"Women's Work, Family Income and Public Policy"

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Abstract:

Dual earner families are more prevalent in some countries than in others. Even when bothspouses—or partners—work, the degree to which women contribute to the family income varies from country to country. This paper poses three questions. How does a woman's economic status in a typical "middle class" married or cohabiting couple vary from country to country? What labor market institutions affect women's economic status in the family? Lastly, do women's attitudes in OECD countries reflect the cross-national patterns of women's economic status? The analysis is conducted for 16 OECD countries using data from the Luxembourg Income Study.

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I. INTRODUCTION

Scholars have noted the role of the welfare state in reducing women's economic dependency on their husbands (Bianchi and Petola 1996; Bianchi, Casper and Petola 1999; Hobson 1990; Sorensen and McLanahan 1987). Typically, they conceptualize the wife's dependency in terms of the gap between the husband's and wife's earnings as a percentage of household income. They find that the mother-friendly welfare states found in Scandinavian countries improve wives' economic position within the family. This is not surprising given how much social democratic welfare states do to enable women to balance work and family (Gornick, Meyers and Ross 1997; Gornick and Meyer 2003; Huber and Stephens 2000, 2001). These welfare states offer generous paid care leaves as well as public childcare services to strengthen women's labor market attachment. As a result, so this argument goes, wives in these welfare states gain relative economic parity with their male partners.

Suzanne Bianchi et al. (1996; 1999) have applied Gøsta Esping-Andersen's three typologies of welfare states—social democratic, liberal, and conservative—to explain the mean economic dependency levels of wives in different advanced industrial societies (Esping-Andersen 1990).¹ In applying Esping-Andersen's taxonomies to explain wives' dependency on their husbands, Bianchi et al. (1996; 1999) expect wives in social democratic welfare states to be most independent. Generous paid leaves—both maternity and parental—and publicly provided childcare actively enhance mothers' labor market attachment and hence women's relative economic position in the family. The tax systems in social democratic countries promote wives' employment as taxes are individual-based rather than household-based. Conservative welfare

¹ It is worth noting that Bianchi et al. (1996; 1999) applied Esping-Andersen's three welfare state taxonomies to explain their effects on female employment before Esping-Andersen himself did the same in his later book (Esping-Andersen 1999).

states are just the opposite. Their policies are geared towards discouraging wives to work. Liberal welfare states—small welfare states in English-speaking countries—are, in contrast, gender-neutral. Their policies neither promote nor discourage female employment. For these reasons, Bianchi et al. (1996; 1999) expect wives in social democratic welfare states to be most independent followed by wives in liberal welfare states. Wives in conservative welfare states in continental European countries are expected to be the least independent.

While Bianchi et al. (1996; 1999) find support in favor of Esping-Andersen's taxonomies, their reasoning about the gender effects of Esping-Andersen's three taxonomies differs from the argument he himself developed in his later work. (Esping-Andersen 1999).² For Esping-Andersen, as far as gender issues are concerned, the key difference between the three taxonomies consists of the degree of "defamilalization." Esping-Andersen argues that both liberal and social democratic welfare states "defamilialize" women's unpaid care work. Social democratic welfare states socialize women's otherwise unpaid care work by providing public childcare. Liberal welfare states provide care services via the market. Thus even though public support is lacking in liberal welfare states, mothers in these countries find childcare services in the market. These services allow them to balance family and work by private means (Esping-Andersen 1999). In contrast, conservative welfare states (in Continental European countries) do little to alleviate women's family burdens. Put briefly, Esping-Andersen predicts cross-national variations in female employment rates on the basis of his three taxonomies. Female employment rates are likely to be high in social democratic countries and liberal countries, but low in conservative welfare states. These effects can be extended to predict wives' dependency ratios.

² For feminist critique of Esping-Andersen's three worlds of welfare capitalism, see Orloff (1993) and Daly and Rake (2003).

Some important questions, however, remain. Figure 1 illustrates patterns of crossnational variations in the shares of two different types of families.³ The bars on the left indicate the percentages of households headed by a male breadwinner in the overall sample of married and cohabiting couples in each country. The bars on the right indicate the percentages of what we call "wife-dominant households," in which half or more of the household income comes from the wife's earnings. Scandinavian countries—Denmark, Finland, Norway, and Sweden—appear to be the most gender egalitarian countries. Comparatively speaking, the percentage of male breadwinner families is low, while the percentage of wife-dominant households is high. Furthermore, the Scandinavian countries as a group stand out for the homogeneity in terms of the patterns of distribution of the two types of households. In contrast, the other two groups are much more heterogeneous. These two types of households—i.e. "wife-dominant households" and "male-breadwinner households"--are distributed unevenly in liberal (English-speaking countries) and conservative welfare states (Austria, Belgium, France, Germany, Italy, the Netherlands, and Spain). Esping-Andersen's three taxonomies offer little help in accounting for such intra-group variations.

[Figure 1 around here]

First, let us begin by observing intra-group variations within the liberal welfare states. The percentage of wife dominant households is much higher in Australia, Canada and the US than in Ireland and the UK, for instance. Male breadwinner households are more prevalent in Australia and Ireland than in other liberal countries. Esping-Andersen's taxonomy does not account for this kind of intra-group variations.

³ We have also compared the countries in our sample by selecting families with small children (below 3). The results look very similar.

Second, let us now turn to the group of conservative welfare states. Belgium and France, which Esping-Andersen considers to be conservative welfare states, perform a lot better than other conservative countries when it comes to wives' economic contribution. In terms of the size of male breadwinner households, these two countries look more like the US and Canada. They also out-perform other conservative welfare states in the size of wife-dominant households. As Janet Gornick and others (1997) demonstrated in their critique of Esping-Andersen, both Belgium and France provide mother-friendly policies despite not being social democratic welfare states.⁴

Furthermore, Figure 1 also raises questions concerning variations across welfare state types. For instance, a sub-group of liberal welfare states (Australia, Canada, and the United States) compare very favorably to social democratic welfare states when it comes to the shares of women-dominant households. Where they lag behind the social democratic countries is in the percentage of male breadwinner households. The share of male breadwinner households is more than 10% greater in liberal countries than in social democratic ones. In sum, Esping-Andersen's three taxonomies *per se* do not account for the variations observed here.

As Gornick's findings indicate, specific welfare state characteristics matter more than welfare state typologies in influencing women's and mothers' employment (Gornick, Meyers and Ross 1997; Gornick 1999). Characteristics such as publicly provided childcare, generous paid maternity and parental leaves promote women's employment regardless of whether a country is a social democratic welfare state or not. Generous paid benefits for maternity and

⁴ While scholars such as Gornick, Meyers and Ross (1997), Gornick and Meyers (2003) and Morgan (2006) have shown that mother-friendly policies are not necessarily exclusive features of social democratic welfare states, Esping-Andersen (1999), however, stands by his original three typologies to predict cross-national patterns of female employment.

parental leaves reward mothers' paid work. When these benefits are earnings-related and conditional on being employed, they increase the work incentives of otherwise family-oriented women. They also make it easier for mothers to hold onto their jobs. Nonetheless, none of these welfare state dimensions—alone or together—can explain all of the aforementioned cross-national variations. Esping-Andersen's argument about "defamilialization" is certainly useful in thinking about women's labor market attachment. Yet, the wife's economic position in the family is a function not only of her labor market status but also of what she thinks she can earn in the market, and how much time she can actually devote to paid work. As many scholars preoccupied with gender inequality have revealed, overall wage dispersion, tax policy, and labor market characteristics also shape women's position relative to men both in the market and within the family.

II. GENDER GAPS IN EARNIGNS AND EMPLOYMENT: EXPLAINING WOMEN'S ECONOMIC POSITIONS

Three issues matter in thinking about wives' economic position vis-à-vis their husbands: (i) wives' labor market attachment; (ii) the degree of gender earnings gap; and (iii) wives' hours of paid work. An extensive literature exists on each of these issues.

(i) Wives' labor market attachment:

Scholars have found that education increases women's labor market attachment in most countries. Controlling for marital status and the presence of children, the higher the education of the woman is, the greater the likelihood that she works. In addition to the presence of children, married women's labor supply is also a function of their husbands' earnings. Blau and Kahn (2007) report that, at least in the US, married women's labor supply have become less responsive to husbands' earnings.

Most comparative studies on this question have focused on the role of mother-friendly policies. The general finding is that generous public child care and family leave provisions enhance women's labor market attachment (Gornick, Meyers and Ross 1997; Gornick and Meyers 2001). Gornick, Meyers and Ross (1997) have shown that these policies reduce the child penalty. Yet these policies often do not explain why women's labor force attachment is relatively strong in English speaking countries, which do not provide mother-friendly policies. Pettit and Hook (2002) explain the cross-national variations in female labor force participation rates partly in terms of service sector size. This is certainly relevant in English speaking countries.⁵

Hicks and Kenworthy (2003) take a different approach. Rather than focusing on motherfriendly policies per se, they consider a broader range of social policy characteristics. They construct two programmatic dimensions—"progressive liberalism" and "traditional conservatism"—to evaluate the welfare state effects on female employment among other things. This two-dimensional approach does a better job of explaining the relatively high female labor

⁵ O'Connor, Orloff and Shaver (1999) take a different approach to suggest that anti-discrimination law might be promoting female employment in liberal countries although they do not provide evidence empirically.

force participation rates in English-speaking countries.⁶ One interesting finding is that the political dominance of Christian Democrats has the strongest effect in reducing female employment, while the traditional conservative dimension remains relatively insignificant. This finding confirms the findings in political science research that attributes female labor force participation rates to the partisan composition of the government (Huber and Stephens 2000, 2001).

Scholars have also noted the importance of factors other than social policies. Some have emphasized the importance of norms and beliefs in shaping women's decision to work (Alesina and Giuliano 2007; Inglehart and Norris 2003; Fuwa 2004). Others have focused on how tax policy might impact married women's labor force participation—particularly married women. (Gustafsson 1988; Rubery et al. 1998). Tax policy is more labor market neutral when it treats husbands and wives as individuals (e.g. individual taxation) rather than as primary and secondary earners within the same taxable unit (e.g. joint taxation). Nonetheless, studies that look at the effect of marginal tax rate or the presence of joint-income taxation on married women's decision to work or not work—or on how many hours to work—have not produced any conclusive results (Phipps and Burton 1995; Plantenga and Hansen 1999).

(ii) Gender Gap in Earnings

The literature on the gender gap in earnings represents the most extensive study of gender inequality. This vast literature can be categorized into two groups: one, single-country microlevel studies; and two, comparative studies. Most studies of the gender earnings gap belong to the first group. Scholars have investigated the causes of gender gap in earnings to test the

⁶ To summarize crudely, one dimension captures governmental commitment to full employment and universality in benefit eligibility, and the other dimension captures features common in male-breadwinner welfare states.

validity of human capital theory. The scholarly consensus here is that even controlling for individual attributes of skills—such as education, the number of years in the labor market and enterprise tenure—men still earn more than women do. Demographic factors such as marital status and number of children have highly gendered effects—reducing women's earnings while boosting men's earnings (Harkness and Waldfogel 2003; citations). Yet even controlling for all possible individual characteristics, residuals remain. These findings, in turn, have led scholars to explore mechanisms of discrimination such as occupational segregation by sex—across occupations and within occupations—and the so-called motherhood penalty (citations). The universal persistence of gender inequality notwithstanding, the question that naturally arises is how female disadvantages might vary in nature and in scope across different countries.

A first wave of comparative studies of gender gap in earnings includes contributions by Donald Treiman and Patricia Roos (1983), Rachel Rosenfeld and Arne Kalleberg (1990) and Francine Blau and Lawrence Kahn (1991). While Treiman and Roos (1983) conclude that women face disadvantages in all industrial economies, Rosenfeld and Kalleberg (1990) demonstrate that women in some types of labor markets fare better than women elsewhere. More specifically, Rosenfeld and Kalleberg (1990) distinguish two types of labor markets: corporatist and dualist. In corporatist labor markets, unions play a much bigger role in the latter compressing wages and eliminating first-tier and second-tier jobs. In dualist countries, the weakness of unions means that employers can create two-tiered labor markets. They find that the gender wage gap is much smaller in corporatist labor markets than in dualist ones despite higher levels of occupational segregation by sex. Blau and Kahn (1991) extend Rosenfeld and

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Kalleberg's study further by including a larger number of countries in their analysis.⁷ They directly focus on the degree of wage compression to show its effects on the gender wage gap. In short, they find that the more compressed the wage structure, the narrower the gender gap in earnings.

Recent comparative studies have focused more on the specific roles that women-friendly policies play in reducing gender gaps in earnings as well as employment rates. Although scholars generally find that the gender gap in earnings and employment rates are lower in countries that provide mother-friendly policies, some studies have found negative effects of long-term maternity and parental leaves (Mandal and Semyonov 2006; Datta Gupta, Smith and Verner 2008; Pettit and Hook 2002: as for why there should be negative effects, see Moss and Deven eds. 1999 Estevez-Abe 2005, 2006).

(iii) Intensity of Women's Work

Intensity of women' work—the number of hours worked—varies greatly from country to country (Gornick 1999; Jacobs and Gornick 2001; O'Reilly ed. 2003; Fagan and Rubery 1996; Rubery, Smith and Fagan 1999; Moen ed. 2003; Blossfeld and Hakim eds. 1997). Perhaps this aspect of women's work is more directly related to women's roles as wives and mothers. Given the gendered division of labor at home, wives and mothers typically have to adjust their working hours to suit the needs of the family. In most countries, married women and mothers are the ones who work part-time. While some scholars focus on women's choices (Rosenfeld and Birkelund 1995), we also need to know what makes the working hours of married men and

⁷ Rosenfeld and Kalleberg's study only consisted of four countries—Canada and the US as dualist labor markets and Norway and Sweden as corporatist cases. Rosenfeld and Kahn (1992) include all countries available in ISSP dataset.

women—and fathers and mothers—similar . Jacobs and Gornick (2001) find that when childcare is provided publicly, the working hours of dual earner couples become more egalitarian. Scholars have also considered other time constraints such as overall work hours and time spent in commuting (Hofmeister 2003; and other citations).

III. WOMEN, MARRIAGE AND INEQUALITY AT THE HOUSEHOLD LEVEL

We now have a lot of information on independent pieces of the puzzle—employment rates, earnings, work intensity. But how do the individual level and the institutional level affect women's position in the family? On the basis of the literature reviewed so far, we might expect that a small gender wage gap coupled with policies that promote mothers' employment will best boost wives' economic standing vis-à-vis their husbands. What should we expect if the gender wage gap is narrower, but there are no policies that promote mothers' employment? What happens when the gender wage gap is wider, but more women work? How do different groups of women fare? And what are the possible implications for overall inequality at the household level?⁸

If the assumption of homogamy holds, lower educated women are likely to marry men with lower education. Such women, if anything, would face greater economic necessities to find paid work. Yet, the literature suggests that the likelihood of work increases as a woman increases her education. In their case studies of the Netherlands, Sweden and the US, Marie Evertsson et al find that low educated women married to low educated men are less likely to

⁸ These are the questions that also motivate Korpi (2000). He focuses on how different welfare states reduce gender and class inequalities. This paper focuses on how certain labor market characteristics generate gender inequalities that also affect household types and inequalities across household types.

work. This means that homogamy can potentially exacerbate inequality at the household level. Scholars who study Southern European countries also report such possibilities (Del Boca and Pasqua 2003; Pasqua 2008). These scholars report a highly biased composition of women who work in these countries. In other words, in countries like Italy and Spain, working women on average have better human capital than the average working man (Olivetti and Petrongolo 2007). Again, if the assumption of homogamy holds, families with educated dual earners in these countries will be much better off than families with lower educated couples (Del Boca and Pasqua 2003; Pasqua 2008).

Indeed, Esping-Andersen (2007) argues that homogamy means that unless lower educated women also enter the labor market as much as higher educated women, the inequality at the household level will increase.⁹ Aside from mother-friendly public policies, the issue of job opportunities for low skilled women thus emerges as an urgent issue both for household level equality as well as gender equality. This is why some consideration of labor market types is so important.

Here Esping-Andersen (1999) offers great insights. As discussed earlier, Esping-Andersen tried to "gender" his own three taxonomies in his later work. His portrayal of postindustrial trajectories is very helpful for unpacking gendered labor market dynamics in different political economies. Let us first reproduce his argument and then distill its specific implications away from his taxonomies.

⁹ The finding by Anders Björklund (2001) supports Esping-Andersen's view. Björklund (2001) finds that the rise in female labor force participation rates in Sweden had an equalizing effect at the household level because female wages are more compressed than male wages. Also see Del Boca and Pascua (2003) and Pascua (2008).

Esping-Andersen sees a significant variation across his three worlds of welfare capitalism in terms of the growth of service sector jobs.¹⁰ Service sector growth is critical, because it offers lots of job opportunities for women generally—and for lower educated women in particular. Wage levels in service sector jobs therefore greatly affect women's earnings. Labor markets that allow for low wage jobs are more conducive to developing service sector jobs—particularly the low wage jobs Esping-Andersen calls "Macjobs." In Esping-Andersen's taxonomy, liberal welfare states correspond to this type of labor market. Given the small scale of their welfare states, taxes and social security contributions are low, hence these states reduce the burden on the labor cost. Moreover, the degree of wage dispersion matters. Low wage service sector jobs in retail, fast-food restaurants and personal services are more likely to flourish when governments and unions do not raise the wage floor too high. This is why even when the welfare state does not provide care services, the market can fill in the gap. The implicit assumption here is that, in such "unregulated" labor markets, there is enough supply of low wage labor to be purchased by working mothers for outsourcing.

In contrast, in larger welfare states—whether it is social democratic or conservative high taxes and social security contributions exert an upward pressure on labor costs. Businesses that rely on the supply of cheap labor will have little chance to succeed in these large welfare states. Furthermore, in these countries, unions negotiate for higher wages while compressing the overall wage structure. The more compressed the wage structure, the more expensive low-skill wages become. In addition, in most large welfare states, the government, if not the social partners, regulates labor market behavior to a much greater degree than in liberal countries. Labor market regulation increases labor costs. In this sense, as far the development of low-skill

¹⁰ This variation is the basis of his argument about "defamilization."

service sector jobs is concerned, large welfare states and regulated labor markets—conservative and social democratic welfare states in Esping-Andersen's framework—are in a difficult bind. One way to offset this problem is for the government to create low-skill service sector jobs within the public sector. As public sector jobs, these low-skill jobs are highly unionized jobs and do not become like "Macjobs." For all the reasons already discussed, the availability of good jobs for lower education women will boost both wives' economic contribution to the household and the family's economic standing. This is, as Esping-Andersen and others see it, what social democratic welfare states have done: They have offset the negative effect of high wage regulated labor market by creating jobs in the public sector.¹¹ He even says that social democratic countries such as Denmark and Sweden outdo the US in the share of unskilled jobs in the economy (Esping-Andersen 1999: 106). Conservative large welfare states, on the other hand, end up with under-developed service sectors as they did not create public sector service jobs.¹² (It is worth noting that many countries in this category have deregulated labor markets or found ways to reduce social security costs on some types of jobs.)

Countries classified into Esping-Andersen's three worlds of welfare capitalism are not necessarily similar on the afore-mentioned specific institutional dimensions. Some liberal welfare states—e.g. Australia—have more compressed wage structures than others, and public sector size varies among non-social democratic countries. It is thus more fruitful to explore the

¹¹ Other scholars have pointed out how social democratic welfare states have become major employers of women (Klausen 1999; Rein 1984; Huber and Stephens 2000; 2001; Hicks and Kenworthy (2003).

¹² Hicks and Kenworthy (2003) who developed a composite index of welfare state characteristics find that the dimension that capture the characteristics common in Continental European countries correlates significantly and negatively with job growth.

effects of specific institutional dimensions than to seek to attribute all cross-national variations to pre-existing taxonomies.¹³

In short, we can distill the following expectations for institution-specific gendered effects:

(i) High levels of unionization rates in public sector jobs push up the wage floor in all countries. Lower educated female workers are likely to be the main beneficiaries. A large public sector thus should thus benefit women. In particular, when governments publicly provide childcare, it increases both the supply of mothers' labor and demand for lower educated women's labor.

Large public sector improves lower educated women's earnings, employment, and hence their positions within the household.

Large public sector, as a result, makes it less likely for working-age households to fall into the category of low income household.

(ii) Unregulated labor markets with small welfare states create demand for low wage jobs hence creating more demand for unskilled female labor. Availability of cheap unskilled jobs in unregulated markets with small welfare states also enhances the supply of skilled women's labor. In other words, female labor force participation rates increase at both ends of the educational spectrum. By the same token, regulated labor markets suppress the demand for female labor. The negative effects are expected to be stronger for lower education women.

Strong labor market regulation is expected to correlate with a greater level of wives' dependence on their husbands, particularly for lower educated women. The percentage of male breadwinner families is likely to be higher in regulated labor markets.

(iii) Wage compression narrows gender gap in earnings but in the absence of a large public sector will reduce the number of jobs available to lower educated women.

¹³ Alexander Hicks and Lane Kenworthy (2003) make a similar point in their article that go beyond Esping-Andersen's taxonomies and, instead, focus on specific welfare state dimensions.

Wage compression is expected to increase the levels of wives' contribution to the household income on the average. In the absence of a large public sector, it will make lower educated women more dependent on their husbands both in regulated and unregulated labor markets. Wage dispersion, while increasing the likelihood of lower education women to work, it is likely to increase the percentage of dual earner households that fall into the low income category.

IV. DATA AND METHODS

We are primarily interested in investigating the effects of strong labor market regulation, public sector size and wage compression in explaining cross-national variations in: (a) in wives' contribution to household income; (b) women's earnings; and (iii) class distribution of married/cohabiting households by type (dual earner families vs male breadwinner families) . We use the Luxembourg Income Study data from the wave V (around 2000). Although the LIS dataset includes 30 countries, following the standard practice in the study of comparative political economy of advanced industrial societies, this study focuses on a subset of relatively homogenous advanced industrial societies (excluding former-socialist countries). Since we have had to exclude countries for which all of the institutional variables of interest were not available, our sample consists of the following sixteen countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Norway, Netherlands, Spain, Sweden, United Kingdom and United States.

Taking advantage of the micro-level data, we combine different types of analyses. The empirical section consists of three broad sets of analysis on: (i) wives' contribution to household income; (ii) women's earnings and working status; and (iii) class distribution by household types.

1. WIVES' CONTRIBUTION ANALYSIS

We conduct two sets of analysis to investigate factors that affect wives' contributions to household income. The first set of analysis consists of multi-level analysis, which evaluates the effects of individual-level and institutional characteristics. We then supplement this analysis by further exploring differences in the size of country-specific coefficients on individual characteristics. The aim here is to investigate any systematic variations on the country-specific effects.

(i) Multi-level Analysis

Our causal variables of interest are country-level institutional variables. Nonetheless, it is necessary that we control for individual characteristics of wives and their households. The multi-level analysis permits us to simultaneously control for both individual-level and country-level characteristics. Due to the hierarchical structure of our independent variables, we decided to work with linear multi-level modelling in terms of a linear random intercept model. The model can be stated as follows:

$$y_{ik} = \beta_{0k} + \beta_1 x_{1ik} + \dots + \beta_n x_{nik} + r_{ik}$$
(1)

where y_{ik} is the share of household income for wife *i* in country *k*, β_{0k} the country specific random intercept, β_1 to β_n the fixed coefficients for individual characteristics x_1 to x_n like age of wife, education level of wife, and number of children, and r_{ik} the individual error term *r* for wife *i* in country *k*. In contrast to the coefficients of the individual (level-1) characteristics, the intercept in a random intercept model is allowed to vary over the countries. This variation is modelled in the following way:

$$\beta_{0k} = \gamma_{00} + u_{0k} \tag{2}$$

where γ_{00} is the overall country mean of the dependent variable and u_{0k} is a country specific random term. This means that all country intercepts are spread randomly around the overall intercept. In a second step we introduce the country (level-2) characteristics. A country's deviance from the overall mean is no longer solely due to some random effect but also due to some country characteristics—such as public sector size, for instance—that shift the country mean in a certain direction.

$$\beta_{0k} = \gamma_{00} + \gamma_{01} z_{1k} + \dots + \gamma_{0m} z_{mk} + u_{0k}$$
(3)

with γ_{01} to γ_{0m} being the coefficients for country characteristics z_1 to z_m .

This modelling strategy has two advantages in particular. First, multi-level analysis leads to consistent estimation of standard errors for country characteristic coefficients (Snijders and Bosker 1999: 15-16). In a normal OLS regression, these estimates are too small and hence lead to incorrect inference. Second, multi-level models are sometimes referred to as "variance component analysis." This means that these models can be used to identify how much variation in the data refers to which level. Therefore, model fits can be calculated for each level separately and this can help to better understand what drives the correlation the most. Importantly, multi-level models only make sense if there are country differences in the distribution of our dependent variable. Country means of wife's share of household income in our sample vary significantly across advanced industrial societies.¹⁴ All models are estimated using the multi-level commands implemented in Stata 9.

¹⁴ The country means in the sample range from 28 percent in Spain up to more than 40 percent in the Scandinavian countries. An ANOVA F-test for group differences finds these differences to be highly significant.

As stated earlier, we use data from Wave V of the Luxembourg Income Study (LIS), and supplement it with country-level institutional variables from different sources. Our principal dependent variable, a wife's share of household income, is calculated in the following manner using the household files in the LIS. Household income is calculated as the sum of gross wages for household head and spouse.¹⁵ The share variable is a two-side censored variable with limited range 0-100. Linear models cannot be applied to variables with restricted ranges. Therefore, we convert the variable into ln (y/1-y), a variable ranging from minus infinity to plus infinity.

We have two sets of independent variables—individual-level and country-level ones. We consider various individual-level characteristics and household-level characteristics. We include the following independent variables at the individual level: wife's age (years), wife's age squared¹⁶, wife's education level (low, medium, high), wife's relative education level compared to the husband (1=equal or higher), presence of children under 18 (1=yes) and the husband's income level. The LIS reports earnings in national currencies. For reason of international comparability, we use the z-standardized values of husband's income. All these variables are present in the LIS dataset.

Variables that measure country-level institutional characteristics are taken from several different databases. As a measure of labor market regulation, we use the index of employment protection regulation developed by OECD (OECD 2004, Table 2.A2.4 version 1). Public sector size is based on the ratio of public sector employment as a percentage of total employment from

¹⁵ Unfortunately, not all countries in the LIS dataset report gross wages in every wave. For this reason, we have to use net wages for France and Italy.

¹⁶ We add the wife's age squared to the mode, because the age effect not as a linear correlation but as a convex one. This is to say that a wife's share of household income should rise with age but only up to a certain point later in life from which it will start to decline.

an OECD publication, Public Sector Size: Measuring Public Employment in OECD Countries (OECD 1997: Table II.4). Wage compression/dispersionis measured in terms of wage inequality is defined as the gap between the top 10 percentile and the bottom 10 percentile; and calculated on the bases of OECD earnings dataset (the 2006 electronic version). Aside from the institutional variables of interest, we also include a number of country-level controls: tax penalty for second earner, government support for childcare, national culture, and political dominance of the left. The variable for tax penalty measures the ratio of tax rates on second earners in the family and single persons. The larger the ratio, the greater is the penalty on second earners' earnings. This ratio captures possible tax disincentives on wives' work. We have used the rates calculated by Florence Jaumotte (2004: Table 2).¹⁷ As a measure of government support for public childcare, we have used national public childcare coverage expressed in percentages (Esping-Andersen 1999, table 4A). We use religiosity as a proxy of traditional gender attitudes. Religiosity has been measured as percentages of respondents who said that they went to church at least once a week using the latest waves of World Values Surveys. The second causal factor is strength of the left-wing parties. Scholars such as Esping-Andersen (1999) and Evelyn Huber and John Stephens (2000, 2001) have argued that social democracy improves female employment. As a measure of strength of the left-wing parties, we have used the number of years during which left-wing parties were in government as calculated in Huber and Stephens $(2001: Table 4.1.)^{18}$

(ii) Country-Specific Effects-Wives' Contribution and Working Status

¹⁷ Jaumotte (2004: Table 2) calculated two sets of ratios. One set represents tax penalty against women earning 67 percent of average production workers, and the other represents tax penalty against women earning 100 percent of average production workers. We have used the latter set of tax penalty ratios.
¹⁸ Huber and Stephens (2001) give different weights depending on if the left-wing parties were in coalition or were ruling alone. Their data do not include Spain, so we have calculated it following Huber and Stephens method.

We use three dependent variables in this section: (a) wives' contribution to household income—as defined in the previous section; (b) wives' odds of being in the labor force; and (c) their odds of being in full-time as opposed to part-time employment. We calculate countryspecific coefficients of all the individual-level characteristics—the same ones used in the multilevel analysis—on these three dependent variables. In order to estimate country-specific effects of wives' individual characteristics on their contribution to household income, we run the same OLS regressions of all individual-level variables used in the multi-level analysis for one country at a time for all countries in the sample. For the working status models, we create two dummy variables. Full-time dummy (full-time=1, part-time=0) has been created by using LIS data on working hours. Due to the binary nature of the first two working status related dependent variables, we use logistical regressions to examine the effects of individual factors that affect these two dependent variables.

Unfortunately, the wave V of LIS does not include any information on working in Scandinavian countries. For this reason, Scandinavian countries drop from the working status analysis. Given the reduction in the sample size, we do not conduct any multi-level analysis. Instead, once we estimate country-specific effects of the individual characteristics, we plot them on institutional dimensions of interest such as strictness of labor market regulation to examine meaningful cross-national patterns. This method adopted here is referred to a two-step regression analysis. As Orit Kedar and Philip Shively argue, it is a useful method when one is using a micro-level dataset that includes a relatively small number of countries (Kedar and Shively 2005; Long and Shively 2005).¹⁹

¹⁹ For a detailed discussion about advantages and drawbacks of the two-step approach see the 2005 special issue of *Political Analysis*—"Multilevel Modelling for Large Clusters"in *Political Analysis* 13(4).

2. WOMEN'S EARNINGS ANALYSIS

In this analysis, we use estimate country-specific coefficients of individual characteristics and public sector employment on women's earnings. Unlike the analyses described in the previous section, which concerned working age married women and cohabiting women, earnings analysis includes all employed people. We run OLS regressions on female and male samples respectively to estimate individual attributes on their earnings in each country. In this analysis, in addition to individual characteristics such as education, age, marital status and the presence of children, we also include two new variables using variables present in the LIS dataset. One is a public sector employment dummy variable and the other is a part-time dummy variable. (We used the latter as a control for working hours.) Because Wave V does not include information on working hours in Scandinavian countries, these countries are dropped from the analysis.

3. CLASS AND HOUSEHOLD TYPES ANALYSIS

In this analysis, we first estimate the distribution of low-income, middle-income and high-income households using the LIS data. We define classes following the method used in Steven Pressman (2009), who conducted a class analysis using the LIS dataset. Middle-income households are defined as those with a household income between 75 and 125% of the national median household income. The household income is measured in terms of net disposable income (dpi) which consists of all income from (dependent) work plus other income sources plus social benefits all after taxation. The dpi is the amount of money that the household has available for living. When comparing dpi across households it is important to take into account the household size. We standardize household income by dividing the dpi by the square root of the

number of persons living in the household. This method makes sure that every additional person in the household counts with a weight smaller than 1.

In addition to defining household types by class, we also defined household types in terms of gender dynamics within the family. We have created three types of households: (a) male breadwinner families (=wives and female partners contribute less than 10% of the household income); (b) dual earner families (wives and female partners contribute more than 30% and less than 60% of household income); and (c) wife-dominant families (wives and female partners contribute more than 50% of the household income).

We then map out the class distribution of these three types of households in each country in our sample. We calculate the percentage of each household type in all working age married and cohabiting households that fall into "low-income class," "middle income class," and "high income class" as defined above.

V. RESULTS

Table 1 reports the results from the multi-level analysis. All the models were run on all working age married and cohabiting women in the sample. The results for individual-level characteristics confirm the findings from existing studies (see Section II). As women get older, their contributions to household income increase. Yet as it can be seen from the negative sign on the age squared variable, the relationship is a convex one: when women get much older, the effect of age becomes negative. Wives' education levels have a positive and significant effect uniformly throughout different specifications of the basic model. Wives' educational level relative to their husbands (or male partners) has a positive effect as well. When the wife is better educated than or equally educated as her husband, it does translate to her greater income

contributions. The presence of children always has a very significant negative effect. Husbands' earnings matter too. As already explained, we use z-standardized values of husbands' earnings. This variable has a negative effect on wives' contribution to household. In other words, women married to high-earning men contribute less to their household income than women married to more modest earners.

[Table 1 around here]

Strictness of labor market regulation (i.e. employment protection), as expected, has a negative and significant effect on wives' share of income, while public sector size has a positive and significant effect. Wage inequality has a significant and negative effect. Effect of tax penalty is not significant. Generosity of public child care also has a positive effect confirming what many existing studies have argued. Strength of the left-wing parties has a positive and significant effect, while religiosity has a significant and negative effect.

[Table 1 continued around here]

How can we compare different models (that is, the significance of each of the institutional variables relative to others)? Due to the limited number of samples at the country level, we cannot incorporate all institutional variables into one model. Moreover, the very fact that some of the institutional variables might correlate to one another makes it problematic to include some of the institutional variables in the same model together. For these reasons, we run models that include institutional variables deemed mutually independent. Even if we were to include all the variables into one model, the differences of unit of these variables would still make it difficult to compare their coefficients.

We thus use model fits to evaluate the relative merits of the models shown in Table 1. Analogous to OLS regression the model fit for a linear multi-level model can be measured by calculating the proportion of explained variance (R-squared) separately for each level (see Raudenbush, S.W/ Bryk, A.S. 2002:72-80, 149-150). This model fit is intuitive to understand. Models that account for more variance are thus superior to those that account for less. For a better interpretation of these fits, we calculated in a first step the base model containing no variables but the intercept. This base model indicates how much of the overall variation in the data belongs to which level. For the sample used for the analysis reported in Table 1, 95.7 percent of the overall variation in a wife's contribution to household income is located on level-1 and 4.3 percent is located at level-2 (country-level). Model fit at the level-2 thus helps us evaluate which model best accounts for the portion of the variation attributed to the country level.

Table 1 reports the model fits of all models. Model IV and I, which include public sector size and strictness of employment protection, have the best model fits. Based on this comparison of model fits, we consider public sector size and strictness of labor market regulation to be more significant factors that affect wives' contributions to household income than public child care and wage inequality.

The following figures illustrate the results from the analysis on country-specific coefficients on wives' contribution to household income, wives' working status and their full-time work. Country-coefficients that are statistically significant are shown in the figures. When there is only a country label with no data in the figure, it means that the coefficient for that particular country is not statistically significant. The vertical axis shows the values of the coefficients. Countries are plotted on the horizontal axis to convey variations on two dimensions. The countries are grouped into three on the following manner. The groups on the left fall into

the most unregulated labor market economies with small welfare states and little policy support for working mothers. Within this group, countries are ordered in terms of the strictness of their labor market regulation from left to right—those countries on the left within each group are the ones with stricter labor market regulation within that particular group. The middle group consists of Continental European countries whose labor markets are more regulated than the English-speaking countries. Within this group, Belgium and France stand out for their generous public childcare provision and larger public sector size, so they are placed to the right of the group—closer to the Scandinavian cluster. All the other countries in this group are plotted in the order of the value of strictness of their labor market regulation—stronger to the left and weaker to the right. France is placed to the left of Belgium because of its stricter labor market regulation. The same ordering applies to the Scandinavian cluster. All Scandinavian countries possess very large public sectors that dwarf public sectors elsewhere, and they also provide more generous public childcare. This is why they are placed at the right end of horizontal axis. Within this group, those on the left have stricter labor market regulation.

[Figures 2a, 2b and 2c around here]

Interesting cross-national patterns emerge, which are compatible with the expectation of this paper. Women with low education in the middle group contribute less to household income and their labor supply is more sensitive to their husbands' earnings. In the middle group of countries with stronger labor market regulation with small public sector, wives' position is most sensitive to their educational attainment. Figure 2a shows that the effect of education on wives' contribution is much stronger in the middle group of countries. Similarly, the effect of education in determining whether the wife is active in the labor market and if she is likely to work full-time is greater in the middle group of countries (Figures 2b and 2c). One of the liberal countries on

the left side of the all figures, Ireland, displays a pattern similar to that in middle group of countries. In other words, lower educated women in the middle group of countries—strong labor market small public sector and fewer mother-friendly policies—have little chance of contributing to household income to assert economic independence. This self-selection of economically more independent wives is also reflected in Figures 3a, 3b and 3c.

[Figures 3a, 3b and 3c around here]

Figure 3a shows child penalty on wives' contribution to household income. One would expect countries in the middle to report high levels of child penalty. Surprisingly, a few liberal countries—Australia and UK—report large child penalties as well as a sub-set of the countries in the middle group. Counter-intuitively, Spain has a small child penalty. In Austria, Italy and the Netherlands, the effect of a young child was not significant. Figure 3b looks in the child penalty in wives' entry into the labor market. The two countries that show no effect are both countries with public childcare provision and public sectors that are larger than most of the countries in the sample. Large child penalties for other countries that share the same institutional characteristics as Belgium and Sweden are counter-intuitive. This could be a result of women on maternity and child care leaves counted as being out of the labor force. Yet again, very counter-intuitively, child penalty is weak in Spain and Italy. Figure 3c shows that mothers in the UK, Germany and Netherlands are more likely to reduce working hours to part-time compared to married and cohabiting mothers elsewhere.

[Figures 4a, 4b and 4c]

Figures 4a-c shows the effects of husbands' earnings. Wives' contribution in the middle group is highly sensitive to husbands' earnings (Figure 4a). When their husbands' earnings are

high, wives in these countries contribute much less than wives in other groups. Australia and Ireland, however, resemble the countries in the middle. Wives' contribution in Canada, UK, US, France, Belgium and the Scandinavian countries is much less affected by their husbands' earnings. Husbands' income can affect women's share of the household income in two ways: one, it can reduce wives' hours spent in paid work because the wives do not need to work; and, two, most high wage husbands' out-earn their wives. We can further delve into the causal mechanism by looking at the effects of husbands' earnings on wives' work (Figures 4b and 4c). It turns out that except in the US and in Germany, women's labor market entry is not influenced much by their husbands' earnings (Figure 4b). However, the effect on reducing working hours appears to be larger. In Canada, UK and US, wives work fewer hours when their husbands make more money. The negative effect on wives' working hours is greatest in Austria and Germany. While it is not very surprising that we find no negative effect of husbands' earnings in Scandinavian countries, Spain and Italy stand out for their similarity with Scandinavian countries. The comparison of Italy and Spain on the one hand, and Germany (and Austria to a lesser degree) suggests that a mixture of higher and lower education wives choose to work or to stay home in Germany and Austria, while in Italy and Spain wives sort themselves more by education.

It is worthwhile to mention the study of Italian and Spanish women by Olivetti and Petrobola (2007) and Del Boca and Pasqua (2003). They point out how small gender wage gap and motherhood penalty are in these countries, while neither of them is known to have motherfriendly policies or labor markets that promote female work. They explain that low employment rates in these countries skew the composition of women who work. Women who work in these countries are more educated non-randomly selected group of women. The Italian and Spanish anomalies observed here confirm these earlier findings. Because only higher educated wives work, the child penalty lowers. This implies that lots of lower educated wives do not work at all—something that the education coefficient captures. Figure 5 also indicates a highly selected nature of working women in Italy and Spain. Figure 5 compares the effect of marital status on women's earnings. In most countries, is has negligible effect except for the group in the middle. Germany, Austria and the Netherlands show negative effects. Italy and Spain, however, show no negative effects. It is important to note here that coefficients on earnings only take into consideration variations among working men and women. When few non-random sample of women work, such a sample of women can produce misguided coefficients because all those married women who withdrew from the labor market are not counted. The difference between countries such as Italy and Spain on the one hand and Germany, Austria and the Netherlands could be that the sample of working women in the latter countries is less skewed.

[Figures 5 and 6]

Figure 6 shows positive effects of public sector employment for women in most countries. Women's earnings increase when control for age, education, marital status, working hours and the presence of children. However, the same does not hold true for men. This provides micro-level evidence for the beneficial effect of public sector employment for women.

In sum, the country-specific coefficient analysis provides complementary evidence for women's difficulties in the countries grouped in the middle, which have strong labor market regulation and small public sector. Figures 7 and 8 illustrate the implications of strict labor market regulation and large public sector in another way. Large public sector correlates with fewer male breadwinner households (Figure 7). When we remove countries with large public sector, a correlation between strictness of labor market types and women's lack of economic means becomes easier to visualize (Figure 8).

In other words, lower education women in countries such as Spain, Italy, Germany, Netherlands and Austria are more likely to be trapped in male breadwinner families. If the homogamy assumption holds, we expect to see more low-income male breadwinner households in this group of countries. In contrast, homogamy in unregulated labor markets might mean that a lower education woman with a low wage job forming a household with a lower education male with a low wage job. In unregulated labor markets, we might thus observe a relatively higher number of dual earner families among low income households. Figure 9 supports these expectations. Figure 10 also highlights the large number of middle class male breadwinner families in many of the countries in the middle group. Low female participation rates in these countries mean that it is not only lower education women who become dependent wives. Canada, US, France, Norway, Sweden and Denmark stand out for the salience of dual earner families in the middle income group. In most of these countries, a typical middle class family is a dual earner family. Australia, Ireland and the UK clearly differ. As we observed earlier, women in these countries have a bigger child penalty on maternal employment than in other liberal countries. Australia, which often resembled the countries in the middle group, is a unique country that combines wage compression with a relatively unregulated labor market. Both Ireland and Australia have the most regulated labor markets among the liberal groups. Clearly, these variations produce divergence of these countries from the liberal prototypes such as Canada and the US.

Lastly, the distribution of household types among the high income households is revealing. There are much more dual earner families in this category than in any other ones.

Countries that promote female work via the public sector have the fewest male breadwinner families among high income families. Within this class, the US, Germany, Ireland, UK, Spain and Italy are among the top in terms of the number of male breadwinner families.

VI. CONCLUSIONS

This paper has examines the effects of labor market characteristics on wives' contribution to household. Different sets of analysis have shown the negative effect on labor market regulation on women, and the positive effect of public sector. The analysis has demonstrated the persistence of male breadwinner households in countries with more strictly regulated labor markets unless a large public sector existed to offset the trend.

	Model I	Model II	Model III	Model IV	Model V
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficien
	(std. error)	(std. error)	(std. error)	(std. error)	(std. error)
Individual/Household					
Level Variables	0 (2***	0 (2***	0. (2***	0 11444	0 11***
Wife's age	0.63***	0.63***	0.63***	0.41***	0.41***
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)
Wife's age squared	-0.01***	-0.01***	-0.01***	-0.005***	-0.005***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Wife's education	1.5***	1.5***	1.5***	1.58***	1.58***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Wife's relative	0.17***	0.17***	0.17***	0.16***	0.16***
education	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Children under 6				-3.31***	-3.31***
				(0.16)	(0.16)
Children under 18	-2.22***	-2.22***	-2.22***		
	(0.13)	(0.13)	(0.13)		
Children x education	0.35***	0.35***	0.35***	0.63***	0.63***
level wife	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)
Husband's income	-2.81***	-2.81***	-2.81***	-2.81***	-2.81***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Institutional Variables					
Public Childcare		0.04*	0.01		0.04*
		(0.02)	(0.02)		(0.02)
Public Sector Size	0.11***			0.11***	()
	(0.04)			(0.04)	
Tax Penalty	-1.24	-1.71	-2.53	-1.36	-1.81
	(1.49)	(1.75)	(1.53)	(1.5)	(1.75)
Employment Protection	-0.53**	-0.45	-0.89***	-0.54**	-0.46
Employment Protection	(0.27)	(0.31)	(0.33)	(0.27)	(0.32)
Wage Inequality	(0.27)	(0.51)	-1.08**	(0.27)	(0.32)
wage inequality			(0.47)		
Constant	-16.44***	-14.32***	(0.47) -8.99***	-12.27***	-10.16***
Constant	(2.31)	(2.44)	(3.14)	(2.33)	(2.45)
Model-Fit	(2.31)	(2.77)	(3.14)	(2.33)	(2.73)
Level 2 (R-squared	69.5	58.1	69.5	69.0	57.3
in %)	07.5	50.1	09.5	09.0	57.5
	15.8	15.8	15.8	16.1	16.1
,		13.0	15.0	10.1	10.1
Level 1 (R-squared in %)	15.0				
Level 1 (R-squared	116,893	116,893	116,893	116,897	116,897

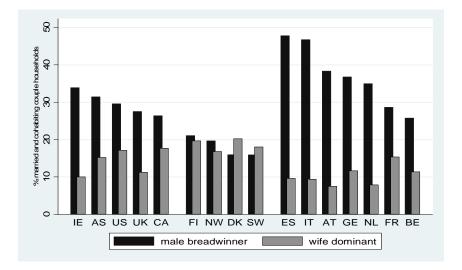
Table 1: Multi-Level Analysis on Wives' Contribution to Household Income

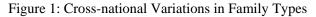
*** significant at the 0.01 level, ** significant at the 0.05 level, * significant at the 0.10 level

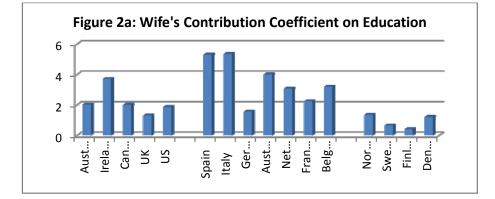
Table 1 CONTINUED

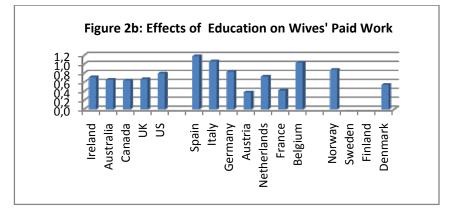
Table I CONTINUED			
	Model VI	Model VII	Model VIII
	Left	Religiosity	Religiosity
	Cabinet	j	- <u> </u>
	Coefficient	Coefficient	Coefficient
	(std. error)	(std. error)	(std. error)
Individual/Household	(300.0101)	(300.0101)	
Level Variables			
	0 (2***	0 (2***	0 (2***
Wife's age	0.63***	0.63***	0.63***
	(0.02)	(0.02)	(0.02)
Wife's age squared	-0.01***	-0.01***	-0.01***
	(0.00)	(0.00)	(0.00)
Wife's education	1.5***	1.5***	1.5***
	(0.04)	(0.04)	(0.04)
Wife's relative	0.17***	0.17***	0.17***
education	(0.05)	(0.05)	(0.05)
Children under 6	(0.00)	(0.00)	(0.00)
Children under 18	-2.22***	-2.22***	-2.22***
Ciniciten under 10			
01.11	(0.13)	(0.13)	(0.13)
Children x education	0.35***	0.35***	0.35***
level wife	(0.06)	(0.06)	(0.06)
Husband's income	-2.81***	-2.81***	-2.81***
	(0.02)	(0.02)	(0.02)
Institutional Variables			
Strength of the Left	0.06*		
0	(0.03)		
Religiosity	· /	-0.03*	-0.04*
		(0.02)	(0.02)
Public Childcare		(0.02)	0.03
Derblie Greek C		0.09***	(0.02)
Public Sector Size			
		(0.03)	
Tax Penalty	-1.35		
	(1.92)		
Employment Protection			
	-0.5	-0.63**	-0.58*
			-0.58* (0.3)
Constant	(0.33)	(0.26)	(0.3)
Constant	(0.33) -14.9***	(0.26) -16.8***	(0.3) -15.27***
	(0.33)	(0.26)	(0.3)
Model-Fit	(0.33) -14.9*** (2.72)	(0.26) -16.8*** (1.11)	(0.3) -15.27*** (1.0)
<u>Model-Fit</u> Level 2 (R-squared	(0.33) -14.9***	(0.26) -16.8***	(0.3) -15.27***
Model-Fit Level 2 (R-squared in %)	(0.33) -14.9*** (2.72) 56.1	(0.26) -16.8*** (1.11) 74.7	(0.3) -15.27*** (1.0) 64.4
<u>Model-Fit</u> Level 2 (R-squared in %) Level 1 (R-squared	(0.33) -14.9*** (2.72)	(0.26) -16.8*** (1.11)	(0.3) -15.27*** (1.0)
Model-Fit Level 2 (R-squared in %)	(0.33) -14.9*** (2.72) 56.1	(0.26) -16.8*** (1.11) 74.7	(0.3) -15.27*** (1.0) 64.4
<u>Model-Fit</u> Level 2 (R-squared in %) Level 1 (R-squared	(0.33) -14.9*** (2.72) 56.1	(0.26) -16.8*** (1.11) 74.7	(0.3) -15.27*** (1.0) 64.4
<u>Model-Fit</u> Level 2 (R-squared in %) Level 1 (R-squared	(0.33) -14.9*** (2.72) 56.1	(0.26) -16.8*** (1.11) 74.7	(0.3) -15.27*** (1.0) 64.4

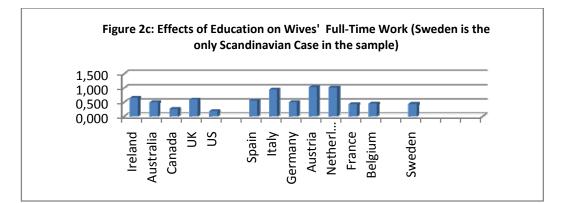
*** significant at the 0.01 level, ** significant at the 0.05 level, * significant at the 0.10 level

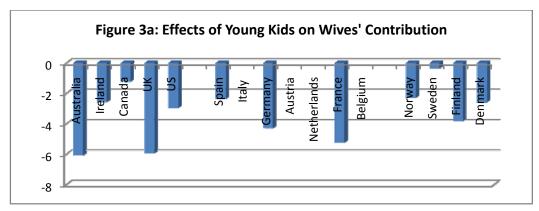


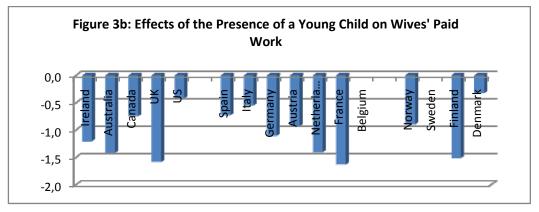


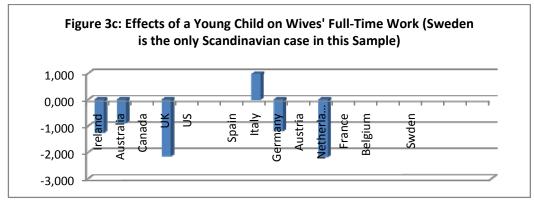


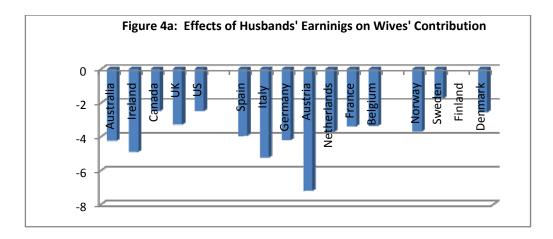


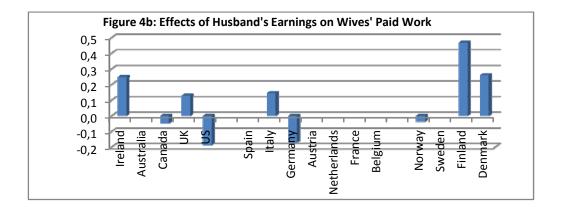


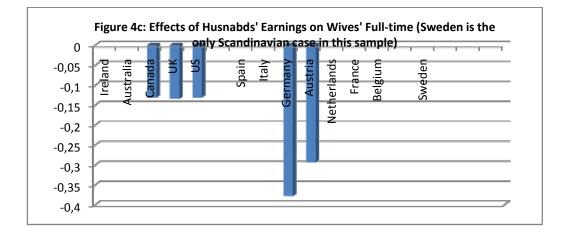


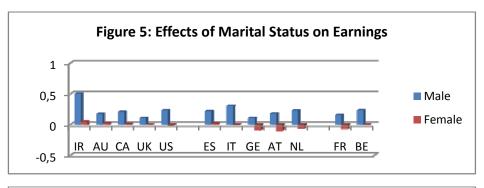












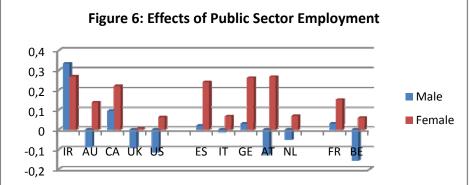


Figure 7: Public Sector Size and Male Breadwinner Families

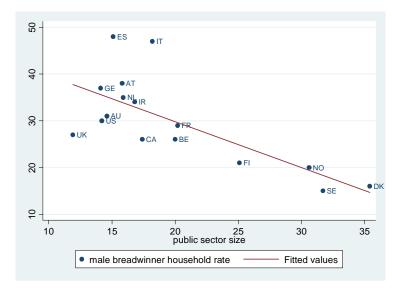
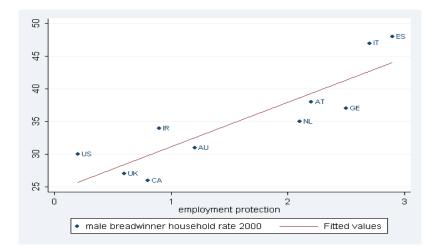
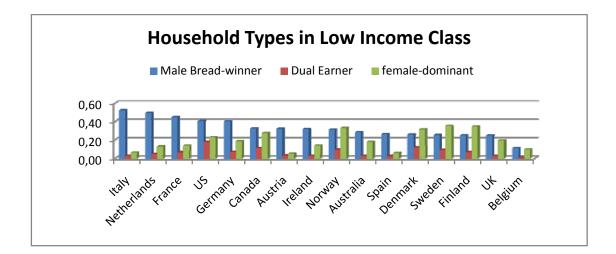
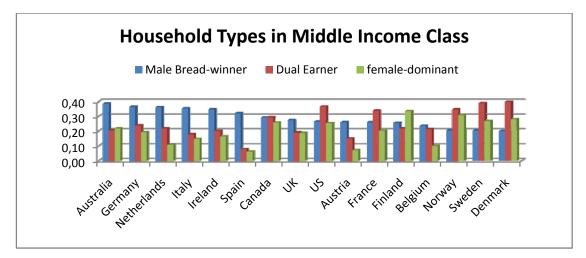
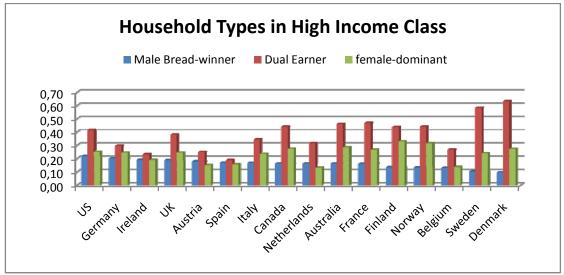


Figure 8. Strictness o Labor Market Regulation and Male Breadwinners









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