



The multidimensionality of poverty: Time poverty in Spain

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Abstract

In the last few years the concept of poverty has evolved from simply being a measure of income poverty to a multidimensional measure that takes into consideration essential aspects for the attainment of certain levels of wellbeing. This paper assesses how the incorporation of time can contribute to the measurement of poverty. To this end, we reviewed the time poverty literature and focused on the Spanish case. We use the Spanish Time-Use Survey 2009-2010 to analyse time poverty in Spain, and estimate a probit model to assess the probability of being time poor in Spain and identify key factors associated with time poverty in Spain.

Keywords: time poverty, gender, wellbeing, Spanish Time Use Survey 2009-2010.

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1. Introduction

Measures of wellbeing and poverty have commonly taken income to be the variable that best represents wellbeing (Alkire and Foster, 2011). Given the limitations of the neoclassical approach in economics, the issue of alternative measures has been debated in the literature over many decades. There have been numerous attempts at incorporating a multidimensional perspective on the phenomenon that consider other elements in addition to income or consumption.

Time and money are two of the main constraints imposed on individuals and families in societies (Burchardt, 2008). Consideration of the time factor is essential because there are key differences in the way men and women use time that should be made explicit, and because it allows for the inclusion into the analysis of other aspects that are crucial for people's wellbeing, such as care work, but which are usually absent from the analysis of poverty focused solely on income.

In a multidimensional context, the identification of the poor is more difficult as more indicators and aspects must be taken into consideration to define this vulnerable population (Alkire and Foster, 2011). In this respect, relevant contributions have lately been made on how to measure the multidimensionality of poverty, including using time-use data as a strategic variable for an improved understanding of poverty (Vickery, 1977; Bardasi and Wodon, 2006;

Burchardt, 2008; Kalenkosky, Hamrick and Andrews, 2011; Antonopoulos, Masterson and Zacharias, 2012).

Incorporating time among the indicators of poverty is a way of acknowledging that households and individuals need more than money alone to achieve a minimum level of wellbeing, which not only affects their current situation but will also determine their future lives (Burchardt, 2010). This approach closely relates to the capability approach proposed by Sen (2004), based on what people are and do (functionalities) and on the freedom they have to be and do it (capabilities) (Alkire, 2013). According to this approach, if people have time poverty limitations, this will affect not only their present functioning but also their future capabilities (Gammage, 2009; Burchardt, 2010).

Feminist efforts in the field of time-use studies have also been very important in providing support for the theoretical framework of the present study. In particular, we follow Power's (2004) consideration of 'social provisioning' that summarises the 'consensus' among feminist economists around five fundamental methodological points. Among other principles, they argue that care and domestic work are central aspects of any economic framework and must be treated as core elements of the analysis from the beginning. The concept of social provisioning allows for a wider understanding of the economic activity that includes women's unpaid and nonmarket activities, avoiding the traditional concept of 'economic' as referring to something that is exchanged in the market excluding care and housework activities, which are essential for the analyses of wellbeing and poverty.

It is also important to focus our attention on the need to organise the time devoted to different activities in our daily life. This leads to the idea that there are multiple heterogeneous 'times' as an alternative to the single concept of 'time' (Adam, 2013). Time has various dimensions. There is a time that can be defined as objective, which can be measured and quantified, and which regulates people's activities. There is also a subjective time, which is difficult to quantify as it does not materialise in any concrete activity, but which is present in 'invisible' tasks that nevertheless demand concentration and energy from the person. For example, it has been shown that time devoted to leisure, personal relationships and citizen participation has a high degree of flexibility; in fact, it is often used as an 'adjustment variable' in relation to the time spent on domestic work and caregiving: an increase in the latter quickly reduces leisure time, particularly among women (Carrasco, 2005). At the same time, it is also important to underline that the different times are not equal in terms of social importance or recognition, and that (Carrasco and Recio, 2014).

In this paper, the focus is on the study of time poverty in Spain. To this end, we use the latest available Spanish Time Use Survey (2009-2010). Following the approach of Burchardt (2008) in UK, there is a widespread debate on how to measure time poverty. In this work, time poverty is understood as the condition of some individuals who do not have enough available time after working (in paid or unpaid work) and after time doing necessary activities (more details are provided in Section 3) (Bardasi and Wodon, 2006; Burchardt, 2008).

In Spain, a number of studies have sought to measure poverty from a multidimensional perspective (Prieto Alaiz, González González and García Pérez, 2016; Ortiz Serrano and Izquierdo, 2009), but none have directly incorporated time as a variable. This paper addresses this gap in the literature by analysing the multidimensionality of poverty in Spain using data from a nationally representative time-use survey. The case of Spain is interesting as it has one of the highest income poverty rates, those with incomes below 50% of the median income (OECD, 2017), in the European Union (15.5%), and one of the largest gender gaps in time use (Gálvez-Muñoz, Rodríguez-Modroño and Domínguez-Serrano, 2011). This papers set out to

further demonstrate the importance of time use in terms of gender as prior literature has consistently shown that women experience both time and income poverty to a greater extent than men (Burchardt, 2008; Burda and Hamermesh, 2010; Williams, Masuda and Tallis, 2016; Wodon and Blackden, 2006). The main aim of this paper is to explore whether time poverty in Spain follows the same pattern in connection with gender inequality found elsewhere.

The remainder of this paper is structured as follows. The next section presents the theoretical framework and a review of the extant empirical research on time poverty. The third section explains the methodology and data. The fourth section presents the results of the analysis of time and income poverty in Spain. Finally, the last section presents the main conclusions of the study.

2. Measuring time poverty

Recent years have witnessed a growing concern about time poverty, and a number of scholars have drawn attention to the distribution of available time and its relationship to the individual and household situation (Bittman and Wajcman, 2000; Chatzitheochari and Arber, 2012; Gershuny and Sullivan, 2003; Sayer, 2005). A number of studies, furthermore, have shown how a growing number of people describe their lives as stressful and feel they do not have enough time to do everything they need (Bittman and Wajcman, 2000; Wajcman, 2015). In this paper, we analyse time poverty in Spain and define the time poverty threshold, which is mainly determined by time devoted to paid work, unpaid work, and the fulfilment of the person's basic needs.

Before analysing time poverty in detail, it is important to define the different categories of human activities. Ås (1978) identified four broad categories of time use: necessary time; contracted time; committed time; and free time. Necessary time refers to the time required to satisfy basic needs such as sleep, eating and personal care. Contracted time is the time spent on regular paid work. Committed time refers to activities associated with housework and care. As we elaborate further below, all the activities included in this category have the character of work, albeit unpaid, because they can be done by a third party in return for pay (Ås, 1978; Gershuny and Robinson, 1988). However, following prior time poverty research (Burchardt, 2008; Kalenkoski, Hamrick and Andrews, 2011), in this paper committed time is defined as the time dedicated to paid work, unpaid work and the performance of certain basic activities among others, with some variations (detailed below).

In general terms, scholars measure time poverty in two different ways. The first group of researchers impute market values to time in different activities. In other words, they convert measures of time into measures of income. Vickery (1977), one of the first to use this approach, developed a concept of income poverty adjusted to time in the United States. In the second approach, measures of time are used directly and time is not converted into income to construct an income metric. Bardasi and Wodon (2010) in Guinea, Harvey and Mukhopadhyay (2007) in Canada, and analyses carried out by researchers at the Levy Institute have used the second method (Zacharias, 2011). In this paper, we will use this second approach.

This second approach considers time as the suitable direct variable to measure time poverty (Burchardt, 2008; Bardasi and Wodon, 2006; Kalenkoski, Hamrick and Andrews, 2011), because it allows for parity in quantifying paid and unpaid work in terms of time, providing a clear picture of the total committed time to all work activities in addition to other measures of time use.

2.1 Empirical analysis

In this section we review some of main studies on time poverty following the second approach. One of first studies applying pure time indicators—without including income or consumption data—was performed in Guinea, where the authors used two alternative relative-poverty thresholds to calculate time poverty rates ranging from 15.1% to 39.2%, with important gender differences (Bardasi and Wodon, 2006). Kalenkoski, Hamrick and Andrews (2011) used discretionary time—total available time minus the minimum time devoted to activities required to generate an income above the poverty threshold—to analyse time poverty using the American Time Use Survey (ATUS) 2003-2006. They found that individuals in households with children had less discretionary time and were thus more likely to be time poor, with a time poverty rate of 20.4%. Using the United Kingdom Time Use Survey 2000-01, Burchardt (2008) found that people who were both time- and income-poor spent a much larger amount of time doing unpaid work, while those who were only time poor spent more time on paid work. Another study from UK, highlights that working women experienced multiple and more severe free time constraints (Chatzitheochari and Arber, 2012). In Germany, Merz and Rathjen (2014) used the German Socio-Economic Panel and the German Time Use Survey (2001-2002) and found that the interdependence between time and income is significant. McGinnity and Russell (2007), in their analysis of time poverty in Ireland in 2005, showed that high levels of committed time are associated with greater individual feelings of time pressure.

There are also studies in developing countries such as Pakistan (Najam-us-Saqib and Arif, 2012), where the incidence of time poverty is 14%. People working in professions and industries that require longer working hours and provide low wages are more likely to be time poor. Qi and Dong (2018) emphasise the importance of wages in the analysis of time poverty in China. They estimate that female paid workers and low-paid workers account for an unequal percentage of the time poor population. Furthermore, these authors show that female workers who are low paid, married, living with children or elderly people, and employed in sectors with high overtime rates or low wages have a higher probability of being time poor. Two relevant studies in Latin America also demonstrate the use of the direct approach to measuring time poverty using time use data. Gammage (2009), in their study of time poverty in Guatemala, revealed the importance in economic terms of unpaid work in Guatemalan households (around 30% in 2000). This study also reports on the intensity of women's work and on their need for more time as compared to men: approximately 23% of women and 13% of men declare needing more than 24 hours per day. In their study of time poverty in Brazil, Ribeiro and Marinho (2012) affirm that women are the poorest among time poor individuals in urban or rural areas. One of the most recent studies on time poverty analyses the situation in Mozambique (Arora, 2015) showing that the time spent by women on paid work, including time devoted to subsistence agriculture, is comparable to the time spent by men on those activities. Unpaid work, including household and care work, which is generally women's responsibility with men contributing to a much lesser extent.

3. Methodology

3.1. Data

This study uses data from the Spanish Time Use Survey 2009-2010, which comprises 19,295 persons aged 10 years and over who filled out a diary of activities. It also includes household data and other individual-level variables (INE, 2011). This study focuses on a sub-sample of

individuals aged 16 to 64 years, avoiding issues arising when the activities of children and retired people are considered (Burchardt, 2008). Furthermore, we excluded individuals who reported having a job the previous week but whose data on paid work were missing as we will not be able to construct key measures and conduct analysis. After these adjustments, the number of cases in the sample used for analysis was 14,212 persons-days. The data are weighted using the diary weights provided in the survey.

Time use recorded in the time-diary is classified according to a harmonised list of activity codes developed by Eurostat (EUROSTAT, 2009), which groups time use into 10 major categories: personal care, paid work, studies, household and family care, volunteer work and meetings, social life and recreation, sports and outdoor activities, hobbies and computers, the media and travel, and unspecified time use. For a better understanding of the main hypothesis of this study, some of these activities are re-classified into a different category. This category is that of ‘committed time’, which encompasses the time devoted to paid work, unpaid work, studies and personal care. This helps us clearly differentiate the time that is committed from that which is available, and thus measure time poverty. For this analysis, and in order to establish the time poverty threshold, we define the total actual time spent on the following activities: personal care, paid work, unpaid work, and studies:

- **Paid work:** Includes time spent in the labour market, commuting to work, and time devoted to job seeking.
- **Unpaid work:** Includes domestic tasks, childcare and unpaid care for household members and other households. Although unpaid and care work for other household is classified as voluntary work by the Instituto Nacional de Estadística (INE, 2011), we include it in our measure of unpaid work irrespective of whether it is carried out for household members or not.
- **Studies:** Includes time dedicated at school and time to study. Although most literature considers this activity distinct from ‘committed’ time (Burchardt, 2008; Kalenkoski, Hamrick and Andrews, 2011), we argue that time in this activity reflects a ‘commitment’ to education, and it can be understood as work related to participation in education.
- **Personal care:** Includes sleep and other necessary activities like eating, drinking, etc. In order to avoid those who reported excessive hours sleeping being classified as time poor, following the National Sleep Foundation’s recommendations that 7 to 9 hours sleep is appropriate for adults (Hirshkowitz et al., 2015) we capped this variable to maximum of 9 hours per day.

Individuals divide their time among paid work, unpaid work, studies and personal care, and this generates a certain standard of living. We define ‘available time’, as the time that is disposable after the above-mentioned activities are performed. In addition to time, we also examine income, both separately and together, because we are especially interested in people who are time- and income-poor.

We analyse time poverty at the individual level because a person may be time poor even if their partner or other members of the household are not, due to an unequal distribution of paid and unpaid work within the household. The case of income is more complicated than time. It would be ideal to have a measure of individual income capturing the person’s use of resources, for there is some shared expenditure within households. This ideal measure cannot be the equalised household income, because the contributions of the different household

members are often unequal (Sutherland, 1997). As the focus is on the individuals, we have decided to use the income variable derived from the individual questionnaire.

3.2. Measurement of time poverty

In accordance with traditional income measures, time poverty can be determined by reference to absolute or relative standards. With regard to constructing the time poverty threshold, we follow most time poverty studies, which implement a relative approach, given that the appropriate level of available time cannot be determined as it is influenced by the social environment (Wodon and Blackden, 2006) which conditions participation in social and leisure activities depending on the context (Bittman and Wajcman, 2000). This is the main reason why, in this study, we use a relative poverty line. Following prior empirical research, we define the relative time poverty threshold at 50% of the median of available time. The relative income poverty line is set to 60% of the median of income following the latest OECD and Spanish studies on poverty (Förster and Pearson, 2002).

Following a World Bank (1990) study, we use the conventional measures of income or consumption poverty to analyse time poverty. In prior empirical research on poverty, the most commonly used measure to assess household poverty is the Foster, Greer and Thorbecke Index (Foster, Greer and Thorbecke, 1984),

$$FGT = \frac{1}{N} \sum_{i=1}^q \left[\frac{z - y_i}{z} \right]^\alpha$$

where z is the poverty line or threshold; N is the number of people in the economy; q is the number of poor people; y_i is the available time of each individual i . In a time poverty context, the headcount index is the percentage of the population (of individuals aged 16-64 years) who have an amount of available time that is below the relative time poverty line (defined as below 50% of the median available time for individuals 16-64 years). Available time is the time remaining in the day after any time the individual allocates to committed activities as defined above (including paid and unpaid work, sleep and other basic needs, and study).

For a population of size N in which q individuals are time poor, the headcount index will be defined as ($\alpha = 0$):

$$H = \frac{q}{N}$$

3.3 Modelling time poverty

As well as providing estimates of time poverty, we are interested in identifying the key determinants of time poverty in Spain. To do this we use a probit regression model where the dependent variable takes a value of 1 when the individual is time poor, and a value of 0 otherwise. The independent variables included in the model have been selected according to previous literature on time poverty research (Burchardt, 2008; Bardasi and Wodon, 2010; Chatzitheochari and Arber, 2012; Warren, 2003).

The variables included in the study are divided in three different categories: individual, household and employment related variables. In relation to individual-level variables, we include gender and age in our models. Gender is a key factor with potentially important implications for time poverty because the women still play an importance role in care and household activities. We control for age, which is included as a continuous variable, as the

distribution of activities and responsibilities change during the life course and could have implications on time poverty. We furthermore control for the level of education included as a dummy variable identifying those having above secondary education-meaning going to university level studies in contrast to those who left education at age 18 years or less. Education level could have an impact influence on time poverty, in connection with access to jobs with a higher salary, or more autonomy over one's own time.

A second group of variables in the models relate to household-level factors. We control for whether or not the individual is in a couple relationship. We also control for the number of children younger than 10 years old, because usually taking care of children below 10 years old is more demanding than taking care of older children. Children need looking after and this has important implications for unpaid work and also for the possibility of entering in the labour market, especially for women. In addition to children, our model controls for whether there is a dependent adult in the household. The presence of a dependent adult in the family entails more housework and care responsibilities at the household level, because in most cases dependent adults are unable to contribute to the total amount of work in the household. Finally, the model controls for whether the household employs domestic services or help which has implications for time dedicated to unpaid work and, consequently, for time poverty.

In relation to employment, we include dummy variables indicating whether the respondent is employed full time or part time. In order to complete the picture, in a further model of a sub-sample of respondents who are employed, we include as a dummy variable having a flexible working schedule that allow in some cases better coordination and reconciliation with non-remunerated work. The last variable is continuous schedule that means a schedule that allow to concentrate all the workhours in a certain time, for example skyping break and starting earlier (7 am to 3 pm) in some cases also this kind of schedule could help to conciliate with unpaid work responsibilities. We estimate a model for the whole sample, and we estimate further models separately for men and women to consider the extent to which household and employment variables influence time poverty in similar ways for men and women.

4. Results

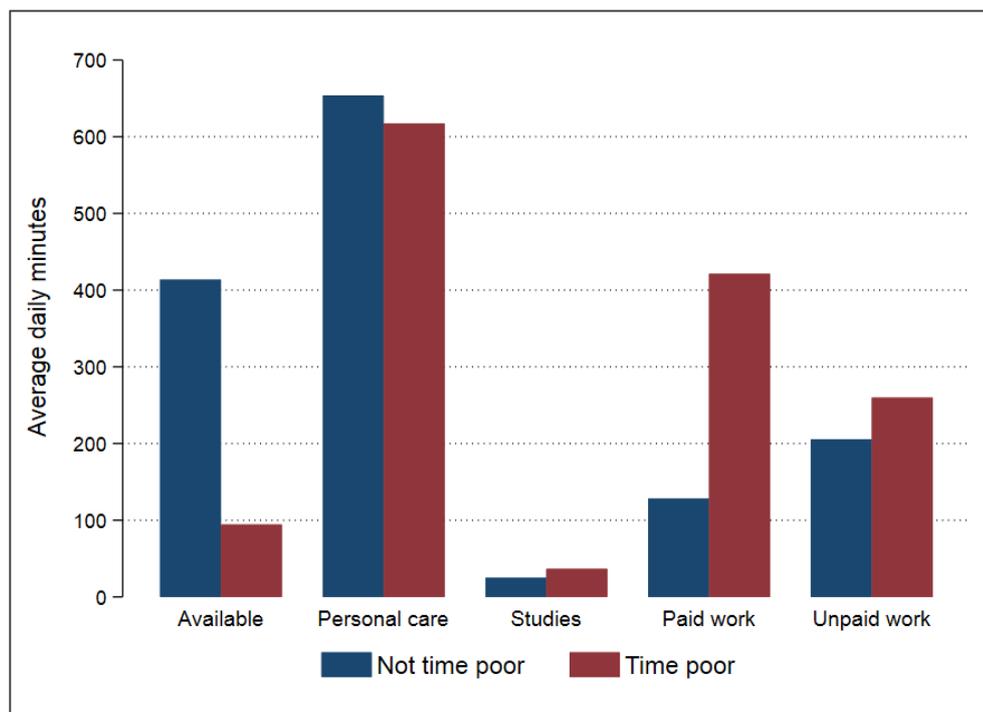
4.1. Time poverty

As already mentioned, we determine the relative time poverty threshold for people aged 16 to 64 years after taking into consideration the time devoted to paid work, unpaid work, personal care and studies. The relative time poverty line, set at 50% of the median of the available time of the population selected, is 170 minutes per day. The headcount ratio in Spain for 2009-2010 shows that 21.9% of the Spanish population 16-64 years is time poor. In other words, 21.9% of those between 16 and 64 have less than 170 minutes available per day for rest or leisure. If we compare this result with those of the above-mentioned studies, we will see that the time poverty rate in Spain is slightly higher than, for instance, that of Ireland (20%) (McGinnity and Russell, 2007). Kalenkoski, Hamrick and Andrews (2011), with data from 2003-2006, estimated time poverty for the United States working population at 20.35%, while Burchardt (2008), with data from the United Kingdom 2000 TUS, established that 11.6% of the British working age population was time poor. However, another study using the same data focused on workers, and using a slightly similar definition of time poverty, reported a time poverty rate of 20% for weekdays and 22% for weekends (Chatzitheochari and Arber, 2012). Qi and Dong

(2018) found that 27.4% of the working population suffered from time poverty. Compared to the most recent measures, time poverty in Spain appears to be broadly similar to that of other developed countries. However, this comparison should be taken with caution because of differences in methodology. Only a properly cross-national study using the same methodology across surveys could be used to make direct comparisons.

It is also interesting to look at the allocation of time of those who are time poor in comparison to those who are not. Figure 1 shows the average time use, in broad activity groups, of those who are time poor and those who are not time poor. The main difference concerns work: the time poor devote more time to both paid and unpaid work than those who are not. If we look at personal care, the allocation is similar in both groups. The difference in paid work is greater than unpaid work as it is often difficult to reduce the amount of unpaid work. This means that for time poor people, the changes take place mostly through paid work, with unpaid work decreasing to a lesser extent because it includes activities that cannot be outsourced and for which there is no replacement person.

Figure 1: Average minutes in major activity groups for those who are time poor and those who are not time poor



To get a better picture of how time is distributed, it is useful to analyse how available time is allocated by gender. Table 1 reports average minutes, in broad activity groups, of those who are time poor and those who are not time poor separately for men and women. Personal care is mostly constant between men and women in the two populations. However as mentioned before, women devote more time than men to unpaid work activities. However, what we find most interesting is that, among those who are time poor, women devote more than double the time to unpaid work than men. On average, time-poor women dedicated 340.4 versus 134.1 minutes for time-poor men (see Table 1). Time poor men spend just 4 minutes more on average in unpaid work compared with men who are not time poor. The corresponding difference for women is more than one hour. Even if men have available time because they are not in the

labour market, they do not take on the same degree of responsibility at home as women do, which also helps explain why women are more time poor than men.

Moreover, if we analyse those who are time poor, we may roughly say that men are so because of the relative importance of paid work, while women are so because of the relative importance of both paid and unpaid work—thus reflecting women’s double burden as we can see in Table 1. If we look at the difference between men and women who are not time poor, women still perform more unpaid work than men do. This is only slightly lower than that of time poor women, which confirms that women’s unpaid work remains more or less stable in both populations. Consequently, the element that partly explains the difference between these two cases is unpaid work responsibilities.

Among the non-time and time-poor population, men’s average available time is higher than for women, though the difference is much greater among those who are not time poor. As we already know, men enjoy a higher amount of available and probably ‘purer’ time, as they have fewer responsibilities concerning care, supervision, etc.

Table 1: Average minutes in major activity groups for men and women who are time poor and those who are not time poor

	Time poor		Not time poor	
	Women	Men	Women	Men
Personal care	622.0	609.3	657.2	650.2
Studies	38.8	33.2	23.4	26.6
Paid work	335.8	554.9	86.5	170.6
Unpaid work	340.4	134.1	279.2	130.1
Available time	92.9	96.8	382.8	445.2

Source: Authors’ estimates using Spanish 2009-2010 TUS data.

4.2. Factors linked to time poverty

We are especially interested in individuals who are time poor. If we analyse the distribution of time poverty by gender, we find interesting results as previous studies had already pointed out (Burchardt, 2008; Wodon and Blackden, 2006). Time poverty is higher for women than for men, with 24% of Spanish women in this situation in comparison to 16.3% of men. As discussed before, this could be partially explained by the fact that women, in all cases, devote more time to unpaid work (see Table 1).

As we can see in Table 2, the percentage of those who are time poor in couples (22.6%) is higher than those who live alone (15.6%). As it turns out, having another adult in the household—in most cases, a man—does not contribute to reducing the poverty rate; in fact, this presence generates a deficit of time rather than a surplus of time, which is relevant from a gender perspective. Moreover, when we look at the household composition, time poverty is higher for those living with children (35.4%) compared with those in households where there are no children (18.8%), suggesting that differences related to children’s care and unpaid work responsibilities are related to time poverty.

Looking at education, Table 2 shows that the headcount poverty rate is relatively similar between those above secondary than those with relatively less education, although it is higher among those with more education (21.1% vs 19.1%). This, arguably, reflects the influence of time devoted to paid work, which increases as the level of getting an employment increase as education rises. Lastly, in relation to employment characteristics, as we expected, those that

are not working in the labour market are less time poor, most likely because of the importance of paid work on the total available time regardless of whether they work part-time or full-time.

Table 2: Time poverty rate by selected key characteristics

	Headcount ratio (%)
Gender	
Men	16.3
Women	24.0
Living with partner	
Yes	22.6
No	15.6
Has children	
Yes	35.2
No	18.8
Above secondary education	
Yes	21.1
No	19.1
Full time	
Yes	27.0
No	13.0
Part time	
Yes	29.8
No	19.4

Source: Authors' estimates using Spanish 2009-2010 TUS data.

4.3 Time and income poverty

Given that, because of its trade-off with time, income is a key variable, we analysed the relation between available time and income by income decile in order to evaluate how the two are connected. Results indicate that available time among the lower decile groups is higher than further up the income distribution. However, an interesting finding is revealed when comparing the two extremes. Available time is just a little higher in the bottom decile than in decile 10, and the peak time is spent on unpaid work, while in deciles 9 and 10 the peak time is spent on paid work. These results are consistent, because the higher income groups can use some of their income to outsource their domestic and care responsibilities, rather than fulfilling them personally. At the same time, these results reflect differences in the population composition, because in the first deciles we find families with more children and, consequently, a higher demand of care (Burchardt, 2008).

In this work, we are more interested in the population in decile 1, because they are more vulnerable due to their income and time restrictions. On the other hand, those in decile 10 are also confronting time poverty, but they arguably spend more hours working than what is strictly required to earn a 'decent' or appropriate income.

The income poverty rate at individual level, with a threshold set on 60% of the median income, shows that 10.1% of the population is income-poor, and, if we look at the data from a gender perspective, we will notice that women are poorer than men. The difference is significant in the headcount ratio: 4.2% of men are income-poor versus 17.1% of women. This is mainly explained by the care responsibilities assumed by women, which limit women's opportunities and capacity to access the labour market, among other consequences.

If we analyse the Spanish time- and income-poor population, we see that the percentage is not very high (2.6%). This is similar to the proportion of 2.2% in the United States reported by Kalenkoski, Hamrick and Andrews (2011), and to the proportion of 1.8% reported by Burchardt (2008) for the United Kingdom.

However, some main features are worth mentioning: 87.2% of the time- and income-poor are women; 77.2% have obtained secondary education as their highest level of education; 96.2% declared being employed the previous week; and 76.8% live with their partner. It is important to mention that those proportions are proportions of 2.2% (small in absolute terms), but it is important to highlight the key characteristics of those who are both time and income poor.

As expected, some of these characteristics are shared with those who are only time poor, as those who suffer greater time and income poverty are women, live with their partner, and have children under their care. This type of study allows us to understand whether people are time poor because they devote ‘too much’ time to paid work, in an attempt to earn a higher salary, due to the lack of flexibility of the labour market, or because of social conventions, among other possible reasons.

4.4 Multivariate analysis of factors associated with time poverty

We analysed the probability of being time poor examining the influence of key variables that are associated with time poverty. Table 3 shows the marginal effects of the independent variables on the possibility of being time poor or not. Models were estimated for the total sample, and separately for women and men.

The results obtained are mostly in line with those of previous studies. As seen in other research (Burchardt, 2008; Wodon and Blackden, 2006), being a woman has a marginal positive and significant effect, echoing the descriptive results reported in Table 2. The variable age appears to have a negative and significant effect on time poverty just for men. This may be partially explained because some of the care responsibilities may be reduced as they get older, however a more detailed study in relation to this is needed before making any firm conclusions. As for education level, we find that having above secondary education has a negative marginal effect on being time poor for men and for women. This could be explained in some cases because education leads to better salaries that also could help to paying someone for doing unpaid work, but more detailed studies on this respect are needed it before making any conclusion.

The presence of household members under the age of 10 is also positively related to the probability of being time poor. At the household level, children demand a substantial amount of unpaid work. When analysed by gender, the coefficient for the number of children is significant for both men and women, as men are progressively involved in childcare responsibilities. Also important is the fact that the presence of a dependent adult in the household is positively related to being time poor. This result was expected, because, according to their level of necessity, dependent people need help to carry out their daily life activities. When the model is analysed by gender, this variable is significant for women, but not for men. This again emphasises the importance of non-remunerated work for women, not just in relation to children but also for dependent adults.

Table 3: Coefficients of the probit model of time poverty

INDIVIDUAL VARIABLES	ALL	WOMEN	MEN
Female [Reference: Male]	0.116 ^{***}		

	(0.007)		
Age (in years)	-0.001	0.000	-0.001**
	(0.000)	(0.001)	(0.000)
Above secondary education [Reference: No]	-0.034***	-0.034**	-0.032***
	(0.007)	(0.011)	(0.010)
HOUSEHOLD VARIABLES			
No. of children < 10 [Reference: Continuous variable]	0.076***	0.095***	0.055***
	(0.005)	(0.007)	(0.007)
Dependent adult in household [Reference: No]	0.038*	0.077**	-0.006
	(0.018)	(0.026)	(0.023)
Living with partner [Reference: No]	0.034***	0.040***	0.024*
	(0.009)	(0.012)	(0.012)
Domestic service [Reference: No]	-0.013	-0.015	-0.010
	(0.012)	(0.018)	(0.015)
EMPLOYMENT VARIABLES			
Full-time [Reference: Not employed]	0.236***	0.262***	0.205***
	(0.008)	(0.012)	(0.009)
Part-time [Reference: Not employed]	0.212***	0.204***	0.271***
	(0.018)	(0.019)	(0.045)
Number of observations	13,824	7,328	6,496
Pseudo R2	0.097	0.084	0.104

Source: Authors' estimates using Spanish 2009-2010 TU data

Notes: *** p<0.01, ** p<0.05, * p<0.1; Robust standard errors in parentheses

Living as a couple is positively related to time poverty. As we explained before, living with a partner increases the time-poverty rate. We should also mention that the head of the family in households consisting of one adult taking care of children is in most cases a woman. When we analyse the results by gender, we see that this specific variable appears more significant for women than for men. Thus, the presence of an extra adult—usually a man—as a partner in the household increases the probability of being time poor and not the other way around. In relation to the use of external domestic services by the household, the model does not show any significant results for the incidence of time poverty.

With regard to the employment variables, having a job, either full-time or part time, is significantly and positively related to the probability of being time poor for both men and women. The relevance of time devoted to paid work over total time and, in consequence, its relationship with available time has already been mentioned (see Figure 1 and Table 1).

Finally, we analysed two additional factors related to employment estimating an additional model (results are available on request) taking into consideration just those that are employed in order to understand the effect of having a flexible working and interrupted schedule. We found no significant association between being time poor and having flexible working hours. It could be that those who have flexible work schedules are time poor in a higher proportion than those who do not, but, on the other hand, these time poor individuals may have requested flexible working hours in order to better deal with their household and care responsibilities. An interesting finding, especially connected to labour policy, is that time poverty is negatively related to having a paid job for men with an uninterrupted working day schedule, which in most cases reduces the total time at work and may also reduce time poverty. We also analysed the likelihood of being both time- and income-poor. However, due to the low

number of cases in this group, the coefficients are not significant. Nevertheless, the results obtained follow the same pattern as the time poverty coefficients.

5. Conclusions

The main objective of this study was to highlight the importance of taking time into account when calculating poverty indicators. The article has attempted to contribute to the measurement of poverty as a multidimensional phenomenon and contribute to the international literature that highlights the importance of time as a main indicator of poverty, especially from a gender perspective. It has also sought to show how a gender approach, as the feminist economics literature suggests, helps further understand poverty indicators among women and men when unpaid work is taken into consideration.

The main contributions of this work are that it provides a time poverty indicator for Spain using data from the latest survey available, and that it emphasises the importance of unpaid work in terms of both time poverty and income poverty. Labour arrangements and regulations, the level of education and, most especially, the share of care responsibilities in the household and gender are crucial variables that determine the level of time poverty.

Understanding time poverty as a basic indicator of wellbeing allows for the consideration of unpaid work in poverty measures as a critical aspect of wellbeing. It is also crucial to establish a definition of time poverty that facilitates valid international comparisons, and to promote the regular collection of time-use surveys and publication of time poverty indicators.

Future studies on time poverty should advance in the direction of including indicators that capture qualitative dimensions of time, as Reish (2001) argues. This will depend on the availability of more time use surveys that gather information beyond the quantitative aspects of time. In order to better analyse time poverty, it would also be interesting to assess individual perceptions of time pressure (see Gimenez-Nadal and Sevilla-Sanz, 2011; Mothersbaugh, Herrmann. and Warland, 1993; Sullivan and Gershuny, 2013; Wajcman, 2015). At the same time, a full assessment of available time requires data that contains high-quality information about simultaneous activities, especially paid and unpaid work, and about the fragmentation of those activities or the number of activity episodes over short periods of time, which consequently increase the feeling of time pressure. The existence of family care responsibilities that determine the characteristics of available time, as well as the possibility of not enjoying any 'pure' available time (devoid of responsibilities and freely used), also need to be taken into consideration (Bittman and Wajcman, 2000).

It is not easy to capture the characteristics of women's and men's time use in standard time use surveys, because in order to properly evaluate the characteristics of available time we need to take into consideration certain issues beyond the mere availability of a number of minutes. These limitations are also related to the concept of time and the way it is measured, which stems from the traditional/orthodox economic theoretical model that underpins the surveys (Carrasco and Recio, 2014). Time use surveys are designed mainly to capture the quantitative dimension of time, and not all the aspects connected to wellbeing.

More detailed studies examining differences across age groups and in relation to the life course are required. It cannot be ignored that time poverty may seriously limit the development of human capabilities, as it reduces the freedom that people have to do valuable activities in their lives (Burchardt, 2010). Further studies are needed to improve our

understanding of time poverty, including in the development of poverty measures and in the analysis of policy implications. The results of the present study shed some light on the importance of policies such as the public provision of care services, especially for children and elderly people, the implementation of uninterrupted working day schedule to improve work-life balance, and the promotion of men's participation in unpaid work (including, for instance, paid parental leave for both fathers and mothers).

In conclusion, this work has aimed at highlighting the relevance of time poverty as a key indicator that may contribute to an effective reduction of poverty and to the pursuit of more equal societies, particularly in terms of gender.

6. References

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