Changes in earnings inequality and mobility in Great Britain 1978/9-2005/6

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CASE/132
October 2008

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Editorial Note and Acknowledgements

Richard Dickens is a Research Associate at the Centre for Economic Performance, LSE and a Professor of Economics at the Department of Economics, University of Sussex. Abigail McKnight is a Senior Research Fellow at the Centre for Analysis of Social Exclusion, LSE.

The authors would like to thank the Joseph Rowntree Foundation who funded this research under the Ladders out of Poverty research programme, the Advisory Group for their helpful comments and suggestions and, in particular, Helen Barnard and Chris Goulden both at the Joseph Rowntree Foundation. Thanks are also due to Zeenat Soobedar for research assistance. This research would not have been possible without access to the Lifetime Labour Market Database which was generously provided by the Department for Work and Pensions and the information and helpful advice received from Andrew Needham.

Abstract

This paper examines changes in earnings inequality and mobility between 1978/9 and 2005/6 using a unique dataset that includes both those with secure patterns of employment and a wider group who experience periods without earnings. It finds significant increases in annual earnings inequality for both male and female employees. On most measures this is greater for men. When wider inequality is measured including periods of no earnings, inequality for men increases and for women it falls as employment among women increased. It finds little long-range mobility. There is some evidence of greater short-range upward mobility but also greater movement from the lowest earning decile since 1997/98. More sophisticated measures of mobility suggest falling mobility for men through the 1980s and 1990s but some greater mobility since 2002. For women there has been lower mobility and less variation over time. Increases in employment for women have led to more equalising mobility.

JEL classification: J62
Keywords: earnings inequality, labour market mobility

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1. Introduction

In this paper we examine changes in earnings inequality and earnings mobility between 1978/9 and 2005/6. We provide measures of inequality in annual earnings for each year covered by our data and assess changes in long run inequality. We look at changes in inequality and mobility among those with secure patterns of labour market attachment and for a wider group of individuals who experience periods without earnings. This allows us to examine the impact of the unequal distribution of work, *and* the unequal distribution of earnings for those who are in work. It provides a clearer picture of overall inequality in the labour market and means that we are able to assess the extent to which there has been any change in the way unemployment and low earnings are shared out among the working age population.

2. Data

The data used in this paper is taken from the Lifetime Labour Markets Database (LLMDB). This contains several administrative series which can be linked together to produce a large and complex database. It contains information from a 1% random sample of individuals identified through their National Insurance (NI) numbers for each tax year from 1978/79 to 2005/06. Because the same 1% sample is drawn each year we can construct a longitudinal dataset that follows the same individuals for up to 25 years of their working lives. Overall we have information on over 700,000 individuals for varying time periods. The database contains information on annual earnings from employment and spells of self employment and benefit receipts. Information is also held on date of birth, sex, postcode of home address, whether the individual is a migrant and, where applicable, date of death. We can build a unique picture of individuals following them through spells of employment, self employment, and benefit receipt over a substantial portion of their working lives.

The first phase of this project involved the manipulation of the LLMDB data into a useable format. The main original purpose of the database was to estimate individuals' NI contributions and State pension entitlements. A large amount of work was required first to understand the data and then to make the data suitable for labour market analysis. One of the biggest obstacles arose from the fact that the recording system for the data changed in 1996/97. Prior to this date, employment and earnings records were inputted by hand, with little documentation of how this was done. Since 1997 the data have been compiled electronically.

The primary aim of the data construction exercise was to create a dataset that contains as much information as possible on individuals' labour market status and earnings for each tax year from 1978/79 to 2005/06. We use this to analyse profiles of earnings and employment to explore changes in earnings inequality and mobility.

i. Earnings

Details on annual earnings are recorded for any individual who pays National Insurance in a tax year. Individuals' Class 1 contributions are recorded and these records contain information on earnings and NI contributions for each employment spell in a tax year. These records have been aggregated to create an annual earnings file. No information exists on the start and end dates of employment spells, but because the data contains earnings, contributions and the NI contribution rate, an estimate of the months and weeks worked in a year can be obtained.

One problem that we have had to overcome is that since 1996/97 it has become difficult to distinguish between earnings and occupational pension payments for certain individuals. For those individuals in receipt of an occupational pension that is paid to them directly by their old employer it is not possible to separately identify this from earnings from employment. This is not a problem for those above retirement age since we do not include them in our analysis, but for those who retire early it can be misleading. We have attempted to overcome this problem by excluding those payments from employers for which there is no Class 1 NI liability (which is paid on employment income) but where the individual is earnings above the Lower Earnings Limit (LEL) in the given year. This should capture most of those individuals for which this is a problem.

Figure 1 compares the earnings data in the LLMDB with the only other publicly available annual earnings data that we are aware of from the Annual Survey of Hours and Earnings (ASHE). Note that ASHE collects information on annual earnings for those employees who have been in the same job for at least 12 months, whereas the LLMDB is the total of any earnings throughout the year. This is likely to be lower since some individuals will only work part of the year. Unfortunately the ASHE data is only available back to 1999[1]. Note that average annual earnings are consistently lower in the LLMDB as would be expected but the trend over time is similar. Figure 2 reports data from the two surveys on various percentile points in the distribution. Again, while there is a clear difference in the levels of earnings in the two datasets, the trends over time are similar.

ii. Self Employment Status

There are two sources of information on self employment status. The first can be drawn from records of Class 2 and 3 NI contributions. This has proved to be somewhat unreliable since self employed individuals have up to five years to make payments. The second comes from a file containing information on Liability History. This contains records of periods spent in a range of activities related to NI liability; e.g. self employment, tax credits receipt, etc. This appears to provide the most reliable information on self employment status. Unfortunately no information exists on self employment income (only an indicator where the individual has applied for a small earnings exception from NI contributions).

[1] The New Earnings Survey which ASHE replaced did not regularly collect annual earnings.

iii. Benefit Receipt

Details on benefit spells are also available from a number of sources within the LLMDB. The source that we have utilised so far is from information on NI credits. Individuals who are in receipt of benefits that have an associated NI credit are recorded each tax year. These include some out of work benefits (Job Seekers Allowance (previously Unemployment Benefit)), some in work benefits (WFTC, Family Credit), disability related benefits (Incapacity Benefit, DPTC) and maternity and sickness benefits. This file contains information on the number of weeks of credits for each benefit in each tax year between 1978/79 and 2005/06. The main drawback of this data source is that no information is recorded for those benefits that do not qualify for NI Credits such as Income Support.

The second source of information on benefits comes from separate data files on individual benefit receipt that can be merged into the LLMDB. Information is recorded on the start and end dates of claims. The time period for which this information is available varies between benefits, but for most benefits starts in the early 1990s.

iv. Periods Abroad

The Liability History file contains information on spells spent overseas.

For this paper we construct a data file where the unit of observation is present for each individual in each tax year. This means we have an unbalanced panel of data, because some individuals only appear for one year and some appear for all 25 years. We have information on annual earnings (including zeros if there are no earnings), whether the individual had a spell of self employment, claimed benefits, or time abroad, and, where applicable, the year of death. We restrict our sample to those over the age of 22 years but under the age of 60 for women and 65 for men. When we come to present results on mobility we present results on a sample of those with positive earnings in each year of analysis, and on a sample of those including any spells with zero earnings (but excluding those with spells in self employment or abroad). First we present some results on inequality measures using the cross section data.

3. Changes in Cross Section Inequality

In this section we present some figures on changes in cross section measures of inequality over time. The aim is to show what has been happening to annual earnings inequality but also to provide a check against results from previous research using other data sources. Figure 3 presents an index of the real 10^{th}, 25^{th}, 50^{th}, 75^{th} and 90^{th} percentiles of the earnings distribution between 1978/79 and 2005/06. Note that earnings inequality rises throughout the 1980s and 1990s, a finding which is consistent with those available from other data sources. However, this rise is as much about falling real earnings at the bottom of the distribution as rises at the top. This feature is different from what we normally see but it could well be because we are measuring annual earnings here, rather than the more commonly reported weekly or

hourly pay. Since there has been a growth in part time working, and possibly the number of individuals working only part year, this may lead to a fall in real annual pay at the bottom of the distribution.

Now let us turn to our measures of inequality. Throughout this paper we utilise four different measures of inequality, each of which gives differing weight to changes in different parts of the earnings distribution. The four inequality indices used are the Gini coefficient, the Mean Log Deviation or GE(0), Theil I_1 or GE(1) and the Theil I_2 or GE(2). Details are given in the Appendix.

Figure 4 and 5 present inequality measures over the same years for males and females respectively. In these figures inequality is computed over those with non-zero annual earnings, so an individual must have some earnings in the tax year to appear in the computation. All four measures show rising inequality over the time period, with the fastest increases in the 1980s and 1990s, but interestingly inequality is still rising in the period from 1997. We see a similar story in figure 5 for women, but there is some evidence that inequality began to fall between 1997 and 2003 with increases again since then.[2]

Figure 6 and 7 present the same inequality measures but now computed over all individuals, including those with zero annual earnings. The story is similar but some differences do stand out. As expected inequality is higher and rises faster over the 1980s and 1990s when zero earnings are included. This is likely to be due to an increase in the number of men with no annual earnings over these time periods, particularly in the 1980s during periods of high unemployment. Then in the late 1990s inequality falls and has continued to fall through to 2005/06, partly due to the increases in employment in the recent economic expansion. The figures for women show increases in inequality in the 1980s; when the proportion of those with some employment fell. But then inequality falls as the employment rate of women rises, and this fall continues right through until the end of the period of analysis. The mobility measures that we examine in this paper are based on these cross section measures of inequality. Before we present these, we first look at transitions both within the earnings distribution, and in and out of other states using a transition matrix approach.

4. Transition Matrix Approach

In this section we present results of decile transition matrices, whereby individuals are classified into an earnings decile according to their annual earnings, or an alternative state, such as benefits, self employment and this is tabulated against individuals'

[2] Note that some of the series exhibit a jump around 1996/97. This is likely to be an artefact of the change in the recording system of annual earnings. However, the data should be consistent within the time periods 1978/79-1995/96 and 1996/97-2005/06, so any trends within these periods are consistent.

position in a second year. This enables us to examine the transitions from one state to another and to see the extent of movement in the earnings distribution.

Table 1 presents the decile transition matrix for males between 1979/80 and 1980/81. The table shows us, for different states in 1979/80, the proportion of the population who are in various states in 1980/81. So for example, we see that 35% of those who are in the bottom decline in 1979/80 remain in the bottom decile in 1980/81. The matrix shows a limited degree of movement within the wage distribution. The bulk of observations are on the diagonal (the same position in both years), and there is little long range movement to other deciles. For example, of the 28% who move up from the bottom decile, roughly two thirds only make it into the next two deciles, and less than 1% make it into the top decile. The other key point to note is that those on lower annual earnings are much more likely to exit employment; 19% of those in the bottom decile exit to benefits in the following year (with no earnings from employment in that year) and 10% exit to unknown destinations (into "other"). This compares with just 0.4% of the top decile exiting into benefits and 2% into "other". Previous studies have highlighted the association between low hourly or weekly/monthly earnings and subsequent out-of-work benefit receipt what we show in this analysis is that for a significant proportion of individuals the period of out-of-work benefit receipt is of long duration (at least 12 months). Any measure of earnings mobility that fails to take this into account will overstate the degree of mobility within the earnings distribution.

Table 2 presents the same transition matrix for males but for transitions occurring between 1997/98 and 1998/99, and Table 3 for 2004/05 and 2005/06. There is mixed evidence on the change in mobility over time. The proportions remaining on the diagonal for those in the lowest four deciles falls both up to 1997/98 and 2004/05 and there is an increase in the proportions who move up one or two deciles - higher mobility. There are increases in the proportions remaining on the diagonal in the rest of the distribution – lower mobility. Also, the proportion remaining on benefits falls substantially over time, in 1979/80 some 74% of those on benefits remain in this state the following year. This falls to 57% in 1997/98 and to 36% in 2004/05. The main increase is due to those moving into jobs with annual earnings in the lowest decile.

Tables 4–6 present the transitions for women for the same years. A similar story emerges of little long range movement over one year. The tables show that there was an increase in the proportion of individuals remaining on the diagonal in all deciles between 1979/80 and 1997/98 but falls for most deciles between 1997/98 and 2004/05. Overall this suggests that mobility fell between 1979/80 and 1997/98 and increased between 1997/98 and 2004/05 according to this measure for women. There has been a fall in the proportion of women moving between the lowest decile and benefits one year later and an increase in the proportion of women in the lowest decile moving up one decile one year later. However, in contrast to men the proportion of women remaining on contribution based out-of-work benefits has increased from 52% in 1979/80 to 58% in 1997/98 and 60% in 2004/05. However, a much greater share of women in receipt of benefit in the base year are in employment in the following year 13% in 1979/80, 17% in 1997/98 and 24% in 2004/05. This seems to be due to a fall

in women moving from contribution based benefits to other unknown out of work states one year later.

The transitions presented here are only over one year and we may well expect there to be more mobility over longer time periods. We have also computed transition matrices for men and women over 5, 10 and 20 years.

Overall these results paint a picture of some mobility but little long range movement. They show some evidence that mobility fell between 1979/80 and 1997/98 and then increase between 1997/98 and 2004/05. This approach faces a couple of drawbacks. Firstly, transition matrices do not provide us with a good index of mobility to compare changes over time. Secondly, they only compare someone's state in one year with another year, ignoring what goes on in between. So for example, although we may see someone in the bottom decile in 1996 and again in 2001, we are not able to utilise the information available on their status during the intervening years. We now turn to our measure of mobility that aims to capture transitions over time but also incorporates information on these intervening spells.

5. Measuring Earnings Mobility

In order to examine changes in mobility over time in a way that captures an individual's earnings over a long period of time, and allows us to incorporate spells with zero earnings we utilise the analytical framework developed by Shorrocks (1978). This methodology allows us to quantify the extent to which earnings mobility reduces single year measures of inequality by examining inequality in earnings over a number of years. This allows us to assess, for example, whether or not increases in cross-sectional inequality have been accompanied by increases in mobility. The procedure involves estimating an earnings immobility index which measures the ratio of earnings inequality averaged over a number of years to the weighted average of the sub-period inequalities. The weights are computed as the share of total earnings (over the period t=1 to T) that accrued in year t. More formally, Shorrocks' measure is defined as:

$$R(W_T) = \frac{I(\omega^{mT})}{\sum_{t=1}^{T}(\eta_{t,T} * I(\omega_t))},$$

where W_T is the (N x T) matrix of the N workers' earnings in years 1 to T, $I(\omega)$ denotes the chosen inequality index, ω^{mT} denotes the (N x 1) vector of individual earnings averaged over years 1 to T, ω_t denotes the (N x 1) vector of individual earnings in year t and $\eta_{t,T}$ is the share of total earnings (over the years t=1 to T) that accrued in year t.

The mobility index, $M(W_T) = 1 - R(W_T)$, identifies the extent to which mobility ameliorates increases in cross-sectional inequality. In this case earnings averaged over a number of years are more equal than earnings in single years. M ranges from 0 (no equalising mobility) to 1 (fully equalising mobility). The results from this exercise are used to assess the percentage reduction in inequality (according to all four of measures) due to mobility (averaging earnings across a number of years). The mobility index will vary depending on which inequality index is used in its computation. The inequality indices give different weight to different parts of the earnings distribution, so for example GE(2) is more sensitive to changes at the top of the distribution.[3]

We believe the Shorrocks' index is nicely suited to our data since we have annual earnings for each tax year, including any years with no earnings, when we aggregate over say 4 years we are measuring all of the individuals' earnings over that 4 year period. This is different to many other data sources which only measure earnings at discrete points in time; e.g. the NES measures weekly earnings in April each year and ASHE only measures annual earnings for continuously employed individuals. As such, our data neatly captures spells out of work and gives a true measure of earnings over the "lifetime".

We present results for the four different inequality indices used in Section 3, separately for men and women and computed by aggregating earnings over 2 years, 4 years, 6 years, 8 years and 10 years of earnings (figures for other time spans are available). Figures 8-11 present the mobility indices for men for each year from 1979/80 – 2005/06, for the four inequality indices GE(0), GE(1), GE(2) and the Gini respectively. The men in this sample all have some earnings in each relevant tax year. The interpretation of these numbers is straightforward. For example Figure 8 shows us that mobility over the year from 1979/80 to 1980/81 reduced cross section inequality (measured by GE(0)) by about 21%. As we aggregate earnings over longer periods of time we see that the extent to which mobility reduces measures of cross-sectional inequality is higher, so mobility over the 4 years from 1979/80 – 1983/84 reduces inequality by some 32%. Note, however, that the increase in mobility is declining with the increasing time period, so that over 10 years mobility reduces inequality by about 40%. This increase in equalising mobility over longer time periods is likely to be partly due to the fact that the sample of individuals becomes more select as the time period lengthens. Individuals with some employment in every year over an eight year period are likely to be more advantaged than individuals with some employment in each year of a two year period. However, mobility is measured relative to within group inequality in each case.

All indices present a pattern of falling mobility through the 1980s and 1990s. This is consistent with previous evidence on earnings mobility (Dickens, 2000a, 2000b; McKnight, 2000). The proportionate fall in all the indices over this period is similar.

[3] Note however, that the Shorrock's index weights changes at the bottom of the distribution, irrespective of the inequality index utilised (See Schluter and Trede, 2003).

This tells us that while cross section inequality was rising, mobility was falling. This suggests that the large rise in earnings inequality observed over this period was accompanied by increases in permanent (long-run) earnings differences between individuals.

The pattern of change since 1997 is a bit more mixed. There appears to be a jump in mobility in about 1996/97. This is the year in which the data recording methodology changed and so is likely to be an artefact of this. However, the data after this year is consistent. Mobility has fallen since 1997 until around 2001/02 and since then has started to increase.

Figure 12-15 present the four different mobility indices for women with some earnings in each relevant year (i.e. individuals with zero annual earnings are excluded). Mobility between two years appears to be very similar for men and women. Over longer periods (4 years and more) mobility is higher among men than among women at the start of our time period. For example, mobility over six years (1979-1984) reduced cross-sectional inequality by 30% among women and 37% among men (GE(0) index).

In addition, the pattern of change over time is different for women. Changes in two year mobility are similar for men and women with falls in the late 1980s and early 1990s. The changes since 1997 show that two year mobility fell up to around 2002 and has since started to rise. The longer period measures show greater falls in mobility among men. All measures for men and women show signs of increasing mobility since around 2002. Due to the greater falls in mobility among men, mobility among men and women are more equal at the end of the period than at the beginning. As we noted earlier the measures over longer time periods, say 8 or 10 years, are computed over a fairly select sample of employees who have earnings in all of these years. The sample characteristics of women are also likely to have changed over time as female labour market participation increased.

Let us now turn to see what mobility looks like when we include years with zero earnings. Figures 16–18 present this for males and Figures 19-21 for females for different inequality indices. It is immediately apparent that the computed level of mobility is higher than that computed across those with positive earnings in all years. Obviously the mobility measures for inequality indices which are most sensitive to changes in earnings at the lower end of the distribution – GE(0) and GE(1) – show greater mobility among these samples of individuals. In addition mobility is higher among these men than among women using these measures. However, the fall in mobility through the early 1980s and early 1990s is sharper, particularly for men. This may well be due to an increase in the number of men who are not in work and stay out of work for longer related to the early 1980s and early 1990s recessions. Since 2002 there is evidence that mobility is rising for men, women and for all measures of inequality.

6. Summary and conclusions

In this paper we have used a unique data source to examine changes in inequality and mobility in the labour market between 1978/79 and 2005/06. We find significant increases in annual earnings inequality over this period among male and female employees. According to most measures the increase in inequality, particularly in the 1980s, is greater among men. When we consider a wider measure of inequality which includes periods of no earnings from employment we find greater increases in the 1980s for men as unemployment increased and falls for women in the 1990s as employment among women increased.

When we track individuals over time and compare their employment states and, where relevant, their position in the earnings distribution we find little long range mobility. This analysis shows some evidence of falling mobility between 1979/80 and 1997/98 and increasing upward earnings mobility between 1997/98 and 2004/05 for those with the lowest annual earnings. However, there remains a greater degree of movement between the lowest earnings deciles and subsequent unemployment/non-employment. For men the share remaining on benefit from one year to the next appears to be declining but increasing among women. This is related to falls in other non employee states as the share of women moving from benefits into employment increase by 4 percentage points between 1979/80 and 1997/98 and a further 6 percentage points between 1997/98 and 2004/05.

When we analyse results from a more sophisticated measure of mobility we find falling mobility among men through the 1980s and 1990s. This is suggestive of increases in long-run earnings inequality. There is evidence that mobility has started to increase since 2002. For women, we find lower initial mobility over four or more years of earnings but less of a fall in mobility than that recorded form men through the 1980s and 1990s. Mobility among women has begun to rise at the end of the period. When we use a more inclusive measure which includes years of no earnings we find that increases in unemployment in the 1980s and 1990s led to falls in mobility and larger increases after 1997 as employment has increased. For women increases in employment over this time period has led to increases in equalising mobility.

Appendix: Inequality Indices

The Gini coefficient

$$G = \frac{1}{2N^2\mu}\sum_i\sum_j |\, w_i - w_j \,| \qquad \text{where } i \neq j$$

The Mean Log Deviation or GE(0)

$$MLD = \frac{1}{N}\sum_j \left(\log\left(\frac{\mu}{w_j} \right) \right)$$

Theil I1 or GE(1)

$$I^1 = \frac{1}{N}\sum_j \left(\frac{w_j}{\mu} \right) * \log\left(\frac{w_j}{\mu} \right)$$

Theil I2 or GE(2)

$$I^2 = \frac{1}{2N}\sum_j \left(\left(\frac{w_j}{\mu} \right)^2 - 1 \right)$$

Notes: w = wage, μ = average wage, N individuals are indexed over i and j.

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Figures and Tables

Figure 1: Real Average Annual Earnings from LLMDB and ASHE

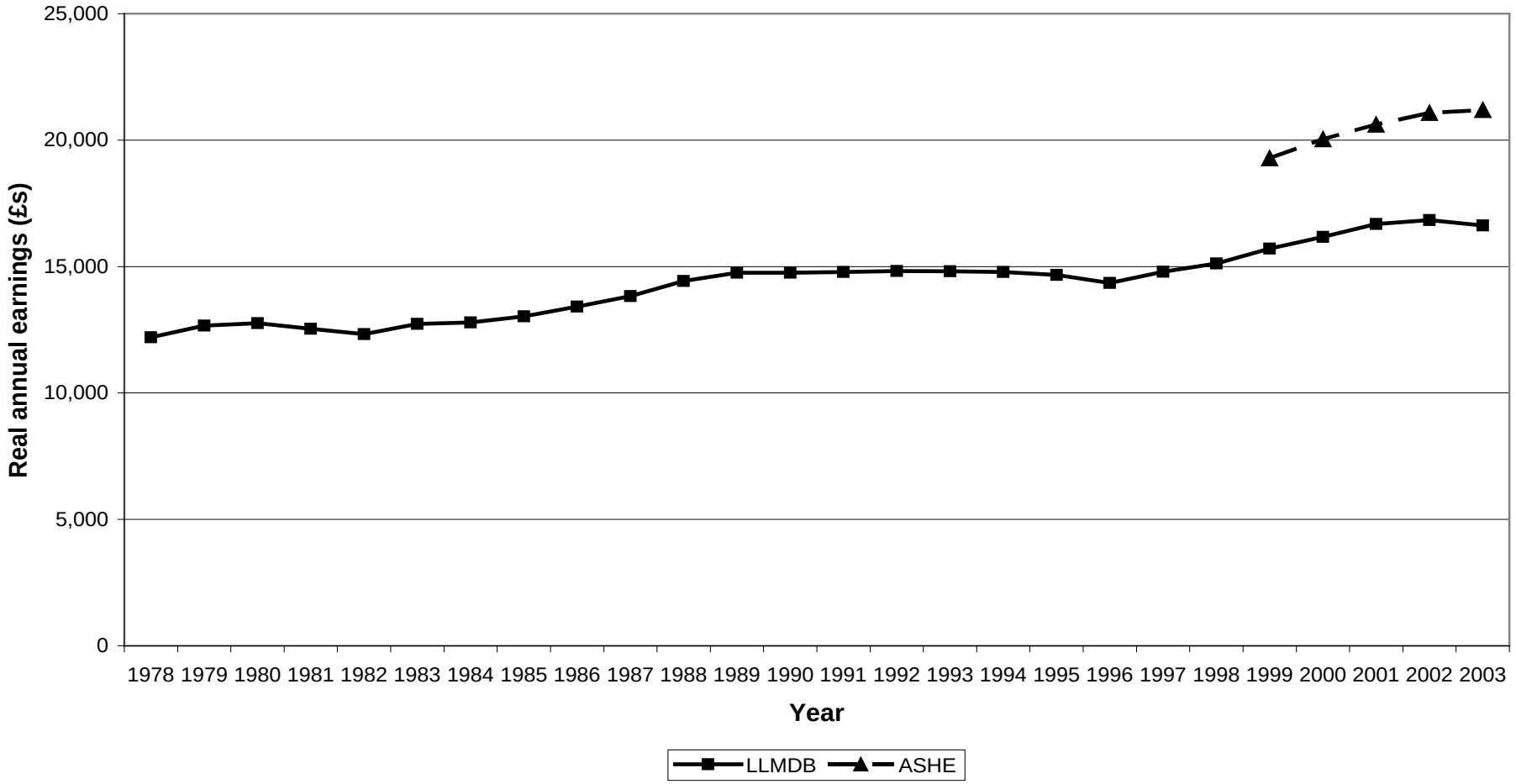

Figure 2: Earnings distributions in LLMDB and ASHE

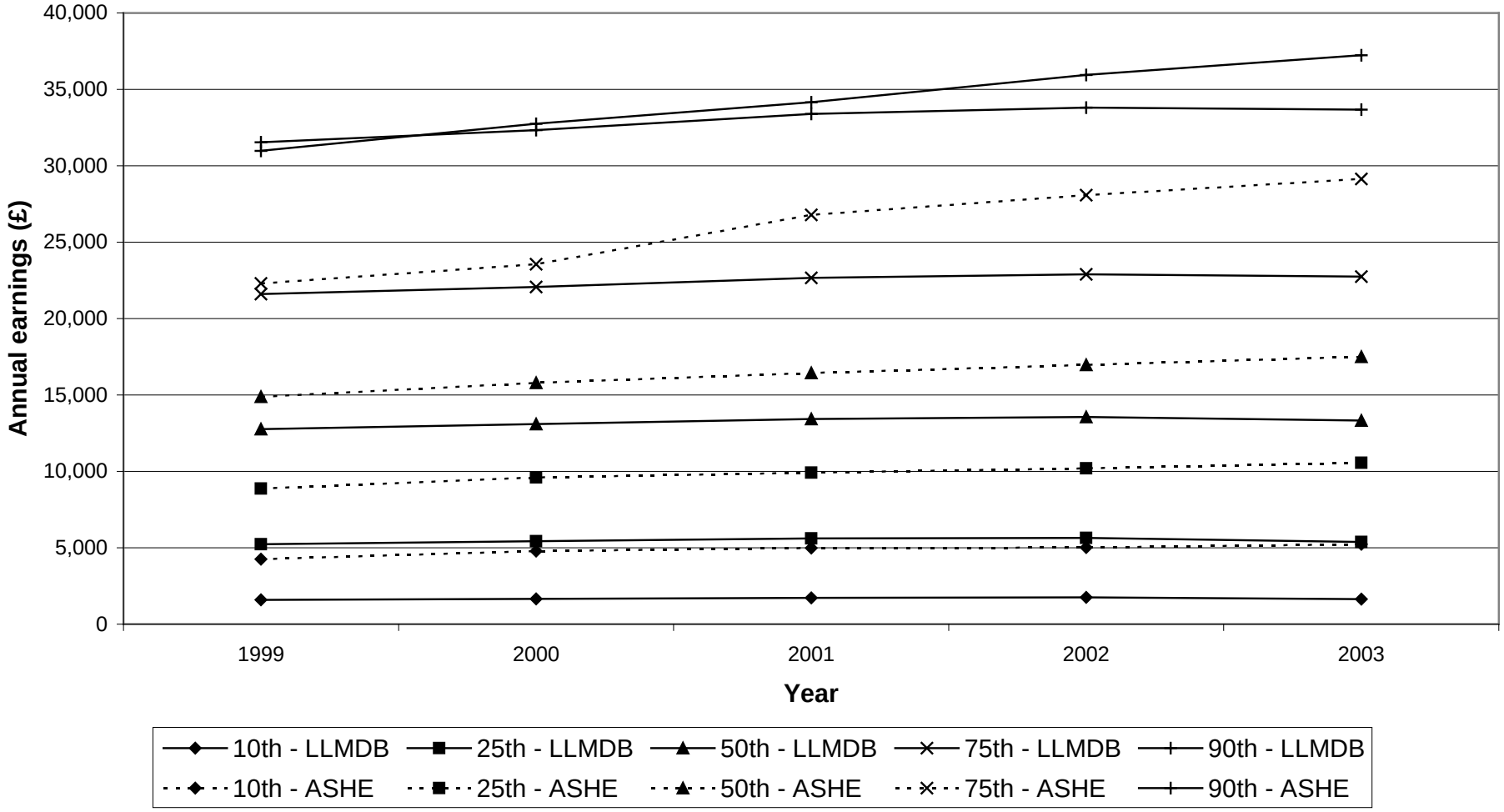

Figure 3: Earnings distributions in LLMDB

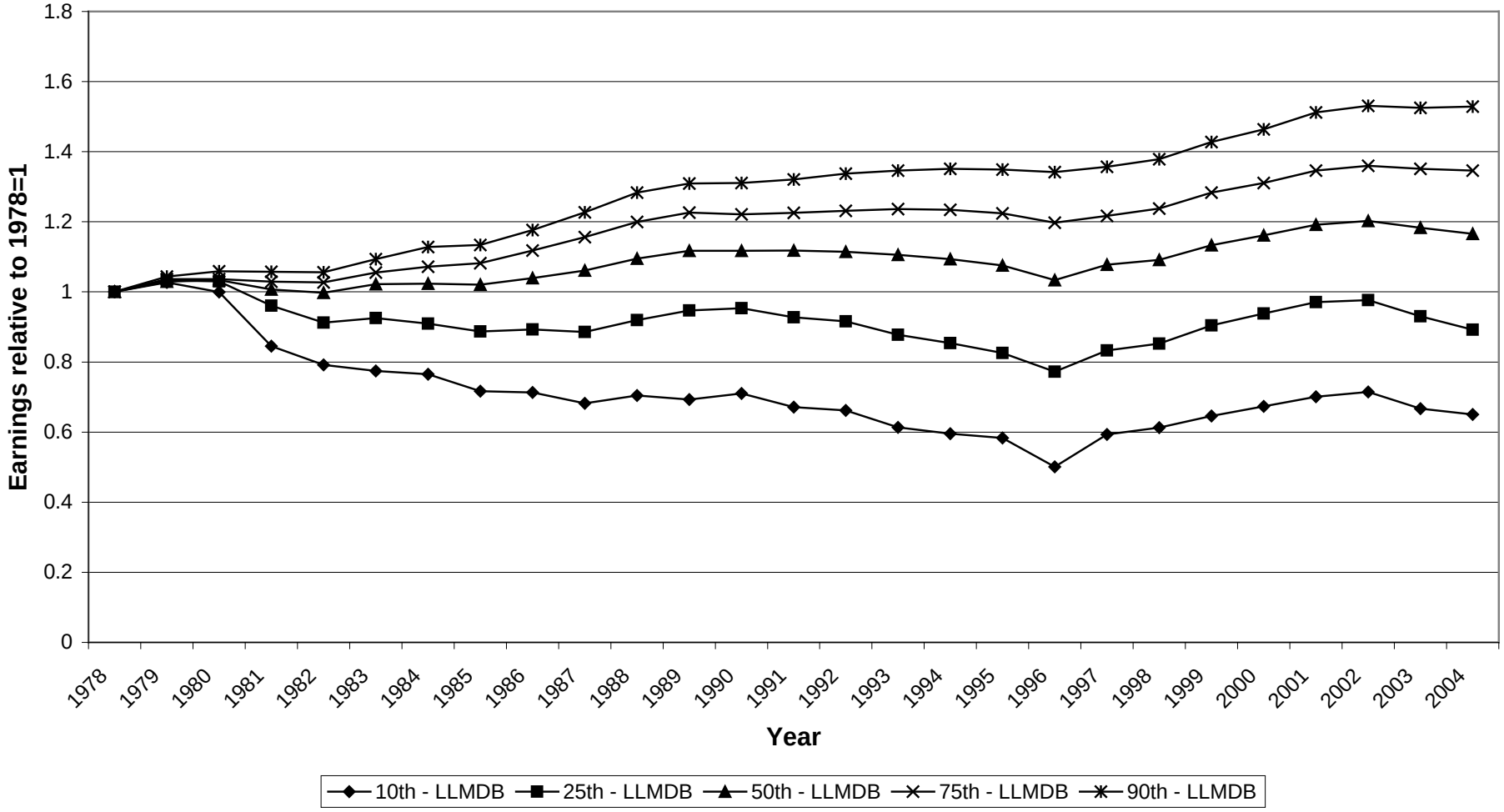

Figure 4: Inequality Indices Males 1979/80-2005/06 (excluding zeros)

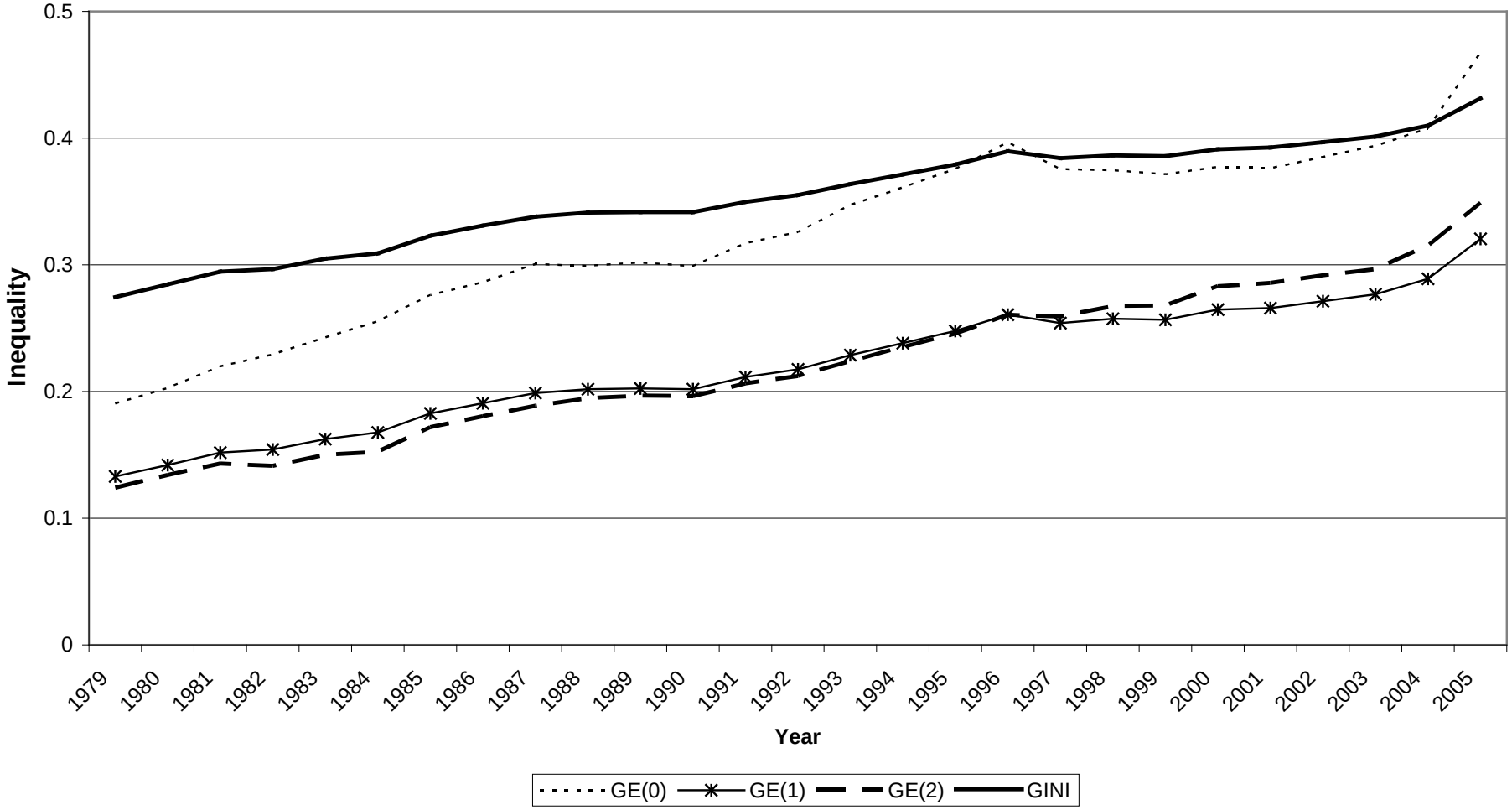

Figure 5: Inequality Indices Females 1979/80-2005/06 (excluding zeros)

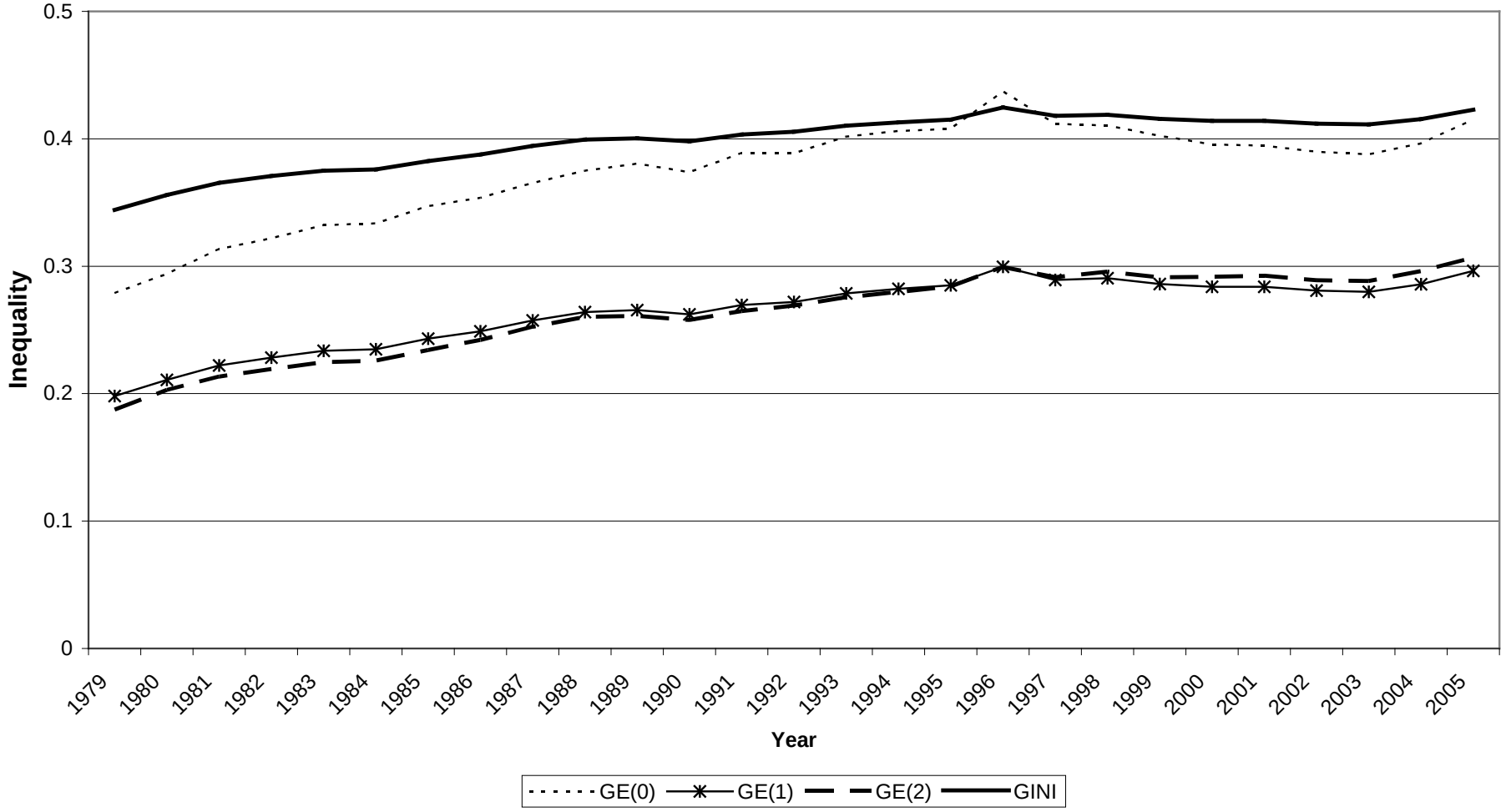

Figure 6: Inequality Indices Males 1979/80-2005/06 (including zeros)

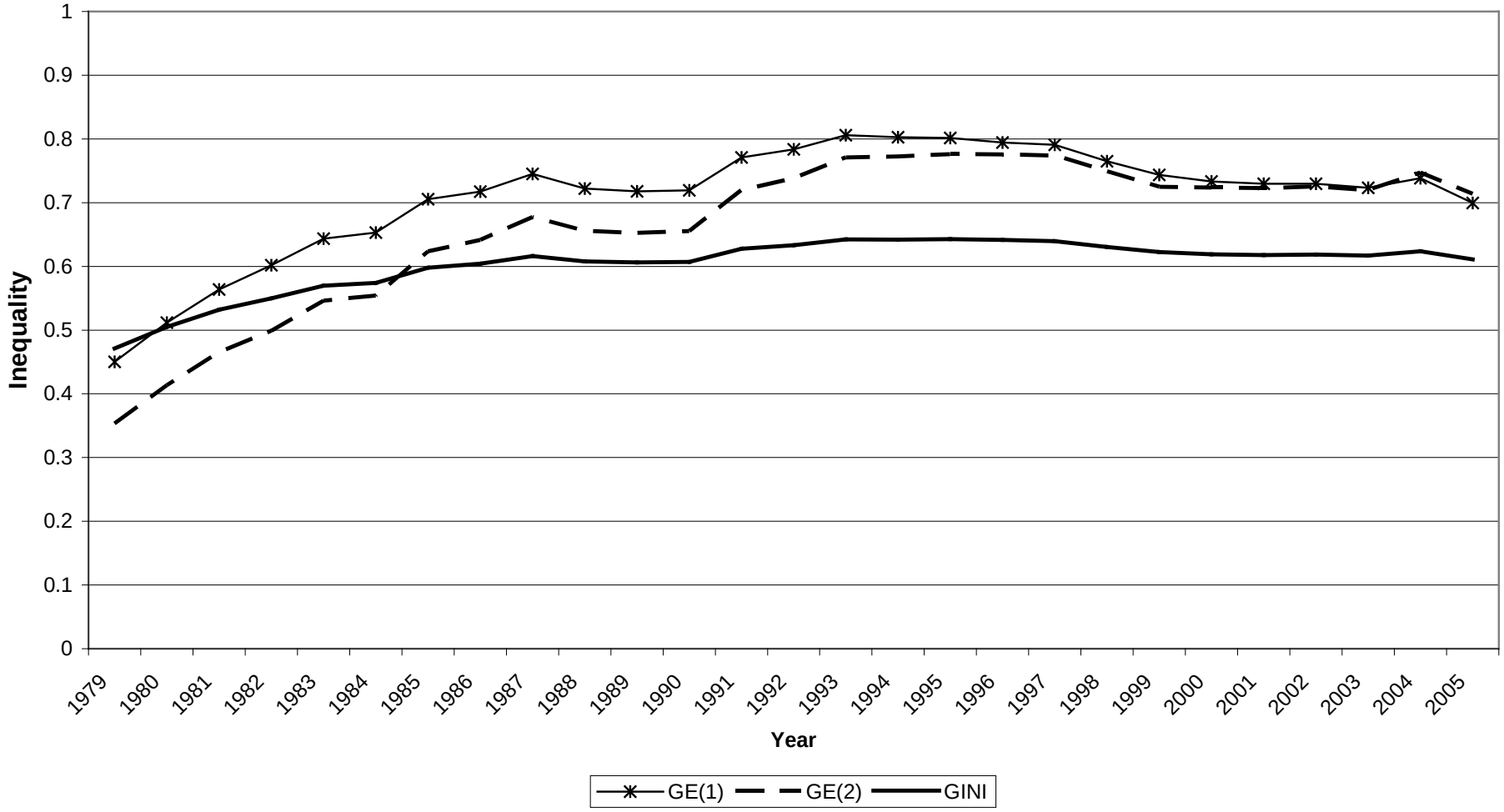

Figure 7: Inequality Indices Females 1979/80-2005/06 (including zeros)

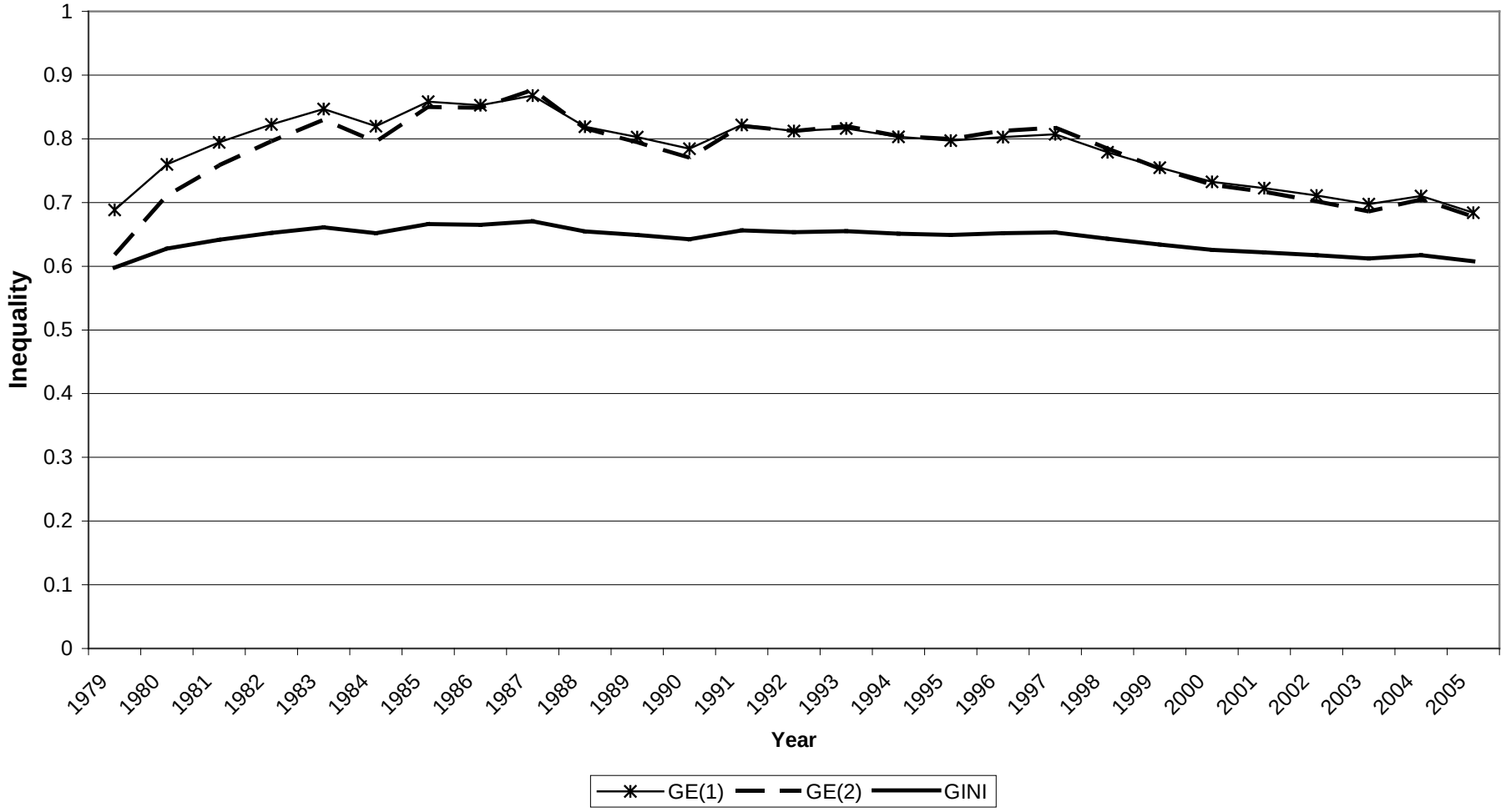

Figure 8: Shorrocks Mobility - Theil GE(0) Index: Males Excluding Zeros

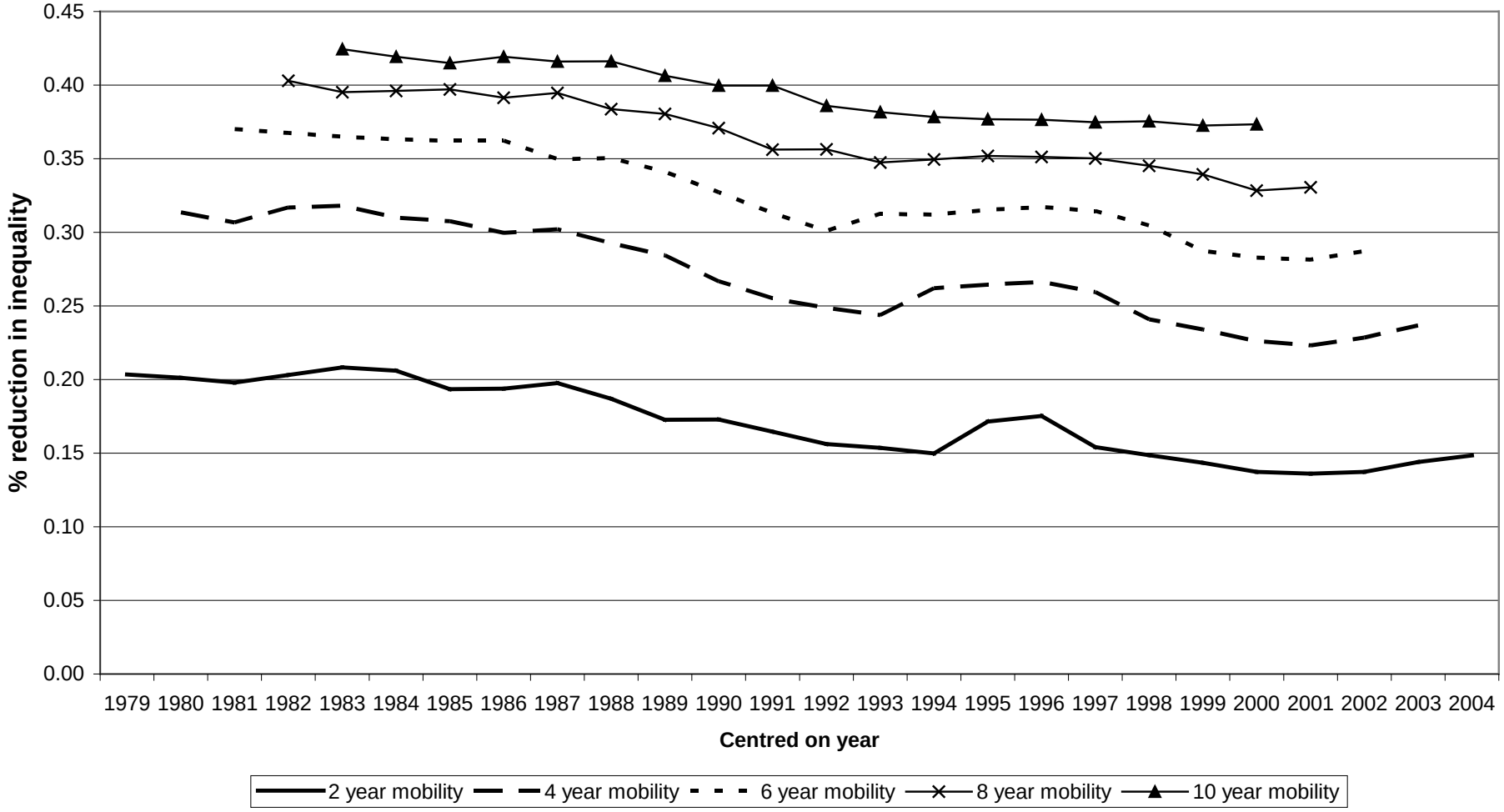

Figure 9: Shorrocks Mobility - Theil GE(1) Index: Males Excluding Zeros

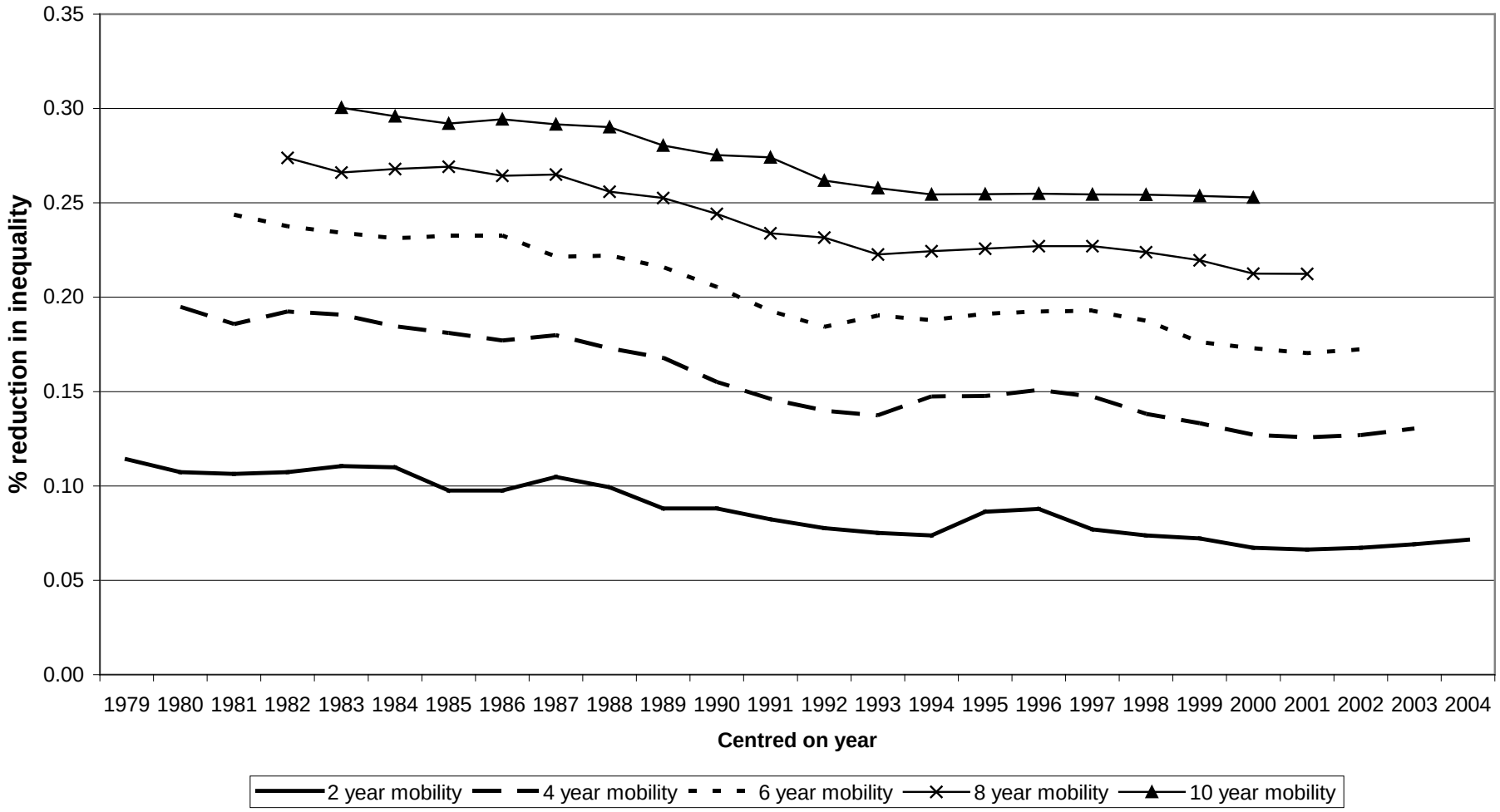

Figure 10: Shorrocks Mobility - Theil GE(2) Index: Males Excluding Zeros

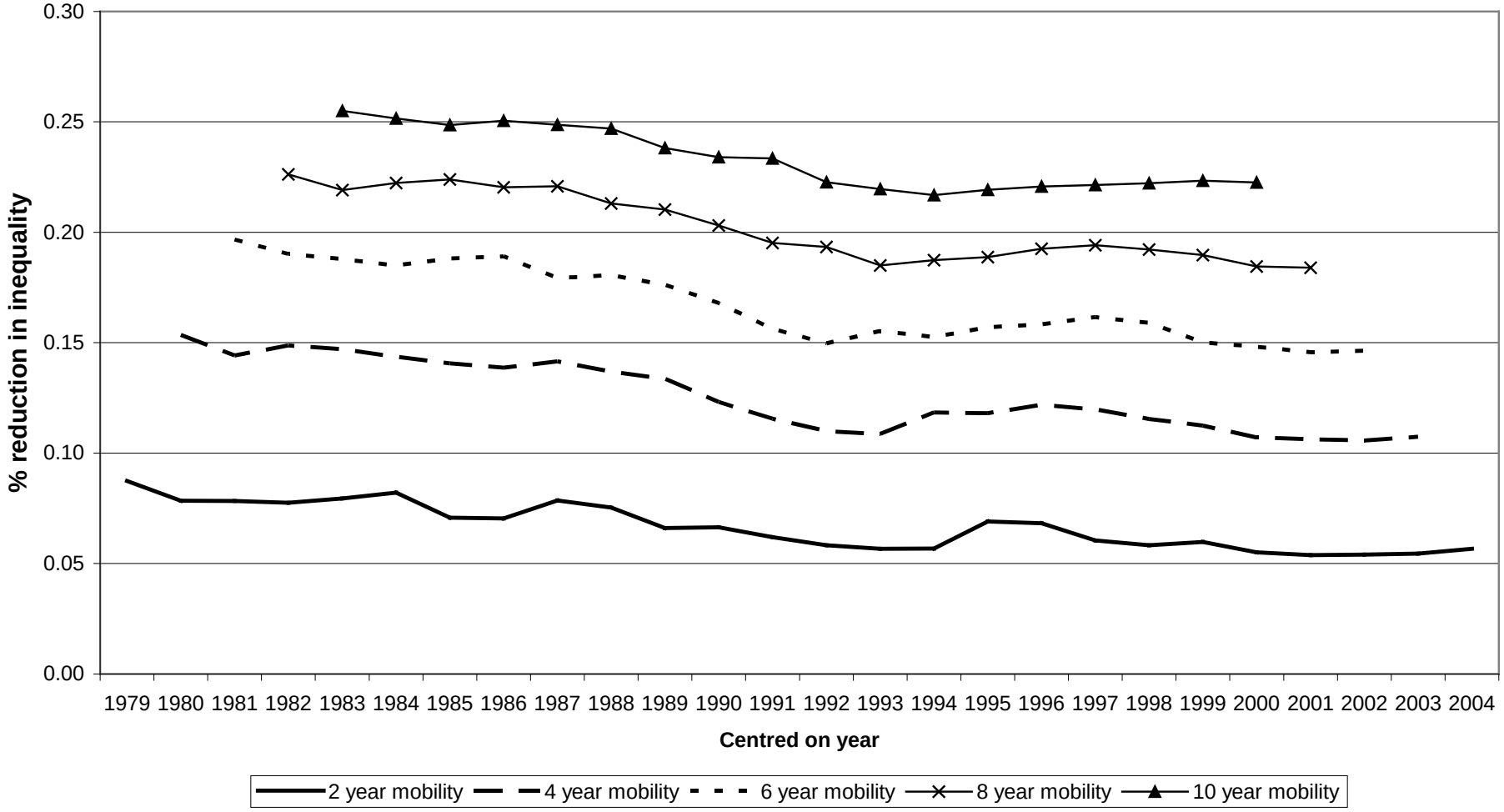

Figure 11: Shorrocks Mobility - Gini Index: Males Excluding Zeros

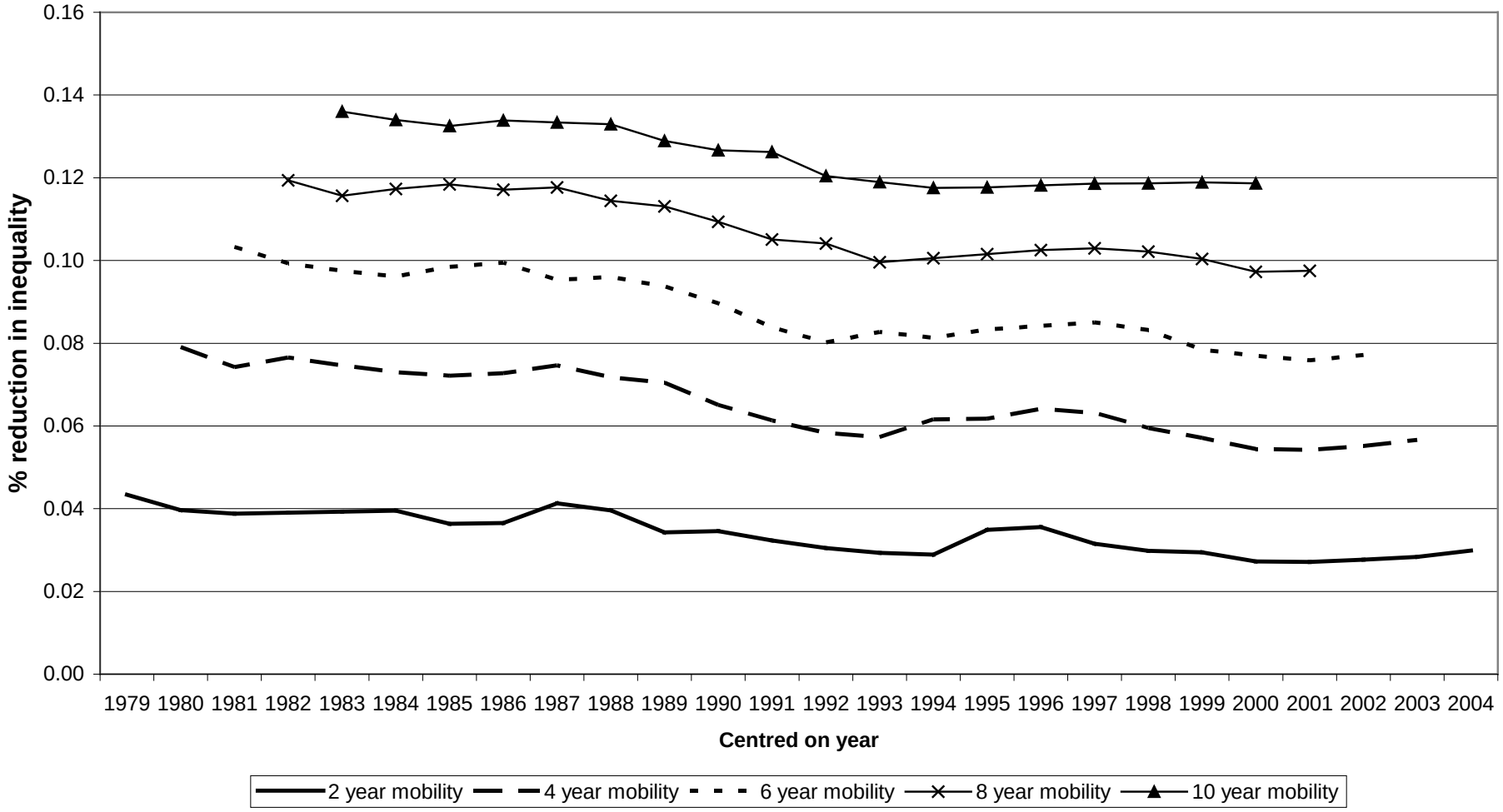

Figure 12: Shorrocks Mobility - Theil GE(0) Index: Females Excluding Zeros

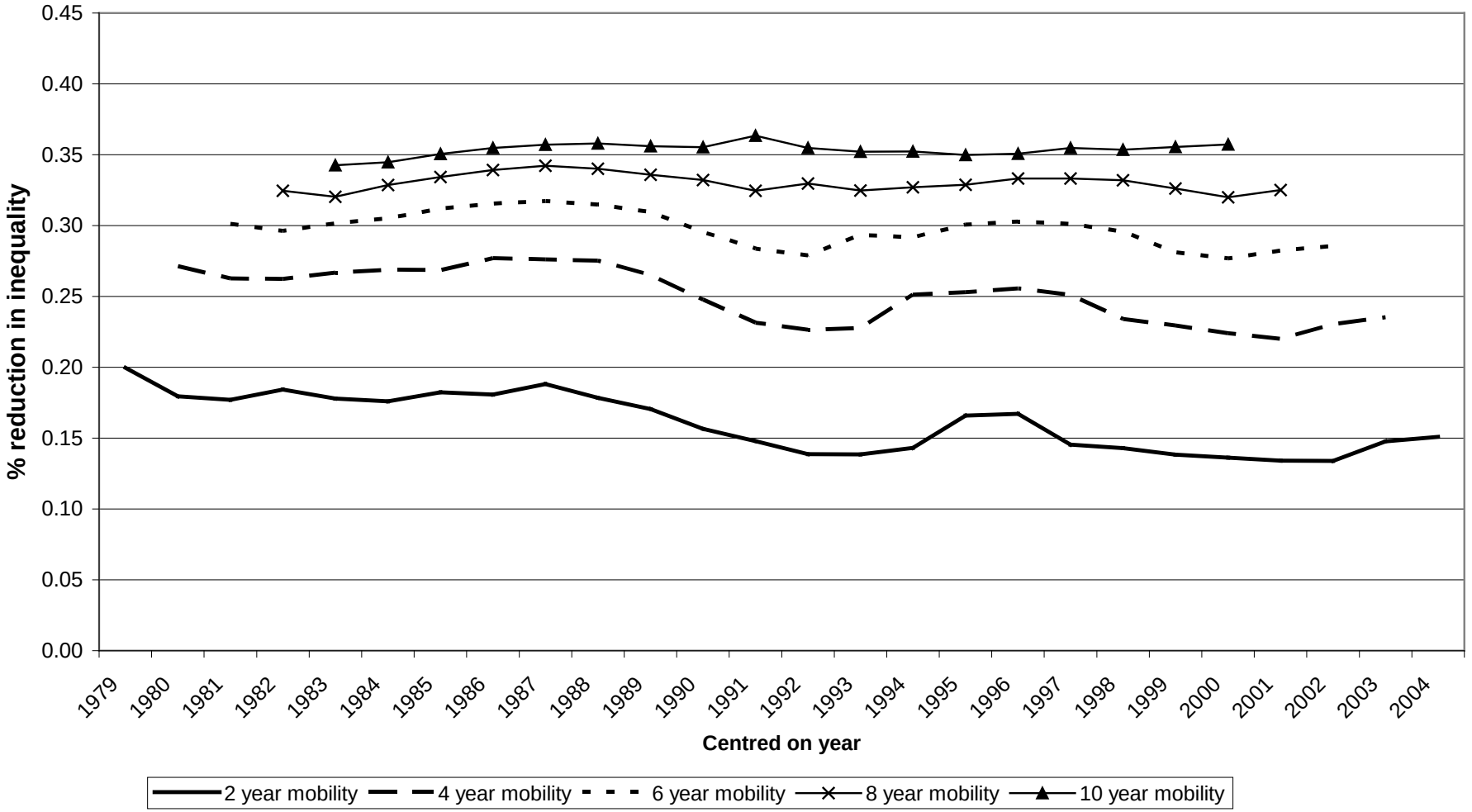

Figure 13: Shorrocks Mobility - Theil GE(1) Index: Females Excluding Zeros

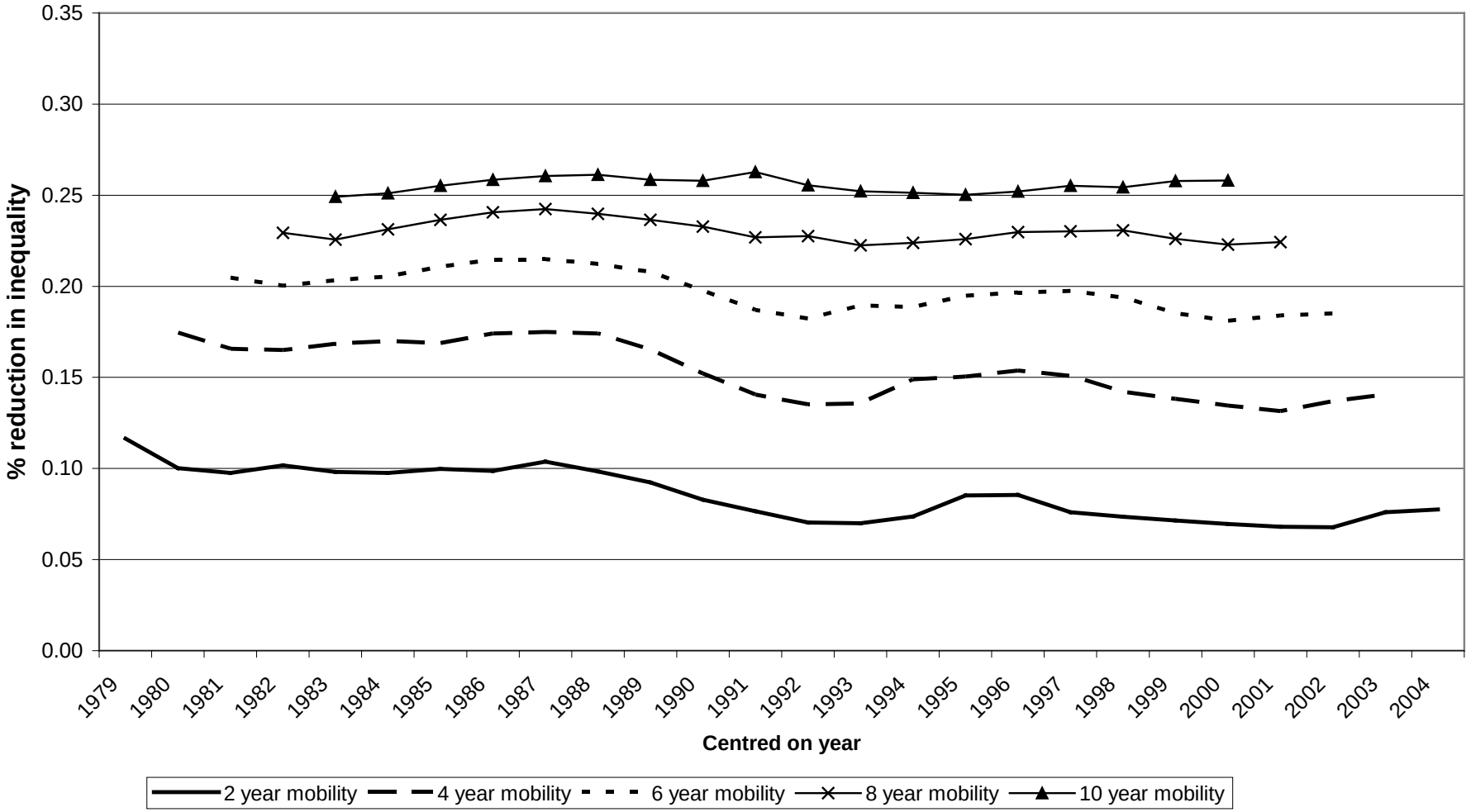

Figure 14: Shorrocks Mobility - Theil GE(2) Index: Females Excluding Zeros

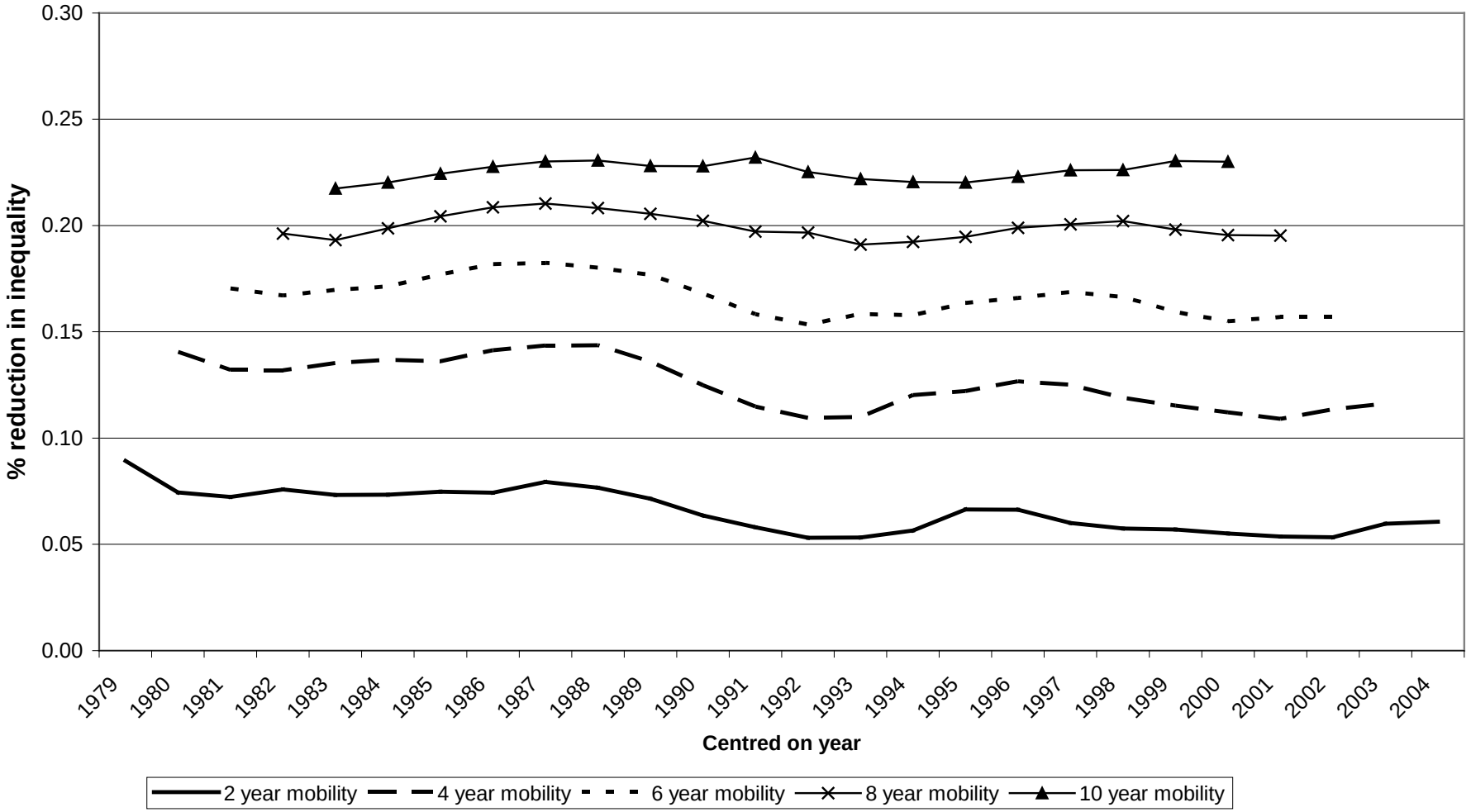

Figure 15: Shorrocks Mobility - Gini Index: Females Excluding Zeros

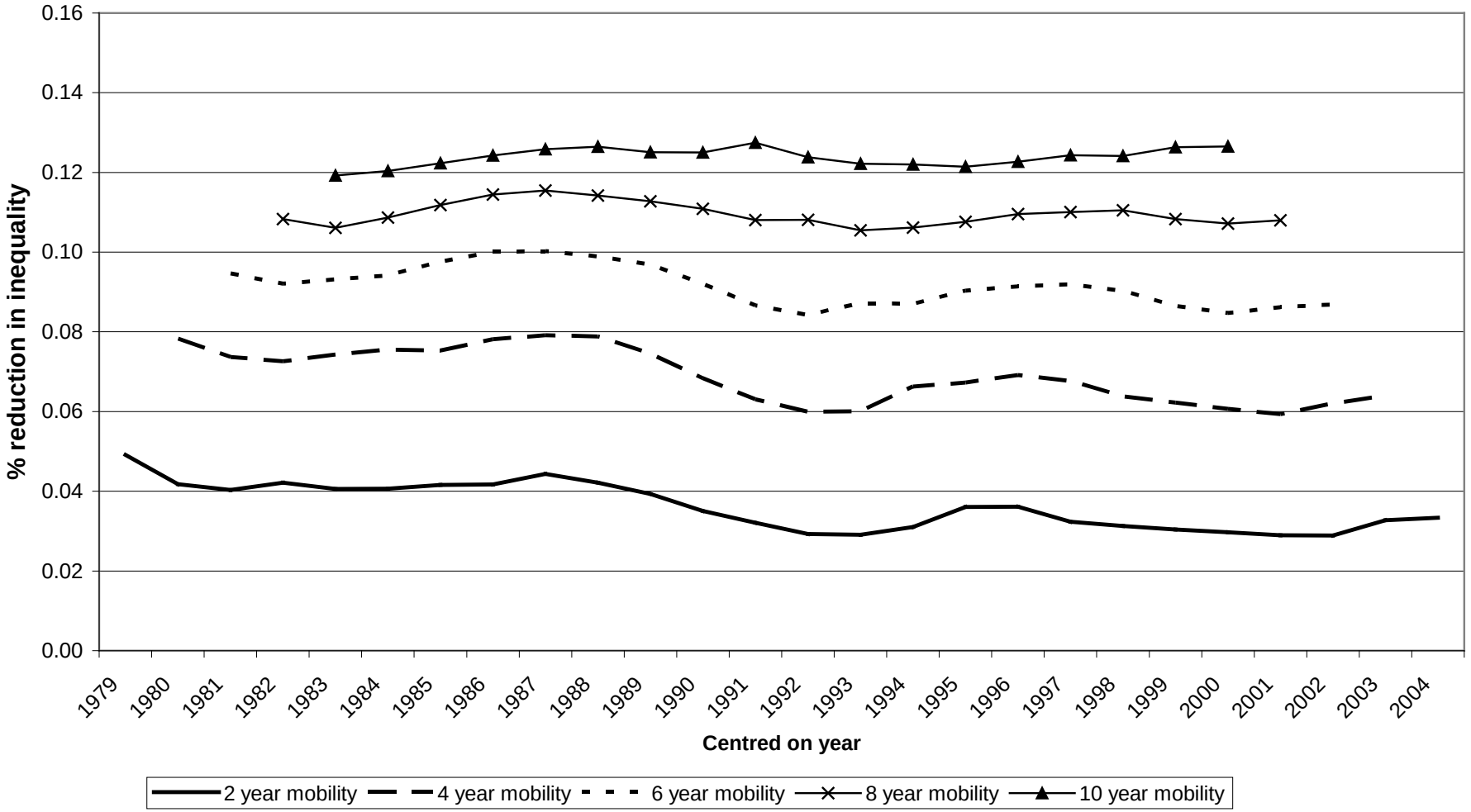

Figure 16: Shorrocks Mobility - Theil GE(0) Index: Males Including Zeros

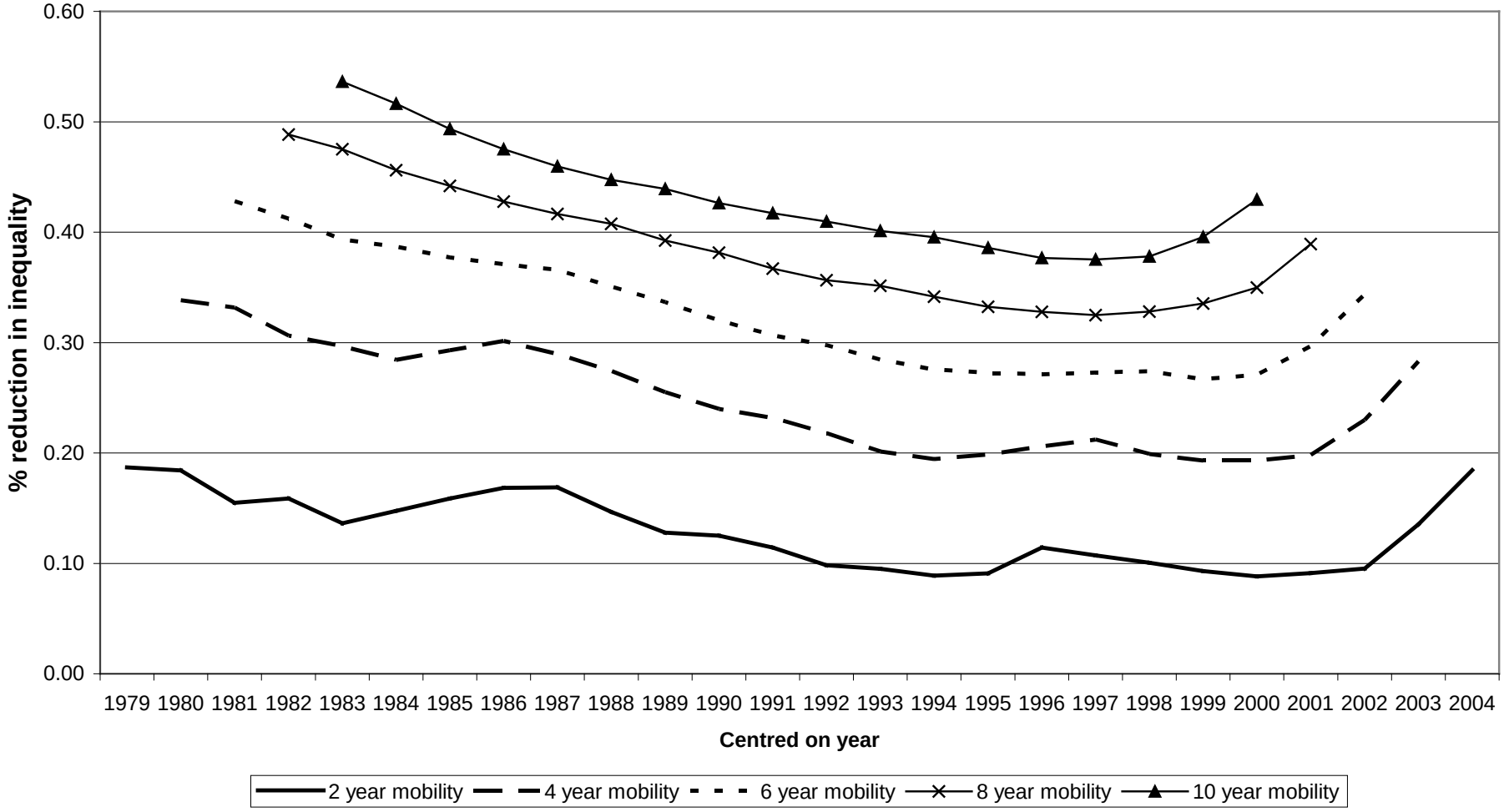

Figure 17: Shorrocks Mobility - Theil GE(1) Index: Males Including Zeros

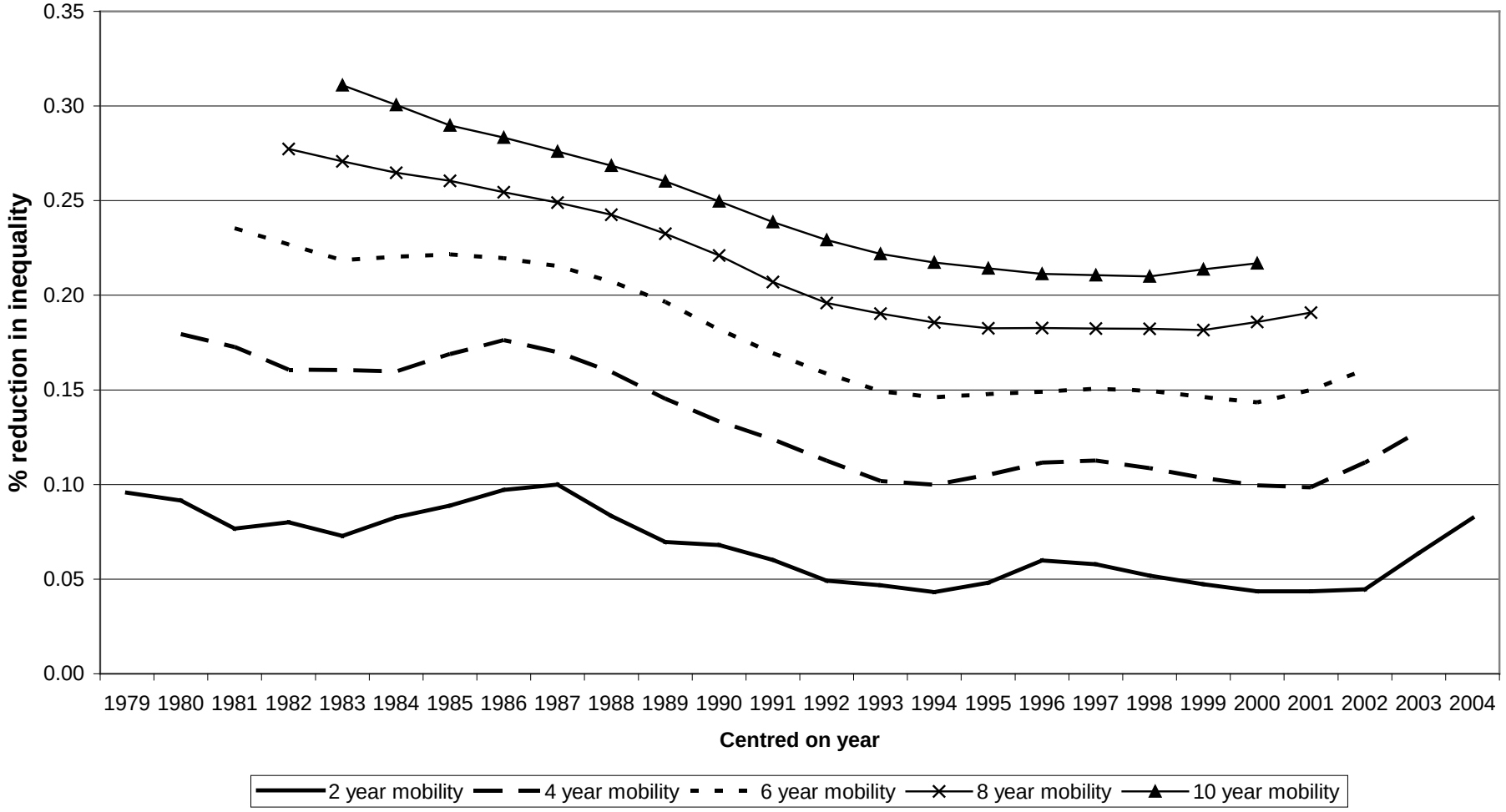

Figure 18: Shorrocks Mobility - Gini Index: Males Including Zeros

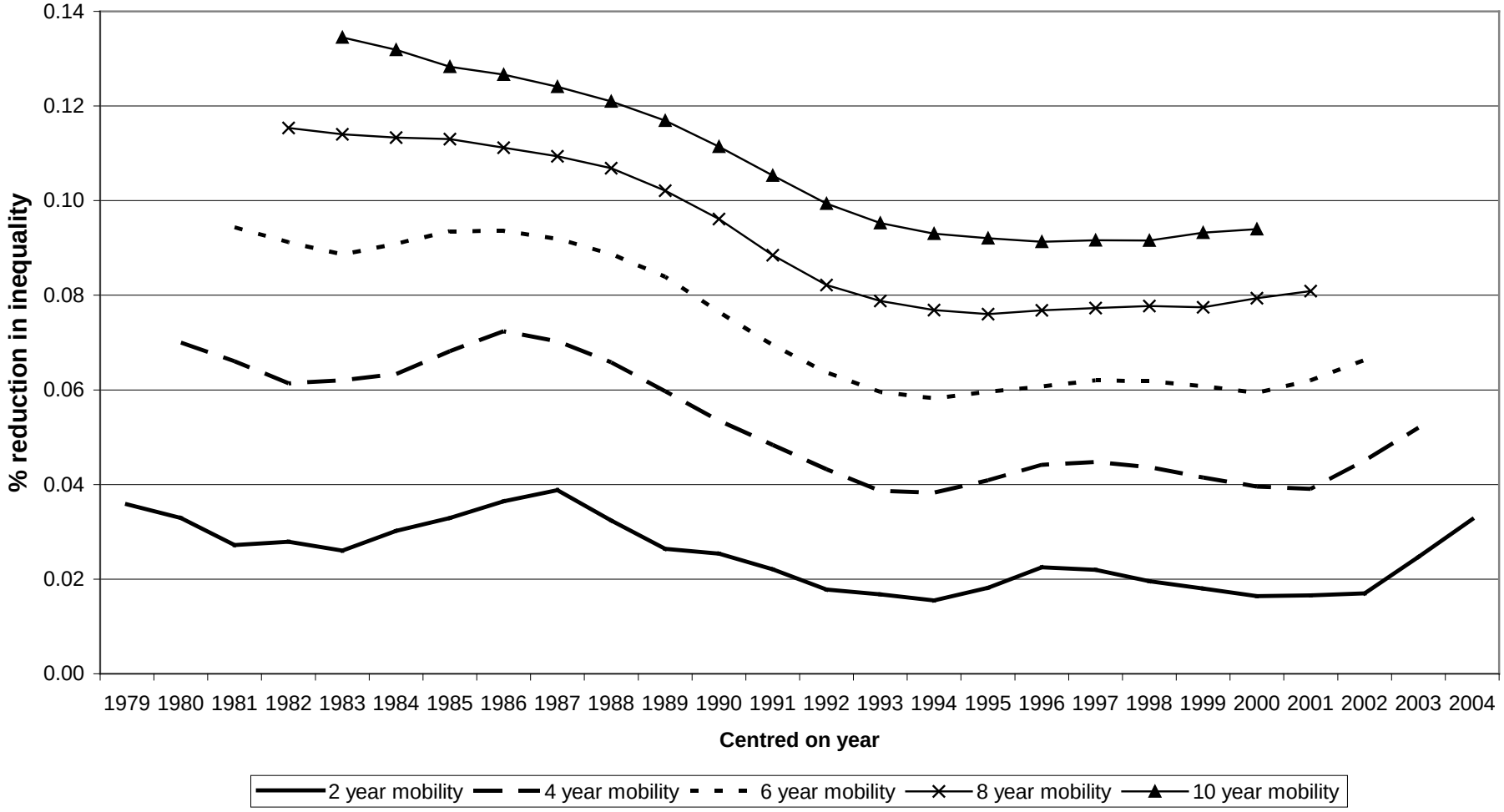

Figure 19: Shorrocks Mobility - Theil GE(0) Index: Females Including Zeros

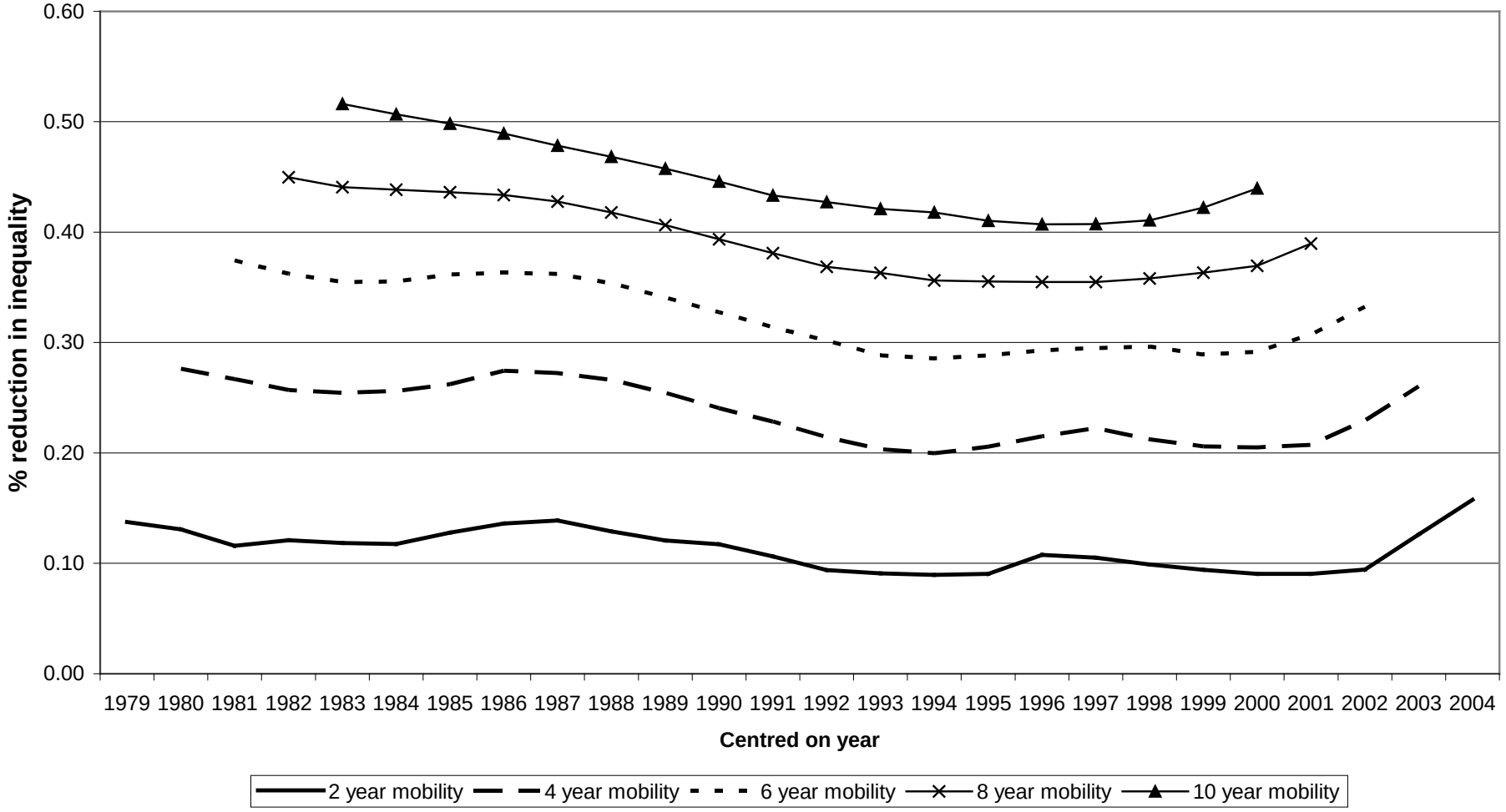

Figure 20: Shorrocks Mobility - Theil GE(1) Index: Females Including Zeros

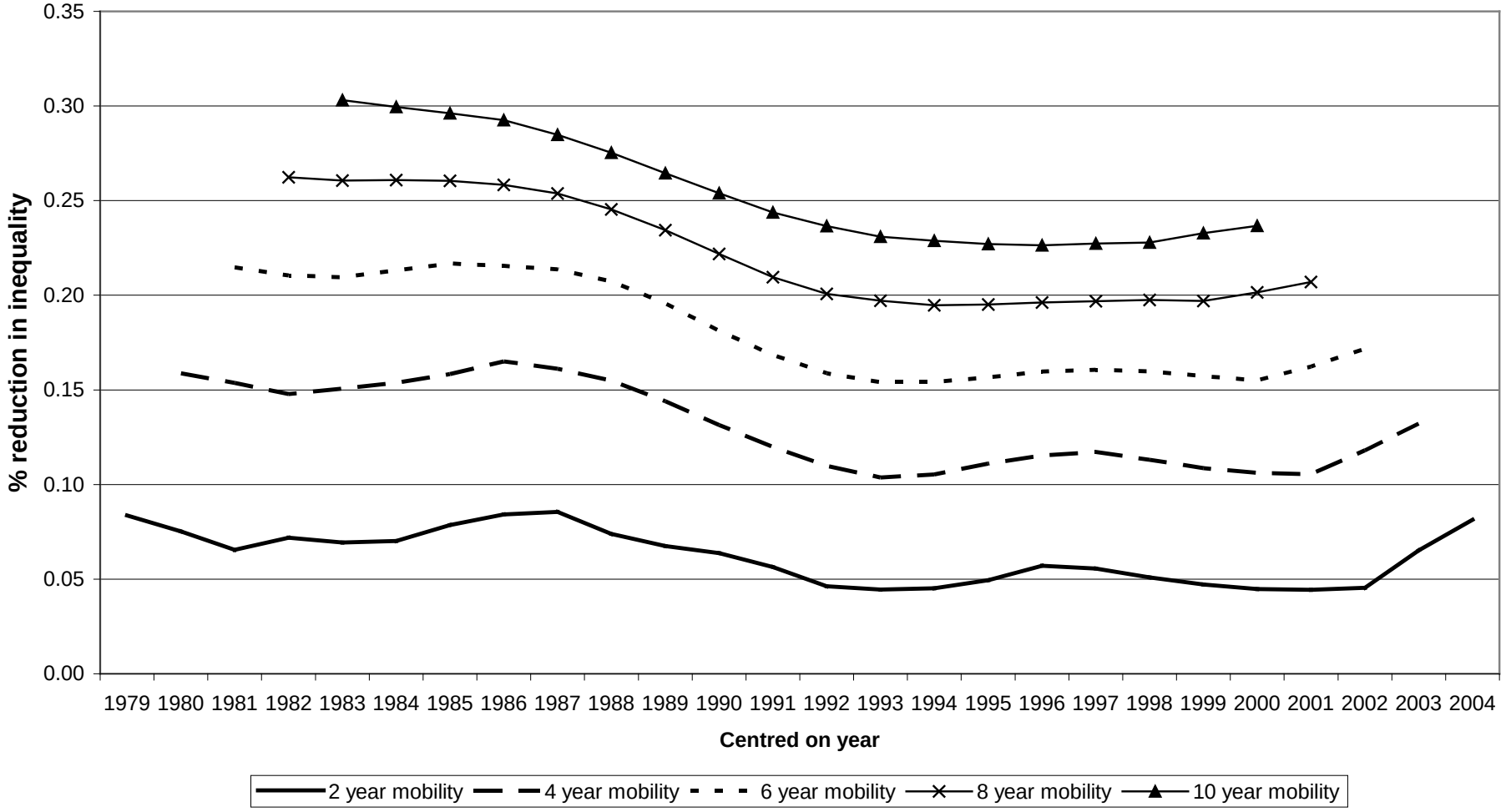

Figure 21: Shorrocks Mobility - Gini Index: Females Including Zeros

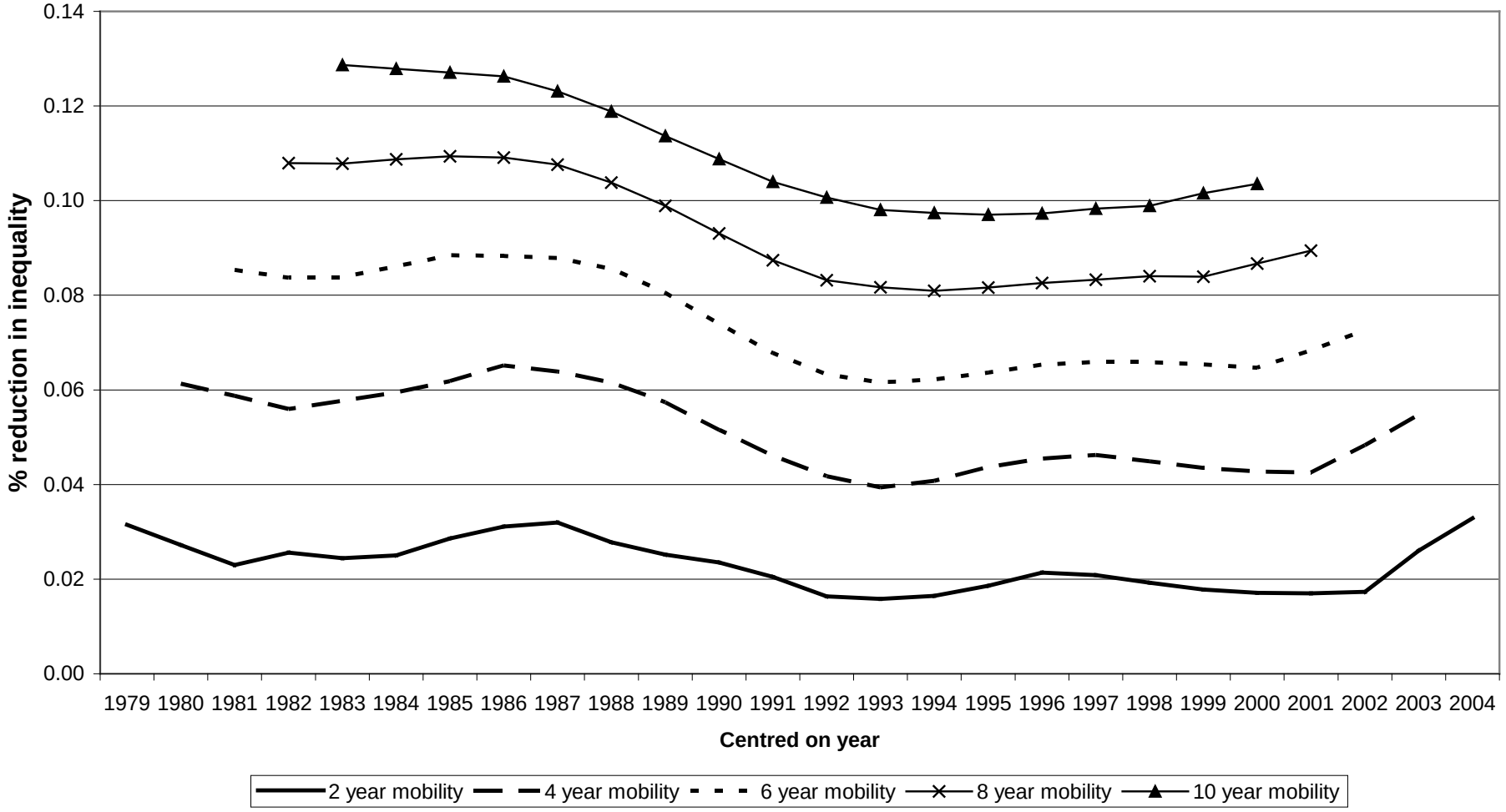

Table 1: Decile Transition Matrix - Males 1979/80

State in 1979	State in 1980: Death	Abroad	Other	Benefits	Self Emp	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
Abroad	0.20	**97.54**	0.26	0.67	0.11	0.59	0.13	0.09	0.07	0.04	0.07	0.03	0.01	0.10	0.09
Other	0.19	0.79	**65.55**	8.67	3.59	6.15	2.62	1.79	1.47	1.25	1.39	1.55	1.33	1.67	2.00
Benefits	1.85	1.15	8.89	**73.73**	1.54	7.10	1.88	1.14	0.62	0.52	0.50	0.37	0.30	0.24	0.16
Self Employed	0.19	0.18	2.11	1.14	**92.02**	2.39	0.70	0.25	0.18	0.16	0.18	0.13	0.11	0.09	0.18
Decile 1	0.87	1.47	10.44	18.81	5.18	**34.93**	12.68	5.24	3.06	2.46	1.63	1.20	0.84	0.73	0.46
Decile 2	0.57	0.36	3.58	3.86	0.94	16.30	**42.41**	18.08	6.34	2.99	1.81	1.14	0.81	0.42	0.39
Decile 3	0.64	0.16	2.10	1.66	0.46	8.59	14.75	**36.64**	20.72	7.80	3.16	1.39	1.01	0.50	0.41
Decile 4	0.46	0.06	1.76	1.09	0.27	6.29	6.24	16.76	**31.08**	20.97	9.25	3.25	1.48	0.62	0.43
Decile 5	0.32	0.05	1.78	0.96	0.27	4.74	4.18	6.48	17.53	**28.69**	20.55	9.91	2.98	1.12	0.42
Decile 6	0.27	0.09	1.59	0.75	0.17	3.32	3.31	3.13	7.17	17.65	**28.97**	22.46	8.48	2.03	0.60
Decile 7	0.37	0.09	1.73	0.57	0.20	2.95	2.18	2.04	3.42	8.30	18.44	**31.08**	22.30	5.13	1.20
Decile 8	0.24	0.07	1.76	0.52	0.15	2.13	1.70	1.19	1.56	3.28	7.68	18.08	**37.36**	21.73	2.55
Decile 9	0.31	0.08	1.57	0.41	0.15	1.67	1.36	1.10	1.06	0.99	2.26	5.55	17.70	**49.97**	15.83
Decile 10	0.29	0.15	2.14	0.43	0.12	1.34	0.95	0.67	0.67	0.70	0.69	1.19	2.87	13.84	**73.96**

Notes: Deciles are computed across those with any earnings in the tax year
Benefits: Those with a record in the year of contributory benefits
Other: Those with no records but who have appeared in the data
Death: Recorded death in the tax year
Self Emp: Those with a self employment spell
Note that those who appear as either in Other, Self Emp or Benefits only do so if they do not have any earnings

Table 2: Decile Transition Matrix - Males 1997/98

State in 1997	State in 1998: Death	Abroad	Other	Benefits	Self Emp	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
Abroad	0.17	**97.70**	0.27	0.34	0.06	0.53	0.19	0.03	0.05	0.08	0.08	0.09	0.04	0.06	0.26
Other	0.88	0.16	**83.17**	2.42	0.62	3.71	2.32	1.11	0.94	0.95	0.82	0.74	0.72	0.68	0.77
Benefits	0.54	0.39	19.96	**57.10**	1.43	11.12	5.51	1.79	0.87	0.39	0.31	0.25	0.19	0.05	0.10
Self Employed	0.30	0.10	1.42	0.60	**89.59**	3.65	1.70	0.76	0.46	0.33	0.22	0.25	0.25	0.21	0.16
Decile 1	0.40	0.73	13.02	8.58	6.31	**38.34**	15.89	6.67	3.38	2.39	1.42	1.09	0.94	0.46	0.39
Decile 2	0.28	0.34	6.70	2.74	2.74	14.77	**37.77**	16.13	6.76	4.61	2.87	1.80	1.13	0.78	0.60
Decile 3	0.26	0.12	3.09	1.01	1.11	5.67	12.77	**46.00**	16.57	6.02	3.37	1.78	1.00	0.64	0.58
Decile 4	0.26	0.08	2.08	0.46	0.70	3.48	5.27	13.86	**44.26**	18.94	5.82	2.44	1.32	0.64	0.38
Decile 5	0.23	0.04	1.74	0.33	0.58	2.13	3.60	3.75	15.72	**41.84**	19.74	6.81	2.19	0.92	0.37
Decile 6	0.13	0.06	1.74	0.22	0.33	1.77	2.41	2.20	4.60	15.64	**43.27**	19.91	5.29	1.73	0.70
Decile 7	0.24	0.07	1.44	0.17	0.25	1.44	1.92	1.51	1.74	4.10	16.37	**46.89**	19.45	3.52	0.88
Decile 8	0.12	0.08	1.35	0.12	0.26	1.09	1.39	1.08	0.93	1.93	3.75	14.94	**53.65**	17.24	2.07
Decile 9	0.08	0.14	1.34	0.13	0.24	0.88	1.09	0.76	0.88	0.86	1.27	2.53	12.95	**63.96**	12.90
Decile 10	0.13	0.21	1.78	0.14	0.22	0.89	0.84	0.49	0.55	0.50	0.44	0.83	1.62	10.28	**81.06**

Notes: Deciles are computed across those with any earnings in the tax year
Benefits: Those with a record in the year of contributory benefits
Other: Those with no records but who have appeared in the data
Death: Recorded death in the tax year
Self Emp: Those with a self employment spell
Note that those who appear as either in Other, Self Emp or Benefits only do so if they do not have any earnings

Table 3: Decile Transition Matrix - Males 2004/05

State in 2004	State in 2005: Death	Abroad	Other	Benefits	Self Emp	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
Abroad	0.20	**93.31**	0.49	0.13	0.23	2.43	1.38	0.45	0.31	0.19	0.15	0.16	0.08	0.20	0.29
Other	0.68	0.16	**77.90**	0.94	0.75	6.83	3.65	1.69	1.12	1.00	1.05	0.99	1.01	1.16	1.07
Benefits	0.49	0.15	18.03	**35.82**	2.10	30.88	6.81	2.89	1.21	0.57	0.32	0.32	0.21	0.09	0.11
Self Employed	0.24	0.07	0.80	0.20	**86.02**	6.49	3.20	1.13	0.49	0.36	0.28	0.22	0.16	0.13	0.21
Decile 1	0.46	0.53	13.73	3.10	7.57	**28.97**	22.79	10.67	4.89	2.48	1.81	1.35	0.78	0.59	0.29
Decile 2	0.27	0.38	7.26	1.24	3.40	9.47	**32.96**	25.53	8.26	4.24	2.76	1.69	1.18	0.78	0.58
Decile 3	0.13	0.16	4.81	0.65	1.93	4.53	8.43	**34.01**	29.70	7.85	3.68	1.85	1.02	0.68	0.58
Decile 4	0.22	0.13	3.50	0.25	0.86	2.44	4.25	7.57	**39.76**	29.97	6.97	2.07	1.18	0.55	0.29
Decile 5	0.17	0.12	3.31	0.14	0.69	2.01	2.65	4.48	6.98	**42.26**	28.28	5.96	1.81	0.76	0.38
Decile 6	0.18	0.05	3.55	0.19	0.53	1.35	2.11	2.77	2.83	7.41	**45.16**	27.35	4.89	1.21	0.43
Decile 7	0.13	0.06	3.21	0.14	0.47	1.09	1.86	1.95	1.63	2.12	7.85	**49.25**	26.11	3.40	0.73
Decile 8	0.11	0.07	3.29	0.04	0.34	0.75	1.22	1.33	1.32	1.21	2.05	8.96	**55.84**	21.49	1.98
Decile 9	0.09	0.13	3.39	0.11	0.29	0.70	1.10	1.08	0.91	1.14	1.03	1.97	7.95	**65.59**	14.52
Decile 10	0.11	0.19	4.06	0.11	0.57	0.57	1.03	0.77	0.49	0.53	0.56	0.83	1.23	6.72	**82.23**

Notes: Deciles are computed across those with any earnings in the tax year
Benefits: Those with a record in the year of contributory benefits
Other: Those with no records but who have appeared in the data
Death: Recorded death in the tax year
Self Emp: Those with a self employment spell
Note that those who appear as either in Other, Self Emp or Benefits only do so if they do not have any earnings

Table 4: Decile Transition Matrix - Females 1979/80

State in 1979	State in 1980: Death	Abroad	Other	Benefits	Self Emp	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
Abroad	0.01	**98.70**	0.17	0.16	0.03	0.24	0.20	0.13	0.05	0.06	0.08	0.04	0.03	0.04	0.05
Other	0.00	0.12	**85.72**	1.91	0.32	4.23	2.65	1.41	0.84	0.75	0.60	0.41	0.34	0.35	0.36
Benefits	0.03	0.42	34.05	**52.23**	0.26	4.56	2.34	1.22	1.17	0.99	0.81	0.52	0.47	0.62	0.31
Self Employed	0.00	0.19	12.43	3.39	**73.82**	3.20	1.51	0.94	1.51	1.32	0.38	0.19	0.38	0.56	0.19
Decile 1	0.01	0.90	35.03	6.11	0.38	**29.59**	11.83	6.10	3.73	2.41	1.64	1.10	0.62	0.36	0.17
Decile 2	0.00	0.48	17.38	4.36	0.31	13.98	**36.53**	12.98	5.50	3.33	2.11	1.31	0.87	0.48	0.38
Decile 3	0.00	0.25	8.70	3.31	0.19	8.06	14.93	**41.14**	12.97	4.65	2.64	1.78	0.83	0.36	0.19
Decile 4	0.03	0.19	6.13	2.80	0.16	5.54	5.91	15.60	**42.32**	12.66	4.21	2.19	0.98	0.96	0.32
Decile 5	0.00	0.15	5.19	2.85	0.04	4.02	3.94	4.91	15.91	**40.91**	13.26	4.52	2.38	1.34	0.60
Decile 6	0.03	0.09	3.71	1.98	0.06	3.34	2.96	2.87	4.78	17.09	**39.66**	15.57	4.87	2.37	0.63
Decile 7	0.01	0.06	2.88	1.25	0.01	2.58	2.02	2.43	2.73	4.44	18.25	**40.60**	17.82	3.95	0.96
Decile 8	0.01	0.15	2.74	1.12	0.06	1.82	1.89	1.53	2.13	2.58	4.47	19.21	**42.52**	17.77	2.01
Decile 9	0.01	0.04	2.76	0.86	0.01	1.29	1.18	1.22	1.39	1.94	2.15	3.61	16.35	**53.87**	13.31
Decile 10	0.00	0.06	2.64	0.48	0.06	0.86	0.60	0.58	0.67	1.22	1.69	1.28	2.22	10.66	**76.99**

Notes: Deciles are computed across those with any earnings in the tax year
Benefits: Those with a record in the year of contributory benefits
Other: Those with no records but who have appeared in the data
Death: Recorded death in the tax year
Self Emp: Those with a self employment spell
Note that those who appear as either in Other, Self Emp or Benefits only do so if they do not have any earnings

Table 5: Decile Transition Matrix - Females 1997/98

State in 1997	State in 1998: Death	Abroad	Other	Benefits	Self Emp	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
Abroad	0.01	**97.88**	0.42	0.12	0.01	0.55	0.31	0.19	0.10	0.09	0.06	0.06	0.04	0.04	0.09
Other	0.21	0.14	**83.03**	1.66	0.46	5.75	3.04	1.56	0.91	0.77	0.68	0.49	0.45	0.39	0.44
Benefits	0.19	0.29	24.14	**57.51**	0.50	7.92	3.76	2.02	1.30	0.87	0.56	0.37	0.29	0.14	0.14
Self Employed	0.06	0.06	3.00	0.36	**86.43**	4.47	2.13	0.89	0.67	0.49	0.42	0.23	0.15	0.17	0.48
Decile 1	0.14	0.61	25.02	3.50	2.34	**34.88**	15.56	7.11	4.13	2.56	1.70	0.94	0.79	0.48	0.24
Decile 2	0.14	0.36	10.71	1.77	1.09	13.86	**40.58**	15.53	6.86	3.65	2.42	1.39	1.89	0.42	0.32
Decile 3	0.07	0.22	5.47	0.85	0.48	6.77	13.98	**44.14**	15.38	5.84	3.04	1.58	1.11	0.56	0.51
Decile 4	0.07	0.12	3.58	0.55	0.35	3.78	5.34	14.90	**46.11**	15.12	5.03	2.34	1.50	0.82	0.39
Decile 5	0.08	0.14	2.49	0.43	0.30	2.37	3.21	4.77	14.32	**45.72**	16.48	4.94	3.25	1.02	0.48
Decile 6	0.09	0.15	1.89	0.30	0.21	1.89	2.30	2.59	4.42	14.48	**46.72**	17.05	5.17	1.96	0.78
Decile 7	0.07	0.02	1.36	0.18	0.13	1.37	1.31	1.63	2.35	3.96	14.79	**51.33**	16.97	3.59	0.95
Decile 8	0.08	0.04	1.45	0.20	0.16	0.97	0.93	1.10	1.25	2.30	3.61	13.69	**54.37**	17.32	2.51
Decile 9	0.03	0.10	1.13	0.13	0.11	0.65	0.69	0.77	0.84	1.41	1.61	3.17	12.42	**63.17**	13.75
Decile 10	0.09	0.04	1.24	0.09	0.22	0.33	0.58	0.43	0.56	0.64	0.76	1.25	2.04	10.92	**80.79**

Notes: Deciles are computed across those with any earnings in the tax year
Benefits: Those with a record in the year of contributory benefits
Other: Those with no records but who have appeared in the data
Death: Recorded death in the tax year
Self Emp: Those with a self employment spell
Note that those who appear as either in Other, Self Emp or Benefits only do so if they do not have any earnings

Table 6: Decile Transition Matrix - Females 2004/05

State in 2004	State in 2005: Death	Abroad	Other	Benefits	Self Emp	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
Abroad	0.09	**92.35**	1.15	0.19	0.09	2.15	1.36	0.76	0.55	0.36	0.26	0.17	0.15	0.17	0.19
Other	0.26	0.15	**80.69**	1.04	0.58	6.31	3.23	1.62	1.14	1.01	0.76	0.73	0.73	0.70	1.05
Benefits	0.25	0.11	15.86	**59.57**	0.55	12.77	6.49	1.72	1.10	0.50	0.37	0.28	0.23	0.14	0.07
Self Employed	0.10	0.13	2.35	0.28	**84.46**	5.64	3.09	1.59	0.78	0.31	0.38	0.31	0.18	0.23	0.18
Decile 1	0.16	0.62	22.20	2.31	3.26	**32.80**	17.50	8.13	4.43	3.30	1.87	1.26	1.16	0.64	0.37
Decile 2	0.10	0.33	9.79	1.04	1.55	11.81	**40.30**	19.40	6.40	3.77	2.30	1.41	1.03	0.57	0.21
Decile 3	0.09	0.25	6.31	0.47	0.80	6.00	9.73	**43.47**	19.55	6.61	3.15	1.64	0.90	0.70	0.32
Decile 4	0.12	0.13	5.01	0.26	0.44	4.19	5.15	9.74	**43.95**	19.32	5.93	2.95	1.59	0.82	0.40
Decile 5	0.08	0.06	4.44	0.15	0.31	2.42	3.27	4.32	10.66	**44.09**	20.32	5.41	2.90	1.20	0.37
Decile 6	0.08	0.09	4.23	0.10	0.27	1.87	2.30	2.66	4.31	10.15	**46.04**	20.47	5.25	1.63	0.56
Decile 7	0.10	0.06	4.04	0.07	0.26	1.62	1.38	1.76	2.46	3.75	10.42	**50.49**	19.42	3.40	0.78
Decile 8	0.01	0.05	4.06	0.05	0.25	1.06	1.18	1.05	1.77	1.99	3.43	9.76	**55.11**	18.48	1.77
Decile 9	0.06	0.12	3.57	0.01	0.20	0.78	0.78	0.73	0.93	1.30	1.74	2.57	9.03	**64.38**	13.79
Decile 10	0.05	0.09	3.94	0.05	0.34	0.61	0.59	0.40	0.39	0.57	1.00	1.44	2.09	7.98	**80.47**

Notes: Deciles are computed across those with any earnings in the tax year
Benefits: Those with a record in the year of contributory benefits
Other: Those with no records but who have appeared in the data
Death: Recorded death in the tax year
Self Emp: Those with a self employment spell
Note that those who appear as either in Other, Self Emp or Benefits only do so if they do not have any earnings