Luxembourg Income Study Working Paper Series

Working Paper No. 106

An International Comparison of Married Women's Labor Supply

Christin Knudsen and Elizabeth Peters

January 1994

(scanned copy)

Luxembourg Income Study (LIS), asbl

AN INTERNATIONAL COMPARISON OF MARRIED WOMEN'S LABOR SUPPLY

by

Christin Knudsen
and
H. Elizabeth Peters

Population Program and Department of Economics
University of Colorado
Campus Box 484
Boulder, CO 80309
EMAIL: KNUDSEN_CC@CUBLDR.COLORADO.EDU

January 1994

An earlier version of this paper was presented at the annual meetings of the Population Association of America, Cincinnati, Ohio, April 1-3, 1993.

ABSTRACT

This paper compares the labor supply of married women with young children in the U.S., Canada, Germany and Australia. Cross-country comparisons of female labor force participation rates exist, but so far little work has been done estimating cross-country structural models of female labor supply functions and wage elasticities. Studies of U.S. labor supply elasticities have produced a wide range of estimates due to differences in estimation techniques and differences in the composition of data. Our cross-country study is based on uniform estimation techniques and composition of samples using data from the Luxembourg Income Study. Thus differences in the estimated labor supply functions are due to differences in institutional structures or policies that subsidize home production or the cost of child care and to differences in "tastes" or social attitudes across countries. As a side issue, we evaluate the importance of the degree of selection bias for the countries in question.

I. Introduction

Over the last few decades most industrialized countries have seen a substantial increase in the labor force participation of women in general and a rise in the participation of married women in particular. The earlier recognized U-shaped pattern - reflecting participation in the labor force before marriage and childbearing followed by withdrawal from the labor force during childbearing years and a later reentering - has had a tendency to flatten out, particularly for those countries where over half of the married women are working. The current picture cross-nationally is, however, still very diversified. While some countries from the western economies have labor force participation rates of married women approaching those of the men, other countries have rather low participation rates for married women with a further withdrawal from the labor market with the presence of children.

This paper compares the labor supply of married women in the U.S., Canada, Germany and Australia. Cross-country comparisons of female labor force participation rates exist (Mincer, 1985), but so far little work has been done estimating cross-country structural models of female labor supply functions and wage elasticities. Studies of U.S. labor supply elasticities have produced a wide range of estimates due to differences in estimation techniques and differences in the composition of data (Killingsworth and Heckman, 1986). Our cross-country study is based on uniform estimation techniques and composition of samples using data from the Luxembourg Income Study.

The literature suggests several explanations for higher female market activity that include an increase in wage rates and educational attainment for women, a decrease in fertility and an increase in divorce rates. Most countries show a narrowing of the female/male wage ratio over time (Blau and

Kahn, 1992). The supply of part-time and lower hour jobs has also had an important effect on female participation.

Differences in hours worked across countries will be due both to differences in the characteristics associated with female labor market activity and differences in the parameters of the labor supply function. These parameter differences could be due to country specific institutional structures or policies which subsidize home production or the cost of child care. The parameter differences could also be due to differences in "tastes" or social attitudes across countries.

A few international studies present comparative patterns of female labor force participation, but there is little analysis of the underlying causes of the inter-country differences. Our study will look at labor supply (i.e. annual and weekly hours worked) as well as labor force participation decisions of married women using a standard econometric model of labor supply. Explanatory variables include non-earned income, wife's wage rate, the presence of school age and preschool age children in the household, ethnicity or race, urban vs. rural location, and wife's age. We will also discuss the possible contribution of country specific social policies such as child care subsidies, the availability and duration of paid and unpaid maternity/paternity leave and policies regarding part-time work.

In the next section we discuss the basic econometric techniques for the analysis. Section III describes the data, sections IV and V present the empirical results, and section VI discusses the country specific family policies that can provide some interpretation of our results. By estimating separate models for each country, we will be able to show the degree to which differences in labor supply across countries are due to differences in the levels of the underlying explanatory variables

versus unobserved country specific characteristics and policies that affect the basic parameters of the model (eg., labor supply response to wages, income, and the presence of children).

II. Econometric Model of Labor Supply

We begin with a linear model of labor supply given by

$$(1) \qquad h = a_0 + a_1 W + a_2 Y + a_3 Z + e_h$$

where h is hours of work, W is the natural log of the wife's hourly market wage rate;[1] Y is her non-earned income which includes the labor earnings of her husband, total family transfer income and public/private pension income;[2] Z is a vector of variables that affects her marginal value of non-market time; and e_h is a random variable that captures unobserved tastes for work.[3] This specification comes from a standard labor/leisure framework in which labor supply is determined at the point where the marginal rate of substitution (MRS) between non-market time (i.e. leisure) and money is equal to the market wage. The coefficients a_1 and a_2 are interpreted as the uncompensated wage effect and the income effect, respectively.

Over the last two decades the work on labor supply has shown how estimates of the income and substitution effects and other parameters in the labor supply model will be biased unless the labor force participation decision is explicitly incorporated in the estimation (see Killingsworth and Heckman, 1986,

---

[1]For convenience in subsequent discussions we refer to the natural log of the hourly market wage rate as the wage.

[2]In this model we assume that the husband's earnings are exogenous, i.e., the husband's labor supply decisions are independent of the wife's labor supply decisions.

[3]The i subscripts have been suppressed to simplify notation.

for a review). In particular, if we estimate equation (1) using a sample of working women only, the correct specification is

(2) $E(h|h>0) = a_0 + a_1W + a_2Y + a_3Z + E(e_h|h>0)$

The standard labor supply model tells us that an individual will participate in the labor market (i.e., h>0) only if her market wage is greater than her reservation wage, defined as the MRS between non-market time and money at zero hours of work. If we ignore the last term in equation (2), the estimated labor supply equation is biased, because the conditional expectation of e_h is not zero and is likely to be correlated with the other explanatory variables, W, Y, and Z.

The solution to this econometric problem involves estimating a reduced form labor force participation equation that includes as regressors all the variables that belong in either the market wage equation or the reservation wage equation (Heckman, 1979):

(3) $pr(h>0) = ßX + e_p$

From equation (3) we construct a Mills ratio, $f(ßX)/(1-F(ßX))$, and include that variable as a proxy for the unobserved conditional expectation of e_h in equation (2).

An additional econometric issue that we address relates to the wage rate. The observed wage is conditional on positive hours worked and is likely to be correlated with the unobserved tastes for work in the hours regression. We account for the endogeneity of the observed wage rate by estimating a wage equation and including the Mills ratio from equation (3) to account for the non-zero conditional error term:

(4) $E(W|h>0) = ?X\mathbb{N} + E(e_w|h>0)$.

The variables in XN are a subset of the variables in X. The instrument for the wage used in the hours equation (2) is W = ?XN. Because the variables in the wage equation (4) are a subset of the variables in the hours equation (2), the wage in the hours equation is not identified. A common solution to this problem that we implement in our estimation is to add squared, cubed and various interaction terms as explanatory variables in the wage equation.

It is well known that the wage and income effects for labor supply estimates reported in the literature vary widely. Mroz (1987) undertook a systematic investigation to isolate the possible sources of this variation. We use the results from his study as a guide to determine the basic specification of our labor supply model.

III. Description of the Data

Our data are taken from the Luxembourg Income Study (LIS). The LIS data contain measures of income, wages, labor supply, education, marital status, number and ages of children and other socio-economic characteristics for samples of households in 14 different countries. The household surveys are conducted by each country, and the LIS takes these different data sets and constructs variables that are more or less comparable for the entire sample. Some countries do not report all the variables that we need for our study, thereby limiting our analysis at this point to four countries: U.S., Canada, Germany and Australia. We use the second wave of the LIS that contains data from the 1980's.

We restrict our sample to married women ages 16 to 59. Table 1 lists the weighted means of the variables used in our analysis. All monetary values have been transformed to 1986 U.S. dollars using OECD purchasing power parities and the U.S. Consumer Price Index (CPI). Note that the

educational categories reported for different countries are not at all comparable. For each country we experimented with a number of different empirical specifications for education using the results from various wage regressions to rank educational categories from lowest to highest and combine categories that had statistically similar effects on wages.[4] The Ethnic/racial variable is also country specific.

There are several notable differences in characteristics of the four countries. Germany has the smallest proportion of young children (0.14), while the U.S. has the largest proportion of young children (0.25). Australian women, on the other hand, are much more likely to have older children in their household.

Patterns of labor supply and wages also differ quite a bit across the four countries. Employment rates are highest in Canada and the U.S., and part-time work is less prevalent in those two countries. The lower employment rate for Germany is partly due to the fact that the data were collected one to three years earlier than the other samples and partly due to a different definition of employment.[5] At

---

[4]The U.S. data report education by single years, and we reclassify the data into four categories: 1) high school dropout (<12 years); 2) high school graduate (12 years); 3) some college (13-15 years); and 4) college graduate ($ 16 years). The Canadian data report similar categories to those we constructed for the U.S. In addition, these data distinguish between a post-secondary diploma and a university degree and those two categories have different effects on wages, so we use five categories of educational attainment for Canadian women. The categories reported in the Australian data are similar to those in the Canadian data, but they do not distinguish between individuals with only a high school degree and those with some post-secondary schooling. For Germany, the category "other" (non-vocational post-high school) is the highest level of schooling. Because German students who attend gymnasium (technical and general high school) frequently go on to study at the university, the effect on wages of completing gymnasium (high school) is similar to the effects of a post-secondary diploma on wages for the other countries. The effect of German vocational schooling on wages is more similar to those of some post-secondary schooling.

[5]For the U.S., Canada, and Australia employment is defined as any work for pay during the reference year. For Germany employment is defined as a positive number of hours worked last week.

least half of German working wives work part-time, but only 13 percent work part-year.[6] Australia has the lowest total annual hours. Although employment rates are high, the low annual hours for that country results from a large proportion of part-time and part-year workers.

In contrast to popular perception, wage rates and non-earned income (including husbands' earnings) are substantially lower for the German sample. We tested whether this pattern was unique to our data set by comparing our results to data published by the International Labor Office (ILO) in Geneva. We found that German wages were lower than U.S. wages in those data as well.[7]

IV. Employment and Wage Results

As described in section II, the first step in our analysis is to estimate the probability that the wife is employed. This reduced form regression reported in Appendix A is used to create the Mill's ratio that is included in the wage and hours equations to take care of the selection bias. Our theoretical model says that the wife will be employed whenever her market wage rate exceeds her reservation wage. Thus we model the employment probability as a function of variables that affect the market wage - human capital variables (Education and Wife's Age), differential wage opportunities (Urban) and discrimination (Ethnic/racial Majority) - and variables that affect the value or tastes for non-market time - Education, Children, Income, Urban and Ethnic/racial Majority.

---

[6] This low percent can be partly attributed to the definition of employment in the German data. The question about weeks per year was only asked of women who worked the week before the survey.

[7] Using purchasing power parities to convert 1984 German wages to dollars, average wages for German women are $4.82, average wages for German men are $6.66, and the average for the two sexes is $6.33. This compares to an average wage of $8.32 in 1984 for all workers in the U.S.

In general, the probability of employment rises with the wife's education, and the education variables are jointly significant. Employment probabilities fall for women with older children (compared to no children), but fall by even more for women with young children. The latter coefficient is twice as large as the former for Canadian and German wives, and more than three times larger for wives from the U.S. and Australia. The effect of children on employment probabilities is smallest for the U.S. Employment probabilities rise at a decreasing rate with age. An increase in non-earned income significantly reduces the probability of employment for the U.S., Canada and Germany, but surprisingly, higher non-earned income increases the employment probability for Australian wives. Most of our employment results are consistent with other studies (Mincer, 1985; Franz, 1985; and Gregory, McMahon and Whittingham, 1985).

The wage results reported in Appendix B are also fairly standard. Consistent with human capital explanations, wages increase with education, and wages increase with age at a decreasing rate.[8] Plots of age/wage profiles show that wage growth over the life cycle is steeper for women with more education. We include interactions between age and education to capture these effects. In addition, these interaction terms and the cubic term on wife's age are necessary to be able to identify the wage effect in the labor supply equations.

Wages opportunities are higher in Canada and the U.S. for women living in urban areas. Urban residence has no effect on wages for German women, and this variable is not included in the Australian data set.

---

[8]The data do not include a measure of labor market experience, so we use the wife's age to capture potential labor market experience.

The variable Ethnic/racial majority is included to capture possible effects of discrimination. For the U.S. our results show that white women do not have significantly higher wages than non-whites. The results for Germany and Australia also indicate that there is no significant effect of ethnicity or race on wages. In contrast, the coefficient on Ethnic/racial Majority is positive and significant for Canada. This variable is defined to equal one for Canadian born and for those who immigrated to Canada prior to 1965 and to equal zero for more recent immigrants. Thus the effect on wages that we measure in our Canadian data may reflect problems of assimilation for more recent immigrants. Immigrant status and the timing of immigration is not available for any of the other three countries.

The results for the effect of the Mills Ratio reveal an interesting contrast across the different countries. This variable measures the effect on wages for working women that is due to the correlation between the employment decision and unobserved market or home productivity effects. The value of the Mill's ratio, itself, is always negative for working women, so a negative coefficient implies that market wages are higher for working women than for non-working women. The converse is implied by a positive coefficient on the Mill's ratio. The case of higher wages for working women is easy to explain. These women are more likely to work, in part, because they have higher wages. The second case, lower wages for working women, requires a more subtle explanation. Controlling for income, why would women with lower wages be more likely to work? Our theory provides an answer: women with low wages who choose to work must have an even lower value (or tastes) for non-market time. In Appendix B we see that the coefficient on the Mill's ratio is negative for both the U.S. and for

Canada and is positive for Germany.[9] These results provide some indication that in the U.S. and Canada, non-working women stay at home because their market wage opportunities are not very good, but German women stay at home because their value of non-market time is high. This conclusion is consistent with evidence that Germany provides large subsidies to mothers who remain at home. We discuss this issue in more detail in section VI.

V. Labor Supply Estimates

Tables 2 and 3 present the results from the hours of work regressions for working women. The dependent variable in Table 2 is annual hours of work and the dependent variable in Table 3 is usual weekly hours. We analyze the two separately, because changes in hours for working women can be accomplished by changing the number of weeks worked per year and/or by changing the number of hours worked per week. The measure of annual hours captures both of these dimensions, but usual weekly hours captures only the second dimension. The degree to which a woman can adjust her hours along the second dimension will be affected by country specific labor market policies or other factors that affect the availability of part time work.

Education is included in the hours equations to capture the effect of education on the value of non-market time. For Canada and Australia, the number of annual hours worked and hours worked per week generally increase with education. There is no consistent pattern between hours worked and education for the U.S. and Germany. Age is included to capture life-cycle effects on home

[9] Although in this table the only coefficient that is at all significant is for the U.S., in slightly different specifications the estimated coefficients on the Mills Ratio were significant at the 5% level for both Canada and Germany. The estimates for Australia were always very small and never significant.

productivity. Annual hours increase with age at a decreasing rate for all countries. The pattern is different for weekly hours, where German and Australian women work fewer hours per week with age.

In contrast to the wage regressions, the race/ethnic variables for the U.S. and German samples have a significant association with both annual and weekly hours. The ethnic/racial majority group tends to supply fewer hours to the market.

As expected, the presence and age of children affects hours in the same way as those variables affected employment probabilities. The presence of both younger and older children reduces hours, with the effect for younger children being twice as large as the effect for older children. The effects of children on hours worked for German wives are substantially larger than for any other country, and these effects for women in the U.S. are much smaller than the other countries in the data.

The wage and income effects are consistent with the predictions of the theory: higher wages induce women to supply more hours to the market and higher non-earned income leads to lower labor supply. The income effects are, in general, significant but the effects are fairly small. Income elasticities for Germany are substantially higher than for any other country in our data. For example, in Table 2 income elasticities for Germany are 5 times larger than for the U.S. Our estimated wage elasticities are of similar magnitude to wage elasticities reported in other studies that use the same statistical methodology (Mroz, 1987). Again, Germany stands out as having the highest wage elasticities. The annual hours wage elasticity for Germany is much larger than for the U.S., and the weekly hours wage elasticity is four times larger. The wage effects are significant for the U.S. and Germany in the annual hours regressions, but are less precisely estimated for the U.S. in the weekly hours regressions.

If there are institutional constraints that prevent individuals from choosing the exact number of hours they would prefer, wage elasticities for weekly hours would be lower than wage elasticities for annual hours, because individuals could make their adjustments by choosing the number of weeks worked per year. On the other hand, if job attachment is important, the lack of flexibility in weekly hours would also lower the wage elasticity for annual hours. The results from Tables 2 and 3 show, except for Germany, that the uncompensated wage elasticities for weekly hours are smaller than for annual hours, providing some evidence that there may be a lack of flexibility in the choice of weekly hours, but that women may be able to compensate by their choice of weeks per year.

The differences in labor supply across countries can be decomposed into two parts: 1) differences in the mean values of the characteristics that are related to labor supply (eg., wages, income, age and children) and 2) differences in the parameters of the underlying labor supply functions. The latter could be caused by differences in social norms and attitudes about the value of maternal child care, tastes for market work versus non-market work, or country specific policies that subsidize mothers who remain at home or subsidize market forms of child care. In section VI we will discuss these cross-country differences in social attitudes and policies in more detail.

Table 4 presents the results of an analysis decomposing country differences in annual hours. Row 1 shows a baseline predicted hours ratio derived from the country specific means for working women and the country specific ß's in Table 2. The hours ratios range from 0.83 for Australia to 0.94 for Germany. Rows 2-4 show what would happen to the hours ratio if only one of the country specific mean characteristics were changed to be equivalent to the U.S. value, but the other mean characteristics and country specific labor supply parameters were the same as in the baseline

prediction. Changing the children variables, wages or income has very little effect on the hours ratio for Canada and Australia. Changing any of these mean characteristics for Germany, however, has a much larger effect. If Germany had the same female wage rates as the U.S., married women would supply 6 percent more hours than married women in the U.S. This difference is probably due to the fact that wage difference between Germany and the U.S. reported in Table 1 is fairly large.

Row 5 reports the results of the experiment that imposes the labor supply parameters for the U.S. on all countries, but uses the country specific mean characteristics. Here we see that women in Canada and Australia would supply more hours than women in the U.S., if their behavior were governed by the parameters of the U.S. labor supply function. However, the hours ratio for Germany is not much different than the baseline hours ratio. The result for Germany is surprising, because the parameters of the German labor supply function are so different from those of the U.S. However, it seems that the larger negative effects of children and income are just offset by the larger positive effect of the wage.

VI. Country Differences in Family Policy

Family policies can affect a woman's labor force participation decision and her labor supply response to changes in wages and income. In this section we describe four categories of family policy: 1) maternal leave policy; 2) paternal leave and subsidies to other forms of non-maternal child care; 3) tax benefits for children and family allowances; and 3) flexible work hours. The structure and the importance of these policies varies across the four countries in our study. Table 5 documents the differences.

The availability of paid maternity leave increases a mother's reservation wage by subsidizing maternal child care. Maternity leave should therefore be associated with lower labor force participation rates for mothers with very young children. On the other hand the option of paid maternity leave increases the value of employment for women who plan to have children in the future. Unpaid maternity leave may also increase the reservation wage, because it guarantees a woman her job upon returning to the work force and eliminates the need to search for a new job. However, the effect of unpaid maternity leave on labor force participation rates should be much smaller than the effect of paid maternity leave. The labor force participation regressions shown in Appendix A provide some partial support for this hypothesis. The U.S. has no federal policy mandating paid or unpaid maternity leave, and the effect of children on labor supply is the smallest for this country; Germany, with the most generous maternal leave policy, has the largest (negative) effect of children on employment.

The availability of paternity leave and policies such as child care tax credits that subsidize non-maternal forms of child care affect our estimates of the labor supply responses to changes in wages. To see this, take a standard labor supply model in which the mother is assumed to be the primary child care provider and to incorporate the costs of child care into her labor supply decisions. The appropriate wage to use in this labor supply model is the *net wage*, defined as the gross hourly wage minus the hourly cost of child care.[10] If our measure of wage opportunities ignores these child care subsidies, we should observe higher measured wage elasticities for countries with higher child care

[10]See Averett et al. (1992) for evidence that women's labor supply responds to the net wage rather than the gross wage.

subsidies, because the gross wage is a closer approximation of the net wage in those countries.[11] From Table 5 it is difficult to rank order the countries in terms of the size of the subsidy to non-maternal care. Germany provides a subsidy to *paternal* care through its parental leave policy. The U.S., on the other hand, has extensive subsidies for child care that is purchased in the market (eg., care provided by day care centers).

Family allowances and tax deductions for children act as an income effect on labor supply. If leisure is a normal good (or if home productivity is enhanced by more income), non-market time will increase with increases in income. These kinds of benefits are, in general, included in our measure of the wife's non-earned income. In the U.S. and Canada benefits for children come in the form of a lower tax liability, and non-earned income will be measured with error for families with children.

Policies that promote more flexible work schedules should increase the elasticity of labor supply as measured by weekly hours. These kinds of policies would also make the parameters of the weekly hours labor supply function more similar to the parameters of the annual hours labor supply function. We do not have any explicit information on these kinds of policies in our four countries. However, from our results we might infer that the availability of part time work is much more limited in the U.S. than in either Canada or Australia, because the wage elasticity in the annual hours equation is almost twice as large as the wage elasticity in the weekly hours equation for the U.S., whereas the two elasticities are virtually the same for Canada and only slightly different for Australia. The surprising result for Germany that the weekly hours wage elasticity is larger than the annual hours wage elasticity

[11]Note that differences in marginal tax rates on earned income across countries will also affect our estimates of wage elasticities, if individuals respond to the wage net of taxes.

could be due to the definition of employment used for that sample. Those who are currently working (the definition of employment for the German sample) are more likely to work full-year than those who worked some time during the previous year (the definition of employment used for the other three countries). Therefore, employed women in the German sample are, by construction, less likely to alter their labor supply by changing weeks per year.

VII. Summary and Conclusions

In this paper we use a standard labor supply model and data from the Luxembourg Income Study to examine differences in labor force participation rates and weekly and annual hours worked for married women from the U.S., Canada, Australia and Germany. Our results show substantial variation in the labor supply measures across the four countries. The U.S. has the largest annual and weekly hours, but a substantial number of women work part-year. The labor force participation rate for Canada is slightly higher than for the U.S., but Canadian women work fewer hours. Australian women work the smallest number of hours, but a large proportion of workers - almost 50% - work part-time. Germany has the lowest labor force participation rate, and part-year work is extremely low. However, this result is due, in part, to the definition of employment used for that sample.

The labor supply estimates for the four countries are qualitatively similar and are consistent with the theoretical predictions of the model. Labor supply is higher for women with higher wages and declines with increases in non-earned income. Both labor force participation rates and hours worked are smaller for women with young children.

Except for Germany, the differences in labor supply across the four countries are not accounted for by differences in the underlying characteristics of the population. Rather, it is the fundamental parameters of the labor supply functions that vary widely across the four countries. Differences in the behavioral parameters are likely to be the consequences of differences in social attitudes and norms about the mother's child care role as well as differences in social policies that subsidize maternal and non-maternal forms of child care. We have documented substantial differences in family policies, and the effect of these policies is consistent with the cross-country differences in our labor supply parameters.

Table 1. Sample Means

	U.S. 1986	Canada 1987	Germany 1984	Australia 1985
Wife's Employed[a,b]	0.67	0.71	0.44	0.57
Working Wives Who Work Part-time[a,c]	0.30	0.34	0.52	0.47
Working Wives Who Work Part-year[a,c]	0.30	0.23	0.13	0.30
Wife's Total Annual Hours[c]	1697.2 (704.5)	1575.3 (676.7)	1509.3 (694.3)	1457.0 (729.3)
Wife's Usual Weekly Hours[c]	35.9 (11.5)	33.4 (11.02)	30.2 (12.8)	30.4 (12.8)
Wife's Wage[c]	8.83 (7.02)	9.18 (7.62)	6.45 (5.68)	8.34 (6.7)
Educational Level 4[a,d]	0.23	0.16	0.01	0.10
Educational Level 3[a,d]	--	0.21	0.11	0.33
Educational Level 2[a,d]	0.22	0.09	0.23	--
Educational Level 1[a,d]	0.47	0.37	--	0.10
Educational Level 0[a,d]	0.08	0.17	0.65	0.47
Wife's Non-earned Income ($1,000)[e]	31.0 (21.0)	29.1 (17.8)	20.3 (12.2)	23.7 (15.2)
Wife's Age	38.4 (10.06)	37.3 (9.6)	39.7 (9.6)	37.4 (9.3)
Any Children Ages 6-18[a]	0.33	0.33	0.33	0.37
Any Children Less Than 6[a]	0.25	0.24	0.14	0.22
Ethnic/Racial Majority[a,f]	0.83	0.89	0.92	0.73
Urban[a]	0.74	0.83	0.89	--

Note: The sample consists of married women ages 16 to 59. All monetary units have been converted to 1986 U.S. dollars. The samples have been weighted to reflect population distributions. Standard errors are in parentheses.

[a]Proportion of the sample with the given characteristic.

[b]For the U.S., Canada and Australia, wife's employment is defined as any work for pay in the year prior to the survey. For Germany employment is defined as any work the week prior to the survey.

[c]Calculated for working women only. Part-time is defined as less than 35 hours. Part-year is defined as less than 52 weeks per year.

[d]Level 4: University degree for the U.S., Canada, Germany, and Australia.
Level 3: Post secondary diploma for Canada, Australia. Technical/General High school for Germany.
Level 2: Some college for the U.S., some post secondary for Canada. Vocational Training for Germany.
Level 1: High school graduate for the U.S., Canada and Australia.
Level 0: Less than high school graduate for U.S., Canada, Australia, and Germany.

[e]Gross Family income minus wife's earnings.

[f]Defined as White for the U.S.; Canadian born and immigrants who arrived before 1965 for Canada; German for Germany; and Australian for Australia. The ethnic/racial minority categories include Black, Spanish, other races for the U.S.; recent immigrants for Canada; Turkish, Yugoslav, Greek, Italian, Spanish, and other for Germany; and European, Asia, North/South America, Africa, and Oceana for Australia.

Table 2. Annual Hours Worked by Married Women - OLS Regressions

	U.S. 1986	Canada 1987	Germany 1984	Australia 1985
Constant (T-statistic)	787.15** (2.02)	376.15 (0.97)	1069.14** (2.03)	597.93 (0.75)
Educational Level 4[g,b]	-92.43 (0.45)	410.13* (1.83)	-41.79 (0.37)	201.34 (1.06)
Educational Level 3[a,h]	--	267.38* (1.66)	-55.56 (0.38)	159.83** (1.99)
Educational Level 2[a,b]	-127.51 (0.82)	104.58 (0.71)	18.49 (0.23)	--
Educational Level 1[a,b]	-87.82 (0.80)	165.79* (1.84)	--	93.97 (1.51)
Any Children Ages 6-18[a]	-150.64** (3.80)	-270.80** (5.76)	-481.24** (5.87)	-343.73** (6.97)
Any Children Younger Than 6[a]	-322.29** (4.10)	-407.35** (4.75)	-922.29** (5.51)	-762.90** (6.46)
Wife's Age	25.00* (1.78)	58.84** (2.39)	15.59 (0.73)	2.88 (0.15)
Wife's Age Squared	-0.35* (1.93)	-0.79** (2.39)	-0.36 (1.19)	-0.13 (0.46)
Wife's Non-earned Income ($1,000/yr)[i]	-1.89 (1.55)	-5.05** (5.52)	-8.93** (6.47)	-2.14* (1.86)
Ethnic/racial Majority[a,j]	-75.31** (2.08)	-72.46 (0.94)	-444.15** (12.13)	-3.44 (0.04)
European[a,d]	--	--	--	102.18 (1.17)
Asian[a,d]	--	--	--	148.17 (1.27)
Urban[a]	-81.90 (1.28)	48.86 (1.14)	-83.91 (1.62)	--
Ln(Wage)	497.36* (1.87)	100.59 (0.39)	672.71** (2.57)	604.39 (1.53)
Mill's Ratio[k]	56.68 (0.48)	-150.63 (1.34)	-245.87** (2.12)	24.13 (0.25)
Sample Size	2963	3212	1198	1774
R^2	0.06	0.06	0.18	0.19
Uncompensated Wage Elasticity[l] (Standard error)	0.32 (.14)	0.06 (.08)	0.43 (.19)	0.39 (.25)
Compensated Wage Elasticity[f] (Standard error)	0.34 (.35)	0.10 (.25)	0.50 (.58)	0.41 (.39)

Income Elasticity[f]	-0.03	-0.08	-0.15	-0.04
(Standard error)	(.33)	(.24)	(.53)	(.30)

Table 2, continued

Note: The samples consist of married women ages 16 to 59 who worked some positive number of hours in the year prior to the survey (or the week prior to the survey for the German sample). All monetary units have been converted to 1986 U.S. dollars. T-statistics are reported for the ß's and standard errors are reported for elasticities. The standard errors have been calculated using Green's method (1990, p. 744-746).

**Estimated coefficient is significantly different from zero at the 5% level.
*Estimated coefficient is significantly different from zero at the 10% level.

[g]Dummy variable equal to one if the individual has the given characteristic and equal to zero otherwise.

[h]Level 4: University degree for the U.S., Canada, Germany, and Australia.
Level 3: Post secondary diploma for Canada, Australia. Technical/General High school for Germany.
Level 2: Some college for the U.S., some post secondary for Canada. Vocational Training for Germany.
Level 1: High school graduate for the U.S., Canada and Australia.
Level 0: Less than high school graduate for U.S., Canada, Australia, and Germany.

[i]Gross family income minus wife's earnings.

[j]Defined as White for the U.S.; Canadian born and immigrants who arrived before 1965 for Canada; German for Germany; and Australian for Australia. The ethnic/racial minority categories include Black, Spanish, other races for the U.S.; recent immigrants for Canada; Turkish, Yugoslav, Greek, Italian, Spanish, and other for Germany; and European, Asia, North/South America, Africa, and Oceana for Australia.

[k]Defined as $[1 + \exp(-ßX)] \ln [1 + \exp(-ßX)] + ßX \exp(-ßX)$ where the ß's come from the logit regression of labor force participation in Appendix A.

[l]The elasticities are evaluated at the same point for all countries: wage = $8.20; income = $26,040 and annual hours = 1560.

Table 3. Weekly Hours Worked by Married Women - OLS Regressions

	U.S. 1986	Canada 1987	Germany 1984	Australia 1985
Constant (T-statistic)	27.08** (4.20)	27.52** (4.17)	39.84** (3.76)	19.87 (1.39)
Educational Level 4[a,b]	0.44 (0.13)	3.40 (0.88)	-1.30 (0.56)	4.29 (1.26)
Educational Level 3[a,b]	--	0.68 (0.25)	-2.16 (0.74)	3.22** (2.24)
Educational Level 2[a,b]	-1.47 (0.57)	-0.18 (0.07)	-0.28 (0.16)	--
Educational Level 1[a,b]	-0.76 (0.42)	0.22 (0.14)	--	1.24 (1.12)
Any Children Ages 6-18[a]	-2.06** (3.14)	-3.40** (4.30)	-7.61** (4.30)	-5.87** (6.67)
Any Children Younger Than 6[a]	-5.17** (3.95)	-5.11** (3.50)	-13.35** (3.57)	-12.25** (5.79)
Wife's Age	0.35 (1.51)	0.51 (1.21)	-0.54 (1.22)	-0.07 (0.20)
Wife's Age Squared	-0.01** (2.01)	-0.01 (1.40)	0.004 (0.63)	-0.001 (0.20)
Wife's Non-earned Income ($100/wk)[c]	-0.19* (1.78)	-0.44** (5.45)	-0.78** (4.29)	-0.26** (2.28)
Ethnic/racial majority[a,d]	-1.66** (2.76)	-1.95 (1.49)	-8.29** (10.63)	0.97 (0.67)
European[a,d]	--	--	--	3.17** (2.02)
Asian[a,d]	--	--	--	3.12 (1.50)
Urban[a]	-0.56 (0.53)	-0.002 (0.003)	-1.65 (1.46)	--
Ln(Wage)	5.16 (1.18)	1.78 (0.40)	12.54** (2.39)	9.01 (1.27)
Mill's Ratio[e]	0.59 (0.30)	-0.98 (0.50)	-2.22 (0.81)	0.12 (0.07)
Sample Size	2963	3212	1198	1774
R^2	0.05	0.05	0.20	0.17
Uncompensated Wage Elasticity[f] (Standard error)	0.16 (.11)	0.05 (.06)	0.68 (.17)	0.32 (.22)
Compensated Wage Elasticity[f] (Standard error)	0.18 (.41)	0.09 (.26)	0.74 (.76)	0.34 (.28)

Income Elasticity[f]	-0.03	-0.07	-0.17	-0.04
(Standard error)	(.37)	(.28)	(.73)	(.13)

Table 3, continued

Note: The sample consists of married women ages 16 to 59 who worked some positive number of hours in the year prior to the survey (or the week prior to the survey for the German sample). All monetary units have been converted to 1986 U.S. dollars. T-statistics are reported for the ß's and standard errors are reported for elasticities. The standard errors have been calculated using Green's method (1990, p. 744-746).

**Estimated coefficient is significantly different from zero at the 5% level.
*Estimated coefficient is significantly different from zero at the 10% level.

[a]Dummy variable equal to one if the individual has the given characteristic and equal to zero otherwise.

[b]Level 4: University degree for the U.S., Canada, Germany, and Australia.
Level 3: Post secondary diploma for Canada, Australia. Technical/General High school for Germany.
Level 2: Some college for the U.S., some post secondary for Canada. Vocational Training for Germany.
Level 1: High school graduate for the U.S., Canada and Australia.
Level 0: Less than high school graduate for U.S., Canada, Australia, and Germany.

[c]Gross family income minus wife's earnings.

[d]Defined as White for the U.S.; Canadian born and immigrants who arrived before 1965 for Canada; German for Germany; and Australian for Australia. The ethnic/racial minority categories include Black, Spanish, other races for the U.S.; recent immigrants for Canada; Turkish, Yugoslav, Greek, Italian, Spanish, and other for Germany; and European, Asia, North/South America, Africa, and Oceana for Australia.

[e]Defined as $[1 + \exp(-ßX)] \ln [1 + \exp(-ßX)] + ßX \exp(-ßX)$ where the ß's come from the logit regression of labor force participation in Appendix A.

[f]The elasticities are evaluated at the same point for all countries: wage = $8.20; income = $26,040 and weekly hours = 32.5.

Table 4. Decomposition of Country Differences in Annual Hours

	Ratio of Annual Hours		
	Canada/U.S.	Germany/U.S.	Australia/U.S.
1. Baseline Predicted Hours Ratio from Country Specific Means and ß's.	0.90	0.94	0.83
2. Predicted Hours Ratio with the U.S. Children Means and Country Specific ß's.	0.90	0.88	0.82
3. Predicted Hours Ratio with the U.S. Mean Wage and Country Specific ß's.	0.90	1.06	0.85
4. Predicted Hours Ratio with the U.S. Mean Income and Country Specific ß's.	0.90	0.89	0.82
5. Predicted Hours Ratio with the Country Specific Means and the U.S. ß's.	1.17	0.97	1.08

Note: The baseline predicted hours ratio (Row 1) is calculated as $X_i ß_i / X_{U.S.} ß_{U.S.}$ where i represents either Canada, Germany or Australia; B_i and $ß_{U.S.}$ are vectors of country specific coefficients from Table 2 and X_i and $X_{U.S.}$ are vectors of country specific means for working wives. Rows 2-4 are calculated by replacing the country specific mean for the indicated variable(s) with the U.S. mean for the variable(s) in the above equation. In Row 5 we replace $ß_i$ with $ß_{U.S.}$. For all calculations Ethnic/Racial Majority = 1 and Urban = 1. Because the measures of education provided in the data are not comparable across countries, in Row 5 we retain the country specific ß's for education.

Table 5. Country Differences in Family Policies

	U.S. 1986	Canada 1987	Germany 1984	Australia 1985
Pregnancy/Maternity Leave	Pregnancy leave is treated the same as short-term disability; until the Family Leave Act of 1993 only Tennessee, Minnesota and Oregon required employers to offer unpaid maternity leave [2]	17 weeks maternity leave (up to 11 weeks of the 17 can be taken during pregnancy; 15 weeks are paid at 60% of salary)[a]; 24 weeks additional unpaid parental leave is also available[b] [2]	14 weeks paid maternity leave at 100% of salary; an additional 6 month fixed allowance for parental leave; conditional allowance for the remaining weeks until the child is one year old[c,d] [1]	Up to 52 weeks unpaid[e].[2]
Paternity Leave	Until the Family Leave Act of 1993 only Minnesota and Oregon required employers to offer unpaid parental leave [2]	24 weeks unpaid parental leave[b,f] [2]	6 month fixed allowance for parental leave; conditional allowance for the remaining weeks until the child is one year old[c,d][1]	none[e] [2]
Leave to Care for a Sick Child	none [2]	none[e] [2]	5 days/year paid [2]	included under parental leave
Tax Benefits for Children	Deduction for dependents; reduces taxable income by $1080 per child in 1986 [7]	Refundable Child Tax Credit; in 1989 the maximum credit is $565 (Canadian) per child for families with net income below $24,355; the benefit is reduced by 5% of net income for families with higher income [4]	none[g] [3]	none [2]
Family Allowances	none [6]	An average of $31.95 (Canadian) a month per child [6]	DM50 per month for the 1st child plus DM70-100 a month for the 2nd child plus DM140-200 a month for the 3rd child [6]	$22.80 (Australian) a month for 1st child plus $32.55 for 2nd child plus $39.00 each for 3rd and 4th plus $45.55 for 5th and subsequent children [6]
Child Care Subsidies	Tax credit for child care expenses; maximum of $720 for one child and $1440 for two children or more [2]	Tax deduction for child care expenses for families with children 14 years of age and under; a maximum of $2,000 (Canadian) per child and a maximum of $8,000 per family [2]	none [3]	Capital and operational subsidies paid to child care centers/family day care givers[h] [5]

Sources: [1] International Labour Office, 1984; [2] International Labor and Working Conditions, 1988; [3] Schiersmann, 1991; [4] Canadian Statistical Yearbook, 1991; [5] Cochran, 1993; [6] U.S. Department of Health and Human Services, 1987; [7] Whittington, Alm and Peters, 1990.

Note: Most countries also have means tested family benefits. In this table we exclude these policies.

[a]Citizens of British Columbia and Quebec and Federal public employees have somewhat more generous benefits.

[b]Parental leave is in addition to the 17 weeks of maternity leave; any leave that the mother takes reduces the weeks available for paternity leave and vice versa. Public sector employees are allowed up to 5 years parental leave.

[c]Any leave that the mother takes (excluding the 14 weeks maternity leave) reduces the weeks available for paternity leave and vice versa. Public sector employees are allowed up to nine years unpaid leave or a 50% reduction in working time for up to 10 years.

[d]The allowance is DM750 for the first 6 months and thereafter is related to income.

[e]Some (or more generous) benefits available for public sector employees.

[f]The laws of Manitoba, Quebec and Saskatchewan make some specific additional provisions for paternity leave.

[g]A tax exemption was reintroduced in 1986. In addition, the 1950 Child Building Allowance law provides income tax reductions for families with children when building or renovating property.

[h]Subsidies to Center-Based Day Care range from $12.50-$18.70 (Australian) per week per child. Family day care givers may be eligible for up to $14.50 per week as operational costs.

Appendix A: Employment Decisions of Married Women - Logit Regressions

	U.S. 1986	Canada 1987	Germany 1984	Australia 1985
Constant (Standard error)	0.44 (1.98)	-0.30 (1.84)	0.53 (2.55)	2.24 (2.43)
Educational Level 4[a,b]	2.33 (2.01)	-0.46 (2.61)	1.21 (4.78)	-3.78 (3.98)
Educational Level 3[a,b]	--	0.96 (1.75)	2.85 (2.9)	1.76 (1.68)
Educational Level 2[a,b]	3.28** (1.62)	-1.64 (1.91)	0.93 (1.85)	--
Educational Level 1[a,b]	4.28** (1.30)	-0.87 (1.12)	--	2.10 (2.10)
Educational Level 4 x Wife's Age	-0.019 (0.10)	0.12 (0.13)	-0.08 (0.24)	0.26 (2.00)
Educational Level 3 x Wife's Age	--	0.06 (0.09)	-0.14 (0.15)	-0.05 (0.09)
Educational Level 2 x Wife's Age	-0.06 (0.08)	0.15 (0.10)	0.01 (0.10)	--
Educational Level 1 x Wife's Age	-0.14** (0.07)	0.10* (0.06)	--	-0.10 (0.11)
Educational Level 4 x Wife's Age Squared	0.0003 (0.001)	-0.002 (0.002)	0.0011 (0.003)	-0.003 (0.002)
Educational Level 3 x Wife's Age Squared	--	-0.001 (0.001)	0.002 (0.002)	0.0009 (0.001)
Educational Level 2 x Wife's Age Squared	0.0004 (0.001)	-0.002 (0.0013)	-0.0005 (0.001)	--
Eucational Level 1 x Wife's Age Squared	0.002* (0.0008)	-0.001* (.0007)	--	0.0014 (0.001)
Wife's Age	-0.01 (0.15)	0.08 (0.15)	0.002 (0.20)	-0.09 (0.20)
Wife's Age Squared	0.003 (0.004)	-0.0004 (0.004)	.002 (0.005)	0.004 (0.005)
Wife's Age Cubed	-0.00004 (0.00003)	-0.00002 (0.00003)	-0.00004 (0.00004)	-0.00007 (0.00004)
Wife's Non-earned Income[c]	-0.02** (0.002)	-0.01** (0.002)	-0.01** (.004)	0.01* (0.003)
Any Children Ages 6-18[a]	-0.41** (0.10)	-0.76** (0.10)	-0.88** (0.11)	-0.62** (0.12)
Any Children Less Than 6[a]	-1.24** (0.11)	-1.65** (0.12)	-1.90** (0.14)	-2.16** (0.14)
Ethnic/Racial Majority[a,d]	-0.12 (0.09)	0.15 (0.14)	-0.11 (0.10)	-0.21 (0.23)
European[a,d]	--	--	--	-0.31 (0.25)

Asian[a,d]	--	--	--	-0.46** (0.24)
Urban[a]	-0.05 (0.08)	0.26** (0.07)	0.20 (0.14)	--

Appendix A, continued

Note: The sample consists of married women ages 16 to 59. All monetary units have been converted to 1986 U.S. dollars.

**Estimated coefficient is significantly different from zero at the 5% level.
*Estimated coefficient is significantly different from zero at the 10% level.

[a]Dummy variable equal to one if the individual has the given characteristic and equal to zero otherwise.

[b]Level 4: University degree for the U.S., Canada, Germany and Australia.
Level 3: Post secondary diploma for Canada, Australia. Technical/General High school for Germany.
Level 2: Some college for the U.S., some post secondary for Canada. Vocational Training for Germany.
Level 1: High school graduate for the U.S., Canada and Australia.
Level 0: Less than high school graduate for the U.S., Canada, Australia and Germany.

[c]Gross family income minus wife's earnings.

[d]Defined as White for the U.S.; Canadian born and immigrants who arrived before 1965 for Canada; German for Germany; and Australian for Australia. The ethnic/racial minority categories include Black, Spanish, other races for the U.S.; recent immigrants for Canada; Turkish, Yugoslav, Greek, Italian, Spanish, and other for Germany; and European, Asia, North/South America, Africa, and Oceana for Australia.

Appendix B: Wife's Log Wage Regression

	U.S. 1986	Canada 1987	Germany 1984	Australia 1985
Constant (T-statistic)	-0.88 (1.09)	-0.92 (1.30)	1.53 (1.61)	-0.16 (0.21)
Educational Level 4[a,b]	-0.28 (0.40)	-0.66 (0.88)	-0.3 (0.18)	0.86 (0.98)
Educational Level 3[a,b]	--	0.10 (0.18)	-2.16** (2.48)	0.58 (1.18)
Educational Level 2[a,b]	-0.14 (0.22)	1.08 (1.57)	-0.48 (0.80)	--
Educational Level 1[a,b]	0.66 (1.12)	0.18 (0.39)	--	0.26 (0.39)
Educational Level 4 x Wife's Age	0.05 (1.41)	0.07* (1.79)	-0.01 (0.76)	-0.03 (0.65)
Educational Level 3 x Wife's Age	--	0.02 (0.69)	0.13** (2.85)	-0.03 (1.15)
Educational Level 2 x Wife's Age	0.03 (1.01)	-0.05 (1.32)	-0.03 (0.92)	--
Educational Level 1 x Wife's Age	-0.02 (0.67)	-0.00003 (0.00)	--	-0.012 (0.32)
Educational Level 4 x Wife's Age Squared	-0.0005 (1.14)	0.0009* (1.82)	0.0004 (0.40)	0.0004 (0.70)
Educational Level 3 x Wife's Age Squared	--	-0.0003 (0.80)	-0.001** (2.58)	0.0003 (0.91)
Educational Level 2 x Wife's Age Squared	-0.0005* (1.19)	0.0007 (1.43)	-0.0004 (0.93)	--
Educational Level 1 x Wife's Age Squared	0.0002 (0.65)	0.00001 (0.03)	--	0.0001 (0.21)
Wife's Age	0.16** (2.76)	0.16** (2.84)	0.002 (0.02)	0.17** (2.66)
Wife's Age Squared	-0.004** (2.85)	-0.004** (2.76)	-0.0001 (0.05)	-0.004** (2.35)
Wife's Age Cubed	0.00003** (2.73)	0.00003** (2.50)	.0000003 (0.02)	0.00004** (2.67)
Ethnic/Racial Majority[a,c]	0.03 (1.00)	0.22** (4.40)	0.005 (0.15)	0.01 (0.12)
European[a,c]	--	--	--	-0.006 (0.08)
Asian[a,c]	--	--	--	-0.12 (1.40)
Urban[a]	0.21** (8.40)	0.10** (3.33)	0.03 (0.50)	--

Mill's Ratio[d]	-0.07* (1.67)	-0.05 (1.04)	0.015 (0.44)	0.01 (0.29)
Sample Size	2963	3212	1198	1774
R^2	0.13	0.10	0.09	0.04

Appendix B, continued

Note: The sample consists of married women ages 16 to 59 who worked some positive number of hours in the year prior to the survey (or the week prior to the survey for the German sample). All monetary units have been converted to 1986 U.S. dollars. The standard errors have been calculated using Green's method (1990, p. 744-746).

**Estimated coefficient is significantly different from zero at the 5% level.
*Estimated coefficient is significantly different from zero at the 10% level.

[a]Dummy variable equal to one if the individual has the given characteristic and equal to zero otherwise.

[b]Level 4: University degree for the U.S., Canada, Germany and Australia.
Level 3: Post secondary diploma for Canada, Australia. Technical/General High school for Germany.
Level 2: Some college for the U.S., some post secondary for Canada. Vocational Training for Germany.
Level 1: High school graduate for the U.S., Canada and Australia.
Level 0: Less than high school graduate for the U.S., Canada, Australia and Germany.

[c]Defined as White for the U.S.; Canadian born and immigrants who arrived before 1965 for Canada; German for Germany; and Australian for Australia. The ethnic/racial minority categories include Black, Spanish, other races for the U.S.; recent immigrants for Canada; Turkish, Yugoslav, Greek, Italian, Spanish, and other for Germany; and European, Asia, North/South America, Africa, and Oceana for Australia.

[d]Defined as $[1 + \exp(-\beta X)] \ln [1 + \exp(-\beta X)] + \beta X \exp(-\beta X)$ where the ß's come from the logit regression of labor force participation in Appendix A.

REFERENCES

Averett, Susan L.; Peters, H. Elizabeth and Waldman, Donald M., "Tax Credits, Labor Supply, and Child Care," NORC Working Paper no. 92-9, University of Chicago, November 1992.

Blau, Francine D. and Kahn, Lawrence M, "The Gender Earnings Gap: Some International Evidence," presented at the NBER Comparative Labor Markets Project Conference, Cambridge, MA., July 1992.

Canadian Statistical Yearbook, Statistics Canada, Ottawa, Ontario, 1991.

Cochran, Moncrieff, International Handbook of Child Care Policies and Programs, Ithaca, NY: Cornell University Press, 1993.

Franz, Wolfgang, "An Economic Analysis of Female Work Participation, Education and Fertility: Theory and Empirical Evidence for the Federal Republic of Germany," Journal of Labor Economics 3, no.1, pt.2, January 1985.

Green, William H., Econometric Analysis, New York: MacMillan Publishing Company, NY, 1990.

Gregory, R. G.; McMahon, P. and Whittingham, B., "Women in the Australian Labor Force: Trends, Causes and Consequences," Journal of Labor Economics 3, no.1, pt.2, January 1985

Heckman, James J., "Sample Selection Bias as a Specification Error with an Application to the Estimation of Labor Supply Functions" in Female Labor Supply, James P. Smith (ed.), Princeton, NJ: Princeton University Press, 1980.

Hoem, Jan M., "Social Policy and Recent Fertility Change in Sweden," Population and Development Review 16, no. 4, December 1990.

International Labour Office, "Protection of Working Mothers, an ILO Global Survey 1966-1984," Women at Work, no. 2, Geneva, 1984.

International Labor Office, Conditions of Work Digest 7, no. 2, Geneva, 1988.

Kamerman, Sheila B. and Kahn, Alfred J., "Social Policy and Children in the United States and Europe," in The Vulnerable, John L. Palmer, Timothy Smeeding and Barbara Torrey (eds.), Washington DC: Urban Institute, 1988.

Killingsworth, Mark R. and Heckman, James J., "Female Labor Supply: A Survey," in Handbook of Labor Economics, O. Ashenfelter and R. Layard (eds.), Elsevier Science Publishers BV, 1986.

Killingsworth, Mark R., Labor Supply, Cambridge: Cambridge University Press, 1983.

Luxembourg Income Study, User Guide, T. Smeeding, Project Director, Walferdange, Luxembourg, 1991.

Mincer, Jacob (1985). "Intercountry Comparisons of Labor Force Trends and of Related Developments: An Overview," Journal of Labor Economics 3, no.1, pt.2, January 1985.

Mroz, Thomas A., "The Sensitivity of an Empirical Model of Married Women's Hours of Work to Economic and Statistical Assumptions," Econometrica 55, no.4, 1987: 765-799.

Schiersmann, Christiane, "Germany: Recognizing the Value of Child Rearing," in Child Care, Parental Leave, and the Under Three's., Sheila B. Kamerman and Alfred J. Kahn (eds.), New York: Auburn House, 1991.

Schopp-Schilling, Hanna Beate, "Federal Republic of Germany," in Women Workers in Fifteen Countries, Jennie Farley (ed.), Ithaca, NY: ILR Press, New York State School of Industrial and Labor Relations, Cornell University, 1982.

Whittington, Leslie, Alm, James and Peters, H.Elizabeth, "Fertility and Personal Exemption: Implicit Pronatalist Policy in the United States", in The American Economic Review, Vol.80 No 3, June 1990.

Wolff Klaus, "An International Comparison of Married Women's Labour Force Participation: A Cross-Country Analysis for Employees in Seven Countries," Luxembourg Income Study Working Paper, Walferdange, Luxembourg, 1990.

U.S. Department of Health and Human Services, Social Security Programs Throughout the World, Research Report no. 61, 1987, Social Security Administration (SSA) Publication No. 13-11805, Washington, D.C., Nov. 1988.