)	(0.00164)	(0.00158)	(0.00131)
Self-reported health status (Baseline: very good): good		0.238***		0.279***		0.238***		0.280***
		(0.0195)		(0.0313)		(0.0192)		(0.0309)
fair		0.572***		0.643***		0.573***		0.646***
		(0.0262)		(0.0388)		(0.0259)		(0.0386)
bad		0.742***		0.822***		0.743***		0.826***
		(0.0411)		(0.0443)		(0.0410)		(0.0440)
very bad		0.887***		1.032***		0.889***		1.036***

		(0.0494)		(0.0567)		(0.0491)		(0.0569)
Chronic illness		0.141***		0.0720***		0.139***		0.0707***
		(0.0217)		(0.0236)		(0.0219)		(0.0242)
Limitation in activities (Baseline: no): yes		0.185***		0.217***		0.186***		0.216***
		(0.0205)		(0.0256)		(0.0203)		(0.0254)
yes, strongly limited		0.362***		0.385***		0.362***		0.388***
		(0.0461)		(0.0536)		(0.0460)		(0.0529)
Child day care	2.936***	-2.992***	-1.367	-3.578***				
	(0.965)	(0.934)	(1.153)	(0.910)				
Sickness and health benefits					0.526***	-0.332**	0.257	-0.485***
					(0.106)	(0.156)	(0.166)	(0.172)
Constant	-1.607***	-2.124***	-1.483***	-1.530***	-2.446***	-1.796***	-2.319***	-0.920**
	(0.429)	(0.226)	(0.346)	(0.222)	(0.474)	(0.415)	(0.560)	(0.451)
Corr	-0.0343		0.138*		-0.0271		0.146*	
	(0.0801)		(0.0830)		(0.0806)		(0.0838)	
Observations	201,373	201,373	141,994	141,994	201,373	201,373	141,994	141,994
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								
Note: robust standard errors clustered by group(country year)								

Table T.11: Hackman model for persons without a partner

No partner	OLD AGE BENEFITS				DISABILITY BENEFITS			
	Women		Men		Women		Men	
	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	-0.0298**	0.0487***	-0.0209	0.0319***	-0.0297**	0.0487***	-0.0209	0.0319***
	(0.0137)	(0.00411)	(0.0132)	(0.00409)	(0.0138)	(0.00412)	(0.0132)	(0.00413)
Age 2	0.000242	-0.000643***	6.35e-05	-0.000458***	0.000240	-0.000644***	6.41e-05	-0.000459***
	(0.000159)	(5.01e-05)	(0.000153)	(4.69e-05)	(0.000159)	(5.02e-05)	(0.000153)	(4.72e-05)
Household type (Baseline: single person): single parent	0.160***	0.0323**	0.0641	-0.142***	0.159***	0.0340**	0.0648	-0.139***
	(0.0380)	(0.0159)	(0.0757)	(0.0235)	(0.0381)	(0.0157)	(0.0758)	(0.0235)
other households	0.120	0.166*	-1.178**	0.0757	0.115	0.167*	-1.182**	0.0757
	(0.181)	(0.0899)	(0.573)	(0.120)	(0.180)	(0.0889)	(0.574)	(0.120)
Presence disabled person/s	-0.239***	-0.107***	-0.227***	-0.161***	-0.241***	-0.105***	-0.229***	-0.159***
	(0.0624)	(0.0364)	(0.0698)	(0.0407)	(0.0620)	(0.0365)	(0.0700)	(0.0404)
Presence elderly person/s (80+)	-0.885**	-0.193	-0.296	0.261	-0.878**	-0.209	-0.297	0.249
	(0.417)	(0.213)	(0.635)	(0.343)	(0.417)	(0.213)	(0.634)	(0.342)
Presence small child/ren (0-6)	0.191***	0.127***	0.380**	0.128**	0.192***	0.125***	0.381**	0.129**
	(0.0522)	(0.0205)	(0.188)	(0.0646)	(0.0520)	(0.0208)	(0.187)	(0.0643)
Total number of hours working per week	0.0182***	-0.000403	0.0201***	-0.00102*	0.0182***	-0.000450	0.0201***	-0.00106*
	(0.00137)	(0.000522)	(0.00126)	(0.000530)	(0.00137)	(0.000522)	(0.00125)	(0.000541)
Education (Baseline: lees than secondary stage of secondary educatio): second stage of secondary level education (ISCED 3)	0.224***	-0.107***	0.122*	-0.0945***	0.222***	-0.105***	0.122*	-0.0929***
	(0.0448)	(0.0184)	(0.0704)	(0.0187)	(0.0446)	(0.0185)	(0.0702)	(0.0189)
recognized third level education (ISCED 5-7)	0.509***	-0.121***	0.330***	-0.177***	0.508***	-0.120***	0.330***	-0.176***
	(0.0448)	(0.0269)	(0.0743)	(0.0216)	(0.0448)	(0.0271)	(0.0743)	(0.0218)
Equivalized income	0.00498***	-0.00484***	0.00736***	-0.00543***	0.00496***	-0.00468***	0.00740***	-0.00535***
	(0.00132)	(0.00169)	(0.00157)	(0.00133)	(0.00131)	(0.00166)	(0.00157)	(0.00132)
Self-reported health status (Baseline: very good): good		0.239***		0.279***		0.239***		0.280***
		(0.0195)		(0.0309)		(0.0195)		(0.0311)
fair		0.567***		0.640***		0.571***		0.643***
		(0.0259)		(0.0383)		(0.0260)		(0.0385)
bad		0.735***		0.818***		0.740***		0.820***
		(0.0408)		(0.0438)		(0.0410)		(0.0437)
very bad		0.882***		1.026***		0.883***		1.028***
		(0.0489)		(0.0567)		(0.0488)		(0.0563)
Chronic illness		0.139***		0.0695***		0.139***		0.0688***
		(0.0222)		(0.0243)		(0.0220)		(0.0241)
Limitation in activities (Baseline: no): yes		0.189***		0.217***		0.187***		0.217***
		(0.0203)		(0.0258)		(0.0204)		(0.0258)

yes, strongly limited		0.366***		0.389***		0.362***		0.388***
		(0.0462)		(0.0539)		(0.0463)		(0.0539)
Old age benefits	-0.0894	0.516***	0.163	0.398*				
	(0.214)	(0.160)	(0.220)	(0.218)				
Disability benefits					0.594	-0.538	0.0881	-0.387
					(0.438)	(0.538)	(0.459)	(0.564)
Constant	-0.797	-4.699***	-2.360**	-3.710***	-1.591***	-2.201***	-1.755***	-1.806***
	(0.932)	(0.622)	(1.004)	(0.855)	(0.575)	(0.467)	(0.456)	(0.472)
Corr	-0.0402		0.141*		-0.0394		0.140*	
	(0.0792)		(0.0836)		(0.0795)		(0.0836)	
Observations	201,373	201,373	141,994	141,994	201,373	201,373	141,994	141,994
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								
Note: robust standard errors clustered by group(country year)								

Table T.12: Heckman model for persons without a partner

No partner	TOTAL EXPENDITURE IN SOCIAL PROTECTION			
	Women		Men	
	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	-0.0295**	0.0487***	-0.0204	0.0317***
	(0.0138)	(0.00410)	(0.0133)	(0.00405)
Age 2	0.000238	-0.000644***	5.86e-05	-0.000456***
	(0.000160)	(5.00e-05)	(0.000154)	(4.66e-05)
Household type (Baseline: single person): single parent	0.156***	0.0340**	0.0617	-0.140***
	(0.0383)	(0.0157)	(0.0756)	(0.0233)
other households	0.120	0.160*	-1.192**	0.0716
	(0.179)	(0.0881)	(0.572)	(0.121)
Presence disabled person/s	-0.243***	-0.105***	-0.230***	-0.159***
	(0.0620)	(0.0365)	(0.0701)	(0.0404)
Presence elderly person/s (80+)	-0.860**	-0.204	-0.317	0.248
	(0.415)	(0.211)	(0.639)	(0.341)
Presence small child/ren (0-6)	0.192***	0.126***	0.380**	0.130**
	(0.0521)	(0.0205)	(0.188)	(0.0644)
Total number of hours working per week	0.0181***	-0.000454	0.0200***	-0.00104*
	(0.00138)	(0.000517)	(0.00126)	(0.000535)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.225***	-0.107***	0.124*	-0.0947***
	(0.0446)	(0.0186)	(0.0706)	(0.0188)
recognized third level education (ISCED 5-7)	0.513***	-0.121***	0.333***	-0.179***
	(0.0444)	(0.0270)	(0.0747)	(0.0215)
Equivalized income	0.00475***	-0.00460***	0.00733***	-0.00526***
	(0.00132)	(0.00164)	(0.00158)	(0.00130)
Self-reported health status (Baseline: very good): good		0.240***		0.282***
		(0.0197)		(0.0319)
fair		0.573***		0.646***
		(0.0267)		(0.0395)
bad		0.742***		0.824***
		(0.0418)		(0.0454)
very bad		0.887***		1.033***
		(0.0497)		(0.0578)
Chronic illness		0.138***		0.0682***
		(0.0223)		(0.0244)
Limitation in activities (Baseline: no): yes		0.187***		0.216***
		(0.0204)		(0.0257)
yes, strongly limited		0.361***		0.386***
		(0.0464)		(0.0539)
Total expenditure for social protection	0.128***	-0.0289	0.0956*	-0.0451
	(0.0475)	(0.0432)	(0.0558)	(0.0415)
Constant	-2.401***	-2.301***	-2.624***	-1.639***
	(0.670)	(0.480)	(0.694)	(0.467)
Corr	-0.0343		0.146*	
	(0.0799)		(0.0840)	
Observations	201,373	201,373	141,994	141,994
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1		Robut std.err	clustered by group	(year country)

Table T.13 Heckman model for all persons, women

	NO MACRO		AUSTERITY	
ALL WOMEN 18-65	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.00374	0.0421***	0.00376	0.0421***
	(0.00584)	(0.00237)	(0.00585)	(0.00237)
Age 2	-0.000108	-0.000559***	-0.000109	-0.000558***
	(6.65e-05)	(2.75e-05)	(6.65e-05)	(2.75e-05)
Household type (Baseline: single person): two/more adults no children	0.0702**	-0.224***	0.0701**	-0.224***
	(0.0302)	(0.0145)	(0.0303)	(0.0145)
two/more adults with children	0.174***	-0.263***	0.174***	-0.263***
	(0.0289)	(0.0167)	(0.0289)	(0.0167)
single parent	0.136***	0.0318**	0.136***	0.0318**
	(0.0328)	(0.0157)	(0.0328)	(0.0157)
other households	0.0296	-0.00273	0.0292	-0.00174
	(0.0929)	(0.0593)	(0.0930)	(0.0592)
Presence disabled person/s	-0.0966***	0.0833***	-0.0968***	0.0834***
	(0.0223)	(0.0137)	(0.0222)	(0.0137)
Presence elderly person/s (80+)	0.257***	-0.0762***	0.257***	-0.0761***
	(0.0455)	(0.0138)	(0.0455)	(0.0138)
Presence small child/ren (0-6)	0.243***	0.131***	0.243***	0.131***
	(0.0192)	(0.00862)	(0.0192)	(0.00861)
Weekly hours paid work	0.0164***	0.000805***	0.0164***	0.000812***
	(0.000673)	(0.000270)	(0.000672)	(0.000270)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.219***	-0.114***	0.219***	-0.114***
	(0.0198)	(0.0100)	(0.0198)	(0.0100)
recognized third level education (ISCED 5-7)	0.464***	-0.141***	0.464***	-0.141***
	(0.0248)	(0.0181)	(0.0248)	(0.0181)
Equivalized income	0.00498***	-0.00809***	0.00497***	-0.00809***
	(0.00102)	(0.00158)	(0.00102)	(0.00158)
Self-reported health status (Baseline: very good): good		0.262***		0.261***
		(0.0124)		(0.0124)
fair		0.601***		0.600***
		(0.0195)		(0.0195)
bad		0.744***		0.743***
		(0.0254)		(0.0254)
very bad		0.876***		0.876***
		(0.0291)		(0.0292)
Chronic illness		0.157***		0.158***
		(0.0163)		(0.0163)
Limitation in activities (Baseline: no): yes		0.174***		0.174***
		(0.0185)		(0.0185)
yes, strongly limited		0.150***		0.150***
		(0.0254)		(0.0254)
Austerity			-1.87e-05	3.85e-05**
			(3.01e-05)	(1.60e-05)
Constant	-2.094***	-2.464***	-2.089***	-2.471***
	(0.166)	(0.108)	(0.165)	(0.106)
Corr	0.0667*		0.0669*	
	(0.0377)		(0.0377)	
Wald chi2	3695.3		3724.33	
Observations	1,356,157	1,356,157	1,356,157	1,356,157
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1	Robut std.err	clustered by group	(year country)	

Table T.14: Heckman model for all persons, women

	FAMILY CHILDREN BENEFITS		CHILD DAY CARE	
ALL WOMEN 18-65	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.00455	0.0419***	0.00456	0.0420***
	(0.00591)	(0.00237)	(0.00594)	(0.00237)
Age 2	-0.000117*	-0.000557***	-0.000117*	-0.000558***
	(6.74e-05)	(2.74e-05)	(6.76e-05)	(2.74e-05)
Household type (Baseline: single person): two/more adults no childr	0.0689**	-0.225***	0.0684**	-0.225***
	(0.0308)	(0.0147)	(0.0308)	(0.0145)
two/more adults with children	0.173***	-0.264***	0.173***	-0.264***
	(0.0296)	(0.0170)	(0.0295)	(0.0169)
single parent	0.134***	0.0306*	0.136***	0.0303*
	(0.0331)	(0.0158)	(0.0332)	(0.0158)
other households	-0.00836	-0.00738	-0.0134	0.0105
	(0.102)	(0.0655)	(0.101)	(0.0629)
Presence disabled person/s	-0.102***	0.0875***	-0.101***	0.0861***
	(0.0225)	(0.0134)	(0.0226)	(0.0136)
Presence elderly person/s (80+)	0.244***	-0.0767***	0.242***	-0.0758***
	(0.0453)	(0.0139)	(0.0454)	(0.0141)
Presence small child/ren (0-6)	0.243***	0.131***	0.242***	0.131***
	(0.0196)	(0.00878)	(0.0196)	(0.00870)
Weekly hours paid work	0.0163***	0.000855***	0.0163***	0.000837***
	(0.000680)	(0.000274)	(0.000683)	(0.000273)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.216***	-0.114***	0.215***	-0.114***
	(0.0200)	(0.0101)	(0.0199)	(0.0103)
recognized third level education (ISCED 5-7)	0.466***	-0.142***	0.466***	-0.143***
	(0.0252)	(0.0184)	(0.0251)	(0.0182)
Equivalized income	0.00499***	-0.00810***	0.00492***	-0.00801***
	(0.00102)	(0.00160)	(0.00101)	(0.00157)
Self-reported health status (Baseline: very good): good		0.261***		0.261***
		(0.0124)		(0.0125)
fair		0.599***		0.600***
		(0.0195)		(0.0197)
bad		0.743***		0.744***
		(0.0254)		(0.0256)
very bad		0.875***		0.876***
		(0.0293)		(0.0294)
Chronic illness		0.155***		0.156***
		(0.0157)		(0.0158)
Limitation in activities (Baseline: no): yes		0.175***		0.174***
		(0.0185)		(0.0186)
yes, strongly limited		0.152***		0.151***
		(0.0252)		(0.0253)
Family children benefits	1.249**	-1.308***		
	(0.488)	(0.389)		
Child day care			3.707***	-2.203**
			(0.933)	(0.934)
Constant	-3.346***	-1.183***	-2.661***	-2.115***
	(0.522)	(0.418)	(0.247)	(0.196)
Corr	0.0693*		0.0694*	
	(0.0380)		(0.0381)	
Wald chi2	3495.15		3317.37	
Observations	1,345,941	1,345,941	1,345,941	1,345,941
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	Robut std.err	clustered by group	(year country)	

Table T.15: Heckman model for all persons, women

	SICKNESS HEALTH BENEFIT		OLD AGE BENEFITS	
ALL WOMEN 18-65	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.00539	0.0420***	0.00386	0.0423***
	(0.00596)	(0.00233)	(0.00595)	(0.00238)
Age 2	-0.000127*	-0.000558***	-0.000108	-0.000561***
	(6.80e-05)	(2.70e-05)	(6.77e-05)	(2.77e-05)
Household type (Baseline: single person): two/more adults no children	0.0667**	-0.225***	0.0698**	-0.224***
	(0.0308)	(0.0146)	(0.0305)	(0.0146)
two/more adults with children	0.169***	-0.264***	0.174***	-0.264***
	(0.0299)	(0.0169)	(0.0290)	(0.0171)
single parent	0.132***	0.0317**	0.133***	0.0297*
	(0.0331)	(0.0157)	(0.0331)	(0.0159)
other households	-0.00476	-0.00896	-0.000604	0.00725
	(0.100)	(0.0645)	(0.101)	(0.0639)
Presence disabled person/s	-0.106***	0.0866***	-0.0976***	0.0861***
	(0.0225)	(0.0133)	(0.0228)	(0.0137)
Presence elderly person/s (80+)	0.246***	-0.0767***	0.241***	-0.0749***
	(0.0453)	(0.0138)	(0.0453)	(0.0142)
Presence small child/ren (0-6)	0.243***	0.131***	0.244***	0.131***
	(0.0196)	(0.00871)	(0.0196)	(0.00872)
Weekly hours paid work	0.0163***	0.000848***	0.0164***	0.000816***
	(0.000688)	(0.000267)	(0.000680)	(0.000274)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.219***	-0.117***	0.216***	-0.114***
	(0.0201)	(0.0101)	(0.0199)	(0.0101)
recognized third level education (ISCED 5-7)	0.469***	-0.145***	0.465***	-0.142***
	(0.0252)	(0.0182)	(0.0249)	(0.0182)
Equivalized income	0.00481***	-0.00791***	0.00498***	-0.00828***
	(0.000997)	(0.00156)	(0.00102)	(0.00160)
Self-reported health status (Baseline: very good): good		0.262***		0.260***
		(0.0124)		(0.0124)
fair		0.602***		0.595***
		(0.0196)		(0.0196)
bad		0.747***		0.737***
		(0.0256)		(0.0254)
very bad		0.880***		0.869***
		(0.0295)		(0.0291)
Chronic illness		0.154***		0.154***
		(0.0161)		(0.0162)
Limitation in activities (Baseline: no): yes		0.175***		0.178***
		(0.0185)		(0.0186)
yes, strongly limited		0.152***		0.154***
		(0.0253)		(0.0255)
Sickness and health benefits	0.624***	-0.251*		
	(0.0838)	(0.136)		
Old age benefits			0.310*	0.521***
			(0.176)	(0.123)
Constant	-3.634***	-1.853***	-3.362***	-4.615***
	(0.282)	(0.357)	(0.760)	(0.497)
Corr	0.0754*		0.0633*	
	(0.0385)		(0.0385)	
Wald chi2	3982.8		3822	
Observations	1,345,941	1,345,941	1,345,941	1,345,941
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	Robut std.err	clustered by group (year country)		

Table T.16: Heckman model for all persons, women

	DISABILITY BENEFITS		TOTAL EXPENDITURE SOCIAL PROTECTION	
ALL WOMEN 18-65	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.00409	0.0422***	0.00437	0.0422***
	(0.00591)	(0.00238)	(0.00592)	(0.00236)
Age 2	-0.000111*	-0.000560***	-0.000114*	-0.000560***
	(6.73e-05)	(2.76e-05)	(6.73e-05)	(2.75e-05)
Household type (Baseline: single person): two/more adults no children	0.0699**	-0.225***	0.0687**	-0.224***
	(0.0306)	(0.0145)	(0.0306)	(0.0146)
two/more adults with children	0.174***	-0.264***	0.171***	-0.264***
	(0.0293)	(0.0168)	(0.0294)	(0.0169)
single parent	0.134***	0.0313**	0.131***	0.0314**
	(0.0331)	(0.0158)	(0.0332)	(0.0158)
other households	-0.00802	0.00400	-0.00209	-0.000179
	(0.102)	(0.0638)	(0.0999)	(0.0642)
Presence disabled person/s	-0.100***	0.0862***	-0.102***	0.0858***
	(0.0227)	(0.0135)	(0.0227)	(0.0136)
Presence elderly person/s (80+)	0.243***	-0.0762***	0.246***	-0.0756***
	(0.0452)	(0.0140)	(0.0451)	(0.0140)
Presence small child/ren (0-6)	0.243***	0.131***	0.243***	0.131***
	(0.0196)	(0.00874)	(0.0196)	(0.00873)
Weekly hours paid work	0.0164***	0.000804***	0.0163***	0.000799***
	(0.000682)	(0.000273)	(0.000685)	(0.000272)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.214***	-0.113***	0.216***	-0.114***
	(0.0197)	(0.0102)	(0.0199)	(0.0101)
recognized third level education (ISCED 5-7)	0.465***	-0.142***	0.468***	-0.142***
	(0.0249)	(0.0183)	(0.0251)	(0.0183)
Equivalized income	0.00505***	-0.00809***	0.00476***	-0.00810***
	(0.00101)	(0.00158)	(0.00100)	(0.00157)
Self-reported health status (Baseline: very good): good		0.261***		0.261***
		(0.0125)		(0.0127)
fair		0.599***		0.599***
		(0.0195)		(0.0202)
bad		0.743***		0.743***
		(0.0255)		(0.0263)
very bad		0.875***		0.876***
		(0.0292)		(0.0300)
Chronic illness		0.155***		0.154***
		(0.0160)		(0.0162)
Limitation in activities (Baseline: no): yes		0.175***		0.176***
		(0.0186)		(0.0187)
yes, strongly limited		0.151***		0.151***
		(0.0255)		(0.0256)
Disability benefits	0.943*	-0.424		
	(0.536)	(0.533)		
Total expenditure for social protection			0.164***	0.00420
			(0.0330)	(0.0379)
Constant	-2.775***	-2.162***	-3.707***	-2.507***
	(0.433)	(0.430)	(0.384)	(0.415)
Corr	0.0646*		0.0695*	
	(0.0382)		(0.0383)	
Wald chi2	3672.21		3723.61	
Observations	1,345,941	1,345,941	1,345,941	1,345,941
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	Robut std.err	clustered by group (year country)		

Table T.17: Heckman model for all persons, men

	NO MACRO		AUSTERITY	
ALL MEN 18-65	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.00951	0.0455***	0.00951	0.0455***
	(0.00680)	(0.00276)	(0.00679)	(0.00275)
Age 2	-0.000200***	-0.000568***	-0.000200***	-0.000567***
	(7.68e-05)	(3.11e-05)	(7.67e-05)	(3.09e-05)
Household type (Baseline: single person): two/more adults no children	0.0803**	-0.174***	0.0804**	-0.174***
	(0.0315)	(0.0116)	(0.0315)	(0.0116)
two/more adults with children	0.149***	-0.195***	0.149***	-0.195***
	(0.0315)	(0.0160)	(0.0316)	(0.0160)
single parent	0.164**	-0.0736***	0.165**	-0.0737***
	(0.0715)	(0.0224)	(0.0714)	(0.0224)
other households	-0.217*	0.0773	-0.217*	0.0785
	(0.114)	(0.0844)	(0.114)	(0.0843)
Presence disabled person/s	-0.152***	0.0607***	-0.152***	0.0607***
	(0.0227)	(0.0131)	(0.0227)	(0.0131)
Presence elderly person/s (80+)	0.0872*	-0.109***	0.0872*	-0.109***
	(0.0451)	(0.0150)	(0.0452)	(0.0150)
Presence small child/ren (0-6)	0.0502*	0.137***	0.0501*	0.137***
	(0.0257)	(0.0106)	(0.0258)	(0.0106)
Weekly hours paid work	0.0200***	0.000573*	0.0200***	0.000584*
	(0.000553)	(0.000300)	(0.000552)	(0.000299)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.214***	-0.117***	0.214***	-0.117***
	(0.0296)	(0.0102)	(0.0296)	(0.0102)
recognized third level education (ISCED 5-7)	0.399***	-0.166***	0.399***	-0.166***
	(0.0354)	(0.0164)	(0.0353)	(0.0164)
Equivalized income	0.00640***	-0.00752***	0.00640***	-0.00752***
	(0.000984)	(0.00122)	(0.000985)	(0.00122)
Self-reported health status (Baseline: very good): good		0.263***		0.263***
		(0.0131)		(0.0131)
fair		0.590***		0.590***
		(0.0190)		(0.0190)
bad		0.691***		0.691***
		(0.0255)		(0.0254)
very bad		0.811***		0.811***
		(0.0306)		(0.0306)
Chronic illness		0.129***		0.129***
		(0.0129)		(0.0129)
Limitation in activities (Baseline: no): yes		0.177***		0.178***
		(0.0193)		(0.0193)
yes, strongly limited		0.133***		0.133***
		(0.0296)		(0.0294)
Austerity			-4.85e-06	3.95e-05**
			(3.13e-05)	(1.88e-05)
Constant	-2.385***	-2.442***	-2.384***	-2.449***
	(0.173)	(0.121)	(0.174)	(0.118)
Corr	0.0364		0.0364	
	(0.0475)		(0.0474)	
Wald chi2	4172.35		4587.56	
Observations	1,235,996	1,235,996	1,235,996	1,235,996
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	Robut std.err	clustered by group (year country)		

Table T.18: Heckman model for all persons, men

	FAMILY CHILDREN BENEFITS		CHILD DAY CARE	
ALL MEN 18-65	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.00941	0.0451***	0.00939	0.0452***
	(0.00669)	(0.00272)	(0.00680)	(0.00272)
Age 2	-0.000199***	-0.000563***	-0.000199***	-0.000564***
	(7.56e-05)	(3.04e-05)	(7.68e-05)	(3.05e-05)
Household type (Baseline: single person): two/more adults no children	0.0789**	-0.175***	0.0784**	-0.175***
	(0.0318)	(0.0117)	(0.0318)	(0.0117)
two/more adults with children	0.146***	-0.195***	0.146***	-0.195***
	(0.0318)	(0.0164)	(0.0318)	(0.0161)
single parent	0.158**	-0.0752***	0.157**	-0.0739***
	(0.0713)	(0.0224)	(0.0714)	(0.0224)
other households	-0.246**	0.0867	-0.246**	0.104
	(0.124)	(0.0920)	(0.124)	(0.0888)
Presence disabled person/s	-0.155***	0.0642***	-0.155***	0.0630***
	(0.0225)	(0.0129)	(0.0228)	(0.0131)
Presence elderly person/s (80+)	0.0900*	-0.105***	0.0896*	-0.105***
	(0.0462)	(0.0145)	(0.0463)	(0.0148)
Presence small child/ren (0-6)	0.0488*	0.138***	0.0484*	0.138***
	(0.0260)	(0.0107)	(0.0260)	(0.0107)
Weekly hours paid work	0.0199***	0.000659**	0.0200***	0.000633**
	(0.000549)	(0.000290)	(0.000553)	(0.000293)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.214***	-0.117***	0.213***	-0.117***
	(0.0298)	(0.0101)	(0.0298)	(0.0103)
recognized third level education (ISCED 5-7)	0.399***	-0.167***	0.399***	-0.168***
	(0.0356)	(0.0167)	(0.0356)	(0.0166)
Equivalized income	0.00643***	-0.00755***	0.00640***	-0.00743***
	(0.000990)	(0.00123)	(0.000984)	(0.00121)
Self-reported health status (Baseline: very good): good		0.261***		0.262***
		(0.0131)		(0.0132)
fair		0.589***		0.590***
		(0.0191)		(0.0191)
bad		0.691***		0.691***
		(0.0254)		(0.0255)
very bad		0.809***		0.808***
		(0.0306)		(0.0308)
Chronic illness		0.126***		0.128***
		(0.0124)		(0.0124)
Limitation in activities (Baseline: no): yes		0.181***		0.180***
		(0.0190)		(0.0191)
yes, strongly limited		0.137***		0.136***
		(0.0287)		(0.0293)
Family children benefits	0.468	-1.498***		
	(0.585)	(0.478)		
Child day care			1.332	-2.621**
			(1.252)	(1.049)
Constant	-2.832***	-0.974*	-2.568***	-2.027***
	(0.569)	(0.511)	(0.259)	(0.224)
Corr	0.0326		0.0331	
	(0.0475)		(0.0476)	
Wald chi2	4253.46		4196.46	
Observations	1,226,999	1,226,999	1,226,999	1,226,999
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	Robut std.err	clustered by group	(year country)	

Table T.19: Hackman model for all persons, men

	SICKNESS HEALTH BENEFITS		OLD AGE BENEFITS	
ALL MEN 18-65	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.0104	0.0450***	0.00908	0.0456***
	(0.00672)	(0.00269)	(0.00687)	(0.00277)
Age 2	-0.000210***	-0.000563***	-0.000195**	-0.000568***
	(7.58e-05)	(3.02e-05)	(7.77e-05)	(3.12e-05)
Household type (Baseline: single person): two/more adults no children	0.0778**	-0.176***	0.0784**	-0.175***
	(0.0318)	(0.0116)	(0.0318)	(0.0117)
two/more adults with children	0.145***	-0.196***	0.145***	-0.196***
	(0.0320)	(0.0163)	(0.0321)	(0.0164)
single parent	0.157**	-0.0737***	0.156**	-0.0758***
	(0.0712)	(0.0223)	(0.0714)	(0.0227)
other households	-0.240**	0.0813	-0.241**	0.0991
	(0.122)	(0.0925)	(0.122)	(0.0896)
Presence disabled person/s	-0.159***	0.0638***	-0.153***	0.0624***
	(0.0222)	(0.0129)	(0.0229)	(0.0133)
Presence elderly person/s (80+)	0.0908**	-0.107***	0.0904*	-0.104***
	(0.0463)	(0.0144)	(0.0461)	(0.0150)
Presence small child/ren (0-6)	0.0499*	0.138***	0.0486*	0.138***
	(0.0258)	(0.0107)	(0.0262)	(0.0107)
Weekly hours paid work	0.0198***	0.000681**	0.0200***	0.000581*
	(0.000556)	(0.000278)	(0.000559)	(0.000300)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.216***	-0.120***	0.213***	-0.118***
	(0.0299)	(0.0103)	(0.0298)	(0.0100)
recognized third level education (ISCED 5-7)	0.403***	-0.171***	0.398***	-0.167***
	(0.0358)	(0.0166)	(0.0355)	(0.0165)
Equivalized income	0.00625***	-0.00733***	0.00640***	-0.00768***
	(0.000979)	(0.00120)	(0.000987)	(0.00122)
Self-reported health status (Baseline: very good): good		0.263***		0.261***
		(0.0131)		(0.0131)
fair		0.593***		0.585***
		(0.0190)		(0.0192)
bad		0.696***		0.685***
		(0.0255)		(0.0254)
very bad		0.814***		0.802***
		(0.0307)		(0.0306)
Chronic illness		0.126***		0.126***
		(0.0125)		(0.0127)
Limitation in activities (Baseline: no): yes		0.179***		0.182***
		(0.0190)		(0.0192)
yes, strongly limited		0.136***		0.138***
		(0.0287)		(0.0294)
Sickness and health benefits	0.442***	-0.352**		
	(0.120)	(0.153)		
Old age benefits			0.265	0.484***
			(0.187)	(0.154)
Constant	-3.462***	-1.583***	-3.447***	-4.437***
	(0.311)	(0.412)	(0.816)	(0.611)
Corr	0.0414		0.0308	
	(0.0484)		(0.0482)	
Wald chi2	4597.75		4111.7	
Observations	1,226,999	1,226,999	1,226,999	1,226,999
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	Robut std.err	clustered by group (year country)		

Table T.19: Heckman model for all persons, men

	DISABILITY BENEFITS		TOTAL EXPENDITURE SOCIAL PROTECTION	
ALL MEN 18-65	unmet needs due to time poverty	Unmet needs	unmet needs due to time poverty	Unmet needs
Age	0.00909	0.0455***	0.00961	0.0455***
	(0.00686)	(0.00277)	(0.00678)	(0.00274)
Age 2	-0.000196**	-0.000568***	-0.000201***	-0.000568***
	(7.75e-05)	(3.11e-05)	(7.67e-05)	(3.09e-05)
Household type (Baseline: single person): two/more adults no children	0.0788**	-0.175***	0.0783**	-0.175***
	(0.0318)	(0.0117)	(0.0318)	(0.0117)
two/more adults with children	0.146***	-0.194***	0.144***	-0.195***
	(0.0318)	(0.0161)	(0.0319)	(0.0161)
single parent	0.156**	-0.0724***	0.154**	-0.0733***
	(0.0717)	(0.0226)	(0.0715)	(0.0225)
other households	-0.246**	0.0981	-0.238*	0.0922
	(0.123)	(0.0898)	(0.122)	(0.0902)
Presence disabled person/s	-0.155***	0.0632***	-0.155***	0.0626***
	(0.0226)	(0.0130)	(0.0226)	(0.0131)
Presence elderly person/s (80+)	0.0905*	-0.106***	0.0914**	-0.105***
	(0.0462)	(0.0147)	(0.0462)	(0.0146)
Presence small child/ren (0-6)	0.0485*	0.138***	0.0488*	0.138***
	(0.0261)	(0.0107)	(0.0260)	(0.0107)
Weekly hours paid work	0.0200***	0.000576*	0.0199***	0.000573*
	(0.000557)	(0.000299)	(0.000557)	(0.000295)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	0.213***	-0.116***	0.214***	-0.117***
	(0.0298)	(0.0103)	(0.0298)	(0.0102)
recognized third level education (ISCED 5-7)	0.399***	-0.167***	0.401***	-0.167***
	(0.0356)	(0.0166)	(0.0356)	(0.0167)
Equivalized income	0.00644***	-0.00752***	0.00627***	-0.00749***
	(0.000984)	(0.00121)	(0.000988)	(0.00120)
Self-reported health status (Baseline: very good): good		0.262***		0.262***
		(0.0131)		(0.0134)
fair		0.589***		0.590***
		(0.0191)		(0.0196)
bad		0.690***		0.691***
		(0.0254)		(0.0264)
very bad		0.807***		0.809***
		(0.0307)		(0.0312)
Chronic illness		0.126***		0.126***
		(0.0125)		(0.0127)
Limitation in activities (Baseline: no): yes		0.181***		0.180***
		(0.0192)		(0.0193)
yes, strongly limited		0.135***		0.134***
		(0.0294)		(0.0298)
Disability benefits	0.472	-0.642		
	(0.549)	(0.609)		
Total expenditure for social protection			0.109***	-0.0100
			(0.0391)	(0.0433)
Constant	-2.703***	-1.984***	-3.439***	-2.343***
	(0.414)	(0.491)	(0.404)	(0.484)
Corr	0.0314		0.0361	
	(0.0478)		(0.0482)	
Wald chi2	4353.26		4188.32	
Observations	1,226,999	1,226,999	1,226,999	1,226,999
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	Robut std.err clustered by group (year country)			

Table T.20: Regression on weekly hours of paid work, persons with partner

HOURS PAID WORK with partner	AUSTERITY		FAMILI CHILDREN BENEFITS	
	Women	Men	Women	Men
Age	2.454***	3.419***	2.444***	3.427***
	(0.0779)	(0.0756)	(0.0775)	(0.0759)
Age2	-0.0310***	-0.0422***	-0.0309***	-0.0423***
	(0.000893)	(0.000930)	(0.000888)	(0.000934)
Household type (Baseline: two adults no children): two/more adults with children	-4.182***	1.396***	-4.213***	1.389***
	(0.359)	(0.148)	(0.361)	(0.150)
single parent	-2.947	-5.211*	-2.989	-5.101*
	(2.647)	(2.813)	(2.647)	(2.807)
other households	-2.038***	-0.305	-2.178***	-0.337
	(0.512)	(0.525)	(0.543)	(0.571)
Presence disabled person/s	-5.287***	-9.642***	-5.294***	-9.628***
	(0.261)	(0.426)	(0.262)	(0.430)
Presence elderly person/s (80+)	2.496***	4.910***	2.429***	4.893***
	(0.281)	(0.311)	(0.282)	(0.320)
Presence small child/ren (0-6)	-6.222***	-1.634***	-6.221***	-1.652***
	(0.316)	(0.135)	(0.319)	(0.135)
Partner's weekly hours paid work	0.111***	0.0614***	0.110***	0.0612***
	(0.00500)	(0.00321)	(0.00508)	(0.00326)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	5.941***	3.537***	5.960***	3.538***
	(0.189)	(0.179)	(0.189)	(0.182)
recognized third level education (ISCED 5-7)	11.95***	6.379***	11.95***	6.387***
	(0.257)	(0.322)	(0.259)	(0.328)
Income other household members	-0.0437***	-0.0405***	-0.0435***	-0.0401***
	(0.00282)	(0.00595)	(0.00281)	(0.00594)
Austerity	-0.000129	-0.000432*		
	(0.000117)	(0.000230)		
Family children benefits			5.299**	10.04***
			(2.210)	(3.196)
Constant	-27.55***	-29.28***	-32.53***	-39.32***
	(1.732)	(1.854)	(2.720)	(3.462)
Observations	874,403	796,128	867,640	790,171
R-squared	0.222	0.235	0.221	0.235
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table T.21: Regression on weekly hours of paid work, persons with partner

HOURS PAID WORK with partner	CHILD DAY CARE		SICKNESS HEALTH BENEFITS	
	Women	Men	Women	Men
Age	2.444***	3.426***	2.449***	3.430***
	(0.0775)	(0.0759)	(0.0770)	(0.0756)
Age2	-0.0309***	-0.0423***	-0.0309***	-0.0423***
	(0.000888)	(0.000934)	(0.000883)	(0.000932)
Household type (Baseline: two adults no children): two/more adults with children	-4.211***	1.394***	-4.205***	1.395***
	(0.361)	(0.150)	(0.360)	(0.149)
single parent	-2.934	-5.073*	-2.931	-4.996*
	(2.639)	(2.807)	(2.643)	(2.816)
other households	-2.374***	-0.568	-2.116***	-0.240
	(0.528)	(0.545)	(0.558)	(0.587)
Presence disabled person/s	-5.290***	-9.624***	-5.303***	-9.630***
	(0.263)	(0.429)	(0.262)	(0.429)
Presence elderly person/s (80+)	2.433***	4.897***	2.447***	4.923***
	(0.281)	(0.317)	(0.282)	(0.322)
Presence small child/ren (0-6)	-6.224***	-1.656***	-6.219***	-1.650***
	(0.319)	(0.134)	(0.319)	(0.135)
Partner's weekly hours paid work	0.111***	0.0613***	0.110***	0.0610***
	(0.00512)	(0.00326)	(0.00505)	(0.00325)
Education (Baseline: lees than secondary stage of secondary educatio): second stage of secondary level education (ISCED 3)	5.954***	3.527***	6.008***	3.611***
	(0.192)	(0.183)	(0.188)	(0.172)
recognized third level education (ISCED 5-7)	11.96***	6.394***	11.99***	6.451***
	(0.262)	(0.328)	(0.258)	(0.317)
Income other hh members	-0.0438***	-0.0408***	-0.0441***	-0.0414***
	(0.00283)	(0.00599)	(0.00281)	(0.00601)
Child day care	24.83***	28.20***		
	(3.487)	(6.441)		
Sickness and health benefits			3.302***	4.906***
			(0.336)	(0.748)
Constant	-31.36***	-34.04***	-35.45***	-41.48***
	(1.760)	(1.973)	(1.902)	(2.101)
Observations	867,640	790,171	867,640	790,171
R-squared	0.222	0.235	0.222	0.236
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table T.22: Regression on weekly hours of paid work, persons with partner

HOURS PAID WORK with partner	OLD AGE BENEFITS		DISABILITY BENEFITS	
	Women	Men	Women	Men
Age	2.443***	3.424***	2.442***	3.424***
	(0.0776)	(0.0760)	(0.0776)	(0.0761)
Age2	-0.0308***	-0.0423***	-0.0308***	-0.0423***
	(0.000888)	(0.000935)	(0.000889)	(0.000936)
Household type (Baseline: two adults no children): two/more adults with children	-4.211***	1.396***	-4.215***	1.394***
	(0.360)	(0.149)	(0.361)	(0.149)
single parent	-2.979	-5.194*	-3.027	-5.157*
	(2.651)	(2.809)	(2.649)	(2.813)
other households	-2.190***	-0.374	-2.284***	-0.427
	(0.537)	(0.560)	(0.530)	(0.551)
Presence disabled person/s	-5.287***	-9.622***	-5.291***	-9.625***
	(0.265)	(0.430)	(0.263)	(0.429)
Presence elderly person/s (80+)	2.432***	4.898***	2.435***	4.902***
	(0.284)	(0.319)	(0.282)	(0.319)
Presence small child/ren (0-6)	-6.219***	-1.655***	-6.221***	-1.654***
	(0.319)	(0.134)	(0.319)	(0.135)
Partner's weekly hours paid work	0.111***	0.0614***	0.111***	0.0614***
	(0.00503)	(0.00324)	(0.00505)	(0.00325)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	5.961***	3.539***	5.948***	3.532***
	(0.190)	(0.179)	(0.190)	(0.178)
recognized third level education (ISCED 5-7)	11.94***	6.389***	11.94***	6.387***
	(0.259)	(0.323)	(0.259)	(0.323)
Income other household members	-0.0437***	-0.0403***	-0.0436***	-0.0403***
	(0.00279)	(0.00593)	(0.00282)	(0.00596)
Old age benefits	1.634**	0.477		
	(0.777)	(1.266)		
Disability benefits			5.698*	3.626
			(2.935)	(3.672)
Constant	-34.08***	-31.45***	-31.41***	-32.07***
	(3.810)	(5.462)	(2.715)	(3.642)
Observations	867,640	790,171	867,640	790,171
R-squared	0.221	0.235	0.221	0.235
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table T.23: Regression on weekly hours of paid work, persons with partner

HOURS PAID WORK with partner	TOTAL EXPENDITURE IN SOCIAL PROTECTION	
	Women	Men
Age	2.448***	3.426***
	(0.0772)	(0.0760)
Age2	-0.0309***	-0.0423***
	(0.000885)	(0.000935)
Household type (Baseline: two adults no children): two/more adults with children	-4.207***	1.394***
	(0.359)	(0.148)
single parent	-2.896	-5.098*
	(2.643)	(2.809)
other households	-2.283***	-0.441
	(0.527)	(0.556)
Presence disabled person/s	-5.299***	-9.630***
	(0.263)	(0.429)
Presence elderly person/s (80+)	2.445***	4.921***
	(0.284)	(0.323)
Presence small child/ren (0-6)	-6.216***	-1.651***
	(0.319)	(0.135)
Partner's weekly hours paid work	0.110***	0.0613***
	(0.00503)	(0.00325)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	5.997***	3.579***
	(0.187)	(0.176)
recognized third level education (ISCED 5-7)	11.99***	6.438***
	(0.257)	(0.318)
Income other household members	-0.0444***	-0.0417***
	(0.00284)	(0.00605)
Total expenditure for social protection	1.149***	1.245***
	(0.181)	(0.220)
Constant	-38.86***	-41.88***
	(2.357)	(3.035)
Observations	867,640	790,171
R-squared	0.222	0.236
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Table T.23: Regression on weekly hours of paid work, persons without partner

HOURS PAID WORK no partner	AUSTERITY		FAMILI CHILDREN BENEFITS	
	Women	Men	Women	Men
Age	3.121***	3.417***	3.115***	3.416***
	(0.101)	(0.0738)	(0.101)	(0.0738)
Age 2	-0.0375***	-0.0407***	-0.0374***	-0.0407***
	(0.00121)	(0.000908)	(0.00121)	(0.000910)
Household type (Baseline: single person):two/more adults with children	-2.080***	-1.230**	-2.088***	-1.205**
	(0.275)	(0.575)	(0.277)	(0.575)
single parent	3.852***	6.849***	3.994***	6.871***
	(1.112)	(2.318)	(1.164)	(2.417)
other households	-13.57***	-19.49***	-13.57***	-19.49***
	(0.322)	(0.475)	(0.324)	(0.477)
Presence disabled person/s	3.779*	-1.201	3.178	-2.966
	(2.153)	(3.724)	(2.237)	(4.073)
Presence elderly person/s (80+)	-5.958***	0.206	-5.957***	0.198
	(0.368)	(1.041)	(0.369)	(1.039)
Presence small child/ren (0-6)	0.220	0.0213	0.266	0.0965
	(0.502)	(0.702)	(0.470)	(0.544)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	-0.390***	-0.274***	-0.390***	-0.273***
	(0.0195)	(0.0282)	(0.0194)	(0.0282)
recognized third level education (ISCED 5-7)	10.28***	8.417***	10.27***	8.407***
	(0.243)	(0.363)	(0.245)	(0.369)
Income other household members	-0.390***	-0.274***	-0.390***	-0.273***
	(0.0195)	(0.0282)	(0.0194)	(0.0282)
Austerity	-0.000382*	-0.000595***		
	(0.000195)	(0.000217)		
Family children benefits			6.468***	10.75***
			(2.190)	(2.836)
Constant	-35.46***	-35.45***	-41.66***	-45.90***
	(2.034)	(1.617)	(3.193)	(3.458)
Observations	205,428	144,880	204,290	144,300
R-squared	0.373	0.336	0.373	0.336
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table T.24: Regression on weekly hours of paid work, persons without partner

HOURS PAID WORK no partner	CHILD DAY CARE		SICKNESS HEALTH BENEFITS	
	Women	Men	Women	Men
Age	3.112***	3.414***	3.112***	3.419***
	(0.101)	(0.0742)	(0.101)	(0.0736)
Age 2	-0.0374***	-0.0406***	-0.0374***	-0.0407***
	(0.00121)	(0.000913)	(0.00121)	(0.000909)
Household type (Baseline: single person):two/more adults with children	-2.078***	-1.208**	-2.080***	-1.185**
	(0.276)	(0.575)	(0.276)	(0.574)
single parent	3.836***	6.621***	4.038***	6.936***
	(1.142)	(2.366)	(1.169)	(2.421)
other households	-13.57***	-19.47***	-13.59***	-19.50***
	(0.323)	(0.475)	(0.324)	(0.477)
Presence disabled person/s	3.233	-2.790	3.084	-2.948
	(2.228)	(4.045)	(2.182)	(4.115)
Presence elderly person/s (80+)	-5.953***	0.200	-5.969***	0.140
	(0.369)	(1.036)	(0.370)	(1.040)
Presence small child/ren (0-6)	0.287	0.151	0.233	0.0486
	(0.408)	(0.530)	(0.440)	(0.443)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	-0.390***	-0.273***	-0.390***	-0.273***
	(0.0194)	(0.0283)	(0.0195)	(0.0282)
recognized third level education (ISCED 5-7)	10.28***	8.404***	10.30***	8.468***
	(0.246)	(0.367)	(0.245)	(0.363)
Income other household members	-0.390***	-0.273***	-0.390***	-0.273***
	(0.0194)	(0.0283)	(0.0195)	(0.0282)
Child day care	18.38***	28.14***		
	(4.440)	(5.470)		
Sickness and health benefits			2.880***	4.750***
			(0.547)	(0.604)
Constant	-38.26***	-39.92***	-42.18***	-46.84***
	(2.247)	(1.871)	(2.363)	(2.085)
Observations	204,290	144,300	204,290	144,300
R-squared	0.373	0.336	0.373	0.336
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table T.25: Regression on weekly hours of paid work, persons without partner

HOURS PAID WORK no partner	OLD AGE BENEFITS		DISABILITY BENEFITS		TOTAL EXPANDITURE IN SOCIAL PROTECTION	
	Women	Men	Women	Men	Women	Men
Age	3.113***	3.415***	3.113***	3.415***	3.110***	3.417***
	(0.101)	(0.0741)	(0.101)	(0.0741)	(0.101)	(0.0741)
Age 2	-0.0374***	-0.0407***	-0.0374***	-0.0407***	-0.0374***	-0.0407***
	(0.00121)	(0.000912)	(0.00121)	(0.000912)	(0.00122)	(0.000913)
Household type (Baseline: single person):two/more adults with children	-2.083***	-1.195**	-2.087***	-1.211**	-2.079***	-1.195**
	(0.276)	(0.576)	(0.276)	(0.575)	(0.275)	(0.575)
single parent	3.952***	6.845***	3.926***	6.816***	3.891***	6.743***
	(1.148)	(2.388)	(1.151)	(2.384)	(1.151)	(2.378)
other households	-13.56***	-19.47***	-13.57***	-19.48***	-13.58***	-19.48***
	(0.324)	(0.478)	(0.323)	(0.479)	(0.323)	(0.477)
Presence disabled person/s	3.114	-2.884	3.205	-2.792	3.198	-2.725
	(2.228)	(4.047)	(2.220)	(4.052)	(2.163)	(4.093)
Presence elderly person/s (80+)	-5.961***	0.231	-5.953***	0.222	-5.963***	0.180
	(0.370)	(1.044)	(0.370)	(1.041)	(0.370)	(1.045)
Presence small child/ren (0-6)	0.552	0.522	0.394	0.320	0.258	0.137
	(0.504)	(0.685)	(0.479)	(0.704)	(0.389)	(0.576)
Education (Baseline: lees than secondary stage of secondary education): second stage of secondary level education (ISCED 3)	-0.390***	-0.273***	-0.390***	-0.273***	-0.391***	-0.274***
	(0.0194)	(0.0282)	(0.0195)	(0.0282)	(0.0196)	(0.0283)
recognized third level education (ISCED 5-7)	10.27***	8.405***	10.26***	8.397***	10.29***	8.443***
	(0.245)	(0.367)	(0.245)	(0.363)	(0.246)	(0.362)
Income other household members	-0.390***	-0.273***	-0.390***	-0.273***	-0.391***	-0.274***
	(0.0194)	(0.0282)	(0.0195)	(0.0282)	(0.0196)	(0.0283)
Old age benefits	-2.351**	-3.149**				
	(0.994)	(1.315)				
Disability benefits			3.366	3.167		
			(3.290)	(3.684)		
Total expenditure for social protection					0.935***	1.124***
					(0.172)	(0.219)
Constant	-25.77***	-22.63***	-37.79***	-37.77***	-44.50***	-46.55***
	(4.868)	(5.569)	(3.050)	(3.110)	(2.203)	(2.380)
Observations	204,290	144,300	204,290	144,300	204,290	144,300
R-squared	0.373	0.335	0.373	0.335	0.373	0.336
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Concluding Remarks

The works presented in this thesis analyses unpaid care and domestic work from several perspectives – as an economic component, as a source of wellbeing and as a cause of inequality – and are linked among them by two underling questions: is a better division of unpaid care and domestic work possible? Would our societies benefit from it?

The analysis is grounded on a feminist approach to the study of economic phenomena, described in the first chapter, that recognizes the central role of unpaid care and domestic work, along with public services and market goods and services, in the process of social reproduction of the population. This represents a dynamic model, that reflects historical relationship between men and women, classes and generations.

Therefore, the household through unpaid care and domestic work takes care of the creation and sustenance of the work force (Addabbo, 2003). Besides its central role in the process of reproduction of the population, the household is not the only actor involved in this process. Care responsibilities are distributed across four different welfare pillars, families, the State, the market, and the community, and the way in which they are distributed determines the 'care regime' (Razavi, 2007). Indeed, all welfare regimes have a 'caring regime' measured by the degree of 'commodification' and 'familization' the State determines.

The interdependence of paid and unpaid economic activities mediated by these four actors became a key research issue and opens the road to the study of the contribution of unpaid care and domestic work to wellbeing, income and consumption of individuals and households, as well as to the analysis of the effects of its unbalanced distributions.

For analysing unpaid care and domestic work, as presented in chapter 2, we need the appropriate tools. First of all a definition. Joining the economic and social meanings of unpaid care and domestic work we could say that it includes those household productive activities that are

carried out by and for the household's members, and that are characterized by their standards and routine (Oakley, 2018), and that, ultimately, might (in most instances) be replaced by market goods or paid services (Reid, 1934).

The following analytical task entails the measurement and valuation of unpaid care work. The main tool for the collecting information on unpaid care and domestic work are time-use surveys. Time-use surveys collect information on individual time-use and allow the analysis to connect time-use with other variables of interest. However, these data are not always available or collected on a regular basis. For the converting unpaid care and domestic work into monetary value there are different methods and the research should carefully choose the most appropriate to scope of the analysis in order to avoid over/underestimation. For example, deciding whether to count or not simultaneous activities.

The analysis on data relative to time use highlights that all EU countries are affected by an important gender inequality regarding the division of work. The data highlights that in EU28 women on average spend more time in unpaid care and domestic work than men, while the opposite is true for paid work. And, when we combine the time spent in paid and unpaid work, the data confirms that employed women work more than employed men.

In Italy differences in time-use between women and men are among the biggest in Europe. The difference in working time between women and men striking. In Italy, women on average work almost 10 hours per week more than men when unpaid care and domestic work is taken into consideration. This is due to the fact that even if women spend less time on average than men in paid work, they also spend an average in unpaid care and domestic work almost two times more hours than men. The unequal distribution of work between women and men is at the basis of women's time-poverty, as we see in chapter 3.

Women's time-poverty, together with its consequences on household wellbeing, could be relieved by an increase in the availability of public services as LIMTIP studies demonstrate (Zacharias, Antonopoulos and Masterson, 2012; Zacharias, Masterson and Kim, 2014; Zacharias, Masterson and Memis, 2014; Zacharias *et al.*, 2018). The analysis of time and income poverty in Italy represent the first LIMTIP attempt in a developed country. The study entails, first of all, the creation of an *ad hoc* dataset that unifies time-use information with the other economic variables of interest.

The LIMTIP analysis of the Italian data highlighted that the poverty rate estimated by the LIMTIP is higher than the one recorded by the "at risk of poverty" measure. In 2014, 22.5 percent of households were below the LIMTIP poverty threshold compared to 19.5 percent that were recorded as "at risk of poverty". Hidden poverty amounted, therefore, to 3 percent, which was 0.6 percent higher than in 2008. This means that standard poverty measures not only underestimated the poverty rate, but also the increase in poverty during the years following the 2008's global economic crisis. This might be due to two factors. On one side, households became poorer on average because their incomes decreased. On the other side, austerity policies affected the provision of publicly provided social care services increasing the amount of household production required of the household. Secondly, the study on Italy shows that poverty has important gender components. Especially with regards to time poverty, the analysis highlights that more women than men suffer from time-poverty, especially when they are employed. In particular, data highlights that time poverty rises for both men and women as the number of hours of employment increases, but with a fairly wide gender gap to the disadvantage of women. Finally, the third conclusion of the LIMTIP studies is that creating new jobs for poor people is not a sufficient solution for alleviating poverty. Considering the ratio of the monetized value of the time deficits to the net wages for full-time workers, the analysis highlights that the average female worker in the bottom income quintile would have to spend almost 90 percent of her earnings on purchasing

market substitutes. Differently, men in the lower income quintile would have to spend on average around 20 percent of their net wages to cover their time deficits.

The analysis suggests that to promote the entrance on women that belong to the poorest household into the labour market the state should offer a larger amount of affordable and quality care services, that would one side ease women for a part of their care responsibility allowing them to enter the labour market, and, on the other side, create new quality jobs. The redistribution of unpaid care and domestic work is at the centre of the last empirical analysis of this thesis, too.

The fourth chapter tries to overcome the limit of data availability on time-use by the employment of a variable present in the EU-SILC that records a condition of time-poverty and that can be linked with the total workload as the sum of paid and unpaid work. A variable has been constructed that reports the possibility of unmet needs caused by time-poverty and it has been used in a Heckman probit model in other to estimate the impact of public expenditure in social protection on time-poverty. The data analysis returned some unexpected results. Instead of decreasing the probability of unmet need due to time-poverty, public expenditure in social protection increases it, for women in particular. The variables directed to family and children (family and children benefits and child day care) have the highest coefficients among all the macro variables, highlighting that public expenditure in social protection increases for women more than for men and for women with a partner more than for single women the probability of unmet needs due to time-poverty.

The author suggests two possible explanations. Expenditure in social protection could, on one side, contribute to increasing the number of hours of paid work among the population by creating new jobs in the public services sector, on the other side, lift people from a part of the care responsibilities encouraging more persons to enter the labour market or to increase their amount of hours of paid work, for example, working full-time instead that part-time. In this case, the hours

of unpaid care and domestic work that public services are able to lift would be overcompensated by an increased engagement in the labour market.

The analysis highlights a second element that could offer an explanation to the unexpected results. For every additional hour of paid work of the partner women's probability of unmet needs due to time-poverty increases more than that of men. This could be signal of the limited redistribution of unpaid care and domestic work between the partners when women increase their engagement in the labour market.

The analyses performed in this thesis confirmed that unpaid care and domestic work and its redistribution are topics that deserve much attention. Moreover, this work opened at least three avenues for future research:

1- As chapter 2 pointed out, the analysis of simultaneous activities in time-use diaries could offer some particularly interesting results in a gender perspective. This information is included in the Italian TUS and could give the possibility to estimate an alternative size of the gender gap in work time;
2- The LIMTIP analysis in chapter 3 does not entails an employment simulation. This could represent the natural development of this research. Moreover, the simulation could include the redistribution of unpaid care and domestic work between the partners to evaluate its impact;
3- The variable for unmet needs due to time-poverty, created in the fourth chapter, could be used for estimating the impact of other monetary variables on time-poverty, as for example benefits and social transfers, that are available in the EU-SILC. Moreover, the model could be further developed for evaluating the links between time-poverty and labor market participation.

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