

Poles Apart

Health Polarisation, Bi-polarisation and Inequality in Lothian, Scotland

By Owen Moseley

NHS Ayrshire and Arran

Abstract

Health inequality describes how equal the distribution is in terms of health, while polarisation refers to the emergence of groups of individuals within the distribution with similar health levels. Polarisation increases when the level of health within the groups becomes more homogenous or when the distance between different groups becomes further apart. If only two groups emerge in the distribution this is referred to as bi-polarisation, while polarisation describes the appearance of more than two groups. In this paper, the Foster and Wolfson (1992) and Esteban et al (1999) indices provide measures of bi-polarisation and the Duclos et al (2004) index captures polarisation. Health inequality is measured by the Gini index. Data is available from the Lothian Health Survey and the SF-6D provides the measure of an individual's health to be analysed in this study. The main results are that the 55-64 year old age group displayed higher levels of health polarisation, bi-polarisation and inequality than the preceding age category, the 45-55 year olds. Bi-polarisation and inequality appears at its greatest in low socio-economic categories, particularly the unskilled. Finally, health polarisation, bi-polarisation and inequality are greater in a sample of females when compared to males. On many occasions the bi-polarisation and polarisation measures produced conflicting results. The issue of disagreement between the polarisation/bi-polarisation indices is still an important research finding however. Future research should focus on why this is the case and it is an issue which is also evident in the income polarisation/bi-polarisation literature.

Introduction

The purpose of this paper is to investigate the level of health polarisation, bi-polarisation and inequality, in Lothian, Scotland. The Wolfson and Foster (1992) index and the Esteban et al index (1999) will assess bi-polarisation and the Duclos et al (2004) measure will investigate polarisation. Finally, the Gini coefficient will capture the extent of inequality.¹ All measures will be applied to scores on the SF-6D for a sample of respondents who were aged 35-44, 45-54 and 55-64 years in 1993. The same indices are calculated for respondents aged 35-44, 45-54 and 55-64 years in 2003. From the results it is possible to rank the categories by their degree of health polarisation/bi-polarisation and inequality, and establish which age groups display the largest level of polarisation/bi-polarisation and inequality in 1993 and 2003 respectively.

The measures of inequality and polarisation or bi-polarisation used in the study will also be applied to different socio-economic groups. The socio-economic categories will be ranked by their degree of health polarisation/bi-polarisation and inequality. This will establish whether the level of inequality and polarisation/bi-polarisation is particularly high in any specific socio-economic category. In addition, the paper will determine if health inequality and polarisation or bi-polarisation is greater when comparing the male and female genders.

Inequality simply describes how equal a distribution is, or in other words whether individuals have the same level of a variable (Apouey, 2007). Analysing this issue is well established in the economics literature and a number of measures are available that measure the extent of inequality.

A related concept to inequality is polarisation which describes the emergence of groups within a distribution with respect to a particular variable. Therefore in this paper, polarisation broadly describes the 'clustering' of individuals with similar health levels

¹ From now on the Foster and Wolfson index will be labelled FW, the Esteban et al index EGR and the Duclos et al index will be denoted DER

(Esteban and Ray, 2005). These clusters or groups may also be moving further apart from each other towards the distribution's extremes (Wolfson, 1994). In other words, there is a divergence in the health levels between the groups. When a society is composed of only two groups, this phenomenon is referred to as bi-polarisation, while polarisation refers to the emergence of more than two groups.

Unfortunately, standard measures of inequality, such as the Gini coefficient fail to capture polarisation or bi-polarisation accurately (Wolfson, 1994). Since the early 1990s polarisation/bi-polarisation and its measurement has become increasingly the focus of research and a number of measures have emerged. This paper will apply three of these polarisation/bi-polarisation indices and a standard inequality measure to Short Form Six Dimensions (SF-6D) health data (Brazier, et al, 2000). The study is a positive piece of research as it is describing the distribution. Establishing the extent of inequality and polarisation or bi-polarisation will enable a discussion of equity to be made at a later date. This paper will also enable the level of concordance between a set of polarisation measures to be analysed.

Very few studies have examined health inequality and polarisation/bi-polarisation. Most studies which do explore these issues prefer to use the variable income and not health. Of the little published research which has focused upon health, no-one has applied the techniques used to measure inequality and polarisation to a *cardinal* measure of self-assessed health. Some papers have investigated these issues in the context of ordinal self-assessed health but not cardinal measures. This research will use the cardinal measure the SF-6D as the unit of health with data being used from the Lothian Health Survey.

Literature Review

Defining Inequality

Equality refers to the members of a population having the same level of a variable while inequality requires the distribution to be unequal. Therefore, inequality requires some

individuals to have more than others of the variable of interest (Apouey, 2007). In this study the variable of interest is health, as measured by the SF-6D. The measure of inequality used in this paper is the Gini index, which is twice the difference between the Lorenz curve and the line of equality. It is a measure of overall ‘pure’ health inequality (Wagstaff and Van Doorslaer, 2002) and is consistent with the Pigou-Dalton principle (Gasparini et al, 2006).

Defining polarisation and bi-polarisation

The distinction between polarisation and bi-polarisation has already been made in the introduction to this paper. Esteban and Ray (2005) consider the following properties central to any concept of polarisation *and* bi-polarisation.

1. Polarisation increases when ‘within-group’ inequality is reduced
2. Polarisation increases when ‘across group’ inequality increases
3. There exist a small number of significantly sized groups. Groups of a small size have an insignificant impact.

Point 1 refers to polarisation or bi-polarisation increasing when individuals in the same group experience similar levels of health. That is, health levels within a group are becoming more homogenous. Point 2 describes an increase in polarisation or bi-polarisation when the health levels of the different groups become further apart. In other words, a divergence in health levels between the different groups. Finally, Point 3 is obvious.

A difference between inequality and polarisation/bi-polarisation

As discussed in the introduction to this paper, polarisation/bi-polarisation is distinct to inequality and standard inequality measures fail to measure polarisation/bi-polarisation accurately. An illustration is provided to demonstrate this point which is taken from Gasparini et al (2006). The example uses the income as the variable of interest and is also

consistent with the three properties considered central to any measure of polarisation/bi-polarisation.

Imagine a society of six people labelled A B C D E F with incomes of £ 1 2 3 4 5 and 6 respectively. Now two transfers take place of a value of £1; the first is from individuals C to A and the other is from individuals F to D. These transfers are equalising as they transfer money from richer to poorer individuals. All inequality indices consistent with the Pigou-Dalton principle will fall or at least not increase. The Pigou-Dalton principle is that any transfer from rich to poor will decrease inequality, ceteris paribus (Gasparini et al, 2006).

After the transfer, the income distribution has changed and become more equal; three people (A B C) have £2 and three have £5 (D E F). However, this distribution represents a greater state of polarisation/bi-polarisation as there are two clearly differentiated groups which are perfectly homogenous. In this example polarisation and inequality move in the opposite direction but this may not always be the case. What is clear is that the concepts of inequality and polarisation/bi-polarisation are distinct and require their own methods of measurement (Gasparini et al, 2006).

Measuring bi-polarisation and polarisation

Measures of bi-polarisation include the Foster and Wolfson (1992) bi-polarisation index which was originally developed for a population divided into two groups by the median value. In addition, it is derived from the Lorenz curve and is twice the area between the Lorenz curve and the tangent line at the median point. This measure is the FW index used to assess bi-polarisation in this paper.

The index originally took the following form:

$$P^w(x) = 4 \frac{\mu}{m} \left[(0.5 - L(0.5)) - \frac{G(x)}{2} \right]$$

Where $G(x)$ is the Gini coefficient of the health distribution and $L(0.5)$ represents the Lorenz curve at the median percentile. If there are few individuals with mid-level health values the bracketed term will become large, thus representing greater bi-polarisation. Finally, mean health is denoted as μ and median health is represented by m .

Measures of polarisation, those which estimate polarisation based on an arbitrary number of groups; include the Esteban and Ray (1994) index. This index is based on the identification-alienation framework, developed by Esteban and Ray (1991, 1994), which proposes that *polarisation* is related to the alienation that groups and individuals feel from each other. A key point is that fuelling the alienation is a feeling of within-group identity. Therefore in this paper, if polarisation is increasing, groups of individuals are experiencing a greater level of within-group homogeneity with regards to health. In other words the variation of health within a group is becoming smaller. According to Esteban and Ray (1994), the result of this is that people now feel they can *identify* with individuals in similar circumstances but feel *alienated* from others. A society divided into closely homogeneous groups that are clearly distinct and separate from each other is likely to cause social unrest, tension and rebellion (Esteban and Ray, 1994).

The Esteban and Ray (1994) index is widely criticised and is in fact not operational. Esteban et al (1999) propose an alteration which enables the Esteban and Ray (1994) index to calculate results. The amended Esteban et al (1999) index is the EGR index used in this study. However, a drawback remains as the number of groups has to be chosen exogenously.

The EGR index calculates polarisation as follows:

$$P^{EGR}(f, \alpha, \rho^*, \beta) = 0.5 \left(\sum_{j=1}^m \sum_{k=1}^m p_j^{1+\alpha} p_k |\mu_j - \mu_k| - \beta (G(f) - G(\rho^*)) \right)$$

Where μ_j or μ_k and p_j or p_k denote the average level of health per person and population

share for groups j and k respectively. The alpha parameter represents the sensitivity to polarisation, which is usually set to 1. The optimal partition of the distribution for an exogenously decided number of groups is represented by ρ^* . This figure is also a component of the error term, the right hand side of the equation after the minus sign. Finally, the β coefficient represents the weight assigned to the error term while the 0.5 outside the brackets ensures that the index lies between 0 and 1.

The indices proposed by Esteban and Ray (1994) and Esteban et al (1999) are developed by Duclos et al (2004) who also subscribe to the alienation-identification framework. Duclos et al produce a measure of polarisation which uses a kernel density estimate of the distribution of the variable of interest. This is the main benefit of the Duclos et al measure as the researcher does not have to decide on the number of groups. In addition, the Duclos et al index described above is the DER index which is used to assess polarisation in this study, as detailed in the introduction to this paper.

The DER index is as follows;

$$P_{\alpha}(F) = \int f(y)^{\alpha} g(y) dF(Y)$$

The alienation and identification effect is captured by the $f(y)^{\alpha}$ and $g(y)$ terms respectively.

Inequality and polarisation using health data

Apouey (2007) investigates the measurement of health polarisation using self-assessed health data. However, she is concerned with ordinal measures of self-assessed health (SAH), while this study utilises a cardinal measure. To investigate polarisation Apouey (2007) is required to develop her own index which can be applied to ordinal data and then applies her index to the British Household Panel Survey (BHPS). Apouey also calculates a Gini index which requires the cardinalisation of the SAH data. Calculating a Gini index allows a comparison between inequality and polarisation measures and her results

indicate that measures of polarisation and inequality do not behave similarly. Therefore, Apouey concludes that the two concepts are clearly different and that they require their own specifically designed measure to analyse them.

Methods

The purpose of this paper is to analyse health inequalities and polarisation/bi-polarisation in Lothian, Scotland. To investigate bi-polarisation, the FW and EGR indices will be calculated. The DER index will be used to assess polarisation and the Gini coefficient will calculate the level of inequality. All measures will be applied to SF-6D data which provides a value between 0 and 1 indicating an individual's level of health. Essentially this paper is applying the techniques used to investigate income inequality and polarisation to utility and self-assessed health.

A research objective of this paper is to establish the pattern of polarisation/bi-polarisation and inequality in different age groups in both 1993 and 2003. The sample will be divided into those who were aged 35-44, 45-54 and 55-64 years in 1993. The FW, EGR, DER and Gini indices will be calculated for each age group. A new sample of individuals aged 35-44, 45-54 and 55-64 in 2003 will be created and the same set of indices is estimated. The age categories will be ranked from largest to smallest by their level of polarisation/bi-polarisation and inequality for both the 1993 and 2003 results. For the 1993 rankings, the ordering will be labelled through numbers with 1 representing the age category with the largest polarisation/bi-polarisation and inequality and 3 the smallest. The 2003 ranking will be labelled through letters; A denotes the age category with the largest polarisation/bi-polarisation and inequality and C the smallest. Each index will produce a ranking of age categories for 1993 (labelled 1, 2 and 3) and for 2003 (labelled A, B and C).

Using different measures of polarisation/bi-polarisation and producing rankings will establish the level of concordance between the indices. In other words, the paper will investigate whether the indices produce similar result and put the age groups in the same

order.

The analysis of health polarisation, bi-polarisation and inequality is not confined to age groups only; socio-economic class is also of interest which is classified through an individual level indicator. A sample of respondents will be taken which divides individuals into the following categories; professional, intermediate, skilled occupational, skilled occupational manual, partly skilled and unskilled worker. The FW, EGR, DER and Gini indices will be calculated for each category using 2003 data only. The socio-economic groups will also be ranked by their level of polarisation from largest to highest for each index.

Finally, a new sample will be taken which divides the population into males and females. The FW, EGR, DER and Gini indices will be calculated for each gender category using 2003 data only. Gender groups will be ranked for each index from largest to smallest. Ranking the data for both socio-economic group and gender again allows the concordance between the measures to be investigated.

Prior to any analysis of health inequalities and polarisation/bi-polarisation some simple preliminary statistics will be calculated. The average scores on the SF-6D for any age group included in the analysis for both 1993 and 2003 will be tabulated. Average 2003 SF-6D scores for each socio-economic class will also be presented. Finally, the average SF-6D scores for males and females using 2003 data is to be tabulated.

In addition to calculating mean SF-6D scores, the corresponding number of individuals and observations in each category will be provided. As a final point, all individuals included in any sample are still alive at present and the samples are unbalanced.

Data

The data used in this study is taken from the Lothian Health Survey (LHS). The survey was distributed at three different time periods or waves; 1993, 1996 and 2003. Tabulated

below is the number of people who responded to the questionnaires in each wave:

Type of response	Number of respondents 1993	Number of respondents 1996	Number of respondents 2003
Responder	6195 (62%)	2949 (84%)	2765 (56%)
Anonymous return	200 (2%)	-	7
Non-response	3633 (36%)	567 (16%)	2138 (44%)

Results and Discussion

Descriptive Statistics

The mean and standard deviation of scores on the SF-6D for the different age groups are tabulated in Appendix 1 Table 1. In addition, the number of individuals and observations for the different age groups are also displayed in the same table. Similar statistics for socio-economic class and gender are tabulated in Appendix 2 Tables 2 and 3 respectively. Interestingly, the means are quite similar in all categories, be it age, socio-economic status or gender, at approximately 0.75. An exception is the mean score from the 35-44 year olds in 1993 which is relatively high at 0.81. This implies that the mean level of health is similar even when you divide the distribution into a variety of groups and classifications.

Health Inequality, Polarisation and Bi-polarisation in Age

Table 1 in Appendix 2 suggests that when analysing the 2003 SF-6D scores, polarisation/bi-polarisation is greatest in the eldest category, when compared to *any* age category. However, this result does not hold for the scores obtained from the SF-6D in 1993. The indices do not agree that the eldest category exhibits the highest level of polarisation/bi-polarisation when compared to *any* age category. Interestingly, the results obtained using the 1993 data did state that polarisation/bi-polarisation was higher in the eldest category when compared to the *preceding* age group, the 45-54 year olds.

With-in group health inequality is also consistently at its highest in the 55-64 year old category for both the 1993 and 2003 analysis. In fact, the 2003 inequality index is higher than the 1993 result. This could imply that health inequality is becoming larger in the age group which is already the most unequal, in terms of health.

Health Inequality, Polarisation and Bi-polarisation in Socio-economic Class

Table 2 in Appendix 2 displays the results of health polarisation/bi-polarisation and inequality in different socio-economic categories. The two bi-polarisation indices and the health inequality index place the lowest socio-economic categories in the highest ranking positions. Therefore, bi-polarisation and inequality is largest in low socio-economic groups. Interestingly the FW, EGR and Gini indices all rank the 'unskilled' category in first place.

This result is not consistent across all the indices since the DER index provides very different results and rankings. However, seven ranking categories are available for socio-economic status, which is a much larger figure than the number of categories in the previous age group analysis. With any part of the age group analysis, the largest amount of categories that the indices had to rank was only three. Therefore, if the FW, EGR, and DER indices produced different rankings then it was concluded that no clear result was obtained because they were only ordering three categories. Since the ranking of socio-economic status by three of the indices is similar across *seven* categories, this implies that these results are at least worth discussing. The reader must acknowledge however, that any conclusions taken from this part of the analysis are contradicted by the DER index.

Health Inequality, Polarisation and Bi-polarisation in Gender

A unanimous result is found in the examination of health polarisation and bi-polarisation in gender; see Table 3 Appendix 2 for details. Quite clearly bi-polarisation and polarisation is more evident in females than males. In addition, health inequality is

greater in females implying some women have quite high levels of health when compared to those with low levels.

Policy relevance

The results indicate that in both 1993 and 2003, the eldest category included in the analysis, the 55-64 year olds, exhibited higher levels of health polarisation, bi-polarisation and inequality, than the preceding age category. Does this imply that health polarisation, bi-polarisation and inequality are worsening as the population moves towards retirement age?

These results may be driven by the fact that health levels generally declines as people reach old age (Chapman, 2008) and some individuals may be feeling the effect of ageing upon their health more than others. The effect of old age upon health may be offset by income since health is closely linked to income, the higher the income of an individual the higher their health (Kong and Lee, 2001). Those with higher incomes are more likely to have experienced better lifestyles throughout their life and be able to currently afford health promoting activities. Therefore, income may be paying dividends in old age and helping sustain a level of health. Those individuals who could not afford such affluent lifestyles experience a decline in health driven by old age (Cattell, 2001). What is clear is that as the population is ageing and heading towards retirement age (the 55-64 year old age group) there is a divergence in the health levels of individuals and the clearer formation of groups of individuals with similar levels of health.

The 'unskilled' socio-economic category and other low socio-economic classifications exhibit the largest levels of health bi-polarisation and inequality, when compared to other socio-economic groups. Bi-polarisation refers to two groups of health, which could be taken to imply a good health group and a relatively poor health group. Therefore, why is the existence of a good and poor health group more prevalent in low socio-economic categories, especially the unskilled?

This result may be driven by the reason that some individuals are unskilled is due to their health. Martin and Woo (1997) acknowledge that those with disabilities and health problems are likely to achieve less in education and employment. Therefore, within the unskilled socio-economic category are those with low health levels (who are possibly disabled) and also those who are unskilled due to other reasons such as socio-economic background. These latter individuals will not have health levels as low as those with disabilities. As a result, two groups of health are formed, a good health group and a poor health group, which are very distinct. This would explain why bi-polarisation is highest in the unskilled category. In addition, if some individuals are disabled or have health problems and some do not, then this would also imply that a high level of inequality is prevalent, a finding reported by this paper.

With all these findings in mind a government may wish to commission research to discover what is driving the results, instead of hypothesising reasons. The government will need to establish whether it believes these circumstances are fair and whether it wants to intervene.

Lack of agreement between indices

By analysing Tables 1, 2 and 3 in Appendix 2 it is clear that there is a degree of variation in the indices. The FW, EGR and DER indices at times provide conflicting results, for example the FW and DER indices detail that polarisation/bi-polarisation becomes greater in 55-64 year old age group, while the EGR index reports an increase in bi-polarisation, when comparing the results from 1993 to 2003. The lack of agreement in the results produced by the different indices is still an important research finding which requires acknowledgment.

In a review of the differences between bi-polarisation and polarisation measures conducted by Esteban and Ray (2007) they state that they cannot provide a comprehensive answer to how the two sets of indices differ. Therefore, it is difficult to establish if the lack of concordance between the indices is down to a particular feature of

an index. Esteban and Ray (2007) do provide some evidence of how the bi-polarisation and polarisation measures differ through discussing their underlying axioms. It may be that the reason why the FW and DER indices at times disagree is because of these underlying axioms.

Another reason why the bi-polarisation and polarisation indices differ may be due to them both not being applicable to the same distributions. For example, should a bi-polarisation measure only be used when the researcher is sure that two groups exist in the distribution? If more than two groups are evident, does this render the bi-polarisation indices defunct and that they should not be calculated as their results are invalid? If they are producing invalid results then perhaps it is no surprise that they are conflicting with the calculations of polarisation indices. In the income literature many papers use both bi-polarisation and polarisation measures to investigate the same phenomena (see for example Duro, 2005 or Zhang and Kanbur, 2006). However, this may not be the most appropriate practice and this issue requires exploration.

Other Areas for future research

The Duclos et al (2004) paper which formulated the DER polarisation index suggests areas for future research which build upon their work. Duclos et al note that the identification and alienation functions used within their index are based on the same characteristic, such as income. In other words, whatever the variable of interest is, be it income or health, inter-group alienation is driven by that variable. Duclos et al suggest that a multi-dimensional approach to polarisation is required where alienation is dependent on other characteristics than those which define group identity.

It appears that Duclos et al (2004) are suggesting their measure is at present a 'pure' index in that it only considers one variable. This is similar to the Gini index which is used in this paper as a measure of 'pure' health inequality. It is possible that Duclos et al are proposing an index which is analogous to the concentration curve, some measure which can take into account a number of different variables. In fact all measures used in this

study, EGR, FW, DER and Gini could be considered pure measures. Developing all the above indices to be able to include multiple attributes may prove to be worthwhile and deepen the analysis.

This current paper could be expanded by varying the alpha coefficient in the EGR and DER indices. This approach is evident in the income literature, for example Gasparini et al (2006). Recall from the methods section that the alpha value captures the sensitivity to polarisation and must lie between the interval 0.25 to 1 to respect the axioms of the identification-alienation framework. Varying alpha will establish how sensitive the results of this study are to the coefficient.

Conclusion

The purpose of this paper was to investigate the extent of health polarisation/bi-polarisation and inequality in Lothian, Scotland. This paper used the FW and EGR indices to investigate bi-polarisation and the DER index measured polarisation. Health inequality was calculated through the Gini coefficient.

It is argued in the literature² that standard measures of inequality fail to measure polarisation or bi-polarisation accurately. Therefore, a number of indices were developed which were reported to be able to accurately capture the extent of polarisation/bi-polarisation. Since income was primarily the area of interest when these indices were developed, many are applicable to cardinal data only. This paper applied a set of polarisation/bi-polarisation indices and an inequality index to a cardinal measure of health, the SF-6D. Very few studies have investigated health polarisation/bi-polarisation at all, and those that have used ordinal data.

The results indicate that the eldest category included in the analysis, the 55-64 year olds, exhibited higher levels of health polarization, bi-polarisation and inequality, than the preceding age category, the 45-54 year olds. This may imply that health polarization, bi-

² See Wolfson (1994) or Esteban and Ray (1994) for examples

polarisation and inequality are worsening as the population moves towards retirement age. Investigating health polarisation/bi-polarisation and inequality was not confined to age groups only. It was also investigated in the context of socio-economic class. Health bi-polarisation and inequality was largest in the 'unskilled' socio-economic category and other low socio-economic classifications, when compared to other socio-economic groups. Bi-polarisation refers to two groups of health which could be taken to imply a good health group and a relatively poor health group. Therefore, the existence of good and poor health groups is more prevalent in low socio-economic categories, particularly the unskilled.

Finally, the degree of health polarisation/bi-polarisation and inequality was investigated in the different gender categories. A unanimous result was reported, health polarisation or bi-polarisation and inequality was larger in the female category when compared to the male category.

Determining what is driving the results is certainly an issue for further research. In addition, this would also be relevant from a policy perspective as the government may want to decide whether the current situation is fair. This is a positive piece of research as it describes the distribution. Therefore, any discussion on the equity consequences of the findings of this study would be a relevant and interesting piece of work.

A pressing area of future investigation is determining why the polarisation/bi-polarisation indices disagree. Since this issue is also apparent in the income polarisation literature, it requires further exploration. If measures of inequality fail to capture polarisation/bi-polarisation accurately, it is important to establish that the methods developed to address this issue, are fit for purpose. Once this issue is resolved, the creation of polarisation/bi-polarisation indices which can take into account more than one variable, the recommendations of Duclos et al (2004), would be certainly worthwhile.

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Appendix 1

Table 1: Description of Data by Age Group

Statistic	Age group: 35-44		Age group: 45-54		Age group: 55-64	
	1993	2003	1993	2003	1993	2003
Mean	0.8114242	0.7728727	0.795477	0.7669694	0.7889918	0.7568668
Standard Deviation	0.1394908	0.1277457	0.145148	0.1240893	0.1489319	0.1487055
Individuals	724	1,034	1,233	724	1,103	1,233
Observations	396	220	738	229	488	488

Table 2: Description of Data by Socio-economic Class: 2003

Stat.	Prof.	Interm.	Skilled Occ.	Skilled Occ. Manual	Partly Skill. Occ	Unskill.	No Occ.
Mean	0.77074	0.77462	0.75827	0.74534	0.74230	0.71662	0.70926
Std. Dev	0.13062	0.129203	0.135357	0.148803	0.145753	0.164258	0.154364
Inds.	190	880	844	557	387	219	559
Obs.	105	472	425	237	162	74	172

Table 3: Description of Data by sex: 2003

Statistic	Males	Females
Mean	0.7637437	0.7416112
Standard Deviation	0.1377288	0.1436649
Individuals	2,885	3,441
Observations	792	1,057

Appendix 2

Table 1: Polarisation and Inequality over different age groups

Index	Age group: 35-44		Age group: 45-54		Age group: 55-64	
	1993	2003	1993	2003	1993	2003
FW	0.043576 (2)	0.041765 (C)	0.042831 (3)	0.045303 (B)	0.045695 (1)	0.051469 (A)
EGR	0.028482 (3)	0.013255 (C)	0.031829 (2)	0.019588 (B)	0.032188 (1)	0.026613 (A)
DER	0.155711 (1)	0.160811 (B)	0.155174 (3)	0.157623 (C)	0.155526 (2)	0.174152 (A)
Gini	0.096900 (3)	0.091184 (B)	0.102333 (2)	0.090690 (C)	0.105272 (1)	0.109088 (A)

Table 2: Polarisation and Inequality over different socio-economic groups: 2003

Index	Prof.	Intermed.	Skilled Occ.	Skilled Occ. Manual	Partly Skill. Occ	Unskilled	No Occ.
FW	0.05055 (5)	0.04392 (7)	0.04750 (6)	0.05770 (3)	0.05560 (4)	0.07668 (1)	0.06781 (2)
EGR	0.02948 (6)	0.02803 (7)	0.02984 (4)	0.03124 (2)	0.03007 (3)	0.03277 (1)	0.02949 (5)
DER	0.15387 (4)	0.16484 (1)	0.16297 (2)	0.15816 (3)	0.15263 (6)	0.15062 (7)	0.15326 (5)
Gini	0.09433 (6)	0.09321 (7)	0.10028 (5)	0.11289 (3)	0.11030 (4)	0.12980 (1)	0.12460 (2)

Table 3: Polarisation and Inequality by sex: 2003

Index	Males	Females
FW	0.049706 (2)	0.054747 (1)
EGR	0.019387 (2)	0.024258 (1)
DER	0.178489 (2)	0.184115 (1)
Gini	0.101618 (2)	0.109663 (1)