The Effect of Benefits on Single Motherhood in Europe.

Evidence from the ECHP♣

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(PRELIMINARY AND INCOMPLETE!)

Abstract: This paper uses data from the European Community Household Panel to estimate the impact of welfare benefits on the incidence of single motherhood and headship for young women across European countries. The regressions include country fixed effects and country specific time trends to account for fixed and trending unmeasured factors that could influence both benefit levels and family formation. They also account for individual characteristics and labor market conditions. The results suggest a significant positive effect of benefits on both single motherhood and headship.

JEL codes: J12, J13, I38.
Keywords: single mothers, welfare benefits.

1. Introduction

Single mother households have become an increasingly frequent family type in many industrialized nations over the past few decades. This trend has been very pronounced in countries like the United States and the United Kingdom, attracting a great deal of attention from researchers and policy makers.[1] The main concern is that single motherhood seems to be associated with poverty and negative outcomes for children.[2]

There is a sizeable literature on the impact of benefits on partnership and fertility, mostly focused on the US (Murray 1984, Ellwood and Bane 1985, Moffitt 1994, 1995, 1998, 2000, Hoynes 1997, Blau et al. 2004). Most studies exploit variation in benefits across states and over time to identify the effect of interest. Some include state fixed effects to account for unmeasured state-specific variables that affect both benefit levels and single motherhood. These studies tend to find either no effects or small, marginally significant ones.

This paper contributes to the literature on the effect of benefits on the incidence of single mothers by exploiting the large cross-country variation in welfare benefits, which provides an excellent source of identification for the effect of interest.[3] I use data from the European Community Household Panel for 14 countries over an eight-year period (1994 through 2001). Including country fixed effects might still yield biased estimates if there are unmeasured changes within country over time that are correlated with changes in welfare benefits. I account for this possibility by including country-specific time

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[1] For recent research on the prevalence of single mothers in the US, see Blau et al. (2004), Neal (2004), Schmidt (2003), Moffitt (2000), Rosenzweig (1999), Hoynes (1997), Akerlof et al. (1996). See Del Bono (2004) for a recent study on pre-marital fertility in Britain. See Burdett and Ermisch (2002) and Willis (1999) for theoretical models of the formation of single mother families.

[2] Lerman (1996), McLanahan & Sandefur (1994), Krein & Beller (1988).

[3] Gonzalez (2003) used Luxembourg Income Study Data for 17 countries to evaluate the effect of economic variables on single motherhood. However, the estimation included country fixed effects, but not country-specific time trends.

trends.[4] I also include individual-level controls such as age and education level, as well as aggregate measures of labor market conditions.

Separate regressions are estimated for single motherhood and single headship, in order to account for the possibility that the effect of benefits may take place through co-residence arrangements rather than fertility or partnership decisions. I measure benefit levels as the median level of family-related allowances and social assistance received by single mother households in a given country and year. I focus on young women (aged 18 to 35), whose family formation decisions are most likely to be affected by current labor market conditions and benefit levels.

The countries with higher benefit levels are also those where single mothers are more prevalent, which, of course, does not necessarily imply causality. Once we introduce the country fixed effects and the country-specific time effects, the impact of benefits remains positive and significant. The effect seems to take place both through family formation and co-residence arrangements.

The remainder of the paper is organized as follows. Section 2 briefly reviews the literature on the effects of welfare benefits on family formation. The following section introduces the data and describes the methodology. Then section 4 discusses the main results and some additional specifications, and a final section concludes.

2. Previous Literature

The incidence of single mothers is undoubtedly affected by social, cultural and religious factors. It is also undeniable, however, that there are economic variables with a potential to influence fertility, partnership and co-residence decisions, as economic theory has long emphasized. Empirical research on this issue has typically followed the seminal

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[4] This approach was implemented in Blau et al. (2004), who estimate the effect of benefits on single motherhood in the US including MSA fixed effects and MSA-specific time trends.

work of Becker (Becker 1960, 1973, 1974, 1981, Becker et al. 1977, Becker and Barro 1988) in assuming that fertility and marriage decisions are influenced by the expected costs and benefits of the different choices available to the individual. Central to this theory are the opportunity cost of women's time and the gains to specialization in marriage.

The sharp rise in the prevalence of single mothers in the US during the 1980's and 1990's generated a large literature, that hypothesized one of the following alternative explanations for this trend: 1. Welfare incentives (Murray 1984, Moffitt 1994, 1995, Hoynes 1997, Blau et al. 2004); 2. Increased economic opportunities for women (McLanahan 1994, Edlund 2000, Schmidt 2003); 3. Reduced supply of marriageable men (Wilson 1987), or a combination of those (Rosenzweig 1999, Schultz 1994, Willis 1999, Moffitt 2000, Neal 2004). None of these hypotheses alone is totally satisfactory, and no consensus has been reached on the subject to date.

Economic theory unambiguously predicts a positive effect of benefits on single motherhood. Both the absolute level of benefits available to single mothers and their degree of targeting would affect the attractiveness (or the feasibility) of single motherhood. For instance, AFDC welfare benefits in the US were not available to women without children or to married women. It was also harder to qualify for a single mother living with other relatives. Thus welfare benefits were subsidizing single mothers who headed their own households.

Becker's theory also predicts important roles of male and female labor market conditions. Better labor market opportunities for women would enable them to support children on their own (Schmidt 2003, McLanahan 1994, Edlund 2000). However, the lack of economic opportunities may lower the perceived costs of out-of-wedlock childbearing, especially for very young women (Rich and Kim 2002, Duncan and

Hoffman 1990). Wages could also show a negative correlation with the prevalence of single mothers if, as some have suggested, marriage is a normal good (Moffitt 2000, Oppenheimer 1994). Thus, the effects of better female labor markets on the incidence of single motherhood are theoretically ambiguous.

Another potentially relevant factor is the availability of suitable partners. In other words, sex ratios and the supply of men with stable earnings prospects have a potential to influence partnership decisions. Some evidence has been provided that the supply of men as well as their earnings and employment prospects affect female marriage behavior (Wilson 1987, Angrist 2000, Wallace 2000, Brien 1997). Willis (1999) develops a theoretical framework that implies that out-of-wedlock childbearing should be more prevalent when females are in excess supply, and when the gains to marriage are small because male incomes are low.

However, the fact that marriage market prospects affect marriage rates does not necessarily imply that they also affect single motherhood, as Neal (2004) points out. While better male labor markets and greater availability of marriageable men raise the likelihood that women will marry, the resulting increase in marriage also increases the incidence of children, and thus the size of the group at risk of becoming single mothers through separation or divorce (Blau et al. 2004).

Many previous studies have attempted to estimate the effect of welfare benefits on fertility and marriage in the United States, with mixed results. These analyses usually model the probability of being a female head as a function of individual and state characteristics, including welfare benefits. Most studies estimate cross-sectional regressions, which rely on interstate variation in benefits to identify the welfare effect (Schultz 1994). Some use more than one period and introduce state fixed-effects in order to control for omitted state variables (Moffitt 1994), and Hoynes (1997) also adds

individual fixed-effects. A recent paper by Blau et al. (2004) introduces MSA rather than state fixed effects as well as MSA-specific time trends. Some find small significant effects (Schultz 1994, Rosenzweig 1999, Blau 2004), while some find no effect at all (Moffitt 1994, Hoynes 1997).

While previous studies on the impact of welfare on single motherhood have focused on a single country, a multi-country analysis is especially attractive since the large international variation in public support and labor market conditions provides an excellent source of identification for the effects of interest. This paper uses the eight waves of the European Community Household Panel to examine the impact of welfare on family formation by taking into account country fixed effects and country-specific time trends. The longitudinal nature of the data also allows for the introduction of individual fixed effects. Thus we are accounting for unmeasured variables at the country level that might be correlated with both the level of benefits and the prevalence of single mothers, such as a country's tolerance for these types of families. We are also incorporating the possibility that these unobserved variables are changing at different rates in different countries, rather than assuming that they are fixed. Finally, the individual fixed-effects enable us to take into account sample attrition and entry.

The analysis also includes proxies for labor and marriage market conditions. The analysis focuses on young women (those aged 18 to 35), since including older age groups would bring in women who made their family formation decisions at varying times, hence possibly under very different labor and marriage market conditions.

3. Data and Methodology

The data set used in the analysis is the European Union Household Panel (waves 1 through 8), spanning from 1994 until 2001.[5] This data set is the best available option for international comparisons in Europe, as the same survey was conducted in all 15 European Union countries.[6] Its main shortcomings are the short time period covered, and the low sample sizes at the country level once we restrict the population of interest.

I define a single mother as an unmarried woman aged 18 to 35 living with her dependent children younger than 18. There are many issues involved in settling on a specific definition. In particular, we need to make a decision about the age limit for the mother as well as the children, the marital status of the head, whether to include cohabitants as single, and whether to include single parents who are co-residing with other relatives, such as the grandparents of the children. The main definition includes only mothers aged 18 to 35 with dependent children (in the household) under 18, who are not married and not cohabiting with a partner. However, sensitivity analyses are performed using alternative definitions, such as different age cuts for the mother.

We are concerned with two outcomes: single motherhood itself, and co-residence. Thus, the analysis will be performed for two separate dependent variables. "Single motherhood" is defined as above and incorporates all single mothers independently of their co-residence situation, i.e. included are single mothers living with other relatives, such as the grandparents of the children. The second outcome variable, which we will refer to as "single headship", indicates a single mother who lives by herself with her

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[5] The data start in the second wave for Austria, the third for Finland, and the fourth for Sweden.
[6] I exclude Sweden since it is the only country for which the data are not longitudinal.

dependent children.[7] The number of single mothers in the sample is 6,580, out of which 4,250 are single heads.

The analysis exploits country-level differences in welfare policy and labor and marriage market conditions to estimate the impact of these factors on young women's propensity to become single mothers or single heads. The following logit model for the determinants of single motherhood (headship) for individual i, in country c, and year t is estimated:

$$(1) \qquad P(Y_{ict} = 1) = \Lambda(X_{ict}\beta + Z_{ct}\omega)$$

Where Y is a dummy that takes value 1 if a woman is a single mother (head), Λ is the logistic cumulative distribution function, X is a vector of individual characteristics, Z is a vector of country-specific factors, and β and ω are coefficient vectors.

In the vector X, I include some measured characteristics of a woman that are expected to affect her labor market prospects, her attractiveness as a partner, and her preferences regarding marriage and children. Thus I include age, age squared and age cubed, and I also include two dummies for education level:[8] one that indicates the equivalent of high school graduation, and one that indicates a university degree.[9] I include women enrolled in school as well as not enrolled.

In the vector Z, I include a measure of the generosity of the benefit system in a given country, which is the key explanatory variable of interest. Benefits are measured as the median amount received by single mother families the year before in terms of either family-related allowances or social assistance.[10] Two alternative definitions are also explored. The first adjusts the amount of benefits received by a family by taking

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[7] Blau et al. 2004 also estimate separate regressions for single mothers and single heads. However, their definition of single mothers, as in much of the previous research on this issue, could not exclude cohabiting mothers from the sample.
[8] The ECHP does not provide very rich information on education levels.
[9] I also include a dummy for women still at school or with missing data for education.
[10] Median benefits are calculated including observations for all single heads aged 18 to 55.

into account the number of children in the household.[11] The second alternative measure includes all other types of public transfers received by single mother families. Benefits are expressed in euros, using the exchange rates provided by the ECHP.

I also include as country-level control variables the male unemployment rate, and the adult male (ages 25-54) median wage level, as overall indicators of labor market conditions. As noted by Blau et al. (2004), this variable would also improve the interpretation of the benefit variable, since hourly wages are likely to be closely associated with living costs. Moreover, adult wages and unemployment are less likely to be endogenous to the behavior of the young women in the sample. Wages are expressed in euros and computed as net monthly earnings divided by the number of hours worked.[12]

Equation 1 is estimated on a pooled sample for all 14 countries with data for the eight waves, including country dummies, overall year dummies, and country-specific year dummies. The omitted wave is the first (1994), and the omitted country is Denmark. The sample size for the main specification is 173,135. The number of country*year observations is 109.

4. Results

A. Descriptive Statistics

Table 1 shows the proportion of women in the sample who are single mothers and single heads in different years. Overall, 3.8 percent of women aged 18 to 35 are single mothers in the 14 countries included in the sample, and 2.5 percent are single heads. We observe a slight decline in the incidence of single mothers and heads between 1994

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[11] Benefits received by a household are divided by the square root of the number of children.
[12] Number of hours worked a month are calculated as number of hours worked a week, times 4.345.

and 2001.[13] However, both the incidence and its evolution over time vary considerably across the 14 countries.

Figure 1 displays the proportion of women aged 18 to 35 who are single heads in 1994 and 2001 by country. There are four countries with very low incidence of single mothers: Italy, Greece, Portugal and Spain (less than 1 percent in 2001). At the other end, in the UK more than 8 percent of young women were single heads. Most countries experienced a decline in the proportion of young single heads. The decline was statistically significant (at the 95% confidence level) only in Denmark and Finland.[14]

Table 2 shows median benefits received by single heads aged 18 to 54 in 2001, by country. Note the high correlation between the level of benefits and the incidence of single mothers. Median benefits are zero both in 1994 and in 2001 in Spain, Italy and Greece, countries with very low prevalence of single mothers. The UK is both the country with highest incidence of single motherhood and one of the highest in terms of benefit levels. This correlation of course does not necessarily imply causality. Once we introduce the country fixed-effects, identification will come from changes in the prevalence of single mothers following changes in benefits within a country and over time. Germany, Ireland and the UK experienced large increases in benefit levels between 1994 and 2001, while there were substantial declines in Austria and The Netherlands.

Descriptive statistics for the main variables included in the regressions can be found in table 3. Mean age is 27. Almost 24 percent of women in the sample have a university degree, while 41 percent have only a high school degree. Average male hourly wage is 6.7 euros, and average unemployment is 6.8.

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[13] The fall is not significant at the 90% confidence level for either single mothers or single heads.
[14] See Gonzalez (2004) for a more detailed analysis of the changes in the incidence of single motherhood across European countries.

B. Main Specification

Table 4 shows the results of estimating equation 1, for the outcomes of single motherhood and single headship. The entries are the coefficients for the benefits variable and their standard errors. The table presents results for cross-sectional models (a), models with time dummies (b), country dummies (c), and country*time dummies (d). Results are reported with and without the adult male wage and unemployment rate included.

In the cross-sectional models, the benefit variable has positive and significant coefficients both for single motherhood and headship, indicating that, without taking into account country fixed effects or trends, higher benefits are associated with higher prevalence of single mothers and heads.

The effect does not fade away when we introduce the country and time effects. Once we control for individual characteristics and some proxies for labor and marriage market conditions, and we introduce year dummies that are common for all countries as well as country fixed-effects (panel c), the estimated effect is smaller than suggested by the cross-sectional correlations, but it remains positive and significant. In this specification, the magnitude of the coefficient is twice as large in the single heads regressions than in the single mothers one. This suggests that benefit levels may have a stronger effect on co-residence arrangements than on fertility or partnership decisions.

However, even a specification with country dummies does not account for unmeasured factors at the country level such as changing norms and other time-varying forces that may cause changes in both benefits and the incidence of single motherhood. The use of the eight waves of the ECHP enables us to account for these factors by including of country-specific year dummies. Even in these specifications, benefits remain positive and significant. On average, 1,000 more euros in yearly benefits is

associated with an incidence of single mothers about .7 percentage points higher, according to this specification.[15]

Table 5 shows the coefficients for the rest of the explanatory variables in selected specifications. As reported in previous studies, older, less educated women are significantly more likely to become single mothers. Note that age has a stronger effect on headship, while the effect of education is stronger for single motherhood. Male unemployment rates show negative coefficients, and this variable is significant in some specifications. Male wages have a significant positive effect only in the final specification for single heads, suggesting that higher wages are associated with a higher incidence of single headship. The interpretation of the coefficients on male wages and unemployment is however not straightforward since they are capturing both labor market and marriage market effects.

The coefficients in panel (d) of table 4 are surprisingly high compared with (c). As a robustness check, I run the same regression excluding each of the individual countries one by one. It turns out that the size of the coefficient is very sensitive to the inclusion of certain countries. This is not true for specification (c).[16] Moreover, practically none of the country*year dummies are significant, and only some of the country dummies. This points toward a more robust specification where the year effects could be allowed to vary by groups of countries. A natural grouping is suggested by the welfare state regimes classification (Esping-Andersen, 1990).[17] Table 6 thus shows the results from

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[15] Note that average benefits are 1,920 a year. Also, although the coefficients are similar for single mothers and heads, since the incidence of single heads is lower, the size of the effect is different (an 18% increase in the prevalence of single mothers vs. an increase of about 28% in the number of single heads).

[16] The coefficient for single mothers varies only between 0.023 and 0.063 depending on which individual country is excluded.

[17] The *liberal* or Anglosaxon model, with little involvement of the state in the provision of social welfare and where social security is regarded as being a matter of individual responsibility (UK and Ireland). The *conservative* or Continental model, where social security is financed mainly by contributions from dependent workers and institutions provide incentives for a one-breadwinner family model (Germany, The Netherlands, France, Austria, Belgium, Luxembourg).

regressions where instead of country dummies, indicators for four groups of countries are interacted with the year dummies. The coefficients for the benefit variables now fall from around .24 in the specification without the country dummies to .12 once we include indicators for groups of countries (which are significant). The size of the coefficients remains essentially unchanged when we include the group*year interactions (some of which are now significant). According to these specifications, on average, 1,000 more euros in yearly benefits is associated with an incidence of single mothers about .3 percentage points higher, for an average prevalence of 3.8 percent of women. This implies an 8% increase in the number of single mothers, while the effect on single headship would be a 13% increase.

C. *Additional Specifications and Robustness Checks*

The reported results are robust to a variety of alternative specifications. The regressions are run with several different age cuts for women, with very similar results. Robust standard errors, clustered by country, are estimated. I also include additional interaction terms in the regressions; in particular age and education are interacted with the country and year dummies. [18]

Alternative definitions are explored for the benefits variable. In particular, adjusting benefits received by a family by the number of children in the household barely alters the coefficients. Mean benefits are also employed instead of median. Finally, an additional measure of public support is explored, that includes all public transfers

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The *social-democratic* or Scandinavian model, that secures a high level of (tax-financed) social welfare for all citizens (Finland, Denmark).
The *familistic* or Southern model, where the state takes responsibility for securing a basic level of social security while it is assumed that informal assistance is provided by family networks (Spain, Portugal, Italy, Greece).

[18] Tables are available upon request.

received by single mother families. This alternative measure yields smaller (but positive) coefficients that are not always significant.

Low-educated women are more likely to be affected by changes in benefit levels than more educated young women. Thus regressions are estimated excluding women with a university education, and excluding also those with a high school degree. Benefits remain significant and the magnitude of the effects is barely altered.

Economic theory also suggests that the incentives faced by women at risk of becoming single mothers may be quite different for never married women who decide to have a child on their own, versus married women with children and considering divorce. As a first approximation to these two channels into single motherhood, I estimate the regressions separately for never married women and ever married women with children. These results are reported in table 7. Benefits turn out to be significantly associated with both the incidence of out-of-wedlock childbearing and divorce among married women with children.

Hoynes (1997) noted that, in a panel data source, if the composition of state (or, in our case, country) populations changes over time through migration of individuals and sample attrition or entry, the state (country) fixed-effects specification may still yield spurious results, which could be avoided with the inclusion of individual fixed effects. Since the ECHP is a longitudinal database, this concern led us to explore specifications with individual fixed effects. Note that, if no one moved and no one left or entered the panel after the first wave, then country fixed effects and individual fixed effects would provide the same information.

The coefficients for the benefit variable in several different specifications with individual fixed-effects are shown in table 8. Note that identification now comes only from women whose status in terms of the outcome variable changed during the period,

thus the number of observations has substantially dropped,[19] which is potentially a problem given the already low number of observations in some of the countries. The specifications with country dummies and country-specific year dummies yield insignificant coefficients.

The results when including observations for all women aged 18 to 45 in the regressions are shown in panels c and d. Including older women may be more appropriate in the fixed-effect specifications since we are focusing on women who either become a single mother or transition out of this state, thus at least some family formation or dissolution decisions are being taken at the time the survey is conducted. The inclusion of older women increases the number of observations.[20] Now the specifications with country dummies yield positive and significant coefficients. According to specification (c), benefits affect single headship significantly, but not single motherhood, suggesting again that benefit levels may alter co-residence arrangements rather than the fertility or partnership decisions.

The results presented here should be interpreted with some caution, due to several remaining caveats. First, it would be desirable to include more detailed measures of labor demand and supply in the regressions, for both men and women and, if possible, stratified by education level. Separate controls for marriage market conditions would also be desirable. Second, the data set covers only an eight-year period, thus we do not capture long-term trends in benefits or the incidence of single mothers. Moreover, the reduced-form specification limits the interpretation of the results. For instance, we cannot separate the effects of the overall generosity of the welfare system from the degree of targeting. Finally, a more refined measure of benefit levels would reflect the

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[19] From 173,135 to 10,590 (in the regressions for single motherhood) and 7,253 (in the regressions for single headship).
[20] 22,847 in the regressions for single motherhood and 17,738 in the regressions for single headship.

national benefit schedules, rather than benefits actually received by single mother households. These issues will be addressed in future research.

5. Conclusions

This paper estimates the effect of benefits on the incidence of single motherhood in Europe. Using ECHP data from 1994 through 2001, regressions are estimated where the likelihood of a young woman being a single mother is assumed to depend on her personal characteristics, labor and marriage market conditions, and public support, as well country fixed effects and country-specific time trends. Controlling for country fixed effects and trends is important since country-specific factors such as norms or other unmeasured social or economic factors and their evolution over time may affect both the provision of benefits and individual family-formation decisions.

A simple cross-section shows that the countries where single mothers are more prevalent also provide higher benefit levels. This association may reflect unmeasured factors that affect both single parenthood and benefits. Once we control for individual characteristics and some proxies for labor and marriage market conditions, and we introduce country fixed-effects, the estimated effect is smaller than suggested by the cross-sectional correlations, but it remains positive and significant.

Even a specification with country dummies does not account for unmeasured factors at the country level, such as changing norms and other time-varying forces, that may cause changes in both benefits and the incidence of single motherhood. The use of the eight waves of the ECHP enables us to account for these factors by including of year trends that are specific for each country or group of countries. Even in these specifications, benefits remain positive and significant. The preferred specification suggests that an increase in family allowances or social assistance to single mother

families of 1,000 euros a year would result in an 8% percent increase in the likelihood of a young woman being a single mother.

Thus, the results provide some evidence suggesting that fertility, partnership and co-residence decisions are, as predicted by economic theory, affected by economic incentives. These incentives should be taken into account when designing benefit schedules.
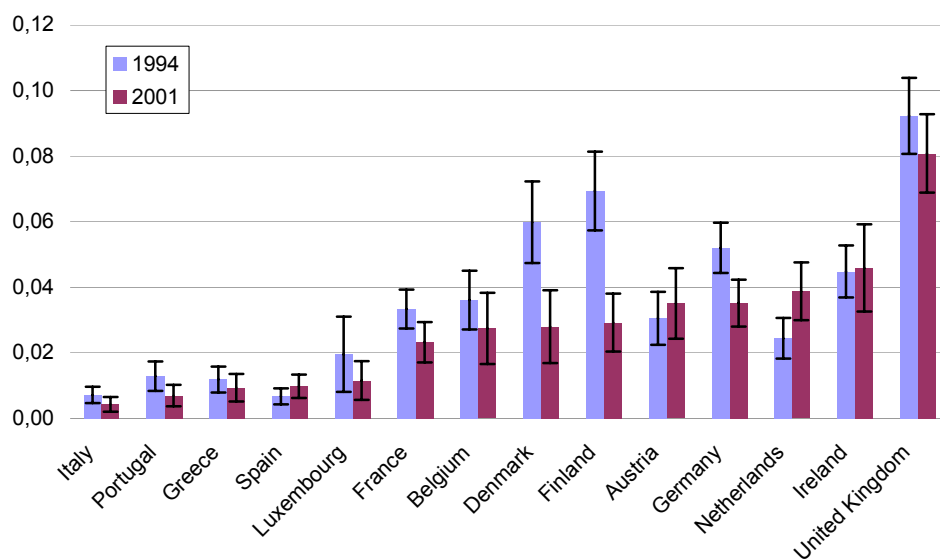
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Figure 1. Proportion of Women Aged 18 to 35 Who Are Single Heads

Note: ECHP data, waves 1 and 8, except for Finland (waves 3 and 8) and Austria (waves 2 and 8). Person weights have been used. Single heads are defined as unmarried women aged 18 to 35 who live on their own with their children, at least one of them younger than 18. The error bars show ± 1.645 the standard deviation of the proportions.

Table 1. Proportion of Women 18-35 Who Are Single Mothers

	Single mothers	Single heads
1994	0.0385	0.0258
1997	0.0383	0.0241
2001	0.0357	0.0225
All Waves	0.0380	0.0245
N	173,135	173,135

Note: ECHP data for 14 countries (all but Sweden), waves 1 through 8. Unweighted means are shown. Single mothers are defined as unmarried women aged 18 to 35 who live with their children, at least one of them younger than 18, and without a partner (but maybe with other relatives). Single heads are defined as single mothers who live on their own with their children.

Table 2. Median Benefits Received by Single Heads in 2001

	1994	**2001**
Denmark	4,057	4,410
Netherlands	5,838	3,348
Belgium	2,189	2,975
France	1,630	1,295
Ireland	3,897	6,689
Italy	0	0
Greece	0	0
Spain	0	0
Portugal	216	384
Austria	3,277	2,093
Finland	2,861	3,213
Germany	468	3,313
Luxembourg	2,829	2,336
United Kingdom	3,441	6,165

Note: ECHP data, waves 1 and 8, except for Finland (waves 3 and 8) and Austria (waves 2 and 8). Single heads are defined as unmarried women who live on their own with their children, at least one of them younger than 18. Benefit levels are expressed in euros and include family-related allowances and social assistance. The medians are calculated for the sample of single heads aged 18 to 54.

Table 3. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Single heads	0,0245	0,1547	0	1
Single mothers	0,0380	0,1912	0	1
Age	26,6535	5,1759	18	35
High school	0,4094	0,4917	0	1
University	0,2389	0,4264	0	1
Male unemp.	6,7872	3,3129	1,1	16,4
Male wage	6,7458	2,3339	2,19	13,89
Benefits	1920,1380	1930,0840	0	6688,98

Note: ECHP data, waves 1 through 8, except for Finland (waves 3 through 8) and Austria (waves 2 through 8). Sample size is 173,135. Benefit levels and male wages are expressed in euros.

Table 4. Coefficients for the Effect of Benefits on Single Motherhood and Headship.

	Single mother		Single head	
a) Cross Section				
Age and education	0,2279	*	0,2686	*
	(0,0063)		(0,0078)	
Age, education, male wage	0,2498	*	0,2336	*
and male unemployment	(0,0815)		(0,0098)	
b) Year dummies				
Age, education, male wage	0,2518	*	0,2290	*
and male unemployment	(0,0832)		(0,0099)	
c) Country and year dummies				
Age, education, male wage	0,0485	*	0,0959	*
and male unemployment	(0,0229)		(0,0278)	
d) Country, year and country-year dummies				
Age, education, male wage	0,2637	*	0,2438	*
and male unemployment	(0,1041)		(0,1147)	

Note: The coefficients are from logit regressions using ECHP data for 14 countries in eight waves (1994 through 2001). Standard errors are shown in parenthesis. The sample includes all women aged 18 to 35. The number of observations is 173,135. Other variables included in the regressions are specified in the table. The asterisks indicate that the variable is significant at the 95% confidence level. Benefits are defined as median family-related allowances and social assistance received by single heads in a given country and period, and are measured in thousands of euros.

Table 5. Selected Results for Control Variables

	Single mother				Single head			
Age	2,30674	*	2,31928	*	3.48191	*	3,47889	*
	(0,29429)		(0,29446)		(0,44721)		(0,44721)	
Age squared	-0,07537	*	-0,07577	*	-0,11233	.	-0,11213	.
	(0,01094)		(0,01094)		(0,01624)		(0,01624)	
High school degree	-0,63305	*	-0,64286	*	-0,55645	*	-0,56917	*
	(0,03042)		(0,03084)		(0,03815)		(0,03873)	
University degree	-1,12615	*	-1,13195	*	-1,06492	*	-1,07693	*
	(0,03042)		(0,03798)		(0,04513)		(0,04557)	
Male unemployment	-0,01640	.	-0,04456	*	-0,06106	*	-0,02466	.
	(0,01051)		(0,02134)		(0,01521)		(0,03175)	
Median adult male wage	0,02967	.	0,00349	.	-0,06993	.	0,18745	*
	(0,03351)		(0,05649)		(0,04287)		(0,06726)	
Country-specific time dummies?	no		yes		no		yes	

Note: The coefficients are from logit regressions using ECHP data for 14 countries in eight waves (1994 through 2001). Standard errors are shown in parenthesis. The sample includes all women aged 18 to 35. The number of observations is 173,135. Other variables included in the regressions are age cubed, country dummies (excluding Denmark) and year dummies (excluding 1994). The asterisks indicate that the variable is significant at the 95% confidence level. Benefits are defined as median family-related allowances and social assistance received by single heads in a given country and period.

Table 6. Coefficients for the Effect of Benefits on Single Motherhood and Headship, Countries Grouped.

	Single mother		Single head	
Countries (grouped) and year dummies	0,1203	*	0,1185	*
	(0,0121)		(0,0138)	
Countries (grouped), year and country-year dummies	0,1176	*	0,1159	*
	(0,0123)		(0,0159)	

Note: The coefficients are from logit regressions using ECHP data for 14 countries in eight waves (1994 through 2001). Standard errors are shown in parenthesis. The sample includes all women aged 18 to 35. The number of observations is 173,135. Other variables included in the regressions are age, age squared, age cubed, two education dummies, male unemployment rates and median male wages. The asterisks indicate that the variable is significant at the 95% confidence level. Benefits are defined as median family-related allowances and social assistance received by single heads in a given country and period. The country dummies include one for the UK and Ireland, one for Spain, Italy, Greece and Portugal, and one for Finland and Denmark.

Table 7. Coefficients for the Effect of Benefits on Single Motherhood and Headship, by Marital Status.

	Never Married Women				Ever Married Women with Children			
	Single mother		Single head		Single mother		Single head	
a) Country and year dummies	0,0685	**	0,0968	**	-0,0524	.	0,0339	.
	(0,0243)		(0,0293)		(0,0389)		(0,0440)	
e) Groups of countries and year dummies	0,0882	**	0,1077	**	0,0938	**	0,0746	**
	(0,0098)		(0,0117)		(0,0217)		(0,0235)	
f) Groups of countries, year and group-year dummies	0,0818	**	0,1061	**	0,0943	**	0,0739	**
	(0,0100)		(0,0120)		(0,0223)		(0,0241)	

Note: The coefficients are from logit regressions using ECHP data for 14 countries in eight waves (1994 through 2001). Standard errors are shown in parenthesis. The sample includes all women aged 18 to 35. The number of observations is 92,172 in the never married regressions, and 60,890 in the ever married regressions. Other variables included in the regressions are age, age squared, age cubed, two education dummies, male unemployment rates and median male wages. The asterisks indicate that the variable is significant at the 95% confidence level. Benefits are defined as median family-related allowances and social assistance received by single heads in a given country and period (never married heads in the regressions for never married women, and ever married heads in the regressions for ever married women with children). The dummies for groups of countries include one for the UK and Ireland, one for Spain, Italy, Greece and Portugal, and one for Finland and Denmark.

Table 8. Coefficients for the Effect of Benefits on Single Motherhood and
Headship, Specifications with Individual Fixed Effects.

	Single mothers		S.m., low educ.		Single heads		S.h., low educ.	
a) Country and year dummies	-0,0484 (0,04226)	.	-0,0845 (0,04617)	*	-0,0047 (0,05221)	.	-0,0776 (0,05755)	.
b) Country, year and country-year dummies	0,1309 (0,19810)	.	-0,0674 (0,23147)	.	0,2948 (0,21835)	.	0,1210 (0,24849)	.
c) Country and year dummies, age 18-45	0,0214 (0,02782)	.	0,0210 (0,03097)	.	0,0688 (0,03232)	**	0,0663 (0,03586)	*
d) Country, year and country-year dummies, age 18-45	0,3500 (0,13282)	**	0,4750 (0,16368)	**	0,4435 (0,14386)	**	0,6287 (0,17440)	**

Note: The coefficients are from fixed effects logit regressions using ECHP data for 14 countries
in eight waves (1994 through 2001). Standard errors are shown in parenthesis. The sample
includes all women aged 18 to 35 (18 to 45 in specifications c and d. The number of
observations is 10,590 in the single mothers regressions and 7,253 in the single heads
regressions (22,847 and 17,738 in specifications c and d). The regressions for low- educated
single mothers exclude observations for women with a university education. Other variables
included in the regressions are age, age squared, age cubed, education dummies, male
unemployment, and male wage. One asterisk indicates that the variable is significant at the 90%
confidence level, two indicate significance at the 95% confidence level. Benefits are defined as
median family-related allowances and social assistance received by single heads in a given
country and period.