Income Inequality: A Tale of Two Cycles?

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Abstract

Building on previous work, this paper documents the changes in income inequality that have occurred over the past 20 years, right up until the late 1990s. In particular, we are interested in whether or not the path of inequality in the most recent economic cycle differed from that observed in the 1980s. The robustness of the results is investigated using innovative statistical techniques, in an attempt to identify whether or not the observed changes represent real increases or decreases in inequality or whether they can be attributed simply to sampling variation between years. Finally, some preliminary results are presented which attempt to identify some of the reasons underlying the observed trends in income inequality, with a particular focus on the role of the labour market.

JEL classification: D31.

I. INTRODUCTION

The publication of *For Richer, for Poorer* (Goodman and Webb, 1994) provided, for the first time, a long time-series of consistent evidence on trends in income inequality in the UK. It provided information for the entire 31-year period 1961–91, documenting the huge growth in income inequality that occurred during the boom years of the 1980s and pushing income inequality to the forefront of public debate. Between 1979 and 1991, the richest groups saw their incomes grow substantially, while the incomes of the poorest groups hardly changed at all.

More recent evidence (for example, Goodman, Johnson and Webb (1997) and Hills (1999)) has suggested that this trend was checked in the early 1990s, with the growth in inequality levelling off in the first four years of this decade but still remaining at an exceptionally high level after the massive increases of the 1980s. However, until now, it has not been possible to determine whether or not this heralded the start of a period of falling inequality, or whether the relative stability in the years of recession in the early 1990s was just a temporary blip before a resurgence of growth as the economy recovered.

In this article, we use the latest available data to investigate the behaviour of income inequality in the most recent economic cycle, and compare this with what happened in the 1980s. We also use statistical techniques that permit an evaluation of the extent to which observed changes in inequality represent real changes and not just random sampling error. Finally, we provide some preliminary evidence on the underlying reasons for the observed trends in inequality witnessed in the 1990s, in particular why the effects of the most recent economic cycle might have differed from those of the last one.

II. DATA AND METHODS

Previous work on income inequality in the UK has generally been based on data from the Family Expenditure Survey (FES), an annual survey of around 7,000 households. The latest available data relate to the financial year 1997–98,[1] which enables us to update previous evidence. Also now available are data from a new survey — the Family Resources Survey (FRS) — which has a much larger sample, of around 25,000 households, and was first conducted in 1993–94. Both the FES and the FRS contain detailed information on family income which we use to derive a measure of current disposable household income, adjusted to reflect household size.[2] The methodology for deriving the income figures used in this study is based on that used by the Department of Social Security in its annual Households Below Average Income series (DSS, 1999).

The much larger sample size contained in the FRS means that this survey should be a far more reliable source of data, as it should more closely approximate the actual population distribution of incomes. In order to ensure that we are using the best available data, the results presented are based on the FES up to 1993–94 and the FRS from the financial year 1994–95, the first year for which we have detailed and reliable income data from the new survey. The information collected on income and the methodology employed to derive our measure of household income are almost identical in the two surveys, so that we

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[1]Up until 1993, the FES was collected annually over the calendar year rather than the financial year.

[2]Adjustments are also made to account for differential response rates and misreporting of incomes amongst the very rich.

FIGURE 1

Comparing the Calculated Gini Coefficients from the FES and FRS
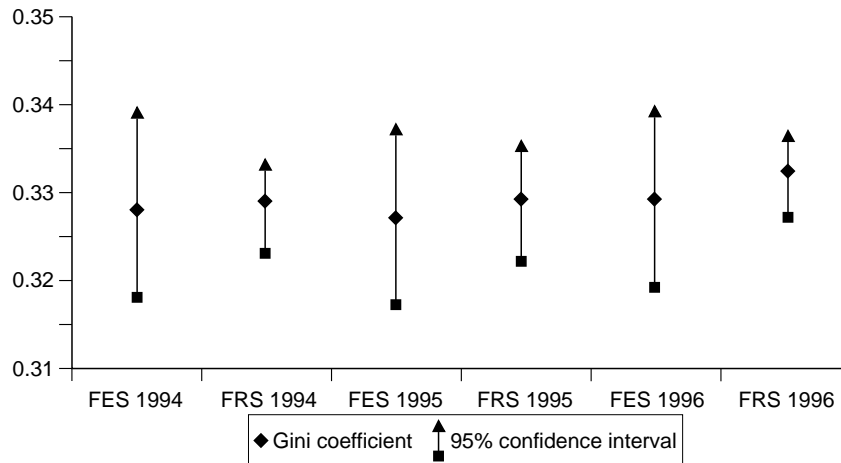
can be confident that switching between the two surveys does not generate significant inconsistencies in the income series.[3] Figure 1 demonstrates the continuity between the datasets by comparing estimates of one particular measure of income inequality — the Gini coefficient — for each of three years where data from both sources are available. It shows that, in every case, the 95 per cent confidence interval (see Section IV) calculated for the FRS lies entirely within that for the FES, suggesting that no significant discontinuity is implied. This also underlines the greater degree of accuracy possible with the larger survey.

The measure of income used for most of the analysis that follows is based on income from all sources, gross of housing costs. However, this might not be the most appropriate reflection of living standards for some households. If housing is a necessity and households have little choice over the level of their housing expenditure (this is particularly true for tenants of low-cost social housing), then income *after* housing costs (rents, mortgage payments, etc.) have been deducted (AHC income) might be deemed the most appropriate measure. Conversely, for an increasing number of households, the level of expenditure on housing is a matter of choice, so that higher housing expenditure might not imply a lower standard of living. In this case, income *before* housing costs have been deducted (BHC income) might be the most appropriate measure. Clearly, then, the choice

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[3]The FRS does not include Northern Ireland households; therefore we have excluded Northern Ireland from our FES sample for the purpose of this study.

will depend on individual circumstances.[4] From Figure 2 below, it is apparent that income inequality based on both measures followed very similar paths over the period under consideration, and therefore we restrict our more detailed discussion to just one measure: income before the deduction of housing costs.

III. WHAT HAS HAPPENED TO INEQUALITY IN THE 1990S?

As we already know from previous research (Goodman and Webb, 1994; Goodman, Johnson and Webb, 1997), a period of relatively stable income inequality between 1961 and the early 1970s came to an end in the middle of the 1970s when inequality began to fall significantly. From 1977, however, this trend of declining inequality was abruptly reversed as the gap between the rich and the poor began to widen, marking the start of a period of more than a decade during which inequality rose on an unprecedented scale.

The huge growth in inequality that took place in the post-1979 era is illustrated in Figure 2, which charts the changes in one of the most commonly used summary measures of income inequality, the Gini coefficient.[5] Like most inequality measures, the Gini coefficient measures inequality relative to two bounds. It takes a maximum value of one in a situation of 'complete inequality', where all income would be given to a single person in the population. It takes a minimum value of zero if income is equally distributed across the population, with all individuals receiving the same income.

As discussed in the previous section, the choice of the most appropriate income measure depends very much on individual circumstances. Therefore we present results in Figure 2 on the basis of both BHC and AHC incomes. It is clear that, while AHC income inequality is always above inequality based on BHC income (and the two series have diverged since 1979), the general trends over the period are very similar. The graph shows that the BHC Gini increased from 0.248 in 1979 to 0.338 in 1997–98. Over the same period, the AHC Gini also increased, from 0.257 to 0.378.

This general rise in inequality has not maintained a uniform pace over the entire period, however. In the first six years considered here (1979–84), inequality rose only modestly, coinciding with a period of rapidly increasing unemployment. During the following period (1984–90), as the economy recovered, inequality rose very quickly. The increase over these seven years constitutes the large majority of the total increase in BHC income inequality that occurred over the entire period shown in Figure 2.

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[4]The relative merits of BHC and AHC income as measures of living standards are discussed in detail in Johnson and Webb (1992).

[5]Throughout, figures are based on FES calendar years until 1993, when the time period covered by the data switches to a financial year basis (i.e. 1993 relates to financial year 1993–94, etc.)

FIGURE 2

Income Inequality in Britain
(showing 95 per cent confidence intervals for BHC income inequality)
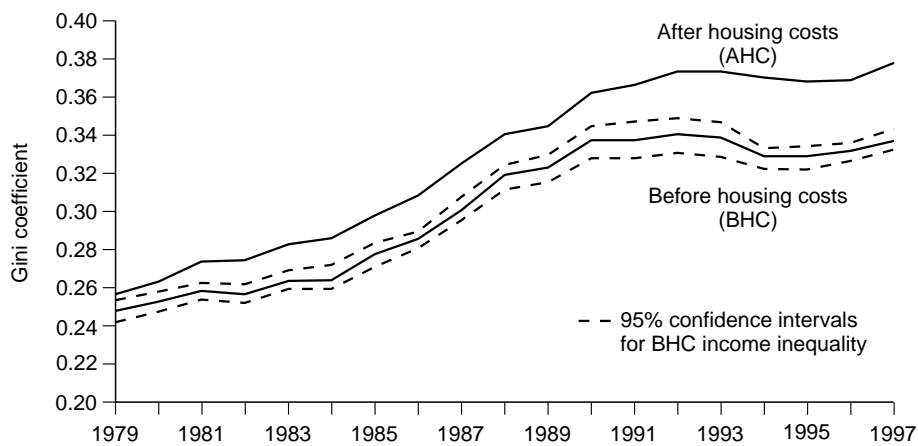
Note: Confidence intervals for AHC Gini were calculated but are not shown.

From 1990, as boom gave way to slump, the rise in inequality was checked, before going into reverse over the period 1993–94 to 1995–96 as the economy started to recover again. However, this slight fall in inequality is dwarfed by the increases that took place in the 1980s. In the most recent two years of economic growth — 1996–97 and 1997–98 — inequality seems to have started rising once again. AHC income inequality has reached a new post-1979 peak, and the BHC Gini is once again very close to its highest level of 1992.

IV. HOW RELIABLE ARE THESE RESULTS?

There are two important reasons why concern might be raised about how much the Gini coefficient really tells us about trends in income inequality. First, one might be worried that sampling variation in the annual survey being used might lead to important differences between the true population Gini coefficient and that calculated from the sample. This has the potentially serious implication that the resulting random variation in recorded Gini coefficients might obscure the true path that income inequality has taken. Of course, this could equally be a problem for any alternative inequality measure one might consider. Secondly, and perhaps more fundamentally, there might be concern over whether or not the Gini coefficient is the most appropriate measure for capturing what we conceive of as income inequality. In other words, a different inequality measure might tell a very different story.

1. Checking for Statistical Significance

There is a relatively straightforward solution to the first concern, which is to attach standard errors to the calculated Gini coefficients for each year. This enables us to see how much of the observed change in inequality we can be confident is not the product of random sampling variation. Accordingly, we employ 'bootstrapping' techniques, which enable the calculation of statistics for each of a series of random samples drawn from an original sample, the distributional properties of which are assumed to approximate the true population (see, for example, Davison and Hinkley (1997)). With the availability of powerful statistical packages, bootstrapping provides a comparatively simple means of obtaining statistical measures — such as standard errors — from a sampling distribution without the need to make restrictive assumptions about the underlying distribution. Figure 2 shows the 95 per cent confidence intervals produced by bootstrapping the BHC Gini coefficient for each year of data.[6] Such confidence intervals are so constructed that, for each relevant year, they should contain the true population Gini coefficient in 95 per cent of samples. If these confidence intervals do not overlap, then we can be sure that the observed change in inequality is statistically significant.[7]

Figure 2 illustrates that random variation is sufficiently problematic for us to be apprehensive about drawing conclusions about year-on-year changes in inequality based on the calculated BHC Gini coefficient. Indeed, it is only for the two years that saw the largest increases in inequality on this measure — 1987 and 1988 — that we can be sure that the increase represents a real rise in inequality (in the sense that the 95 per cent confidence intervals do not overlap). When we compare changes over periods of more than one year, however, the standard errors suggest that there are many more changes in the level of inequality that cannot be explained simply by variation introduced by the random sampling process. From the graph, it is very clear that the level of inequality increased significantly between 1979 and 1997–98. Further, the confidence intervals calculated from these standard errors are small enough to allow us to be confident not only that the increase was statistically significant, but also that we have a reasonable estimate of the scale of inequality growth over the period.

Statistically significant changes in inequality are also found over many shorter periods throughout most of the 1980s: by 1983, the Gini coefficient displayed a significant increase on its 1979 level; 1986 also shows a significant increase on 1983; 1987 and 1988 each reveal further big rises; and the 1990 level is significantly higher than the level in 1988. In very sharp contrast, the standard errors leave us very little room to say much about changes since 1990, even though the confidence intervals tend to be narrower due to the larger sample size

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[6]The calculation is based on 200 draws from each original annual sample, using the statistical package STATA.
[7]In fact, this is a slightly conservative approach — changes can be statistically significant even when individual confidence intervals overlap slightly.

of the FRS for each year after 1993–94. Not surprisingly, the stability of the Gini coefficient between 1990 and 1993–94 suggests no clearly significant change. More strikingly, however, despite the marked dip in inequality witnessed in 1994–95, the confidence intervals for the Gini coefficients of this year and the previous year do overlap. Indeed, we are left with only one clearly significant change in the eight years of data that we have for the 1990s — the increase between 1994–95 and 1997–98.

Although the 95 per cent confidence intervals for inequality in 1993–94 and 1994–95 overlap, Figure 2 provides suggestive evidence that inequality was genuinely falling. For example, each one of the three years from 1994–95 to 1996–97 has a BHC Gini of less than that for each one of the years from 1990 to 1993–94, making it less likely that the drop in 1994–95 is just an outlier. Comparing these results against those using the FES instead of the FRS after 1993–94 also confirms these findings, further reducing the likelihood that the fall in inequality in 1994–95 is purely due to chance.

Attaching confidence intervals to the AHC Gini coefficient produces very similar results. Several rises in inequality in the 1980s are again found to be significant. Although, as Figure 2 shows, AHC income inequality continued to increase two years after BHC inequality stopped rising, the confidence intervals for inequality of AHC income in 1990 and 1992 actually overlap. We find non-overlapping confidence intervals for the fall in inequality in 1994–95 and the subsequent increase in inequality to 1997–98.

2. Comparison with Other Measures of Inequality

The second concern with interpretation of the results based on the Gini coefficient is that the Gini might not be the most appropriate statistic to capture the notion of inequality that we wish to measure. There are many different summary statistics that measure inequality, all of which have different features. We do not provide extensive discussion of the relative merits of different inequality measures here.[8] However, it is important to note that different concepts of inequality demand different measures, and some features of the Gini will conflict with some basic ideas about inequality. For example, a particular feature of the Gini that might give rise to concern is that, in a certain sense, it is commonly regarded as giving a high weight to the distribution of incomes at the top end.

We can test whether it is this, or perhaps some other, particular feature of the Gini coefficient that dominates the results reported above by comparing trends over time in the Gini with trends in other inequality measures. Figure 3 compares the Gini with two other widely used summary measures of inequality: half the

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[8]The reader is referred to Champernowne and Cowell (1998, Ch. 5) and Goodman, Johnson and Webb (1997, Ch. 1), for example, for a fuller discussion.

FIGURE 3

Trends in the BHC Gini, COV and '90/10' Ratio Compared
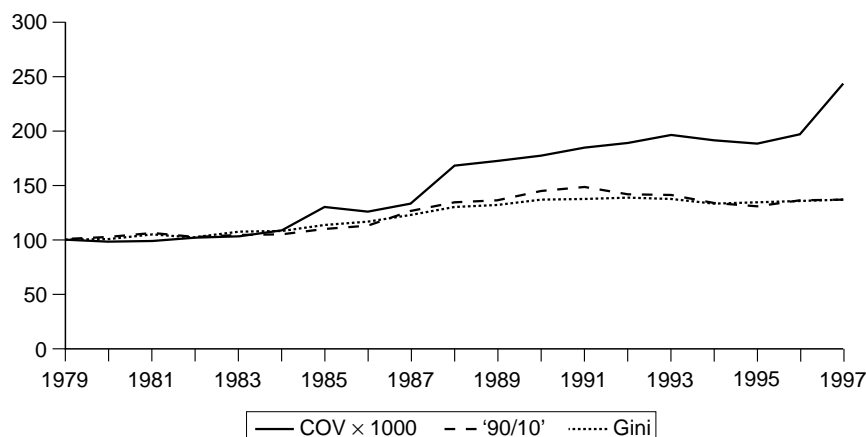
squared coefficient of variation and the '90/10' ratio. While this is far from an exhaustive list of alternative inequality measures, these comparisons should suffice to test whether our overall picture of inequality over time is being driven by some peculiarity in our particular choice of inequality measure.

Gini vs. Half the Squared Coefficient of Variation (COV)[9]

The COV measure is described in the appendix. As we will see below, one of the advantages of this particular inequality index is its decomposability property, which allows us to assess the contribution of different sources of income to overall inequality. However, a disadvantage is that it is quite sensitive to extreme values. From Figure 3, we can see that, over the period under consideration, the COV increases more than the Gini coefficient. A further difference is that there are more cases of especially big increases in single years, such as 1985, 1988 and 1997–98. (The particularly large increase in 1997–98 is related to changes at the very top of the income distribution, as discussed below.) But the basic story again remains unchanged: the COV's growth is concentrated between the mid-1980s and the start of the 1990s. A brief period of declining inequality follows, before inequality growth returns in the most recent period.

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[9]The income on which the calculation of COV is based differs slightly from the BHC definition: it is gross of certain payments, such as maintenance payments and council tax. This allows a more meaningful decomposition of inequality into different sources of income, which we utilise in Section V. Following the methodology of Goodman, Johnson and Webb (1997), we have excluded those with zero incomes from the analysis. This does not affect the general pattern of the results.

Gini vs. the '90/10' Ratio

The '90/10' ratio measures the ratio of the income of the 90th percentile of the total distribution to that of the 10th percentile. Figure 3 shows that this measure of BHC income inequality has increased by a very similar proportion to the Gini since 1979. This conceptually straightforward measure of income inequality ensures that the results are not dominated by the incomes of those at the very top end of the income distribution, in contrast to the COV measure in particular. The general story is once again broadly the same, although inequality measured by the '90/10' ratio is even more heavily concentrated in the late 1980s and the fall in inequality in the early 1990s is more substantial. Indeed, attaching standard errors to the '90/10' ratio, using bootstrapping methods in the same way as described above for the Gini, reveals that the decline in inequality in the early 1990s is clearly statistically significant on this measure.

One interesting difference between this measure of inequality and the other measures we have considered, which is evident in Figure 3, is that in 1997–98 the '90/10' ratio fails to increase; rather, it falls slightly (although this fall is not significant). The comparison is particularly stark against the COV measure of inequality, which showed the largest single annual increase in income inequality over the entire period for this most recent year. The reason for the difference is primarily that the 1997–98 data show increases in income being concentrated amongst the very richest groups. At the 99th percentile, for example, the real increase in income in 1997–98 is more than double the average, while most other individuals experience below-average increases in income. The resultant inequality increase, as measured by the Gini and the COV, is compounded by real falls in income at the bottom end (at the 5th percentile, for example). But the '90/10' ratio is relatively insensitive to such polarisation at the extremes, which is a feature of the most recent year of data.

V. WHAT HAS DRIVEN THESE TRENDS IN INEQUALITY?

Making use of bootstrapping techniques to estimate confidence intervals, and comparing a variety of alternative inequality measures, we have built on previous work and charted changes in inequality that occurred from 1979 up until the late 1990s. Comparing the two economic cycles of the 1980s and 1990s, after 1982, as the economy pulled out of recession, inequality began to rise quite quickly, but in the most recent cycle, the early years of recovery were characterised by stable or falling inequality, and this trend did not start to be reversed until 1996–97, well into the most recent period of economic growth. However, the differences between the two cycles in terms of the relationship between inequality and economic growth are not large enough — and the time-series is not long enough — to enable firm conclusions to be drawn in this respect. The basic story, nevertheless, is that inequality appears to have started to

edge up again in recent years, after a period of relative stability in the early 1990s that followed a decade of unprecedented inequality growth.

So, we know *what* happened, but the question now begging to be asked is *why*?

1. Have the Rich Got Richer or the Poor Got Poorer?

One interesting starting-point is to establish whether the observed trends are a product of a general widening of the income distribution, or whether they reflect a more specific reshaping, being driven by change in a particular part of the distribution relative to the rest.[10] We can use percentile ratios such as the '90/10' to determine whether or not there is a growing gulf between the top of the income distribution and the rest, as suggested in the previous section. The advantage of using this ratio rather than focusing on changes at more extreme parts of the distribution (for example, 99th or 5th percentile) is that the results are less likely to be driven by outliers generated by the high degree of uncertainty associated with year-on-year changes at these extremes.

The '90/10' ratio is the product of the '50/10' and the '90/50' ratios, which are plotted alongside one another in Figure 4, providing us with a graphical description of how the increase in the '90/10' ratio is being driven by the widening gulf between the richest and the rest of the population *vis-à-vis* the gap between the poorest and the rest. Over the entire period, it is evident that the two

FIGURE 4

**Decomposing the '90/10' Ratio:
Trends at the Bottom and the Top of the Income Distribution**

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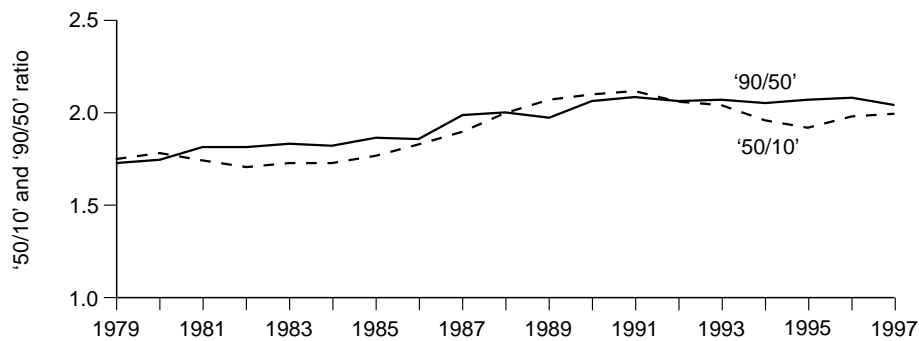
[10]Of course, the data on which these inequality measures are based come from cross-section surveys, and the compositions of the poorest and richest groups change over time. As a result, the interpretation of statements such as 'the poor have got poorer' must be tempered by the recognition that we are not necessarily comparing like with like.

ratios have both increased. It is also clear that they never diverge too much, although the '50/10' ratio has been slightly more variable, increasing faster in the late 1980s before falling back more heavily in the early 1990s. In contrast, the '90/50' ratio has increased at a fairly steady pace. In the periods when income inequality was growing at a relatively low rate, or even falling — the early 1980s and the early and mid-1990s — it appears that a closing of the gap between the poorest and the rest was responsible for checking the upward trend, perhaps as many of those who were on moderate wages moved into unemployment and because of higher benefit levels.

Overall, however, Figure 4 suggests that increasing income inequality over the two decades can, in general, be equally attributed both to an increased gap between the rich and those in the middle of the distribution and to an increased gap between the poorest and the middle.

2. The Contribution to Inequality of Different Income Sources

We have seen that there is some suggestion from the results presented that a slightly different pattern might be emerging in the relationship between income inequality and the latest economic cycle compared with what we have seen previously. The return of economic growth after the recession of the early 1980s was accompanied by rising inequality, while the initial recovery in the 1990s was accompanied by stable or falling inequality. While these differences are quite small, and the falls in the early 1990s were not found to be statistically significant, understanding them should help clarify whether the increases in inequality observed for 1996–97 and 1997–98 mark the start of another period of protracted increase. We now investigate some of the reasons why economic inequality has taken the particular path that it has done over the past two decades, with respect to patterns of change in the different sources of household income.

In order to investigate the changing contribution of different income sources to total inequality, we exploit the decomposability properties of one of the inequality measures already introduced in the previous section: half the squared coefficient of variation (see the appendix for a brief description).[11] Before we go on to present the results, attention should be paid to the fact that this particular measure of inequality displayed a slightly different pattern in the early 1990s from our other indices, rising until 1993–94 when our other inequality measures had already started to level off. This might have implications for the interpretation of some of the results presented below, which attempt to identify the underlying reasons for any difference in the behaviour of inequality between the most recent economic cycle and the previous one.

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[11]Following the methodology developed by Shorrocks (1982). For examples of previous applications of the decomposability properties of this inequality measure, see Jenkins (1995) and Goodman, Johnson and Webb (1997).

FIGURE 5

Decomposing Income Inequality: The Sources of Income
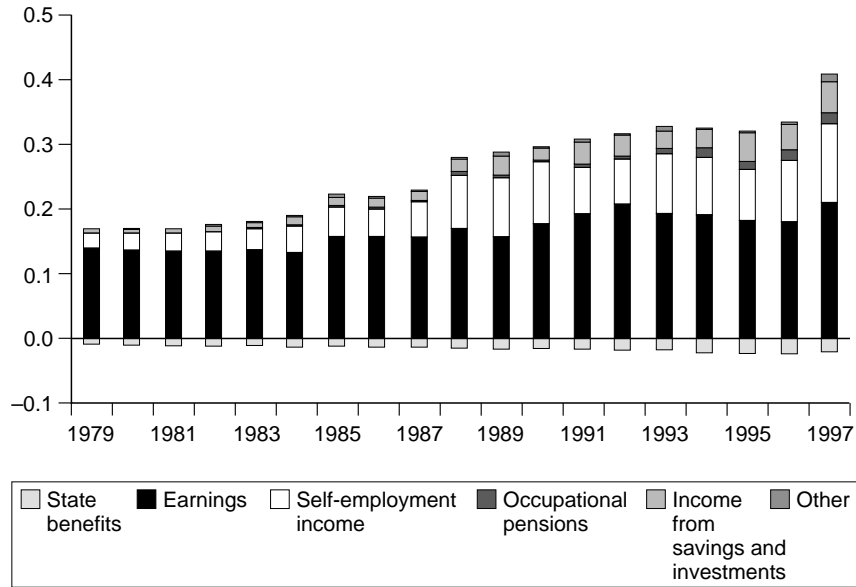
Notes: The order of the categories in the key corresponds to their order from the bottom to the top of the bars in the figure. Income from savings and investments includes income from personal pensions.

The particular measure of household income used in the previous section is composed of six different sources of income: earnings from employment, self-employment income, occupational pensions, income from savings and investments (including personal pensions), state benefits and a catch-all 'other' category (comprising miscellaneous income sources such as private health benefits, student loans and maintenance payments). Figure 5 shows how the evolving level of total income inequality since 1979 has been generated by different disequalising contributions from these different sources of total household income. The figure has three especially striking features. First, overall inequality has increased substantially, as we saw in the previous section. Second, all of the income sources shown (with the sole exception of state benefits, which tend to promote equality) now make a larger absolute contribution to overall inequality than at the start of the period. Finally, the sources of income inequality are now more diverse than previously: in 1979, the great majority of income inequality reflected inequality of earnings, but by the late 1990s, the combined effect of other income sources has grown to be almost as important.

Figure 6 develops this last point by plotting the changing shares of income inequality due to the four main sources of income: earnings from employment, self-employment income, occupational pensions and income from savings and

investments (including income from personal pensions). The share of inequality attributable to earnings falls from 87 per cent to 54 per cent over the period, while the combined contribution of the other three main sources has grown by an offsetting amount. The share of inequality that is due to self-employment income has more than doubled, while the contribution of investment income has increased almost fourfold. At the same time, occupational pensions now account for 4 per cent of total income inequality, compared with virtually zero at the start of the period.[12]

We will not dwell here on the reasons underlying the growing contribution of these sources of income to total inequality. Suffice it to say that there are a number of explanations for why income inequality from a particular source might become a more important component of total income inequality,[13] and the patterns we observe in the growing contribution of self-employment income, pensions and investment income can be traced back to at least one of these explanations. First, the distribution of the income source might become more unequal. Second, the positive correlation between the income source and total income might increase, so that, in general, high-income households receive more income from that particular source than do low-income households. Third, the share of the income source in total income might increase, generating a larger contribution to total inequality.[14]

FIGURE 6

Changing Shares of Income Source Inequality in the Total
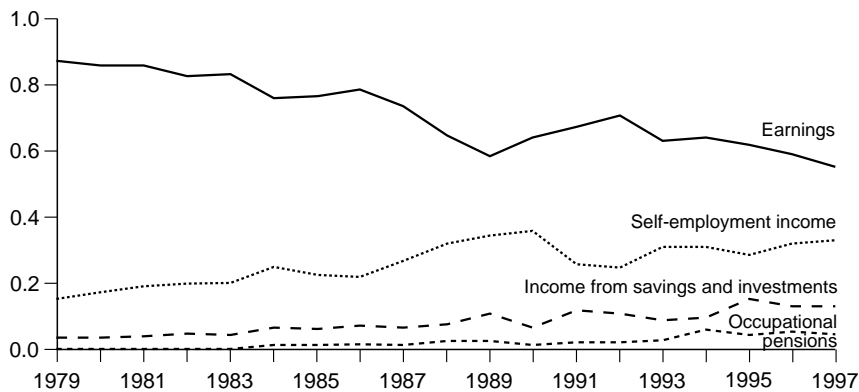
Note: Income from savings and investments includes income from personal pensions.

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[12]See Johnson and Stears (1995) for a detailed discussion of trends in pensioner income inequality.

[13]The appendix describes how the COV measure of inequality can be decomposed in order to identify the contribution of each of these different explanations.

[14]The reader is referred to Goodman, Johnson and Webb (1997, Ch. 5) for a detailed discussion of these various trends.

Even though earnings are less important than they once were in driving total income inequality, it remains true that income from the labour market — including both employment and self-employment — is still responsible for the great bulk of income inequality in Britain: some 86 per cent in 1997–98. Further, pension income and a large proportion of investment income — which have become more important contributors to overall inequality — are both essentially deferred earnings.

The following section considers in some detail how the developing features of the British labour market have underpinned the general increase in inequality since 1979, and offers some explanations for the difference between trends in inequality in the current cycle compared with the last.

VI. INEQUALITY AND THE LABOUR MARKET

1. Self-Employment

Figures 5 and 6 have shown that inequality due to self-employment income has increased substantially since 1979. Further decomposition reveals that all three potential explanations for the growing contribution of this particular income source to total inequality, described in the previous section, have been important contributory factors. That is, income from self-employment has become increasingly unequally distributed, it has become more highly correlated with the level of total income and it now accounts for a much larger share of the total. Figure 7 charts how self-employment income has grown in importance as a share of total income over the period, from a low of just over 6 per cent in 1979 to a peak of 12 per cent in 1990, falling to 8 per cent in 1994–95 but recovering slightly to 10 per cent by the end of the period.

Self-employment income is more unequally distributed amongst the self-employed than employment income is amongst earners. In 1997–98, for example, the Gini coefficient for employment income was 0.357, compared with 0.710 for self-employment income,[15] and in 1979 the ratio between the Gini for employment and self-employment earnings was again almost exactly two. There are several institutional reasons for this much higher dispersion in earnings from self-employment than in earnings from employment. First, previous research (Gosling and Machin, 1995) has shown that, in the UK, the presence of unions tends to depress wage inequality for employees,[16] but this will have had little impact on the wages of self-employed workers. A related feature is the regulation of wages. Up until 1993, the Wages Councils placed a minimum wage floor for employees in many industries, but no such floor existed for the self-

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[15]For those with positive earnings from employment and self-employment respectively.

[16]Similar results have also been shown for the US (for example, Freeman (1993) and Card (1991)).

FIGURE 7

Self-Employment Income as a Share of the Total
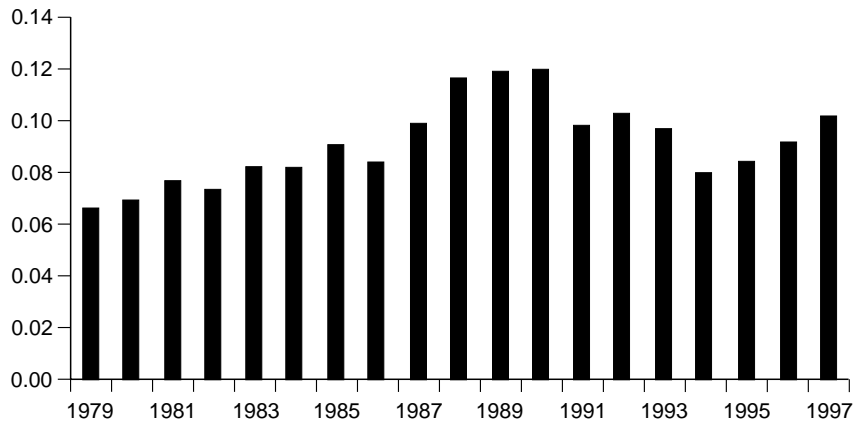
employed. Third, non-monetary rewards earned by some of the most productive employees might render lower wages more acceptable amongst this group of workers. The fact that such rewards are generally unavailable to highly productive self-employed workers might act to move the supply curve of these individuals, leading to a higher equilibrium wage and resulting in greater wage inequality amongst the self-employed than amongst employees.

Finally, the irregularity of payment of self-employed earnings will tend to make income from self-employment appear more dispersed over short time periods than the income of employees. This generates an additional, relatively short-term, temporal dimension in self-employment income inequality. Of course, this last point is related to one of the major reasons for the much higher degree of inequality among the self-employed — that is, the high risk associated with entrepreneurial ventures. While the self-employed are exposed to much higher potential returns from their business activity, in the form of returns to both labour *and* capital investment, the associated risk increases the volatility of earnings from these activities.

For all of these reasons, one might expect any growth in the numbers of the self-employed to generate an increase in total income inequality. Indeed, periods of growth in the share of self-employment earnings in total income illustrated in Figure 7 can be linked to periods of rapidly rising income inequality, particularly during the boom years of the late 1980s. Conversely, during the downturn of the early 1990s, the growth in self-employment was temporarily checked, corresponding to a period of relative stability in income inequality. The higher risk of bankruptcy associated with the latest recession probably revised expectations downwards, thus delaying the subsequent growth in the number of

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self-employed workers until well into the recovery years of the mid-1990s. But in the latest two years for which we have data, the returning growth of self-employment income as a share of the total is again linked with rising inequality. Any continuation of this trend will increase the likelihood of further growth in inequality in future years.

2. Income from Employment

Earnings from employment constituted the overwhelming majority of total household income in 1979 (74 per cent) and, while this source of income has become relatively less important, it remains easily the largest single source of income today (comprising 60 per cent of the total). Further, as Figure 6 illustrates, employment earnings still account for over half of total income inequality in Britain. Consequently, developments in the distribution of this source of income will play an important role in shaping overall inequality. Given that wages and salaries correlate with total household income to a much higher degree than any other income source, changes here are particularly likely to affect the better-off who, as we have seen, tend to dominate the overall results for income inequality on most measures. Moreover, earnings are especially important if one is concerned about the prospects of inequality in the longer run, as changes will tend to feed through into inequality in other income sources — notably private pensions and other investment income — in the future.

We will examine the role of employment earnings in guiding the path of total income inequality first by considering the importance of the general growth in average earnings and second by turning our attention to the contribution of trends in earnings dispersion.
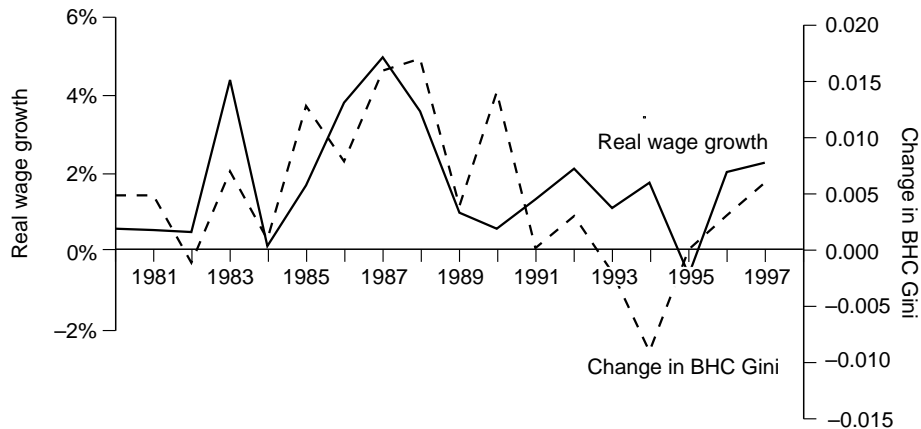
Wage Growth

Figure 8 shows how changing income inequality has related to average real wage growth during the last two economic cycles.[17] It is evident that, in general, during times of rapid real wage growth, inequality tends to rise. One of the major reasons that increases in real average wages tend to promote inequality is that the poorest households are the most likely to contain non-working individuals (owing to retirement, sickness, unemployment, etc.), so that earnings make up a much smaller fraction of total income for these groups than they do for the rest of the population.

The most important (albeit rather small) differences in the pattern of inequality between the two economic cycles can be largely explained by differential wage growth in the two periods. The recovery in the 1980s was characterised by generally accelerating wage growth in each of the years from

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[17]Real wage growth is calculated using the average earnings index deflated by the retail price index.

FIGURE 8

Real Wage Growth and Changing Inequality Since 1979

1984 to 1988. These were the boom years during which inequality increased the most, as we have seen in Figure 2. In stark contrast, in the current cycle, real wage growth was very slow to return. Wage growth lagged GDP growth for several years. This implies that the extra growth generated in the economy was not 'spent' on (inequality-promoting) increases in wages, but directed towards, for example, the equality-promoting creation of moderately paid jobs or perhaps meeting the cost of increased retained profits or higher taxes.

Figure 8 also suggests that the relationship between real wage growth and increased inequality might be weakening. This is not surprising, given the growing importance of income sources other than employment earnings amongst the very richest groups, in the form of self-employment income, private pensions and earnings from other investments.

Wage Dispersion

The influence of employment income on total inequality depends, of course, not only on the average *level* of wages but also on the *distribution* of wages across the population.[18] Figure 9 illustrates trends in the '90/10' ratio of hourly wages over time, comparing these with changes in total income inequality (on the basis of this same measure).

The first notable feature of Figure 9 is that wage dispersion has risen relentlessly over the period, and by a very similar proportion to total household

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[18]Of course, wage growth and wage dispersion are not unrelated. For example, as low wages often tend to be nominally fixed, any period of accelerated average wage growth will tend to exacerbate wage inequality.

FIGURE 9

The '90/10' Ratios of Gross Hourly Wages and Total Net Income Compared
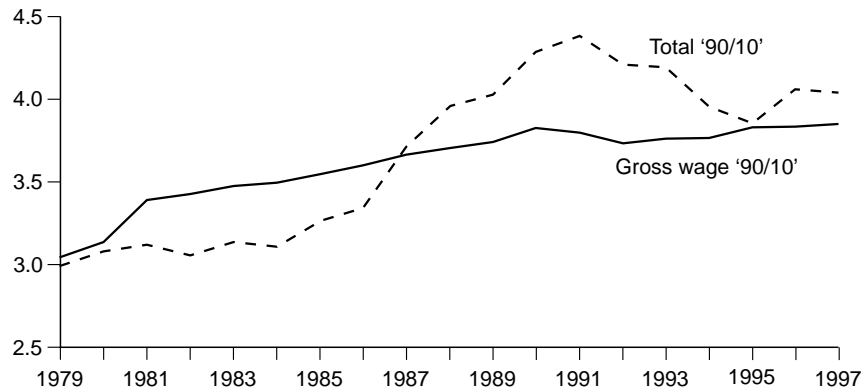
Note: All figures relate to average gross hourly earnings reported in the FES.

income inequality, suggesting an important role for wage inequality in shaping overall inequality trends over the longer term. The relationship between the two ratios is less clear over shorter periods. For example, during the mid- to late 1980s, earnings dispersion grew at a remarkably steady pace, at a time of rapid growth in total income inequality. Similarly, changes in the distribution of wages in the 1990s were less dramatic than changes in overall inequality.

Figure 9 does, however, point to one potential explanation for the slight difference we observe in the path of inequality between the two economic cycles — that is, the fact that the recession of the 1980s failed to check inequality growth, but the downturn of 1990–92 apparently succeeded in doing this. The recession of the early 1980s is shown to be concurrent with the continuation of increasing wage dispersion (arguably, at least partly because the market was still responding to the relaxation of the egalitarian incomes policies of 1972 to 1977), but the recession of the 1990s, in contrast, coincided with a temporary decline in wage inequality. Exactly why wage dispersion fell over this period is unclear,[19] but these differences do help to provide an explanation for the fall in total inequality during the slowdown of the early 1990s, when such a fall was not observed during the corresponding period in the 1980s.

The relationship between earnings dispersion and overall income inequality is very complex, depending on many short-run cyclical factors (such as the number of and characteristics of the unemployed, which we discuss briefly below) as well as on the correlation between partners' earnings within couples, participation rates, hours worked and changes in the tax and benefit system.

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[19]It is likely to be linked to the pattern of average wage growth discussed above and/or to trends in unemployment discussed below.

However, over the longer term, increased wage inequality will tend to put upward pressure on total inequality, as Figure 9 well illustrates.

3. Unemployment

Trends in the numbers and earnings of the self-employed, together with developments in wage growth and inequality amongst those in employment, have been shown to play an important role in the course of overall income inequality. Of course, any description of the role of the labour market in generating inequalities would be incomplete without a discussion of the pattern of unemployment.

Growing unemployment increases the level of inequality because more people are deprived of earning a wage and therefore see their income levels fall as they become reliant on state benefits.[20] However, the composition of those who become unemployed also has important implications for the path of inequality (see Gregg and Wadsworth (1996) for an interesting discussion). We can see this from looking at trends in unemployment and inequality over the last two economic cycles.

Rising unemployment in the early 1980s was arguably inequality-promoting as it overwhelmingly moved relatively low-paid, low-skilled male workers from the lower-middle of the income distribution to the bottom. The fall in unemployment in the late 1980s did not really reverse this trend, at least partly because many of these men moved onto sickness benefit and did not return to the work-force (Disney and Webb, 1991). Instead, many of the newly created jobs will have gone to unemployed young single people living with their parents, previously unemployed recent graduates and second earners. Consequently, falling unemployment will have improved the position of people who might already be relatively high up the income distribution. In this case, falling unemployment will not depress inequality; rather, it might exacerbate it.

Rising unemployment in the early 1990s appears to have had a different effect on inequality from the one it had in the previous economic downturn, as experience of unemployment was felt much further up the income distribution (particularly with the widespread experience of bankruptcy among the self-employed). According to the Labour Force Survey, in the mid-1980s, less than one-fifth of all recently unemployed people came from professional and intermediate occupations, while, by the mid-1990s, this proportion had risen to one-quarter. As such, the most recent period of growing unemployment might be argued to have had a small equality-promoting effect.

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[20]And these benefits are uprated in line with prices, not earnings.

VII. CONCLUSIONS

Evidence from the latest available data suggests that income inequality might be starting to rise again, after a period of relative stability in the first part of the 1990s. Further, there is some indication that the behaviour of inequality in the most recent economic cycle differed from that observed in the 1980s, in that inequality has been slower to pick up as the economy moved out of recession.

We have offered some explanations for the recent trends, focusing on changes at the top and the bottom of the income distribution and the role of different sources of income in explaining the path of total inequality, paying particular attention to the role of the labour market. However, this is necessarily an incomplete and very preliminary analysis of the forces underlying the trends in inequality in recent years. For example, we have not considered the role of tax and benefit policy, changing patterns of employment or the contribution of changing household composition and demographics.

The results presented here mark only the starting-point of a more detailed analysis of income inequality in the 1990s. With the availability of much larger and more reliable data sources, we hope to go further than previous work in untangling the complex interactions of the various driving forces. In particular, these much larger samples permit detailed investigation of income inequality both within and between different groups in the population. Ultimately, we hope to be able to paint a detailed picture of the potential future direction of income inequality as we move into the new millennium, and to assess the performance of the New Labour government in reducing this inequality.

APPENDIX: DECOMPOSING HALF THE SQUARED COEFFICIENT OF VARIATION (COV)

The COV inequality index is simply a measure of the variance normalised by the square of the mean:

$$I = \frac{\sigma^2}{2\bar{y}^2}.$$

The value of this particular inequality measure is its decomposability property, which allows the effect of each different source of income (earnings, investments, etc.) on total inequality to be identified. The contribution of each income source can be written as

$$I_k = \frac{1}{2}(C_k^A + C_k^B),$$

where

$$C_k^A = \frac{\sigma_k^2}{\bar{y}^2},$$

$$C_k^B = \frac{\sigma_k^2 + 2\operatorname{cov}(Y_k, Y - Y_k)}{\bar{y}^2},$$

σ_k is the variance within source k, Y_k is income from source k and Y is total income. The first term, C_k^A, is the coefficient of variation of each income source, k, reflecting the total inequality that would exist if all other sources of income were distributed equally. This term is always positive. The second term, C_k^B, however, can be negative (such as in the case of income from state benefits), representing as it does the change in overall inequality that would occur if this particular source of income were distributed equally.

For each income source, the COV can be derived as the product of four constituent parts:[21]

1. the correlation of the income source with total income;
2. the share of the source in total income;
3. the square root of the COV for the income source (within-source inequality);
4. the square root of the overall COV index.

This decomposition is particularly helpful in identifying the changing role of different income sources in shaping overall inequality (see Section V).

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[21]See, for example, Goodman, Johnson and Webb (1997).

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