The Contribution of Women's Employment and Earnings to Household Income Inequality: A Cross-Country Analysis

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Revised (June 2010)

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Abstract

Aggregate data shows an inverse relationship between female employment and income inequality. This paper investigates this relationship using micro-data for seventeen OECD countries. In all countries, female earnings exert an equalising force on the distribution of income in spite of large employment gaps between high and low educated women. There are marked similarities across countries; even in Nordic countries where employment rates are high female earnings comprise a small proportion of the family budget and single women, employed or not, are overrepresented in the bottom of the income distribution. The US is the one country that stands out, with greater earnings equality among couples and more single women households making it into the top quintile. For all countries, raising female employment and reducing employment inequality between women would have a substantial impact on reducing household income inequality, and a far larger impact than reducing the gender pay gap.

Keywords: Income inequality; female employment; gender pay gap.

JEL Classification: J31, J20, D63

I. Introduction

Recent decades have seen rapid growth in female employment across all industrialised countries. However, significant differences remain; data from the Luxembourg Income Study shows employment rates ranging from just 50 percent in Greece, Italy and Spain to over 80 percent in Denmark and 90 percent in Sweden. At the same time, income inequality has been rising in most countries but again marked differences exist (Esping-Andersen, 2007). This study looks at to what extent these two trends are related, in particular looking at the role of female earnings in influencing overall income inequality. While a number of studies have looked at the influence of different income sources on inequality within countries, there are few cross-country studies. The contribution of this study is to look across countries to examine how differences in demographic structure, particularly the number of single adult households, and patterns of female employment and earnings influence differences in overall levels of household income inequality.

The study uses Luxembourg Income Survey (LIS) data for 17 industrialised countries with countries grouped into three 'regime' types according to Esping-Anderson's (1990) welfare state typology. The results suggest that female earnings are an important factor in reducing household income inequality in all countries. Demographic differences matter less to inequality than work patterns, with families headed by a single earner, and in particular a single female earner, disproportionately likely to be at the bottom of the income distribution. However, there are variations across countries with women's earnings exerting a particularly strong equalising force in the US.

The structure of the rest of the paper is as follows. Section II reviews the literature and sets out overall trends in female employment and inequality across countries. In Section III we describe the Luxembourg Income Survey used in the paper. Section IV uses this data to look at cross-country differences in family composition, work patterns and income composition, and to examine differences across the income distribution. The paper then goes on to more formally assess the importance of within and between group variations in income to overall income inequality, where groups are defined by both household employment and partnership status. Finally, Section VI

considers how under various counterfactal scenarios female earnings influence the overall distribution of household income. Section VII concludes.

II. Literature Review and Background

There is a large and growing literature on international differences in household income inequality (see for example Brandolini and Smeeding, 2009; Atkinson and Brandolini 2001; Smeeding 2006; Smeeding and Rainwater, 2004; Gottschalk and Smeeding, 1997) with recent studies suggesting rising income inequality has been widespread (Esping-Andersen, 2007).[1] Key drivers of increasing income inequality have included growing wage inequality, unemployment and an increasing polarisation of households into "work-rich" and "work-poor" (Gottschalk 1997; Gregg and Wadsworth, 2001, 2003). Other studies have suggested that, as the rise in male wage inequality has tended to mirror the rise in household income inequality, male wages may have been the dominant factor driving rising income inequality. More recently, Gottschalk and Danziger (2005) have shown that were it not for other changes (in particular in female earnings inequality and hours of work) income inequality would have risen by more. Alongside rising male wage inequality, a second key economic trend has been the growth in female employment across industrialised countries. Yet the role of female employment and earnings in shaping household income inequality remains relatively under-explored. Instead, studies of female employment and of inequality have been conducted in separate domains.

There are numerous studies looking at cross-county differences in gender pay inequalities, including several using LIS data. These find that, while women do worse than men in the labour market and are more likely to be in poverty in nearly every LIS country surveyed, for every time period, outcomes vary enormously across countries (see Gornick 2004 for a review). Yet substantial differences in employment rates and pay gaps across countries exist too[2] and there is evidence of growing inequality

[1] Esping-Andersen (2007) finds gini coefficients for gross income grew by 6% and 7% between 1980 and 2000 for Denmark and Italy and in excess of 20% in other countries including the UK, US, Germany and Sweden.

[2] Although the correlation between these two measures is weak. For example, in Spain and Italy the gender pay gap is low, but so too are female employment rates. Petrongolo and Olivetti (2005) suggest that the combination of low pay gaps and high employment rates can be explained by the non-random selection of women into employment: wage gaps are small because women who whould have low earnings if they worked are not observed in the wage distribution.

between women both in terms of employment and earnings (Blau and Kahn 2006). Several studies have looked at the influence of income components on overall inequality (for example Shorrocks, 1983; Lerman and Yitzhaki, 1985; Jenkins, 1995; Lam, 1997; Jaantti, 1997; Cancian and Reed, 1998; and more recently Breen, Garcia-Penalosa and Orgiazzi, 2008). These suggest growing earnings inequality has been a major source of rising household income inequality. This is in part a result of rising wage inequality among those in work. But for some countries unemployment and inactivity matter more: in the UK for example there is evidence of an increasing polarisation of work across households with wives of employed men being more likely to work than wives of the unemployed, and non-employment being particularly high among single adult, and in particular single parent, households (Gregg and Wadsworth, 2001, 2003). There is also evidence of an increasing correlation between the employment behaviour and earnings of husbands and wives (for the US see Lam, 1997 and Cancian and Reed, 1998, 1999, 2001; for international evidence Esping-Andersen, 2007) while in the US there is also evidence that marriage too is more common among high earning men (Burtless, 1996). These trends all have implications for the distribution of household income.

The evidence on the actual contribution of women's earnings to household inequality is mixed, results varying depending on the measure of income used, the sample covered and by country. The earliest studies for the US found a negative relationship between husbands' earnings and wives labour supply, with wives' earnings exerting a small equalising effect on the distribution of household income among couples (Mincer 1972, 1974; Danziger, 1980). More recent studies found similarly equalizing effects among married couples using US data for the 1970s and 1980s (see for example: Cancian, Danziger and Gottschalk, 1992; Cancian and Reed, 1998; Pencavel, 2004). But extending the sample to look at all households (so including single adults as well as those in married couples), Shorrocks (1983), Lerman and Yitzhaki (1985) and more recently Karoly and Burtless (1995) found an increasing correlation between husbands and wives earnings over time meant female pay exerted an increasingly disequalizing effect on the distribution of household income (having a disequalising effect on the distribution of income from 1979 onwards). But Cancian and Reed (1999), again looking at all families (single and married), find that in spite of a rise in the correlation between husbands and wives earnings, wives earnings

explain only a small part of the observed overall rise in family income inequality. They attribute the difference between their results and those of Karoly and Burtless partly to the time period used but more importantly to the use of the Gini decomposition (a technique which they argue first does not adequately separate married and single people and second does not fully decompose inequality by income source).

Studies using similar comparisons to Cancian and Reed's 1999 study (which compares actual household inequality with that which would exist in the absence of female earnings) find similar equalising effects for couples in Italy (Del Boca and Pasqua, 2003); Norway (Birkelund and Mastekaasa, 2009) and the UK (Harkness et al, 1997). Harkness et al's findings contrast with Jenkins (1996) results that used earlier data (for the 1970s and 1980s) and, using the Shorrock's decomposition, found rising wives employment to have an increasingly disequalizing effect on household inequality across all families.[3]

Internationally Cancian and Schoeni (1998) have used LIS data from the late 1970s / early 1980s to look at the contribution of female earnings to total earnings inequality across working-age, couple households. They found wives earnings to have a mitigating effect on inequality in all ten countries studied in all periods, in spite of wide variations in employment and earnings shares.[4] This equalizing effect occurred even though spouses' earnings were found to be increasingly (positively) correlated, but did not dominate the impact of higher levels of wives' wage inequality and increasing income shares on overall household inequality. As a result, the overall effect of spouses' earnings on inequality tended to become more equalizing with time.[5] More recently Pasqua (2008), using ECHP data, showed that rising female employment tends to reduce inequality across couples. She also finds, as in other studies, that male wage inequality explains the major part of income inequality in all

[3] Although increasing equality of wives' earnings helped reduce inequality this was offset by both an increased in the share of female income in total income and an increase in the correlation of husbands and wives earnings.

[4] Countries studied were Australia, Canada, US, UK, Switzerland, France, Germany, Israel, Sweden and the Netherlands. Female earnings reduced total earnings inequality by 18 and 26 percent except in Sweden, where the effect was larger.

[5] Indeed Cancian and Schoeni show that the correlation of spouses' earnings would have to double for the effect of wives earnings to become disequalizing.

countries. This is in line with Reed and Cancian's (2001) conclusion that understanding the causes of rising family income inequality over last three decades should concentrate on the causes of rising male wage inequality. Using similar methods Esping-Andersen (2007) compared the variance of total earnings with the variance of male earnings, using the difference between the two to estimate the impact of female earnings on overall (couple) family earnings inequality.[6] Reporting ECHP data for 1993 and 2001 he finds a positive correlation between earning and employment of husbands and wives for all countries except Germany (where labour supply was positively but earnings negatively correlated). Comparing the variance of total earnings and husbands' earnings, he concludes that wives earnings increased inequality among couples in France, Germany, Italy, Spain and the UK but were equalizing for the US, Sweden and, in 2001 only, in Denmark[7]. These findings contrast with several of those reported in other studies and described above.

These cross-country comparisons all look at couples only. A growing number of studies, using a variety of methods, have looked at how demographic change has affected inequality. Decomposing across family types these studies suggest that demographic changes, and indeed the rise in dual-earner households, did little to explain rising household income inequality (for cross-country analysis see Jantti, 1997 and Pasqual, 2008; for analysis in the UK see Jenkins, 1995; for Australia see Johnson and Wilkins, 1993; in the US Burtless, 2009 and Gottschalk and Danziger, 2005). Indeed, Jantti concluded that changes in female hours of work and earnings were more important to rising inequality than participation. These results are perhaps surprising given that other studies suggest that parental work patterns are important for child poverty, as Gornick and Jantti (2009) show. Gornick and Jantti's review of LIS research suggests that institutional factors, and in particular labour markets outcomes and the welfare state, are more important to child poverty than

[6] Where total earnings are more equally distributed than male earnings the effect of female pay is assumed to be equalising with the percentage difference in these variances taken to be the impact of female pay on income inequality.

[7] Note that Esping- Andersen's 2007 study uses the coefficient of variation in his analysis of cross-country differences in the contribution of female earnings to inequality. These numbers suggest that first earnings inequality has been falling in several countries (including Sweden), contrary to other studies, and second that inequality is higher in Sweden than elsewhere. The coefficient of variation is used to measure inequality but is highly sensitive to outliers. The results suggest that outliers are substantially influencing the results, particularly for Nordic countries where income data is register rather than survey data (and therefore records some very high income values which are not typically included in survey data).

demography.[8] Nordic institutions are, they argue, particularly favourable to children as they enable wives' employment. On the other hand single women often do poorly; in the US and UK female-headed households have incomes of just 73 to 74 percent those of couples compared to between 86 and 91 percent in Sweden and Western continental Europe (Rake and Daly, 2002)

A cursory look at cross-country data on rates of female employment and levels of income inequality confirm the picture suggested above, across countries there is a clear inverse relationship between levels of household inequality and rates of female employment (Figure 1). Some clear country groupings emerge: (i) Nordic countries with very high levels of female employment and low inequality; (ii) Anglo-American countries with slightly lower levels of employment alongside high income inequality; (iii) central / northern European countries with similar employment levels to (ii) but lower income inequality and (iv) southern European countries which have both low employment and high levels of income inequality. It is notable too that the relationship between employment rates and inequality, on the face of it, appears much stronger than any relationship to the gender pay gap (Figure 2). While Blau and Kahn (1996) have shown that wage inequality leads to an increase in the pay gap across countries, selection into work tends to dominate this effect and in countries such as Italy, which has a relatively unequal distribution of income, the pay gap is small mainly because employment rates, particularly among less educated women, are low too.

A key question then is to what extent do differences in female employment across countries drive inequality? The studies reviewed above suggest that women with higher earnings power are most likely to work. Looking across education groups we can see that this is broadly true, but with large variations across countries. The top panel of Figure 3 plots employment rates for high and low educated women. For highly educated women employment rates are high everywhere ranging from 75-percent in Spain to over 90-percent in Austria and Denmark. On the other hand, employment rates among the low educated vary enormously, from under 40-percent in Italy and Spain to over 70-percent in France and Finland. The bottom panel of

[8] For example Bradbury and Jantti (1999) find variation in welfare state institutions matters, but not as much as variations in market income. Rainwater and Smeeding (2003) find earnings and transfers are important in explaining cross-country differences in child poverty.

Figure 3 shows the employment-gap between the high and low educated women across countries and indicates a wide variation across countries: in Italy there is a 44 percent employment deficit for low skilled women, in the US and UK a 30-percent gap, and in Finland and Norway a gap of around 20-percent. Only in France is the employment gap under 10-percentage points. The unequal distribution of work across women suggests that female work may exacerbate inequality. But other factors matter too and in the following sections we go on to formally assess the impact of these differences in employment to overall patterns of inequality.

III. Data

The remainder of this paper uses micro-data from the Luxembourg Income Study (LIS), a project that brings together comparable micro data sources from a range of industrialised countries across a number of years.[9] The analysis is confined to high-income countries. Eastern European countries are also excluded as employment and inequality may have been driven by different factors than those of interest here. The latest data (wave six) is available from between 2003 to 2005 for Australia, Denmark, Finland, Luxembourg, Sweden, the UK and US. Data for other developed countries is yet to be released and so that we include in our sample other key European countries we also report data from wave five for France, Spain, Austria, Germany, Ireland, Finland and the Netherlands (all wave 5 data is for 2000 except the Netherlands data which is 1999).

International comparisons of inequality depend crucially on how income is measured (Smeeding 2004, Atrkinson and Brandolini 2001, Brandolini and Smeeding 2009). A key advantage of the LIS data is that it constructs comparable measures of income across countries allowing inequality comparisons. The income measure used here is gross income (or pre-tax, post transfer income[10]) and family size is adjusted for using the square root of household size (the OECD equivalence scale. For Austria, Belgium, France, Ireland, Italy and Spain gross income and earnings are not reported

[9] LIS data is available for a limited number of countries in Wave 0 (data from the 1970s). From Wave 1 (1979-81) onwards includes an increasing number of countries.

[10] This is the same definition of income as used by Cancian and Reed 1998.). Some other studies of international income inequality using LIS data have used disposbable income as a measure of welare, here we are interested in women's potential to contribute to the household budget (rather than the reaction of the tax system to changes in earnings levels) and so we look at gross wages and income.

and for these two countries we use net income in its place[11]. In order to ensure our data is not unduly influenced by very high (or low) incomes / earnings we trim the data. The chosen cutoffs are the same as those chosen by Brandolini and Smeeding (2009) who drop households with reported incomes which are less than one percent of mean equivalised income or greater than ten times the unequivalized median. We report results for all households whose heads and (for couples) spouses are working age adults (age 18-59). We exclude those households whose head or spouse is in full-time education. All income variables are equivalised using the square root of the number of people in the household. Data is weighted using country household weights multiplied by the number of individuals in the household. More details on the data source for each country and the variables used in this study are available in the Appendix Table A1, and at www.lisproject.org.uk.

One limitation of the LIS dataset is that we are not able to identify family units. Our analysis is instead conducted at the level of the household, with marital status defined by the status of the household head. For some countries, such as the UK, this may be important as, for example, it may underestimate the number of single parent families (by omitting those who live with, for example, their parents). A second limitation is that LIS data on work hours is poor for many countries and we do not therefore examine diffrences in "work intensity", and in particular part-time working, across countries.

In order to clarify the presentation of our results we group countries by welfare state regime. Welfare state analysts typically divide industrialized countries into three-regime types: Anglo-American (or liberal), Continental Europe (conservative-corporatist) and Nordic (social democratic) (see Esping-Anderson 1990 and 1999 for further discussion). Each regime is typified by similar sets of social policies, and corresponding socio-economic and employment outcomess. For example in Nordic countries demand from large public sector employers and extensive service provision is expected to lead to high employment levels while the lowest employment rates are expected in Continental Europe where female employees have historically been marginalised and mothers encouraged to stay at home. Women in Anglo-American

[11] Note net earnings are missing for Australia Denmark, Finland, Sweden, US, Germany and Netherlands.

counties are expected to occupy an intermediate postion although in some liberal countries women's labour market performance has been strong in spite of a lack of support for working mothers.[12]

The counries included in the analysis, by regime type, are:

i) **Anglo-American:** Australia (2003); Canada (2004); Ireland (2000); UK (2004) and US (2004);

ii) **Continental Europe**: Austria (2000); France (2000); Germany (2000); Italy (2000), Luxembourg (2004) Netherlands (1999) and Spain (2000)

iii) **Nordic:** Norway (2004), Sweden (2005); Finland (2000) and Denmark (2004)

Esping-Andersen's typlology has been criticised by those who have increaingly turned their attention to gender and the welfare state (Sainsbury 1999, 1996; Daley and Rake, 2002) with Gornick (1997) arguing that Esping-Andersen's clusters "fail to cohere with policies that affect womens' employment". In spite of this limitation the three regime types still offer the simplest model by which to classify our data and is used here to present results.

IV. Family Composition, Work Patterns and Income Composition: Differences across Countries and Income Distribution

This section describes differences in household composition, employment patterns and income composition across countries, both at an aggregate level and for households at different points of the income distribtution. Table 1 shows variations in family composition across countries. While the demographic composition of household heads in Anglo-American and Nordic countries are similar, in Continental Europe marriage or cohabitation is more common and there are few lone parents (particularly in Southern European countries). Table 1 also shows cross country differences in the demographic composition of households for those in the bottom, middle and top quintile of the income distribution. In all countries except Italy and

[12] This may be in part due to low levels of employment protection boosting women's labout rmarket positions (see Estevez-Abe and Hethey, 2008)

Spain single women are over-represented at the bottom of the income distribution, with the relative position of single women being worst in Anglo-American and Nordic countries. This may not be surprsing given that women are on average paid less than men in all the countries and that a substantial number of single women are lone parents.[13] Being in a household headed by a couple substantially reduces the risk of being in the lowest income quintile in Nordic and Anglo-American countries, and raises the likelihood of being in the top fifth of the income dsitribution. Finally single men are overrespresented at the bottom of the income distribution, and underrepresented at the top in Nordic countries (with the exception of Finland) while in Anglo-American countries they are equally spread across the distribution in Continental Europe overrepresented at the top.

To what extent do work patterns, earnings and other income (including social transfers) contribute to these differences? Household employment patterns and the share of female earnings in household income vary substantially both across the income distribution and across countries.[14] As Table 2 (panel a) shows the share of "male breadwinner" (MBW) households is now relatively small in all countries. Perhaps unsurprisingly, this model remains most common is Southern Europe and Ireland and least common in Nordic countries with the proportion of MBW families ranging from 38-percent of households in Spain and 31-percent in Italy to just and 13-percent in Sweden, 12-percent in Norway, 9-percent Denmark and 8-percent of families in France. The US too has few MBW families, at just 14-percent, while this family type comprises between 16 and 18-percent of families in Canada, the UK, Austria, Belgium and Germany. The declining share of MBW families reflects a rise in the numbers of dual-earner couples and increasing numbers of families headed by single men or women. Reflecting the above trends, the proportions of dual-earner couples is largest in Nordic countries where half of families have two earners (with although Austria, Belgium, France and the Netherlands also all have large numbers of dual earner families (between 58 ad 61 percent of all families).

[13] In all countries except Italy and Spain (where there are few households headed by single parents) lone parents are concentrated in the bottom of the income distribution and just a tiny share of the richest households contain a lone parent (the country with the most "rich" lone parents is the US where just under 3 percent of the top decile are lone parent families)

[14] Although it has been argued that for couples female earnings make a relatively minor contribution to overall levels of household income inequality, the dominant factor being male earnings (see for the US Cancian and Reed 2001, for the UK Jenkins 1996).

Nordic and Anglo-American countries (with the exception of Ireland) also have a large number of households headed by single people, and it is in these families that worklessness is concentrated. While workless couples make up under 5-percent of all workless households in all Nordic countries, families headed by workless single men or women comprise between 6 and 9-percent of households. Other countries show similar patterns: in the US workless couples comprise 3-percent of households and workless singles 7-percent; in the UK the figures are 5 and 9-percent respectively. Notable too is that, among workless single families, worklessness is concentrated on female households. For Continental Europe patterns are more varied with worklessness being concentrated among couples in Spain, Italy and Belgium, partly because single adult households comprise a smaller share of households in these countries.

How are household employment patterns related to their position in the income distribution? Table 2 panel (b) shows household work patterns for those in the bottom, middle and top income quintile. It is clear that, while worklessness leads to families falling within the bottom income quintile, families with only a female worker (either within a couple or working single women) are also disproportionately likely to be in the poorest quintiles. In some countries couples headed by a solo working man are also over-represented. What is clear is that living in a couple with two-earners or being a single working male provides considerable protection against the risk of falling into the lowest income deciles.

A similar picture is evident at the top income distribution, with two-earner couples more likely, and male breadwinner families less likely, to make it into the top quintiles. Single working men are also slightly overrepresented at the top while single working women are less likely to make it to this position. However there are notable differences across countries, in particular single working women in Australia, Canada and the US, and male breadwinner families in Ireland and Spain make up a significant share of the richest twenty percent of households.

These cross-country differences in household employment structure are reflected in the composition of household income, although the relationship between the two is not always clearcut. This is partly because there are considerable variations in other income sources

across countries (including income from social transfers, but also income from other household members earnings, investment income and so on) and partly because female earnings vary considerably according to the number of hours worked and average earnings. Published data show a wide variation in the incidence of part-time work across countries, the share of female employees working part-time ranging from 55-percent in the Netherlands, around 40-percent in Australia, Belgium and the UK, and just 13-percent in the UK, 16-percent in Spain and fewer than 10-percent in Sweden.[15] Table 3 reports income shares from male earnings, female earnings, social transfers other income. Across all countries male heads of households' earnings contribute the largest portionof income, although the range is considerable. In Canada and the Netherlands male earnings comprise close to 60-percent of all working age households income; in Australia, the UK, Belgium, France, Germany, Luxembourg, Finland and Sweden male earnings shares are over 50-percent; while in other countries (with the exception of Italy) male income shares lie between 40 and 50-percent. These differences in income composition cannot be simply explained by differences in female income shares - female earnings shares do not vary systematically with male earnings contribtuions. Instead female earnings shares are largest in the US (at 29-percent of gross income) followed by Denmark (26-percent), Germany (22-percent) and Belgium (21-percent), and are lowest in Italy, Spain and the UK (all 18-percent) and Canada (15-percent). Shares of social transfers in total household income vary enormously across countries, accounting for just 5-percent of gross income in US but 17-percent in Sweden. Differences in other income show large variations too, with this measure encompassing earnings of all other household members and other income sources such as investment and property income.

These income shares differ across countries partly because of demographic differences. But even looking at couples only we find taht only in Denmark does female earnings account for more than 30 percent of household income. Even in countries with high female employment rates, such as Sweden and the Netherlands, there are substantial differences in male and female earnings shares (indeed income shares in these countries are similar to those observed elsewhere). Table 3 also reports earnings as a share of family income among households headed by single adults. It is notable that among families headed by single women earnings comprise a very small share of household income in some countries (just 42% in Italy, 51% in Ireland; and 56% and 57% in the UK and Spain respectively).

Unpacking some of these differences further, Figure 4 looks at how earnings shares vary over the income distribution. Female earnings make up only a tiny share of income for the poorest

[15] Source: OECD Labour Market Statistics. Data is for 1999.

fifth of the population in all countries: only in the US, Italy, Spain and France does female pay contribute more than 10-percent of family income. Instead the main components of household income for the poorest are male pay and social security transfers. As we move up the income distribution the male earnings contribution to income rise and, in most cases, the income share of women rises although even in the top income quintile female pay accounts for only around one fifth of household income. We can also say something by looking at the height of the bars in the chart. The difference in the height of the bars tells us the share of income in each decile relative to the median. While the picture of inequality varies across countries, it is notable that in all countries earnings are higher among women in the richest households but are still equivalent only to the earnings of men in the second or third income quintiles (as indicated by the height of the red bar). Indeed it is perhaps remarkable that in spite of differences in household employment structures female income shares vary so little across countries.

This section has shown that avoiding poverty and reaching the top income quintiles is increasingly dependent on living within a two earner couple in all countries. However there are notable cross-country differences. First the data suggests that, in spite of women being more likely to work in Nordic countries, single working women remain concentrated in the bottom fifth of the income distribution. Indeed, it is perhaps surprising that single working women are most likley to make it to the top income quintile in Anglo-American countries and this may suggest greater equity of opportunity. Moreover, there are significant and similar proportions of workless single women in both Anglo-American and Nordic countries (around 5 percent of households, although the proportion is slightly higher in the UK at 7 percent and lower in Canada and Norway). While fewer households are headed by single women in Continental Europe they typically fare better than elsewhere, as do male breadwinner families. Looking beyond employment patterns at the earnings contribution of women to household income, in-spite of large differences in employment rates across countries income shares are surprisingly similar across countries, the US being the most notable exception.

V. Inequality and differences in family and employment structure: between Group Inequality Decompositions

Two approaches that have been taken to analysing the contribution of female employment and earnings to inequality. The first looks at how differences in family structure (including employment) affect the overall distribition of household income, decomposing an aggregate measure of income inequality into within and between group measures. The second approach looks at how the share of women's earnings in

household income drive overall patterns of income inequality. This section takes the first approach and looks at how differences in family and employment structures across countries influence income inequality. The following secton then examines the affect of female earnings (rather than employment) on inequality.

The decompositions in the following sections use two related measures of income inequality. In this section to look at the affect of differences in employment structures in income inequality we use half the squared coefficient of variation (I2). The subsequent section, which decomposes inequality by income shares, uses the coefficient of variation (CV). Clearly these measure are very closely related and lead to the same inequality rankings across countries. In order to provide a robustness check we also report an alternative and commonly used measure of inequality, the gini coefficient. The coefficient of variation is very sensitive to outliers and especially very high values. This is particularly important for Nordic countries, where data on income was collected from administrative records (in all other countries income data comes from survey data) which gives rise to a significant number of very high income values (which are not typically recorded in survey data). Trimming the data as described in Section III brings the cross-country ranking of the CV and I2 measures of inequality in Nordic countries into line with other inequality measures including the gini coefficient. Table 4 reports the gini coefficient and coefficient of variation for 17 countries. Comparing the gini coefficients with those reported by Brandolini and Smeeding (2009) gives a similar set of coefficients and inequality rankings in spite of differences in the sample used (these differences are that first, equivalised gross income is reported here while Brandolini and Smeeding report disposable peronal income; second, inequality is calculated here for those in working age households rather than all households; and third we use more recent time periods for several countries). Comparing the gini coefficient and the coefficient of variation shows similar cross-country inequality rankings and support the use of the coefficient of variation in subsequent analysis. This is in line with Brandolini and Smeeding's (ibid) conclusion that "the basic patterns of international inequality are clear regardless of the measure of inequality employed". The rankings resported suggest that, across all working age households, inequality is lowest in Sweden, the Netherlands, Denmark and Norway and highest in Anglo-American countries, in paricular in the US and UK. Comparisons of all households and couple households also shows some interesting

differences, in particular when loofking just at couples inequality is generally lower and this reduction is most marked in the US and UK. This may indicate high levels of between group inequalities, with households headed by single adults (and in particular single parents) faring poorly and pushing up inequalities in these countries. This is something we turn to below.

To what extent can international and how much to differences within groups (or *within* group inequality)?

Using any generalized entropy measures of inequality, cross-country differences in income inequality can be decomposed into (i) that part due to family structures (or *between* group inequalities) and (ii) that due to inequalities within groups (or *within* group inequality)[16]. Following Jenkins (2009), total inequality may be written:

Equation 1: $$E_\alpha(Y) = E_\alpha^B(Y) + E_\alpha^W(Y)$$

Where within group inequality is given by $E_\alpha^W(Y) = \sum_{m=1}^{M} v_m^\alpha \; w_m^{1-\alpha} E_\alpha(Y^{(m)})$; v_m is sub-group m's share of total income, w_m is m's population share and $E_\alpha(Y^{(m)})$ is inequality within sub-group *m*. Between-group inequality, $E_\alpha^B(Y)$, is obtained by assuming each individual has the mean income of the sub-group to which they belong.

The decomposition is performed across eight population sub-groups, couple and single adult households which are each split into four sub-groups (for couples, dual-earners, male-breadwinners, female-breadwinners and no-earners and for singles working and non-working men and women). Total inequality is then disaggregated into the contribution due to inequality to variations within these groups and the contribution due to variations between groups. Results are reported for half the squared coefficient of variation (I_2) measure of income inequality in Table 5.The decomposition results show that everywhere the main drive of inequality is *within-group* income differences. Table 5, panel b, shows the degree of within group inequalities and panel c shows their relative importance. Inequality among dual-earner

[16] See Jenkins 2009 for a full discussion.

couples is the most important factor driving overall inequality in most countries. Also important is the degree of income inequality among families headed by a male breadwinner families and between single working women. The results also, importantly, show that *between-group* income differences make a relatively small contribution to inequality (ranging from 6-percent in Luxembourg and 7-percent in Austria to 20-percent in Denmark and 22-percent in Finland).[17] However *between-group* inequality appears a more important driver of inequality in Nordic countries than elsewhere.[18] This might be explained by the fact that single headed households make up a larger share of families in Nordic countries but carrying out the same exercise over just three sub-groups (couples, single men and single women) suggested work patterns across these groups are of more importance.[19]

Looking at couples only the results in Table 5 (panel a) show that differences in household structure matter even less to inequality among couples. Once again in Nordic countries between group differences in employment patterns across households are a more important factor for overall inequality patterns than elsewhere, but within group inequalities matter most explaining over 85-percent of inequality in all countries.

VI. Inequality of Income Components and Family Inequality

The previous section looked at how household employment structures affect the distribution of income and at differences across countries. This section looks at how female *earnings* affect income inequality. Here we use the coefficient of variation as this measure has most frequently been used in the related literature.[20] One way to look at the affect of female earnings on income inequality is to use Shorrocks' decomposition (Shorrocks 1982, used by Jenkins 1995; Jantti 1997; Pasqua 2008) where each income component *k* accounts for a share of total inequality:

[17] The I_0 measure suggests between group differences contribute aslightly larger share of income inequality. However the picture across countries remains similar.
[18] although as overall inequality is lower the absolute contribution to inequality is still relatively small compared to, for example, Anglo-American countries
[19] Results are not reported here
[20] For example, see Cancian and Reed 1998, Reed and Cancain 2001, Esping Andersen 1997, 2008, Lam, 1997 among others although the gini coefficient has also been less frequently used.

Equation 2 $$S_k = \frac{\text{cov}(Y^k, Y)}{\sigma^2(Y)} = \rho(Y^k, Y).\frac{\mu_Y^k}{\mu_y}.\frac{CV(Y_k)}{CV(Y)}$$

Where $\rho(Y^k, Y))$ is the correlation of income Y_k with total income Y; $\frac{\mu_Y^k}{\mu_y}$ is the income share of component k; and $\frac{CV(Y_k)}{CV(Y)}$ is the relative covariance of factor k compared to the total income. One problem with this measure is that as long as the correlation of factor income with total income is positive the contribution of any income component k to total income inequality must be positive. Yet, as Lam (1997) clearly shows, this is typically not the case. This can be seen by expanding out the coefficient of variation. Assuming for the moment just two components, female earnings and other income[21] the coefficient of variation for total household income can be written as:

Equation 3 $$C_t^2 = C_o^2 s_o^2 + C_w^2 s_w^2 + +2\rho_{ow} s_o s_w C_o C_w$$

Where C_i^2 is the coefficient of variation of factor i, s_i is the share of factor i's income in total income and ρ_{ij} is the correlation of income components i and j. This equation tells us that the contribution of female earnings to inequality depends on (i) the share of female earnings in income, (ii) the coefficient of variation and (iii) the correlation of earnings with other income sources.[22] Lam notes "a common misconception [..] is that if $C_w > C_o$ and $\rho > 0$, then wives income will tend to be disequalizing." Instead, as he shows, income pooling usually leads to an equalizing affect on the distribution of income. A simple example of this is where it is assumed that male and female earnings are equal ($s_w = s_o = 0.5$) with the same covariance ($C_w = C_o$). In this case:

Equation 4: $$C_t^2 = 0.5 C_o^2 (1 + \rho) \leq C_o^2$$

[21] Much of the literature takes this to be male pay, total inequality being measured across the sum of husbands and wives earnings (ex Esping Andersen 2007; C&R ? others..)

[22] The earlier analysis look at four income components: male earnings (m), female earnings (f), social transfers (t) and other income (o) and the full decompostion can therefore be written as:

Equation 4

$$C_t^2 = C_h^2 s_h^2 + C_w^2 s_w^2 + C_s^2 s_s^2 + C_o^2 s_o^2 + 2\rho_{hw} s_h s_w C_h C_w + 2\rho_{ht} s_h s_t C_h C + 2\rho_{ho} s_h s_o C_h C_o + 2\rho_{wt} s_w s_t C_w C_t + 2\rho_{wo} s_w s_o C_w C_o + 2\rho_{to} s_t s_o C_t C_o$$

Table A2 in the appendix reports the coefficients of variation, income shares and correlation coefficients for male and female earnings across countries for all working age households and couples.

Under this scenario only when male amd female earnings are perfectly correlated will inequality be as great as that when no women work; as long as male and female earnings are less than perfectly correlated female earnings exert an equalising effect. So $C_w > C_o$ is a necessary but not sufficient condition for female earnings to increase overall income inequality as an imperfect correlation of women's earnings with other income sources will tend to have an equalising effect on the overall income distribution and "this pooling effect exerts a powerful tendency for combined family income to be more equal then the income of either husbands or wives taken separately" (Lam ibid).

Table 6 reports the results from decomposing the coefficient of variation using equation (2). For all housholds in all countries the distribution of female earnings is more unequal than male earnings, the coefficient of variation for female earnings being largest in Spain and Italy (where there are large numbers of women with no earnings) and Anglo-American countries (in particular the US and UK) where levels of employment are relatively high but earnings are unequally distributed. Female earnings inequality is most likely to lead to a rise in household income inequality when (i) the share of female earnings in total income is high, and (ii) female earnings are positively correlated with other income. As noted in Section IV, female earnings shares are surprisingly similar across countries with Denmark and the US having the largest shares, in all other countries female earnings contribute a small share of income and and are much lower than male pay. The correlation of female earnings with other income components shows a mixed picture. In Ireland, the US and most of Continental Europe (other than France and Spain) this correlation is negative, suggesting women work because other income is relatively low, while in Australia, Canada, UK and Nordic countries (with the exception of Denmark) the correlation is a positive and may indicate greater "assortative mating".[23]

[23] A more detailed decomposition of income (results not reported here) shows the correlation between male and female earnings is positive in most countries, correlation being greatest in Finland, Sweden, Canada, the UK, France, Australia and Denmark. Only in the US, Austria, Germany and Luxembourg is a negative assocaition found, and in all these cases the correlation is close to zero. Both social transfers and other income are unequally distributed compared to male earnings showing a negative correlation with earnings (both male and female) suggesting that in the majority of cases they exert an equalising affect.

Table 6 also reports results for couples only. Among couples, female earnings shares are largest in Denmark (34%) and comprise just 25% in the US, a share which ranks below Austria, Belgium, Germany, Luxembourg, Norway and Sweden. Again, pay is much more unevenly distributed for wives than husbands everywhere while correlations between female earnings and other income vary widely. Looking at correlations between male and female earnings (Appendix A2) shows the US, Austria and Luxembourg to exhibit little evidence of assortative mating while correlations but husbands and wives earnings are greater in Nordic countries, Canada, Australia, the UK and France.

How would changes in female employment and earnings affect overall income inequality? We answer this question first by looking at the following counterfactuals assuming: (i) no women work (female earnings are zero); (ii) all women work (wages being predicted for non-workers from a female wage equation)[24] and (iii) that there is no gender pay gap (assuming employment is unchanged).[25] We then estimate a second set of counterfactuals looking at what would happen to inequality if conditions in other countries (Sweden and the US) were replicated elsewhere. These exercises are essentially accounting identities and do not take into account behavioural responses; in particular they make the strong assumption that male earnings and other income (including social transfers) do not respond to changes in female earnings.

Results for these scenarios are reported in Table 7, first for all working-age households (panel a) and second for couples only (panel b).[26] Looking at all households, the first counterfactual shows that if women had no earnings household income inequality would increase in all countries by an amount ranging from 15-percent in Australia to 49-percent in the US. The second counterfactual looks at what would happen if all women worked, imputing wages for all non-employed female heads of household or spouses. Under this scenario income inequality would fall in all countries by an amount ranging from 3-percent in Norway to 16-percent in Italy. Both

[24] Wages are estimated for all non-employed women by imputing wages from a wage equation estimated for all working women. This regresses the log of wages on a quadratic in age, a set of education dummy variables, and dummy variables for being partnered and for the presence of children in the household

[25] Wages are predicted for all working women using the male wage equation.

[26] We also conduct a similar exercise using the gini coefficient using counterctuals (i)-(ii) which produces very similar results.

counterfactuals suggest that female pay exerts a strongly equalising force on household income inequality. The final counterfactual looks at the impact of closing the gender pay gap on overall income inequality, assuming no change in employment behaviour. A wage equation is estimated for all male household heads and this is used to predict wages for all working women.[27] Note that changes in predicted weekly female earnings may result either because of an increase in hourly earnings or because of a change in weekly working hours. This third counterfactual produces mixed results: in some countries improving gender pay equality reduces income inequality, particularly in Canada and the UK, but in other countries it reinforces it, with inequality rising most in the Nordic countries. Note that this counterfactual assumes no change in female employment and that closing the pay gap is likely to raise inequality if there are large gaps in employment between high and low educated women or a high degree of "assortative mating". On the other hand in some countries such as the UK working hours and hourly earnings as part-time work in the UK and other countries tends to be concentrated within low paid jobs and among relatively low-income families, and closing the weekly earnings pay gap will tend to be inequality reducing.

Using the same analysis as above, results are reported for couples only in Table 7 (panel b). These suggest that the effect of setting female earnings to zero again leads to increased household income inequality. The second counterfactual, where all women work again leads to a fall in income inequality for all countries of between 2 percent (Norway) and 14 percent (Australia). Our final counterfactual looked at what happened to inequality when the pay gap is closed. In many countries, closing the pay gap raises inequality among couples *but* there are numerous exceptions: for Canada, the UK, Austria, Germany, Spain and Sweden inequality among couples declines when the pay gap disappears. Again, it is likely that this decline is driven in part by changes in working hours and hourly earnings of low-paid part-time workers.

Another way to consider how female earnings affect inequality, and how this varies across countries, is to consider what would happen to income inequality in one country under the same female employment conditions and earnings of another

[27] The wage equation is as described for female wages.

country. We use Sweden and the US as examples and see what would happen if conditions in these countries were replicated elsewhere. Sweden is chosen as a benchmark case as it is often given as a model of gender equality with high female employment alongside low levels of wage and income inequality. However, as shown earlier, in spite of a high female employment rates, female earnings shares are relatively low and the pay gap is comparatively large. By contrast, the US has high levels of income and wage inequality alongside high levels of female employment, and female earnings shares, and strong legislative structures to deal with discrimination but, in spite of this, a relatively large gender pay gap.

To consider how inequality would be affected if these conditions were replicated elsewhere we consider what would happen first if the share of female earnings equalled the Swedish or US level; second if both the mean earnings share and the distribution of female earnings equalled these levels, and third if the correlation of female earnings and other income also changed.[28] Results are reported in Table 8 for all households and for couples. For all households replicating the Swedish mean and coefficient of variation for female earnings would reduce inequality in all countries except Belgium, Denmark, Finland and Norway, but the effect is typically small (inequality would fall by a high of 7-percent in Luxembourg followed by 5-percent in the UK). However the positive correlation between husbands and wives earnings in Sweden offset low levels of wage inequality and if this too was replicated in other countries household income inequality would rise everywhere but Canada, the UK and Luxembourg. So while Sweden benefits from a relatively equitable distribution of female income, the low female earnings share coupled with a relatively high correlation between wives earnings and other household income offsets these and mean that replicating Swedish conditions elsewhere would not help reduce income inequality. Among couples the pattern is similar pattern, although the effects are larger with low levels of inequality in wives earnings tending to reduce inequality more but this being offset to a greater extent by the strong correlation of partners' earnings.

[28] In order to carry out these decompositions we use equation 2 above, decomposing the overall coefficient of variation (CV) into the CVs for female earnings and all other income, female earnings as a share of income and the correlation between female eanrings and other income (these components are reported for the whole population and couples in Appendix A3 below)

The second counterfactual looks at the US. The US has both the largest share, and most unequal distribution, of female income. Both factors tend to raise income inequality but the correlation between female earnings and other household income is close to zero or negative and this helps to offset these effects. Replicating US conditions would reduce inequality in Luxembourg (by 5-percent) and would have a negligible effect on inequality in Canada and the UK. For Nordic countries replicating US conditions would raise inequality by large amounts (by 27-percent in Finland and between 12 and 15-percent in other Nordic countries). For other Anglo-American countries there would be only small effects, while in Continental Europe the effect would be to raise inequality although the impact varies widely. For couples a similar picture emerges.

The various counterfactuals presented here suggest that female earnings tend to have an equalising affect on the income distribution. However, a marginal rise in the share of female earnings in household income, in the absence of changes in either the distribution of female earnings across families or in the correlation of female income with other income sources, has a disequalising affect. Looking across countries the impact of replicating Swedish or US conditions on the overall income distribution tends to exert a disequalising force on the overall distribution of household income. The reasons for this differ - in the US it is the large share of female earnings in total income and their unequal distribution which is important, in Sweden the positive correlation between female earnings and other income is the main driver increasing inequality.

XI. Conclusions

This paper has looked at the relationship between female employment and household income inequality. Aggregate data shows a clear inverse relationship between female employment and household inequality. This paper looks further at this relationship using micro data for seventeen OECD countries. We first examine how at a micro level demographic structure and household employment patterns relate to household income inequality. Looking across the income distribution a simple descriptive picture shows that being in the bottom (or top) income quintile is strongly related to

family structure with single women in Anglo-American and Nordic countries at greater risk of being in the bottom household income quintile. This is partly because they are more likely than either single men or couples to be in "workless households", but also because families headed by single women who work are concentrated in the bottom of the income distribution too. In continental Europe, while single women head fewer households, where they do they tend to fare better. Couples with a single earner, and in particular a single female earner, are also increasingly overrepresented at the bottom (and underrepresented at the top) of the income distribution, although there are exceptions - in Spain and Ireland male breadwinner families do well. In most countries, having two-earners provides considerable protection against being in the poorest income quintile and is the dominant family type at the top of the distribution.

In spite of large differences in employment rates, female earnings share are very similar across countries, comprising between fifteen and twenty-three percent of household income. Only in Denmark and the US are female earnings more important, making up around 26 and 29-percent of income respectively. The importance of female earnings to family budgets varies across the income distribution, for the poorest families female income makes up a very small share of household income in almost all countries with the main income sources of those in the poorest quintiles being male wages and social transfers. However, even in the top income quintile female pay makes up a relatively small share of household income (around 20 percent) with male earnings being considerably more important to total household income.

To assess the importance of demographic and employment patterns to household income inequality a seriese of decompositions were performed. The results suggest that inequalities within groups are of most importance in driving overall income inequalities, with inequalities among dual earner and male breadwinner households and among single working women mattering most. On the other hand cross-country differences in population shares and relative incomes of different demographic groups can be assigned only a small role in influencing the overall distribution to income.

Examining the effect of female earnings on household income inequality using a range of counterfactuals suggests that female employment is inequality reducing. The

first counterfactual compared the income distribution with that which would exist of no women worked. This analysis suggested female earnings were very important in reducing inequality, the impact varying from between 15-percent in Australia to 49-percent in the US (or, for couples only, from10-percent in Australia to 55-percent in the US). The second counterfactual considered what would happen to inequality if all women worked. Results suggest getting all non-employed women into work would reduce inequality by between 3-percent in Norway and 16-percent is Italy. Both counterfactuals suggest an important role for women's employment in helping to reduce inequality of household income. A final counterfactual looked at the impact of closing the pay gap for those currently working. These results suggested that closing the pay gap without raising employment would have only a small effect on inequality in all countries (although this effect was generally larger in Nordic countries). Our final analysis looked at what would happen if either Swedish or US female employment conditions were replicated elsewhere. In both cases replicating these conditions tended to exert an disequalising force on the overall distribution of household income although the reasons for this differed: in the US the large share of female earnings in total income and their unequal distribution are important to this results while in Sweden the relatively equitable distribution of female earnings helped reduce inequality but this equalising effect was more han offset by the positive correlation of female earnings with other sources of household income.

Esping-Andersen (2007) concludes, "even if women's wages improve relative to males', the profile of female labour supply is such that it is more likely to heighten than to abate inequality. The conditions required for an equalising effect are quite steep: namely, maximum Nordic-type female participation with a fairly symmetric distribution of work intensity across households." Our results suggest that this is only partially true. First, as we have shown, closing the pay gap would have only a small impact on household income inequality. Second, in all of the 17 countries studied, the effect of female earnings on household income inequality was equalising and this was true regardless of employment levels. Moreover, it is not the case that female earnings always have the most equalising effects in countries with high employment rates although it remains the case that increasing female employment rates, and reducing the employment gap between high and low educated women, would reduce household income inequality. Perhaps one of the most surprising findings here is just how little

variation there is in the share of women's earnings in household income across countries. Even in Nordic countries, where employment rates are high, women's earnings comprise a relatively small share of income. In addition, Nordic countries tend to have relatively high correlations between the income of married men and women while single women tend to fare relatively poorly and are concentrated at the bottom of the income distribution. These results suggest that the low levels of inequality seen in Nordic nations are supported by low rates of wage inequality, not by higher levels of gender equality or equality between women. In contrast, the role of women's employment in the US is largely equalising and tends to reduce wage inequality. Within families, and in particular among couples, women's earnings comprise a relatively large share of income. Single women too do better in the US, with larger numbers making it into the highest income quintiles.

Appendix 1: LIS Country Datasets and Variable Definitions

Country	Data Source	Sample Size
Australia 2000	Survey of Income and Housing Costs (SIHC)	2544 households, 5982 individuals
Austria 2000	European Household Panel / *AT ECHP*	10210 households; 19378 individuals
Belgium 2000	Panel Study of Belgian Households (PSBH) / *BE ECHP*	3067 households, 7850 individuals
Canada 2004	Survey of Labour and Income Dynamics (SLID)	28936 households; 55216 individuals
Denmark 2004	Income Tax Register	177,000 individuals
Finland 2004	Income Distribution Survey (IDS)	11,229 households; 29112 individuals
France 2000	Household Budget Survey	10,035 households; 25803 individuals
Germany 2000	German Social Economic Panel Study (GSOEP)	11,947 households; 28368 individuals
Ireland 2000	Living in Ireland Survey / *IE ECHP*	2865 households, 9131 individuals
Italy 2000\	Survey on Household Income and Wealth (SHIW)	8001 households, 19,209 adults
Luxembourg 2004	*LU SILC*	3622 households, 9661 individuals
Netherlands 1999	*NL ECHP*	5007 households; 9119 individuals
Norway 2004	Income Distribution Survey	13131 households, 33989 individuals
Spain 2000	Spanish European Community Household Panel	4966 households, 11964 individuals
Sweden 2005*	Income Distribution Survey	16268 households; 39618 individuals
Switzerland 2002	Income and Consumption Survey	3726 households, 9220 individuals.
UK 2004	Family Resources Survey	28,041 households (65,232 individuals)
US 2004	Current Population Survey March Supplement	77,200 households

* Finland, Sweden, Norway and Denmark data is supplemented by administrative register records. All other data is recorded from surveys.

Appendix A2:

Coefficient of Variation and Male / Female Earnings Correlations, All Working Age households and Couples

	All				Couples			
	CV M	F	Total	Correlation Male and Female earnings	CV M	F	Total	Correlation Male and Female earnings
Anglo American								
Australia	1.00	1.54	.66	.20	.93	1.26	.63	.23
Canada	.95	1.52	.72	.28	.82	1.14	.63	.25
Ireland	1.17	1.53	.77	.06	.94	1.43	.63	.17
UK	1.16	1.65	.73	.23	1.01	1.30	.67	.27
US	1.40	1.74	.89	-.00	1.20	1.31	.83	.09
Continental Europe								
Austria	.96	1.38	.55	-.02	.81	1.27	.53	.14
Belgium	.81	1.24	.59	.12	.76	1.10	.55	.18
France	.91	1.33	.62	.23	.87	1.12	.60	.28
Germany	.96	1.44	.61	-.01	.83	1.27	.57	.11
Italy	1.19	1.59	.66	.14	1.08	1.53	.66	.27
Spain	1.13	1.76	.70	.17	1.06	1.82	.70	.25
Netherlands	.71	1.33	.53	.08	.65	1.15	.51	.09
Luxembourg	.94	1.43	.61	-.03	.80	1.45	.60	.24
Nordic|								
Denmark	.84	1.08	.50	.20	.75	.71	.45	.27
Finland	.79	1.23	.57	.36	.73	.88	.54	.45
Norway	.84	1.16	.60	.17	.79	.85	.54	.21
Sweden	.83	1.25	.55	.34	.77	.83	.50	.42

Notes: As Table 1.

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Table 1: Family Composition across countries and quintiles

	Anglo-American					*Continental Europe*								*Nordic*			
	Australia	Canada	Ireland	UK	US	Austria	Belgium	France	Germany	Italy	Luxem-bourg	Nether-lands	Spain	Denmark	Finland	Norway	Sweden
	2003	2004	2000	2004	2004	2000	2000	2000	2000	2000	2004	1999	2000	2004	2004	2004	2005
All																	
Couples	.762	.716	.842	.747	.714	.804	.826	.814	.763	.862	.844	.839	.885	.716	.748	.730	.676
Single Men	.092	.137	.047	.087	.100	.064	.057	.060	.098	.052	.061	.058	.036	.127	.116	.121	.146
Single Women	.145	.147	.132	.166	.187	.132	.117	.126	.139	.086	.095	.102	.080	.158	.135	.149	.178
Bottom Quintile																	
Couples	.575	.522	.579	.490	.504	.689	.644	.643	.506	.870	.757	.658	.831	.390	.499	.382	.347
Single Men	.120	.165	.066	.111	.105	.049	.075	.088	.155	.035	.059	.064	.027	.220	.195	.210	.217
Single Women	.305	.313	.355	.399	.391	.262	.281	.261	.339	.095	.185	.278	.1427	.390	.306	.407	.436
Middle Quintile																	
Couples	.813	.774	.892	.820	.753	.822	.872	.854	.824	.843	.874	.896	.901	.805	.792	.801	.753
Single Men	.082	.127	.038	.078	.102	.070	.058	.050	.077	.061	.049	.050	.038	.106	.107	.102	.139
Single Women	.106	.099	.070	.102	.145	.108	.069	.096	.098	.095	.077	.054	.061	.089	.102	.097	.108
Top Quintile																	
Couples	.837	.814	.889	.864	.839	.869	.910	.894	.847	.873	.840	.900	.907	.872	.888	.895	.876
Single Men	.095	.122	.047	.087	.090	.068	.051	.051	.091	.069	.102	.070	.044	.080	.071	.076	.085
Single Women	.068	.065	.064	049	.071	.062	.039	.056	.062	.058	.058	.030	.049	.048	.041	.029	.039

Notes:

1. Source: Luxembourg Income Survey data.
2. Quintiles are defined by household income. To be consistent with the LIS literature on income inequality we use Brandolini and Smeeding's (2009) top and bottomcoding to trim the data. Data is trimmed for households with reported incomes which are less than one percent of mean equivalised income or greater than ten times the unequivalized median.The data is more fully described in Section III.

Table 2

(a) Cross-Country Employment Distribution by Family Type (% of all households)

Column %		*Anglo-American*					*Continental Europe*								*Nordic Countries*			
		AU03	CA04	IE00	UK04	US04	AT00	BE00	FR00	GE00	IT00	LU04	NL99	ES00	DK04	FI04	NO04	SW05
Couples	Two earner	47	49	43	50	44	58	56	61	47	36	45	58	36	55	47	56	54
	Male breadwinner	21	17	27	16	14	17	17	8	18	31	26	21	38	9	21	12	13
	Female breadwinner	3	3	7	3	11	8	3	6	7	12	9	3	8	5	1	3	1
	No earner	6	3	5	5	3	3	6	3	4	8	4	3	7	3	5	3	3
Single	No work	2	2	1	2	2	1	1	2	2	1	1	1	1	4	4	3	3
Men	Working	7	12	3	6	8	5	5	6	8	4	5	5	3	9	8	9	10
Single	no work	6	3	5	7	5	4	4	4	3	3	3	3	3	5	4	3	5
Women	Work	9	11	8	10	14	10	8	11	11	5	7	7	5	10	9	10	11

***b)* Employment Patterns across Quintiles**

Column %		*AU03*	*CA04*	*IE00*	*UK04*	*US04*	*AT00*	*BE00*	*FR00*	*GE00*	*IT00*	*LU04*	*NL99*	*ES00*	*DK04*	*FI04*	*NO04*	*SE05*
								Bottom Quintile										
Couples	Two earner	15	20	11	9	13	26	19	23	14	9	29	28	14	12	9	8	12
	MBW	18	19	21	18	17	25	20	12	16	49	31	29	43	10	18	18	13
	FBW	7	5	9	4	14	12	4	7	9	18	7	4	11	5	3	5	2
	No earner	18	9	18	18	8	6	22	8	12	11	8	5	16	12	19	10	11
Single men	No work	8	7	5	8	5	2	4	8	6	2	3	2	1	13	16	15	12
	Work	4	10	2	3	6	3	4	6	10	1	3	4	1	9	5	8	7
Single women	No work	23	14	19	27	18	11	16	18	14	7	7	11	7	21	21	17	22
	Work	7	17	16	13	21	15	13	18	20	2	11	17	7	18	10	20	21
								Middle Quintile										
Couples	Dual	51	55	53	62	50	54	61	69	53	42	50	66	35	66	50	65	61
	MBW	23	18	26	16	14	16	21	7	19	26	24	19	43	9	25	10	15
	FBW	4	3	8	2	11	10	3	5	8	9	9	3	8	5	2	3	1
	No earner	4	2	2	1	1	3	2	2	2	7	4	2	5	1	2	1	0
Single men	No work	0	1	1	1	1	1	1	1	0	1	0	0	1	1	1	0	0
	Work	8	12	3	7	9	6	5	5	7	5	5	5	3	9	11	11	12
Single women	No work	2	1	0	1	2	3	0	1	0	4	2	0	1	1	0	0	0
	Work	9	9	7	9	13	8	7	10	10	6	6	5	5	8	10	10	9
								Top Quintile										
Couples	Dual	71	69	60	73	64	65	76	76	68	57	55	74	60	80	77	80	83
	MBW	12	10	26	11	11	15	12	5	13	14	19	13	24	5	10	8	5
	FBW	1	2	3	1	8	5	2	5	3	10	8	2	4	2	1	1	1
	No earner	0	1	0	0	1	2	1	1	1	7	2	2	2	0	1	0	0
Single men	No work	0	0	0	0	1	0	0	0	0	1	1	0	0	19	0	0	0
	Work	9	12	5	9	8	6	5	5	9	6	10	6	4	7	7	8	7
Single women	No work	0	1	1	0	1	1	0	0	0	1	1.	0	0	1	0	0	0
	Work	6	9	6	5	6	6	4	6	6	5	5	3	5	4	4	3	3

Notes: as Table 1

Table 3: Cross Country Household Income Shares
Head of Households and Partners' Earnings Shares, Social Tranfers and Other Income (All Working Age Households)

	AU	*CA*	*IE*	*UK*	*US*	*AT*	*BE*	*FR*	*GE*	*ES*	*IT*	*NL*	*LU*	*DK*	*FI*	*NO*	*SE*
All																	
Male Share	.50	.57	.41	.51	.48	.47	.53	.50	.51	.44	.32	.62	.51	.48	.52	.49	.55
Female Share	.20	.15	.20	.18	.29	.21	.23	.21	.22	.18	.18	.19	.22	.26	.20	.20	.20
Social Transfers	.08	.07	.09	.09	.05	.12	.11	.14	.09	.07	.11	.08	.13	.13	.14	.15	.17
Other Income	.22	.20	.30	.21	.17	.20	.13	.15	.19	.31	.40	.11	.14	.14	.15	.15	.08
Married Couples																	
Male earnings	.50	.59	.43	.53	.57	.49	.52	.48	.53	.46	.36	.60	.61	.47	.50	.46	.53
Female earnings	.24	.18	.18	.20	.25	.18	.24	.24	.20	.16	.16	.24	.22	.32	.24	.25	.25
Social transfers	.06	.05	.07	.06	.04	.11	.10	.13	.08	.07	.09	.06	.07	.09	.11	.13	.14
Other	.20	.18	.32	.21	.14	.21	.13	.15	.19	.32	.39	.09	.11	.11	.15	.16	.08
Single Men																	
Male Earnings	.69	.71	.55	.69	.71	.72	.74	.71	.75	.67	.43	.81	.74	.66	.53	.69	.74
Social transfers	.08	.09	.12	.10	.06	.12	.09	.13	.07	.11	.17	.09	.10	.20	.21	.16	.18
Other income	.23	.20	.33	.20	.23	.16	.17	.16	.18	.22	.40	.10	.16	.14	.26	.16	.09
Single Women																	
Feale Earnings	.62	.67	.51	.56	.68	.57	.66	.66	.70	.57	.42	.72	.63	.06	.60	.62	.65
Social transfers	.18	.13	.19	.27	.10	.21	.20	.20	.13	.14	.21	.19	.20	.20	.23	.27	.26
Other income	.20	.21	.30	.17	.22	.22	.14	.14	.17	.29	.37	.09	.17	.15	.27	.11	.09

Table 4: Earnings Inequality

	All Working Age Households				Couples			
	Gini	**Rank**	**CV**	**Rank**	**Gini**	**Rank**	**CV**	Rank
Anglo-American								
Australia	.335	12	.661	11	.309	12=	.628	12=
Canada	.349	15	.720	14	.307	11	.633	14
Ireland	.336	13	.768	16	.309	12=	.628	12=
UK	.353	16	.735	15	.324	14	.671	16
US	.401	17	.890	17	.377	17	.829	17
European								
Austria	.279	4=	.549	3=	.274	6	.538	5
Belgium	.294	7	.594	6	.281	7	.558	8
France	.296	8	.619	10	.285	9	.598	10
Germany	.310	10	.610	9	.284	8	.568	9
Italy	.325	11	.664	12	.325	15	.658	15
Luxembourg	.306	9	.606	8	.304	10	601	11
Netherlands	.260	2	.529	2	.247	3=	.454	2
Spain	.337	15	.699	13	.338	16	.511	4
Nordic								
Denmark	.252	1	.497	1	.203	1	.367	1
Finland	.280	6	.572	5	.257	5	.539	6
Norway	.279	4=	.604	7	.247	3=	.540	7
Sweden	.264	3	.549	3=	.233	2	.500	3

Table 5: Between and Within Group Inequality Decompositions (Half the Squared Coefficient of Variation, I2)

	All Working Age Households			Couples	
	I2	**% between**		**I2**	**% between**
		3 Groups (Couples, Single Men and Single Women)	8 Groups (Couples: Dual Earner, Male Breadwinner, Female Breadwinner, no earner and Singles: Working and non-working men and women)		4 groups (Dual Earner, Male Breadwinner. Female Breadwinner, no earner)
Anglo-American					
Australia	.219	3%	18%	.198	14%
Canada	.259	4%	10%	.218	6%
Ireland	.295	2%	33%	.189	10%
UK	.270	6%	17%	.227	11%
US	.396	4%	9%	.343	4%
Continental Europe					
Austria	.151	3%	7%	.143	4%
Belgium	.177	4%	14%	.151	10%
France	.191	3%	8%	.151	3%
Germany	.186	5%	15%	.157	10%
Italy	.221	0%	11%	.219	11%
Luxembourg	.184	1%	11%	.130	4%
Netherlands	.140	4%	9%	.242	2%
Spain	.244	2%	6%	.173	6%
Nordic					
Denmark	.123	9%	20%	.101	11%
Finland	.164	6%	22%	.145	14%
Norway	.182	8%	16%	.145	7%
Sweden	.151	10%	17%	.116	9%

(b) Indices of Within Group Inequality

	Couples				Single Men		Single Women	
	Dual earner	Male Bread winner	Female Breadwinner	No earner	No Work	Work	No Work	Work
Anglo-American								
Australia	0.151	0.206	0.175	0.237	0.271	0.195	0.202	0.157
Canada	0.174	0.288	0.296	0.639	0.483	0.307	0.288	0.323
Ireland	0.153	0.186	0.165	0.216	0.242	0.229	0.259	0.467
UK	0.173	0.289	0.327	0.269	0.164	0.314	0.164	0.233
US	0.257	0.526	0.478	0.632	0.484	0.447	0.548	0.433
Continental Europe								
Austria	0.156	0.179	0.174	0.161	0.489	0.185	0.251	0.199
Belgium	0.129	0.156	0.153	0.139	0.186	0.167	0.193	0.133
France	0.128	0.144	0.157	0.182	0.119	0.337	0.115	0.173
Germany	0.141	0.168	0.142	0.238	0.338	0.239	0.146	0.137
Italy	0.125	0.185	0.142	0.224	0.212	0.235	0.283	0.213
Spain	0.135	0.256	0.332	0.236	0.254	0.225	0.181	0.148
Netherlands	0.202	0.215	0.171	0.229	0.423	0.219	0.211	0.198
Luxembourg	0.109	0.182	0.099	0.177	0.113	0.128	0.124	0.160
Nordic								
Denmark	0.082	0.132	0.115	0.124	0.163	0.136	0.144	0.110
Finland	0.114	0.124	0.253	0.189	0.191	0.125	0.095	0.095
Norway	0.110	0.283	0.175	0.236	0.219	0.261	0.257	0.086
Sweden	0.102	0.100	0.207	0.108	0.094	0.125	0.080	0.087

c) Contribution of each group to total *within* group inequality (%)

	Couples				Single Men		Single Women		Total % contribution of within group inequality
	Dual earner	Male Bread winner	Female Breadwinner	No earner	No Work	Work	No Work	Work	
Anglo-American									
Australia	49%	14%	1%	2%	1%	9%	1%	5%	82%
Canada	47%	15%	2%	2%	1%	14%	0%	9%	90%
Ireland	33%	16%	2%	1%	0%	4%	1%	11%	67%
UK	50%	14%	2%	1%	0%	11%	1%	5%	83%
US	44%	16%	11%	1%	1%	10%	1%	8%	91%
Continental Europe									
Austria	55%	15%	6%	2%	1%	7%	2%	6%	93%
Belgium	54%	12%	2%	2%	0%	10%	0%	5%	86%
France	63%	6%	4%	2%	1%	8%	1%	6%	91%
Germany	45%	16%	4%	1%	0%	11%	1%	7%	86%
Italy	34%	21%	14%	7%	1%	7%	1%	4%	89%
Spain	49%	26%	3%	3%	1%	4%	1%	4%	89%
Netherlands	55%	21%	2%	2%	0%	5%	1%	5%	92%
Luxembourg	48%	20%	8%	2%	1%	9%	1%	6%	94%
Nordic									
Denmark	50%	7%	3%	1%	2%	9%	2%	6%	80%
Finland	51%	12%	2%	2%	1%	6%	0%	4%	78%
Norway	47%	17%	2%	1%	0%	14%	1%	3%	84%
Sweden	57%	7%	2%	1%	1%	8%	1%	4%	81%

Table 6: Income Components, Female Earnings and All Other Income

	All					Couples				
		Coefficient of Variation								
	Female Share	Female earnings	Other Income	Total income	Rho	Female Share	CV Female	CV Other	CV Total	Rho
Anglo-American										
Australia	.195	1.550	.710	.661	.059	.243	1.256	.695	.630	.085
Canada	.153	1.525	.755	.720	.184	.199	1.175	.708	.661	.228
Ireland	.200	1.527	.916	.769	-.087	.233	1.318	.747	.642	-.126
UK	.181	1.648	.775	.735	.127	.224	1.332	.730	.674	.131
US	.292	1.737	1.067	.890	-.047	.248	1.366	1.079	.829	-.045
Continental Europe										
Austria	.211	1.385	.634	.549	-.118	.254	1.161	.645	.535	-.115
Belgium	.231	1.232	.685	.595	-.015	.267	1.039	.658	.552	-.018
France	.207	1.327	.672	.619	.080	.243	1.116	.067	.598	.097
Germany	.219	1.444	.710	.610	-.100	.269	1.164	.692	.560	-.126
Italy	.180	1.590	.765	.664	-.095	.208	1.429	.776	.662	-.077
Spain	.181	1.760	.751	.699	.232	.202	1.620	.755	.696	.035
Netherlands	.192	1.326	.577	.529	-.009	.221	1.147	.572	.511	-.008
Luxembourg	.221	1.433	.704	.606	-.098	.259	1.257	.691	.589	-.065
Nordic										
Denmark	.262	1.082	.566	.497	-.033	.335	.743	.566	.449	-.012
Finland	.196	1.226	.587	.572	.209	.242	.935	.580	.540	.237
Norway	.205	1.161	.683	.604	.053	.255	.846	.658	.540	.020
Sweden	.196	1.254	.545	.549	.230	.259	.859	.541	.509	.272

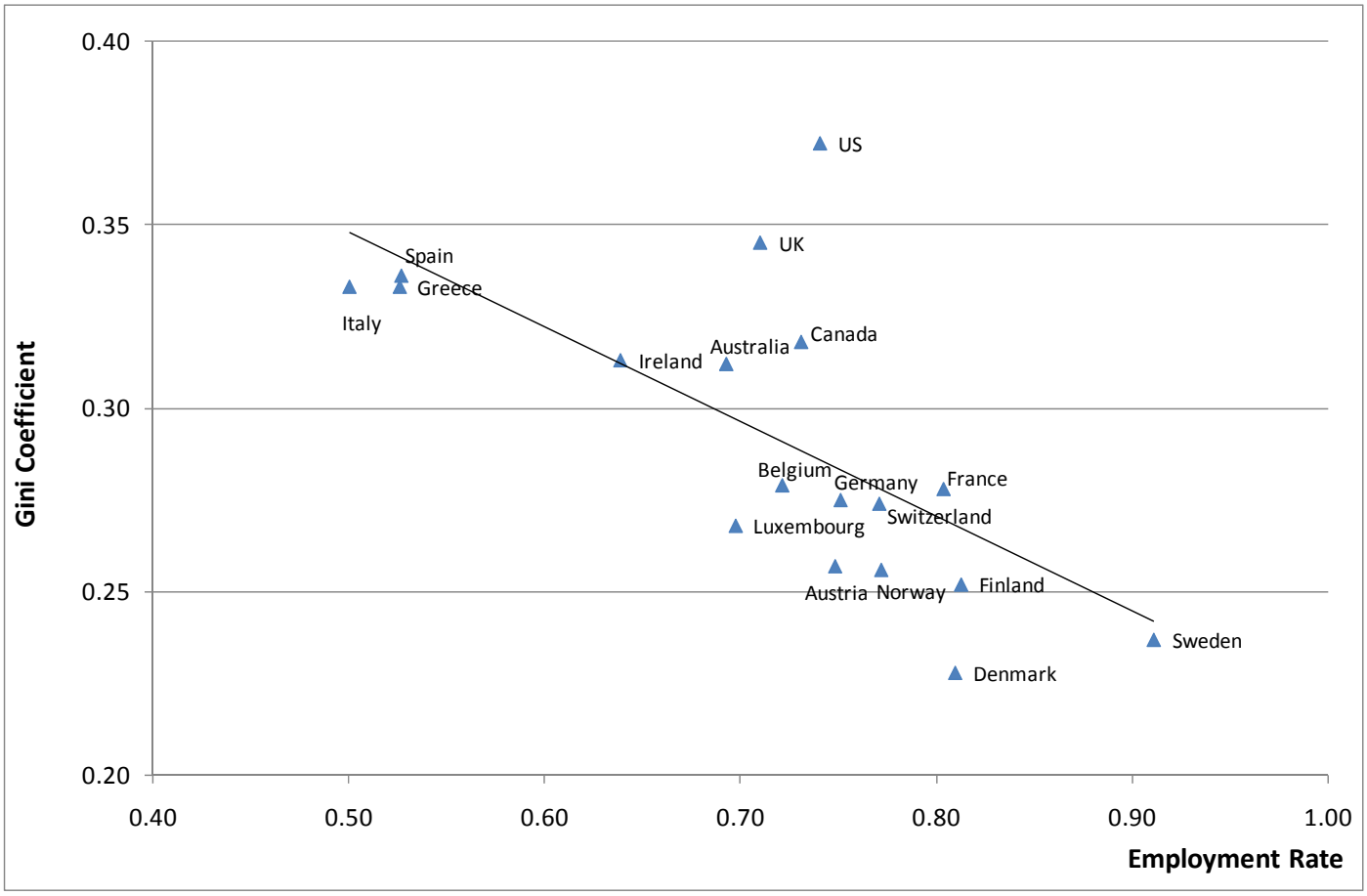
Table 7: E arnings Inequality With and Without Female Earnings (Coefficient of Variation)

	All	(i) No women work		(ii) All Women Work		(iii) Close Pay Gap (no change in employment)		Couples	(i) No women work		(ii) All Women Work		(iii) Close Pay Gap (no change in employment)	
	CV	CV	% change	CV	% change	CV	% change	CV	CV	% change	CV	% change	CV	% change
Anglo-American														
Australia	.661	.761	15%	.559	-15%	.668	1%	.630	.696	10%	.543	-14%	.643	2%
Canada	.720	.940	31%	.666	-7%	.690	-4%	.661	.865	31%	.608	-8%	.621	-6%
Ireland	.768	.897	17%	.707	-8%	.808	5%	.615	.805	31%	.576	-6%	.655	7%
UK	.735	.922	25%	.658	-10%	.700	-5%	.674	.843	25%	.616	-9%	.630	-7%
US	.890	1.323	49%	.832	-7%	.923	4%	.828	1.287	55%	.774	-7%	.873	5%
Continental European														
Austria	.549	.764	39%	.501	-9%	.538	-2%	.534	.722	35%	.487	-9%	.522	-2%
Belgium	.594	.797	34%	.546	-8%	.635	7%	.552	.717	30%	.512	-7%	.602	9%
France	.619	.741	20%	.582	-6%	.639	3%	.598	.670	12%	.563	-6%	.626	5%
Germany	.610	.885	45%	.572	-6%	.604	-1%	.560	.805	44%	.532	-5%	.552	-1%
Italy	.664	.828	25%	.555	-16%	.682	3%	.662	.818	24%	.544	-18%	.681	3%
Luxembourg	.606	.835	38%	.574	-5%	.605	0%	.588	.779	32%	.557	-5%	.587	0%
Netherlands	.529	.643	22%	.493	-7%	.534	1%	.511	.577	13%	.482	-6%	.513	0%
Spain	.699	.826	18%	.626	-10%	.680	-3%	.696	.808	16%	.621	-11%	.675	-3%
Nordic														
Denmark	.497	.694	40%	.470	-5%	.547	10%	.449	.635	41%	.427	-5%	.535	19%
Finland	.572	.792	38%	.541	-5%	.614	7%	.540	.740	37%	.513	-5%	.614	14%
Norway	.604	.769	27%	.586	-3%	.656	9%	.540	.659	22%	.527	-2%	.616	14%
Sweden	.549	.742	35%	.521	-5%	.540	-2%	.509	.675	33%	.485	-5%	.503	-1%

Table 8: Counterfactual income distributions: US and Sweden

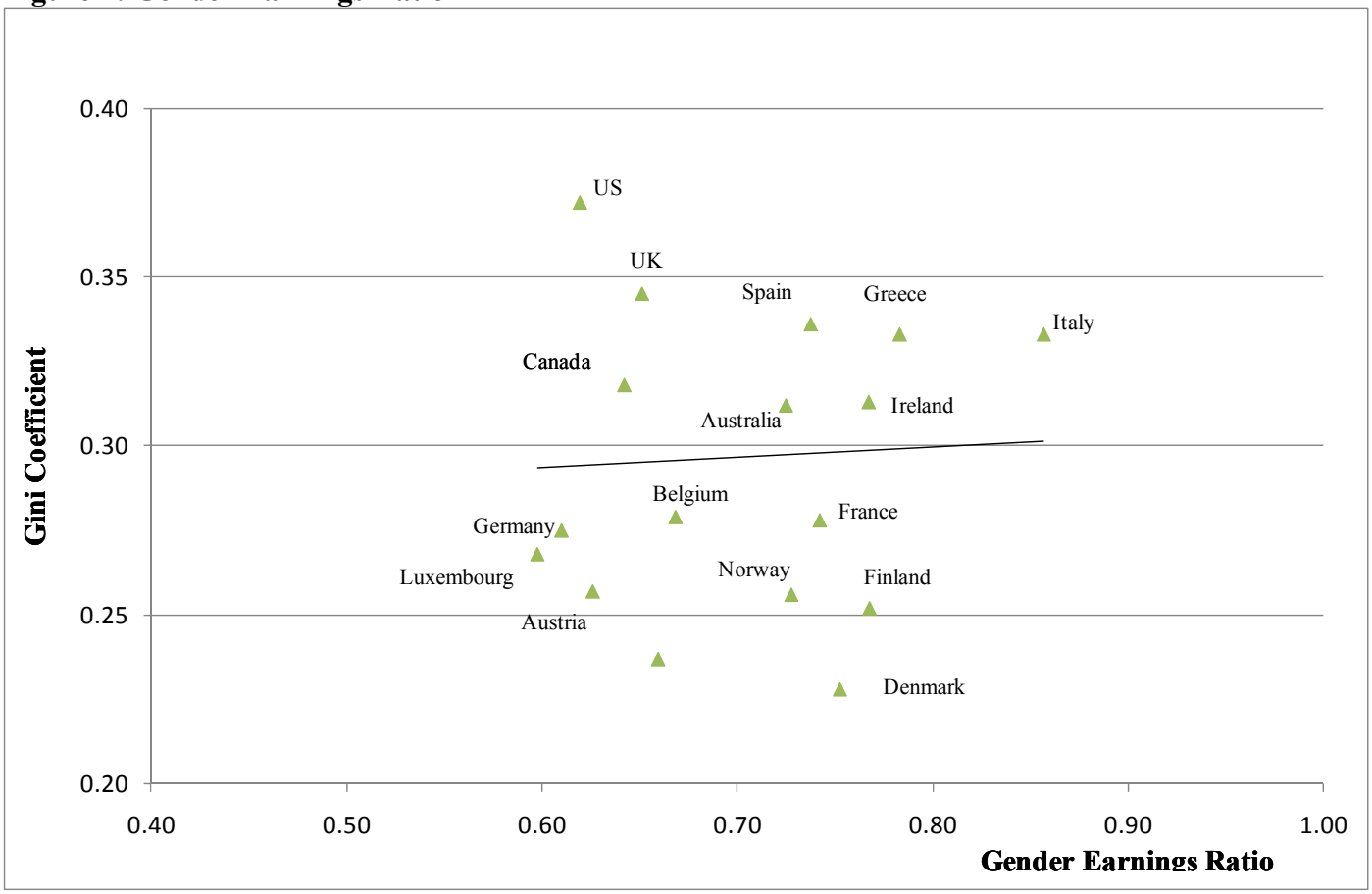
	All							Couples						
		Sweden			US				Sweden			US		
	CV	Mean	CV and Mean	CV, rho, mean	Mean	CV and Mean	CV, rho, mean	CV	MEAN	CV and Mean	CV, rho, mean	Mean	CV and Mean	CV, rho, mean
Anglo-American														
Australia	.661	0.2%	-4.1%	1.4%	5.1%	11.0%	5.3%	.630	0.3%	-8.3%	-2.6%	5.7%	10.7%	3.9%
Canada	.720	0.6%	-3.4%	-2.0%	5.0%	11.4%	-0.1%	.661	0.4%	-7.0%	-5.7%	4.5%	13.1%	-0.1%
Ireland	.768	0.2%	-1.7%	7.7%	-1.9%	2.4%	4.6%	.615	-4.6%	-7.3%	5.7%	3.2%	5.2%	9.9%
UK	.735	0.3%	-5.0%	-1.9%	5.4%	7.9%	-0.7%	.674	0.7%	-9.3%	-5.3%	6.5%	8.0%	-0.7%
US	.890	2.0%	-1.0%	6.2%	0.0%	0.0%	0.0%	.828	3.7%	-1.0%	7.0%	0.0%	0.0%	0.0%
European														
Austria	.549	-0.1%	-1.8%	12.0%	3.4%	16.0%	20.5%	.534	-0.1%	-5.8%	8.4%	4.2%	14.5%	18.8%
Belgium	.594	0.5%	0.8%	9.7%	0.8%	17.1%	15.1%	.552	0.1%	-3.6%	6.6%	1.6%	17.6%	16.0%
France	.619	-0.1%	-1.2%	3.9%	3.0%	16.8%	9.7%	.598	0.0%	-5.8%	-0.2%	3.5%	15.5%	7.9%
Germany	.610	0.2%	-1.9%	10.0%	2.1%	11.0%	14.2%	.560	0.2%	-5.0%	9.2%	2.3%	11.6%	16.6%
Italy	.664	-0.2%	-3.6%	7.3%	2.2%	6.3%	9.0%	.662	-0.4%	-9.3%	1.3%	4.7%	2.2%	4.0%
Luxembourg	.606	9.0%	-7.0%	-7.0%	8.6%	8.0%	-5.0%	.588	2.1%	-12.4%	-5.7%	12.1%	1.6%	-2.4%
Netherlands	.529	0.1%	-1.2%	8.2%	5.9%	22.5%	20.2%	.511	0.9%	-6.6%	3.7%	8.7%	21.3%	19.2%
Spain	.699	-0.2%	-1.9%	10.1%	2.1%	11.5%	10.1%	.696	-0.1%	-7.4%	3.8%	4.8%	9.8%	11.0%
Nordic														
Denmark	.497	-0.3%	2.6%	13.6%	1.0%	28.0%	14.6%	.449	2.3%	5.3%	17.1%	-0.2%	37.4%	35.2%
Finland	.572	0.1%	0.6%	1.3%	5.2%	25.7%	27.0%	.540	0.2%	-2.1%	-0.9%	3.7%	28.1%	13.3%
Norway	.604	0.2%	1.5%	7.8%	0.1%	19.0%	11.8%	.540	-0.3%	0.1%	9.1%	-2.8%	22.6%	18.7%
Sweden	.549	0.0%	0.0%	0.0%	7.3%	28.2%	13.2%	.509	0.0%	0.0%	0.0%	3.4%	34.4%	17.6%

Figure 1: Female Employment and Inequality



Source: Luxembourg Income Study published data "Gender Key Figures" and "Inequality and Poverty Key Figures". Data available at http://www.lisproject.org/key-figures/key-figures.htm/.

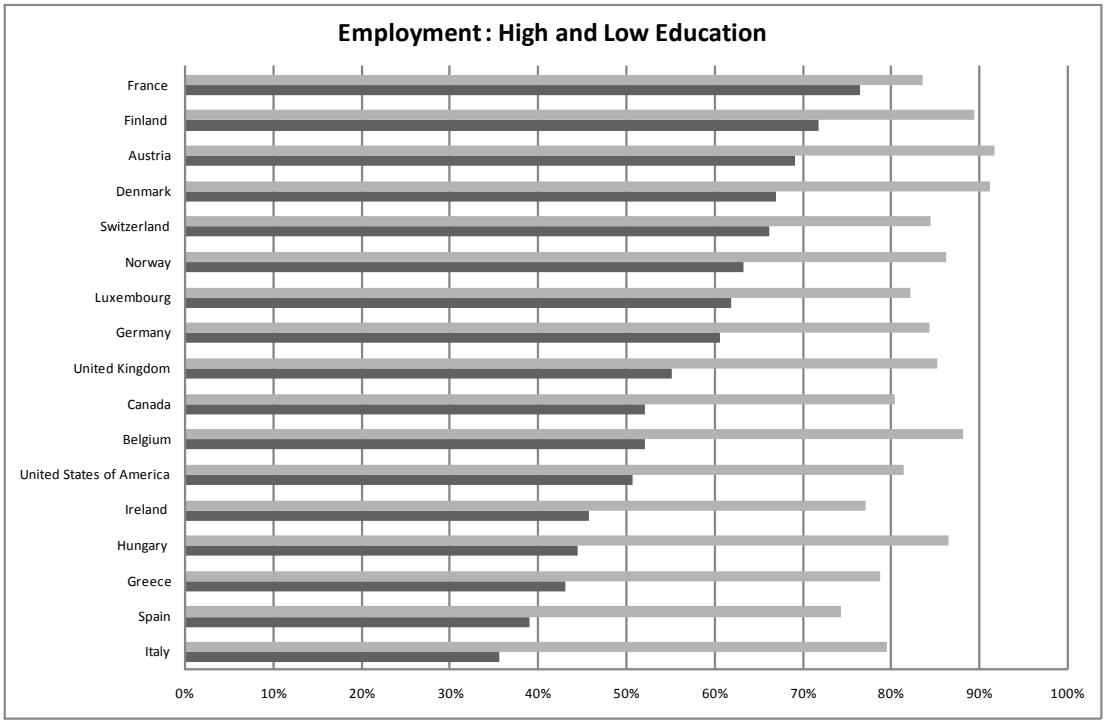
Figure 2: Gender Earnings Ratio



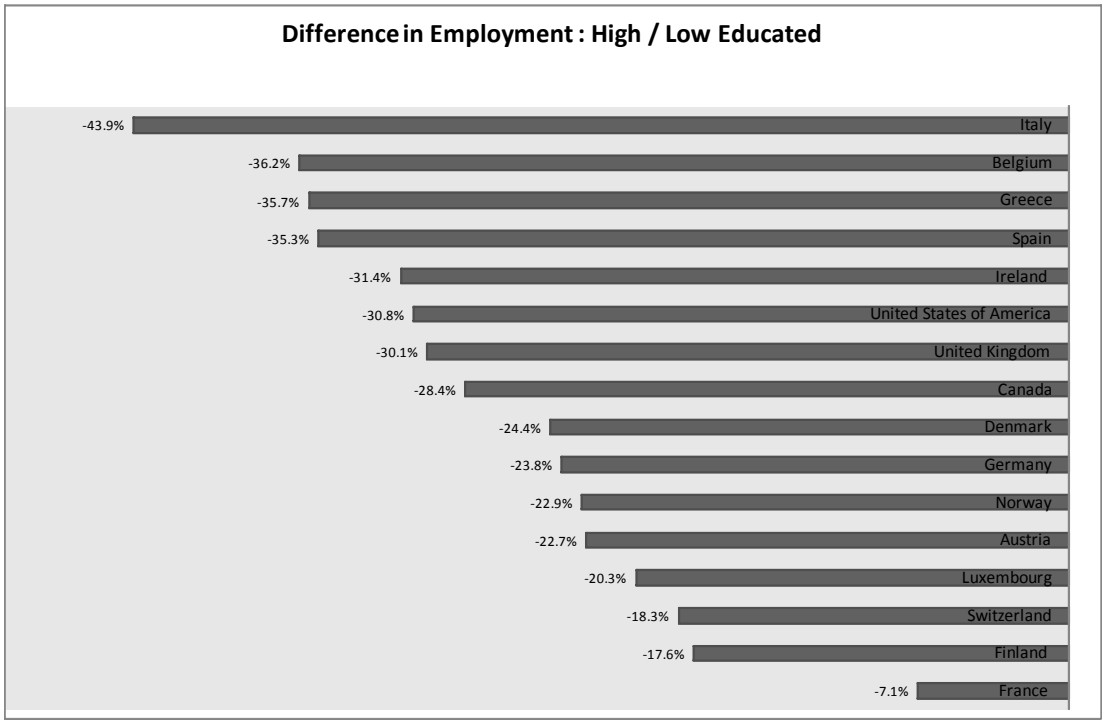
Source: as Figure 1.

Figure 3: Employment by Education

i) Rates



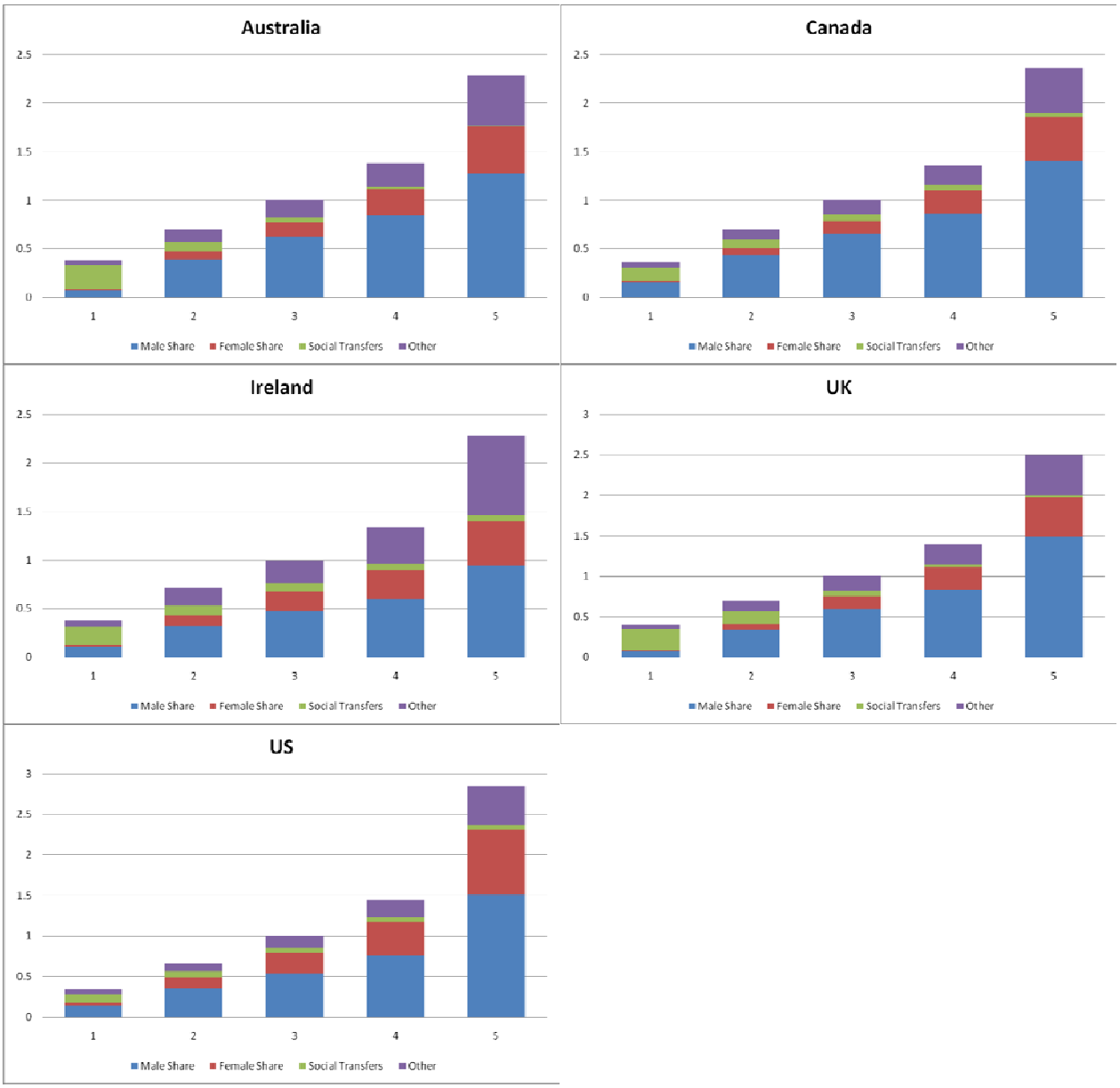
ii) Employment Gap



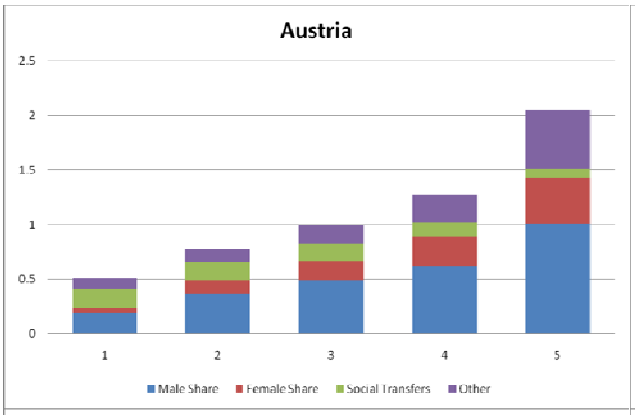
Source: as Figure 1.

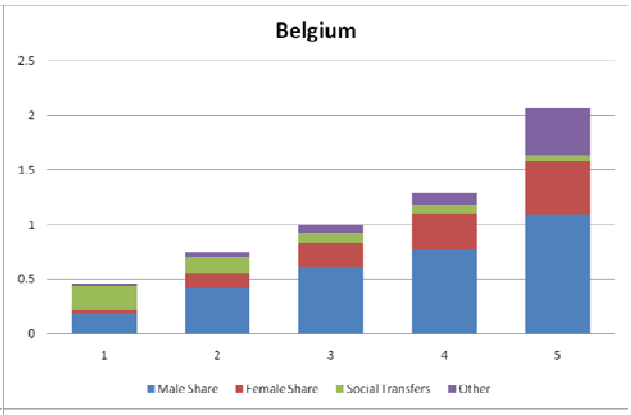
Figure 4: Cross Country Income Shares

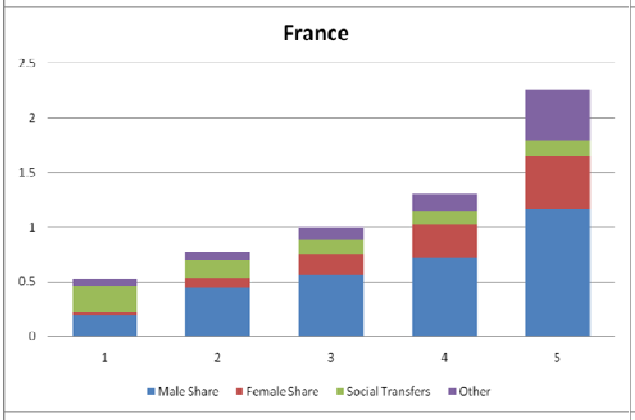
i. Anglo American

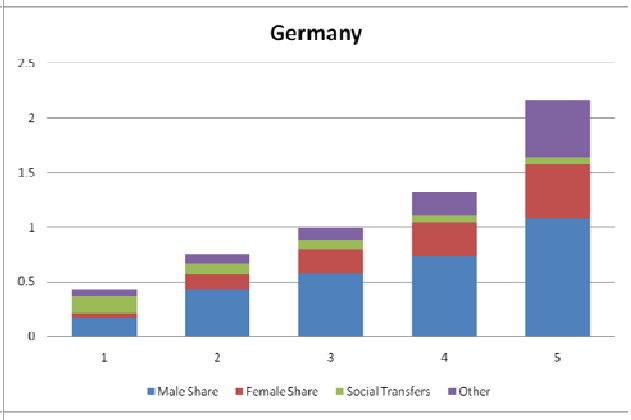


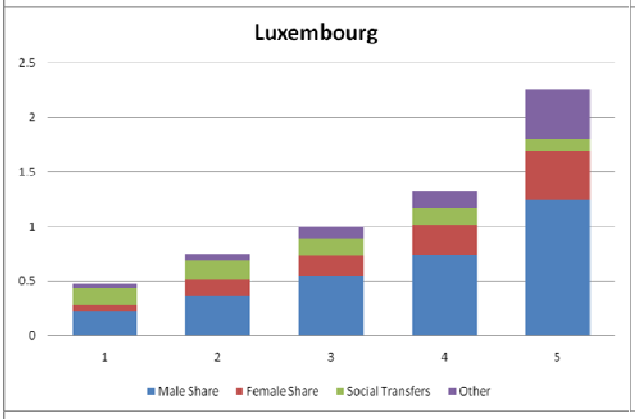
ii) Continental Europe

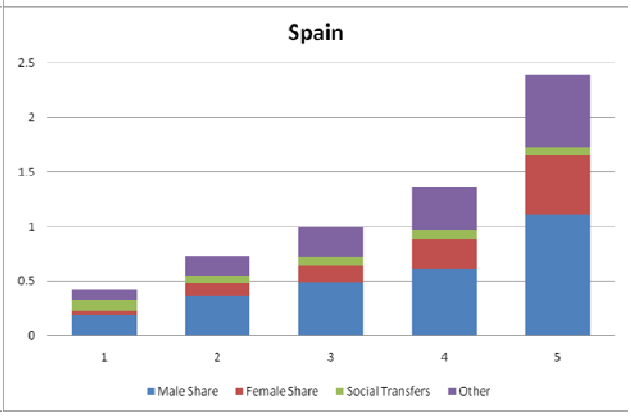


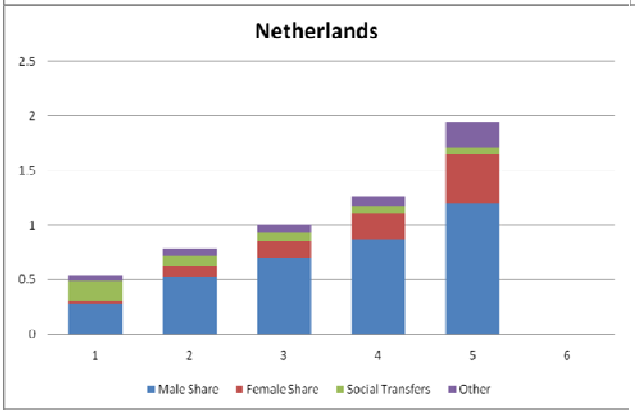












iii) **Nordic Countries**