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Childbearing and well-being: a comparative analysis of European welfare regimes
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Summary Fertility rates in contemporary Europe have reached dramatically low levels. In light of this we are interested in the extent to which childbearing events may worsen individuals’ material well-being. Using a sample of women drawn from the European Community Household Panel Survey, we make a comparison of the impact of childbearing on well-being using a welfare-regime classification. Recognizing that poverty status is a poor proxy for well-being, we also derive several measures of well-being that are multidimensional in nature. These measures are referred to as deprivation indices and avoid the poor/non-poor dichotomy. We provide descriptive statistics of poverty status and deprivations indices, as well as an analysis of a more causal nature, the latter consisting of a Difference-in-Differences estimator combined with Propensity Score Matching techniques (DD-PSM). We find that independently of how well-being is defined, childbearing events never have a positive impact on individuals’ material well-being. But our estimates are largely consistent with welfare-regime theory: women in the social-democratic welfare states suffer the least as a result of childbearing, whereas women in conservative and Mediterranean states suffer significantly more. For the liberal welfare regime the results are more mixed, and depend on the definition of well-being.

Key words childbearing, deprivation indices, ECHP, poverty, propensity score matching


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Introduction

A striking feature of Western contemporary society, and of great concern to policymakers, is the emergence of dramatically low fertility rates. Comparing current Period Total Fertility Rates (PTFR) to the levels of the 1960s it is clear that all Western European countries have seen a substantial decline (Castles, 2003; Kohler et al., 2002). Though the great majority now have PTFR well below replacement levels, there is still a substantial variation across countries. Whereas Mediterranean countries are struggling with extremely low fertility rates, spearheaded by Italy and Spain with PTFR levels around 1.20 and 1.16 in 1998 respectively, the situation is somewhat different, for instance, in Scandinavian countries, where the average PTFR is around 1.69 (in 1998). Similarly, considering liberal welfare states, such as the UK and the US, fertility levels remain relatively high. The reasons for the general fertility decline, and the emergence of ‘lowest-low’ fertility rates in Mediterranean countries, are widely debated in the social sciences (Billari and Kohler, 2002; Castles, 2003). Whereas economists have emphasized increasing costs of children and opportunity costs among women, mainly as a result of increased educational attainment and labour-market participation (Del Boca et al., 2003; 2005), sociologists and demographers have put more emphasis on changes in attitudes and value orientations (van de Kaa, 2001). Social-policy research emphasizes the inadequate response of the welfare state in providing services for a rapidly changing society, both in terms of family formation and labour-market behaviour (Esping Andersen, 1990; 1999).

Irrespective of the various explanations offered, a natural question to ask in this context concerns to what extent couples in European contemporary society associate childbearing with their own general well-being. Is it, for instance, the case that couples choose to have fewer children because childbearing is generally associated with an intolerable increase in direct and indirect costs and efforts?

This is of course a central question for policymakers, since one possible remedy for the low fertility levels is to promote childbearing through social policies and family benefits.

In this paper, applying different measures of well-being, we use six waves from the European Community Household Panel to analyse to what extent childbearing events affect individuals’ material well-being. Obviously, within the European Union countries differ not only in terms of current fertility levels, but also in their systems of social policy and family support. For instance, the social-democratic welfare states, mainly composed of the Scandinavian countries, provide much more generous child-care support compared to the Mediterranean countries. It is frequently argued that such differences in child-care provision are important in explaining the fertility differentials, the main argument being that the welfare provision in social-democratic welfare states actively facilitates childbearing.

However, from an empirical point of view, the effects of such differences are difficult to establish. For a start, welfare generosity depends not only on monetary amounts, but also on the extent the system offers flexibility of working hours and parental leave. Thus welfare provision and the way it interacts with individuals’ perception of well-being are complex and difficult to capture in empirical analysis. Our strategy is to organize the analysis around the welfare-regime typologies outlined by Esping-Andersen (1990) and elaborated by Ferrera (1996), Trifiletti (1999) and Mayer (2001). Though this is a rather indirect approach to identify the effect of differences between welfare regimes, it does provide insight into the link between childbearing events and well-being. It does, for instance, demonstrate how well-being is affected differently in countries where welfare provision to families with young children is generous, such as Scandinavian ones, as opposed to countries with a much lower level of generosity, such as the Mediterranean ones. An important issue concerns the definition of well-being. Frequently poverty status is used as a proxy. However,
dividing the population into a simple dichotomy of ‘poor’ and ‘non-poor’ is clearly an oversimplification. An alternative approach would be to recognize the fact that well-being is multidimensional – depending on a range of factors – not only monetary well-being. As a result we introduce various deprivation indices which take into account non-monetary aspects of well-being.

Our analysis consists of two parts. First we present descriptive statistics of well-being, measured both in terms of poverty status and deprivation indices, by family status, for the four different welfare regimes. In the second part we make an attempt to identify causal effects by focusing on the extent to which childbearing events lead to changes in well-being. We do so by implementing a procedure commonly referred to as Propensity Score Matching, in which women are grouped by their background characteristics. For each homogenous group of women we compare the well-being outcomes of those women who experience childbearing to those who do not.

The paper is outlined as follows. The second section summarizes the relevant background for our analysis – with a particular emphasis on welfare regimes theory. The next section gives a brief description of the ECHP data. The fourth section explains how we define well-being and puts particular emphasis on the construction of the deprivation indices. Using these well-being definitions, the section provides interesting descriptive patterns of poverty and deprivation for different family types and welfare regimes. The fifth section explains the methodological strategy for the causal analysis and presents the results. The sixth section concludes.

Background

Well-being is frequently analysed in terms of poverty status and poverty head count ratio (HCR). Though the use of poverty status is a gross simplification, it does provide a useful starting point for assessing how individuals’ well-being is determined. Out of the many sources of income available to the household, labour income is by far the most important. Needless to say the likelihood of household poverty decreases with the number of employed family members, but increases with increasing number of dependent family members such as children. Bane and Ellwood (1986), using American data, show that changes in demographic status – particularly childbearing – are strongly linked to entering poverty. More recently, Jarvis and Jenkins (1996) – using the British Household Panel Survey, for the United Kingdom – support these findings and show that a significant proportion of those who enter poverty do so as a result of increased family sizes, though the main source of poverty entry is from becoming unemployed. A recent descriptive analysis comparing poverty dynamics in six OECD (Organization for Economic Cooperation and Development) countries highlights the importance of both family and employment change (Oxley et al., 2000). This study also shows that for all countries female-headed households and single-adult households with children are particularly vulnerable to long-term poverty. Computing poverty rates for different countries before and after social-benefits payments, they found that for the UK there is only a small difference, whereas in countries such as Germany, the Netherlands and Sweden the difference is considerable, a feature that is largely due to the stronger social safety net in these countries.

Insofar as individual well-being is defined in terms of income or poverty status it is clear that well-being depends upon generosity of state welfare linked to childbearing, such as child benefits and child services, but also the structure of the labour market – especially in terms of facilitating female labour-force participation. A fruitful approach to making inferences about the role of social policy and provision of services is therefore to compare countries that differ significantly in these respects. One way of doing this is to follow the welfare-regimes classification outlined by Esping-Andersen.
though several authors have suggested separating out the Mediterranean countries from the Continental welfare regimes (Ferrera, 1996; Trifiletti, 1999; Mayer, 2001). The welfare regimes can then be classified as follows: (a) social-democratic, with generous and universal entitlements; (b) conservative, in which social policies are linked to earnings and occupation – and an emphasis on the family and communities as a means to provide social support; (c) liberal, emphasizing the role of the market to provide services, and where benefits are to a much greater extent means-tested; and (d) Mediterranean, where public support is limited and there is a greater reliance on family relations to provide social support.

The four welfare regimes differ in terms of social benefits in two important dimensions: (a) family-leave policy; and (b) early childhood education and services. For instance, family leave in social-democratic states amounts to an average 37.5 weeks, whereas it is only 14.5 weeks in conservative welfare states, and only 5 weeks in liberal welfare states (Gornick and Meyers, 2003). Moreover, social-democratic states promote a considerably higher level of gender equality in their family-leave policies. The welfare regimes differ considerably in terms of the extent care is provided publicly. Social-democratic countries have the most extensive provision of public child care for children in the age range of 1–3 years, whereas both Mediterranean and liberal welfare states provide hardly any public child care for children of this age group. Conservative countries have also quite poor provision of public child care for very young children, but considerably better for children aged 4–5 years. Overall it is clear that both flexibility and generosity of social benefits are considerably better in social-democratic and conservative welfare states, and are likely to contribute significantly to the material well-being of households, and therefore promote childbearing (Gornick and Meyers, 2003).

As for labour-market regulations, the four regimes also hold significant differences. To a large extent this is reflected in the marked differences in female labour-market participation. In Sweden, for instance, the employment rate among mothers with children under the age of 6 is around 85 percent, whereas the average of Spain, Greece and Italy, in contrast, is only 45 percent (OECD, 2001). The latter three countries are also the ones with the lowest fertility rates. Though these patterns may reflect differences in value systems and attitudes to childrearing, it is reasonable to believe these differences are also driven by difficulties in reconciling childbearing and work activities, mainly due to a lack of flexible working hours and part-time work, which is much more common in social-democratic states but rare in Mediterranean countries (Esping-Andersen, 1999). Southern European labour markets are in fact highly regulated both in terms of hiring and firing. These rules severely restrict opportunities for labour-market entrants, a feature which has been claimed to be the main reason for high unemployment rates among women and young people (Del Boca et al., 2005). Unemployment among young people and women of course reduces current household income, and is likely to lead to postponements both in union formation and the onset of childbearing. The Italian labour market, for instance, is characterized by a high level of rigidity, with a strong protection for those in full-time employment, and very little protection for those in temporary employment. Moreover, part-time jobs are rare, but are often the kind of jobs preferred by mothers. Interestingly, child care is rather limited for children under 3 years old, both in terms of availability and in the number of hours offered on a day-to-day basis. This implies that public child care does not in fact provide much support to those in full-time work – making childrearing and work a difficult combination. Married women are often forced to choose between not working or working full time (Del Boca et al., 2003).

In our analysis we classify Denmark, Finland and the Netherlands as social-democratic; Belgium, France, and Austria as conservative; Great Britain and Ireland as liberal; and
Greece, Italy, Spain and Portugal as Mediterranean. Obviously these groups are not necessarily homogenous, and there are variations in many of the processes which are also important for childbearing. Nevertheless, this set of groupings is fairly consistent with the existing literature.

**Data**

Our analysis is based on data from the European Community Household Panel (ECHP), which is a multidimensional and multi-purpose survey centrally designed and coordinated by the Statistical Office of the European Community (EUROSTAT). Starting in 1994, the ECHP has provided information from six waves for Denmark, Germany, the Netherlands, Belgium, Luxembourg, France, the United Kingdom, Ireland, Greece, Italy, Spain and Portugal; five waves for Austria starting in 1995; and four waves for Finland starting in 1996. A Swedish sample was made available from 1997, though not used in our analysis. A great advantage of the ECHP is the scope for comparability among countries in the European Union, together with the fact that it provides up-to-date information. A drawback of the panel is the lack of retrospective information. A drawback of the analysis is the lack of retrospective information. For instance, parental information cannot be recovered if the respondent has left the parental home in the first wave. Furthermore, retrospective information in terms of demographics and labour-market experiences is limited (for a general review of the quality of the ECHP see Nicoletti and Peracchi, 2002; Peracchi, 2002). However, the ECHP contains fairly detailed information about the current demographic status, as well as detailed information concerning income, employment and schooling.

**Measures of well-being**

**Monetary well-being**

Our measure of monetary well-being is here given by the poverty headcount ratio, where household poverty status is derived from the net household income. When assessing economic well-being it is paramount to adjust for the income needs of households with different characteristics. These needs are clearly affected by the composition of the household and the age distribution of the family members. Moreover, they depend on the extent to which economy of scale is exploited within the household. Such adjustment is conventionally dealt with by applying an equivalence scale. Studies have shown that the composition of poor households depends quite markedly on the choice of equivalence scale, whereas the actual poverty ranking of countries tends to be unaffected (e.g. de Vos and Zaidi, 1997). We therefore include two different equivalence scales. The first is the modified OECD scale, which gives a weight of 1 for the first adult, 0.5 for any other adults, and 0.3 for each child. The second is a version of the Fuchs scale (Fuchs, 1986), where the first adult is given a weight of 1, other adults a weight of 0.8, the first child 0.4, and any other children 0.3. Compared to the OECD scale, the Fuchs scale gives a higher weight to other adults and a slightly higher weight to the first child – a feature that should be reflected in our estimates (see ‘Causes and effects’ section below). It is important to be aware that the use of equivalence scales in this manner assumes that household members share the income equally. However, this is not necessarily the case. For instance, there is ample evidence to suggest that the hypothesis of ‘income pooling’ among married couples is rejected (Browning et al., 1994; Lundberg et al., 1997), instead giving support to bargaining models (e.g. McElroy and Horney, 1981).

The poverty threshold is here set to 60 percent of the median level of the net equivalized household income. Thus, an individual is deemed poor if the income of the household to
which he or she belongs is below this threshold. Descriptive statistics from the European Household Panel shows how poverty rates differ across welfare regimes. Figure 1 shows strong variation in poverty rates. Social-democratic states have the lowest (12 percent), whereas the liberal welfare states have the highest (20.7 percent) closely followed by the Mediterranean states (18.6 percent). The next columns show poverty rates by household composition. It is of particular interest to see that among social-democratic welfare states poverty remains low for all household types with children. In fact, poverty rates for households with less than three dependent children (excluding single parents) remain lower than

Figure 1 Means of poverty (in %) by welfare regimes$^a$ and household type (weighted data)

Note: $^a$ Social-democratic: Denmark, Finland, the Netherlands. Conservative: Belgium, France, Austria. Liberal: Great Britain and Ireland. Mediterranean: Greece, Italy, Spain, Portugal.

Figure 2 Means of poverty rates (in %) by welfare regimes$^a$, woman’s age and two household types (weighted data)

Note: $^a$ Social-democratic: Denmark, Finland, the Netherlands. Conservative: Belgium, France, Austria. Liberal: Great Britain and Ireland. Mediterranean: Greece, Italy, Spain, Portugal.
households with two adults with no children. Comparing this with the other welfare states, we see that households with children tend to have higher poverty rates than those without children. This is especially the case for liberal welfare states. These trends are also evident in Figure 2, which shows poverty rates by age groups for two different household types. Again, social-democratic welfare states have considerably lower poverty rates, with the liberal welfare states having the highest poverty rates. These differences indicate strong differences in family-related welfare provision. In general they confirm the widely held belief that social-democratic welfare regimes, and to a large extent conservative welfare regimes, provide much more generous family support.

**Poverty deprivation indexes**

The drawbacks of using poverty status as an analytical measure of well-being are well known. Dividing the population into a simple dichotomy of ‘poor’ and ‘non-poor’ is clearly an oversimplification. Well-being is not a single attribute that characterizes an individual or household in terms of its presence or absence, nor does it take into account that well-being is multidimensional (Betti and Verma, 2002). That is, individuals’ well-being is unlikely to depend on monetary well-being alone. Considerable research has been undertaken recently to develop multidimensional measures. We follow this literature closely and define several deprivation indices, which generally depend on a range of characteristics of the household (for applications of this approach see, among others, Mencarini, 1999; Miceli, 1998; Qizilbash, 2002).

In brief, the approach can be explained as follows. A range of ‘items’ believed to be important for individuals’ perception of well-being is chosen. These items might be ordinal variables, either given as yes–no dichotomies or ordered scales. Moreover, these items might be subjective in nature, expressing individuals’ perception of their economic situation, or any other relevant dimension of their current situation. These indicators are then ‘summarized’, using an appropriate weighting scheme, to construct a composite index, ranging from 0 (no deprivation) to 1 (maximum deprivation). The technical approach is based on ‘fuzzy systems’ and follows closely Betti and Verma (1999), which builds on the suggestion by Cerioli and Zani (1990) and elaborated by Cheli and Lemmi (1995). Eurostat officially recognized and adopted this approach in 2002 (EUROSTAT, 2002). The majority of the items under consideration here are simple ‘yes–no’ dichotomies. A value of 1 is assigned if the item is present and 0 if the item is absent. Some items may involve more than two ordered categories. Similarly to dichotomous items, equally spaced values in the range 1–0 can be assigned to an ordered polytomy:

\[ v_{(m)} = (M-m)/(M-1) \]

where individual \( j \) is ranked \( m \) on \( M \) ordered categories, with \( m = 1 \) the most deprived to \( m = M \) the least deprived.

From the ECHP data we identified 25 items that may be used to define the deprivation index (see Table 1). One serious issue here is that many of the items might be correlated. For instance, if a household does not possess a television it is also unlikely to possess a video recorder. Similarly, a dwelling plagued by damp walls is also likely to have rot in the windowsills. Failing to control for these correlations may make some households disproportionately deprived. As a result we perform a factor analysis to identify groups of items that are highly correlated within, but uncorrelated between. Largely consistent with Whelan et al. (2001) we identify five groups: (a) ‘Affordability’ dimension, based on subjective information on the ability of the household to make ends meet, to keep the house warm, to go on a week’s holiday away from home and so on; (b) ‘Housing deterioration’, based on the physical characteristics of the dwelling, such as leaky roof, dampness and rot; (c) ‘Environmental problems’, based on noise from neighbours, pollution, vandalism and crime; (d) ‘Secondary
deprivation’, based on non-essential durables, such as possession of a car, video recorder and so on; (e) ‘Essentials’, based on essential housing facilities such as having a bath and shower, and durables, such as television and telephone.

Of course, lack of a particular consumer good does not necessarily reflect deprivation. Rather they might simply reflect individuals’ preferences. For instance, some individuals may have a high income but choose not to have a television. To account for this, only households that specifically indicated in the questionnaire that they were unable to afford the item, as opposed to a simple possession–non-possession dichotomy, were recorded as a symptom of deprivation.

The indices of the various variables are defined over their weighted sum:

\[ f(x_i) = \frac{\sum_{j=1}^{l} g(x_{ij})w_j}{\sum_{j=1}^{l} w_j} \]

where \( w_j \) is the weight. Two important issues

Table 1 Information from ECHP sample used to construct deprivation index

<table>
<thead>
<tr>
<th>Deprivation indexes</th>
<th>Information used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Affordability</strong></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Household’s ability to make ends meet</td>
</tr>
<tr>
<td>2.</td>
<td>Household can afford to keep house warm</td>
</tr>
<tr>
<td>3.</td>
<td>Household can afford week holiday away from home</td>
</tr>
<tr>
<td>4.</td>
<td>Household can afford replacing worn-out furniture</td>
</tr>
<tr>
<td>5.</td>
<td>Household can afford to buy new, rather than 2nd-hand clothes</td>
</tr>
<tr>
<td>6.</td>
<td>Household can afford to eat out, if wants to</td>
</tr>
<tr>
<td>7.</td>
<td>Household can afford to invite friends over</td>
</tr>
<tr>
<td>8.</td>
<td>Household can afford to pay bills and utilities</td>
</tr>
<tr>
<td>9.</td>
<td>General feeling about economic situation</td>
</tr>
<tr>
<td><strong>House characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Shortage of space in the house</td>
</tr>
<tr>
<td>11.</td>
<td>Accommodation is too dark or insufficient lighting</td>
</tr>
<tr>
<td>12.</td>
<td>Lack of adequate heating</td>
</tr>
<tr>
<td>13.</td>
<td>Leaking roof of the house</td>
</tr>
<tr>
<td>14.</td>
<td>Dwelling has damp walls, floors or foundations</td>
</tr>
<tr>
<td>15.</td>
<td>Dwelling has rot in windows</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Noise from outside neighbours</td>
</tr>
<tr>
<td>17.</td>
<td>Pollution or grime</td>
</tr>
<tr>
<td>18.</td>
<td>Crime or vandalism</td>
</tr>
<tr>
<td><strong>Luxury durables</strong></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Possession of a car</td>
</tr>
<tr>
<td>20.</td>
<td>Possession of a video recorder</td>
</tr>
<tr>
<td>21.</td>
<td>Possession of a microwave</td>
</tr>
<tr>
<td>22.</td>
<td>Possession of a dishwasher</td>
</tr>
<tr>
<td><strong>Essential durables</strong></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Bath and shower in the dwelling</td>
</tr>
<tr>
<td>24.</td>
<td>Colour TV</td>
</tr>
<tr>
<td>25.</td>
<td>Telephone</td>
</tr>
</tbody>
</table>

Table 2 Deprivation indexes by welfare regimes (weighted data)

<table>
<thead>
<tr>
<th></th>
<th>Total deprivation index</th>
<th>Affordability</th>
<th>House characteristics</th>
<th>Environmental</th>
<th>Luxury durables</th>
<th>Essential durables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social-democratic</strong></td>
<td>0.084</td>
<td>0.133</td>
<td>0.080</td>
<td>0.184</td>
<td>0.064</td>
<td>0.010</td>
</tr>
<tr>
<td><strong>Conservative</strong></td>
<td>0.098</td>
<td>0.168</td>
<td>0.080</td>
<td>0.178</td>
<td>0.071</td>
<td>0.011</td>
</tr>
<tr>
<td><strong>Liberal</strong></td>
<td>0.107</td>
<td>0.174</td>
<td>0.078</td>
<td>0.116</td>
<td>0.148</td>
<td>0.037</td>
</tr>
<tr>
<td><strong>Mediterranean</strong></td>
<td>0.153</td>
<td>0.249</td>
<td>0.159</td>
<td>0.216</td>
<td>0.201</td>
<td>0.036</td>
</tr>
</tbody>
</table>
determine the calculation of the weight. The first is the item’s power to distinguish individuals in the population. For instance, items of deprivation that affect only small proportions of the population are considered more critical, and consequently given a larger weight. Second, it is adjusted according to the extent to which the item is correlated with other items. Specifically, the weight depends on the inverse of the average measure of its correlation with all other variables (see Betti and Verma, 2002 for technical details). In total we calculate six deprivation indices. The first is based on all 25 items listed in Table 1, whereas the remaining five are specific to each subgroup. The indices are calculated separately for all countries and for all waves.

Computing deprivation indices based on the ECHP is not, however, without problems. On several occasions there have been routing problems in questionnaires, severely restricting variables to be included. Moreover, only a handful of the variables in Table 1 are available for Luxembourg and Germany. Accordingly these countries were excluded from the analysis. Many items were also missing for the UK sample in the first two waves, which were also excluded from the analysis.

Table 2 gives the mean deprivation levels for each of the welfare regimes. Looking at the

Figure 3 Deprivation index (total) by welfare regimes and household type (weighted data)

Figure 4 Deprivation index by welfare regimes, woman's age and two household types (weighted data)
total deprivation (first column) we see that the social-democratic countries have the lowest deprivation level, whereas the Mediterranean countries have the highest. Interestingly this pattern is similar to the poverty rates reported in Figures 1 and 2. Looking across the other five indices we see that the pattern of deprivation by welfare regimes persists to a large extent. However, for the groups concerning household characteristics and environmental items, conservative countries score better than liberal ones. As expected, we see that there is very little deprivation in terms of essential durables. Figure 3 presents the total deprivation level for different welfare regimes and different household compositions. Not unexpectedly, single parents have the highest levels of deprivation. Looking across the different household types, concentrating on households with two adults, we see that deprivation does not vary much by the number of children. This is somewhat different to the case of poverty status, which seems more sensitive to the amount of children present in the household.

Finally, in Figure 4 we see that the level of deprivation is not particularly sensitive to the age of the individuals, insofar as they have no children. Among those who have children we see that deprivation becomes lower with higher ages, though overall the effect is not particularly pronounced.

Causes and effects: the impact of childbearing on well-being

The descriptive statistics show interesting patterns of poverty and deprivation for different groups in society and for the welfare regimes under study. However, the reported statistics do not say much about whether – or to what extent – childbearing events may lead to higher levels of deprivation. For instance, in Figure 3 we notice that one-person households are generally less deprived than single-parent households, but it is unclear whether the higher deprivation of the latter household is a cause or a consequence of the presence of children.

Nevertheless, from a social policy point of view this is an important issue: sensible policies aimed at improving well-being associated with childbearing can only be successfully implemented as long as one knows the causal direction of the effects.

In this section we implement a method with the aim of establishing whether childbearing events do have a causal impact on poverty and deprivation, and if so, establishing the magnitude and the differences between welfare regimes. We apply this technique on different measures of well-being (as described previously). In particular, we are interested in: (a) whether the use of different well-being measures provides different conclusions about the causal effects; and (b) whether different measures of well-being provide different conclusions about the effect of childbearing across different welfare regimes.

Methodological approach

A possible approach to assessing the impact of childbearing on well-being would be to compare the well-being of women who experience a childbearing event to those women who do not experience such an event. To a large extent this is what we have done in the presentation of the descriptive statistics in the previous section. However, a quick glance at Table 3 – which provides the mean values of certain background variables by women who experience a childbearing event and women who do not – demonstrates quite clearly that these two groups of women are very different in almost all their characteristics. The implication, of course, is that computed differences in well-being are highly likely to be confounded by these background variables, a feature that needs to be adjusted for. The ideal setting would be to compare a woman’s level of well-being when experiencing a childbearing event to its counterfactual, which here would be the case when the same woman does not experience such an event. Such a comparison would enable us to single out the effect on well-being
that is only attributable to the childbearing event. The problem of course is that for the same individual these two scenarios are mutually exclusive. In other words, the counterfactual is indeed non-existent, which clearly impedes such a comparison.

It is, however, possible to overcome this problem by constructing an approximation to the counterfactual with the help of what is known as Propensity Score Matching (PSM) (Rosenbaum and Rubin, 1983). This approach borrows heavily from the treatment effect model, which is generally concerned with estimating the impact of treatments, such as labour-market training, on the expected income. In simple terms the application of this method for our case can be outlined as follows. Women are divided into two types: those who have experienced a child birth (considered the treatment group) and those who have not (considered as a control group). Women from these two groups are then paired based on their observable characteristics prior to the childbearing event. Provided relevant differences between women who have experienced a child birth and those who have not are captured by observable covariates, one can apply matching methods to provide an unbiased estimate of the average impact of childbirth on the outcome variable – here the woman’s well-being. Rather than performing the matching directly on the relevant background variables – which is in general a highly computer-intensive exercise – one can instead condition on a one-dimensional variable which is the conditional probability of experiencing a child birth (Rosenbaum and Rubin, 1983). This is known as the propensity score. If exposure to childbearing (i.e. the ‘treatment’) is random within each cell as defined by the covariates, it will also be random within cells defined by the propensity score variable. This is commonly referred to as ‘conditional independence’ or ‘strong ignorability’ which means that conditional on the observable variables, the outcome (here well-being) is independent of the childbearing event. Provided the conditional-independence assumption holds, one may proceed to the matching

| Table 3 | Mean values of observed characteristics, by welfare regime and childbearing status ('Having a birth' vs 'Not having a birth').
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<tr>
<td></td>
<td>Social-democratic welfare regime</td>
</tr>
<tr>
<td>Age</td>
<td>Birth event</td>
</tr>
<tr>
<td>27.9</td>
<td>31.41</td>
</tr>
<tr>
<td>Married</td>
<td>0.67</td>
</tr>
<tr>
<td>Cohabiting</td>
<td>0.27</td>
</tr>
<tr>
<td>No of children</td>
<td>0.88</td>
</tr>
<tr>
<td>Highly educated</td>
<td>0.32</td>
</tr>
<tr>
<td>Deprivation Index</td>
<td>0.077</td>
</tr>
<tr>
<td>Household income</td>
<td>15,513</td>
</tr>
<tr>
<td>Employed</td>
<td>0.60</td>
</tr>
<tr>
<td>Inactive</td>
<td>0.30</td>
</tr>
<tr>
<td>Student</td>
<td>0.05</td>
</tr>
</tbody>
</table>

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stage, when women who have experienced a child birth and those who have not are paired according their scores. Here we use what is called ‘Nearest Neighbour Matching’ to perform the matching (for details concerning other matching methods see Becker and Ichino, 2002; Smith and Todd, 2005).

A drawback of this method concerns the strong ignorability assumption as it conjectures that selection occurs only on the basis of observable characteristics. Clearly selection may also take place on the basis of unobservable characteristics. Based on this, Heckman et al. (1997) proposed 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 to another of participants, with the mean change of well-being for the same time period for non-participants. An important advantage of the DD estimator is that it allows us to control for selection caused by unobserved variables. Provided unobserved heterogeneity is time-fixed, its effect will be reduced by taking first difference (Heckman et al., 1997). There is still an open debate on the reliability and the robustness of results produced by cross-sectional matching estimators (e.g. Dehejia and Wahba, 1998; 2002; Smith and Todd, 2005), but it is generally acknowledged that the DD-PSM estimator is robust as it eliminates temporarily-invariant sources of bias.

All the analysis is implemented in STATA (Becker and Ichino, 2002), and the analysis is performed separately for the four welfare types previously outlined. The matching procedure based on the PSM implies that all variables listed in Table 3 have to be balanced between women who have experienced a child birth and those who have not. Satisfying the balancing property is in our case a non-trivial exercise. The main difficulty comes from the fact that different countries are pooled into the same samples. This forced extensive use of interactions sometimes using higher-order terms. Thus, the specification of the propensity score changes with the sample, and the more unbalanced the sample is, the greater need for interaction terms. In all samples the variables which are suspected to confound the effect of fertility on poverty are included in the estimation of the PSM: age, number of children, partnership status, well-being level prior to the event, education and employment status.

Results

The results are reported in Table 4. We start by considering the impact on poverty status for which parameter estimates are given in the first two columns of the table. The figures refer to the change in entering poverty as a result of a childbearing event. For instance, a parameter estimate of 0.071 refers to the difference in the rate of entering poverty between those who experienced a childbearing event and those who did not. We present these estimates for the two equivalence scales described earlier. As can be seen from Table 4 this certainly has an impact on the estimates. The difference is mainly caused by the different weights for additional adults present in the household, whereas both scales are fairly similar in terms of the weight imposed for children present in the household. Thus, the impact of an additional child from one period to the next will have a stronger impact when using the OECD scale – simply because the difference in weights between additional adults and children is smaller.

Looking across the estimates for different welfare regimes, we see that the ranking remains robust independent of the type of equivalence scale. For the social-democratic states an additional child entering the household increases the rate of entering poverty by 1.6 percentage points, which is lower than all the other regimes. The largest change in entering poverty is found among women in liberal welfare states, in which the increase in the rate of entering poverty is 5.6 percentage points when using the OECD scale, and 7.1 percentage points when using the Fuchs scale. The estimates for conservative and Mediterranean welfare regimes are similar and located somewhere between the social-democratic and liberal ones.
Overall, these results are fairly consistent with welfare-regime theory, and also fairly consistent with Figure 1 which shows poverty rates in terms of the Head Count Ratio (HCR). It shows that social-democratic welfare states have a much lower HCR, which can be seen as a measure of ‘egalitarianism’ in those countries. Consequently, a negative income shock in social-democratic countries, here caused by childbirth, is less likely to translate into entering poverty. Conversely, in liberal welfare states, a smaller drop in household income is required for entering poverty. The fact that women in social-democratic welfare states have the lowest rate of entering poverty signals the generosity of family-support policies. Most women tend to work prior to childbirth, which in effect implies a substantial drop in labour income for most households when childbirth takes place. On average, Scandinavian women tend to stop working for 37 weeks after childbirth (Gornick and Meyers, 2003). However, the very small impact on the poverty rate suggest that parental-leave and child-support policies are able to compensate for most of the income lost due to childbirth. In contrast, women in Southern Europe have considerably lower participation rates. As a result, they do not ‘lose’ out in terms of salary loss, but the risk of poverty gets significantly higher due to increased family size and low family allowances.

Next we consider estimates concerning the deprivation indices. In general we would expect childbirth to have different impacts on the indices. For instance, it is likely that an additional child will have a detrimental impact on individuals’ evaluation of affordability, whereas it is less likely that it will have a strong impact on environmental deprivation, the latter being expected to remain fairly stable over time – independent of couples having children or not. Similarly, the deprivation index comprising essential items is expected to remain fairly stable. Note that estimates here refer to changes in deprivation measured on the scale from zero to one.

First consider the ‘total deprivation’ index, where an average effect of childbearing on poverty status and deprivation indexes by welfare regime & t-statistics in parentheses (values in italics significant at the 5% level or lower).
which includes all deprivation items (see Table 4). The estimates indicate that childbearing events do not have a particularly strong impact on overall deprivation. Both for social-democratic and liberal welfare regimes the effect is not statistically significant. For conservative states the effect is significant, but the magnitude is modest. Only for the Mediterranean welfare regimes can we see a more substantial effect (0.011).

Turning next to the ‘affordability’ index, for which we expect childbearing to have a stronger impact, we see that the effects are the same as in the case of using the overall deprivation (0.003 and 0.011 respectively) both for social-democratic and Mediterranean states. There is a worsening for conservative states, but the difference compared to overall deprivation is not very large (0.006 to 0.008). The major shift lies with the liberal welfare state. Here the impact is now 0.023, which is in stark contrast to the estimate of 0.004 when using the overall deprivation. Of interest here is the fact that the estimates associated with the affordability index are fairly consistent with the patterns found for poverty entry (i.e. using monetary poverty) as reported previously. Thus, insofar as deprivation is summarized in terms of individuals’ subjective perception of affordability, the results are qualitatively consistent with the use of poverty status.

Moving on to deprivation defined over household characteristics, we see more mixed results. This index includes items describing the general condition of the household, but also whether individuals consider the household to have adequate space. This latter item is likely to have a pivotal effect since an additional child in the household will necessarily make it more crowded. The estimates suggest a significant worsening among Mediterranean countries and a weakly significant worsening among social-democratic states, but no significant impact on the remaining states. Moving onto the index capturing environmental items, we would again expect this to remain fairly stable over time, and unlikely to be affected significantly by childbearing events. Nevertheless, our estimates suggest a significant worsening among conservative states and, with a somewhat weaker effect, among social-democratic states. The reason for this effect is a bit unclear. It seems unlikely that prospective parents are forced to move to a more deprived area (i.e. cheaper housing) as a result of having another child. A more plausible explanation is that they change their attitudes towards environmental problems in their neighbourhood once a(nother) child is born. Obviously, we are unable to make any inference on which of these sources drives our results. The next two indices, luxuries durables and essential items are also expected to remain stable and unaffected by childbearing events. Our results confirm this conjecture to a large extent.

Conclusions

It is important to be aware of some of the shortcomings of our analysis. For instance, the analysis does not capture well any dynamics and interactions between childbearing and labour-market behaviour. Rather it captures only the net effect caused by a childbearing event. Moreover, consequences incurred by childbearing are long-lasting. This is, of course, relevant given that welfare benefits and services vary in duration and flexibility. Another drawback is that the analysis does not distinguish between birth parities. Clearly, well-being may be affected differently depending upon the parity, which again will have interesting policy implications. It is also clear that one should be careful in making general statements about the link between childbearing, well-being and welfare regimes. For instance, for the liberal welfare regimes we only have two countries, namely Great Britain and Ireland, whereas important countries such as the USA, Canada and Australia are not included in our analysis. Similar arguments apply for the social-democratic and the conservative regimes. Consequently, the countries included here can only represent a limited and European manifestation of the general welfare-regime groups.
Despite these caveats, we consider it interesting and illuminating that in all groups of countries considered, independent of how well-being is measured, childbearing is never found to have a positive impact on individuals’ material well-being. This is not to say that childbearing is a negative experience for couples in general. There are of course positive benefits to having children that cannot be captured in our measures of well-being, such as the ‘psychic’ value of children. Nevertheless, the fact that they are never better off from a materialistic or financial point of view should perhaps serve as an eye-opener for policymakers, especially given the below replacement rates of fertility levels across Europe. Looking across welfare regimes we find patterns that are fairly consistent with welfare-regime theory. When considering monetary measures of well-being, i.e. poverty status derived from the net equivalized household income, we see that the ranking across countries is fairly robust with regards to which equivalence scale applied. The most consistent result is that couples in social-democratic welfare states are always less worse off than their European counterparts. To what extent can these results be linked to observed fertility levels? Of course, fertility levels in social-democratic welfare states are higher than those observed in conservative and Mediterranean states, and as such our results are consistent. Nevertheless, fertility levels are also higher in liberal welfare regimes compared to conservative and Mediterranean ones. On this point our results produce more mixed results. On the one hand we find that childbearing events in liberal states have a strong impact on poverty and deprivation in terms of affordability, which is inconsistent with the higher fertility levels. However, when considering the Total Deprivation index we see effects which are consistent with observed fertility levels.

Another issue concerns the magnitude of these effects. In general the effects are quite modest. In the worst-case scenario we find childbearing events to increase the entry rate into poverty by 7.1 percentage points (liberal welfare states). This figure is consistent with findings by Jarvis and Jenkins (1999) using the British Household Panel Survey (BHPS), but as they report in their findings, the impact of becoming unemployed has a considerably larger impact on actually entering poverty.

A useful contribution of our analysis is the use of several measures of well-being. At the outset it is difficult to get a good grasp of what a change in the deprivation index really means. For instance, does a deterioration of 0.011 in total deprivation represent a substantial change? Compared to changes in poverty status one is inclined to believe that deprivation is probably not dramatically affected by a childbearing event. Though our analysis is able to confirm many of the hypotheses put forward by welfare-regime theory, as well as quantifying the effect on well-being caused by childbearing events, it is also clear that the analysis is not well designed to make strong predictions on overall fertility levels. Given that this link is only implemented in an indirect way (by comparing welfare regimes), such an inference will necessarily be of a qualitative nature.

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References


