Marital Disruption and Economic Well-being: A Comparative Analysis

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Abstract

Though there is a considerable literature concerned with the economic consequences of marital breakdown, there is still substantial disagreement in terms of its magnitude. One of the major problems underlying this debate is how economic well-being is defined. In this work we implement several measures of well-being of monetary and multidimensional nature using data from European Community Household Panel. Another issue in this literature concerns selection bias of divorcing couples. We tackle this issue using a propensity score matching technique combined with a Difference-in-Differences estimator. Results confirm the importance of well-being definition. We find a high gender bias when using monetary measures but a considerably lower one or even non existent when using non-monetary indices.

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1. Introduction

Household structures across Europe are changing and evolving. A particular feature of modern family patterns is the significant increase in marital breakdowns. As a result the number of children living in single parent households, most of which are female-headed, has also increased. Though the issue of divorce and marital breakdowns is not new in most countries, it is an issue of continued concern. Most of the debate around the economic consequences of divorce is focussed on gender inequalities, and the most consistent finding from the literature is a rather sharp gender difference in terms of financial outcomes following a marital disruption. Early longitudinal research from the US and Europe showed that women experiencing a divorce tend to suffer a substantial loss of income, whereas men's economic circumstances seem rather unaffected or even improving slightly in some cases (Burkhauser *et al.,* 1991; Fritzell, 1990; Jarvis and Jenkins, 1999; Manting and Bouman 2004, Poortman, 2000, 2002; Smock 1993, 1994). The reasons behind this pattern are many. One is that women tend to have lower labour market attachment, and therefore facing lower earnings. Another reason is that children tend to stay with the mother following a divorce, in many cases imposing a major strain on the single female-headed household. Finally, lack of state support is another reason for why many divorced women suffer financially.

An equally consistent finding is strong country differences in terms of the economic penalty associated with a marital dissolution (Andreß, 2004; Burkhauser *et al.,* 1991; Duncan and Hoffman, 1985; Finnie, 1993; Fritzell, 1990; Jarvis and Jenkins, 1999; Smock, 1993, 1994; Smock *et al.*, 1999; Poortman, 2000, 2002). The general pattern is that divorced women in Scandinavian countries, with their generous welfare provision, are much better off than divorced women in Britain, a country characterised by poorer welfare provision. Andreß *et al.* (2004) comparing Belgium, Germany, Italy, Great Britain, and Sweden analysing the three main providers of individual welfare: 1) the family, 2) the market and 3) the state, shows that the configuration of these providers to a large extent determines the economic outcome of marital dissolution. Due to limited welfare provision, they find British mothers to be particularly vulnerable, being considerably more dependent on the labour market as a means to maintain a reasonable level of economic self sufficiency. As expected the UK setting is quite different to Scandinavian countries, but also different with respect to Continental countries such as Germany. The social democratic welfare is not only generous in terms of levels, but also provides strong support in terms of extensive childcare infrastructure, a system which enables Swedish mothers to work full-time to a much greater extent than other European countries, and especially the UK. However, there is no clear consensus on these

findings, especially concerning the issue of gender differences. Many maintain that the gender bias is overestimated and that the actual trend constitutes an increasing number of men who are subject to economic strain following separation (McManus and DiPrete, 2001). Indeed, there are many reasons to believe that also men experience economic problems following separation: payment of alimonies, the necessity to find another dwelling (usually the conjugal house is assigned to the woman especially if there are children) may relevantly and negatively alter the lifestyle of divorced men. Thus it may seem hard to believe that men are better-off after marital dissolution.

One of the key problems underlying this debate is the definition and measurement of the rather vague concept of 'economic well-being'. Many use income or poverty status as an overall indicator of economic wellbeing, but these measures suffer from many drawbacks. Poverty status as a measure of wellbeing is criticised because it divides the population into a simple poor/non poor dichotomy, based on sometimes arbitrarily chosen thresholds (Cheli and Lemmi, 1995). Of course, the dichotomy is easily overcome by using income as a measure of economic wellbeing. But this measure is problematic as it is difficult to assess to what extent an income loss brings about a real drop in living standards, especially in a comparative perspective. Moreover both income and poverty status are only monetary measures of well-being whereas it is well recognised that well-being itself has many more dimensions, often non monetary in nature (Atkinson, 2003; Bourguignon and Chakravarty, 2003). Another drawback is that poverty status and income depend on the choice of equivalence scale. Given that a marital breakdown inevitably modifies the household composition, the equivalence scale becomes of great consequence. But it is not clear which equivalence to use, especially in comparative analysis. Thus, it is beneficial to consider measures of wellbeing in which the use of equivalence scales is not imperative.

In this work we present several well-being measures in order assess whether the estimated impact of a marital breakdown is dependent on the different definition of well-being itself. Together with conventional poverty status (defined over three poverty thresholds) we provide a *relative income* measure that overcomes the poor/non poor dichotomy, and several deprivation indices that take into account the multidimensional nature of well-being. We expect that women are more likely to be deprived in monetary terms in the aftermath of separation given their greater reliance on partner's income. Separated men experience instead a dramatic rise in their expenses if they have to pay alimonies and new dwelling costs (this is particularly the case when the couple has children as the conjugal house is often assigned to mothers). The use of different measure of well-being should detect both these effects.

Another key issue in assessing the role of marital dissolution on economic wellbeing concerns selection bias. This is driven by the fact that couples experiencing a marital separation may be qualitatively different from couples not doing so. For example, women who are strongly dependent on partner's income might be less likely to separate from them as they are aware of the strong economic distress they would experience in the case they split from their partner (Becker, 1991). One way to tackle this issue is to implement a *propensity score matching* technique which nets out the impact of separation from the confounding effects driven by other observed covariates. Obviously, many other *unobserved* covariates may influence the estimate of the effect of marital dissolution. As a result we combine the propensity score matching approach with a Difference-in-Differences estimator as suggested by Heckman *et al.* (1998). In this way we control for the effect caused by unobserved variables, provided these are time-invariant.

The analysis is implemented using data from European Community Household Panel (ECHP), which offers a unique scope for comparability at the European level. Uunk (2004) shows that welfare state arrangements tend to influence the economic consequences of divorce for women. Income-related arrangements alleviate the economic strains most, then employment-related arrangements. His findings underpins the importance of welfare regimes, and shows that differences in terms of economic strains associated with divorce, is not simply an artefact of country differences. Taking advantage of his work we also analyse the consequence of marital disruption under different welfare regimes, using the well known country classification of Esping-Andersen (1999). The analysis provides information about the possible effects of different family policies in European countries, with respect to consequences associated with marital disruption. Finally we recognise the importance of presence of children in the couple, so we make separate estimates for couples with children only. These estimates are compared to the cases where we include couples with *and* without children.

The paper is organised as follows: section 2 explains how we measure economic wellbeing, section 3 give details of data and estimation strategy, section 4 presents the results and section 5 concludes.

2. Well-being definition and measurement

2.1 Measuring well-being: the conventional approach

A simple approach in measuring an individual's well-being is to construct an individual's poverty status. This is normally defined over the household's net equivalised income, and the poverty threshold is taken as 60 percent of this income level. Poverty is consequently a relative measure, and a household is deemed poor if the income falls below this threshold. This measure takes into account the individual's position in the income distribution relative to others within his or her own country. Another important feature of this approach is that it overcomes the fact that countries will differ in terms of per capita incomes and their purchasing power parity. A drawback, however, is that it is not clear what constitutes an appropriate poverty threshold. Often 60% of net equivalised household income is chosen, but many use alternative poverty thresholds of 50 and 70 percent.

When assessing *economic* well-being, any measure of household income must be adjusted to reflect the needs of the people living within the household. Larger households need more income than smaller households to attain the same standard of living; adults have different needs than children. Additionally, there are economies of scale, meaning (for example) that two adults can live together more inexpensively than they could if living separately. Adjustment for household composition is conventionally done by calculating an equivalence scale, which is a number reflecting the needs of the household, and dividing total household income by this equivalence scale. We apply the commonly used OECD modified equivalence scale, which gives a weight of one for the first adult, 0.5 for other adults than the household head, and 0.3 for children. Two points should be raised in relation to equivalence scales. First, the use of equivalence scales assumes that household members share their income equally, which is not necessarily the case in practice (Browning *et al.*, 1994; Lundberg *et al.*, 1997; McElroy and Horney, 1981). Secondly, poverty statistics are sensitive to the choice of equivalence scale: for example, scales which weight children more heavily will generate higher estimates of poverty among families with children (Aassve *et al.*, 2005). However, it has also been shown that in comparative studies, the actual poverty ranking of countries tends to be unaffected by the choice of equivalence scale (e.g. de Vos and Zaidi, 2003).

2.2 Well-being as a matter of degree: the relative income measure

Dividing the population into a simple dichotomy of "poor" and "non-poor" is clearly unsatisfactory. An individual's well-being is not a single attribute that characterises an individual or household in terms of its presence or absence (Cheli and Lemmi, 1995). Instead we propose a measure treating poverty as a matter of degree: in principle all individuals are subject to poverty, but to varying levels (some much more than others). That level, say 1 for the poorest to 0 for the richest, is determined by the individual's rank in the income distribution, and the individual's share in the total income received by the population.

There are several advantages of treating poverty in this way. Most important is that it utilises the whole distribution directly as a measure of economic wellbeing, as opposed to dividing the population by a dichotomous category, avoiding specification of a poverty line. Equally important is the potential of this approach in studying poverty (or more generally, deprivation in multiple dimensions) in the longitudinal context. The conventional approach measures mobility simply in terms of movements across some designated poverty line, and does not reflect the actual magnitude of the changes affecting individuals at all points in the distribution. Consequently, the degree of mobility of persons near to the chosen line tends to be over-emphasised, while that of persons far from that line largely ignored. Moreover, we can expect the resulting measures to be more precise. The sampling error of a distribution is lower than that of a dichotomy with values concentrated at the two end points. We can also expect the measures to be less sensitive to local irregularities in the income distribution curve, and to the particular choice of the poverty threshold (Verma and Betti, 2005).

The propensity of income poverty associated with each individual, defined as Fuzzy Monetary (FM), was first proposed by Betti and Verma (1999) and has been officially adopted by Eurostat (2002). The approach can be explained as follows. Let us consider the statistic $y_{(i)}$ giving the net equivalised household incomes in ascending order for every country and every wave. Then the position of individual j in the income ranking is defined as

$$V_j = \frac{\sum_i w_{(i)}(y_{(i)} - y_{(1)}) \,|\, (i) : y_{(i)} > y_{(j)}}{\sum_i w_{(i)}(y_{(i)} - y_{(1)}) \,|\, (i) : y_{(i)} > y_{(1)}} \qquad (1)$$

where w_i is the sample weight of individual i. (1) takes into account possible negative incomes, tied rankings (i.e. individuals in the same household, etc…) and weighting. It is easy to see that the individual with the lowest income has ranking 1 and the one with the highest takes ranking 0. Corresponding to the income index, V_j, the propensity to income poverty is defined as:

$$FM_j = \left(V_j\right)^{\alpha / H} \qquad (2)$$

where H is the Head Count Ratio for a particular country and a particular wave. The parameter α is in our case determined such that for the European population as a whole, the mean of the index FM_j is equal to the proportion poor (HCR) according to the conventional approach. In (2) α is divided by H, since we have empirically found that this form of the equation results in very stable values of α for different domains despite differences in their head count ratios (Verma and Betti, 2002).

2.3 A multi-dimensional and comparative perspective: the deprivation index measure

The relative income measure given by (2) overcomes one of the major drawbacks of poverty status as a measure of well-being, i.e. its simplistic categorisation of population into poor and non-poor dichotomy. However relative income considers deprivation only in its monetary dimension, disregarding other non-monetary aspects. This calls for a measure which considers deprivation in its multiple dimensions (Kolm 1977, Atkinson and Bourguignon 1982, Tsui 1985, Maasoumi 1986, Sen 1999). Certainly, in our application of consequences of marital disruption, we expect that individuals' experience of well-being goes beyond a simple drop of equivalent income: some can experience a dramatic rise in monthly expenses (for example for paying alimonies) with a substantial change of life-styles. Moreover, a marital disruption is likely to change, sometimes dramatically, the housing situation of the individuals involved.

Just as in the FM approach described above, we define here the concept of multiple deprivation as a matter of degree. The state of deprivation is thus seen in the form of 'fuzzy sets' to which all members of the population belong, but to varying degrees. The issue of how to best summarize items reflecting different dimensions of well-being into a unique index has been debated (Atkinson *et al.,* 2002; Duclos, Sahn and Younger, 2001; and especially Atkinson, 2003). A number of authors have evoked the concepts of fuzzy sets in the analysis of poverty and living conditions (e.g. Chiappero Martinetti 1994; Vero and Werquin 1997). The present contribution represents a continuation and further development of the work of Cerioli and Zani (1990), Cheli and Lemmi (1995), Cheli (1995), and Betti and Verma (1999, 2004). In doing so we select a list of items indicating non-monetary deprivation in the households (see the appendix). These items often take the form of simple 'yes/no' dichotomies (such as the presence or absence of enforced lack of certain goods or facilities), some other items may involve more than two ordered categories, reflecting different *degrees* of deprivation. These items are grouped into five different dimensions of deprivation whose identification is discussed in section 2.4.

The first step consists of creating a deprivation score for every item: consider the general case of item k with m=1 to M ordered categories, with m=1 representing the most

deprived and m=M the least deprived situation. Let m_{jk} be the category to which individual j belongs with respect to item k. Cerioli and Zani (1990) assuming that the rank of the categories represents an equally-spaced metric variable, propose the deprivation score:

$$d_{jk} = \frac{M - m_{jk}}{M - 1}, \qquad 1 \le m_{jk} \le M \tag{3a}$$

Cheli and Lemmi (1995) improves on this approach by replacing the simple ranking of the categories with their *distribution function* $F(.)$ in the population:

$$d_{jk} = \frac{1 - F(m_{jk})}{1 - F(1)} \tag{3b}$$

Note that the above two formulations for d_{jk} are identical in by far the most common case – that of a dichotomous indicator (M=2), giving a dichotomous m.f. d_{jk}= 1 (deprived) or d_{jk}= 0 (non-deprived). Thus we choose to use the simpler formulation (3a).

The second step involves determining weights to be assigned to each item of the deprivation index. This is a crucial part of deprivation index construction and has caused some debate in the literature. An early attempt to specify an appropriate weighting system was due to Ram (1982), using principal component analysis, which was also adopted by Maasoumi and Nickelsburg (1988). Among others, Nolan and Whelan (1996) adopted factor analysis for evaluating a weighting system, while Cerioli and Zani (1990) and Cheli and Lemmi (1995) adopted a weighting system based on the diffusion of the individual item (see also Lemmi and Betti (forthcoming) for further details).

The weighting procedure we propose here is a variant of the procedure developed by Betti and Verma (1999) and incorporates crucial dimensions of how the items are distributed in the population. Firstly, the weight is determined by the variable's power to differentiate among individuals in the population, that is, by its dispersion. This amounts to letting the weight depend on the coefficient of variation of deprivation score d_{jk} , which we define as w_k^a . In practice this means that items that affect only small proportions of the population are considered more critical, and therefore given a larger weight. Secondly, in order to avoid redundancy, it is necessary to limit the influence of those characteristics that are highly correlated with the others included in the analysis. Even for the overall index, it is reasonable to consider this correlation separately within each of the dimensions of deprivation identified, i.e., the weight of variable k in deprivation dimension δ is taken as the inverse of an average measure of its correlation with all the variables in that dimension. There are many examples where items within a dimension can be correlated. One is the two items relating to possession

of a television and a video recorder. It is unlikely that a household will possess a video recorder unless they possess a television set as well, thus inducing a positive correlation. Similarly, different items describing the conditions of the dwelling may also be correlated. For instance, a dwelling plagued by rot in window frames or floors is also more likely to report to have damp walls, floors and foundations (see Appendix for a detailed description of the items). However, a household reporting both items should not be counted as being twice worse off than a household reporting none of these items. Formally the weight can be expressed as:

$$w_{k^b} \propto \left(\frac{1}{1+\sum_{k'=1}^{K} \rho_{k,k'} \mid \rho_{k,k'} < \rho_H} \right) \cdot \left(\frac{1}{\sum_{k'=1}^{K} \rho_{k,k'} \mid \rho_{k,k'} \geq \rho_H} \right) \tag{4}$$

where $\rho_{k,k'} = corr(d_{jk}, d_{jk'})$ is the correlation between the two deprivation scores. In the first term in the right side of (3), the sum is taken over all indicators whose correlation with the variable k is less than a certain value ρ_h (determined, for instance, by dividing the ordered set of correlation values at the point of the largest gap.). Thus the results are not affected by arbitrary inclusion or exclusion of items highly correlated with other items in the set. The final weight is then given as: $w_k \propto w_k^a \times w_k^b$ (see Betti and Verma (2002) for further details). With these weights, a deprivation score is determined for the overall situation covering all the indicators:

$$S_j = \frac{\sum_k w_k \left(1 - d_{jk}\right)}{\sum_k w_k} \tag{5}$$

Note that (5) defines a 'positive' score indicating *lack* of deprivation.

The final step is to create the Fuzzy Non-Monetary indicator of deprivation. As in the Fuzzy Monetary approach, we define the individual's propensity to non-monetary deprivation as the *share* of the total "non-deprivation" assigned to all individuals less deprived than the person concerned. It varies from 1 for the most deprived, to 0 for the least deprived individual. So we consider the statistic $S_{(j)}$ as the ordered deprivation scores. The particular form below has been chosen so as to take into account tied rankings, which are much more frequent for items with few categories, compared to the case of continuous variables like income:

$$FS_j = \frac{\sum_i w_{(i)} S_{(i)} \mid (i) : S_{(i)} > S_{(j)}}{\sum_i w_{(i)} S_{(i)} \mid (i) : S_{(i)} > S_{(1)}} . \qquad (6)$$

It should be taken in mind that $w_{(i)}$ in the (6) is different from w_k in the (5), being the first the individual sampling weight and second the weight of item k as defined earlier.

2.4 Dimensions of non-monetary deprivation

Supplementing the overall deprivation measure introduced above, it is useful to identify the underlying dimensions and to group the indicators accordingly. Taking into account the manner in which different indicators cluster together adds to the richness of the analysis; ignoring such dimensionality can in fact result in misleading conclusions. Thus we want to analyse not only the overall deprivation index as defined in (6) but also the deprivation indices for each dimension of well-being. Approaches of this kind applied to poverty analysis of European countries are becoming more common. By applying a factor analysis based on 24 variables in the ECHP, also the Eurostat (2002) *Report* identifies five groups, for which it constructs deprivation indices. In a similar approach Aassve *et al.* (2005) consider the impact of childbearing events on a similar set of deprivation indices.

Here we identify five dimensions of deprivation, all of which derived from factor analysis (see Whelan *et al.* 2001 for details). We define, for each dimension δ: 1,…, Δ and for each individual j, the deprivation score $S_{j,\delta}$ as in (5) but only considering the items belonging to dimension δ. The individual's propensity to deprivation $FS_{j,\delta}$ is defined as in (6) taking the ordered values $S_{(j),\delta}$. This means that the average value of the overall deprivation index is allowed to vary from one dimension to another, reflecting the relative prevalence of each. The dimensions are as follows: (1) basic non-monetary deprivation; (2) secondary non-monetary deprivation; (3) lack of housing facilities; (4) housing deterioration; and (5) environmental problems. The list of items used to construct the deprivation indices for each of these dimensions are reported in the appendix.

3. Data and estimation strategy

3.1 Data and definition of marital breakdown

The European Community Household Panel (ECHP) is a set of comparable large-scale longitudinal studies implemented by the European Union. The first wave of the ECHP was collected in 1994 for the original countries in the survey: Germany, Denmark, the Netherlands, Belgium, Luxembourg, France, the UK, Ireland, Italy, Greece, Spain and Portugal. Three countries were late joiners to the project: Austria joined in 1995, Finland in 1996 and Sweden in 1997. All countries except Luxembourg, Sweden and Germany are included in the analysis; Luxembourg is omitted because of an extremely small sample, Sweden because the data do not form a panel, Germany is dropped because the information necessary to construct the deprivation indices is not available for this country. Eight waves of the ECHP were collected in total, the last collected in 2001. We aggregate data according the welfare regime clusters defined by Esping-Andersen (1990, 1999) and Trifiletti (1999); the clusters are as follows: *Liberal countries* (United Kingdom and Ireland), *Social Democratic countries* (Finland and Denmark), *Conservative countries* (Belgium, Netherlands, France, and Austria), and *Mediterranean countries* (Italy, Spain, Portugal, and Greece).

The event of interest is marital dissolution that is defined by separation or a divorce, and in the ECHP the variable is based on self reported marital status, *and* household composition. A marital split materialises in most cases as a separation between partners, followed by a formal divorce. Laws and regulations on separation and divorce vary across European countries. One important implication of this is that the duration between separation and divorce will differ, which in turn implies that the well-being for individuals currently separated may be different from the well-being of those defined as divorced. Since in most cases a separation is associated with a significant financial shock, it is likely that separated individuals, especially women, have a high likelihood of experiencing deterioration in their financial well-being. The financial strain associated with a divorce (as opposed to a separation) is likely to be less severe for divorced individuals, since this will normally take place some time after the physical separation. As such, we would expect poverty and deprivation to be lower than for those registered as divorced. Of importance in this analysis is to measure the event in which a couple physically ceased to live in the same household. Thus, a couple, in our analysis, is not formally recorded as separated unless they also reported to live in separate households. We make this distinction since they in this situation cannot benefit from economies of scale of the household, nor can they share the burdens of rearing children.

3.2 Propensity score matching

In estimating the effect of marital disruption on economic wellbeing we face the potential problem of selection bias. That is, couples experiencing a marital separation may be qualitatively different from couples not separating. For example, women who are strongly dependent on partner's income are probably less likely to separate from them as they are aware of the strong economic distress they would experience in the case they split from their partner (Becker, 1991). Here we tackle this issue by implementing a propensity score matching technique. Applications of this kind are growing in literature (see among others Blundell *et al.* 2005; Lechner, 2002; Dehejia and Wahba, 1998) beyond the evaluation of social programmes. In our setting we assume that each individual i has two potential outcomes, Y_{1i} in the case he/she experiences a marital split (the treatment) and Y_{0i} in the case he/she does not (the controls). The causal impact is given by the comparison between Y_{1i} and Y_{0i}. Obviously, only one of these two outcomes is observable for every individual making such a comparison impossible, a problem often referred to as the "fundamental problem of causal inference" (Holland, 1986).

Let D_i be the treatment variable taking the value 1 if individual i receives the treatment (marital split) and 0 otherwise. One parameter of interests is commonly referred to as *average treatment effect on treated* (ATET) that is:

$$\text{ATET} \equiv \text{E}(Y_{1i}|D_i = 1) - \text{E}(Y_{0i}|D_i = 1) \tag{7}$$

In (7) we have to identify of $\text{E}(Y_{0i}|D_i = 1)$. This needs further assumption on the selection process. The easiest solution is using a naïve estimator of ATET consisting of observed difference between treated and control groups:

$$\text{ATET} = \text{E}(Y_{1i}|D_i = 1) - \text{E}(Y_{0i}|D_i = 0) \tag{8}$$

(8) assumes that there is no selection bias, i.e. treated group is randomly selected from the total population. It is well known that in observational studies this assumption is overly strong and treated and control groups are systematically different, so that (8) is a biased estimate of ATET. Lalonde (1986) use $B = E(Y_{1i}|D_i = 1) - E(Y_{0i}|D_i = 0)$ as a measure of the bias term while Heckman *et al.* (1998) propose to write B as a function of a set of observed variables X:

$$B = \int_{S_{1X}} E(Y_0 \mid X, D = 1) dF(X \mid D = 1) - \int_{S_{0X}} E(Y_0 \mid X, D = 0) dF(X \mid D = 0) \quad (9)$$

where $B(X) = E(Y_0 \mid X, D = 1) - E(Y_0 \mid X, D = 0)$ is the pointwise selection bias in X. Based on (9) Heckman *et al.* (1998) derive a decomposition of B into three terms B_1, B_2, and B_3.

Term B_1 arises when the supports of the observable X for the treated and the control group S_{1X} and S_{0X} are not overlapping, i.e. among the treated group we observe value of X that are not observed in the control group or vice versa. Term B_2 depends on misweighting within the common support, since the distribution of X may change when we restrict to common support. Finally, term B_3 is the true "selection" bias term arising from a different distribution of *unobserved* variables between treated and untreated.

The removal of the bias terms from the (9) is then the crucial part of the estimation strategy. Here we use a matching method, based on the critical assumption called c*onditional independence assumption* (CIA) stating that treatment status is random conditional on some set of X, in notation

$$Y_0 \perp D \mid X \quad (10)$$

If CIA holds the bias in (9) only depends from observed variables X and B_3 is zero. Under this assumption, $E_X(Y_{0i} \mid X_i, D_i=0) = E_X(Y_{0i} \mid X_i, D_i=1)$, thus the ATET can be unbiasedly estimated by

$$\text{ATET} = E_X(Y_{1i} - Y_{0i} \mid X_i, D_i=1) = E_X(Y_{1i} \mid X_i, D_i=1) - E_X(Y_{0i} \mid X_i, D_i=0). \quad (11)$$

Though theoretically appealing, the matching approach is in practice difficult to apply when the dimension of X is high because of the difficulties in calculating the conditional expectations in the (11). Instead of matching on the base of X one can equivalently match treated and comparison units on the base of any balancing score, and in particular on the base of the "propensity score" (Rosenbaum and Rubin 1983) that is the conditional probability of receiving the treatment given the values of X, formally:

$$p(X_i) = \Pr(D_i = 1 \mid X_i) \quad (12)$$

This result reduces the dimensionality problem in computing the conditional expectation and an unbiased estimate of ATET can be found from:

$$\text{ATET} = E_{p(X)}\left\{\left[E(Y_1 \mid D = 1, p(X)) - E(Y_0 \mid D = 0, p(X))\right] \mid D = 1\right\} \quad (13)$$

There are many matching estimators (see, for example Becker and Ichino, 2002; and Smith and Todd, 2005), all of them can be seen as generated by the following formula

$$ATET = \frac{1}{n_1} \sum_{i \in \{D_i=1\}} \left[Y_{1i} - \sum_{j \in \{D_J=0\}} w_{ij} \cdot Y_{0j} \right] \quad (14)$$

where the weight w_{ij} is defined according the matching method is used. In this work we implement a *nearest neighbour* matching consisting of pairing every treated unit with the closest control unit, i.e. weight is defined as

$$| P(X_j) - P(X_i) |] \qquad (15)$$

Sometimes it may happen that more than k>1 controls satisfy the (15). In this case we use all these k controls with weight 1/k. Thus two out of three components sources of bias in (9) are eliminated. B_1 is eliminated by allowing matches only in the common support region, and B_2 is eliminated because the control units are re-weighted according the value of p(X). B_3 is the only component of (9) that is not eliminated by matching and it is assumed to be zero by CIA. Also CIA, albeit less strong than the assumption underlying the naïve estimator, has proved to be unlikely to hold. Based on this Heckman *et al.* (1998) propose to combine a Difference-in-Differences (DD) estimator to the matching procedure. In essence this implies comparing the mean change of well-being from one time period t to another, t+1, of participants, with the mean change of well-being for the same time period for non-participant.

$$DD = E(Y_1^{t+1} - Y_1^t) - E(Y_0^{t+1} - Y_0^t) = E(\Delta_1) - E(\Delta_0) \qquad (16)$$

An important advantage of the DD estimator is that it allows us to control for selection into the treatment group caused by unobserved variables. That is, provided unobserved heterogeneity is time-fixed, its effect will be netted out by taking first difference. In this way the CIA is relaxed and the critical identifying assumption is now (Heckman *et al.*, 1998)

$$B^{t+1}(X)\text{-}B^t(X) = 0. \qquad (17)$$

As a result it has been argued that the DD-PSM estimator is more robust since it eliminates temporarily-invariant sources of bias (e.g. Dehejia and Wahba, 1998, 1999 and Smith and Todd, 2005). The final estimator of the impact of marital split on well-being is given by:

$$DD - PSM = E_{p(X)}\{[E(\Delta_1 \mid D = 1, p(X)) - E(\Delta_0 \mid D = 0, p(X))] \mid D = 1\} \qquad (18)$$

DID estimator is implemented in all the estimates. However when we estimate the effect of separation on poverty status, DID and cross-sectional estimators are equivalent given that all those who are poor *before* the marital split are ruled out from analysis. This means that Y^t=0 for all individuals.

The estimation of standard errors of ATET is not a trivial exercise; the main problem is that the estimated variance of ATET should also include the variance due to estimation of the propensity score. The common solution to this problem is bootstrapping (see for example, Lechner, 2002 and Blundell *et al.,* 2005). This is the solution we adopt, using the module developed by Leuven and Sianesi (2003) for STATA.

The matching procedure based on the PSM implies that all variables have to be balanced between treated and control units. In order to satisfy the balancing property, the propensity score specification changes with the country specific samples (see estimates in appendix). In all samples the variables which are suspected to confound the effect of marital split on poverty are included in the estimation of the propensity score: wave, age, number of children, well-being level prior the event (measured both in terms of income and in terms of deprivation), education and employment status. It has to be kept in mind that the main purpose of propensity score estimation is not to predict participation to treatment but to balance all covariates in the matching procedure (Augurzky and Schmidt, 2000). Therefore we are not interested in goodness of fit of model specification but in balancing all observed variables. Moreover "perfect" prediction should be avoided since if $P(X)=0$ or $P(X)=1$ for some value of X we cannot match on these values of X as they are out of the common support. Heckman *et al.* (1998) argue that some randomness is needed in order to guarantee to observe individuals with identical values of X both in the treatment and the control groups. Then after having chosen the appropriate variables to include in the propensity score estimate we test whether the balancing property is satisfied for each model specification we used. The null hypothesis (i.e. covariates are balanced between treated and untreated) is rejected in non of the cases.

4. Results

4.1 Entering Poverty

Table 1 presents the effects of experiencing a divorce/separation event on entering poverty using different poverty thresholds. Note that the estimate refers to what is called the average treatment effect on the treated, and reflects therefore the difference between the rate of entering poverty for married couples and individuals experiencing a marital break-up.

The results confirm that women are considerably more likely to enter poverty as a result of divorce compared to men. This is the case independent of countries and poverty threshold used. Moreover, the effects are largely consistent with welfare regime theory. Especially with the 50 percent threshold, the ranking of country groups is perfectly in line with the Welfare Regime theory, having the Social-Democratic group the smallest effect followed in ascending order by the Conservative countries, the Mediterranean, and, finally,

the Liberal group that presents the highest effect. However, this ranking does not remain perfectly consistent if we consider higher poverty thresholds. By using the 60 or 70 percent of median income, the effect of marital disruption increases dramatically for the Conservative and Social-Democratic countries. In fact the Social Democratic countries reach in this case the levels of the Mediterranean group. Thus, divorce clearly affects women in Social Democratic countries as well in that they are considerably more likely to enter "mild" poverty, and they are more likely to do so than divorced women in the Conservative countries. Women in the Liberal countries clearly experience the strongest effect, independent of poverty line used. Note that the sample mainly consists of individuals from the United Kingdom, as the number of separations and divorce is rather low in Ireland. As expected the effect for men is far lower and only in the Conservative group significant (when the poverty line is 60% or 70% of median income). The Liberal countries also have the largest gender difference. This gender difference is slightly larger than Mediterranean countries. When we consider only couples with children the effect of marital disruption is even stronger: for Liberal women the rise of poverty entry rate is beyond 0.5 when the poverty threshold is set at 70% of the median income. For men the figures are not significantly different when we consider only those with children.

Table 1: Average Treatment effect on poverty entry rate at different poverty thresholds, by gender, presence of children and welfare regime.

	MALES				FEMALES			
	All Couples		Couples with children		All Couples		Couples with children	
	Att	t-value	Att	t-value	Att	t-value	Att	t-value
Liberal Countries								
50% threshold	0.030	1.250	0.020	0.623	0.335	7.328	0.365	7.262
60% threshold	0.016	0.518	0.045	1.024	0.389	8.543	0.414	7.017
70% threshold	0.000	0.000	0.011	0.250	0.432	9.086	0.509	8.755
Social Democratic Countries								
50% threshold	0.029	1.372	0.019	0.766	0.110	2.978	0.103	3.418
60% threshold	0.047	1.444	0.071	1.909	0.250	5.987	0.204	4.926
70% threshold	0.057	1.372	0.064	1.451	0.276	6.612	0.296	5.223
Conservative Countries								
50% threshold	0.009	0.819	0.009	0.570	0.123	5.401	0.147	7.058
60% threshold	0.043	2.803	0.024	1.183	0.210	7.593	0.217	8.557
70% threshold	0.065	2.574	0.039	1.555	0.227	8.066	0.242	9.353
Mediterranean Countries								
50% threshold	0.038	1.735	0.057	1.982	0.217	9.008	0.215	6.741
60% threshold	0.045	1.636	0.007	0.225	0.245	7.430	0.284	7.016
70% threshold	0.016	0.540	0.042	1.106	0.295	8.012	0.294	8.445

4.2 Fuzzy monetary indicator

The results reported in Table 2 are the estimates of Average Treatment Effect on the fuzzy monetary indicator, namely the relative income. These estimates reflect a decline or a rise in the terms of ranking of income with a certain country. In other words, a positive effect means a decline in the income ranking due to marriage dissolution, whereas a negative effect means a rise. Therefore in Liberal countries, for instance, women tend to experience a strong decline whereas men's ranking remains approximately the same after the separation\divorce. The decline is weaker for Mediterranean countries but higher than in Scandinavian and Conservative. The results in Table 2 need to be read together with the estimates of Average Treatment Effects on poverty entry rates. Provided that women from Liberal countries experience the strongest effect, the situation for other countries is less straightforward. Women from Continental and the Nordic countries experience approximately the same decline in the income ranking when we consider the whole sample but it is much lower for Social Democratic Europe when using only the couples with children. Thus for Scandinavian women the effect of divorce or separation on own income ranking is milder if they have children. Interestingly we find a reversed trend for liberal countries: women with children experience a stronger effect compared to all women (with or without children). This is fairly consistent with results of divorce effect on poverty entry rate reported in table 1. Mediterranean and Conservative countries show no relevant difference between the whole sample and women with children, again this is consistent with results in table 1. Differently from results on poverty entry rate we find no significant effect of separation on men. This comes as no surprise given that we find a positive effect of marital split only using a particular poverty threshold.

Table 2: Average Treatment Effect of marital dissolution on relative income.

	MALES				FEMALES			
	All Couples		Couples with children		All Couples		Couples with children	
	Att	t-value	Att	t-value	Att	t-value	Att	t-value
Liberal	0.014	0.624	-0.011	-0.508	0.298	9.039	0.346	8.268
Social Democratic	0.022	1.178	0.035	1.716	0.141	6.106	0.077	3.918
Conservative	-0.000	-0.031	-0.001	-0.541	0.144	9.464	0.152	7.528
Mediterranean	0.011	0.472	-0.015	-0.696	0.205	9.561	0.199	7.697

4.3 Deprivation indices

We now move to the effect of marital dissolution on total household deprivation. We consider first the change in total deprivation index due to the separation from spouse. We then consider in more detail the effect of separation on the five dimensions of deprivation as defined earlier. Here we are showing only the estimated average treatment effect on treated for the overall deprivation index, the basic lifestyle deprivation index, and the secondary lifestyle deprivation index. The estimates for the remaining indices (housing facilities, housing deterioration, and environmental problems) are omitted as in non of these cases did we find significant effects of marital separation on these outcomes.

Total deprivation

The results reported in Table 3 show a somewhat different picture than the analysis of poverty entry rates. The effect for women from Liberal countries is still the highest, but now the Social Democratic and the Mediterranean groups show quite similar figures for both men and women. We find the lowest impact among the Conservative countries. Importantly, the effects are now significant also for men, and though the magnitude of the effects is always lower than women, there is less of a gender gap. In the Liberal group the effect for men is strikingly high and is in stark contrast to the very weak effect reported for men entering poverty. Moreover, the effect is not much lower than for women. Men in the Conservative countries suffer a significant rise of deprivation after separation as well, but this is consistent with the figures we reported for poverty entry. As with the Liberal countries, Conservative countries now show a quite narrow gender gap. Thus by measuring well-being in terms of total deprivation the geographical pattern of gender differences changes dramatically. Now the Social Democratic and the Mediterranean countries have the largest gender differences out of the four countries. This time the effect of marital split changes somewhat when considering couples with children only: the effect for males is milder in Liberal countries and stronger in Scandinavian ones, whereas it does not change significantly for the other country groups. For women we observe a smaller effect in Liberal countries and a higher one in the Conservative countries.

Table 3: Average Treatment Effect of marital dissolution on deprivation index.

	MALES				FEMALES			
	All Couples		Couples with children		All Couples		Couples with children	
	Att	t-value	Att	t-value	Att	t-value	Att	t-value
Liberal	0.124	3.100	0.093	2.203	0.138	4.166	0.123	3.094
Social Democratic	0.023	0.723	0.073	2.054	0.106	3.646	0.097	2.736
Conservative	0.041	2.688	0.044	2.341	0.058	3.682	0.075	4.795

Mediterranean	0.034	1.137	0.036	1.112	0.115	4.860	0.105	3.831

Basic Lifestyle deprivation

If we focus on the first dimension of deprivation, i.e. deprivation on basic lifestyle, we find results relatively consistent with results for total deprivation index. Again the liberal group shows the strongest effect both for men and women, but this time the effect for women is about twice as high. The weakest effect is found in Mediterranean countries even though the effect for the Conservative group is almost equal. Again for the Scandinavian countries we notice a relatively high effect for women and a significant gender gap. Finally, we register as before a significant effect for men also in the Conservative group.

The presence of children seems to negatively influence the effect for males: apart from Mediterranean countries, almost everywhere the effect of marital split is stronger when we only consider couples with children. Conversely, the effect for women is almost everywhere weaker, with the exception of Conservative countries.

Table 4: Average Treatment Effect of marital dissolution on basic lifestyle deprivation index.

	MALES				FEMALES			
	All Couples		Couples with children		All Couples		Couples with children	
	Att	t-value	Att	t-value	Att	t-value	Att	t-value
Liberal	0.114	2.785	0.136	2.178	0.224	4.541	0.194	3.303
Social Democratic	0.033	0.850	0.100	2.251	0.166	3.646	0.104	2.173
Conservative	0.086	4.840	0.089	3.904	0.127	6.010	0.145	5.881
Mediterranean	0.025	0.809	0.024	0.613	0.126	4.374	0.118	3.988

Secondary lifestyle deprivation

Finally, we look at the effects of marital disruption on the deprivation level concerning the secondary lifestyle deprivation. Surprisingly we find the strongest effect for women in the Scandinavian countries and not in Liberal ones (whose estimate however is, together with Mediterranean countries, quite close to the Scandinavian group). The effect in the Continental countries is much lower. Another interesting feature of these results is the effect of separation for men, which is now quite close to deprivation for women, i.e. the gender gap is reduced when considering secondary lifestyle deprivation.

Again, if we consider couples with children only, the results change somewhat. Surprisingly the effect for women is no longer significant whereas for men it remains

unaltered in Liberal countries. A substantial drop is registered also for Scandinavian women combined with an increase for Scandinavian men. Conversely we observe a small increase of the effect for females in the other two country groups. No relevant change is registered for men in these countries.

Table 5: Average Treatment Effect of marital dissolution on secondary lifestyle deprivation index.

	MALES				FEMALES			
	All Couples		Couples with children		All Couples		Couples with children	
	Att	t-value	Att	t-value	Att	t-value	Att	t-value
Liberal	0.149	3.311	0.148	2.734	0.147	3.067	0.077	1.647
Social Democratic	0.069	2.147	0.119	2.625	0.157	4.976	0.129	3.179
Conservative	0.052	2.750	0.046	1.987	0.086	4.840	0.109	4.938
Mediterranean	0.049	1.578	0.042	1.008	0.134	4.393	0.149	4.826

5 Concluding remarks

The present work is concerned with the economic consequences of marital disruption for both the members of the separating couples. Most of the literature on this topic assess whether there is a large gender bias, women being exposed to high poverty risks in the aftermath of separation whereas men seem not to experience any dramatic drop of their income and sometimes they can be even better off after divorce/separation. Some authors (McManus and DiPrete, 2001) challenge this evidence, suggesting that the gender bias is less strong than what is generally acknowledged, and also men economically suffer after marital disruption. Here we suggest that two main issues are behind this debate: firstly the conventional measures of well-being (i.e. income and poverty status) are not entirely satisfying. Poverty status creates distinction between "poor" and "non poor", but it is not clear which poverty line should be considered appropriate and why. Moreover, income and poverty status do not encapsulate all the dimensions underlying poverty and social exclusion - only the monetary one. We may expect that men are not suffering in monetary terms in the aftermath of separation but they experience an increased deprivation in lifestyle standards all the same because of a rise in expenses due to alimonies payments, new dwelling costs, etc. The second issue concerns selection. This is driven by the fact that men and women who are at high risk of entering poverty may be more likely to avoid separation. By using a propensity score matching procedure combined with a Difference-in-differences estimator we control for such a selection bias.

We expect that by using different measures of well-being we are able to observe that both men and women experience an economic deprivation after separation being women more deprived in monetary terms and men in non monetary terms. The results confirm largely to our expectations: it is confirmed that the definition of poverty threshold is an important issue. Results differ considerably depending on whether we use a 50%, a 60%, or 70% poverty line. Moreover when we use monetary measures (i.e. poverty status and relative income) it is unquestionable that women suffer a disproportionately larger negative effect than men. Also important is that by using monetary measures, we find that most of the results are consistent with welfare regime theory. However, the non-monetary measures (i.e. deprivation indices) provide a different picture. Women are still found to suffer significantly more than men, but it is also clear that men's level of deprivation also increases, and in some cases there is no significant difference between the ATT estimated for men and women (this is case in Liberal countries when using the overall deprivation index and the secondary lifestyle deprivation index).

Children play an important role in explaining the gender differences. If there are children in the conjugal dwelling, then mothers are much more likely to be granted custody following a divorce. Thus the divorce event will for many women imply reduced income (poorer access to the husband's income) and a higher relative expenditure. Men are instead likely to live alone or with parents, and are much less likely to experience poverty and financial strain. Considering couples with children only in the analysis of entering poverty, we notice that in Liberal and Mediterranean countries the gender gap is even larger, in Scandinavian countries is smaller, and in the Conservative countries it remains, more or less unaltered.

However, in terms of deprivation, men do suffer significantly. Many of the items used to compute the deprivation index refers to characteristics of the dwelling. If it is the case that men normally has to leave the dwelling following a divorce, he will in the short run at least, loose out on many of the goods and services that the household would provide. So though men are not worse off financially, they are worse off in terms of consumer durables and certain expenditure goods. It also seems likely that the new dwelling is often of poorer quality of the original dwelling, which is consistent with our estimates.

The gender difference is clearly smaller when children are not present in the dwelling. With no children, the effect on lifestyle deprivation among men becomes higher, whereas it is slightly smaller for women. One important factor here is that it is less clear which of the spouses that will stay put in the conjugal dwelling if the couple has no children.

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Appendix 1: Variables for calculating deprivation indices

Dimensions and items of non-monetary deprivation

1 Basic non-monetary deprivation – these concern the lack of ability to afford most basic requirements:

- Keeping the home (household's principal accommodation) adequately warm.
- Paying for a week's annual holiday away from home.
- Replacing any worn-out furniture.
- Buying new, rather than second hand clothes.
- Eating meat chicken or fish every second day, if the household wanted to.
- Having friends or family for a drink or meal at least once a month.
- Inability to meet payment of scheduled mortgage payments, utility bills or hire purchase instalments.

2 Secondary non-monetary deprivation – these concern enforced lack of widely desired possessions ("enforced" means that the lack of possession is because of lack of resources):

- A car or van.
- A colour TV.
- A video recorder.
- A micro wave.
- A dishwasher.
- A telephone.

3 Lacking housing facilities – these concern the absence of basic housing facilities (so basic that one can presume all households would wish to have them):

- A bath or shower.
- An indoor flushing toilet.
- Hot running water.

4 Housing deterioration – these concern serious problems with accommodation:

- Leaky roof.
- Damp walls, floors, foundation etc.
- Rot in window frames or floors.

5 Environmental problems – these concern problems with the neighbourhood and the environment:

- Shortage of space.
- Noise from neighbours or outside.
- Dwelling too dark/not enough light.
- Pollution, grime or other environmental problems caused by traffic or industry.
- Vandalism or crime in the area.

Appendix 2: Estimation of the propensity score of marital disruption

Continental countries

	Couples with children				All couples			
	Females		Males		Females		Males	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
wave2	0.196	0.085	0.030	0.089	0.209	0.073	0.085	0.078
wave3	0.185	0.087	0.085	0.087	0.141	0.076	0.133	0.077
wave4	0.225	0.086	0.061	0.090	0.200	0.075	0.097	0.079
wave5	0.588	0.079	0.514	0.079	0.574	0.069	0.524	0.070
wave6	0.612	0.080	0.449	0.082	0.525	0.070	0.390	0.074
wave7	0.124	0.095	0.029	0.097	0.084	0.084	0.022	0.087
Age	-0.007	0.003	-0.009	0.003	-0.008	0.002	-0.011	0.002
# Children	-0.016	0.022	0.007	0.024	0.064	0.016	0.080	0.017
Austria	-0.554	0.099	-0.791	0.102	-0.458	0.083	-0.669	0.085
Belgium	-0.304	0.121	-0.584	0.107	-0.232	0.099	-0.513	0.088
France	-0.146	0.061	-0.229	0.060	-0.120	0.051	-0.222	0.051
Log HH income (t-1)	0.029	0.036	0.072	0.022	0.006	0.029	0.067	0.019
Log person income (t-1)	0.007	0.006	-0.004	0.010	0.006	0.005	0.001	0.008
Student	0.317	0.188	0.008	0.287	0.266	0.169	-0.106	0.268
Out of labour force	-0.034	0.063	0.101	0.123	-0.024	0.058	0.093	0.105
Unemployed	0.004	0.073	-0.073	0.130	0.038	0.065	-0.063	0.113
Degree	-0.144	0.059	-0.048	0.061	-0.131	0.054	-0.046	0.054
Secondary	0.022	0.046	0.011	0.052	0.031	0.041	0.005	0.045
Shortage of space in HH	-0.034	0.057	-0.055	0.062	-0.023	0.053	-0.038	0.056
Deprivation index (t-1)	0.309	0.091	0.300	0.097	0.276	0.080	0.264	0.087
Constant	-2.459	0.394	-2.605	0.269	-2.329	0.328	-2.694	0.236

Liberal countries

	Couples with children				All couples			
	Females		Males		Females		Males	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
wave3	-0.142	0.142	0.660	0.305	-0.122	0.117	0.726	0.296
wave4	-0.112	0.141	0.768	0.303	-0.100	0.117	0.770	0.295
wave5	-0.031	0.139	0.754	0.304	-0.075	0.119	0.762	0.296
wave6	-0.267	0.159	0.644	0.309	-0.241	0.131	0.694	0.299
wave7	-0.165	0.149	0.635	0.311	-0.152	0.124	0.605	0.303
Age	-0.022	0.007	-0.012	0.005	-0.024	0.004	-0.015	0.004
# Children	0.023	0.051	-0.022	0.036	0.009	0.035	0.023	0.025
Log HH income (t-1)	-0.102	0.056	0.040	0.041	-0.089	0.048	0.030	0.033
Log person income (t-1)	-0.004	0.018	0.001	0.020	-0.012	0.016	0.010	0.017
Out of labour force	-0.027	0.137	0.136	0.180	-0.117	0.126	0.171	0.154
Unemployed	0.860	0.242	0.096	0.181	0.647	0.202	0.019	0.166
Degree	-0.108	0.101	0.223	0.087	-0.084	0.084	0.130	0.075
Secondary	-0.068	0.137	-0.173	0.123	-0.106	0.121	-0.131	0.103
Shortage of space in HH	-0.071	0.121	-0.094	0.113	-0.054	0.106	-0.026	0.099
Deprivation index (t-1)	0.017	0.187	0.291	0.162	0.084	0.154	0.181	0.142
Constant	-0.302	0.598	-3.010	0.496	-0.228	0.512	-2.980	0.453

Mediterranean countries

	Couples with children				All couples			
	Females		Males		Females		Males	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
wave2	-0.019	0.079	-0.066	0.096	0.010	0.071	-0.024	0.085
wave3	0.042	0.078	0.066	0.090	0.044	0.071	0.035	0.083
wave4	0.091	0.077	0.051	0.092	0.132	0.069	0.120	0.080
wave5	0.089	0.078	0.083	0.092	0.066	0.072	0.064	0.083
wave6	0.000	0.083	-0.115	0.105	0.028	0.075	-0.037	0.089
wave7	0.068	0.080	-0.057	0.102	0.098	0.072	-0.021	0.088
Age	-0.003	0.002	-0.016	0.003	-0.004	0.002	-0.014	0.002
# Children	-0.005	0.024	0.036	0.028	0.010	0.018	-0.003	0.021
# Siblings	-0.033	0.217	0.050	0.165	-0.090	0.217	0.205	0.103
Italy	-0.278	0.122	0.300	0.138	-0.206	0.110	0.317	0.118
Greece	-0.094	0.070	-0.316	0.091	-0.030	0.061	-0.192	0.077
Spain	-0.031	0.062	-0.161	0.078	-0.020	0.056	-0.121	0.070
Log HH income (t-1)	-0.061	0.025	0.063	0.027	-0.052	0.023	0.052	0.024
Log person income (t-1)	0.032	0.005	0.003	0.008	0.032	0.005	0.000	0.007
Student	0.546	0.289	0.539	0.428	0.446	0.278	0.313	0.402
Out of labour force	0.062	0.065	0.056	0.100	0.061	0.059	0.008	0.088
Unemployed	0.138	0.068	0.216	0.075	0.100	0.064	0.191	0.066
Degree	0.104	0.058	0.041	0.070	0.094	0.054	0.035	0.061
Secondary	-0.178	0.227	0.188	0.216	-0.005	0.153	0.064	0.182
Shortage of space in HH	-0.004	0.051	-0.042	0.064	-0.009	0.047	-0.072	0.058
Deprivation index (t-1)	0.388	0.083	0.364	0.103	0.351	0.074	0.348	0.090
Constant	-2.013	0.369	-2.959	0.412	-2.167	0.342	-2.833	0.361

Scandinavian countries

	Couples with children				All couples			
	Females		Males		Females		Males	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
wave2	0.083	0.224	0.464	0.239	0.066	0.168	0.166	0.177
wave3	0.222	0.189	0.281	0.227	0.132	0.145	0.110	0.159
wave4	0.337	0.188	0.412	0.226	0.203	0.145	0.221	0.157
wave5	0.274	0.191	0.335	0.229	0.123	0.148	0.130	0.161
wave6	0.207	0.197	0.193	0.239	0.143	0.150	0.037	0.168
wave7	0.125	0.202	0.219	0.238	-0.021	0.159	0.048	0.168
Age	-0.008	0.005	-0.012	0.005	-0.008	0.004	-0.013	0.004
# Children	-0.038	0.043	-0.035	0.043	0.024	0.030	0.042	0.029
Finland	-0.003	0.084	0.182	0.096	-0.004	0.070	0.114	0.076
Log HH income (t-1)	-0.036	0.062	0.028	0.078	-0.027	0.049	0.047	0.059
Log person income (t-1)	-0.002	0.015	-0.027	0.015	-0.005	0.011	-0.018	0.012
Student	0.120	0.217	0.054	0.300	0.118	0.189	0.026	0.282
Out of labour force	-0.052	0.185	0.122	0.213	0.024	0.136	-0.063	0.162
Unemployed	0.123	0.191	0.172	0.215	0.052	0.139	0.265	0.163
Degree	0.216	0.111	0.188	0.111	0.156	0.085	0.071	0.087
Secondary	0.000	0.116	0.105	0.107	-0.005	0.087	-0.018	0.085
Shortage of space in HH	0.047	0.091	-0.027	0.096	0.025	0.084	0.003	0.086

Deprivation index (t-1)	0.509	0.185	0.415	0.199	0.517	0.151	0.381	0.163
Constant	-1.840	0.796	-2.329	0.958	-1.922	0.636	-2.469	0.734