

Two Sides to Every Story. Measuring Worklessness and Polarisation at Household Level

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Abstract

Individual and household based aggregate measures of joblessness can, and do, offer conflicting signals about labour market performance. This paper introduces a simple set of indices which can be used to measure joblessness at the household level and which can be used to try to identify the likely source of any disparity between individual and household-based measures of worklessness. We focus on one measure that can be decomposed in order to isolate the source of any discrepancy. 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, we show that in Britain and in certain other OECD countries there has been a growing disparity between the individual and household based jobless measures, which we term polarisation. Changing household size in Britain can only account for a quarter of the rise in polarisation so that differences between individual and household jobless performance measures seem to derive mainly from the labour market. Long established labour market shifts in employment across gender, age, region and skill explain around one quarter of the change since the mid-seventies. Yet even within these groups there is considerable polarisation of work across households.

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1. Introduction

Analysis and examination of labour market data usually relies on information collected on individuals. In most cases this information is simply averaged across the economy as a whole to produce estimates of, say, the unemployment or employment rates. Jobless measures serve to capture two, rather different, issues. First, they capture the extent of labour market slack and hence potential inflationary pressure in the economy. Second, they can be used as a measure of the extent of social distress and exclusion. On first inspection, the state of the labour market in a country like Britain looks healthy. Britain now has an ILO unemployment rate around 5 per cent, (the lowest for twenty five years), and an employment rate close to that observed at previous cyclical peaks, which is currently also one of the highest in the industrial world. However, this good news is not matched by other measures of social distress based on household level data. Poverty and inequality amongst the working age population are inordinately high, especially among families with children (see DSS 1999). In addition, there is evidence, (Gregg and Wadsworth 1999), that joblessness is now increasingly concentrated on certain groups and in certain areas. This paper examines whether measuring joblessness at the household level can help reconcile these observations.

In a series of articles, Gregg and Wadsworth (1996, 1998) show that over the past twenty years, the pattern of employment in certain OECD countries has become increasingly unevenly distributed across households. The share of households where everyone is in paid work has grown at the same time as the share of households where no adult works, so employment is increasingly concentrated into work-rich households. This, despite aggregate employment rates, derived from

individual-based measures of joblessness, that have changed little over the past twenty years, allowing for cyclical variation.

The scale of this change, in some countries, has been so large that analysis of labour market performance using individual level data can reach radically different conclusions to that provided by a household based analysis, using the same source of information. The current workless household rate in Britain, for example, is now double that of the late seventies when the aggregate non-employment rate was at the same level. Despite near record high employment rates, nearly 1 in 5 children in Britain are growing up in a household where no one works. Households lacking wage income will be more dependent on welfare payments than households containing a mixture of those in and out of work and more at risk of experiencing poverty. This in turn has profound implications for the scale of government welfare finance for a given level of joblessness. It is also easy to think of equilibrium unemployment models where the amount of wage pressure could vary with the distribution of work across households in a different way to the usual hypothesised effect of the aggregate jobless rate. In sum, the labour market now is very different from that of twenty-five years ago, but examination of individual-based jobless data does not always reveal this.

Whilst the rise in workless household numbers is undeniable, some commentators have argued that the cause is not, primarily, a labour market problem. Instead the emphasis is placed on the break up of the traditional nuclear family. More single adult households means a greater likelihood of both fully employed and no work households in the population at any given employment level. This raises an important issue for policy-makers, since the solution to the problem of workless households may differ across the two scenarios. If the rise of the workless household is largely a social problem stemming from the growth of smaller households, then there is a need to understand the processes that underlie

household formation and dissolution. Conversely, if forces are creating an unequal division of work across households then policy makers need to be aware of the reasons why jobs are going disproportionately to households already benefiting from earned income.

This paper introduces a simple set of indices which can be used to measure joblessness at the household level and which can be used to try to identify the likely source of any disparity between individual and household-based measures of access to work. These measures, we believe, could be used regularly alongside more traditional measures of labour market performance so as to give a more complete understanding of the state of the labour market. 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, we show that changing household size in Britain can only account for a quarter of the rise in the workless household rate. The gap between a world where work is randomly distributed and the actual outcome has grown appreciably over the past twenty years. In short, the household distribution of employment has become increasingly polarised and the origin of this seems to lie primarily in the labour market.

Having provided formal reasons why jobless measures can diverge across individual and household measures, we then explore whether this disturbance derives from concentrations of work between regions, gender, age and skill groups. Since household occupants tend to have many characteristics in common, any major change in employment centred on certain demographic groups, a shift in demand away from the less skilled for example, could help explain the observed polarisation. We find that differential movements in employment rates seem to play a substantial role in explaining the polarisation of work. There remains, however, a large residual polarisation of work within area, age and education groupings. This within-group polarisation, is centred mostly on single adult households.

Section 2 sets out the basic facts underlying the divergence between individual and household based jobless measures in Britain and other OECD countries. Section 3 considers formally why such divergences can arise and defines a set of household based measures of joblessness and polarisation. Section 4 extends these results to the entire distribution of employment across households. Section 5 uses Labour Force Survey data to measure polarisation and decomposes the change over time into the various competing explanatory components and section 6 sets out some conclusions and discusses the policy implications of these findings.

2. Household Employment Patterns

We begin with a simple outline of the existing facts on household based measures of employment. We concentrate on Britain, but present some evidence from several other OECD countries to show that the issue is not unique to one country. The Labour Force Survey, (LFS), for Britain contains household identifiers. We can therefore count the numbers of adults employed and the number out of work, on the ILO definition, in each of the 50,000 working age households in the sample. A workless household, in our definition, then occurs when all the adult occupants of working age are out of work. Conversely an all-work household occurs when all adult members are in work. We confine our estimates to the population of working age, exclude any full-time students living at home and all households where the head is retired to try and minimise the effects of educational participation and retirement on our data. Since we are interested primarily in the diverging signals emanating from the individual and household non-employment rates, we make no distinction between ILO unemployed and ILO inactive and simply add the two groups together¹.

Table 1 and Figure 1 document the growth in the proportion of working age workless households in Britain using LFS data². Whilst the aggregate employment rate moves over the cycle but

remains broadly untrended, the share of households where no adult works has tripled since the 1970s. By 1996, nearly one in five of all working age households were jobless. During the mid-eighties and early nineties the individual-based non-employment rate falls back, but the household non-employment rate continues to rise. The two measures give conflicting signals. Figure 1 and Table 1 also document the simultaneous rise in the proportion of households where every one is in work. Households containing a mixture of working and non-working adults are in secular decline. The share of mixed-work households has fallen by around twenty points, whilst the share of households where everyone works has risen from 57 to 64 percent alongside the rise in workless households.

Figure 2 shows that Britain has the third highest workless household rate among OECD countries, despite having one of the highest employment rates, (see also OECD 1998). Perhaps most striking is how small the variation in the workless households rate is across countries, despite large differences in their employment and unemployment rates. Evidence again, that individual and household based measures can give conflicting signals about the state of the labour market. Figure 3 shows the workless rate amongst households with children. The British rate is far higher than in any other nation, with one in five households with children having no working adult present.

The highest incidence of worklessness is amongst single parents, at around 50%, (Table 2). Again, all family types exhibit rises in the numbers of workless households between 1981 and 1996, even though there was a significantly higher proportion of adults in work in 1996. The aggregate decline in worklessness over the late nineties is reflected across all household sizes.

Table 3 uses Family Expenditure Survey, (FES), data to confirm that poverty rates are positively correlated with workless household rates. This is especially marked for families with children, where around 90% are poor on conventional definitions³. Around one half of the non-pensioner poor

lived in workless households in 1996. Nor is this state transient. Around 60% of these households currently have no resident adult who has worked in the last three years. Policy makers are thus likely to be non-neutral as to whether polarisation is over producing workless households or all-work households. Workless 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 workless households for this reason.

3. Defining Polarisation

We now consider how best to measure non-employment and hence polarisation at the household level. We need to be able to assess to what extent the labour market accounts for changes in the distribution of work and why individual and household based measures of joblessness can give conflicting information. To understand why this may occur, 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 aggregate non-employment rate in the population is the same, so that this statistic alone is unable to distinguish between the two outcomes.

Esteban and Ray (1994) have investigated polarisation between groups stratified according to income. Our concern is with measuring discrete outcomes on the allocation of work, and not, unlike Esteban and Ray and the income inequality literature in general, with a continuous variable. By focussing on the share of work in each household, we are not faced with the endogeneity problem of Esteban, Gradin and Ray (1999) in classifying a continuous variable, (income), into discrete groups in order to measure polarisation. We would like therefore 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, all axioms required of inequality measures outlined in Cowell (1995).

One simple measure of polarisation that accords with most of these axioms, and alluded to by Esteban and Ray (1994), is simply to calculate the proportion of households containing a mixture of working and non-working adults,

$$M = \sum_h \text{Mixed} / \sum_h \quad h = 1, 2 \dots H \text{ Households} \quad (1)$$

Any fall in this proportion must lead to increases in either the all-work or the no-work groups or both. This is a useful statistic and is easy to calculate. However, it does not lend itself readily to further decomposition. For example if changes in the share of households containing different numbers of adults were thought to be important, this would not be picked up in an index which measured the mixed work household rate in each household type i , m_i , multiplied by the share of each household type, s_i ,

$M = \sum_i s_i m_i$, since this is necessarily zero for all households containing only one adult. Moreover, as we show below, a falling mixed work rate need not, in itself imply a divergence between the signals emanating from the household and individual based non-employment rates and the measure does not make explicit the link between the individual and the household rates. Furthermore, this measure does not imply whether the polarisation results in more workless or more all-work households and, as noted above, policy makers are likely to be disproportionately concerned with the former.

The sociological literature on segregation (see for example Duncan and Duncan (1955)) provides some guidance on how to construct indices of disparity. The Duncan segregation index, adapted to our purposes, would take the form, $D = \frac{1}{2} \sum_i | a_i - w_i |$, where a_i is the proportion of all work households and w_i is the proportion in group i where no one is in work. This is, however, unsuitable. In households containing more than one adult, there is a mixed work group, the existence of which invalidates the dichotomy required to calculate any such index. The index reduces to the

proportion of mixed households in each group. Similarly, the turbulence index used to outline the extent of labour market “mismatch”, $T = \frac{1}{2} \sum_i | (N_i/N) - (N_i^0/N^0) |$, where N_i is the share of employment in group i , (see Layard, Nickell and Jackman (1990)), does not readily lend itself to the measure of the distribution of work *within* household types.

One way forward is to undertake standard shift share analysis on the changing proportion of workless households disaggregated by different household types. Let the actual household non-employment rate be written as the simple weighted average of the non-employment rate in each household type, $w = \sum_i s_i w_i$, where s_i is the share of type i in the population of households and w_i is the proportion of household type i where no one is in work. In this way it is possible to decompose the total change in the workless household rate into within and between household components and an interaction effect.

$$\Delta w = \sum_i s_i \Delta w_i = \sum_i s_i \Delta w_i^0 + \sum_i s_i^0 \Delta w_i + \sum_i \Delta s_i w_i \quad (2)$$

where the zero superscript denotes base year values. The larger the within-group component the more likely it is that some form of labour market failure is the dominant explanatory factor⁴. Whilst ultimately providing an answer to the source of any workless household growth, this approach again does not contain any element of how divergent are the individual and household workless measures. Yet for policy, this dimension is important to try to estimate.

Consider instead an alternative means of examining the distribution of work. As a benchmark we use the counterfactual workless household rates that would occur if work were randomly distributed in the population, so that each individual had the same probability of being out of work, given by the aggregate non-employment rate in the population at time t , n_t . In this case the probability of observing a single adult household out of work would also equal the individual non-employment rate, but the

probability of a two adult household being out of work would be the square of the non-employment rate and that of a three adult household the cube of the individual non-employment rate.

Pr (Workless/1 Adult) = n_t , Pr (Workless/2 Adult) = $n_t * n_t$, Pr (Workless/3 Adult) = $n_t * n_t * n_t$

Let household type now be defined by the number of resident adults, so that the predicted workless rate for a household with i adults at time t is then given by

$$p_{it} = n_t^i \quad (3)$$

It follows that, ignoring time subscripts, the aggregate predicted workless household rate is the weighted average of these rates, where the weights are again the shares of the relevant household type in the population.

$$\hat{w} = \sum_i s_i p_i = \sum_i s_i n^i \quad (4)$$

Our definition of polarisation is then the difference between the actual and predicted household rates⁵, that is the extent to which there are more workless households than would be predicted by a random distribution of employment across all working age adults.

$$\text{Polarisation} = \text{Actual} - \text{Predicted} = w - \hat{w} = \sum_i s_i w_i - \sum_i s_i n^i = \sum_i s_i (w_i - n^i) \quad (5)$$

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 workless households than merited by a random draw. The upper and lower bounds of this measure vary with the level of non-employment and with changes in the relative shares of each household type. At the limit where work is randomly distributed, the predicted and actual workless household rates are identical and polarisation must go to zero. These calculations can also be replicated for each household size type in order to see which

groups have experienced the most polarisation. From the above the following observations hold.

Proposition 1: The actual workless household rate will rise further if jobs are disproportionately lost in single rather than multiple adult households.

This is because the set of work/no-work combinations in a household containing i adults is

$$\text{No. (Work/No Work Household Combinations)} = (2)^i \quad (6)$$

Assuming, for simplicity, that each of these outcomes is equally likely then a job lost in a single adult household increases the workless numbers by one; a job lost to an individual in a 2 adult household has a two in three chance of raising the workless household numbers and there is a three in seven chance of a job is lost by an individual in a 3 adult household⁶. Hence changes in the measure of polarisation stem from how unevenly work is distributed among multi-adult households and from whether single adult households are losing work relative to multi-adult households.

Proposition 2: A rise in the share of households containing one adult will raise the predicted workless household rate more than a similar size increase in the share of households with more than one adult.

To see this, let the cumulative share of household types $S_i = \sum_{j=1}^i s_j$ so that (4) can be written

$$\hat{w} = \mathfrak{Z}_i (S_i - S_{i-1}) n^i = \mathfrak{Z}_i S_i (n^i - n^{i+1}) = \mathfrak{Z}_i S_i n^i (1 - n) \quad (7)$$

and hence $\frac{\hat{d} \hat{w}}{\hat{d} S_1} > \frac{\hat{d} \hat{w}}{\hat{d} S_2} > \dots > \frac{\hat{d} \hat{w}}{\hat{d} S_n}$ since $n^1 > n^2 > \dots > n^n$.

Proposition 3: the individual non-employment rate and the workless household rate need not move at the same rate or in the same direction over time

This follows directly from the arguments above. If, as in Britain during the last two recoveries, job creation is skewed toward multiple adult households then whilst the individual non-employment rate will

fall, following (6), there may be little impact on the workless household rate. Given the workless household rate $\sum_i s_i w_i$, then if for example, $dw_1/dn \dots dw_2/dn$, depending on the size of the relative household shares, s_i , this is sufficient to generate a differential response in the rate of change or even in the direction of change of the workless household and non-employment rates⁷. Equally, a within household-type explanation of the same event would suggest that mixed work households, benefit disproportionately from an upturn. New jobs go mostly to households containing a mixture of working and non-working adults rather than to workless households of whatever size. We return to this issue in the next section.

Decomposition of Polarisation

We now proceed to decompose changes over time in both the predicted and polarisation measures in order to explore the source of any disturbance. To examine the change in the predicted workless household rate over time, we use a shift-share breakdown

$$\hat{w} = \sum_i s_i n^i = \sum_i s_i n^{i0} + \sum_i s_i^0 n^i + \sum_i s_i n^i \quad (8)$$

where the three terms capture the impact of changes in family structure holding employment rates constant at their base year values, changes in aggregate employment holding household type constant and an interaction effect, respectively. Hence between any two dates the predicted component can be attributed to changes in family structure and changes in labour market performance as measured by the aggregate employment rate.

Since changes in household shares also affect our measure of polarisation we decompose the change in polarisation as

$$\hat{(w - w)} = \sum_i s_i (w_i - n^i) = \sum_i s_i (w_i - n^i)^0 + \sum_i s_i^0 (w_i - n^i) + \sum_i s_i (w_i - n^i) \quad (9)$$

where the first term is the between household type component, the second term measures the within household type component and the third term is an interaction effect. 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 (9)), 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.

Disaggregating By Characteristics

We next compare actual and predicted values 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 thirty years lie behind the observed polarisation of work. We wish to know whether members of workless households have common characteristics that make them more likely to experience joblessness. For example, whether they are older, less qualified or more likely to live in low employment regions. Since the predicted rate, n_k^i , is now based on the average non-employment rate in group k, the predicted and actual rates for group k will converge the more disaggregated the population on which n_k^i is based. The degree of disaggregation used is, of course, arbitrary but does allow us to look at the major factors over which employment is known to vary. This conditional polarisation measure now becomes

$$\text{Polarisation} = \text{Actual} - \text{Predicted} = w - \hat{w} = \sum_{ik} s_{ik} w_{ik} - \sum_{ik} s_{ik} n_k^i = \sum_{ik} s_{ik} (w_{ik} - n_k^i) \quad (10)$$

The extent that this count differs from the measure introduced in (5) is attributable to between employment group variation in employment and any residual polarisation from (10) can be said to be within employment group polarisation.

Proposition 4: if employment dispersion across any factor lies behind the divergence between actual

and predicted measures then disaggregating by this variable should reduce polarisation more.

This follows directly from (4). Since the average actual rate, $\sum_{ik} s_{ik} w_{ik}$, is unchanged by disaggregation, the better the prediction, $\sum_{ik} s_{ik} n_{ki}^i$, the lower the polarisation measure. Given 2 variables, X and Y, if the non-employment rate varies widely across different values of X, but is unchanged across different values of Y, then $\sum_{ik} s_{ik} w_{ik} - \sum_{ik} s_{ik} n_x^i < \sum_{ik} s_{ik} w_{ik} - \sum_{ik} s_{ik} n_y^i$.

This helps clarify the extent to which polarisation rises if 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. Note that because (a) only applies to multi-adult households, the larger the share of single adult households the smaller the impact of disaggregation on the polarisation measure. Having accounted for a set of observable characteristics, any residual within-group polarisation would suggest that workless households form because all members of certain households suffer reduced access to work relative to others with similar characteristics.

4. Other Household Work Patterns

When analysing social distress, workless households are of primary interest. However, we can compile a polarisation measure for the entire distribution of work since the decompositions above can also be applied to the measure of the change in the share of households where there is full employment or a mixture of employed and non-working adults. This may help us understand why, for example, as Figure 1 shows, the workless and fully employed household rates have risen together at certain points over the last twenty years.

Taken together, the predicted allocation of work across households is given by,

$$\hat{Dist} = \hat{NoWork} + \hat{MixWork} + \hat{AllWork} = \sum_i s_i n^i + \sum_i s_i (1 - n^i - (1 - n)^i) + \sum_i s_i (1 - n)^i \quad (11)$$

which can be compared with the actual rates documented earlier in Figure 1 and Table 1. If the mixed work rate is constructed as a residual, it follows that the three terms in (11) must add to one.

$$1 = \hat{NoWork} + \hat{MixWork} + \hat{AllWork} = \hat{NoWork} + \hat{MixWork} + \hat{AllWork} \quad (12)$$

Proposition 5: Under a random allocation of work, for any change in the aggregate non-employment rate, the predicted no work and all work rates will always move in opposite directions, though the size of the changes are not symmetric.

The first point follows directly from (11), since

$$d(\hat{n}^i)/dn = \mathfrak{Z}_i s_i i n^{i-1} > 0 \quad \text{and} \quad d(1-n)^i/dn = \mathfrak{Z}_i - s_i i (1-n)^{i-1} < 0 \quad (13)$$

(13) also shows that a given change in the non-employment rate has a non-symmetric effect on the predicted workless and all work rates, (unless $n=0.5$). Over time, these two predicted rates, and indeed the actual rates, need not move in the same proportion and so changes in a polarisation count for no work households will vary differ from one based on all work households. This is a good reason for studying the two household measures, workless and all-work, independently. Note that a positive polarisation count using the all-work household measure implies that there are more all-work households than would be predicted under a random allocation of work.

Proposition 6: Polarisation will rise if the predicted and actual mixed work household rates move in opposite directions.

This again follows from (11). For non-employment rates below fifty percent, any rise (fall) in the aggregate non-employment rate increases (reduces) the predicted mixed rate, since

$$d(\hat{Mix})/dn = \mathfrak{Z}_i s_i (-i n^{i-1} + i(1-n)^{i-1}) > 0 \quad (14)$$

The rise in the predicted workless household rate following a negative employment shock reduces the

predicted number of mixed work households, (term 1 in (14)), but this is more than offset by the predicted inflow from the fall in the number of all work households, (term 2)⁸. Yet this is not always what we observe, as Figure 1 shows. In Britain at several points over the sample period, the actual workless household rate rises alongside the all work rate, and the share of mixed households falls when it should, if work were allocated randomly, be rising. Hence another means of detecting polarisation is to compare the change in the actual and predicted mixed rates. If the rates move in the opposite direction, then one might suspect polarisation.

This is not a sufficient condition for polarisation however, since the individual and household non-employment rates can give conflicting signals even when the predicted and actual mixed rates are moving in the same direction. If, in a recovery, work goes disproportionately to mixed work households then the individual based non-employment rate will fall faster than the household non-employment rate and our measure of polarisation could rise.

Proposition 7: A necessary and sufficient condition for a rise in our polarisation measure is that the rate of change in the predicted mixed work household rate is less than the rate of change in the mixed work household rate.

$$d(\hat{Mix})/dn < d(Mix)/dn \quad (15)$$

This follows directly from (14). A random allocation of work implies a given level and a given rate of change in the mixed, or indeed in any of the predicted rates. Any deviation implies polarisation⁹. Hence the deviation between the actual and predicted mixed work household rate offers another measure of polarisation. However this result brings us back to our original formulation of polarisation, namely the deviation between a random allocation and the actual outturn. As the patterns of polarisation toward no work and all work households are not symmetric and we are non-neutral between these two

outcomes, we analyse the rise in no work and all work households separately.

5. Results

We now proceed to examine British data in the light of these propositions. We begin, in Table 4 with information on actual workless household rates and our estimates of the predicted rate on the random basis, using (4), and polarisation, using (5). We presents results for the years 1977, 1990 and 1999, when the aggregate employment rate was broadly the same and also at the peak of each respective cycle, together with the years 1987 and 1996, when the workless household rate was at a cyclical high point. These dates should highlight any secular or cyclical trends.

In 1977, the predicted workless household rate, based on the random allocation of work, almost exactly matched the actual rate, so that there was no polarisation. By 1999, despite there being a similar non-employment rate as in 1977, the proportion of households with no adult in work had risen by over nine percentage points but the predicted rate rose by just 2.6 points, (column A). As a result, the polarisation measure rises to 6 percentage points. Changes in household shares account for the vast majority of the predicted change and indeed shifts in family structure accelerated in the latter half of the sample period, so that this explains around one half of the three point increase in the overall workless household rate between 1990 and 1999, (column B of the bottom panel of Table 4). However for the sample period as a whole, two thirds of the rise in the workless household rate is unexplained by either changing household structures or changes in the aggregate non-employment rate.

Figure 4, (upper panel), tracks the measure of polarisation moves over time alongside the workless household rate. Polarisation rises in each recession and continues to rise after the individual employment rate begins to recover. There are then modest falls in polarisation during the later part of each recovery. Periods of net job destruction result in larger increases in workless households than

would be predicted by a random draw across the population. Rapid net job generation reduces workless household rates by more than would be predicted by a random allocation, but not enough to offset the losses of the preceding recession. Since 1996, polarisation has eased somewhat faster than during the recovery in the late eighties but still not by enough to undo the cumulative effects from earlier years. Table 5 decomposes the change in polarisation into within and between household group effects using (9). The main source of polarisation is more workless households within all household types, (column II). The majority of this rise occurs before 1990, since when the between household type component dominates the, much smaller, rise in polarisation.

Accounting for Polarisation

Having access to individual survey data we can relax the random distribution of work assumption and predict household employment probabilities according to the characteristics of the individuals that comprise them. 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 predicted household probability of worklessness. The characteristics we use are the principal variables known to be associated with differential employment probabilities; region, (11 groups), gender, age (3 groups; 16-24, 25-49, 50+) and education (4 groups; degree, upper and lower intermediate and no qualifications). We use one characteristic at a time and then combine, giving us a maximum of 264 non-employment rate cells in any one year. Note that predicted values from a logit on the probability of the individual being out of work, applied to each member of the household, could be used here once cell sizes become too small¹⁰.

Table 6, (column III), shows that allowing for regional variation in non-employment makes little difference to the predicted rates. So employment differences across regions are reflected fully in

workless household rates and do not therefore contribute to polarisation¹¹. Changes in workforce composition by gender go a little way toward explaining the change in polarisation, (column IV). 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 and, because the predicted rates were lower than the actual rate in the seventies, helps explain the rise in polarisation, (see also Figure 5). In some households both individuals now work, in others no-one works. Age and education have a modest impact on the predicted rates, but the interaction of all four factors, (column VI) does have a more noticeable effect on the predicted rates. Indeed this disaggregation can explain around a third of the 6.3 point rise in polarisation between 1977 and 1999¹². This is consistent with the notion that older, less educated men in the North are losing work and prime-age women in the South are entering work, (see Gregg and Wadsworth, 1999, for more detail of these trends). These groups live in different households, hence polarisation rises.

One way of assessing the impact of these trends is to calculate counterfactual estimates of what the workless household rate would be if the cell-specific non-employment rates were fixed at their 1977 values. The final row of Table 6 suggests that the unconditional predicted rate workless household rate for 1999 based on the 1977 non-employment rate would be little different from the contemporaneous prediction, (column II). However, the conditional prediction based on the interaction of age, education, region and gender suggests that had non-employment patterns, based on these 4 factors, remained as in 1977, the predicted workless household rate would have been 2.5 points lower than the estimate using current values, (compare rows 4 and 6 column VI)¹³.

However it is apparent from Table 6, (row 5), that only around one half of the 9.1 point rise in the workless household rate over the period is explained by the interaction of these variables or by

changes in household size, so that there is a large residual within-group gap. It would seem that within any group, say older, less educated men in the North, those who are either single or who have non-working partners increasingly don't work whereas those with working partners do.

Polarisation by Household Type

Whilst the analysis so far indicates that most polarisation is within group, this does not reveal amongst which types has polarisation increased most. One way of beginning to address this issue is to conduct separate analyses by household size, to assess which types are most affected and contrast any within-group differences across these households. We divide the population into three groups according to whether the household contains one, two or more than two adults and present estimates of (4) and (5) for each household type. We do not use separate non-employment rates for each household type in the calculating the predicted rates, since we wish to contrast the differential performance of different household types against a common background.

Table 7, (and Figure 6), suggest that our earlier finding of no polarisation at the aggregate level in 1977 held for all household types. So during the seventies, the random allocation of work assumption fits the data closely. Since then, the share of single adult households has grown by 12 percentage points over the sample period, mainly at the expense of the 3 or more adults household group. Propositions 1 and 2 indicate that this would be expected to increase the aggregate actual and predicted workless household rates for a given non-employment rate, but not necessarily polarisation within each household type. Table 5 showed that polarisation occurred primarily within household type not from shifts towards those types where polarisation was already strong. Of the 5.1 point rise in within group polarisation, using the second term in (9) and the information in Table 7, single adult households accounted for around half of the within group rise.¹⁴ However, workless household rates for all

household types are increasingly diverging from the rates predicted on the random distribution of work assumption, so that there is an increase in polarisation for all types over the sample period. Relative changes across household types over the whole sample period are broadly equal.¹⁵

Interestingly, the single adult share rises most after 1990, when polarisation for this group starts to fall. In the 1990's polarisation is more of a problem amongst multiple adult households. The main effect of conditioning on characteristics is, generally, to raise the predicted workless household rates in multiple adult households, and so increase polarisation, and to reduced conditional polarisation in single adult households. So, over time, between-group employment shifts across age, gender, education and region explain more of the polarisation observed in single households, though, as before, there remains a substantial within-group component to the workless household rates that can not be explained by these factors.

Around a third of single adult households were lone parents in 1999 who account for 40% of the rise in the numbers of single adult households since 1983¹⁶. Since lone parents have low employment rates, their increasing numbers might underlie this within employment group deterioration for single adult households. In order to address this issue, Table 8 and Figure 7 present workless household and polarisation estimates for the 3 household types, conditioning on the presence of children¹⁷. Workless household rates for lone parents are higher than for any other group, but have recovered in the nineties both in absolute and relative terms. The conditional estimates of polarisation for both single adult groups are always much closer to each other than the unconditional estimates. This suggests that lone parents have age, education, gender or regional characteristics that make them more likely to experience worklessness. Using (9) to account for within group polarisation, we estimate that those without children account for slightly half of the relative deterioration of employment among single

adult households since 1983. So it appears that all single adult households have lost ground relative to other adults with similar characteristics in multi-adult households.

Cross-Country Comparisons

We next look at how polarisation in Britain compares with other countries by adapting raw data first published in OECD (1998). Table 9 shows that Britain had the highest level of polarisation among the OECD nations surveyed. It has far more workless households given its employment level and family structure than any other country. Some countries, notably Spain and Italy, still have negative polarisation, as was the case in the UK in the 1970's. For these countries negative polarisation is perhaps a way of coping with low employment rates. High levels of individual joblessness are absorbed by households containing other employed workers. Since 1985, a number of countries have witnessed sharp rises in polarisation, Belgium, Ireland, Canada and the Netherlands being the most notable. Only in Portugal and Luxembourg has polarisation fallen over time. Almost all the countries have experienced shifts in family structure that produce more workless households. This trend has been strongest in the UK, and Belgium and weakest in Ireland, Italy, Spain and Portugal. Ireland and the Netherlands have had major employment expansions, reducing the predicted number of workless households, though not by enough to offset the trends generated by changing household structures.

All-Work Households

We next explore the rise of the all-work household in the same way as for workless households. Tables 10-13 repeat the decompositions in Tables 4-7 but for all-work households. Table 10 and the bottom panel of Figure 4 show that in 1977 there were fewer households where all adults worked than would be predicted by a random distribution of work, a feature which was reversed in the nineties so that polarisation is also apparent using the all work measure. Polarisation is at its highest at

the end of the recession in the early nineties. This suggests that jobs were lost disproportionately during the recession in mixed work households. The rise in the all work household rate over the sample period amounts is around 7 percentage points, (column 1). Half of this rise can be predicted by changes in family structure given the near constant employment rates observed between 1977 and 1999, (column 3). Polarisation of work across households explains the other half of the change. Note that, consistent with our predictions, the size of the change in polarisation is different from that estimated using workless households. Moreover, the bulk of the family structure effects occurred in the 1990s, whereas polarisation has grown steadily over the entire period.

We explore the combined effect of individual characteristics within households in explaining any observed polarisation in Table 12. By the nineties, the level of the all-work household rates can be largely explained by the random allocation of work prediction. Conditioning on other observables has little additional effect. Over time, most of the rise in polarisation can be explained by the combined effects of changes in employment structures across age, education, region and gender. The net effect of the recent convergence in the employment rates of men and women, for example, produces more fully employed households and so unconditional polarisation in the all-work rate rises. The counterfactual calculations suggest that the predicted all-work rate in 1999 would have been higher if the 1977 employment rates were in place but the household structure was allowed to vary.

For an unchanged employment rate the more jobs are skewed towards households already containing working occupants the more all-work polarisation is likely to increase. When the data are split by household size, (Table 13), it is apparent that two adult households are much more likely now to be fully employed, from just over one half of the total in 1977 to two thirds at the end of the nineties. Moreover, this increase is much more than would be predicted by a random allocation of work, even

after conditioning on observable characteristics. Most of this increase in polarisation, for all groups, again occurs in the eighties. All-work polarisation is much higher amongst single adult households, though has stabilised somewhat in the nineties.

6. Conclusion

Labour market jobless measures aggregated from individuals can give conflicting signals about labour market performance compared with jobless measures derived using the household as the basis of aggregation. A simple focus on individual-based aggregate employment statistics can, and does, therefore obscure 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. We would urge that household-based measures of labour market performance be used regularly alongside more traditional individual based measures of joblessness. If we wish to calculate the extent to which individual and household based measures of joblessness are diverging over time then the mixed household rate, or preferably the measure of polarisation outlined here could be used. The latter 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 there have been dramatic changes in the polarisation of work across households in the last 25 years. Only a quarter of the rise in the workless household in Britain derives from shifts in household structures toward more single adult households, mostly in the 1990s, and none from aggregate employment changes. Polarisation across households accounts for the remainder of the rise and is partially driven by changing concentrations of employment across areas and

socio-economic groups. It seems that less educated and older men in the northern regions of Britain are losing employment whilst better educated, prime-age women in the south are gaining work and because these people live in different households, polarisation rises. Many of the individual issues have been explored elsewhere, (see for example Erdem and Glyn, 1999, Wadsworth 2000, on less skilled men in depressed areas, Disney, 1999, on older men, Machin and Van Reenan, 1998, on skill biased technological change and Blundell and McCurdy, 1999, on female labour supply).

Between group effects are almost entirely confined to the 1980s and account for around a quarter of the total rise in polarisation. So after accounting for changing employment rates across age, education, gender and region there has still been considerable polarisation of employment across households. Within any group, say older men, those who are single or who have non-working partners increasingly do not work whilst those with working partners do. We believe that such within-group polarisation of work is likely to be driven by factors which combine to produce differing incentives to accept relatively low wage entry level jobs¹⁸. The presence of a working partner changes work incentives profoundly in Britain, (see Gregg et al, 1999).

The cyclical nature of polarisation means that the last few years have seen a small improvement and, of course, more work to distribute. We are not yet at the peak of this employment cycle. We will learn in the next few years whether a sustained tight labour market can significantly reverse the polarisation of work observed over the past 25 years. Policy initiatives to encourage this could focus on encouraging inactive groups such as lone parents, older and less educated men and the partners of men on welfare benefits into work. There is a need to shift the agenda away from a simple focus on individual based jobless measures as an indicator of labour market performance and social distress. Perhaps the issues raised in this paper suggest how complementary analysis could proceed.

Footnotes

1. See Gregg, Hansen and Wadsworth in Gregg and Wadsworth (1999) for some evidence of the unemployed/inactive composition of workless households.
2. The ONS now has its own series, derived, like ours, from the same LFS source. The main difference between the two is that the ONS definition of working age households includes any resident who is working age, whilst our series excludes any household with a head of household above working age. In our definition students are also excluded. A household with both parents working and a child over 16 in full-time education counts as a fully working household in our definition but not in the ONS series, (see Cooper-Green, 2000). Both series exclude households where any occupant does not record labour force status. The Family Expenditure Survey also has a broadly consistent definition of a household that starts in the late 1960s but is based on a smaller sample than the LFS. The data are unweighted in the absence of LFS household weights.
3. A poor household has less than half mean household income after housing costs equivalised for family structure. See Gregg, Harkness and Machin, (1999), for the link between worklessness and poverty in Britain and Micklewright and Stewart, (1999) for the contrast with the rest of Europe.
4. Throughout, we assume that household size and labour market performance are independent. We leave the exploration of the relation between the two factors to future work. Our data do suggest that changes in the shares of different household types appear secular rather than cyclical. To the extent that the labour market does influence household size then we will overestimate the share attributable to households in our decomposition. The polarisation definition used here when not decomposed is however unaffected by these considerations.
5. 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 are not concerned with the absolute value of the variable under consideration (in our case work, in their case income).
6. This follows because the set of all possible employment combinations is $\{1,0\}$ in a 1 adult household; $\{0,0; 1,1; 0,1; 1,0\}$ in a 2 adult household and $\{1,0,0; 0,1,0; 0,0,1; 1,0,1; 1,1,0; 1,1,1; 0,1,1; 0,0,0\}$ in a 3 adult household.
7. 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 workless household and non-employment rates.
8. Note that the sign of the derivative is reversed if the non-employment rate, n , is above fifty percent.
9. It is obvious that if the predicted workless rate falls less than the actual rate then polarisation also rises.

10. This strategy does however imply that once cell sizes become too small a logit prediction based on a linear specification, bX , like OLS, will predict only the mean of the dependent variable and the mean workless probabilities of each right hand side variable, not their interactive cell means. This is analogous to the difference between predictions from the non-parametric and propensity score techniques in the matching literature. The median cell size in 1977 is 172 with a minimum of 1 and a maximum of 2429.

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

12. The change in polarisation over the period is the difference between columns I and II in row 5. This gives $9.1 - 2.6 = 6.5$ points. Column VI indicates that the predicted rate changes by 4.8 points over the period allowing for variation by age, education, region and gender, whilst the random predicted rate rises by 2.6 points. So, $4.8 - 2.6 = 2.2$ points of the gap can be explained by relaxing the prediction rule.

13. Note that this counterfactual strategy cannot be applied to the actual workless household rate, since the method is based on individual non-employment probabilities.

14. The second term on the right hand side of (9) indicates that within group polarisation is $\sum_i s_i^0 (w_i - n^i) = .21*[13.3-1.7] + .63*[2.5-.09] + .11*[2.8-.02]$. The first term on the right hand side of this expression gives the relative contribution of single adult households.

15. In 1999 the predicted rate for singles is 24.3 points and the actual rate is 53% above this. For couples the predicted is 5.9 and the actual rate 41% above this and for 3+ adults its 1.4 with the predicted 171% higher.

16. The share of lone parent families in the household population rose from 4% in 1981 to 10% in 1999. The share of single childless adult households rises from 14 to 23% over the same period.

17. This information is only available in the LFS from 1983 onward.

18. See Card and Robbins, 1998, Elwood, 1999 for recent North American evidence.

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Figure 1. Polarisation of Work Across Households, 1975-99

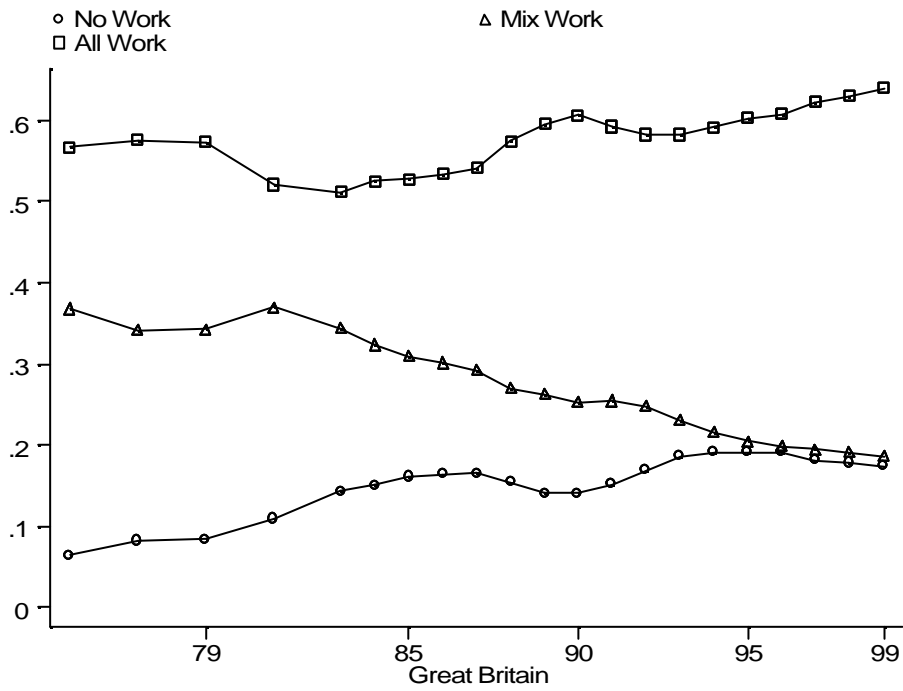
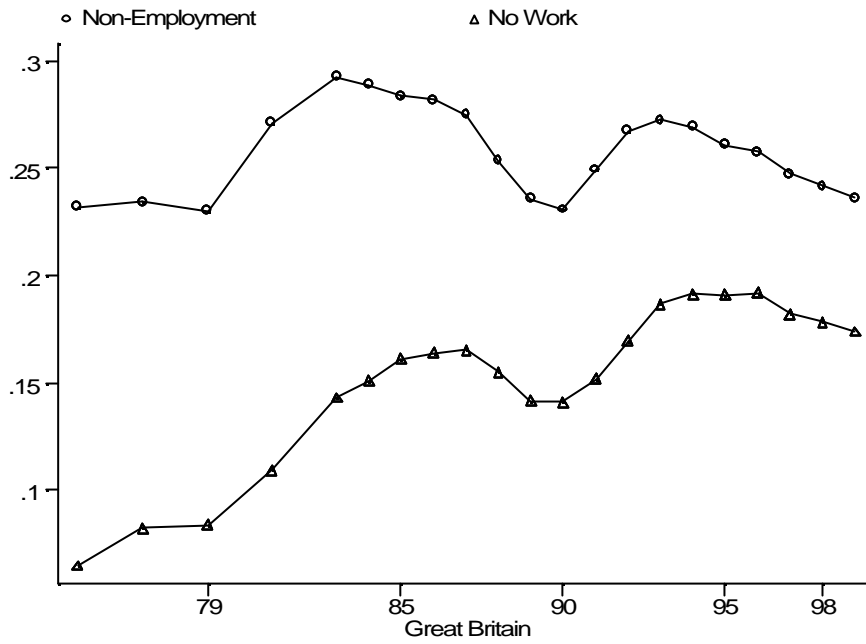


Figure 4. Polarisation of Employment Across Households:

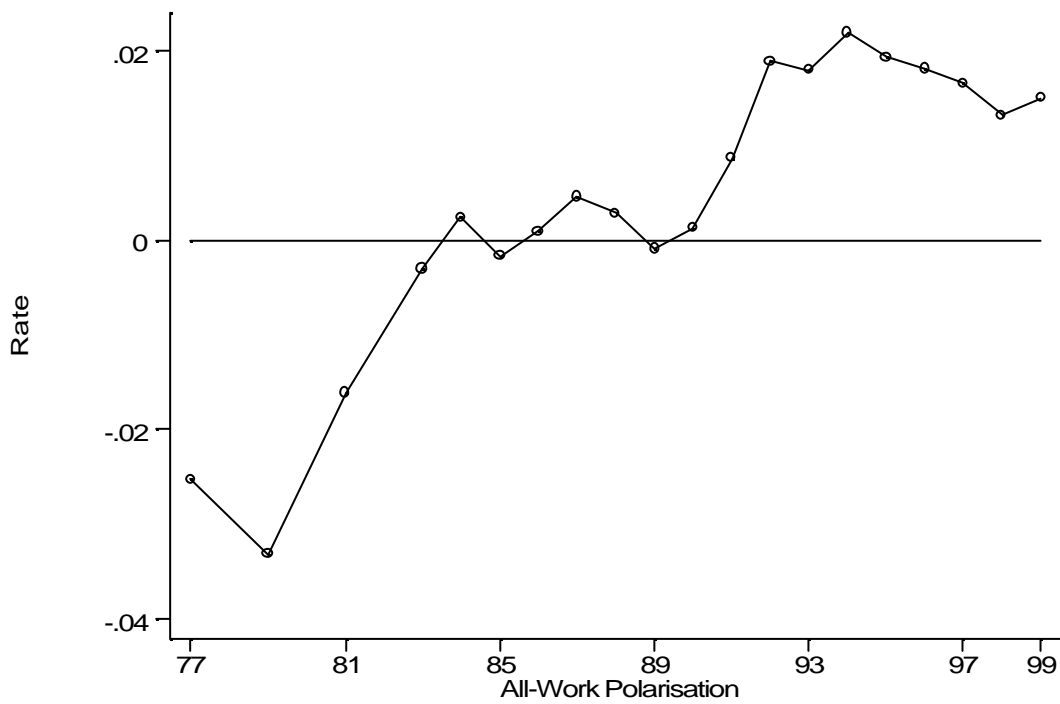
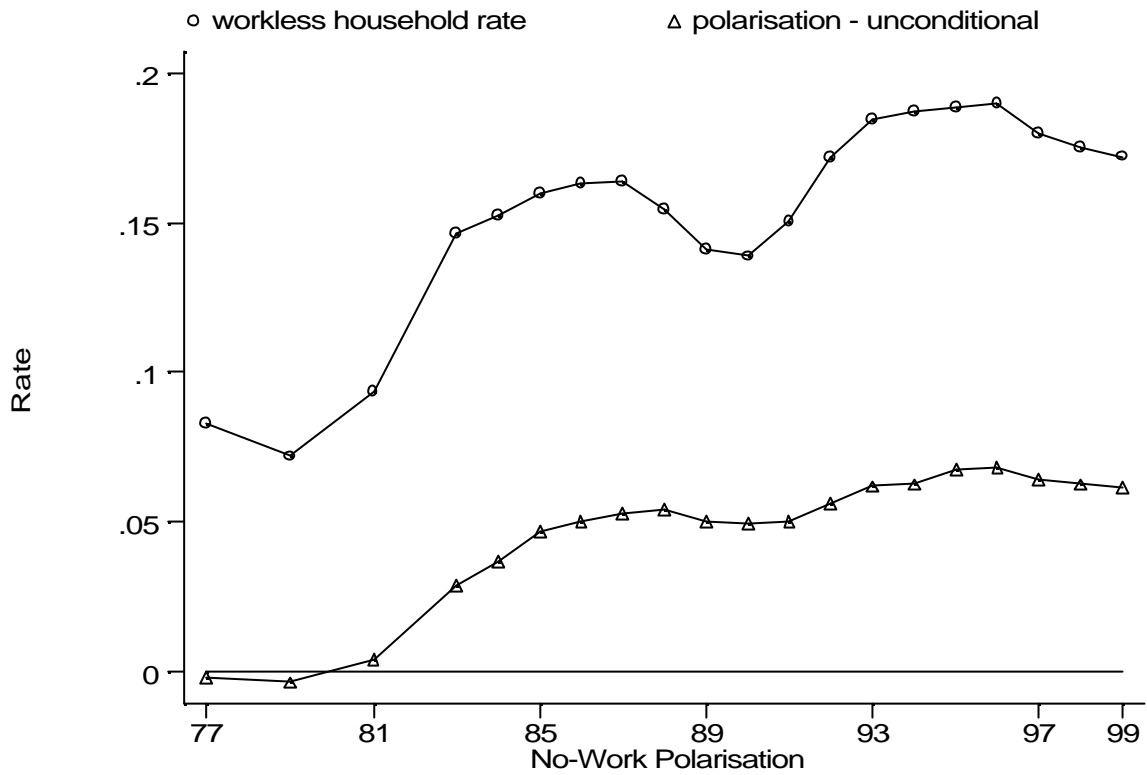


Figure 5. Accounting for Polarisation in Workless Households

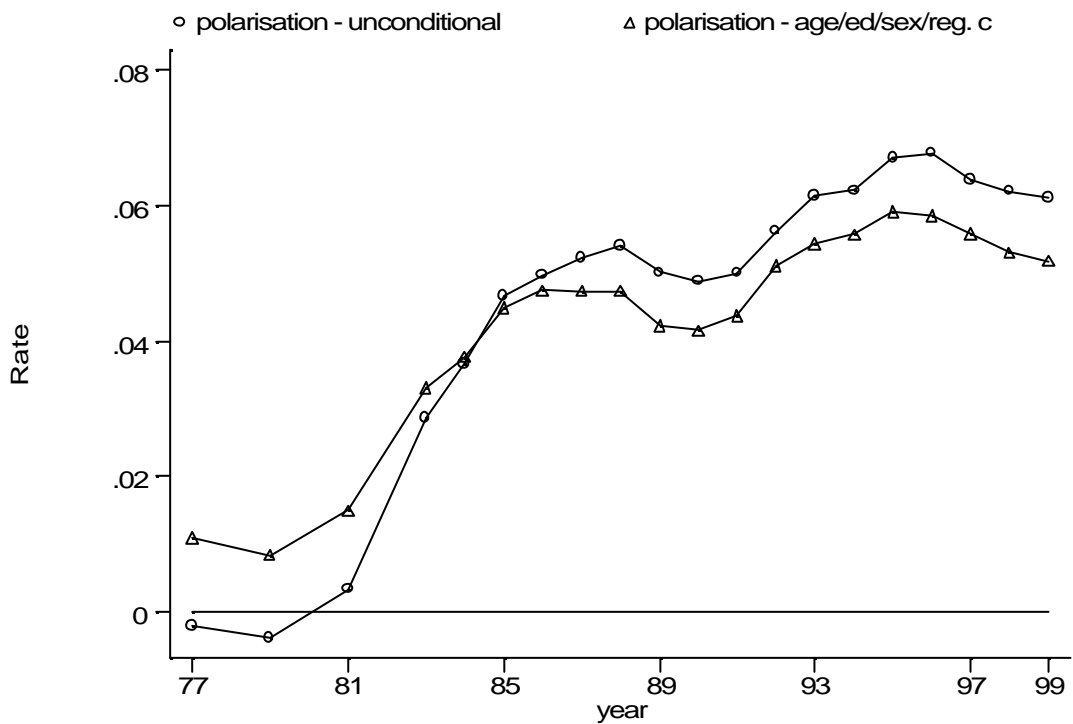
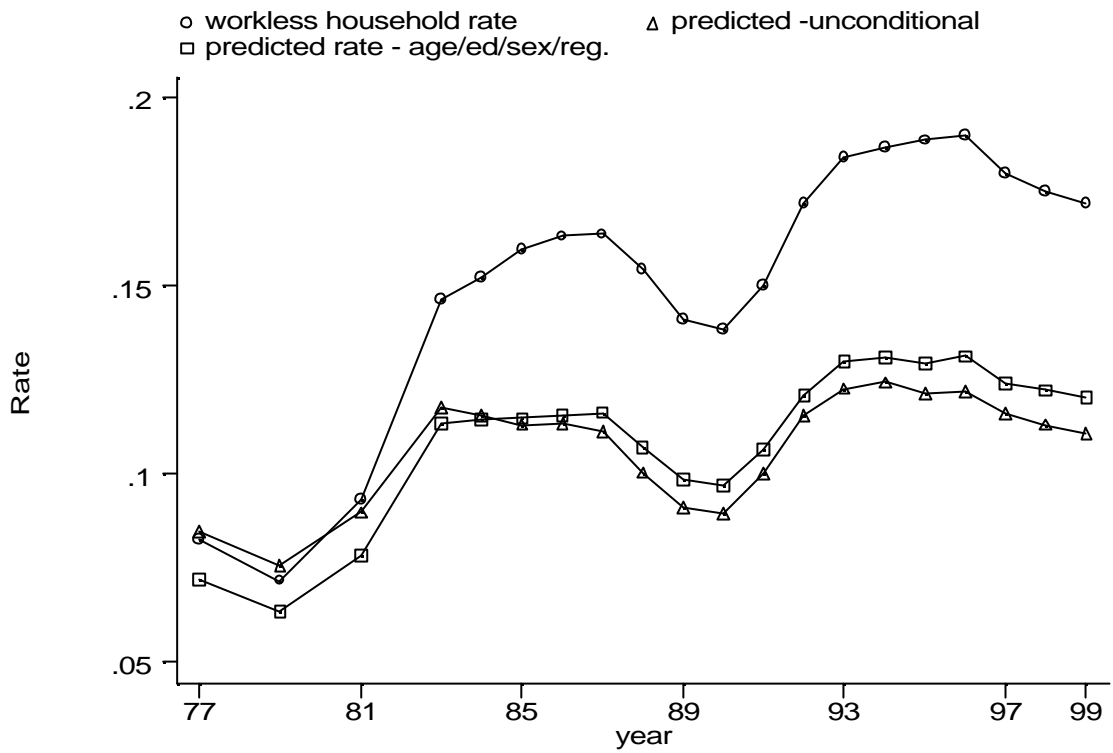


Figure 6. Worklessness and Polarisation By Household Size

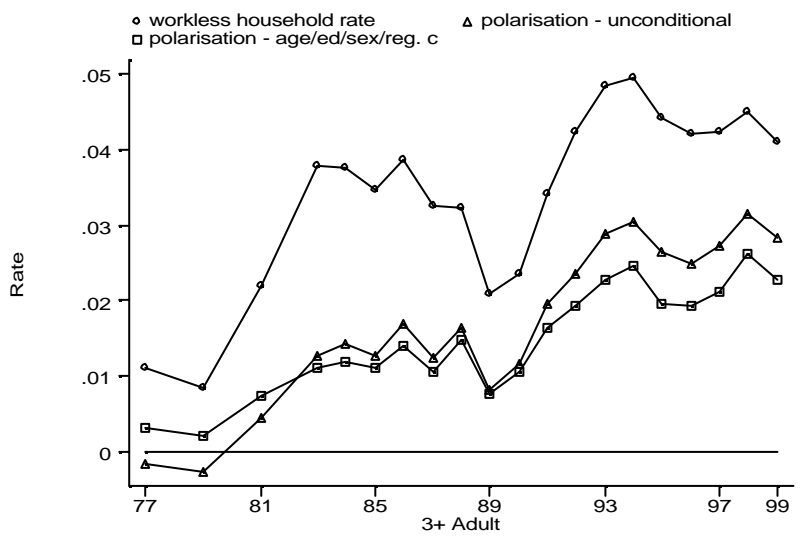
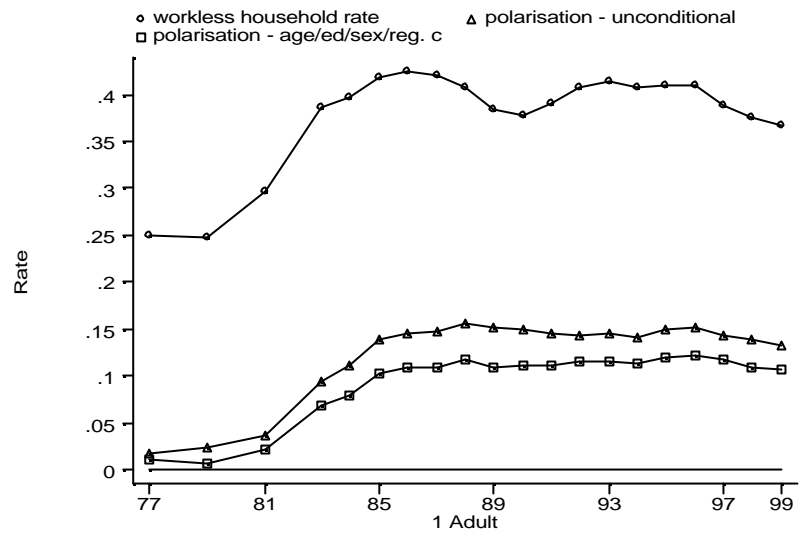


Figure 7. Workless Households and Polarisation by Presence of Children

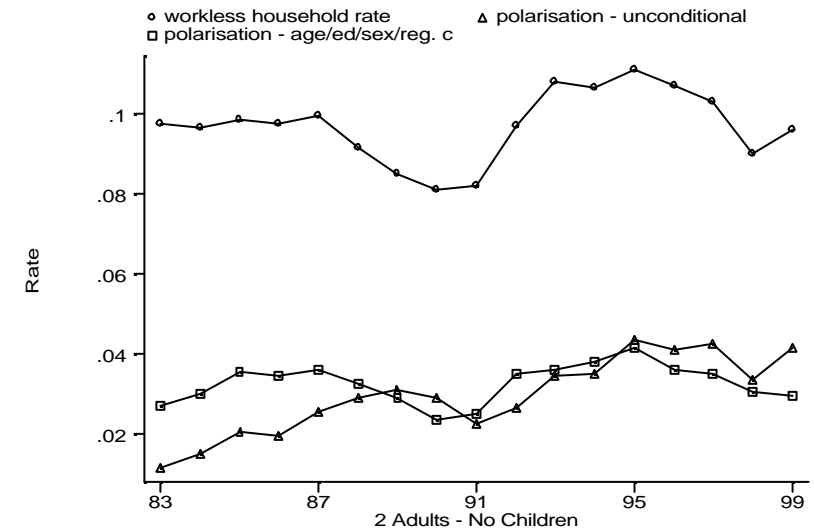
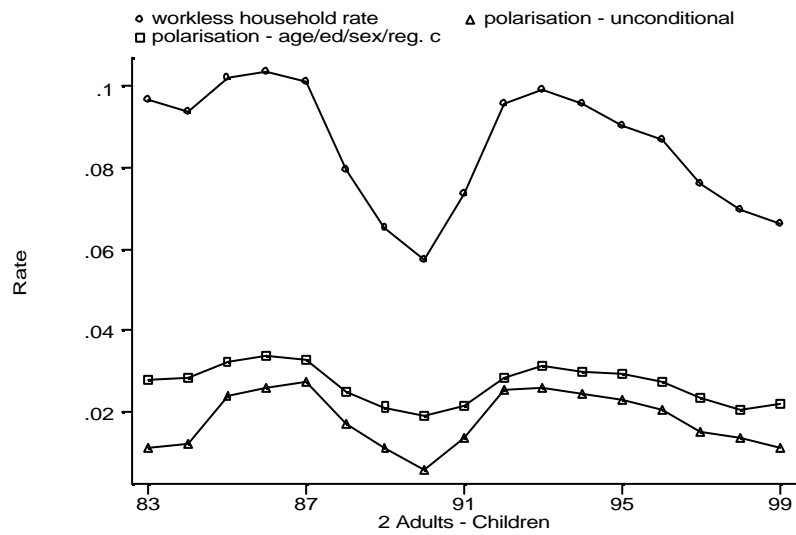
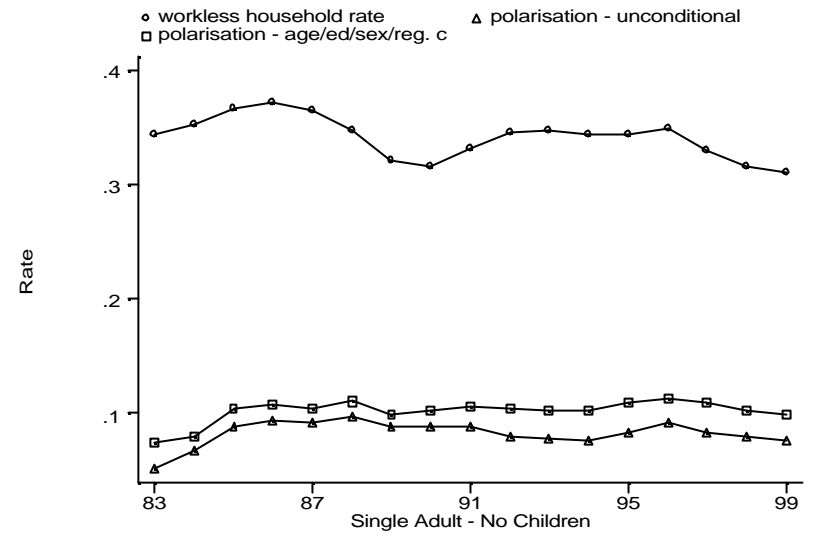
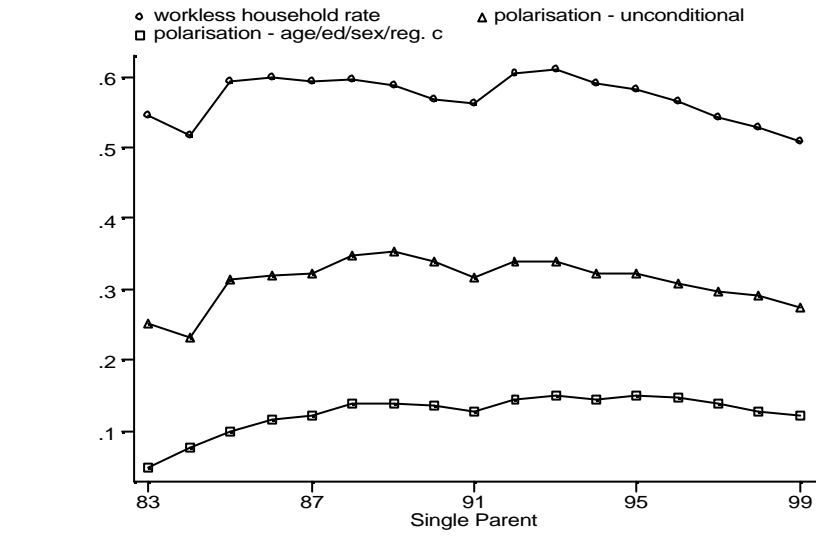


Figure 2. Workless household rate by country (OECD -1996)

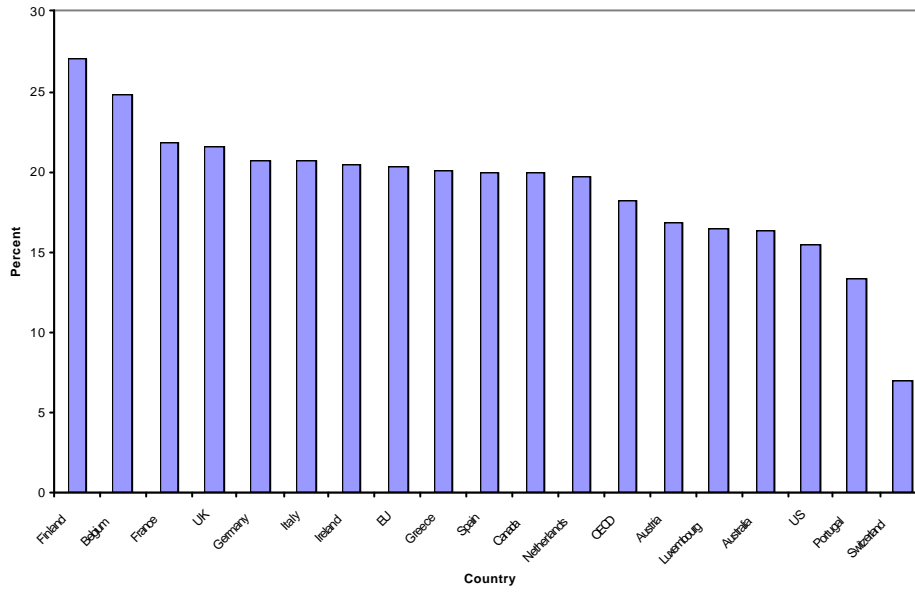


Figure 3. Workless household rate by country for households with children (OECD - 1996)

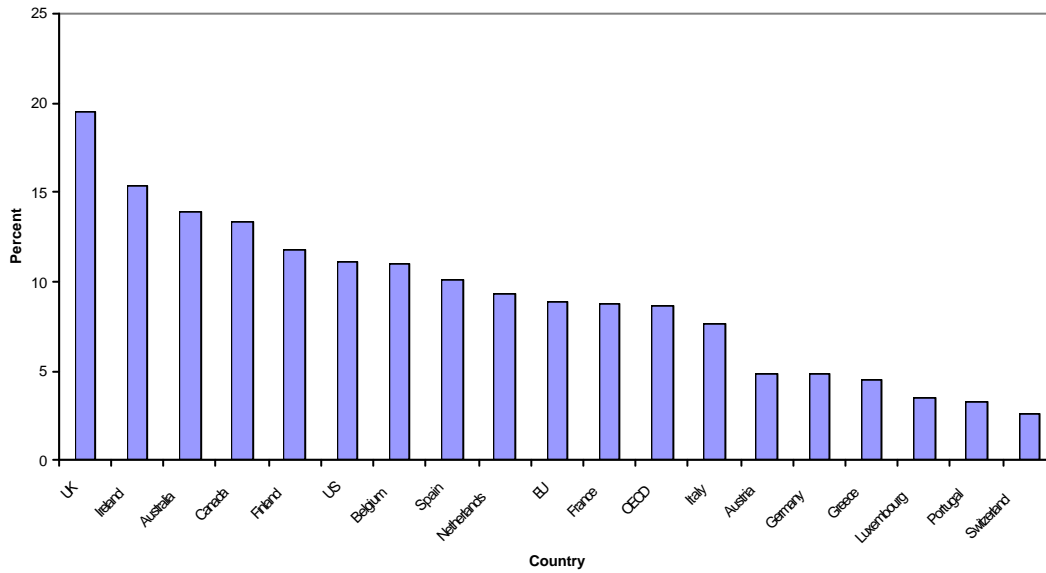


Table 1. Workless households in Britain

	Workless households (working age)		Households where all adults work		Working age adults in workless households		Children in workless households		Employment rate
	(000s)	%	(000s)	%	(000s)	%	(000s)	%	
1975	900	6.5	7880	56.7	1230	4.3	-	-	76.8
1981	1570	10.9	7480	52.1	2360	7.8	1510	11	72.9
1987	2580	16.5	8470	54.2	3780	11.9	2340	17.5	72.5
1990	2280	14.1	9840	60.7	3140	9.8	2280	14.5	76.9
1996	3320	19.2	10540	60.9	4530	14.1	2880	20.4	73.9
1999	3080	17.2	11320	64	4130	12.7	2620	18.4	76.4

Source: LFS. Notes: - data not available.

Table 2. Workless households by Family Type

	Family type			
	Single adult	Single parent	Couple, no children	Couple with children
1981	28.3	51.2	4.7	6.2
1985	36.6	59.2	7.1	9.1
1990	31.5	58.4	6.4	5.2
1996	34.8	56.7	7.8	8.3
1999	31.2	51.9	7.7	6.4

Source: LFS.

Table 3. Poverty rates in workless households

	Workless household poverty rate	By family type				Proportion of the poor living in workless households
		Single adult	Single parent	Couple, no children	Couple with children	
1968	70.8	59.3	81.9	61	75	29.3
1975	62.2	46.9	82.3	41.5	60.4	37.8
1981	62.5	47.4	66.9	40.7	71.2	46.8
1985	69	56.4	73.7	47.3	85.1	58
1990	77.4	68.2	89.7	49.5	84.3	43.2
1996	74.9	60.6	89.1	40.1	89.2	51.2

Source: Family Expenditure Survey

Table 4. Decomposition of workless household rate in Britain, 1977-99 (LES)

	W o r k l e s s Household Rate (1)	Predicted Rate (2)	Predicted given employment levels in 1977 (3)	Predicted given household structure in 1977 (4)	Polarisation (1) - (2)
1977	8.2	8.5	8.5	8.5	-0.3
1987	16.5	11.1	8.9	10.7	5.5
1990	13.9	9	9.2	8.3	4.9
1996	19	12.2	10.7	9.7	6.8
1999	17.2	11.1	11	8.5	6.1
	) w o r k l e s s household rate	) predicted rate (A)	Change in (A) d u e t o h o u s e h o l d structure (B)	Change in (A) d u e t o employment (C)	C h a n g e i n polarisation
77-99	9	2.6	2.5	0	6.4
77-90	5.7	0.5	0.7	-0.2	5.2
77-87	8.3	2.6	0.3	2.2	5.8
87-90	-2.6	-2.1	0.5	-2.4	-0.6
90-99	3.3	2.1	1.8	0.2	1.2
96-99	-1.8	-1.1	0.3	-1.2	-0.7

Note: changes in B & C do not add to A due to omission of interaction term

Table 5. Decomposition of polarisation in workless household rate 1977-99 (LES)

	) polarisation (I)	Within Household types (II)	Between Household Types (III)
77-99	6.4	5.1	0.2
77-90	5.2	4.8	0.1
77-87	5.8	5.4	0.1
87-90	-0.6	-0.6	0.2
90-99	1.2	0.3	1
96-99	-0.7	-0.8	0.2

Note: changes in B & C do not add to A due to omission of interaction term

Table 6. Workless Household Predictions by Characteristics, (Britain)

	A c t u a l w o r k l e s s h o u s e h o l d r a t e	P r e d i c t e d b y r a n d o m d i s t r i b u t i o n o f e m p l o y m e n t	P r e d i c t e d r a t e a l l o w i n g e m p l o y m e n t v a r i a t i o n b y:			
			Region	Sex	Age and education	Region, sex, age quals. VI
	I	II	III	IV	V	VI
1977	8.3	8.5	8.5	7	8.6	7.2
1983	14.6	11.8	11.9	10.9	12.2	11.3
1990	13.9	9	9.1	8.6	9.8	9.7
1999	17.4	11.1	11.2	11.1	11.8	12
			Change			
99-77	9.1	2.6	2.7	4.1	3.2	4.8
			Counterfactual (1977 employment rates)			
1999	17.4	11.1	11	10.2	9.1	9.5

Note: values in columns 1&2 may differ from numbers reported in Table 4 because of missing regional, gender, age or qualifications data.

Table 7. Polarisation of Worklessness by Household Type, 1977-99

	1 Adult	2 Adult	3 Adult
1977			
Workless Household %	25	4.5	1.1
Polarisation Unconditional	1.7	-0.9	-0.2
Conditioned on age, gender, education and region	1.1	1.3	0.3
1983			
Workless Household %	38.7	9.7	3.8
Polarisation Unconditional	9.4	1.1	1.3
Conditioned on age, gender, education and region	6.9	2.7	1.1
1990			
Workless Household %	37.8	6.7	2.3
Polarisation Unconditional	15	1.6	1.2
Conditioned on age, gender, education and region	11	2.1	1
1999			
Workless Household %	36.7	8	4.1
Polarisation Unconditional	13.3	2.5	2.8
Conditioned on age, gender, education and region	10.6	2.5	2.3
Change 1999-77			
Polarisation Unconditional	11.6	3.4	3
Polarisation Conditional	9.5	1.2	2

Source: LFS. Share of 1, 2 and 3+ adult households were respectively .21, .63, .16 in 1977, .25, .58, .19 in 1990 and .34, .55, .11 in 1999.

Table 8. Workless Household Rate and Polarisation by Presence of Children and Household Type, 1983-99

	1 Adult		2 Adult		3 Adult	
	Child	N Child	Child	N Child	Child	N Child
1983						
Workless Household %	54.4	34.4	9.7	9.7	4.5	3.2
Polarisation						
Unconditional	25.2	5.2	1.1	1.1	2	0.6
Conditional age, gender, education , region	4.9	7.5	2.7	2.7	1.3	0.9
1990						
Workless Household %	56.8	31.6	5.8	8.1	2.9	2.1
Polarisation						
Unconditional	34.1	8.9	0.6	2.9	1.7	0.9
Conditioned on age, gender, education, region	13.5	10.1	1.9	2.4	1.4	0.9
1999						
Workless Household %	50.7	31.1	6.6	9.6	5.7	3.2
Polarisation						
Unconditional	27.3	7.7	1.1	4.1	4.4	1.9
Conditioned on age, gender, education, region	10.6	9.9	2.2	3	2.9	1.9
Change 1999-83						
Workless Household	-3.7	-3.1	-3.1	-0.1	1.2	0
Polarisation unconditional	2.1	2.5	0	3	2.4	1.3
Polarisation conditional	5.7	2.4	-0.5	0.3	1.6	1

Source: LFS. Note share of each household type in population were respectively .04, .16, .37, .23, .09 and .10 in 1977 .06, .19, .34, .25, .06 and .10 in 1990 and .10, .24, .30, .25, .04 and .07 in 1999.

Table 9 . Decomposition of change in workless household rate in the OECD, 1985-96

	Workless household rate 1996 (1)	Predicted (2)	Predicted given 1985 household structure	Predicted given 1985 employment	Polarisation (1) - (2)
Australia	16.3	12.9	11.8	14.5	3.4
Belgium	24.8	21.3	18.5	24.2	3.5
Canada	19.9	16.5	15.5	17.9	3.4
France	21.9	20.1	18.7	19.4	1.8
Germany	20.7	18	16.3	20.1	2.7
Greece	20.1	19.2	18.6	19	1.9
Ireland	20.4	20.3	20.2	24.7	0.1
Italy	20.7	22.8	22.7	20.6	-2.1
Luxembourg	16.4	19.7	17.1	20.3	-3.3
Netherlands	19.7	16.3	15.3	21.7	3.4
Portugal	13.3	12	11.9	11.3	1.3
Spain	20	22.9	22.7	21.3	-2.9
Un. Kingdom	21.6	14.1	11.3	16.5	7.5
Un. States	15.4	15.5	14.3	17.7	-0.1
	) workless household rate 96-85	) predicted 96-85	) in (2) due to change in household structure	) in (2) due to change in employment	) polarisation
Australia	0.9	-0.5	1.1	-1.6	1.4
Belgium	3.6	-0.1	2.8	-2.8	3.7
Canada	2.2	-0.4	1	-1.3	2.6
France	3.1	2.1	1.4	0.8	1
Germany	0.2	-0.4	1.7	-2	0.6
Greece	2	0.8	0.6	0.2	1.2
Ireland	-0.5	-4.3	0.1	-4.4	3.8
Italy	3.7	2.3	0.1	2.2	1.4
Luxembourg	1.7	2	2.6	-0.5	-0.3
Netherlands	-1.7	-4.2	1.2	-5.2	2.5
Portugal	0.6	0.8	0.1	0.7	-0.2
Spain	1.8	1.7	0.1	1.6	0.1
Un. Kingdom	1.8	0.5	2.9	-2.2	1.3
Un. States	-0.4	-0.9	1.3	-2	0.5

Table 10. Decomposition of all work households in Britain 1977-99 (LES)

	All Household Rate (1)	Work Predicted Rate (2)	Predicted given employment levels in 1977 (3)	Predicted given household structure in 1977 (4)	Polarisation (1) - (2)
1977	57.9	60.4	59.9	59.9	-2.5
1987	55.5	55	60.7	54.6	0.5
1990	62	61.9	61.2	60.9	0.1
1996	61.4	59.6	63.1	56.7	1.8
1999	64.8	63.3	63.5	59.9	1.5
	Change in the all work household rate	Change in the predicted rate (A)	Change due to family structure (B)	Change due to employment (C)	Change in polarisation
77-99	6.9	2.9	3.6	0	4
77-87	-2.4	-5.4	0.8	-5.7	3
87-90	6.5	6.9	0.5	6.3	-0.4
77-90	4.1	1.5	0.7	1	2.6
90-99	2.8	1.4	1.9	-1	1.4
96-99	3.4	3.7	0.4	2.2	-0.3

Note: changes in B & C do not add to A due to omission of interaction term

Table 11. Decomposition of polarisation in all work household rate in Britain 1977-99(LES)

	) polarisation (I)	Within Household Types (II)	Between Household Types (III)
77-99	4	7.1	-0.3
77-87	3	2.5	0.2
87-90	-0.4	-0.1	0.4
77-90	2.6	3.4	0.2
90-99	1.4	3.5	-2
96-99	-0.3	-0.1	-0.4

Note: changes in II & III do not add to I due to omission of interaction term

Table 12. All-Work Households

	Actual work rate (1)	all Predicted r a n d o m distribution (2)	by Region	Predicted rate allowing employment variation by:		
			Sex	Age and education	Region, sex, age quals.	
1977	57.9	60.4	60.4	58.2	60.3	57.7
1987	55.5	55	55.1	54.2	55	54
1990	62	61.9	61.9	61	61.8	60.9
1999	64.8	63.3	63.4	62.8	63.5	63
			Change			
99-77	6.9	2.9	3	4.6	3.2	5.3
			Counterfactual (1977 employment rates)			
1999	64.8	60.4	63.3	61.2	66.9	63.3

Note: values in columns 1&2 may differ from numbers reported in Table 10 because of missing regional, gender, age or qualifications data.

Table 13. Decomposition of all work household rate by Household Type, 1977-99 (LFS)

	1 Adult	2 Adult	3 Adult
1977			
All Work Rate	74.5	53.4	53.3
Polarisation unconditional	-2.2	-5.4	8.2
conditional on age, sex, region, education	-2.1	-2	10.5
1987			
All Work Rate	58.8	56.1	49.4
Polarisation unconditional	-13.9	3.2	11
conditional on age, sex, region, education	-10.6	2.8	12.7
1990			
All Work Rate	62.2	63.2	56.2
Polarisation unconditional	-10	3.6	10.1
conditional on age, sex, region, education	-11	3.1	11.7
1999			
All Work Rate	64	66.9	54.7
Polarisation unconditional	-12.5	8.4	9.9
conditional on age, sex, region, education	-9.9	6.7	12.1

Figure 2. Workless household rate by country (OECD -1996)

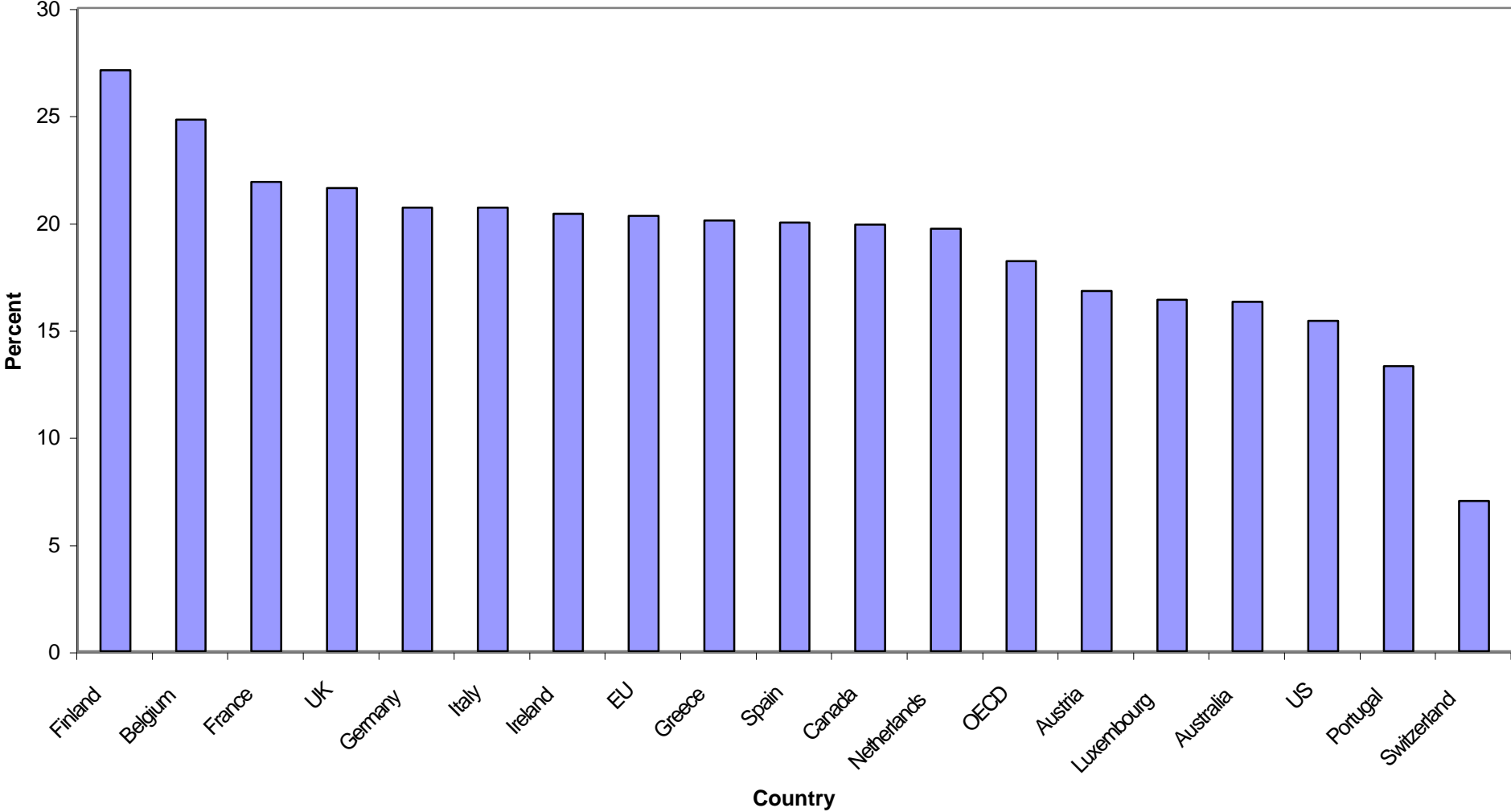


Figure 3. Workless household rate across countries for households with children - OECD 1996

