Trends in the polarisation of employment across households: Evidence from Australia, the United States, Britain, Germany and Spain

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Final report

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Executive summary

Over the last fifteen years or so Australia has seen rising employment, shifts toward smaller households and more households with no earned income. By 1997/8 nearly 1 in 6 children lived in a household with no earned income (Dawkins, Gregg and Scutella, 2002b). The vast majority of these jobless households have low income with around 70% in the poorest income quintile and largely dependent on income support. This is also true for jobless families with children whether lone parents or as part of couples. This trend in Australia is common to many other countries in the developed world (OECD, 1998 and Gregg and Wadsworth, 1998). This paper uses a simple set of indices to measure joblessness at the household level in Australia and 4 other OECD countries (Britain, Spain, Germany and the US) with very different labour markets and welfare systems and tries to identify the likely source of any disparity in the signals stemming from individual and household-based measures of joblessness.

Data and definitions

In the analysis we use the Australian Survey of Income and Housing Costs (or earlier Income Distribution Surveys) (IDS), Spanish and UK Labour Force Surveys, (LFS), the German Socio-Economic Panel, (GSOEP) and the US Current Population Survey, (CPS). All of these data sets provide information at both the individual and household level. Beginning with data from the early eighties, we count the number of working-age employed and non-employed according to ILO/OECD definitions in each household for each year and for each country.

A jobless household, in our definition, is observed when all the occupants within the household of working age are out of work. Similarly, an all-work household occurs when all occupants of working age are employed. We confine our estimates to the population of working age, excluding full-time students and all households whose head is of or above retirement age, to try and reduce the effects of any changes in educational participation and state legislated retirement on our results. Since we are interested primarily in the diverging signals emanating from the individual and household non-employment rates, we make no initial distinction between ILO unemployed and ILO inactive.

Individual vs. household based measures of joblessness

In all of the countries examined there has been a growing disparity between individual and household based jobless measures with any increases in employment evident since the early 1980s unevenly dispersed across the population and concentrated in certain households.

- A rise in the share of households where no adult works between the early 80s to the late 90s is evident in Australia, Britain and Germany. In 1998 Germany and Britain had the highest jobless household rates at around 18 per cent. Australia followed close behind with just over 16 per cent of households with no working-age occupant in paid employment. Jobless household rates in Spain and the US are fairly flat over the period at 11.5 and 14.3 per cent respectively.
- This occurred while individual based non-employment rates were generally falling. Non-employment rates for Britain and Australia have fallen by 5.5 and 3 percentage points respectively. While rates of household joblessness remained fairly flat in the US and Spain over the period, there was a general rise in employment. The non-employment rate decreased by 8.2 percentage points in the US and 5.9 percentage points in Spain. Germany's non-employment rate declined over the 80s and early 90s but has since risen to a level similar to that of 1984.
- At the face of it, it appears that the increase in employment went to households with a member already in paid work as the increase in jobless household rates was matched by a growth in all-work households.

Household composition

Over the last two decades the share of single-adult households has increased in the population. Accordingly there is a greater likelihood of both fully employed and jobless households at any given employment level. This raises an important issue for policy-makers, since the solution to the growing problem of jobless households may differ across the two scenarios. If the rise of the jobless household largely stems from a move towards smaller households, then there is a need to understand the processes that underlie household formation and dissolution. Conversely, if there are trends toward a more unequal division of work within household types, then policy makers need to be aware of the reasons why jobs are going disproportionately to households already benefiting from earned income.

- Household structure differs markedly across countries and jobless rates vary considerably by household size. Large households are much more prominent in Spain than elsewhere, with a much smaller share of single-adult households and a much larger share of multi-adult households than in the other countries.
- Single-adult households are increasingly common in all countries but this is most marked in Australia, Britain and Germany.
- Single adult households in Britain and Spain are relatively more likely to be out of work than similar households in Australia, who in turn are more likely to be out of work than their counterparts in Germany and the U.S.

Measuring employment polarisation

To address these issues, we derive and apply a simple set of indices to Australia and 5 other OECD countries with differing levels of employment, family structures and welfare systems over a fifteen-year period. The indices are built around a comparison of the actual household jobless household rate with that which would occur if all available employment were randomly distributed over the working-age population given the observed household structure.

Though the incidence and magnitude of these changes varies widely across the countries examined, a large part of the change in household joblessness is from an increase in the polarisation of employment rather than from changing household composition or employment levels.

- Polarisation levels are highest in the UK, with Australia not far behind.
- The change in employment polarisation between the early 1980s and the late 1990s is most marked in Spain, with the traditional single income earning family, although still remaining the norm, less common than was previously the case. Employment in the UK and Australia has also become much more polarised across households. This phenomena is lowest in the US and Germany.

While general trends towards smaller households can have an effect on the jobless household rate, shifts towards households where employment levels are traditionally low, such as lone parent households, which are not picked up by general shifts in household composition, can drive the measure of polarisation. To determine whether this is indeed the case we decompose our measure of polarisation into within and between household type components.

In all the countries we study, the increase in the polarisation of employment across households can be explained by within rather than between household group factors. So after accounting for general trends towards smaller households and changes in employment levels across the population, the increase in household joblessness in each country is largely due to changes within household types rather than due to any increases in the representation of groups in the population where employment is traditionally low, such as lone parents.

It is important to note that the rise in jobless households generally occurred in two rather different periods. The polarisation of employment primarily occurred in the 1980s whereas the changes in household composition predominantly occurred after 1990. Hence the employment gains made after the early 1980s recession appear to have made no impact on the share of no-earner households. In fact jobless household rates continued to rise. Any increases in the availability of employment failed to reach these households. After 1990 however, the continued rise in joblessness among households was generally due to shifts in household structure toward single-adult households where employment rates are low.

Within household polarisation

The estimate of employment polarisation within household types can be further broken down by household size to see whether any particular household type is more likely to experience an unequal distribution of employment than others.

- In Australia and Spain, the vast majority of the polarisation measured within households comes from two-adult (couple) households.
- This differs from that observed in Britain and the US where most of the within-household polarisation observed is in single adult households.
- Within household polarisation in Germany is due to multi-adult households (2 adult or more).

Individual employment opportunities and assortative mating

If household members have similar characteristics then inequalities in labour market opportunities along the lines of these characteristics will bring a coincident polarisation by household. The most obvious is by region, for all household members reside at the same address then if that is an area of low employment, all household members are likely to have a lower propensity to be in work. In the context of couples the process by which members share common characteristics is called assortative mating. This kind of 'assortative mating' would tend to make joblessness concentrated in particular households if joblessness is more apparent in certain sections of the population. With female participation rates rising and male participation rates falling in developed countries, it is quite likely that some of the observed polarisation may be due to assortative mating becoming more apparent. This effect will be strengthened if employment opportunities have worsened for certain groups in the population while improving for others, and the disadvantaged groups live in the same household. For instance demand for less skilled employment may have fallen with an increase in demand for high skilled employment. With less skilled males more likely to be married to less skilled females, and high skilled males more likely to be married to high skilled females, this will have a significant effect on employment polarisation.

To explore the importance of common characteristics on employment polarisation, we relax the assumption of a random distribution of employment by allowing the predicted individual non-employment rates to vary by gender, age, qualifications and region. This allows us to see whether the major shifts in the pattern of employment across regions, skill and age groups over the last twenty years lie behind the observed polarisation of work.

We find that controlling for observable characteristics explains part of the change in our measure of employment polarisation in all of the countries examined but an unexplained component, to varying degrees, remains.

- In Australia and Britain, observable patterns in individual characteristics explain about a third of the increase in employment polarisation over the period.
- In Spain only a very small portion of the increase in employment polarisation can be explained by changing patterns in employment across groups in the population.
- Changing employment patterns can explain trends in the distribution of employment in the US and Germany to a much larger extent than the other countries examined, although an unexplained component remains.
- The results are consistent with the notion that older, less educated men are losing work and prime-age women are entering work. These groups live in different households and hence polarisation rises.

Households with children

Financial incentives to enter into paid employment facing households with children differ widely from other household types. Lone parents are exposed to additional constraints in offering labour supply, as they are often the sole carers of their children. However, couple households with children can face substantial disincentives from one member entering into low paid, insecure work, when interactions between the tax system and the social security system are taken into consideration. Often it only pays if both adults enter the labour force. This is even more pronounced if one takes into consideration any costs associated with employment, such as travel costs, and the loss of non-cash benefits such as concessions to utilities and transport. Summarising the results of the analysis on households with children we find that:

- Australia, common with Britain shows an exceptionally high proportion of children living in jobless households, with over 15 per cent of Australian children and 17 per cent of British children living in households where no adult was employed in 1998.
- All of the countries examined show declines in jobless rates among single parent households. In Britain this drop fell short of making use of the employment gains over the period. In all of the countries examined single parents employment prospects

worsened relative to other individuals with similar characteristics.

- Australia was the only country where employment polarisation in two-adult households was not only positive by the late 90s (a trait shared with Britain) but also increasing over the period. Thus not only are single parent households not doing so well in getting jobs compared to others with similar characteristics, which is common across countries, Australia also has a large problem with joblessness in two-adult households with children. Indeed, the increase in the polarisation of employment in two-adult households with children in Australia explains the large majority of the rise in employment polarisation within households in Australia.

Relationship with welfare systems

A number of features of the welfare systems of the countries examined fit the pattern of polarisation observed:

- The most generous component of Germany's unemployment system lasts much longer for older workers, allied to the provision of an early retirement package for the over 60s. This is consistent with the high share of older workers in Germany.
- Welfare requirements mean that lone parents in Spain, and the US, are generally not exempt from job search. Lone parents are not subject to adverse polarisation and contribute substantially less to the jobless household rate in these countries.

Of greater concern are Australia and Britain, which combine high employment rates with jobless household rates higher than the other countries examined, particularly for families with children. Three features common to both the Australian and the UK welfare system might lie behind this:

- First, while welfare payments are not generous they provide weak incentives to take jobs at the lower end of the wage distribution. High levels of wage inequality in Britain and declines in real earnings of low-paid male employees in Australia over the 80s generating low-wage offers in many jobs exacerbate this.
- Second, the reliance on means-tested social assistance is high in both Australia and Britain. Individuals without a job therefore face radically different work incentives dependent on the presence of children and whether their partner has a job. This is

particularly true of couple households in Australia.

- Third, in the period of interest there were no earnings related benefit payments in Australia or Britain, with benefits varying according to family make up. This again creates variation in incentives across family structures such that having children in a jobless household substantially reduces the attractiveness of low-wage jobs. In mainland Europe the long period of earnings related benefit payments (unlimited in Germany) means that work incentives vary only according to differences between previous earnings and potential wage offers and are unlikely to vary across family circumstances.

The reform process is underway in most of the countries examined to address many of these issues:

- In Australia, the ongoing welfare reform process starting from around 1994 has addressed many of these issues, to varying degrees of success. The separate treatment of partners with a partial individualisation of welfare payments; the Jobs, Education, Training (JET) programme designed to assist lone parents into re-entering the labour force; and greater emphasis and monitoring of job search by the unemployed are the longest standing elements of reform. More recently, financial incentives for families with children, especially with child-care costs and a wider focus on motivating and helping all welfare recipients to find work are likely to reduce this problem after our period of study. There has also been discussion of implementing some form of earnings/hours conditional benefit or 'work incentive payment' to encourage participation in the workforce.
- The British government has also set about on a more proactive policy approach introducing a range of welfare reforms to reduce welfare dependency especially among families with children.

1. Introduction

The analysis and examination of most labour market data relies on information collected on individuals, which are then aggregated to cover a population of interest. Unemployment and employment rates are constructed in this way and are used to act as proxy measures of two rather different concerns about labour market performance. First, the extent of labour market slack and hence potential inflationary pressure in the economy and second, they can be used as a measure of social distress and exclusion. Alternative measures of social distress and exclusion such as poverty and inequality are typically based on household level data. The labour market signals emanating from these two levels of aggregation can diverge. As many Australian and overseas studies have shown (for eg. Dawkins, Gregg and Scutella, 2001a and b; Miller, 1997; Gregg and Wadsworth 1996, 1998, 2001 and 2002; OECD, 1998; and Gregory, 1999) the burden of unemployment or more generally joblessness has become increasingly concentrated in certain households over the last twenty years or so. In common with many other OECD nations, Australia has seen an increase in the share of households with all working-age individuals in employment accompanied by a rising share of households where no adult is employed. This is a particular problem for households with dependent children: by 1997/8 nearly 1 in 6 children lived in a household with no earned income (Dawkins, Gregg and Scutella, 2002b). This has occurred, despite a growth in the proportion of the working-aged population in employment since the early 1980s.

The household circumstances of jobless individuals are clearly of importance. Households lacking wage income will be more likely to be dependent on welfare payments and more likely to be poor. This in turn has profound implications for the scale of government welfare finance for a given level of joblessness. OECD (2001) shows that jobless household rates are

far more highly correlated with non-pensioner poverty across countries than individual based unemployment or employment rates. In the Australian context Dawkins, Gregg and Scutella (2002b) show that around seventy per cent of jobless households in Australia are in the lowest income quintile with close to three quarters of jobless households with children in the lowest quintile. Dickens and Ellwood (2002) also show how household based employment patterns help explain how Britain combines unemployment at just over 5 per cent, the lowest of any G7 country, and employment rates among the highest rates in the industrial world, with very high poverty and inequality amongst the working age population, especially among families with children. Jimeno et al. (2000) likewise note the increasing inequality in the distribution of labour income across Spanish households which the attribute largely to rising numbers of multi-earner households.

While the rise in jobless household numbers is undeniable, little is known about the extent of divergence between household and individual based jobless measures and how this relationship has changed over time. Over the last twenty years or so single-adult households have increased in the population meaning a greater likelihood of both fully employed and no-work households at any given employment level. This raises an important issue for policy-makers, since the solution to the growing problem of jobless households may differ across the two scenarios. If the rise of the jobless household largely stems from a move towards smaller households, then there is a need to understand the processes that underlie household formation and dissolution. Conversely, if there are trends toward a more unequal division of work within household types, then policy makers need to be aware of the reasons why jobs are going disproportionately to households already benefiting from earned income.

To address these issues, we derive and apply a simple set of indices to Australia and 5 other OECD countries with differing levels of employment, family structures and welfare systems over a fifteen-year period. The indices help identify the extent of any discrepancy between individual and household measures of joblessness and can evaluate changes over time. A detailed description of the properties of these indices and how they relate to other measures of inequality is presented in Gregg and Wadsworth (2002). Built around a comparison of the actual household jobless rate with that which would occur if work were randomly distributed over the working-age population given the observed household structure, we then show that there is a growing *polarisation* of work across households, in each country. This is most marked in the UK, with Australia not far off (particularly for households with children) and lowest in the US and Germany. We show that this increased polarisation is not driven by changes in household structure. We then examine how much differential movements in employment rates across household type and across the age, gender, education and regional characteristics of the individuals who comprise a household can account for this polarisation.

Section 2 provides a description of the data and definitions adopted in the study while the basic facts about individual and household based jobless measures in Australia and the other 4 OECD countries are set out in Section 3. Section 4 considers formally why such divergences can arise and defines a set of household based measures of joblessness and polarisation. Section 5 decomposes the change over time into the various competing explanatory components. Section 6 outlines differences in institutional frameworks across countries that may help shed some light on the results. Conclusions and policy implications of the findings are discussed in Section 7.

2. Data and definitions

In the analysis we use the Australian Survey of Income and Housing Costs (or earlier Income Distribution Surveys) (IDS), Spanish and UK Labour Force Surveys, (LFS), the German Socio-Economic Panel, (GSOEP) and the US Current Population Survey, (CPS). All of these data sets provide information at both the individual and household level. The Australian data used are the 1982, 1986 and 1990 Income Distribution Surveys and the Income and Housing Costs Surveys from 1994/95 to 1997/98. The British and Spanish data are taken from the respective Labour Force Surveys, the US data are from the CPS and the (west) German data are from the GSOEP. The data for each country use population weights. The number of households in each year in the British, US, Spanish data is around 40,000, and around 4,500 in Germany, (though the German sample was boosted in 1998 to around 7500 households). The Australian sample size varies over the years from around 7000 households in the surveys from 1986 and 1994/95-1997/98 to around 12000 households in the 1982 and 1990 surveys.

Beginning with data from the early eighties, we count the number of working-age employed and non-employed according to ILO/OECD definitions in each household for each year and for each country. A jobless household, in our definition, is observed when all the occupants within the household of working age are out of work. Similarly, an all-work household occurs when all occupants of working age are employed. We confine our estimates to the population of working age, excluding full-time students and all households whose head is of or above retirement age[1], to try and reduce the effects of any changes in educational participation and state legislated retirement on our results. Since we are interested primarily in the diverging signals emanating from the individual and household non-employment rates, we make no initial distinction between ILO unemployed and ILO inactive.

For the purposes of the following analysis dependent children are defined as all children under 15 years and full-time students living at home under the age of 18 years. As levels of formal education levels differ quite dramatically across countries, to facilitate cross country comparisons three quite broad educational qualifications are used; degree, intermediate and low qualifications or there approximate equivalents in each country. When examining regional issues we divide each country into around 10 regions. Sample sizes limit the extent of disaggregation. Australia is actually split into 12 regions: the 5 mainland States are separated by capital city/rest of state with Tasmania a single category and the Territories (ACT and NT) combined into 1 category. In 1986 no distinction between capital city/rest of State is available thus the categories in this year represent the six States plus a final category for the Territories. The regions for: Britain are the 10 standard government administrative regions; Germany the 10 lander; Spain - 49 provinces grouped geographically into 17 regions; and the US states grouped into 9 geographic regions. For more information on the regional groupings see Table A1 in the appendix.

3. Household Employment Patterns

We begin with a simple outline of the existing facts on household based measures of employment. Tables 1a-c and Figure 1 document the growth in the proportion of working-age households and individuals that are jobless in Australia, Britain, Spain, Germany and the US from 1983 onward. To illustrate our central concern, note that the share of households where no adult works in all countries apart from Spain and the US shows quite a steady increase between the early 80s to the late 90s. In 1998 Germany and Britain had the highest jobless household rates at around 18 per cent, with Australian following close behind with just over 16 per cent of households with no working age member in paid employment (Table 1a). Jobless household rates in Spain and the US were 11.5 and 14.3 per cent respectively. Figure

1 and Table 1c show that this pattern has occurred while individual based non-employment rates have fallen. In (west) Germany the individual based jobless measures falls during the eighties but the household based measure rises. In the US, the jobless household rate remains fairly flat over the period, with a slight overall fall in household joblessness, but this occurred during a period where the individual-based non-employment rate fell by over 8 percentage points. Based on these observations, it is clear that household and individual based measures of joblessness are emitting very different signals about labour market performance.

Figure 2 and Table 1b also document the simultaneous rise in the proportion of households where every one is in work, we brand these *all-work households*. Households containing a mixture of working and non-working adults, or *mixed-work households*, are in secular decline in every country we study. In all of the countries examined, the share of mixed-work households has fallen by between 10 to 15 points. In Australia, Britain and Germany this has occurred whilst the share of households where either everyone or no-one works has risen. In Spain, the mixed work household remains the most typical form of household, but it too has been declining steadily over the period. In the US however, the decline in the mixed work household has been accompanied only by a rise in the share of all-work households. Policy makers are likely to be non-neutral as to whether polarisation is over producing jobless households or all-work households. Jobless households are highly likely to be dependent on welfare payments, to be living in poverty and have attendant social problems. In what follows we focus disproportionately on jobless households for this reason. [2]

Table 2 indicates that household structure differs markedly across countries and that jobless rates vary considerably by household size. The more adults present, the lower the risk of joblessness ceteris paribus. The share of single-adult households in Spain is noticeably much

lower than elsewhere and Spain has more multi-adult households than other countries. Single-adult households are increasingly common in all countries but this is most marked in Britain and Germany. The relative differentials between household types also differ across countries. Single-adult households in Britain and Spain are relatively more likely to be out of work than similar households in Germany and the U.S. Single-adult households in Australia fall in between the two groups being more likely to be employed than in Britain and Spain but less likely than one-adult households in Germany and the US. These patterns will be important in section 5 when we decompose the change in jobless household rates over time.

4. Defining Polarisation

Given the above, we wish to be able to measure the extent of divergence between the individual and household based measures of joblessness and to decompose and assess the reasons for any discrepancy. Consider a simple world of 2 households each containing 2 adults and a non-employment rate in the population of 50%. The world in which one adult is out of work in each household is very different from the world in which both adults work in one household and no one works in the other. Yet the individual-based aggregate non-employment rate in the population is the same, and so one is unable to distinguish between the two outcomes. We would therefore like a measure that focuses on discrete outcomes but that can be readily decomposed, is scale invariant, satisfies the principle of population and the principle of transfers, and all axioms required of inequality measures in the literature.

We propose the use of a counterfactual household benchmark, namely the jobless household rate that would occur if work were randomly distributed in the population. Gregg and Wadsworth (2002) provide a detailed discussion of the issues and the statistical properties of these measures presented here. Under this benchmark each individual would have the same

probability of being out of work, given by the aggregate non-employment rate in the population at time t, n_t. It follows that the predicted jobless rate for a household with i adults at time t is then given by

$$p_{it} = n_t^i \tag{1}$$

Ignoring time subscripts, the aggregate predicted jobless household rate is the weighted average of these rates, where the weights are the shares of each household type – defined by the number of resident adults in the population.

$$\hat{w} = \Sigma_i s_i p_i = \Sigma_i s_i n^i \tag{2}$$

The definition of polarisation is then the difference between the actual and predicted jobless household rates[3], that is the extent to which there are more (or fewer) jobless households than would be predicted by a random distribution of employment:

$$\text{Polarisation} = \text{Actual - Predicted} = w - \hat{w} = \Sigma_i s_i w_i - \Sigma_i s_i n^i = \Sigma_i s_i (w_i - n^i) \tag{3}$$

This gives us a cardinal measure, in percentage points, of the diverging signals from household and individual-based jobless statistics. The larger the value, the greater the extent of polarisation. A negative value indicates that work is distributed such that there are fewer jobless households than merited by a random draw. If work is randomly distributed then the predicted and actual jobless household rates are identical and polarisation must go to zero.

We also calculate a relative measure of polarisation using the ratio of the actual and predicted rates, relative polarisation $= w / \hat{w}$. In this case, a value of one would indicate no polarisation, values above one would then give the percentage excess deviation of the jobless household

rate above the norm while values below one would give the percentage deviation below the norm. We have no reason to favour the absolute or relative version, so in what follows we present estimates from both specifications and consider if they provide any important differences for interpretation of the observed patterns. One might also consider normalising the polarisation measures to try and take account of variation in employment over the economic cycle. We therefore also divide the absolute polarisation index by the non-employment rate in each year to get a measure of normalised polarisation = $(w - \hat{w})$/n, where n is the non-employment rate. This measure is still centred around zero, but now the index being weighted by the non-employment rate satisfies the scale invariance criterion, which facilitates comparisons across times and across countries with different non-employment rates. All these calculations can be replicated for each household size type in order to see which groups have experienced the most polarisation.[4]

Gregg and Wadsworth (2002) show, from the above: 1) That the individual non-employment and jobless household counts need not move at the same rate or in the same direction over time. 2) That the jobless household rate will rise if employment shifts from single to multiple adult households, for a given total employment rate. 3) If job creation is skewed toward multiple-adult households with workers already present then whilst the individual non-employment rate will fall, there may be little impact on the jobless household rate. Hence changes in the measure of polarisation depend on how unevenly work is distributed among multi-adult households and on whether single-adult households are losing work relative to multi-adult households.[5]

Decomposition of Polarisation

In order to explore the source of any disturbance we need to decompose changes over time in both the actual jobless household rate and the polarisation count. Using the shift-share breakdown currently advocated in the inequality literature, we decompose the change in polarisation as[6]

$$\Delta(w - \hat{w}) = \Sigma_i \Delta s_i (w_i - n^i)$$

$$= \Sigma_i \Delta s_{i*} [0.5(w_i - n^i)^0 + 0.5(w_i - n^i)^1] + \Sigma_i \Delta (w_i - n^i)^* [0.5\, s_i^0 + 0.5\, s_i^1] \qquad (4)$$

where the first term is the between household type component and the second term measures the within-household type component. This tells us whether the change in polarisation is due to shifts in household structure towards family types who tend to have lower employment probabilities, (term 1 on the right hand side of (4)), or due to employment opportunities worsening amongst all family types, (term 2). Term 2 can also be split into whether the within-household component is strongest amongst single adult or multi-adult households. Since the actual rate equals the predicted plus residual polarisation a similar shift-share breakdown gives:

$$\Delta w = \Delta \hat{w} + \Delta(w - \hat{w}) = \Sigma_i \Delta_i s_i n^i + \Sigma_i \Delta_i s_i (w_i - n^i)$$

$$= \Sigma_i \Delta_i s_{i*} [0.5\, n^{i\,0} + 0.5\, n^{i\,1}] + \Sigma_i \Delta_i n^i * [0.5\, s_i^0 + 0.5\, s_i^1]$$

$$+ \Sigma_i \Delta_i s_{i*} [0.5(w_i - n^i)^0 + 0.5(w_i - n^i)^1] + \Sigma_i \Delta_i (w_i - n^i)^* [0.5\, s_i^0 + 0.5\, s_i^1] \qquad (5)$$

The 1st term gives the contribution of the change in the predicted rate due to changing household shares, the 2nd the change in the predicted rate due to changing non-employment rates, the 3rd between group polarisation and the 4th term within group polarisation.

Disaggregating by Characteristics

It is probable that household occupants have common characteristics, such as being less

qualified, that may make them more likely to experience joblessness simultaneously. To address this issue, the predicted benchmark in equation (1) can be based instead on the mean non-employment rates for various sub-groups according to gender, age, qualifications and region. As the degree of disaggregation for any group k increases, then the predicted and actual rates will tend to converge. The degree of disaggregation used is, of course, arbitrary so we choose to look at the major factors over which employment is known to vary. This helps clarify the extent to which polarisation occurs because either (a) multi-adult household members have common characteristics across which employment varies substantially or (b) single adult households have characteristics which are associated with low employment probabilities. This *conditional polarisation* measure now becomes:

$$\text{Polarisation} = \text{Actual} - \text{Predicted} = w - \hat{w} = \Sigma_{ik}\, s_{ik} w_{ik} - \Sigma_{ik}\, s_{ik} n_k^i = \Sigma_{ik}\, s_{ik}(w_{ik} - n_k^i) \qquad (6)$$

The extent that this count differs from the measure introduced in (3) is attributable to variation in employment between the sub-groups identified in (6). Any residual within-group polarisation would suggest that jobless households occur because all members of certain households suffer reduced access to work relative to others with similar characteristics. The conditional non-employment probabilities can be estimated using either cell based sample non-employment means or by parametric regressions. In this paper we concentrate on using the non-parametric cell based techniques.

5. Results

We now proceed to measure the polarisation of work across households in the 5 OECD countries in Table 3 and Figure 3 using the polarisation measures based around (3). We present results for the start and end years of the data in each country, and also certain intervening years. Ideally we would like these intervening years to coincide with peaks and

troughs in the business cycle of each respective country, however we are unable to do this due to limitations in the availability of data in certain countries.[7] All countries exhibit very low, or negative levels of polarisation at the starting points of the data, although it is much more marked in Spain than the other countries. Negative polarisation of work is consistent with theories of gender divisions of non-work and work time (see for example Danziger and Katz, 1996, Francois, 1998). Added worker theory suggests that the presence (absence) of an employed adult in a household would reduce (raise) the labour supply of other occupants, (see Cullen and Gruber 2000). This would imply higher employment among single-adult households and fewer multiple adult all-work households, other things equal, which is again consistent with negative polarisation.

Spain actually experiences the largest increase in polarisation, on absolute and standardised measures, over the period between 1982 and 1998 although polarisation remains negative in 1998. As Spain has relatively low employment levels, the change in relative polarisation is not as marked. Spain remains to be a very traditional country, with female labour force participation still relatively low and the traditional male-breadwinner role remaining apparent. However, this shows that Spain is beginning to look more like a country where employment is distributed randomly across household members.

Of the nations where employment is concentrated in more households than a random distribution of employment would imply (i.e. those with positive employment polarisation) Australia and Britain have experienced the largest increases in polarisation. By 1997/8, despite aggregate employment rising from their 1982 lows, the proportion of households with no adult in work in Australia had risen by over three percentage points. The predicted rate however slightly fell, with increases in aggregate employment more than sufficient to

compensate for changes in household composition (column 2 in Table 3a). As a result, the polarisation measure rises by 3.4 points more than if the available work were randomly allocated across households. The relative measure indicates that the jobless household rate in 1998 is 41% higher than the counterfactual.

This pattern is similar to that of Britain. In Britain the level of households with no adult employed was around 3 percentage points more in 1998 than in 1983. Like Australia, if employment were distributed at random across all working-age individuals the predicted jobless household rate would have fallen slightly. Polarisation in Britain increased by 3.3 percentage points over the period with the jobless household rate in 1998 52 per cent higher than the counterfactual. All the measures confirm that the bulk of polarisation in Australia and Britain had occurred by the late 80's.[8]

The German and US data all show an increase in polarisation over the period, though the level of polarisation in these countries is much lower than in Australia, Britain and Spain. Polarisation was lowest in Germany at just 0.6 points with the US a little higher at 0.9 points. In Germany, polarisation began rising later than in the other countries, notably after the recession of the early nineties. The US experiences a fall in polarisation in the mid to late 1990s.

Figure 3 also tracks the measure of polarisation over time alongside the jobless household rate. Australia and Britain show a similar pattern in their jobless household rate and in absolute polarisation (although there are less data points available in Australia making certain peaks and troughs difficult to see). Like Britain, absolute polarisation rises in Australia after the early 80s recession and slightly again after the recession in the early 90s, although in the

second decade this rise is not as prominent as that seen in Britain. Jobless household rates and polarisation in both Australia and Britain continue to rise after individual employment rate begins to recover. There are then modest falls in polarisation during the later part of each recovery (in Australia this seems to be the case in the late 90s but cannot be determined due to lack of data in the late 80s). There is less evidence of any cyclicality in polarisation in the other countries we study. In Spain polarisation in the nineties rises despite recovery in the jobless household rate. The use of the absolute, normalised or relative polarisation measures makes little difference to the trends over time, but does have some influence around turning points in the data, (see Figure A2 in the Appendix). So for brevity we mainly focus on the absolute measure from here on.

Accounting for Polarisation

Table 4 presents the decomposition of the change in the jobless household rate over the full sample period into changes in household structure, changes in aggregate employment and the within and between household group contribution of polarisation using (5). In all countries, the improvements observed in aggregate employment rates should lead to fewer jobless households, whilst the shifts in household structure toward more single-adult households should produce more. Table 4 shows that the impact of changes in household structure over time on the jobless household rate is similar across countries, (column 3). The U.S. has the smallest predicted rise in jobless households due to changes in household composition at 1 percentage point and Britain the highest at 3 points. Australia and Germany an equal second with a predicted 2-point rise in the predicted jobless household rate due to changes in household size over the period.

Changing household shares will affect both the actual and predicted jobless household rates for a given non-employment rate, but not polarisation within each household type. Yet in

each country analysed, the main source of polarisation is more jobless households *within* all household types, (column 5), rather than from shifts toward household types who already suffer high polarisation, (the between household component of polarisation in column 4). Since changing household shares does little to account for polarisation, this suggests, to us, that explanations for these changes lie instead in the workings of the labour market and its interactions with given household structures.[9] Moreover, Australia common with Spain, exhibits a rise in within-household type polarisation that is larger than the impact of changing family structure. Thus most of the increase in the jobless household rate in Australia is due to within household changes rather than moves toward more single-adult households. Also, unlike Britain and the US where polarisation has moved most within single-adult households, polarisation in Australia, Spain and Germany is mainly in households with 2 or more working-age members. In Australia and Spain this is mainly in 2 adult (couple) households with 75 per cent of the within household polarisation in Australia coming from 2 adult households (column 6). So although Australia and Britain exhibit very similar patterns in overall jobless household rates and measures of polarisation, joblessness in couple households is driving the result in Australia while in Britain not only have single adult households become much more common, but their employment prospects have deteriorated quite significantly over the period. This begs the question, why are couples so adversely affected in Australia?

Conditional Polarisation

If household members have similar characteristics then inequalities in labour market opportunities along the lines of these characteristics will bring a coincident polarisation by household. The most obvious is by region, for all household members reside at the same address then if that is an area of low employment, all household members are likely to have a

lower propensity to be in work. In the context of couples the process by which members share common characteristics is called assortative mating. This kind of 'assortative mating' would tend to make joblessness concentrated in particular households if joblessness is more apparent in certain sections of the population. With female participation rates rising and male participation rates falling in developed countries, it is quite likely that some of the observed polarisation may be due to assortative mating becoming more apparent. This effect will be strengthened if employment opportunities have worsened for certain groups in the population while improving for others, and the disadvantaged groups live in the same household. For instance demand for less skilled employment may have fallen with an increase in demand for high skilled employment. As less skilled males are more likely to be married to less skilled females, and high skilled males are more likely to be married to high skilled females, this will have a significant effect on the distribution of jobs across households.

To find out whether individual characteristics of members of jobless households can explain the polarisation of employment observed, we relax the random distribution of work assumption and predict household employment probabilities according to the characteristics of the individuals that comprise them using (7). Given the gender composition of the household, for example, we can assign the gender specific non-employment rate to each member of the household and take the product to obtain a revised household jobless probability. The characteristics we use are the main variables known to be associated with differential employment probabilities; region, gender, age and education. To facilitate cross-country comparisons we use 3 age groups, (16-24,25-49, 50+), 3 education groups, (degree, intermediate and low qualifications) and divide each country into around 10 regions[10]. Sample sizes limit the extent of disaggregation. We use one characteristic at a time and then interact. This non-parametric prediction can be used as a benchmark for any parametric

prediction based on the same or additional variables, entered in a more disaggregated form.[11] Figure 4 shows the time paths for the more general conditional polarisation measure.

Table 5, (column 3), shows that allowing for regional variation in non-employment makes little difference to the predicted jobless household rates in any country. So employment differences across regions in each country are fully reflected in jobless household rates and do not therefore contribute to polarisation.[12] Changes in workforce composition by gender do however go a long way toward explaining the change in polarisation, (column 4), particularly in Spain, where nearly the bulk of the residual polarisation can be accounted for by changing patterns of employment across gender. Convergence in male and female employment rates over the last 25 years, falling for men and rising for women, has a net positive effect on the predicted household employment rate. In a world where nearly all men and few women work, conditioning on gender will predict few jobless couples. Converging employment patterns by gender changes the predicted distribution of work, generating more households where both individuals work and others where no one works. Column V of Table 5 shows that age and education have only very modest effects on the predicted employment rate individually. The interaction of all four factors (column VI) has a noticeable effect on the predicted jobless rates in each country except the U.S. Indeed this disaggregation in Spain explains a large part of the rise in polarisation. In Australia and Britain, around one third of the polarisation is explained by general shifts in employment patterns across the population. This is consistent with the notion that older, less educated men are losing work and prime-age women are entering work. These groups live in different households and hence polarisation rises. It is important to realise that using this method, there is still a notable degree of residual polarisation in all of the countries examined.

Polarisation Within Household Types

Figure 5 and Table 6 show the time paths of unconditional and conditional polarisation for each household type. Polarisation in Australia is most prevalent among two-adult households, whereas in Britain mainly in single-adult households. In Germany and the U.S., polarisation is relatively small while in Spain two-adult households again exhibit the most marked polarisation, albeit negative.

Apart from in Australia and Britain, there was little polarisation in the early eighties for single-adult households, so the assumption of a random allocation of work appears to fit the data closely in Germany, Spain and the US. In Australia and Britain however, more singles were out of work than a random distribution of employment would predict. Singles in Britain also fare worse over time, with unconditional polarisation increasing slightly between 1982 and 1998. Conditioning on characteristics makes little difference and, if anything, suggests that characteristics of singles have moved over time to make them more employable.[13] Age is the dominant change here with singles now being somewhat more likely to be of prime age. So the change in polarisation for one-adult households when accounting for differences in characteristics is higher than the change assuming a random distribution of employment.

Over time, polarisation has risen for two-adult households in each country and by broadly similar magnitudes, but only in Australia and Britain are the polarisation counts substantially above zero (see Figure 5). Shifts in the pattern of employment across age, gender, education and region explain much of the polarisation observed in two-adult households in all countries apart from Germany. However, there remains a substantial within-group component to the measures of polarisation that cannot be explained by diverging employment rates across the groups examined in all countries.

The predicted jobless household rates when allowing for employment variations between different gender, education and regional groups suggests that there should have been fewer jobless couples in the early eighties if characteristics affecting the likelihood of being employed (particularly the gender mix of employment) are taken into consideration.[14] Over time, the unwinding of the stark gender differences increasing (with rising female employment and falling male employment) means that the predicted jobless household rate when taking account of different employment opportunities across the genders is very similar in most countries in 1998 to that in 1982 even though overall employment rates increased. The predicted rate based on a random distribution of employment however shows a marked decline due to the general rise in employment levels. Hence in the countries examined characteristics of couples have generally moved to make them more likely to be jobless. Conditioning thus explains a large part of the change in polarisation in two-adult households. After conditioning the small three-plus-adult household type shows very little residual polarisation in all of the countries examined.

Hence the process of conditioning suggests that singles are doing worse than others with similar characteristics, while polarisation for couples is less acute when accounting for changing employment patterns across individuals in the population. One reason why single adults might be losing ground is that they are increasingly made up of single parents, a group with generally low employment rates. In Table 7 and Figure 6 we disaggregate further by presence of dependent children. Since the early 80s, the share of single-parent families has grown across all countries, most of all in Australia and Britain. However, there are larger increases in the shares of single-adult households without children in all four countries. Jobless household rates are typically higher amongst single parent households, though Spain is an exception. Only in Australia and Britain is employment polarisation among single

parents substantially larger than for other household types. Over time, jobless rates among single parents have fallen in all countries and by considerable amounts, with these rates falling more than the overall rise in employment unconditional polarisation has fallen too (apart from in Britain where it rises slightly). Since conditional polarisation accounts for the general rise in female employment rates, lone parents in Australia, Britain, Germany and Spain have not done so well against this tougher benchmark. In the US, the dramatic fall in the jobless household rate for single parent households has occurred mainly since the abolition of AFDC in 1996 (Ellwood, 2000, discusses this in detail). Adverse polarisation of employment against lone parents applies in Britain to a larger extent than in Australia, although it is still quite significant in Australia once comparing single parents to others with similar characteristics.

Australia in 1997/8 has the highest jobless household rate amongst couples with children. It is also only one of two countries examined, the other being Britain, where polarisation in two-adult households with children is positive, the change in polarisation over the period having risen quite substantially (by 4 percentage points) in Australia whereas having fallen in Britain. In Spain and Germany couples with children are far less likely to be jobless even after conditioning on the characteristics of both parents. Australia, common with Britain shows an exceptionally high proportion of children living in jobless households, with over 15 per cent of Australian children and 17 per cent of British children living in households where no adult was employed in 1998. In Britain this tends to be due to the unusually high propensity of single parents to be jobless and to a lesser extent due to joblessness in couple households with children. Whereas in Australia, while joblessness for single parents is quite high, joblessness amongst couple households with children has become increasingly

problematic and indeed explains the majority of the rise in employment polarisation within households.

6. Relationship with Welfare Systems

Policy responses to these observations depend on the status of the individuals who comprise a jobless household, since non-employment is not a homogeneous category and the reasons individuals give for their jobless state may offer insights as to the likely source of any problems. Table 8 gives a breakdown of the labour market status of jobless households, whether they compose of unemployed members or solely of individuals not in the labour force. It also breaks down the not in labour force (or inactive) group into lone-parent households, households with at least one individual aged 55 years plus and other households which include those comprising of individuals with a disability or some other form of sickness making them unable to work, carers etc.

The figures in the table suggest that the composition of jobless households manifests itself in different forms across countries. Most jobless households in all of the countries observed do not have any unemployed persons. Indeed, the proportion of jobless households consisting of any unemployed persons has decreased quite dramatically in Britain, Spain and the US. In Australian data, the results shown refer to 1982, a year earlier than the outcomes in the other countries, where the full impact of the recession on unemployment was not yet fully apparent. Perhaps this is a reason why in Australia, the presence of the unemployed in jobless households remained at roughly similar levels. The proportion of jobless households containing at least one unemployed occupant by 1998 ranges from around a fifth in Britain to over a third in Germany and Spain.

By 1998, the share of lone parents among jobless households is much higher in Britain than elsewhere and has risen quite dramatically over the period. In the US and Australia much smaller increases are apparent. In Germany the share of lone parents in jobless households remains quite stable, while in Spain it actually decreases slightly.

By the early eighties, the increasing trend for those approaching retirement age to retire early stabilised in most countries, thus apart from Spain and the US, the proportion of jobless households with an occupant aged 55 years plus decreased by 1998. This decline was most dramatic in Australia and Germany.

Increasing polarisation of employment in Australia is mainly due to an increasing likelihood of the unemployed living in the same households and in the growth of the 'other' category. This is unlike the situation in Britain with polarisation largely explained by increasing joblessness in lone-parent households, and also unlike the situation in Spain and the US where trends to enter into early retirement have continued. The 'other' category includes households where an occupant has a disability or sickness rendering them not able to work, partnered parents not in the labour force where the other member is under 55 years and not in the labour force and carers. It is not possible from the data to identify those with a disability however there is information on receipt of a disability or sickness related payment alongside whether individuals are permanently unable to work. This data shows that the proportion of jobless households in either of these categories has grown over the period. That is not to say that joblessness amongst lone parents in Australia is insignificant. Lone parents still make up quite a large, and slightly increasing, proportion of jobless households in Australia (with over half of jobless households with children being lone-parent households). However, this trend is by no means as great as that experienced by lone-parent households in Britain.

Table A4 in the appendix outlines the main characteristics of the wage distribution and welfare systems across the countries. A number of features fit the patterns of polarisation observed, though our measures outlined above make no causal inference. The most generous component of Germany's unemployment system lasts much longer for older workers, allied to the provision of an early retirement package for the over 60s. This is consistent with the share of older workers in Germany in Table 8 and the importance of age in explaining conditional polarisation in Table 5. Welfare requirements mean that lone parents in Spain, and the US, are generally not exempt from job search. Lone parents are not subject to adverse polarisation and contribute substantially less to the jobless household rate in these countries.

Of more concern are Australia and Britain, which combine US-style high employment rates with jobless household rates higher than the other countries examined, particularly for families with children. Three features of both the Australian and the UK welfare system might lie behind this. First, while welfare payments are not generous they provide weak incentives to take jobs at the lower end of the wage distribution, a problem exacerbated by a high level of wage inequality, which generates low wage offers in many jobs. From 1993 to 1999 Britain had no minimum wage system and the recently introduced minimum wage is low by European standards. In Australia, even though a higher minimum wage is in place, the 80s saw a sharp rise in the inequality of earnings with real earnings falling for low-waged men (see Borland, Gregory and Sheehan, 2001 for a discussion of this). This fall in real earnings was most pronounced at around the 25th percentile of the distribution, so there was a substantial crushing of the wage distribution just above the minimum wage. By contrast there were sharp increases in earnings for the more educated, particularly for more educated women over this period. Men with low earnings potential and women with high earnings potential tend to live in different households. Second, Australia has no, and Britain a

minimal, insurance-based safety net, rather relying on means-tested social assistance. Individuals without a job therefore face radically different work incentives dependent on the presence of children and whether their partner has a job. In Spain and Germany, the longer duration and greater generosity of the insurance element creates a different incentive structure, as these insurance benefits are not means tested against partner's income. Third, in this period there were no earnings related benefit payments in Australia nor Britain, but benefits do vary according to family make up. This again creates variation in incentives across family structures such that having children substantially reduces the attractiveness of low-wage jobs. In mainland Europe the long period of earnings related benefit payments (unlimited in Germany) means that work incentives vary only according to differences between previous earnings and potential wage offers and are unlikely to vary across family circumstances.

Australia however differs from Britain in that polarisation is more acute in couple households rather than in lone parents households, as is the case in Britain. Employment seems to be more attractive for Australian lone parents wanting to work low or part-time hours levels with the more generous withdrawal of benefits with earnings. Australia also has the Jobs, Education, Training (JET) programme, introduced in 1989 to assist lone parents into re-entering the labour force, which is thought to have significantly raised levels of training, employment and earnings among the population of lone parents on income support (Social Justice Commission, 1994). This combination of factors thus seems to have had a positive effect on the employment circumstances of lone parents in Australia. In terms of couples, Australia offers poor incentives for partners of those not working to find employment with quite harsh means testing on partner income, particularly prior to the Working Nation reforms in 1995. In comparison, Britain has a system of unemployment insurance where all covered

individuals/families are eligible for a flat rate payment for the first six months of being out of work.

Governments are aware of these issues and there is evidence that policy is being shaped accordingly. In Australia, the ongoing welfare reform process starting in the mid 90s has addressed many of these issues, to varying degrees of success. The incentive structure for partners of the unemployed were addressed back in 1994 with the Working Nation reforms introducing the separate treatment of partners with a partial individualisation of welfare payments. And in general there has been a greater emphasis and monitoring of job search by the unemployed. More recently, financial incentives for families with children, especially with child-care costs and a wider focus on motivating and helping all welfare recipients to find work are likely to reduce this problem after our period of study. There has also been discussion in Australia about the possible implementation of tax credits similar to those in the US or UK (see for example Duncan, 2000 and Dawkins, 2002).

The British government has also set about a more proactive policy approach introducing a range of welfare reforms to reduce welfare dependency especially among families with children (see Walker and Wiseman, (2001), for a discussion of these reforms).

In addition, we believe that improving basic education levels and reducing employer taxes on low-wage workers (studies such as Crepon and Desplatz, 2002 show that France is having some success with this latter strategy recently) may provide useful support to these reforms. Over the next few years we should hopefully be able to assess whether this reform strategy has worked.

7. Conclusions

Labour market joblessness measures aggregated from individual or household level data can and do give conflicting signals about performance across time and across countries. Comparing Australia with the US, Britain, Spain and Germany, we show that a similar pattern appears apparent in these OECD countries with individual jobless rates having fallen since the early eighties with no translation to the jobless rate measured at the household level. In fact in all of these countries except the US and Spain jobless households have risen markedly. A simple focus on individual-based aggregate employment statistics therefore obscures major labour market developments that can have important welfare, budgetary and efficiency consequences. We believe that the simple set of indices used in this paper to measure joblessness at the household level can also be used to try to identify the likely source of any disparity between individual and household-based measures of access to work. Our featured measure has the advantage that it can be decomposed in order to isolate the likely source of any disturbance.

Using this approach we find that shifts in household composition toward more single-adult households contribute only modestly to the growing numbers of jobless households. However, there have been dramatic changes in the distribution of work across households in Australia, Britain and Spain over the last 15 years and more modest changes in the US and Germany. Strong employment performance should be producing fewer jobless households than we observe in each of these nations. That this is not the case is mainly because extra jobs are going to second earners (mainly women) living in households with an existing earner. This polarisation of employment has occurred within-household types and primarily among couples in all countries except Britain, where singles have lost a lot of ground. Polarisation

can be accounted for partially by changing concentrations of employment across readily identifiable socio-economic groups. In Spain, polarisation mostly affects multi-adult households and seems to be driven by the large switch in the gender mix of employment observed over the recent past. Women entering the Spanish labour market are randomly drawn from households rather than mainly coming from those where men are without work. In Britain, single-adult households have seen an unprecedented relative loss of employment while in Australia the bulk of the polarisation observed is in two-adult households. In both Britain and Australia under-employment is focused on families with children relative to other countries. While in Britain this is mainly due to job losses in lone parent households, in Australia couple households are much more adversely affected. The high rates of joblessness in households with children in Britain and Australia are amongst the highest in the developed world with around 1 in 6 to 1 in 7 children respectively in households where no adult is employed.

It is unfortunate that more recent unit record data has not been made available in Australia to enable us to identify whether the continued and persisting boom in Australia over the 90s to current times has reversed the trend in polarisation. This has also been a time where policy initiatives have tried to address many of the issues highlighted in this paper. Over the next few years we should hopefully be able to assess whether the combination of boom conditions and the reform strategy have worked in Australia.

Footnotes

[1] The retirement age in Spain, Germany and the United States is 65 for men and women. In the UK and Australia over this period it was 65 for men and 60 for women.

[2] See Gregg and Wadsworth (2002) and Gregg, Dawkins and Scutella (2002a) for more discussion of the link with all-work household rates in the UK and Australia respectively.

[3] Note that this is not the same polarisation as envisaged by Esteban and Ray (1994) who define it as a shift in

the distribution from the centre to the two lateral masses. Our measure differs from those favoured by these authors since we focus on a discrete outcome (work) and are not concerned with the absolute value of the variable under consideration (in their case income).

[4] In a 2 person to each household world, the three measures can be thought of as capturing the following:

$$\text{Polar1} = \Pr(\text{Non}_1 = 1 \;\&\; \text{Non}_2 = 1) - \Pr(\text{Non}_1 = 1)*\Pr(\text{Non}_2 = 1)$$
$$\text{Polar2} = \Pr(\text{Non}_1 = 1 \;\&\; \text{Non}_2 = 1) / \Pr(\text{Non}_1 = 1)*\Pr(\text{Non}_2 = 1)$$
$$\text{Polar3} = \Pr(\text{Non}_2 = 1 / \text{Non}_1 = 1) - \Pr(\text{Non}_2 = 1) = \text{Polar1} / \Pr(\text{Non}_1 = 1)$$

[5] For example, net job loss amongst single adult households and net job creation amongst multiple adult households against a background of net employment growth in the economy could be sufficient to generate a differential effect direction of the change in the jobless household and non-employment rates.

[6] We use the absolute polarisation index, but the decomposition also goes through on the relative measure. See Shorrocks (1999) for a recent discussion of the merits of the Shapley decomposition.

[7] The limited availability of Australian data restricts us to confine the analysis to the period between 1982 and 1998.

[8] British data actually shows that the rise in polarisation began in the late 70s with falls in polarisation apparent in more recent years (in the late 90s up to 2001). Limitations in the availability of more recent Australian data make a comparison not possible, however as Australia has exhibited similar trends to Britain in the past, it seems reasonable to assume that this pattern would also be evident in Australia.

[9] Table A2 shows the variation in the within and between household group decomposition over the two decades. It is interesting to note that the rise in jobless households generally occurred in two rather different periods. The polarisation of employment primarily occurred in the 1980s whereas the changes in household composition predominantly occurred after 1990. Hence the employment gains made after the early 1980s recession appear to have made no impact on the share of no-earner households. In fact jobless household rates continued to rise. Any increases in the availability of employment failed to reach these households. After 1990 however, the continued rise in joblessness among households was generally due to shifts in household structure toward single-adult households where employment rates are low. Once the more recent Australian data is made available the importance of this issue can be examined further.

[10] As noted earlier Australia is actually split into 12 regions: the 5 mainland States are separated by capital city/rest of state with Tasmania a single category and the Territories (ACT and NT) combined into 1 category.

[11] A logit/probit regression using the interaction of all the variables will, of course, give the same prediction as unconditional interactions.

[12] This does not rule out the possibility that a finer area disaggregation may have a role to play.

[13] While both actual and predicted jobless household rates for singles fall over the period, the unconditional predicted rate falls more than the actual rate leading to an increase in unconditional polarisation. Conditional predicted jobless household rates fall by an even greater extent. This then leads to a larger increase in polarisation when characteristics have been accounted for. All of this suggests that characteristics of singles have moved making them more employable. Note that although predicted jobless household rates are not explicitly presented in Figure 5 or Table 6, they can be easily found by subtracting the jobless household rate by the relevant polarisation measure.

[14] Thus conditional polarisation is higher than that estimated based on a random distribution of employment, particularly in the early years.

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Figure 1. Individual & Household Non-Employment Rates in Britain, Spain, the U.S. and Germany

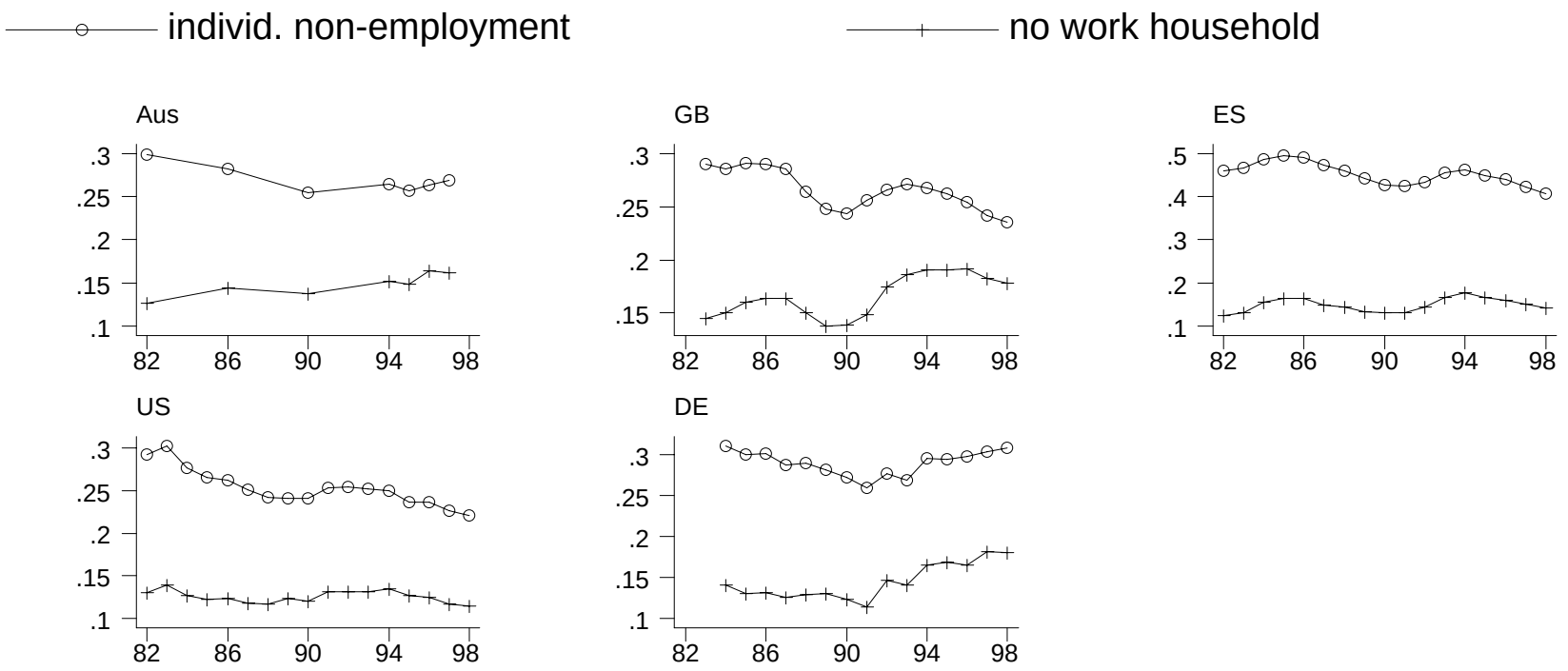


Figure 2. Distribution of Work Across Households in Australia, Britain, Germany, the United States and Spain

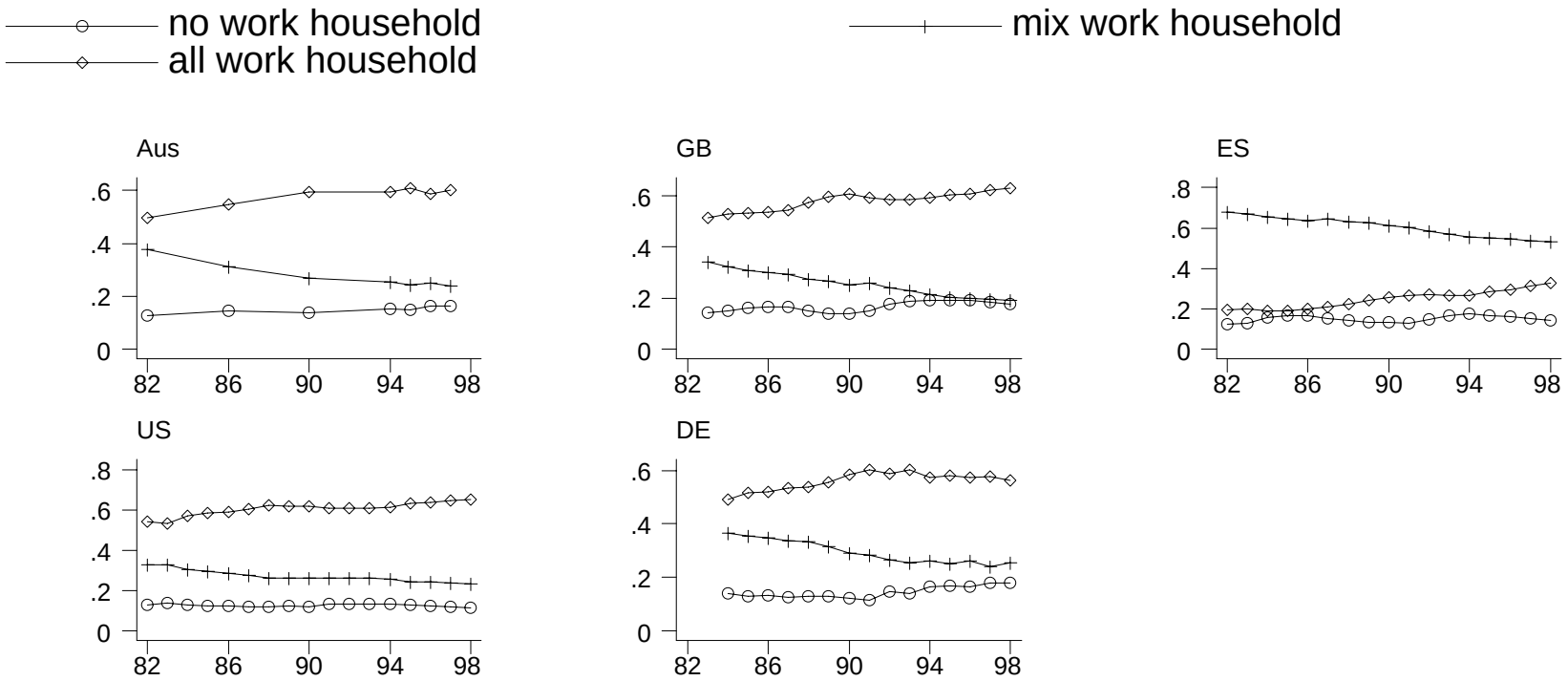


Figure 3. Polarisation Indices in Australia, Britain, Spain, Germany and the U.S.

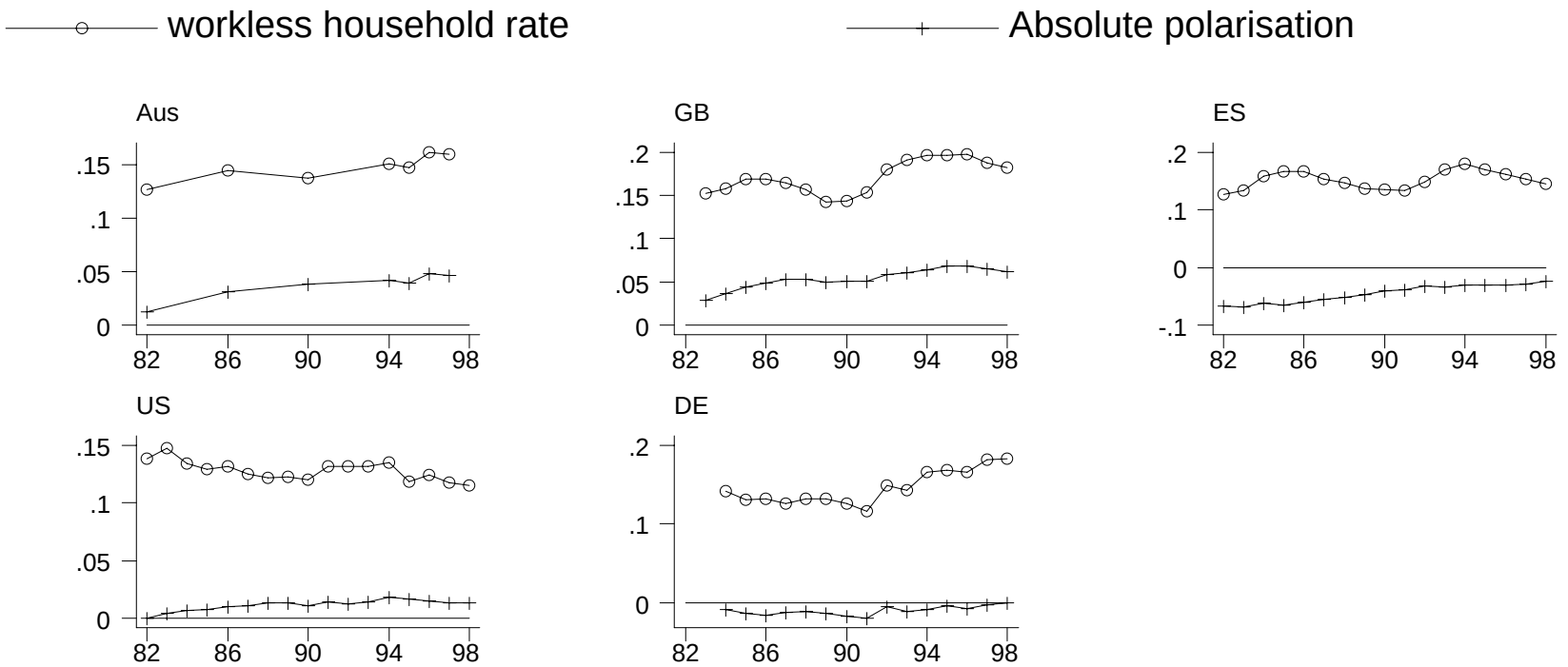


Figure 4. Accounting for Polarisation – Australia, Britain, Spain, Germany & the U.S.

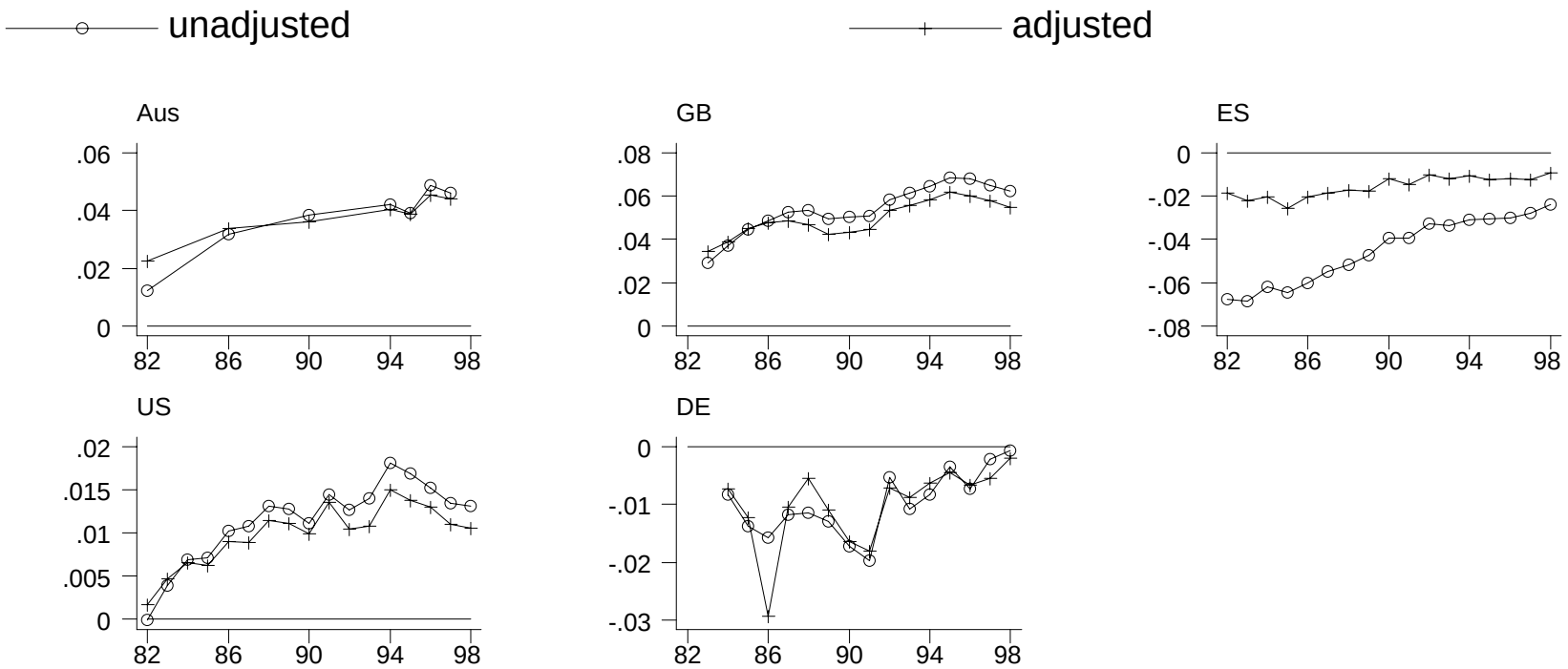
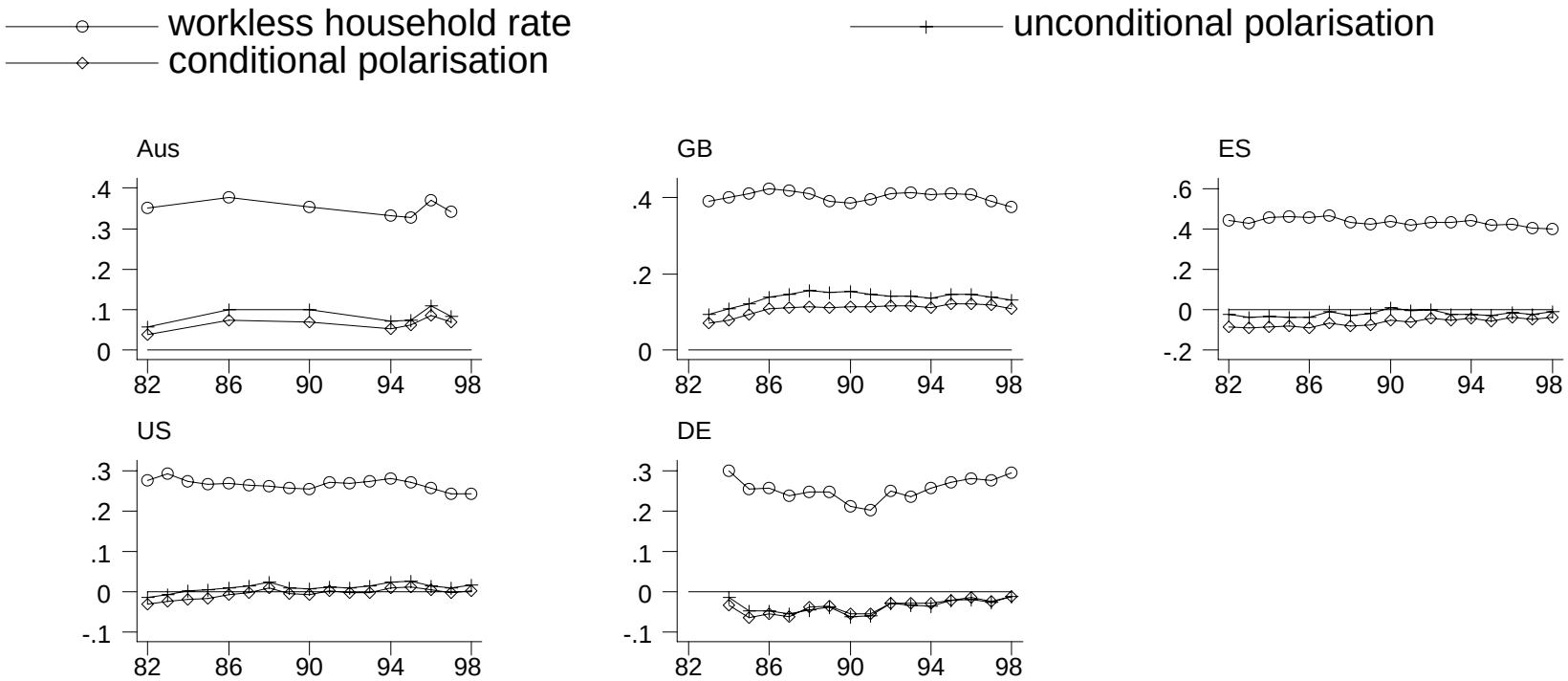
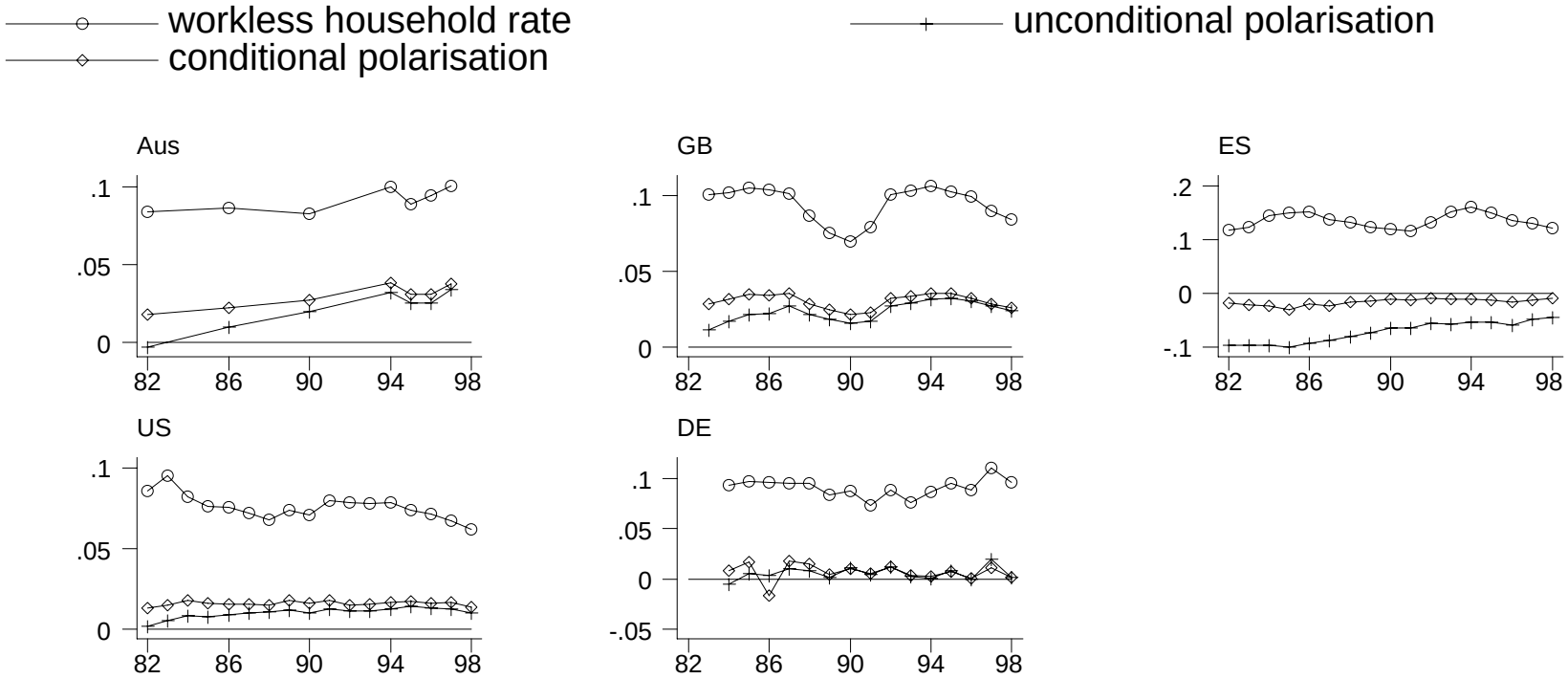


Figure 5. Polarisation by Number of Adults in Household - Australia, Britain, Germany, Spain and the U.S.

a) 1 adult households



b) 2 adult households



c) 3 adult households

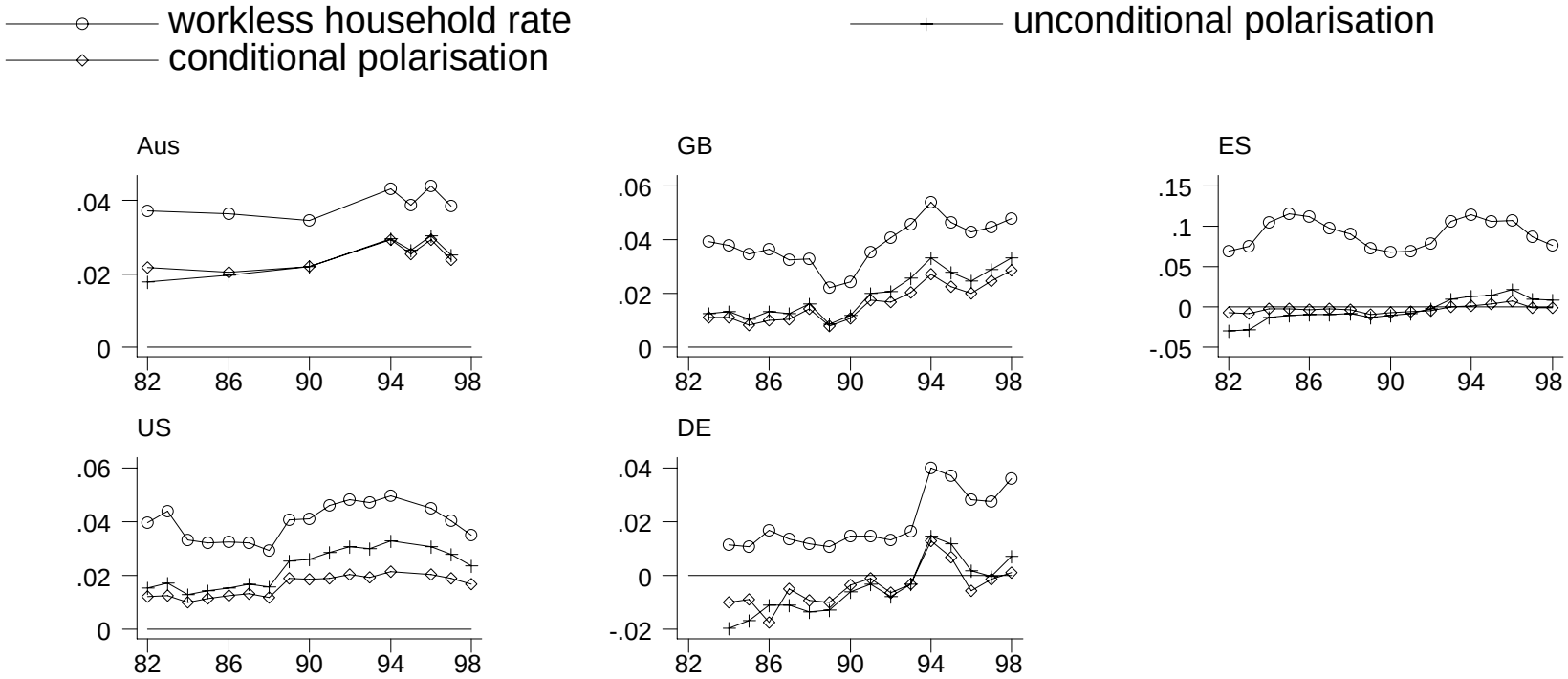
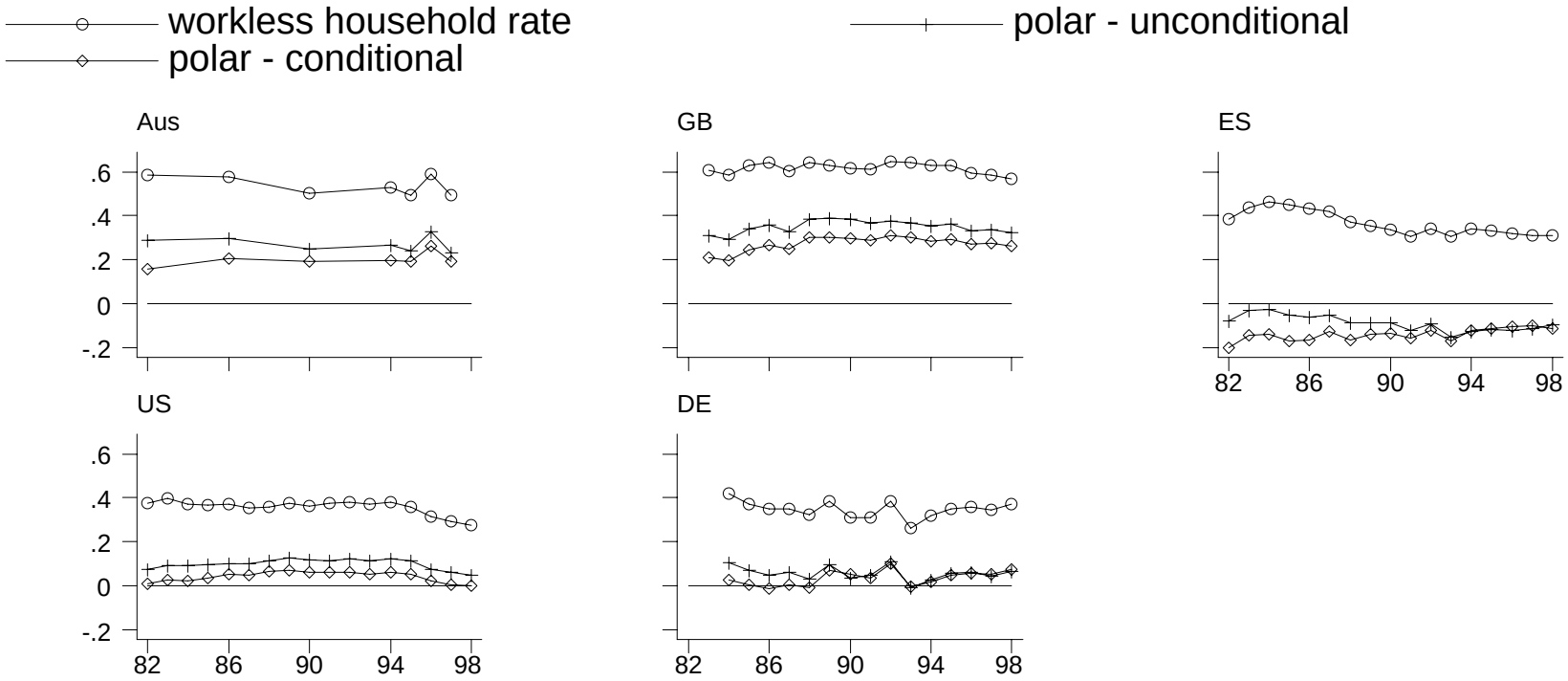
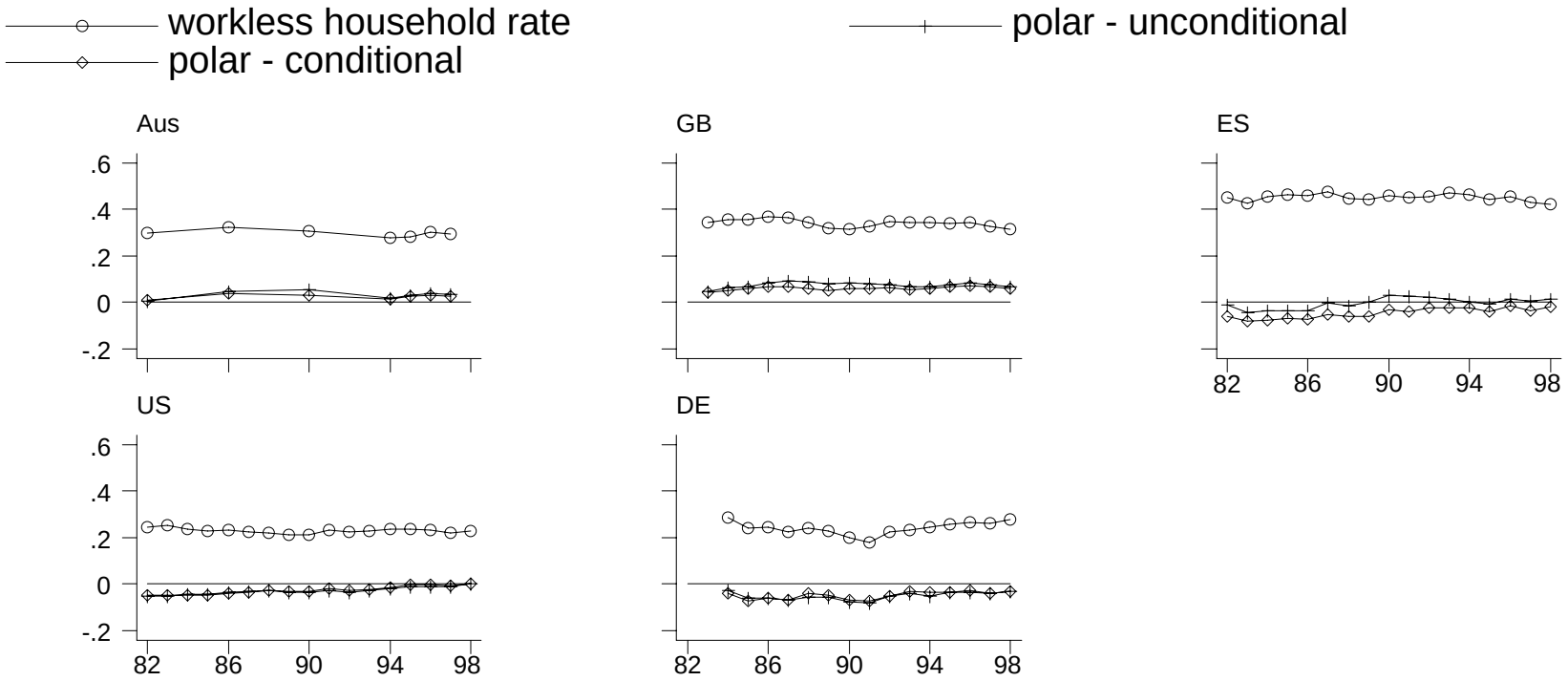


Figure 6. Jobless Households and Polarisation by Presence of Children

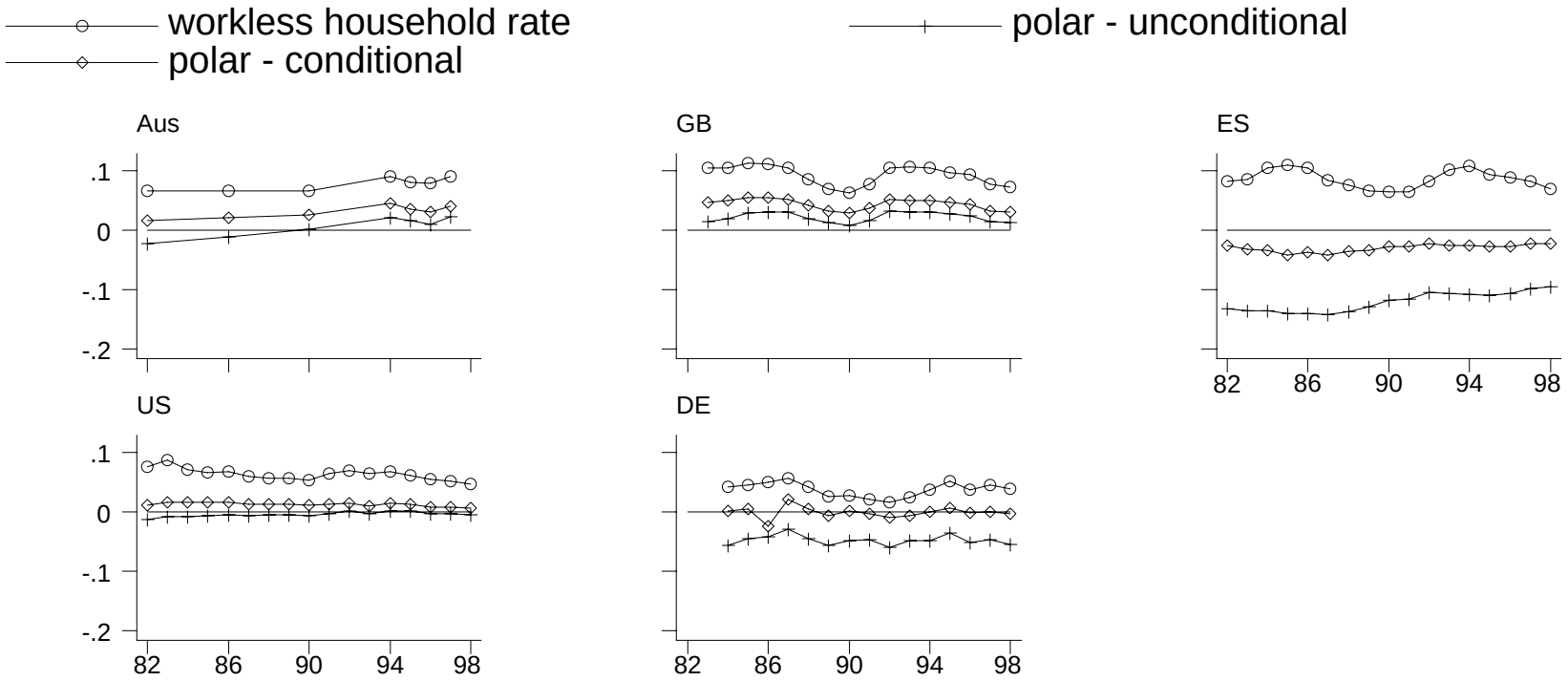
a) Single adult - children



b) single adult – without children



c) two adult - children



d) two adult - without children

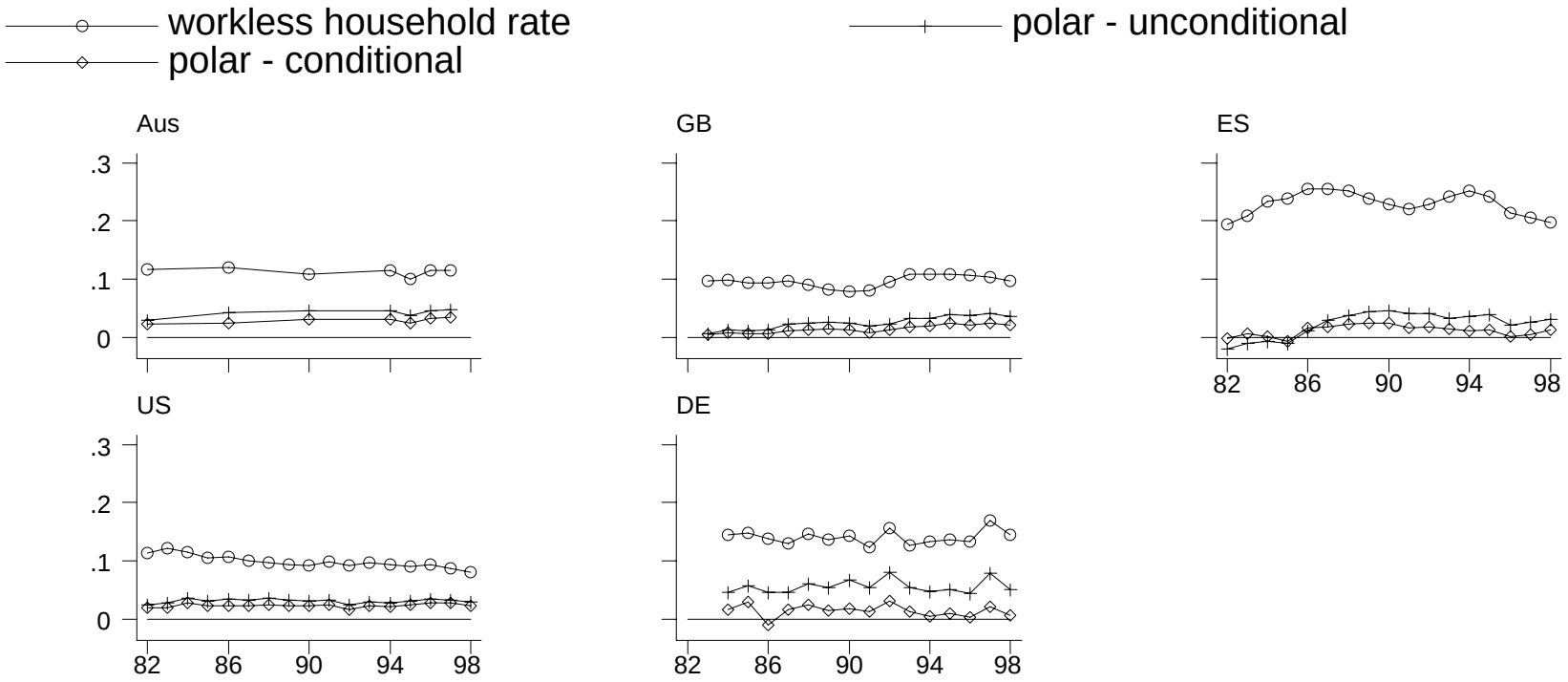


Table 1a. Jobless Households Rates in Australia, Britain, Spain, the US, Germany

	Australia	G.B.	US	Sp.	De.
1983	12.7[1]	14.5	14.0	13.1	14.1[2]
1986	14.4	16.3	12.4	16.4	13.2
1990	13.8	13.9	12.0	13.1	12.4
1994	15.2[3]	19.1	13.5	17.8	16.5
1998	16.1[4]	17.8	11.5	14.3	18.0

Table 1b. All-Work Households in Britain, Spain, the US, Germany

	Australia	GB	US	Sp.	De.
1983	49.5[1]	51.3	53.4	19.9	49.3[2]
1986	54.5	53.6	59.0	19.9	51.9
1990	59.3	60.9	61.9	25.8	58.6
1994	59.4[3]	59.4	61.1	26.5	57.3
1998	60.0[4]	63.2	65.2	32.7	56.4

Table 1c. Non-Employment Rates in Australia, Britain, Spain, the US, Germany

	Australia	GB	US	Sp.	De.
1983	29.8[1]	29.0	30.3	46.6	31.1[2]
1986	28.2	29.0	26.2	49.1	30.1
1990	25.4	24.3	24.0	42.7	27.3
1994	26.4[3]	26.8	25.0	46.3	29.6
1998	26.8[4]	23.5	22.1	40.7	30.9

Source: IDS and SIHC, LFS, SLFS, GSOEP, CPS. Notes. Data are all weighted. Population of working age in each country.

Notes:

1) Start date for Australia refers to 1982 rather than 1983 due to data limitations.

2) Start date for Germany refers to 1984 rather than 1983 due to data limitations.

3) Australian data for 1994 onwards is collected over the financial year, thus for 1994/5, 1995/6, 1996/7 and 1997/8.

4) End date for Australia refers to 1997/98.

Table 2. Household Type Shares and Jobless Rates in Australia, Britain, Spain and the US

	1 Adult households					2 Adult Households					3+ Adult Households				
	Aus	G.B.	Sp.	De.	US	Aus	G.B.	Sp.	De.	US	Aus	G.B.	Sp.	De.	US
Share															
1983	19.2[1]	21.7	8.1	31.1[2]	26.9	62.1[1]	60.6	58.8	53.7[2]	59.5	18.6[1]	17.7	33.1	15.3[2]	13.6
1986	22.9	24.2	8.9	33.3	28.5	60.2	57.9	58.7	51.4	58.4	16.9	17.9	32.5	15.3	13.1
1990	23.3	25.5	9.5	37.8	28.8	61.2	58.2	59.6	50.7	60.0	15.5	16.3	30.8	11.5	11.2
1994	25.6[3]	32.3	11.6	43.9	29.3	59.4[3]	55.7	59.8	47.0	59.5	15.1[3]	8.8	28.6	9.0	11.1
1998	28.5[4]	35.1	13.1	44.9	30.9	56.8[4]	54.5	58.4	45.9	58.9	14.7[4]	7.7	28.4	9.2	10.1
Rate															
1983	35.2[1]	39.2	42.9	30.0[2]	29.1	8.4[1]	10.1	12.3	9.3[2]	9.5	3.7[1]	3.9	7.5	1.1[2]	4.4
1986	37.7	42.4	45.5	25.6	26.8	8.7	10.4	15.2	9.6	7.5	3.7	3.6	11.2	1.7	3.3
1990	35.3	38.7	43.7	21.2	25.4	8.3	7.0	11.8	8.7	7.1	3.4	2.4	6.8	1.4	4.1
1994	33.3[3]	40.8	43.9	25.6	28.0	10.1[3]	10.6	16.1	8.6	7.9	4.3[3]	5.4	11.3	4.0	5.0
1998	34.2[4]	37.6	39.7	29.5	24.2	10.1[4]	8.4	12.0	9.6	6.2	3.9[4]	4.8	7.6	3.6	3.5

Source: IDS and SIHC, LFS, SLFS, GSOEP, CPS. Notes. Data are all weighted. Population of working age in each country.
Notes:
1) Start date for Australia refers to 1982 rather than 1983 due to data limitations.
2) Start date for Germany refers to 1984 rather than 1983 due to data limitations.
3) Australian data for 1994 onwards is collected over the financial year, thus for 1994/5, 1995/6, 1996/7 and 1997/8 (and 1999/00 if we ever get the bloody data).
4) End date for Australia refers to 1997/98.

Table 3a. Polarisation in Australia, 1982-1997/98

	Jobless Household (1)	Predicted Rate (2)	Polarisation (1)-(2)	Standardised Polarisation	Relative Polarisation (1)/(2)
1982	12.7	11.5	1.2	4.2	1.11
1986	14.4	11.2	3.2	11.4	1.28
1990	13.7	9.9	3.9	15.3	1.39
1994	15.1	10.9	4.2	16.1	1.39
1997	15.9	11.3	4.6	17.8	1.41
Change					
82-97/98	3.2	-0.2	3.4	13.6	0.30
82-90	1.0	-1.6	2.6	11.1	0.28
90-97/98	2.2	1.4	0.8	2.5	0.02

Note: numbers may differ from those in Table 1 because of need to condition on age region gender & education.

Table 3b. Polarisation in Britain, 1982-98

	Jobless Household (1)	Predicted Rate (2)	Polarisation (1)-(2)	Standardised Polarisation	Relative Polarisation (1)/(2)
1983	15.3	12.4	2.9	9.8	1.24
1986	16.9	12.0	4.9	17.1	1.40
1990	14.3	9.3	5.0	21.7	1.54
1994	19.7	13.2	6.4	23.5	1.49
1998	18.2	12.0	6.2	25.4	1.52
Change					
83-98	2.9	-0.4	3.3	15.6	0.28
83-90	-1.0	-3.1	2.1	11.9	0.30
90-98	3.9	2.7	1.2	3.7	-0.02

Note: numbers may differ from those in Table 1 because of need to condition on age region gender & education.

Table 3c. Polarisation in Spain, 1982-1998

	Jobless Household Rate (1)	Predicted Rate (2)	Polarisation (1) - (2)	Standardised Polarisation	Relative Polarisation (1)/(2)
1983	13.3	20.2	-6.8	-146	.66
1986	16.6	22.6	-6.0	-12.1	.74
1990	13.5	17.4	-4.0	-9.2	.77
1994	18.0	21.1	-3.1	-6.6	.85
1998	14.5	16.9	-2.4	-5.9	.86
Change					
83-98	1.2	-3.3	4.4	140.1	0.20
83-90	0.2	-2.8	2.8	136.8	0.11
90-98	1.0	-0.5	1.6	3.3	0.09

Table 3d. Polarisation in the U.S., 1982-1998

	Jobless Household Rate (1)	Predicted Rate (2)	Polarisation (1) - (2)	Standardised Polarisation	Relative Polarisation (1)/(2)
1983	14.7	14.3	0.4	1.3	1.03
1986	13.2	12.2	1.0	3.8	1.08
1990	12.0	10.9	1.1	4.5	1.10
1994	13.5	11.6	1.8	7.0	1.16
1998	11.5	10.2	1.3	5.8	1.13
Change					
83-98	-3.2	-4.1	0.9	4.5	0.10
83-90	-2.7	-3.4	0.7	3.2	0.07
90-98	-0.5	-0.7	0.2	1.3	0.03

Table 3e. Polarisation in Germany, 1984-1998

	Jobless Household Rate (1)	Predicted Rate (2)	Polarisation (1) - (2)	Standardised Polarisation	Relative Polarisation (1)/(2)
1984	14.5	15.5	-1.0	-3.2	0.93
1986	13.7	15.2	-1.5	-5.1	0.90
1990	12.6	14.5	-1.9	-6.8	0.87
1994	15.7	17.1	-1.4	-5.0	0.92
1998	18.0	18.4	-0.4	-1.4	0.98
Change					
84-98	3.5	2.9	0.6	1.8	0.05
84-90	-1.9	-1.0	-0.9	-3.6	-0.06
90-98	5.4	3.9	1.5	5.4	0.11

Table 4. Decomposition of change in jobless household rate

Australia	Actual (1)	Predicted (2)	(3)	Polarisation (4)	(5)	(6)	(7)
Δ82-1997/98	3.2	-0.15		3.4			
		Δdue to non-employment	Δ household shares	Between household	Within household		
		-2.2	2.0	0.5	2.9		
				(13%)	(87%)		
					1 adult	2 adult	3+ adult
					0.6	2.2	0.1
					(21%)	(75%)	(4%)
Britain	Actual	Predicted		Polarisation			
Δ83-1998	2.9	-0.4		3.3			
		Δ due to non-employment	Δ household shares	Between household	Within household		
		-3.4	3.0	1.2	2.1		
				(36%)	(64%)		
					1 adult	2 adult	3+ adult
					1.0	0.7	0.3
					(50%)	(35%)	(15%)
Spain	Actual	Predicted		Polarisation			
Δ83-1998	1.2	-3.3		4.4			
		Δ due to non-employment	Δ household shares	Between household	Within household		
		-5.0	1.7	-0.1	4.5		
				(-1%)	(101%)		
					1 adult	2 adult	3+ adult
					0.33	3.0	1.1
					(7%)	(68%)	(25%)
U. S.	Actual	Predicted		Polarisation			
Δ83-1998	-3.2	- 4.1		1.0			
		Δ due to non-employment	Δ household shares	Between household	Within household		
		-5.1	1.0	-0.1	1.0		
				(-6%)	(106%)		
					1 adult	2 adult	3+ adult
					0.7	0.3	0.0
					(65%)	(28%)	(7%)

Germany	Actual	Predicted		Polarisation			
Δ1984-1998	4.1	2.9		0.6			
		Δ due to non-employment	Δ household shares	Between household	Within household		
		-0.5	3.4	-0.1	0.7		
				(-22%)	(122%)		
					1 adult	2 adult	3+ adult
					0.1	0.32	0.33
					(7%)	(46%)	(47%)

Table 5. Accounting for Polarisation through Changing Employment Patterns

	Actual	Random prediction	Predicted conditional on individual characteristics			
			Non-Parametric			
			Region	Sex	Age and education	Region, sex, age quals.
	I	II	III	IV	V	VI
Australia						
1982	12.7	11.5	11.5	10.0	12.1	10.4
1990	13.7	9.9	9.9	9.4	10.6	10.1
1997/98	15.9	11.3	11.4	10.8	11.9	11.5
		Change				
82-1997/98	3.2	-0.2	-0.4	0.8	-0.2	1.1
Britain						
1983	15.3	12.4	12.4	11.5	12.7	11.8
1990	14.3	9.3	9.4	8.9	10.1	10.0
1998	18.2	12.0	12.2	11.9	12.6	12.8
		Change				
83-98	2.9	-0.4	-0.2	0.4	-0.1	1.0
Spain						
1983	13.3	20.2	20.3	16.7	20.3	15.5
1990	13.5	17.4	17.6	14.7	18.2	14.6
1998	14.5	16.9	17.2	15.4	17.4	15.5
		Change				
83-98	1.2	-3.3				0.0
U.S.						
1983	14.7	14.3	14.4	14.1	14.5	14.3
1990	12.0	10.9	10.9	10.9	11.0	11.0
1998	11.5	10.2	10.2	10.2	10.3	10.4
		Change				
83-98	-3.2	-4.1	-4.2	-3.9	-4.2	-3.9

Germany						
1984	14.5	15.5	15.6	14.6	16.3	15.3
1990	12.6	14.5	14.4	13.8	15.3	14.2
1998	18.0	18.4	18.4	18.2	18.9	18.5
			Change			
84-98	3.5	2.9	2.8	3.6	2.6	3.2

Note: values in columns 1&2 may differ from numbers reported in Table 3 because of missing regional, gender, age or qualifications data.

Table 6. Change in Absolute Polarisation Count by Household Type in Australia, Britain, Spain, Germany, U.S. 1983 to 1998

	1 Adult	2 Adult	3 Adult
Australia[1]			
Unconditional	+2.6	+3.7	+0.7
Conditional	+3.0	+2.0	+0.2
Britain			
Unconditional	+ 3.8	+ 1.3	+ 2.1
Conditional	+ 3.9	- 0.2	+ 1.7
Spain			
Unconditional	+ 3.1	+ 5.3	+ 3.6
Conditional	+ 5.4	+ 1.2	+ 0.8
United States			
Unconditional	+ 2.3	+ 0.5	+ 0.6
Conditional	+ 2.8	- 0.1	+ 0.4
Germany[2]			
Unconditional	+ 0.2	+ 0.6	+ 2.7
Conditional	+ 2.1	- 0.8	+ 1.1

Notes: 1) Change is 1982-1997/98 for Australia.
2) Change is 1984-1998 for Germany.

Table 7. Jobless Household Rate and Polarisation by Presence of Children and No. of Adults

	1 Adult		2 Adult		3 Adult +	
	child	no child	child	no child	child	no child
Australia						
Household share – 1982	3.7	15.7	39.5	23.0	8.6	9.7
– 1997/98	8.0	21.6	33.5	24.8	4.6	7.4
Jobless Household Rate						
1982	58.4	30.0	6.5	11.7	5.1	2.5
1997/98	49.2	29.2	8.9	11.6	4.3	3.6
Polarisation Level – (unadjusted)						
1982	28.9	0.5	-2.2	3.0	3.2	0.5
1997/98	23.3	3.3	2.2	4.8	2.9	2.3
– (conditional)						
1982	15.8	1.1	1.6	2.2	3.8	0.8
1997/98	19.4	2.7	4.0	3.5	3.0	0.2
Britain						
Household share – 1983	3.9	17.6	35.8	25.1	6.5	11.0
– 1998	8.8	25.9	28.1	26.8	2.8	7.6
Jobless Household Rate						
1983	60.8	34.5	10.4	9.6	5.5	3.0
1998	56.6	31.4	7.3	9.7	5.4	3.6
Polarisation Level – (unadjusted)						
1983	30.9	4.7	1.5	0.7	2.8	0.3
1998	32.2	6.9	1.3	3.7	3.9	2.2
– (conditional)						
1983	20.9	4.1	4.6	0.4	2.9	0.1
1998	26.2	5.9	3.0	2.1	3.5	1.7
U.S.						
Household share – 1983	7.8	18.5	35.4	25.1	7.0	6.2
– 1998	8.4	21.7	33.6	25.8	5.2	5.4
Jobless Household Rate						
1983	39.7	25.4	8.7	12.1	6.5	3.7
1998	27.6	22.9	4.6	8.1	4.1	3.0
Polarisation Level – (unadjusted)						
1983	9.0	-5.3	-0.8	2.7	3.6	0.8
1998	4.9	0.2	-0.5	3.0	2.9	1.8
– (conditional)						
1983	2.4	-5.0	1.6	1.9	2.6	0.4
1998	0.0	0.4	0.6	2.3	1.9	1.4

Table 7 (continued). Jobless Household Rate and Polarisation by Presence of Children and No. of Adults

	1 Adult		2 Adult		3 Adult +	
	child	no child	child	no child	child	no child
Spain						
Household share – 1983	1.3	6.6	41.0	17.7	16.7	16.6
– 1998	2.8	10.4	35.9	23.3	7.8	19.7
Jobless Household Rate						
1983	43.9	42.7	8.4	21.0	7.1	7.9
1998	30.9	42.0	7.0	19.7	7.6	7.6
Polarisation Level						
– (unadjusted)						
1983	-3.0	-4.2	-13.5	-1.0	-3.2	-2.5
1998	-9.8	1.3	-9.6	3.1	0.9	0.8
– (conditional)						
1983	-14.6	-8.2	-3.3	0.6	-0.6	1.2
1998	-11.3	-2.1	-2.3	1.2	-0.1	-0.1
Germany						
Population share – 1984	3.1	19.1	34.4	24.3	9.2	9.8
– 1998	6.4	24.4	29.5	26.2	4.5	9.0
Jobless Household Rate						
1984	41.9	28.4	4.6	14.6	0.7	1.1
1998	37.5	28.5	3.9	14.7	1.3	4.2
Polarisation Level						
- unadjusted						
1984	10.8	-2.7	-5.1	4.9	-2.2	-1.9
1998	6.7	-2.3	-5.6	5.2	-1.6	1.2
– conditional						
1984	1.9	-4.1	0.5	1.7	-0.7	-1.3
1998	8.2	-2.6	-0.3	0.8	-2.0	0.7

Table 8. Composition of Jobless Households

	Share of households in each category			
	1 Adult	2 Adult	3+ Adult	Total
Unemployed				
1983				
Australia (82)	0.15	0.45	0.85	0.31
G.B.	0.27	0.66	0.88	0.45
U.S.	0.27	0.43	0.71	0.35
Spain	0.12	0.54	0.85	0.48
Germany (84)	0.24	0.35	0.75	0.30
1998				
Australia (97/8)	0.24	0.43	0.83	0.33
G.B.	0.21	0.32	0.63	0.24
U.S.	0.16	0.25	0.43	0.20
Spain	0.25	0.44	0.84	0.43
Germany	0.33	0.41	0.71	0.37
Inactive: of which Lone Parent[1]				
1983				
Australia (82)	0.28			0.15
G.B.	0.24			0.13
U.S.	0.27			0.14
Spain	0.14			0.04
Germany (84)	0.19			0.11
1998				
Australia (97/8)	0.28			0.17
G.B.	0.33			0.24
U.S.	0.23			0.15
Spain	0.09			0.03
Germany	0.18			0.11
Age 55+				
1983				
Australia (82)	0.42	0.32	0.09	0.36
G.B.	0.40	0.12	0.01	0.27
U.S.	0.30	0.22	0.01	0.25
Spain	0.59	0.26	0.01	0.30
Germany (84)	0.41	0.49	0.00	0.43
1998				
Australia (97/8)	0.30	0.26	0.11	0.28
G.B.	0.27	0.22	0.01	0.25
U.S.	0.32	0.27	0.01	0.29
Spain	0.49	0.34	0.01	0.35
Germany	0.31	0.44	0.00	0.35

Other				
1983				
Australia (82)	0.15	0.23	0.07	0.18
G.B.	0.10	0.21	0.12	0.15
U.S.	0.17	0.34	0.28	0.25
Spain	0.14	0.20	0.15	0.18
Germany (84)	0.16	0.17	0.25	0.16
1998				
Australia (97/8)	0.18	0.31	0.07	0.22
G.B.	0.20	0.46	0.36	0.27
U.S.	0.30	0.49	0.57	0.37
Spain	0.17	0.22	0.15	0.19
Germany	0.17	0.15	0.29	0.17

Source: see text. Population of working age. All responses based on self-assessed replies to survey questionnaires. GSOEP data for Germany refer to "officially unemployed" (self-assessed). Numbers are proportion of households with at least 1 unemployed occupant, lone parent not unemployed, all occupants aged 55 and over excluding previous 2 categories. Other category is the residual.

1) Note that lone parents are defined as single adult households with dependent children under 18 years as household type information is not available for the European data.

Appendix

Figure A1. Polarisation Indices in Australia, Britain, Spain, Germany and the U.S.

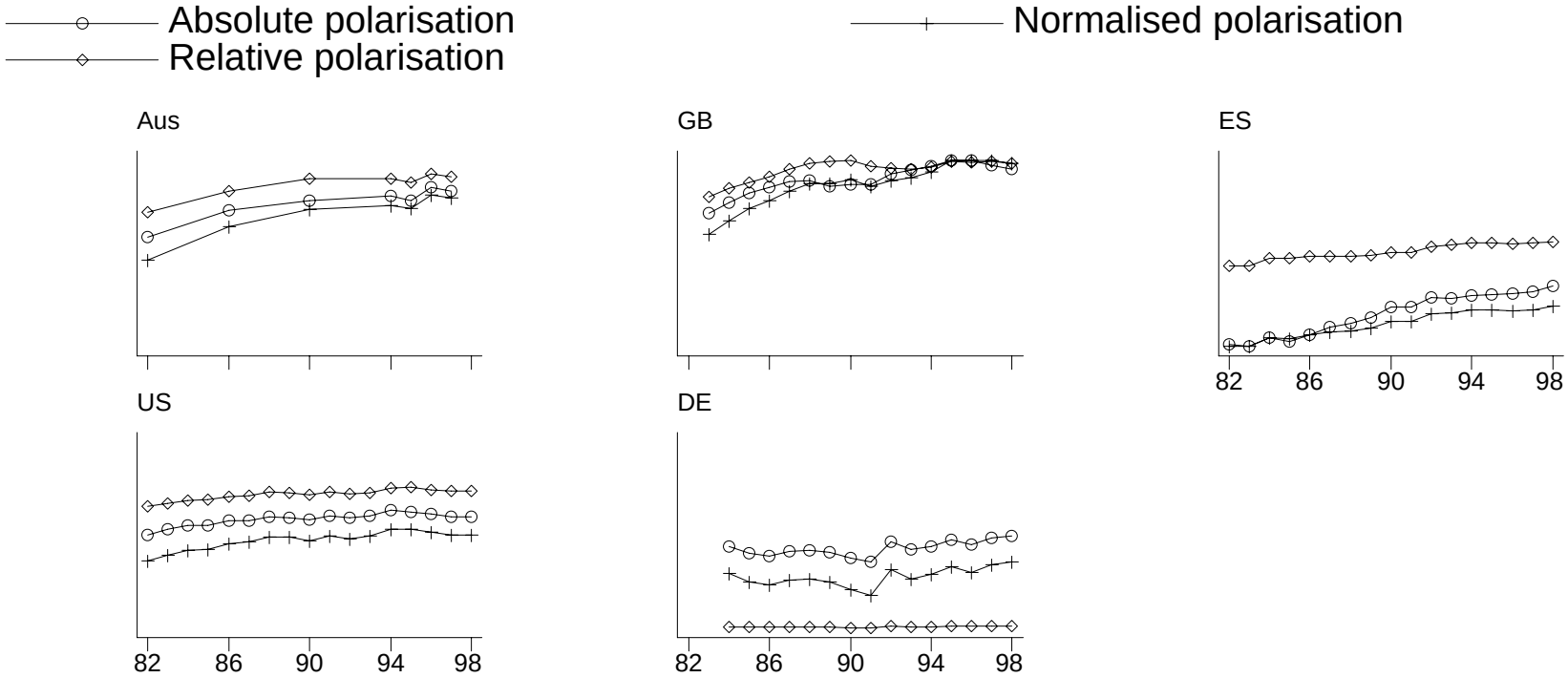


Table A1: List of regions used in conditional polarisation measure
Australia
New South Wales – Sydney
New South Wales – Rest of State
Victoria – Melbourne
Victoria – Rest of State
Queensland – Brisbane
Queensland – Rest of State
Western Australia – Perth
Western Australia – Rest of State
South Australia – Adelaide
South Australia – Rest of State
Tasmania
ACT, Northern Territory
Great Britain
North
Yorkshire
East Midlands
East Anglia
London
South East
South West
West Midlands
North West
Wales
Scotland
Germany
Berlin
Schleswig-Holstein
Hamburg
Lower Saxony
Bremen
North Rhine – Westphalia
Hesse
Rhinel.-Palatinate, Saarl.
Baden-Wuerttemberg

Table A1: List of regions used in conditional polarisation measure

Bavaria
Spain
Basque
Cast La Mancha
Valenciana
Andalucia
Extremadura
Balearics
Catalunya
Castilla Leon
Galicia
Aragon
La Rioja
Madrid
Murcia
Navarra
Asturias
Canarias
Cantabria
USA
Group 1 – Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania
Group 2 – Ohio, Indiana, Illinois, Michigan, Wisconsin
Group 3 – Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas
Group 4 – Delaware, Virginia, Maryland, West Virginia, Washington D.C.
Group 5 – North Carolina, South Carolina, Georgia, Florida
Group 6 – Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Oklahoma, Louisiana, Texas
Group 7 – Utah, Nevada, Colorado, New Mexico, Arizona
Group 8 – Washington, Alaska, Hawaii, Oregon
Group 9 – California

Table A2. Decomposition of polarisation in jobless household rate 1983-1998

	Δ polarisation (I)	Within Household types (II)	Between Household (III)
Australia			
82-97/98	3.4	2.9	0.5
82-90	2.6	2.4	0.2
90-97/98	0.7	0.4	0.3
Britain			
83-98	3.3	2.1	1.2
83-90	2.1	1.7	0.4
90-98	1.2	0.1	1.0
Spain			
83-98	4.4	4.5	-0.1
83-90	2.8	2.9	-0.0
90-98	1.6	1.5	0.1
United States			
83-98	1.0	1.0	-0.1
83-90	0.7	0.8	-0.0
90-98	0.2	0.3	-0.0
Germany			
84-98	0.6	0.7	-0.1
83-90	-0.9	-0.2	-0.6
90-98	1.4	-0.3	1.7

Table A3. Relative Polarisation by Household Type - Britain, Spain, Germany and U.S.

	1 Adult		2 Adult		3 Adult	
Australia	*1982*	*1997/98*	*1982*	*1997/98*	*1982*	*1997/98*
Raw	1.19	1.32	0.96	1.50	1.92	2.88
Conditional	1.12	1.25	1.27	1.59	2.39	2.59
Britain	*1983*	*1998*	*1983*	*1998*	*1983*	*1998*
Raw	1.31	1.54	1.13	1.41	1.47	3.26
Conditional	1.22	1.41	1.39	1.44	1.40	2.48
Spain						
Raw	0.91	0.98	0.56	0.73	0.73	1.13
Conditional	0.82	0.91	0.85	0.93	0.89	0.99
United States						
Raw	0.97	1.07	1.06	1.20	1.63	3.00
Conditional	0.92	1.01	1.19	1.28	1.40	1.91
Germany	*1984*	*1998*	*1984*	*1998*	*1984*	*1998*
Raw	0.96	0.96	0.95	1.01	0.36	1.24
Conditional	0.90	0.96	1.10	1.02	0.53	1.03

Table A4. Welfare Systems and Wage Inequality across countries

Country	Australia	Germany	Spain	UK	US
Wage Inequality 50/10 1995[1]	1.65	1.44[2]	1.66[3]	1.81	2.09
Unemployment Insurance – Duration	N.a.	Varies with age and contributions. For those aged under 42 the max. is 312 days (not Sundays). This rises to 832 days for over 54s.	24 months on fraction of previous wage and up to 30 months in total	52 weeks (26 weeks from 1996)	26 weeks but can be extended to 39 weeks in some states.
Unemployment Insurance – Ratio of Earnings	N.a.	60% of previous net earnings for childless and 67% for those with children up to a ceiling.	70% of previous gross wage for 6 months 60% up to 24 months Then multiple of minimum wage based on family size	Not earnings related but a flat rate for singles or couples if with a non-working partner. Child support only comes under social assistance below.	50% of reference gross salary up to a maximum value.
Unemployment Insurance - Eligibility	N.a.	360 days of work in last 3 years	12 months contributions in last 6 years. More contributions means benefits last longer.	25 weeks in one of previous two tax years.	6 months employment above a minimum earnings level.
Unemployment Assistance	Eligible to all actively seeking employment and able to commence full-time employment. Not related to previous earnings and is subject to means testing. Benefit is indefinite.	Eligibility is as for UI but rates are for 53% of previous net earnings and 57% with children. Benefit is indefinite.	Families with Children for 30 months and those aged 45+ 1 year after UI exhausted for 6 months. Value is 75% of minimum wage	None	None
Social Assistance -	Assistance available to lone parents and partnered parents and other groups not actively seeking employment such as those with a disability, and carers. Additional assistance available to renters and families with children.	Regional based minimum income based on family size. Lone parents receive extra help. No job search required.	Regional based minimum income based on family size. Value is low. Job search required.	Minimum income for the unemployed and lone parents (who are not required to find work). Value based on family size and renters can get extra Housing Benefit.	Food stamps are available to any family unit with job seekers. Lone parent families or those with a disabled member could claim AFDC. Some state variation. Replaced from 1997 by TANF.
OECD Standard Replacement Ratios, 1997 –					

at wage of 2/3 average production wage[4]					
Single	52%	69%	70%	73%	59%
Married couple	79%	71%	74%	88%	59%
Lone parent with two kids	68%	78%	78%	69%	51%
Married couple with two kids	86%	74%	78%	83%	51%

1) Source (for all other than Spain): OECD (1996), Employment Outlook, Chapter 3: Earnings Inequality, low paid employment and earnings mobility. D1 and D5 refer to the upper earnings limits of the first and fifth earnings deciles of employees ranked in order of their earnings from lowest to highest respectively. Thus, D5 refers to median earnings.
Found online at http://www.oecd.org/pdf/M00028000/M00028233.pdf
2) Figure refers to wage inequality at 1993.
3) Source: Jimeno, Canto, Cardoso, Izquierdo and Rodrigues (2000), Integration and inequality: lesson from the accessions of Portugal and Spain to the EU. Found online at ftp://ftp.fedea.es/pub/Papers/2000/dt2000-10.pdf.
4) Source: OECD (1999), Benefit Systems and Work Incentives. Net replacement rate figures for 1997, after tax and including unemployment benefits, family and housing benefits in the first month of benefit receipt. Found online at http://www.oecd.org/xls/M00031000/M00031626.xls.