Single Mothers and Work

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Abstract

Western countries differ greatly in the extent to which single mothers participate in the labor market, both in absolute terms and relative to other women. Using data for 15 countries from the Luxembourg Income Study, I propose and estimate a simple structural model of labor supply that incorporates the main variables that influence the work decision for single mothers. The results from the structural estimation suggest that a large part of the cross country variation in the employment rates of single mothers can be explained by their different demographic characteristics and by the variation in expected income in the in-work versus out-of-work states. Older and more educated single mothers are more likely to work, while more and younger children reduce the probability of working. Women with higher expected earnings are more likely to work. Higher benefits in the out-of-work state discourage employment, and the opposite is true for in-work benefits. Single mothers with higher income from other sources, including child support, are less likely to work. Even after demographic and income variables are controlled for, the country dummies remain significant and, in some cases, sizeable. This indicates that other variables not explicitly incorporated in the model, such as childcare arrangements or social and cultural backgrounds, may also play a role in explaining the cross-country variation.

1. Introduction

Single mother families have received a lot of attention from researchers and policy makers in recent years. This is partly attributable to the large increases in the prevalence of this type of family that took place in some Western countries during the past few decades.[1] For example, in the US the proportion of all families with children that were headed by a single mother rose from 8 percent in 1960 to 22 percent in 2000. Some of the questions raised by the increasing prevalence of this non-traditional family type regard the conflicting role of women as mothers and breadwinners.

Western countries differ greatly in the extent to which single mothers participate in the labor market. In the mid-1990s, 27 percent of single mothers in the United Kingdom reported working at least 10 hours a week, versus 76 percent in the US. Single mothers out of work are more likely to be poor and dependent on public support. On the other hand, the effects of maternal employment on children are still not well understood. Higher income in the household is associated with positive outcomes for children,[2] but lack of maternal care and parental supervision is thought to affect children and adolescents negatively.[3]

This paper analyzes the sources of the large variation in the employment rates of single mothers across countries. Labor market conditions and benefit systems have a potential to influence the work decision of women. Understanding what drives the labor supply decisions of single mothers under different environments would help inform policies aimed at preventing and alleviating poverty for these particularly vulnerable families. A multi-country analysis is especially attractive since the large variation in public support and labor market conditions provides an excellent source of identification for the effects of interest.

A few studies outside of economics have described the different environments that single mothers face in several countries.[4] Their descriptive analyses agree that many factors may contribute to explain the variation in the labor market participation of single

[1] See Gonzalez (2003) for a cross-country analysis of the determinants of the prevalence of single mothers.
[2] See Duncan et al. (1994), Duncan and Brooks-Gunn (1997), Mayer (1997), McLoyd (1998).
[3] The literature on the effects of maternal employment on children is mixed. Some have found negative effects of maternal employment when children are young (Harvey (1999), Belsky (1988)). Others find that maternal employment has positive effects on children in low-income families (Allesandri (1992), Vandell and Ramanan (1992), Moore et al. (1996), Zaslow and Emig (1997)).
[4] See Bradshaw et al. (1996), Kilkey (2001), Duncan and Edwards (1997).

mothers across countries, including benefit systems, labor market conditions, and social and cultural backgrounds, but they conclude that none of them can individually account for most of that variation. Clearly a more structured multivariate analysis is needed in order to analyze the relative contribution of the different factors at play.

I propose a simple structural model of labor supply that points at the variables that are potentially relevant for the work decision of single mothers (section 2). I then describe the employment rates of single mothers in 15 different countries, using data from the Luxembourg Income Study. In some countries, the large majority of single mothers stay home and out of paid work, while in others, most unmarried women with children are employed.

In section 4, I first explore the possibility that this cross-country variation is related to factors that affect employment rates for all women in a given country. Thus, I compare employment rates for single mothers with other groups of women (married mothers and single women without children). It turns out that in some countries single mothers are much *more* likely to work than other women, while there are others where single mothers are much *less* likely to work than other women. This suggests that there are additional sources of variation that affect single mothers differentially.

It is also possible that being a "single mother" means very different things in different countries, in terms of their age, marital status, number and age of children, etc, and that these characteristics are related to labor force participation. Thus, next I describe the composition of single mothers in the 15 countries in terms of demographics characteristics, and analyze how much of the variation in employment rates can be attributed to variation in these characteristics.

The structural model suggests that the expected income in the events of working versus not working plays a role in the work decision. The most important components of income are expected earnings in the event of working, and the level of benefits to which the woman is entitled. Benefits may include both universal family or child allowances and income-tested social assistance. Countries vary greatly both in terms of the types of assistance available to single mothers and the extent to which benefits are means-tested. Section 5 analyzes the contribution of labor market conditions and benefit systems to the variation in the labor force participation of single mothers across countries.

The results from the structural estimation suggest that a large part of the cross country variation in the employment rates of single mothers can be explained by their different demographic characteristics and by the variation in expected income in the in-work versus out-of-work states. Older and more educated single mothers are more likely to work, while more and younger children reduce the probability of working. Women with higher expected earnings are more likely to work. Higher benefits in the out-of-work state discourage employment, and the opposite is true for in-work benefits. Single mothers with higher income from other sources, including child support, are less likely to work. Even after demographic and income variables are controlled for, the country dummies remain significant and, in some cases, sizeable, indicating that other variables not explicitly incorporated in the model, such as childcare arrangements or social and cultural backgrounds, may also play a role in explaining the cross-country variation.

2. A Simple Model of Labor Supply for Single Mothers

I propose a very simple structural model that follows Meyer and Rosenbaum (2001). The model, although very simplified, provides guidance regarding the variables that enter the work decision for single mothers and the expected direction of the different effects.

A woman's utility is assumed to have as arguments her income Y, non-market time L, individual characteristics X, and a random term ε:

$$U = U(Y, L, X, \varepsilon)$$

A single mother decides whether to work or not in order to maximize her utility, subject to her budget and time constraints.[5] Thus, a single mother's decision to work depends on the comparison between her maximal utility in and out of employment. She will work if her expected utility of working exceeds the expected utility of not working:

$$U^*(Y_w, L_w, X) > U^*(Y_0, L_0, X)$$

[5] Note that I am assuming that income equals consumption, i.e. there is no saving or borrowing. This seems like a reasonable approximation for most single mother families.

I define W^* as the difference in the maximal utility in these two alternative states. A single mother will decide to work if $W^*>0$, where

$$W^* = U_w - U_0 = U^*(Y_w, L_w, X) - U^*(Y_0, L_0, X).$$

We only observe the sign of W^*, i.e. whether a woman works or not: $W = 1[W^* > 0]$.

The woman's income is composed of her net earnings (ωh, where ω is the woman's wage rate and h is the number of hours worked, minus taxes t), plus public transfers (B) and other non-labor income (including child support), I.

$$Y = \omega h - t + B + I$$

The probability that a single mother works equals:

$$\Pr(W^* > 0) = \Pr(U^*(Y_w, L_w, X) - U^*(Y_0, L_0, X) > 0) =$$
$$\Pr(U^*(\omega h - t + B_w + I, L_w, X) - U^*(B_0 + I, L_0, X) > 0)$$

The main problem when estimating W is the uncertainty about wages and hours for a woman should she work. Meyer and Rosenbaum (2001) assume that the woman doesn't know with certainty the wage that she would receive or the hours that she would work if she were to take employment. They assume that wages and hours worked are random draws from a distribution, which is common for all single mothers.

In the same line, I will assume that women can predict their wage rate based on their own personal characteristics and labor market conditions, but are uncertain about hours, which I take to be a random draw from a distribution that is common for all single mothers and countries and independent of wage.[6] Then, the probability that a single mother works equals:

[6] I will also explore the alternative approach that assumes that single mothers can predict their total expected earnings.

$$\Pr(W^* > 0) = \Pr(E[U_w] - U_0 > 0) =$$
$$\Pr\left(E\left\{U^*(\omega h - t + B_w + I, L_w, X)\right\} > U^*(B_0 + I, L_0, X)\right)$$

If we assume that utilities are linear in income and non-market time, then:

$$\Pr(W^* > 0) = \Pr\left(\alpha E[Y_w] + \beta E[L_w] + X'\gamma_w + \varepsilon_w - \alpha Y_0 - \beta L_0 - X'\gamma_0 - \varepsilon_0 > 0\right) =$$
$$\Pr(\alpha E[\omega h - t + B_w + I] + \beta E[L_w] + X'\gamma_w + \varepsilon_w - \alpha(B_0 + I) - \beta L_0 - X'\gamma_0 - \varepsilon_0) > 0) =$$
$$\Pr\left(\alpha(E[Y_w] - Y_0) + \beta(E[L_w] - L_0) + X'(\gamma_w - \gamma_0) > \varepsilon_0 - \varepsilon_w\right)$$

If we allow the coefficients on income to vary with the source of income, we arrive at the following expression:

$$\Pr(W^* > 0) =$$
$$\Pr\left(\varepsilon_0 - \varepsilon_w < \alpha_1 E[\omega h - t] + \alpha_2 E[B_w] - \alpha_3 B_0 + \alpha_4 I + \beta\left(E[L_w] - L_0\right) + X'\gamma\right)$$

Assuming that ε is distributed normally, the probability of working can be rewritten as:

$$\Phi\{\alpha_1 E[\text{net earnings}] + \alpha_2 E[\text{In-Work Benefits}] - \alpha_3 \text{Benefits if do not work} +$$
$$+ \alpha_4 \text{Other Non-Labor Income} + X'\gamma\}.$$

We expect that higher earnings and in-work benefits would increase the probability of working for a single mother, while higher benefits when out of work and other non-labor income would decrease it.

Expected earnings can be estimated in several different ways, which I discuss in section 5. Benefits include both non-means-tested public support such as universal child allowances, and means-tested benefits, which vary with earnings. Included in X are other variables that may affect the work decision, such as age and number of children. Non-market time when working and not working ($E[L_w]$ and L_0) are assumed to be constant across all women within a country, or to vary with demographics (which would be captured in X). I allow for variation across countries in order to incorporate differences in childcare policies or informal childcare habits. This variation across countries will be incorporated as country fixed effects.

In order to be able to compare monetary variables across countries, some normalization needs to be done. I will use as a normalization factor for all monetary variables within a given country and period the median household income in that country and period, adjusted by the composition of the households through an equivalence scale. I will refer to this normalization factor as "median equivalent income". [7]

3. Data

I use cross-sectional data for 15 countries from the Luxembourg Income Study (LIS). The LIS database is a collection of household income surveys that includes 30 countries, with data sets that span up to three decades, organized in 5 waves, although not all countries have data for each of the waves.[8] The advantage of this data source is that demographic and income variables are made easily comparable across data sets, which makes cross-country comparisons feasible.

I keep all LIS countries with information on earnings and hours worked in at least two different periods. I exclude Mexico from the analysis due to the large institutional differences with respect to the rest of the countries. This leaves 15 countries, 6 of them with just 2 periods available, and 9 with 3 periods available.[9] The three periods are approximately 1985, 1990 and 1995.

Single mothers are defined as households headed by a female and containing only the mother and her dependent children under 18 years of age. I characterize a woman as "employed" if she reports working at least 10 hours a week and positive earnings.[10] The sample size (pooled country and period data) is 13,440 single mothers, of which 57 percent work. The observations are weighted using LIS household weights, which account for sampling biases and also inflate the sample to population size.

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[7] Equivalent income is calculated as $\frac{DPI}{(A+0.7K)^{0.7}}$, where DPI is household disposable income, A is the number of adults in the household, and K is the number of children (this formula follows *Measuring Poverty*, National Research Council, 1995).

[8] Information on the LIS database is available online at <www.lisproject.org>.

[9] The countries included are: Australia, Austria, Belgium, Canada, France, (Western) Germany, Hungary, Ireland, Israel, Luxembourg, The Netherlands, Russia, Sweden, United Kingdom, and United States.

[10] I also explore alternative definitions of employment. First I consider different hours cutoffs: any positive number of hours and at least 15 hours worked a week. I also perform the analysis defining as employed any woman reporting positive earnings.

4. Descriptive Analysis

A. Comparing Employment Rates Across Countries

The proportion of single mothers in paid work varies greatly across the 15 countries in the sample (see Figure 1). In the mid-1990s, employment rates for single mothers ranged from 20% in The Netherlands and 27% in the UK to 76% in the US and 72% in France and Austria. Of course, these numbers may just reflect differences in overall female labor force participation trends. Thus our first task is to find out whether this variation in the employment rates of single mothers is driven by factors that affect all women or is specific to single mothers.

Table 1 shows employment rates for single mothers in the mid-1990s in the 15 countries in the sample, and a comparison with employment rates for married mothers and single women without children.[11] Employment rates for married mothers can explain only 25 percent of the variation in employment rates for single mothers.[12] Employment rates for single women without children are essentially uncorrelated with employment rates for single mothers (correlation of –0.03). In some of the countries, single mothers are much *more* likely to work than other women, while in others single mothers are much *less* likely to work than other women. Let us describe these different experiences in more detail.

- *France*, *Austria* and *Luxembourg* have very high absolute employment rates (ER) for single mothers (>65%), and those rates are also much higher than ER for married mothers and even single women without children.
- In the *United States* and *Israel*, ER for single mothers are high, but they are very similar to ER for the other groups of women.
- *Hungary* and *Russia* have intermediate ER for single mothers compared with the rest of the countries, and those rates are higher than ER for the other groups of women.
- In *Sweden* and *Belgium*, ER for single mothers are intermediate compared with the rest of the countries. Those rates are similar to ER for single childless women, but they

[11] I define "married mothers" as married women living with their husband and children younger than 18, and "single women without children" as unmarried women living in households with no children under 18.
[12] A linear regression on employment rates for single mothers where the only independent variable is the employment rate of married mothers for the 15 countries in the third period yields an R^2 of .248 (only .19 if adjusted).

are lower than ER for married mothers. In *Canada*, ER for single mothers is intermediate but lower than ER for both single childless women and married mothers.

- In *Ireland* and *Germany*, ER for single mothers are very low, and similar to ER for married mothers, while ER are much higher for single women without children.
- *The Netherlands*, the *United Kingdom* and *Australia* have very low ER for single mothers (<30%), and those are also much lower than ER for the other two groups of women.

In summary, the cross-country variation in employment rates for single mothers does not just reflect overall trends in female labor force participation, but seems to be driven in large part by additional sources of variation that are specific to single mothers.

B. Comparing Individual Characteristics of Single Mothers

It is of course possible that single mothers are very different across countries in terms of their age composition, their education level, the number and age of their children, and other variables that affect the likelihood of working. It is also possible that there are variables that affect single mothers differentially across countries, such as social protection systems that vary in their targeting, generosity, degree of income testing, etc. In order to sort these out, I begin by studying the demographic characteristics of single mothers across the 15 countries. Then I adjust employment rates to account for the different composition of the pool of single mothers in each country.

Pooling all countries together, in the mid-1990s the average single mother was 36 years old and had 2 children, the youngest one being 8 years old. More than 70 percent of single mothers have at least a high school degree (or equivalent), and more than 30 percent have never been married (the rest being either separated, divorced or widowed). However these characteristics vary significantly across the countries in the sample (see Table 2). To illustrate this point, let us compare two of them, Ireland and Israel. The average single mother in Ireland was 32 years old, versus 37 in Israel. Moreover, in Ireland 32 percent of all single mothers are younger than 26 years old, compared with only 6 percent in Israel. Only 23 percent of Irish single mothers had at least a high school degree, versus 67 percent of their Israeli counterparts. The majority of Irish single mothers were never married (65 percent), while in Israel single mothers were much more

likely to be divorced or widowed (only 17 percent of Israeli single mothers had never been married). We expect the older, more educated Israeli single mothers would be more likely to work than the Irish. Israeli single mothers had on average more children than the Irish ones (1.8 versus 1.6), but their children were older. On average, the youngest child in the household was 7.9 years old in Israel, compared with 6.6 in Ireland. Irish single mothers were more likely to have a preschool-age child (58 percent of them did, versus 31 percent in Israel). We suspect these differences may be part of the reason why the employment rates of single mothers were so much higher in Israel (60 percent) than in Ireland (34 percent).

C. Descriptive Models

In order to find out to what extent the variation in employment rates across countries can be attributed to differences in individual characteristics, I compare the results from a Probit on employment rates that includes only country (and time) dummies with the results obtained when including the above mentioned demographic controls, plus female unemployment rates (in order to control for business cycle effects). Tables 3 and 4 report the coefficients, standard errors and average derivatives from both specifications.

The first and second columns report the results from Probit regressions that include only country and time dummies. The first specification includes two time dummies that are common for all countries, while the second introduces country-specific time dummies. The omitted country is the US (in 1997, or third period). The employment rate of single mothers in the US in 1997 was 76 percent, the highest of all 15 countries in the mid-1990s. Thus the average derivatives on the country dummies reflect the difference in employment rates between the US and each of the other countries, after controlling for the time effects. All other countries have lower employment rates than the US in the third period, as can be seen in column 2 (see average derivatives). Note the large differences with respect to The Netherlands (56 percent), the UK (47 percent), and Australia (46 percent). Note also that all the country dummies are highly significant.

The third and fourth columns show the results from including the controls for individual characteristics and unemployment rates.[13] All the controls are significant and show the expected signs (see Table 4). Older single mothers are more likely to work. Higher education levels also increase the likelihood of working.[14] College attendants are 26 percentage points more likely to work than other single mothers. Having more and younger children reduces the probability of working, as do high unemployment rates. An additional child reduces the likelihood of working by 6 percentage points, while the presence of a preschool age child does so by 13 to 14 points.

We are interested in learning how much of the cross-country variation in employment rates can be explained by these controls. Going back to our example from section 4B, the first column in Table 3 shows that single mothers in Ireland are 31 percentage points less likely to work than their counterparts in Israel. Once we control for the different composition of the single mother population in both countries, the third column shows that the difference in employment rates has been reduced to 7 percentage points. Thus, almost 80 percent of the gap in employment rates between Israel and Ireland can be attributed to differences in the individual characteristics of single mothers in these two countries, according to this specification.

We may be especially interested in understanding the gap in employment rates with respect to the US. The countries with lower employment rates (see Figure 1) experience a considerable reduction in the gap with respect to the US once we account for these controls. The controls explain 93 percent of the difference with Ireland, 36 percent of the difference in employment rates with Australia, 37 percent of the difference with The Netherlands, 33 percent of the gap with Germany, and just 12 percent with respect to the UK (compare average derivatives from columns 1 and 3). This specification also accounts for a large part of the difference in employment rates between the US and Canada (57 percent). In some of the other cases, however, the controls slightly "over-explain" the gap, or even widen it.

It seems there is a significant portion of the cross-country variation in the employment rate of single mothers that cannot be explained by differences in their

[13] Female unemployment rates are included only in the regressions with time dummies that are common for all countries.
[14] See Appendix for the definitions of education levels.

individual characteristics or unemployment rates. The difference is still larger than 25 percentage points between the US and France, The Netherlands, Sweden and the UK. All of the country dummies are still significant.

The regression results reported so far did not account for the fact that part of the variation in employment rates for single mothers across countries is driven by factors that affect employment for all women in a given country, and not specifically single mothers (see section 4A). Thus I run an additional set of Probit regressions including married mothers as a comparison group. The new specification is the following:

$$W^*_{ijct} = \alpha + \beta X_{ijct} + \gamma_c Country_c + \delta_t Period_t + \eta_c SingleMother_i + \lambda_t SingleMother_i + \varepsilon_{ijct}$$

I include period dummies that are common for all countries and women, plus additional time dummies interacted with a single mother indicator. The γ's capture differences across countries in overall female employment, while the η's capture the combined effect of all factors affecting the employment of single mothers relative to married mothers. The results with and without the controls for demographic characteristics are shown in Table 5. Sample size is now 98,953. Table 5 also shows the η's from a slightly different specification that includes country-specific time dummies.[15]

Again, all the controls are highly significant and show the expected signs. Differences in the coefficients for country dummies interacted with the single mother indicator (the η's), reported in table 5, give us difference in difference estimates of the combined effect of all factors affecting the employment of single mothers relative to married mothers in columns 1 and 3, and what remains unexplained after we include the controls in columns 2 and 4.

In order to help interpret the results, I will again discuss an example. Single mothers in Ireland are slightly less likely to work that married mothers; while in Israel the opposite is true. According to the first specification, in Ireland single mothers are 9 percentage points less likely to work than married mothers, while in Israel they are 21 points more likely to work than the comparison group. This 30 points difference may be

[15] The specification estimated in columns 3 and 4 is the following:
$W^*_{ijct} = \alpha + \beta X_{ijct} + \gamma_c Country_c + \delta_t Country_c + \eta_c SingleMother_i + \varepsilon_{ijct}$

attributable to the different composition of the single mother and married mother groups in the two countries. In fact, after we control for demographic characteristics and unemployment rates, the 30 points gap has been reduced to 17 points (see column 2). Thus, approximately 43 percent of the difference in the employment rates of single mothers relative to married mothers between Ireland and Israel can be explained by the controls.

The controls included can explain part of the difference in employment rates between single and married mothers for most of the countries. For example, the controls account for 75 percent of the gap in Belgium, 66 percent in Ireland, 33 percent in Israel and 30 percent of the gap in Canada. However, even after taking into account the different characteristics of single and married mothers across countries, we cannot account for most of the cross-country variation in the employment rates of single mothers relative to married mothers. For example, single mothers in Sweden are still 18 percentage points less likely to work than their married counterparts, while in France they are 16 points more likely to work.

The structural model introduced in section 2 suggested that the expected income in the event of working versus not working plays a role in the individual work decision. The most important components of a single mother's income are her expected earnings if employed, the level of benefits to which she is entitled (including both universal family or child allowances and income-tested social assistance), and possibly child support and/or alimony payments. Countries vary greatly both in terms of the types of assistance available to single mothers and the extent to which benefits are means-tested, as well as in the level of earnings that single mothers can expect should they work. Section 5 analyzes the contribution of labor market conditions and benefit systems to the variation in the labor force participation of single mothers across countries by estimating the structural model proposed in section 2.

5. Structural Estimates of the Employment Decision

According to the model, the probability that a single mother works is a function of her expected net earnings if working, her expected benefits both in the in-work and out-of work states, her other non-labor income, and her individual characteristics:

$$\Phi\{\alpha_1 E[\text{net earnings}] + \alpha_2 E[\text{In-Work Benefits}] - \alpha_3 \text{Benefits if do not work} + \\ + \alpha_4 \text{Other Non-Labor Income} + X'\gamma\}.$$

Table 6 shows median earnings for working single mothers by country in the third period, as well as median level of benefits received by single mothers in work and out of work in each country. Median earnings range from 73 percent of median equivalent income (MEI) in Austria to 119 percent in Australia. The US is located in the middle of this range with 88 percent of MEI.

The level of benefits that single mothers receive if they stay at home varies a lot across countries as well. In Russia, benefits are zero at the median, while in The Netherlands the median out-of-work single mother receives benefits that amount to 114 percent of MEI. There is also a large variation in how much the level of benefits is reduced if single mothers take up employment. In all countries but Russia and Hungary, single mothers who work, experience a reduction in the level of benefits that they receive. In Belgium, the median level of benefits is virtually the same for out-of-work and in-work single mothers (21.8 versus 22 percent of MEI). But in The Netherlands, the reduction is dramatic: from 114 percent of MEI for out-of work single mothers to 17 percent for those who work. This indicates that benefits might be part of the story why single mothers are so likely to stay at home in The Netherlands (their employment rate was 20 percent in 1994).

In order to estimate the structural model, we need to include expected earnings, benefits and other non-labor income in the work regressions. We observe "other non-labor income" directly for all single mother households. However, we do not observe earnings for single mothers out of work, or the benefits that they would receive in the counterfactual state.

I estimate expected (net) earnings using predicted hourly wages and the observed distribution of hours. I assume that all single mothers face the same hours distribution. I calculate the hours distribution including all single mothers and pooling all 15 countries and 3 periods, and using LIS weights. On average, employed single mothers work 36.8 hours a week, or 1,915 hours a year.

I also assume that a woman can predict her own wage rate based on her individual characteristics and labor market conditions. The expected wage rate can thus be estimated

as a function of the woman's characteristics, allowing the coefficients to vary by country. I run wage regressions including as explanatory variables the woman's age, her educational attainment, her marital status, whether she has children, and time dummies, separately by country. I include all women 18 to 60 years old with positive earnings in the analysis.[16] Thus identification of predicted wages for single mothers comes from using a larger sample of women in the wage regressions. The sample size is 143,872. I normalize hourly wage by median equivalent income in a given country and period. Virtually all of the country wage regressions have R^2 between .16 and .50.[17] Then we can assign each non-working single mother her predicted wage rate, and we can include expected earnings as an explanatory variable in the Probits. [18]

We also do not observe the level of in-work benefits that an out-of-work single mother would receive should she work, or the out-of-work benefits that a working single mother would receive if she didn't work. I estimate those counterfactuals separately by country and period using observed benefit levels for working and non-working single mothers, as a function of the number and ages of the children in the household and earnings (for in-work benefits).[19] Thus expected benefits are identified by using the variation in actual benefits received by single mothers in and out of work by country, period, number of children, age of the youngest child, and actual earnings.

I then estimate Probit regressions for the probability that a single mother works including, in addition to the demographic controls, expected net earnings, expected in-work and out-of-work benefits, and other non-labor income. All the monetary variables are normalized by median equivalent income in a given country and period. Table 7 shows some descriptive statistics for all variables included in the regressions for the pooled country and period sample. The sample size is 13,440. Expected net earnings for single mothers are on average 111 percent of MEI. Single mothers receive on average benefits amounting to 36 percent of MEI if they are out of work, versus 15 percent of

[16] I exclude observations for women with hourly wage below the 1st and above the 99th percentiles for a given country.
[17] The exception is for Russia, with an R^2 of .043. See Appendix for more details on the wage regressions.
[18] As a robustness check, I perform the analysis both imputing expected wages for all single mothers, and using the imputations only for those not working and using observed wages for the rest.
[19] See Appendix for details on how the benefits variables are constructed.

MEI if they work. Their other non-labor income amounts to an average of 16 percent of MEI.

The results from estimating the structural Probit are shown in Tables 8 and 9. All the specifications but (7) and (8) use observed wages for working single mothers and predicted wages for non-working single mothers. The baseline specifications are shown in columns (1) and (2). Odd columns show the results from using time dummies that are common for all countries, while even ones report the results from Probits that include country-specific time dummies. Columns (3) and (4) are obtained when assuming that women can predict their total earnings (wage times hours), thus expected earnings are derived from earnings regressions run separately by country (instead of wage regressions). Columns (5) and (6) define employed women as those who report working at least 15 hours a week (and positive earnings).

Note that the coefficients on the income variables display the expected signs, which are consistent across specifications. Higher expected earnings are significantly associated with a higher probability of working. An increase in net expected earnings of 10 percent (the equivalent of a 95 cents increase in hourly wage for the US in 1997) would result in an increase in the likelihood of working of between .01 and .06 percentage points. These estimates are higher in the specifications that use predicted earnings for all single mothers (.15 to .23). As expected, higher other non-labor income is associated with lower employment rates. An increase in other non-labor income of 10 percent (the equivalent of about 280 US dollars in 1997) would decrease the probability of working by .02 to .04 percentage points.

Benefit levels are also significantly associated with the likelihood of working. An increase in benefits in the out-of-work state of 10 percent (the equivalent of $650 US dollars in 1997) would result in a decrease in employment rates of between .002 and .026 percentage points, while increasing in-work benefits by 10 percent would increase the likelihood of working by .11 to .22 percentage points. A 10 percent increase in benefits in both the in-work and out-of-work states would therefore have a net effect of encouraging employment. These magnitudes suggest the interesting result that increasing in-work benefits encourages work to a greater extent than increasing out-of-work benefits

discourages it. In other words, employment rates seem to be more sensitive to changes in in-work benefits.

Although introducing earnings and benefits to the specification does not eliminate the significance of the country fixed effects, the magnitudes are considerably smaller after controlling for the income variables. The model can explain between 30 and 95 percent of the gap in employment rates for single mothers between the US and 7 out of the other 14 countries, according to specification (3). We can account for 92 percent of the gap with Israel and 84 percent of the gap with Ireland, and 80 percent with Canada. However, the model "over-explains" the gap with Belgium. After controlling for individual characteristics and income variables, the employment gap with respect to five other countries has in fact widened.

The results presented so far in this section did not account for the fact that part of the variation in employment rates for single mothers across countries is driven by factors that affect employment for all women in a given country, and not specifically single mothers. Thus I also report the results from Probit regressions that include married mothers as a comparison group (see Table 10).[20] The coefficients (the η's) reflect the remaining gap in employment rates between single and married mothers in a given country, after controlling for demographic characteristics and income variables. The model explains a significant part of the gap in employment rates for most of the countries (11 out of the 15). For example, we can account for 62 percent of the gap in Ireland, 65 percent in Russia, 44 percent in Germany and 42 percent in Israel.

Differences in the coefficients for country dummies interacted with the single mother indicator (the η's), give us difference in difference estimates of the unexplained gap in the employment of single mothers relative to married mothers across countries. Going back to the example from previous sections, the specification with no controls showed there was a gap of 30 points between Ireland and Israel in the employment rates of single relative to married mothers. Demographic characteristics and unemployment rates could account for about 43 percent of the gap. Once we introduce the income variables, the original 30-point gap has been reduced to 15 points, i.e. the model accounts for almost 50

[20] Note that married mothers have an additional source of income in the household, the husband's earnings, which is also included in the regressions.

percent of the difference in the employment rates of single mothers relative to married mothers between Ireland and Israel.

However, there is a lot of variability in how well the model can explain the variation across countries. Taking the US as a reference, we can account for more than 20 percent of the gap with just 6 of the other 14 countries. The model works especially well in closing the gap with Israel, Hungary and Austria (more than 60 percent of the gap is accounted for), but it does not help explain the difference with respect to Australia or The Netherlands.

As a summary measure of how much of the cross-country variation we can account for, I calculate the reduction in the magnitude of the unexplained gaps (in absolute value) once we introduce all the controls.[21] We can perform this calculation for each pair of countries. Then we can average the reduction in the gap between each country and the other 14. The model reduces the gap between the US and the rest of the countries by only 11.4% on average, but the model works better for other countries. The gap between Israel and the rest of the countries is reduced by an average of 31.6%, while the reduction amounts to 27.6% of the gap with Ireland, 22.5% with Canada or 21.4% for Russia.

6. Discussion

I have described the large variation across countries in the degree to which single mothers participate in the labor market, even after we control for differences in overall female employment. Using data for 15 countries from the Luxembourg Income Study, I have shown that single mothers are much more likely to work than other women in some countries, while they are much less likely to work in others.

I propose and estimate a simple structural model of labor supply that incorporates the main variables that influence the work decision for single mothers. The results from the structural estimation suggest that a large part of the cross country variation in the employment rates of single mothers can be explained by their different demographic characteristics and by the variation in expected income in the in-work versus out-of-work states. Older and more educated single mothers are more likely to work, while more and

[21] This amounts to comparing the differences in the η's between countries before and after the controls are introduced.

younger children reduce the probability of working. Women with higher expected earnings are more likely to work. Higher benefits in the out-of-work state discourage employment, and the opposite is true for in-work benefits. Single mothers with higher income from other sources, including child support, are less likely to work.

The model can account for a large part of the cross-country variation in the employment rates of single mothers relative to other women. However, even after demographic and income variables are controlled for, the country dummies remain significant and, in some cases, sizeable. This indicates that other variables not explicitly incorporated in the model, such as childcare arrangements or social and cultural backgrounds, may also play a role in explaining the cross-country variation.

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Appendix

- Hourly wages for working women are calculated as total net earnings divided by number of hours worked. Earnings are provided at the yearly level and hours at the weekly level, so that number of hours worked a week are multiplied by 52 in order to get hours worked a year. I treat as missing those observations with hourly wages below the 1st and above the 99th percentile for a given country.

- The education levels are coded across countries following Sullivan and Smeeding (1997).

- The benefit variables used in the analysis are LIS variables V20 (child or family allowances), V25 (means-tested cash benefits) and V26 (all near cash benefits).

- The wage regressions are run separately by country and include observations for all women 18 to 60 years old. Wage is normalized using median equivalent income in a given country and period. The variables included in the regressions are: age, age^2, age^3, two dummies for educational attainment, two dummies for marital status (married being the omitted category), a dummy indicating whether she has children, and time dummies.

- The regressions for out-of-work benefits are run separately for each country and period, and include observations for out-of-work single mothers. Benefits are normalized using median equivalent income in a given country and period. The variables included in the regressions are number of children, number of children squared, and age of the youngest child.

- The regressions for in-work benefits are run separately for each country and period, and include observations for in-work single mothers. The variables included in the regressions are number of children, number of children squared, age of the youngest child, earnings, and $earnings^2$, and $earnings^3$.

- Selected results from wage and benefit regressions are shown below.

A) Wage Regression Results for The Netherlands

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	0.38881	0.03888	336.94	<.0001
Error	4017	0.46355	0.00011540		
Corrected Total	4027	0.85237			

Root MSE	0.01074	R-Square	0.4562
Dependent Mean	0.00083134	Adj R-Sq	0.4548
Coeff Var	1292.16520		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.00214	0.00020266	-10.56	<.0001
AGE	1	0.00020299	0.00001743	11.65	<.0001
AGE2	1	-0.00000456	4.795041E-7	-9.50	<.0001
AGE3	1	3.34143E-8	4.234232E-9	7.89	<.0001
EDUC1	1	0.00010048	0.00001087	9.25	<.0001
EDUC2	1	0.00023546	0.00001366	17.24	<.0001
CHILDREN?	1	-0.00004752	0.00001246	-3.81	0.0001
NEVER MARRIED	1	-0.00001042	0.00001258	-0.83	0.4075
OTHER	1	-0.00002495	0.00001850	-1.35	0.1774
T1	1	0.00042032	0.00001219	34.49	<.0001
T2	1	-0.00016911	0.00001106	-15.29	<.0001

B) Out-Of-Work Benefits Regression for Canada, 1997.

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	2890.01538	963.33846	46.38	<.0001
Error	795	16512	20.76982		
Corrected Total	798	19402			

Root MSE	4.55739	R-Square	0.1490
Dependent Mean	0.42503	Adj R-Sq	0.1457
Coeff Var	1072.24656		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value
Intercept	1	0.27748	0.04818	5.76
NKIDS	1	0.09475	0.04783	1.98
NKIDS2	1	0.00612	0.01084	0.56
AGE OF THE YOUNGEST CHILD	1	-0.00499	0.00189	-2.64

C) In-Work Benefits Regression for the United States, 1997.

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	62207	10368	293.56	<.0001
Error	1911	67492	35.31775		
Corrected Total	1917	129699			

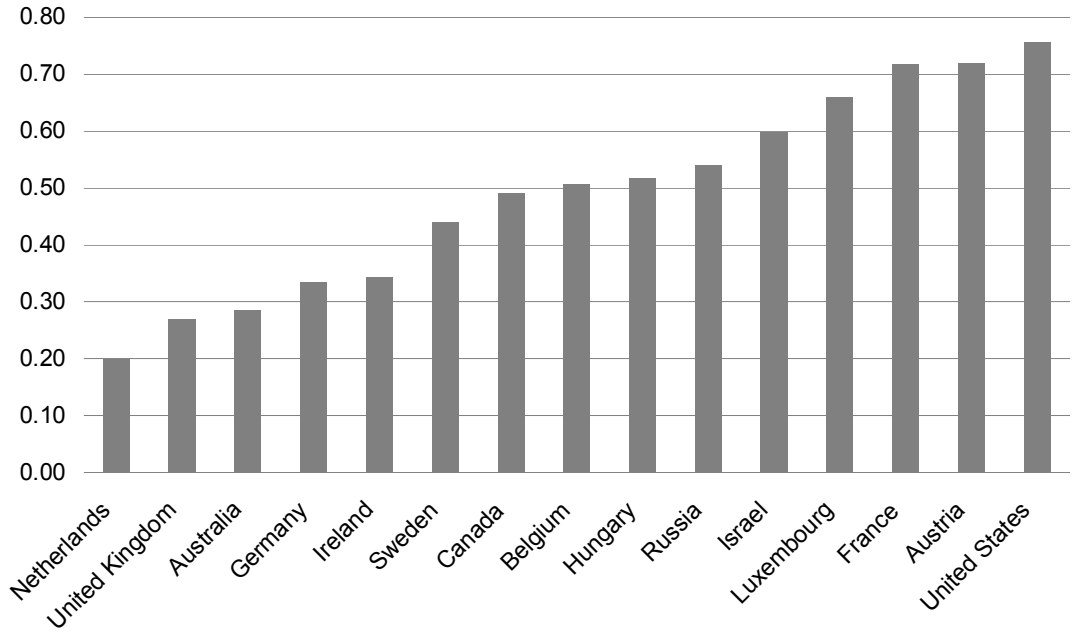
Root MSE	5.94287	R-Square	0.4796
Dependent Mean	0.15527	Adj R-Sq	0.4780
Coeff Var	3827.56581		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value
Intercept	1	0.21271	0.01591	13.37
NKIDS	1	0.03697	0.01005	3.68
NKIDS2	1	0.00692	0.00188	3.68
AGE OF THE YOUNGEST CHILD	1	0.00053375	0.00065029	0.82
EARNINGS	1	-0.18363	0.02500	-7.35
EARNINGS2	1	-0.00095795	0.01788	-0.05
EARNINGS3	1	0.00851	0.00347	2.45

Tables and Figures

Figure 1. Employment Rates Single Mothers, 15 Countries, Circa 1995.



Note: LIS data, weighted. See text for definition of single mothers and exact years.

Table 1. Employment Rates Single Mothers, Married Mothers and Single Women without Children, 14 Countries, Circa 1995.

	Single Mothers	Married Mothers	Single M.-Married M.	Singles w/o Children	Single M.-SingleNC
Australia	0.2858	0.4043	-0.1185	0.6297	-0.3439
Austria	0.7188	0.4702	0.2485	0.5739	0.1449
Belgium	0.5065	0.5271	-0.0206	0.4285	0.0780
Canada	0.4900	0.5899	-0.0999	0.6109	-0.1209
France	0.7178	0.6173	0.1005	0.6061	0.1117
Germany	0.3346	0.3248	0.0098	0.6324	-0.2978
Hungary	0.5175	0.4547	0.0628	0.4197	0.0978
Ireland	0.3448	0.3991	-0.0544	0.6165	-0.2717
Israel	0.5990	0.5444	0.0546	0.5188	0.0802
Luxembourg	0.6591	0.3267	0.3324	0.5604	0.0987
Netherlands	0.1994	0.3845	-0.1851	0.6207	-0.4213
Russia	0.5418	0.4548	0.0870	0.4287	0.1131
Sweden	0.4414	0.5955	-0.1541	0.4085	0.0329
United Kingdom	0.2698	0.4943	-0.2245	0.6632	-0.3934
United States	0.7564	0.6838	0.0726	0.7948	-0.0384

Note: LIS data, weighted. See text for definitions of single mothers, married mothers, single women without children and exact years.

Table 2. Descriptive Statistics Single Mothers, 14 Countries, Circa 1995.

	N	Age	Younger than 26?	High School Degree?	College?	Never Married?	Number of Children	More than 1 child?	Age of Youngest Child	Preschool children?
Australia	242	34.81	0.09	0.14	0.12	0.34	1.81	0.58	6.99	0.42
		(211.89)	(8.24)	(9.973)	(9.265)	(13.514)	(23.91)	(14.09)	(135.82)	(14.110)
Austria	85	36.85	0.04	0.66	0.10	0.31	1.50	0.47	9.12	0.25
		(227.609)	(6.728)	(16.128)	(10.398)	(15.685)	(19.134)	(16.968)	(150.822)	(14.719)
Belgium	73	36.68	0.04	0.58	0.00	0.14	1.57	0.44	8.62	0.24
		(7.842)	(7.081)	(0.575)	(0.000)	(11.992)	(0.844)	(17.113)	(4.788)	(0.532)
Canada	1564	34.74	0.14	0.64	0.10	0.40	1.64	0.49	7.29	0.43
		(138.94)	(6.17)	(8.464)	(5.343)	(8.665)	(13.72)	(8.83)	(87.57)	(8.753)
France	314	36.70	0.06	0.25	0.07	0.39	1.52	0.39	8.20	0.33
		(327.11)	(11.05)	(19.505)	(11.188)	(21.979)	(34.07)	(21.95)	(220.99)	(21.144)
Germany	105	35.47	0.08	0.53	0.09	0.20	1.48	0.36	7.50	0.32
		(23.80)	(24.85)	(1.443)	(0.809)	(36.480)	(2.16)	(43.90)	(12.60)	(1.352)
Hungary	27	37.10	0.03	0.38	0.16	0.06	1.56	0.33	9.22	0.17
		(345.30)	(7.16)	(20.735)	(15.484)	(9.994)	(43.15)	(20.09)	(192.97)	(16.019)
Ireland	71	32.35	0.32	0.19	0.04	0.65	1.61	0.34	6.58	0.58
		(228.03)	(11.96)	(9.973)	(4.806)	(12.204)	(24.81)	(12.12)	(150.53)	(12.634)
Israel	144	37.41	0.06	0.45	0.22	0.17	1.81	0.50	7.88	0.31
		(119.56)	(3.84)	(8.016)	(6.684)	(5.985)	(16.75)	(8.06)	(62.24)	(7.456)
Luxemb.	34	36.55	0.03	0.35	0.05	0.17	1.68	0.50	7.53	0.33
		(62.75)	(1.55)	(4.582)	(2.117)	(3.624)	(7.21)	(4.79)	(34.58)	(4.515)
Netherl.	112	37.96	0.03	0.32	0.10	0.18	1.61	0.50	9.19	0.21
		(250.52)	(6.38)	(16.945)	(10.711)	(13.807)	(25.71)	(18.14)	(170.37)	(14.815)
Russia	134	38.16	0.05	0.54	0.21	0.12	1.41	0.35	10.45	0.17
		(954.72)	(27.88)	(61.461)	(50.488)	(40.428)	(79.95)	(58.82)	(535.82)	(46.320)
Sweden	498	36.26	0.09	0.53	0.19	.	1.63	0.47	7.44	0.44
		(162.28)	(5.92)	(10.589)	(8.237)		(17.24)	(10.58)	(107.31)	(10.522)
UK	412	33.38	0.19	0.68	0.07	0.36	1.83	0.57	6.69	0.47
		(475.19)	(22.92)	(27.189)	(14.948)	(28.040)	(53.32)	(28.96)	(275.71)	(29.180)
US	2581	35.07	0.15	0.68	0.12	0.39	1.91	0.56	7.42	0.41
		(382.37)	(16.17)	(21.362)	(15.084)	(22.367)	(49.69)	(22.77)	(223.35)	(22.538)

Note: LIS data, weighted. See text for definitions of single mothers and education levels.

Table 3. Preliminary Probits, Results for Country Dummies.

	(1)	(2)	(3)	(4)
Australia	-0.9569	-1.2603	-0.6861	-1.1609
	(0.0020)	(0.0031)	(0.0022)	(0.0032)
	-0.3530	-0.4576	-0.2253	-0.3768
Austria	-0.2942	-0.1156	-0.6200	-0.3287
	(0.0030)	(0.0043)	(0.0031)	(0.0045)
	-0.1085	-0.0420	-0.2036	-0.1067
Belgium	-0.2626	-0.6785	0.6545	-0.8239
	(0.0027)	(0.0043)	(0.0035)	(0.0044)
	-0.0969	-0.2463	0.2150	-0.2674
Canada	-0.5442	-0.7198	-0.2619	-0.8176
	(0.0012)	(0.0019)	(0.0014)	(0.0020)
	-0.2008	-0.2613	-0.0860	-0.2654
France	0.2057	-0.1183	1.004	-0.0117
	(0.0012)	(0.0018)	(0.0019)	(0.0019)
	0.0759	-0.0430	0.3297	-0.0038
Germany	-0.7321	-1.122	-0.5497	-1.2891
	(0.0010)	(0.0015)	(0.0013)	(0.0016)
	-0.2701	-0.4074	-0.1805	-0.4184
Hungary	0.004	-0.6508	0.0319	-0.8218
	(0.0026)	(0.0058)	(0.0027)	(0.0059)
	0.0015	-0.2363	0.0105	-0.2668
Ireland	-1.1075	-1.0942	-0.0881	-0.7563
	(0.0047)	(0.0061)	(0.0053)	(0.0064)
	-0.4086	-0.3973	-0.0289	-0.2455
Israel	-0.2667	-0.444	0.1124	-0.5695
	(0.0042)	(0.0066)	(0.0045)	(0.0069)
	-0.0984	-0.1612	0.0369	-0.1849
Luxembourg	-0.0859	-0.2846	-0.5165	-0.2877
	(0.0147)	(0.0235)	(0.0154)	(0.0238)
	-0.0317	-0.1033	-0.1696	-0.0934
Netherlands	-1.1504	-1.5385	-0.8142	-1.6648
	(0.0020)	(0.0038)	(0.0023)	(0.0039)
	-0.4244	-0.5586	-0.2674	-0.5404
Russia	-0.1455	-0.5898	-0.3229	-0.9075
	(0.0007)	(0.0011)	(0.0008)	(0.0011)
	-0.0537	-0.2141	-0.1060	-0.2946
Sweden	-0.5918	-0.8422	-0.7816	-1.029
	(0.0020)	(0.0027)	(0.0021)	(0.0028)
	-0.2183	-0.3058	-0.2567	-0.3340
United Kingdom	-1.0237	-1.3081	-1.0101	-1.403
	(0.0008)	(0.0013)	(0.0009)	(0.0013)
	-0.3776	-0.4749	-0.3317	-0.4554
Country-specific time trends?	N	Y	N	Y

Note: The table displays results from Probit regressions where the dependent variable indicates whether a single mother works or not. LIS weights are used. There are 15 countries and 3 periods included in the analysis. The sample size is 13,440. Other controls included in the regressions are age, age^2, age^3, education, marital status, number of children, a dummy for preschool age children, female unemployment rates, and time dummies (see Table 4). I report coefficients, standard errors (in parenthesis) and average derivatives.

Table 4. Preliminary Probits with Demographic Controls.

	(3)	(4)
Age	0.1871	0.1901
	(0.0011)	(0.0012)
	0.0614	0.0617
High School Degree?	0.5131	0.537
	(0.0006)	(0.0006)
	0.1685	0.1743
College?	0.7849	0.8206
	(0.0009)	(0.0009)
	0.2578	0.2664
Never Married?	-0.1903	-0.1761
	(0.0006)	(0.0006)
	-0.0625	-0.0572
Number of Children	-0.1789	-0.1798
	(0.0003)	(0.0003)
	-0.0588	-0.0584
Preschool children?	-0.4045	-0.4273
	(0.0007)	(0.0007)
	-0.1328	-0.1387

Note: The table displays results from Probit regressions where the dependent variable indicates whether a single mother works or not. LIS weights are used. There are 15 countries and 3 periods included in the analysis. The sample size is 13,440. Also included in the regressions are age^2, age^3, female unemployment rates (in specification 3), country dummies (see Table 3) and time dummies. I report coefficients, standard errors (in parenthesis) and average derivatives.

Table 5. Preliminary Probits with Comparison Group (coefficients on country dummies interacted with single mother indicator).

	(1)	(2)	(3)	(4)
Australia	-0.2182	-0.2289	-0.2411	-0.2432
	(0.0021)	(0.0022)	(0.0021)	(0.0022)
	-0.0821	-0.0811	-0.0894	-0.0849
Austria	0.3502	0.3521	0.3244	0.3296
	(0.0032)	(0.0033)	(0.0032)	(0.0033)
	0.1318	0.1247	0.1202	0.1151
Belgium	0.0581	0.0156	0.0631	0.0359
	(0.0028)	(0.0029)	(0.0028)	(0.0028)
	0.0219	0.0055	0.0234	0.0125
Canada	-0.3213	-0.2384	-0.3407	-0.2714
	(0.0012)	(0.0013)	(0.0012)	(0.0013)
	-0.1210	-0.0845	-0.1263	-0.0948
France	0.423	0.4566	0.3822	0.355
	(0.0013)	(0.0013)	(0.0012)	(0.0013)
	0.1593	0.1618	0.1417	0.1240
Germany	0.21	0.1988	0.2262	0.205
	(0.0011)	(0.0011)	(0.0010)	(0.0011)
	0.0791	0.0704	0.0838	0.0716
Hungary	0.4075	0.3841	0.3003	0.2496
	(0.0027)	(0.0028)	(0.0027)	(0.0028)
	0.1534	0.1361	0.1113	0.0872
Ireland	-0.2458	-0.09	-0.2822	-0.1034
	(0.0050)	(0.0053)	(0.0050)	(0.0053)
	-0.0925	-0.0319	-0.1046	-0.0361
Israel	0.5514	0.3938	0.6296	0.4786
	(0.0043)	(0.0045)	(0.0045)	(0.0047)
	0.2076	0.1395	0.2334	0.1672
Luxembourg	0.8607	0.844	0.8294	0.7969
	(0.0153)	(0.0158)	(0.0152)	(0.0158)
	0.3240	0.2990	0.3074	0.2784
Netherlands	-0.1759	-0.2578	-0.2069	-0.2999
	(0.0021)	(0.0022)	(0.0021)	(0.0022)
	-0.0662	-0.0914	-0.0767	-0.1048
Russia	0.2913	0.2062	0.259	0.1884
	(0.0007)	(0.0007)	(0.0006)	(0.0007)
	0.1097	0.0731	0.0960	0.0658
Sweden	-0.4342	-0.496	-0.4445	-0.504
	(0.0022)	(0.0023)	(0.0022)	(0.0023)
	-0.1635	-0.1757	-0.1648	-0.1761
United Kingdom	-0.4591	-0.4128	-0.4935	-0.4510
	(0.0009)	(0.0009)	(0.0008)	0.0009
	-0.1728	-0.1463	-0.1829	-0.1576
United States	0.126	0.2689	0.0839	0.2093
	(0.0005)	(0.0006)	(0.0004)	(0.0004)
	0.0474	0.0953	0.0311	0.0731
Demographic Controls?	N	Y	N	Y

Note: The table displays results from Probit regressions where the dependent variable indicates whether a mother (single or married) works or not. LIS weights are used. There are 15 countries and 3 periods included in the analysis. The sample size is 98,953. I report coefficients, standard errors (in parenthesis) and average derivatives for country dummies interacted with a single mother indicator. Other controls included in the regressions are time dummies, country dummies, and, in specifications 2 and 4, age, age^2, age^3, education, marital status, number of children, a dummy for preschool age children, and female unemployment rates. I report coefficients, standard errors (in parenthesis) and average derivatives.

Table 6. Median Earnings and Benefits for Single Mothers, 15 Countries, Circa 1995.

	Earnings	Out-Of-Work Benefits	In-Work Benefits
Australia	1.1894	0.7051	0.1675
Austria	0.7275	0.2540	0.1683
Belgium	1.1184	0.2181	0.2205
Canada	1.0587	0.4551	0.0935
France	0.9416	0.4315	0.1663
Germany	1.1433	0.2279	0.0338
Hungary	0.8788	0.1997	0.2069
Ireland	0.9934	0.5045	0.2616
Israel	0.8144	0.2023	0.1018
Luxembourg	0.8496	0.3117	0.0826
Netherlands	0.9726	1.1382	0.1711
Russia	1.0078	0.0000	0.1050
Sweden	0.8735	0.2730	0.2506
United Kingdom	1.0284	0.8616	0.1765
United States	0.8836	0.3029	0.1077

Note: Median earnings and in-work benefits are calculated from the subsample of working single mothers, while median out-of work benefits are calculated using the subsample of single mothers out of work.

Table 7. Descriptive Statistics Structural Probits (weighted).

	N	Mean	Stdev	Min	Max
Work	13440	0.566	23.081	0.00	1.00
Age	13440	34.940	378.706	18.00	60.00
High School Grad?	13440	0.593	22.878	0.00	1.00
College?	13440	0.117	14.987	0.00	1.00
Number of Children	13440	1.742	45.402	1.00	12.00
Preschool?	13440	0.385	22.665	0.00	1.00
Never Married?	13440	0.270	20.677	0.00	1.00
Earnings	13440	1.107	30.016	3.05E-02	7.33
Benefits if not working	13440	0.359	14.226	0.00	2.66
Benefits if working	13440	0.154	9.650	0.00	4.09
Other Non Labor Income	13440	0.156	19.363	0.00	7.66

Note: Included are all single mothers (see text for definition) in the pooled country and period sample. See text for list of countries and years.

Table 8. Structural Probit Results.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age	0.2087	0.2041	0.0552	0.0546	0.1927	0.1874	0.0874	0.1282
	(0.0012)	(0.0012)	(0.0011)	(0.0011)	(0.0012)	(0.0012)	(0.0012)	(0.0013)
	0.0684	0.0662	0.0179	0.0176	0.0632	0.0608	0.0287	0.0417
High School Degree?	0.5222	0.5437	0.5627	0.5718	0.5153	0.5352	0.3567	0.4282
	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0009)	(0.0011)
	0.1712	0.1764	0.1820	0.1839	0.1689	0.1737	0.1170	0.1393
College?	0.7846	0.8245	0.7939	0.8085	0.7651	0.8035	0.3497	0.5285
	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0019)	(0.0027)
	0.2573	0.2675	0.2567	0.2601	0.2507	0.2608	0.1147	0.1720
Number of Children	-0.2217	-0.2039	-0.2404	-0.2372	-0.2192	-0.2016	-0.2159	-0.203
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
	-0.0727	-0.0662	-0.0777	-0.0763	-0.0718	-0.0654	-0.0708	-0.0660
Preschool children?	-0.4011	-0.4232	-0.4042	-0.4113	-0.399	-0.4202	-0.4073	-0.4269
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
	-0.1315	-0.1373	-0.1307	-0.1323	-0.1308	-0.1364	-0.1336	-0.1389
Never Married?	-0.2019	-0.1856	-0.1559	-0.1499	-0.1884	-0.174	-0.1951	-0.1838
	(0.0006)	(0.0007)	(0.0006)	(0.0007)	(0.0006)	(0.0007)	(0.0006)	(0.0007)
	-0.0662	-0.0602	-0.0504	-0.0482	-0.0617	-0.0565	-0.0640	-0.0598
Earnings	0.0536	0.0305	0.0431	0.0365	0.057	0.034	0.7081	0.4657
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0025)	(0.0036)
	0.0176	0.0099	0.0139	0.0118	0.0187	0.0110	0.2323	0.1515
Benefits if out of work	-0.0242	-0.0605	-0.0507	-0.0824	-0.0218	-0.0442	-0.0371	-0.0554
	(0.0014)	(0.0014)	(0.0014)	(0.0015)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
	-0.0079	-0.0196	-0.0164	-0.0265	-0.0072	-0.0144	-0.0122	-0.0180
Benefits if working	0.5501	0.3768	0.6617	0.6739	0.5348	0.3523	0.5084	0.3707
	(0.0017)	(0.0018)	(0.0016)	(0.0016)	(0.0017)	(0.0018)	(0.0017)	(0.0017)
	0.1804	0.1223	0.2140	0.2168	0.1752	0.1143	0.1668	0.1206
Other Non-Labor Income	-0.0646	-0.0673	-0.1374	-0.1348	-0.0599	-0.0626	-0.0744	-0.0709
	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)
	-0.0212	-0.0218	-0.0444	-0.0434	-0.0196	-0.0203	-0.0244	-0.0231
Country-specific time trends?	N	Y	N	Y	N	Y	N	Y

Note: The table displays results from Probit regressions where the dependent variable indicates whether a single mother works or not. LIS weights are used. There are 15 countries and 3 periods included in the analysis. The sample size is 13,440. Also included in the regressions are age^2, age^3, country and time dummies and, in specifications without country-specific time dummies, female unemployment rates. I report coefficients, standard errors (in parenthesis) and average derivatives. See section 5 for a description of the different specifications. Standard errors for the benefits variables are not corrected and thus should be interpreted with caution.

Table 9. Structural Probit Results, Country Dummies.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Australia	-0.7703	-1.1885	-0.3833	-0.7732	-0.7751	-1.2632	-0.9554	-1.37
	(0.0022)	(0.0033)	(0.0021)	(0.0031)	(0.0022)	(0.0033)	(0.0023)	(0.0036)
	-0.2526	-0.3857	-0.1239	-0.2487	-0.2540	-0.4100	-0.3135	-0.4457
Austria	-0.6793	-0.3561	-0.6163	-0.3291	-0.6442	-0.3238	-0.6679	-0.3350
	(0.0032)	(0.0045)	(0.0032)	(0.0046)	(0.0032)	(0.0045)	(0.0032)	(0.0045)
	-0.2227	-0.1155	-0.1993	-0.1059	-0.2111	-0.1051	-0.2192	-0.1090
Belgium	0.5587	-0.8571	0.5346	-0.7901	0.5821	-0.8536	0.5316	-0.9392
	(0.0035)	(0.0044)	(0.0036)	(0.0044)	(0.0035)	(0.0044)	(0.0035)	(0.0045)
	0.1832	-0.2781	0.1729	-0.2542	0.1907	-0.2771	0.1744	-0.3056
Canada	-0.3036	-0.8161	-0.0734	-0.5012	-0.294	-0.8199	-0.2898	-0.853
	(0.0014)	(0.0020)	(0.0015)	(0.0020)	(0.0014)	(0.0020)	(0.0014)	(0.0020)
	-0.0996	-0.2648	-0.0237	-0.1612	-0.0963	-0.2661	-0.0951	-0.2775
France	0.8912	-0.0491	0.7395	-0.0421	0.8999	-0.041	0.8052	-0.1091
	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0020)
	0.2922	-0.0159	0.2391	-0.0136	0.2949	-0.0133	0.2642	-0.0355
Germany	-0.5731	-1.2789	-0.3133	-0.7279	-0.6011	-1.3156	-0.664	-1.3915
	(0.0013)	(0.0016)	(0.0013)	(0.0016)	(0.0013)	(0.0016)	(0.0014)	(0.0019)
	-0.1879	-0.4150	-0.1013	-0.2342	-0.1970	-0.4270	-0.2179	-0.4527
Hungary	-0.1389	-0.866	0.1197	-0.1433	-0.0963	-0.829	-0.1268	-0.8975
	(0.0028)	(0.0060)	(0.0031)	(0.0067)	(0.0028)	(0.0060)	(0.0028)	(0.0060)
	-0.0456	-0.2810	0.0387	-0.0461	-0.0316	-0.2691	-0.0416	-0.2920
Ireland	-0.3182	-0.822	-0.1656	-0.5695	-0.2821	-0.8066	-0.4079	-0.9493
	(0.0053)	(0.0064)	(0.0050)	(0.0062)	(0.0053)	(0.0064)	(0.0053)	(0.0065)
	-0.1044	-0.2667	-0.0535	-0.1832	-0.0924	-0.2618	-0.1338	-0.3089
Israel	0.0646	-0.5958	-0.0364	-0.6276	0.0342	-0.6745	-0.0792	-0.7394
	(0.0046)	(0.0069)	(0.0046)	(0.0069)	(0.0045)	(0.0069)	(0.0046)	(0.0071)
	0.0212	-0.1933	-0.0118	-0.2019	0.0112	-0.2189	-0.0260	-0.2406
Luxembourg	-0.5588	-0.2891	-0.4847	-0.0634	-0.5272	-0.2605	-0.6521	-0.322
	(0.0153)	(0.0238)	(0.0156)	(0.0248)	(0.0153)	(0.0238)	(0.0154)	(0.0238)
	-0.1833	-0.0938	-0.1567	-0.0204	-0.1728	-0.0845	-0.2140	-0.1048
Netherlands	-0.9319	-1.6622	-0.8915	-1.5359	-0.9663	-1.6912	-1.291	-1.92
	(0.0025)	(0.0040)	(0.0024)	(0.0038)	(0.0025)	(0.0041)	(0.0028)	(0.0046)
	-0.3056	-0.5394	-0.2883	-0.4941	-0.3166	-0.5489	-0.4236	-0.6247
Russia	-0.3467	-0.9108	-0.1994	-0.7368	-0.3473	-0.8952	-0.54	-1.085
	(0.0009)	(0.0012)	(0.0009)	(0.0012)	(0.0009)	(0.0012)	(0.0012)	(0.0019)
	-0.1137	-0.2956	-0.0645	-0.2370	-0.1138	-0.2905	-0.1772	-0.3530
Sweden	-0.9011	-1.0801	-0.2702	-0.4274	-0.8797	-1.075	-0.8065	-1.0248
	(0.0021)	(0.0028)	(0.0022)	(0.0030)	(0.0021)	(0.0028)	(0.0021)	(0.0029)
	-0.2955	-0.3505	-0.0874	-0.1375	-0.2883	-0.3489	-0.2646	-0.3334
United Kingdom	-1.177	-1.4643	-1.1351	-1.3543	-1.1802	-1.4779	-1.3926	-1.6115
	(0.0012)	(0.0016)	(0.0012)	(0.0016)	(0.0012)	(0.0016)	(0.0015)	(0.0020)
	-0.3860	-0.4752	-0.3671	-0.4356	-0.3867	-0.4797	-0.4569	-0.5243
Country-specific time trends?	N	Y	N	Y	N	Y	N	Y

Note: The table displays results from Probit regressions where the dependent variable indicates whether a single mother works or not. LIS weights are used. There are 15 countries and 3 periods included in the analysis. The sample size is 13,440. Other controls included in the regressions are age, education, marital status, number of children, a dummy for preschool age children, female unemployment rates, and time dummies. I report coefficients, standard errors (in parenthesis) and average derivatives. See text for a description of the different specifications.

Table 10. Structural Probit Results with Comparison Group, Country Dummies.

	(1)	(2)
Australia	-0.2553	-0.1545
	(0.0022)	(0.0022)
	-0.0901	-0.0527
Austria	0.2967	0.3191
	(0.0033)	(0.0034)
	0.1048	0.1089
Belgium	-0.0525	-0.0362
	(0.0029)	(0.0029)
	-0.0185	-0.0123
Canada	-0.2703	-0.2547
	(0.0013)	(0.0013)
	-0.0954	-0.0870
France	0.3993	0.4349
	(0.0014)	(0.0014)
	0.1410	0.1485
Germany	0.1263	0.2428
	(0.0011)	(0.0011)
	0.0446	0.0829
Hungary	0.3186	0.4746
	(0.0028)	(0.0031)
	0.1125	0.1620
Ireland	-0.1002	-0.123
	(0.0053)	(0.0050)
	-0.0354	-0.0420
Israel	0.3396	-0.0479
	(0.0046)	(0.0046)
	0.1199	-0.0164
Luxembourg	0.7716	0.8351
	(0.0159)	(0.0161)
	0.2724	0.2851
Netherlands	-0.3149	-0.4665
	(0.0023)	(0.0022)
	-0.1112	-0.1593
Russia	0.1086	0.0956
	(0.0008)	(0.0008)
	0.0384	0.0327
Sweden	-0.4957	-0.2134
	(0.0023)	(0.0024)
	-0.1750	-0.0729
United Kingdom	-0.4449	-0.411
	(0.0010)	(0.0010)
	-0.1571	-0.1403
United States	0.2048	0.1524
	(0.0006)	(0.0006)
	0.0723	0.0520

Note: The table displays results from Probit regressions where the dependent variable indicates whether a mother works or not. LIS weights are used. There are 15 countries and 3 periods included in the analysis. The sample size is 98,953. Other controls included in the regressions are age, education, marital status, number of children, a dummy for preschool age children, female unemployment rates, expected earnings, benefits, other non-labor income, time dummies, time dummies interacted with a single mother dummy, and country dummies. I report coefficients, standard errors (in parenthesis) and average derivatives. See text for a description of the two specifications.