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Changes in Poverty Rates during the Howard Era

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Abstract

This article considers changes in poverty rates under the Howard government. We also make three methodological contributions. We consider the statistical significance of the estimated changes in poverty. We propose a decomposition technique that reconciles the trends in absolute and relative poverty. We also use 'poverty profiles', which illustrate sensitivity to alternative poverty lines. We find decreases in absolute poverty and increases in relative poverty, both of which are statistically significant over a range of poverty lines. At a poverty line equal to half of the median income, the increase in relative poverty is statistically significant for all people and borders on significance for children.

* We acknowledge constructive comments from the Editor, Mark Wooden, and two referees.

1. Introduction

In March 1996, the Howard government took office, beginning almost 12 years of Liberal–National Party coalition rule. Howard himself described the policies enacted by his government as, '. . . a blend of economic liberalism . . . and social conservatism' and he expressed the belief that, 'In Western societies . . . two of the greatest contributors to poverty are joblessness and family breakdown' (Howard 2008).

An evaluation of the effect of Howard government policies, individually or as a whole, on the material well-being of the Australian population, or of specific groups, is a task well beyond the scope of this article. It is clear, however, that the four terms of coalition government coincided with a period of economic prosperity. Australia experienced consistently high rates of economic growth, low unemployment and low inflation. It is less clear how the most vulnerable members of society fared during that period. Economic prosperity at the aggregate level does not guarantee increased well-being for those at the bottom end of the income distribution. Economic liberalism, in the form of flexible labour markets,[1] might reduce joblessness but, at the same time, create job insecurity among people in precarious employment, leading to stress and increased family breakdown. Socially conservative policies that promote the traditional family might reduce the incentives for married women with children to work and thereby reduce family income.[2] The effect on poverty is ambiguous.

The aim of this study is to chart the progress made by the disadvantaged from the financial year immediately prior to any policy enacted by the Coalition government taking effect, 1995–96, to the financial year of 2004–05. The latter is the most recent year for which sufficiently

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comparable data are available. Thus, the period covered spans all but the last 2.5 years of the Howard government's 11.75 year rule. We discuss the issue of data comparability in more depth later in this article. Our results will enable a better evaluation of the claims made by both sides of politics about how Australia's disadvantaged fared during this period. We also make three methodological contributions: we test the statistical significance of the observed poverty rate changes; we use a decomposition technique to reconcile changes in the relative and absolute poverty rates; and we use 'poverty profiles' to determine the sensitivity of poverty rates to where the poverty line is set.

We are not the first to measure inter-temporal changes in poverty in Australia. Several others also have compared poverty rates at different points in time (for example, Harding and Mitchell 1992; Mitchell and Harding 1993; Saunders and Matheson 1993; Harding and Szukalska 2000; Harding, Lloyd and Greenwell 2001; Saunders and Bradbury 2006). All of these studies have been based upon sample data, with the Survey of Income and Housing (SIH), conducted by the Australian Bureau of Statistics (ABS), being the most frequently used data source. However, none of these studies was able to test the statistical significance of the poverty rate changes they observed.[3] This now can be done by using the replicate weights provided by the ABS on rereleases of its SIH. With these weights, the standard errors of poverty rates can be calculated by using a jack-knife procedure. In view of the controversy generated by some of the poverty studies (Hughes 2001; Saunders (CIS) 2002; Saunders (SPRC) 2002; Tsumori, Saunders and Hughes 2002; Saunders 2005), it would seem prudent, before debating other issues, to ascertain whether any observed change in the poverty rate can be explained by sampling variation. A major contribution of this study is to compute the standard errors of poverty rates and to test whether the observed poverty rate change is significantly different from zero, statistically speaking.

Part of the controversy concerning changes in poverty in Australia relates to the type of poverty line chosen. Most researchers favour a poverty line set equal to a given percentage of median, or mean, income in the current year, in which case the poverty line can vary in real terms and poverty is a relative concept (for example, Harding, Lloyd and Greenwell 2001; Headey, Marks and Wooden 2005). Others (for example, Tsumori, Saunders and Hughes 2002) argue that an absolute poverty line is better able to identify those most in need. Like Adam Smith, we take the view that both concepts are informative:

> By necessaries I understand not only the commodities which are indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for credible people, even of the lowest order, to be without.
> [Smith 1776, p. 148]

Our study reconciles the relative poverty approach with an absolute poverty approach.[4] The changes in relative poverty are decomposed into two components: the effect of a change in the bottom end of the income distribution with the poverty line constant (a change in absolute poverty) and the effect of a change in the real poverty line with the bottom end of the income distribution constant. The decomposition clarifies the source of an observed change in the relative poverty rate and, consequently, will assist in the interpretation of poverty rate changes.

Also contributing to the controversy is the question of where the poverty line, absolute or relative, should be set. This concern can be resolved largely by presenting the results in the form of poverty rate profiles, which display the sensitivity of poverty rates, and changes in poverty rates, to the poverty line. Indeed, the profiles enable the simple, but crude, headcount ratio to convey information about the depth of poverty at a given poverty line, as well as its incidence. We use poverty rate profiles to analyse relative and absolute poverty rates, and their changes over time, both of the population as a whole and of dependent children aged under 15 years.

The rest of the article is organised as follows. The data and methodology used in the analysis are described in Section 2. The results of

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our analysis of poverty rate changes among the population as a whole are reported in Section 3. Changes in the child poverty rates are examined in Section 4. Some concluding comments are offered in Section 5.

2. Data and Methodology

2.1 Data

The SIH is the main source of income distribution data in Australia. A limitation of these data is that inter-temporal comparability is affected by methodological changes that have been implemented over time. The methods used in the SIHs that were held between 1994–95 and 2002–03 are quite different to those of earlier income surveys (Siminski, Saunders and Bradbury 2003; Siminski et al. 2003). More importantly for this study, several methodological changes that were implemented in the 2003–04 and 2005–06 surveys affect their comparability over the period of interest here (ABS 2007b).

The main comparability issues were discussed by the ABS (2007b) and are summarised below. First, the 2003–04 and 2005–06 SIHs were stand-alone surveys, whereas between 1994–95 and 2002–03, the SIHs were a supplement to the Monthly Population Survey. The respondents to the SIHs between 1994–95 and 2002–03 already had been interviewed for eight consecutive months on labour force topics. This might have resulted in differences in the nature of the non-response in these earlier surveys compared with the stand-alone surveys. Unfortunately, the ABS does not publish response rates that are comparable over the entire period. A second consequence of this change is that the data collected in the Monthly Population Survey were available for use in imputation procedures for earlier years, but not in the stand-alone surveys. This resulted in some changes to the imputation methodology. A third comparability issue relates to the collection of asset and liability data in the 2003–04 and 2005–06 SIHs. The ABS noted that this might have improved the quality of the reporting of associated income streams (ABS 2007b).

The SIH collects income data for the previous financial year ('annual income'), as well as weekly income at the time of the interview ('current income'). Some further comparability issues affect only one or the other of these income concepts but these issues appear to be more substantial for current income than for annual income. The 2005–06 SIH included salary-sacrificed benefits in the current income measure. From 2003–04 onwards, the procedures for collecting data on current income from investments and own-business income also were significantly improved. The public (confidentialised) SIH 2005–06 data files included some current income variables that were intended to be comparable with those in pre-2003–04 SIH data. However, the file did not include such a variable for current disposable income from all sources, nor for the amount of (imputed) income taxation. Thus, without access to the income tax imputation model of the ABS, analyses of the trends over the period 1995–96 to 2005–06, using current disposable income, are difficult to pursue with confidence.

Annual income comparability is affected by two methodological changes relating to the 'financial exclusion flag' of the ABS. An analysis of annual income might not be appropriate for people whose household composition has changed or who have recently arrived in the country because the recorded household size and composition do not apply to the period over which annual income is measured. In an attempt to account for this issue, the ABS includes a 'financial exclusion flag' that identifies the affected households and suggests that they be excluded from annual income analysis. However, Saunders and Bradbury (2006) noted that changes in the definition of the flag (affecting annual income from 1998–99 onwards) appear to have an important effect on poverty rates. They suggested that a more comparable analysis of annual income would ignore the exclusion flag, a suggestion that we follow here.

The second methodological change to annual income is that from 2003–04 onwards, the ABS began to collect income data for people who had arrived in Australia sometime during the 'current financial year'. In earlier surveys, their annual income was set to zero. These new arrivals were flagged for exclusion from annual

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income analysis in both 2003–04 and 2005–06 but they are not distinguishable from other people flagged for exclusion on the publicly available files. However, their number is small (62 people in the 2005–06 SIH) and the direction of the resulting bias in poverty trends is predictable. If we treat the SIH's 2005–06 methodology as a benchmark, the annual income poverty rates for 1995–96 are likely to be slightly overestimated because there are some people with zero recorded income for 1995–96 who actually had positive incomes. Therefore, the increases in relative poverty that we find are likely to be slight underestimates of the actual changes in poverty rates. Conversely, the decreases in absolute poverty rates that we find are likely to be slight overestimates. Note that the exclusion of households with zero income would not account fully for this issue, as some newly arrived migrants might share a household with other people.[5]

Although we do have some reservations over the comparability issues involving annual income data that are discussed above, there are few differences in our substantive results if the end point of the analysis is limited to the SIH of 2002–03, especially for trends in poverty for the overall population (Rodgers, Siminski and Bishop 2008).

The Household Expenditure Survey (HES), also conducted by the ABS, is another commonly used source of household income data and it also was considered for this study. The HES was held approximately every 5 years up to 2003–04 and it also was affected by some of the methodological changes implemented in 2003–04 (ABS 2006). The collection of wealth data in 2003–04 might have improved the reporting of associated income streams. The income tax model was completely different in 2003–04 compared with previous years. The integration of the HES and the SIH might have resulted in a greater emphasis on the auditing of income items, leading to improvements in quality. In any case, the timing of the HES is not ideal for our study, as the Howard government was elected approximately half way between the 1993–94 and 1998–99 surveys. Similarly, 2003–04 is not an ideal end point for our analysis.

The Household, Income and Labour Dynamics in Australia (HILDA) Survey also was considered. Six waves of HILDA Survey income data are available, beginning from 2000–01 and, in principle, could be used to measure the poverty rate trends during the latter years of the Howard government. However, there are questions as to whether the HILDA Survey is a suitable data source for an investigation of trends in cross-sectional statistics. The HILDA Survey is a panel survey and, as such, it does not take a random sample of Australian households in any year other than the initial year. The cross-sectional weights provided correct for differences in some of the observed characteristics between the sample and that of the population in each year. However, differences in the unobserved characteristics (and those observed characteristics that do not contribute to the weights) are not taken into account. Unlike repeated, cross-sectional, random samples, any resulting bias is likely to intensify over the length of the panel survey. Saunders and Bradbury (2006, p. 259) also drew attention to concerns over the need to use imputed incomes in a large number of cases where the income data are missing.

In view of the above data issues, we have decided to conduct our analysis by using the 18 873 people living in households that were selected for the 1996–97 SIH and the 24 295 people living in households that were selected for the 2005–06 SIH.[6] When appropriate weighting procedures are used, these people constitute a random sample of individuals living in private dwellings in all but the most remote areas of Australia. The 2 per cent of Australians who are outside the scope of the surveys include the homeless and people living in institutions, such as boarding schools, prisons and military barracks (ABS 2005, p. 2). Our analysis is based on the annual income in the previous financial year, the primary reason being that we are more confident of the inter-temporal comparability of the annual income data than of the current income data, as discussed above. However, some results, based on current income, are presented in Appendix 1. The results for the whole population are much the same regardless of the income measure, but the results for children

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vary somewhat with the income measure used. We use disposable income, which is the gross cash income from all sources minus income taxes (which are imputed by the ABS). The incomes in each year were inflated to 2004–05 prices by the Consumer Price Index (CPI).[7] We do not exclude households with zero or negative incomes. This is consistent with Saunders and Bradbury (2006).[8]

2.2 Methodology

It is well recognised that the analyst's choice of methodology is likely to influence the value of the poverty rate. The methodology employed in this study is similar to that used by Saunders and Bradbury (2006), in that the person is the unit of analysis, poor people are defined as those who live in households with insufficient equivalised disposable income and the modified equivalence scale of the Organisation for Economic Co-operation and Development (OECD) is used to convert household income to an adult-equivalent basis.[9] The poverty rate is estimated by the (weighted) number of poor people in the sample divided by the (weighted) total number of people in the sample. The underlying assumption of this methodology is that resources are shared among household members, so that each member has the same standard of living.

Studies of inter-temporal poverty must decide the type of poverty line to be used and how to update it over time. The purely relative approach is to set the poverty line in a given year as equal to a particular point in that year's income distribution, in which case the real value of the poverty line can change over time. An absolute poverty line, of the type used in this article, is set equal to a particular point in the initial year's income distribution and is updated for changes in the cost of living, thereby keeping the material standard of living that is represented by the poverty line constant through time. Our approach to absolute poverty, sometimes called an 'anchored poverty line', was employed by Saunders and Bradbury (2006, pp. 350–2). It also is used to produce one of the indicators of social exclusion collected by EU countries, where the poverty line is 'anchored' at 60 per cent of the median income 3 years earlier and is updated for inflation to the current year (Blank 2008, p. 247).[10]

Although most studies of poverty in Australia use a purely relative approach, we believe that keeping the poverty line constant in real terms is also informative. In an expanding economy, a relative poverty approach could report an increase in poverty, even though many people experience an increase in their material standard of living. Similarly, in a period of economic downturn, a relative poverty approach could report a decline in the poverty rate, despite many people experiencing a deteriorating material standard of living. Therefore, we propose a decomposition technique that reconciles the two approaches. We decompose the changes in relative poverty rates into the effect of changes in the real value of the poverty line and the effect of changes in the real incomes of people in the lower part of the income distribution.

The data in the SIHs constitute a complex random sample of people living in private households throughout urban and most rural areas of Australia. The standard errors of the poverty rates reported in this article were computed by using the jack-knife methodology, as described by the ABS (2005, pp. 10–11) and ABS (2007c, pp. 27–9). The process entails computing each poverty rate multiple times by using the multiple sets of replicate weights provided on the confidentialised unit record files (CURF) from the SIHs and by measuring the variability of these multiple estimates around the poverty rate calculated by using the 'main' weight. Thus:

$$SE(\hat{p}) = \sqrt{\frac{M-1}{M}\sum_{j=1}^{M}(\hat{p}_j - \hat{p})^2} \qquad (1)$$

where $\hat{p}$ is the poverty rate computed from the full sample using the 'main' weight and $\hat{p}_j$ is the poverty rate computed from the subsample that is obtained when the jth set of replicate weights are used. M is the number of sets of replicate weights: 30 in the 1995–96 SIH-CURF and 60 in the 2005–06 SIH-CURF. The poverty line used in computing the poverty rate

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for each of the random subsamples identified by the replicate weights can be absolute or relative. An absolute poverty line is fixed across all M random subsamples but a relative poverty line must be recalculated for each of the M random subsamples. Consequently, the standard error of a poverty rate that is calculated by using an absolute poverty line, Z, will be smaller than the standard error of a poverty rate calculated by using a relative poverty line that is equal in value to Z.

The SIHs are independent samples, so the standard error of the change in the poverty rate between the two survey dates is given by:

$$SE(\hat{p}_{04-05} - \hat{p}_{95-96}) = \sqrt{SE(\hat{p})^2_{04-05} + SE(\hat{p})^2_{95-96}} \quad (2)$$

and the statistical significance of the poverty rate change is based upon the standard normal statistic:

$$Z = \frac{\hat{p}_{04-05} - \hat{p}_{95-96}}{SE(\hat{p}_{04-05} - \hat{p}_{95-96})} \quad (3)$$

3. Poverty Rates and Poverty Rate Changes

3.1 Relative Poverty

The relative poverty rate profiles for 1995–96 and 2004–05 are presented in Figure 1a. Each profile is a graph of the poverty rate against the poverty line, which was increased in 1 percentage point increments from zero to 100 per cent of the median income, thereby producing a smooth profile. The real value of any poverty line in Figure 1a differs between years. For example, 50 per cent of the median income equates to $11 193 per annum in 1995–96 and $13 619 per annum in 2004–05. Consequently, any change in the poverty rate over that time period partially will be related to the increase in the median income between the 2 years and partially related to changes in the lower end of the income distribution. Figure 1b graphs the change in the relative poverty rate between 1995–96 and 2004–05, together with its 95 per cent confidence interval, as functions of the poverty line.

Table 1 displays five points on the poverty rate profiles that appear in the figures. The top and middle sections of the table correspond to Figure 1a and list the poverty rates and their jack-knifed standard errors at various poverty lines in 1995–96 and 2004–05, respectively. The bottom section of the table corresponds to Figure 1b and gives the change in the poverty rate, the standard error of that change, the Z-statistic and its P-value at the five poverty lines.

Several features of Figure 1 and Table 1 are of interest. First, at low thresholds, the poverty rate is small and changes little as the threshold increases. But, as the threshold becomes larger, the poverty rate becomes sensitive to the choice of relative poverty line. At a poverty line equal to 40 per cent of the median income, the poverty rate is 5.08 and 6.79 per cent in 1995–96 and 2004–05, respectively. It doubles to 10.33 per cent (1995–96) or 13.34 per cent (2004–05) at a poverty line equal to 50 per cent of the median income and increases substantially again to 19.35 or 21.36 per cent at a poverty line equal to 60 per cent of the median income in 1995–96 and 2004–05, respectively. Second, at all poverty lines less than or equal to 91 per cent of the median income, the 2004–05 poverty rate profile lies above that of 1995–96, indicating an increase in relative poverty. Furthermore, the increase is statistically significant over poverty lines ranging from 23–68 per cent of the median income. Third, those increases in the relative poverty rate that are statistically significant are large enough to be noteworthy. For example, the 3.02 percentage point increase that occurs at 50 per cent of the median income constitutes a (3.02/10.33 =) 29 per cent increase in poverty over the 9 year period. Finally, the fact that the largest inter-temporal changes in relative poverty are observed at poverty thresholds close to half of the median income is not surprising. The poverty rate will approach 50 per cent and the inter-temporal change in the poverty rate will approach zero as the poverty line approaches 100 per cent of the median income.[11] Similarly, when the poverty line equals zero, the poverty rate will equal the

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Figure 1a Relative Poverty Rate Profiles

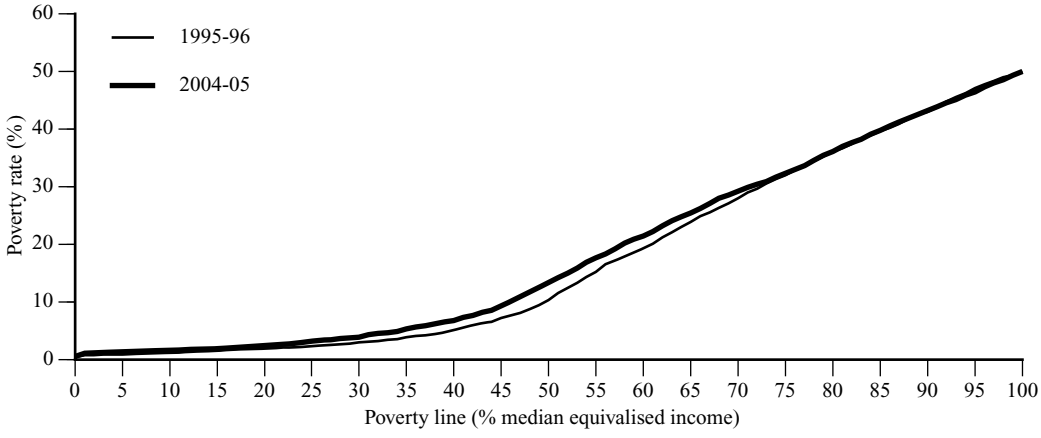
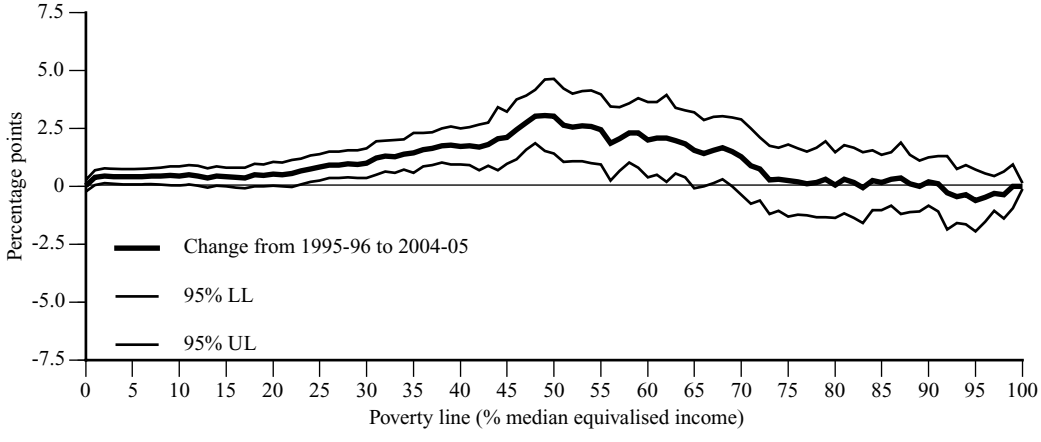


Figure 1b Changes in Relative Poverty Rates



Note: LL denotes lower limit and UL denotes upper limit.

Sources: ABS, *Survey of Income and Housing* – confidentialised unit record files, 1996–97 and 2005–06.

percentage of negative incomes in the sample and, assuming the latter is small in any given year, the inter-temporal change in the poverty rate will be close to zero.

3.2 Absolute Poverty

The absolute poverty rate profiles for 1995–96 and 2004–05 are presented in Figure 2a, which differs from Figure 1a only in that the poverty line on the horizontal axis is expressed as a monetary amount. In constructing these profiles, the poverty line was increased from zero to $22 000 per annum in $100 increments, which are small enough to produce a smooth profile. The poverty lines on the horizontal axis of Figure 2a range from $4000 per annum, below which the poverty rates showed little variation, to $20 000, which is a 'generous' threshold, in the sense that it corresponds to more than 70 per cent of the median equivalised disposable income in both years. Unlike Figure 1a, any poverty line in Figure 2a has the same (real) value in both years. Therefore, any change in the poverty rate will be related entirely to changes in the lower end of the income distribution. Similarly to Figure 1b, Figure 2b graphs the change in the absolute poverty rate between 1995–96 and 2004–05, and its 95 per cent confidence interval, as functions of

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Table 1 Relative Poverty Rate Profiles and Their Changes, 1995–96 to 2004–05[a]

Year	*Poverty line (% of median income)*[b]	*Poverty rate (%)*	*Jack-knifed SE*[c] *(%)*
1995–96[d]	30	2.93	0.20
	40	5.08	0.22
	50	10.33	0.60
	60	19.35	0.65
	70	27.97	0.68
2004–05[e]	30	3.91	0.25
	40	6.79	0.33
	50	13.34	0.55
	60	21.36	0.50
	70	29.23	0.48

Year	*Poverty line (% of median income)*[b]	*Δ in poverty rate*	*SE of Δ in poverty rate*	*Z-statistic*	*P-value (two-tailed)*
1995–96 to 2004–05[f]	30	0.98	0.32	3.0465	0.0023
	40	1.71	0.40	4.3037	0.0001
	50	3.02	0.82	3.6972	0.0002
	60	2.00	0.82	2.4292	0.0151
	70	1.26	0.83	1.5056	0.1322

Notes: (a) All the monetary values are in 2004–05 dollars.
(b) The relative poverty lines are calculated as a percentage of the median equivalised disposable (financial year) income.
(c) SE denotes standard error.
(d) 1995–96: the median equivalent income = $22 386 and the standard error = $219.
(e) 2004–05: the median equivalent income = $27 238 and the standard error = $190.
(f) 1995–96 to 2004–05: the Δ in the median = $4852 and the SE (Δ in the median) = $290.

Source: The authors' computations using the *Survey of Income and Housing*, 1996–97 and 2005–06, by the ABS, and confidentialised unit record files.

the real equivalised poverty line. Five points on the poverty rate profiles are displayed in Table 2, together with their standard errors, *Z*-statistics and *P*-values. The range of poverty thresholds in Tables 1 and 2 are comparable in magnitude: 30 per cent of the median income equals $6716 in 1995–96 and $8171 in 2004–05 and 70 per cent of the median income equals $15 670 in 1995–96 and $19 067 in 2004–05.

There are three salient features of Figure 2 and Table 2. First, as was the case with relative poverty, the choice of the absolute poverty line has a considerable influence on the poverty rate. This is no coincidence. Every relative poverty line has a corresponding absolute value. The rate of increase in the absolute poverty rate quickens after $9000 in 1995–96 and after $11 000 in 2004–05, which are equal to approximately 40 per cent of the median income in the 2 years. Second, in contrast to the relative poverty profiles, the 2004–05 absolute poverty rate profile lies below that of 1995–96 at poverty lines greater than or equal to $7800 per annum, indicating a decrease in poverty. Furthermore, the poverty rate reductions are statistically significant at all poverty lines in excess of $9000 per annum. Third, the reduction in the absolute poverty rate between 1995–96 and 2004–05 is large and becomes larger as the poverty line increases. For example, at a poverty line of $12 000, the reduction in the poverty rate is 5.17 percentage points, it is 7.84 percentage points at $15 000 and, at $18 000, the reduction in the poverty rate is 10.01 percentage points.

The pictures of poverty painted by Figures 1 and 2 are somewhat different: relative poverty has risen significantly, at poverty lines ranging from 23–68 per cent of the median income, while absolute poverty has decreased significantly, at poverty lines ranging from

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Figure 2a Absolute Poverty Rate Profiles

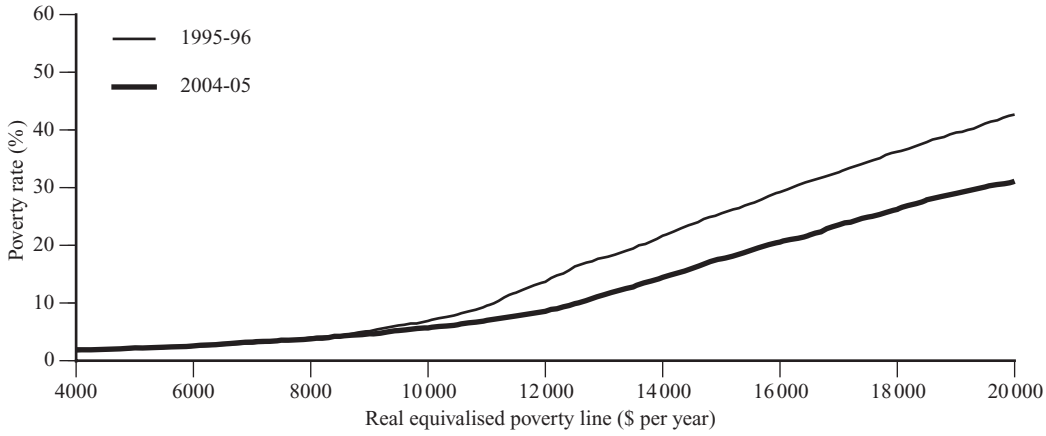
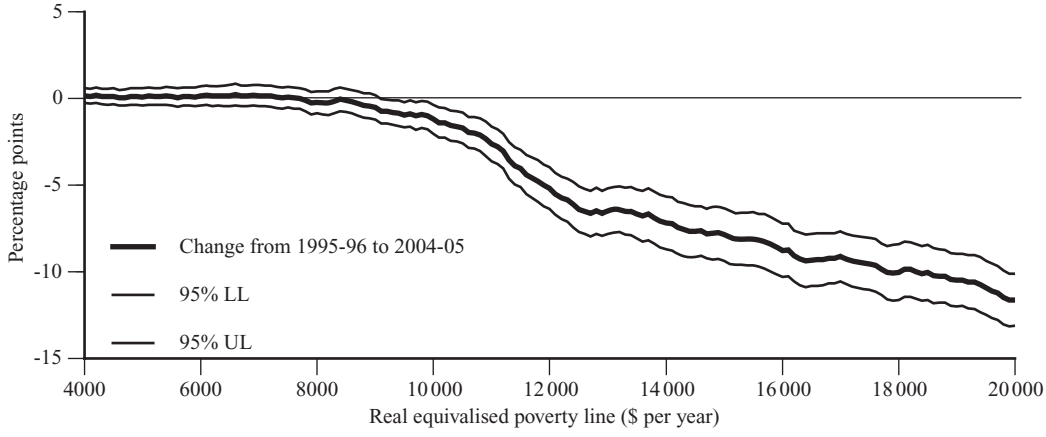


Figure 2b Changes in Absolute Poverty Rates



Note: LL denotes lower limit and UL denotes upper limit.

Sources: ABS, *Survey of Income and Housing* – confidentialised unit record files, 1996–97 and 2005–06.

$9100–20 000 per annum. The relative poverty approach implicitly assumes that the norms of an acceptable standard of living are proportional to the median income and, therefore, they probably will change over time. The absolute poverty approach implicitly assumes that what constitutes an acceptable standard of living is independent of the distribution of income and, therefore, it will remain constant in real terms over time. Consequently, the type of poverty line—relative or absolute—and where it is set can have a considerable effect on changes in the proportion of people who are considered to be poor.

3.3 Decomposition

It is possible to determine how much of a given change in the relative poverty rate can be attributed to: (i) a change in the bottom end of the income distribution, with the poverty line constant (that is, a change in the absolute poverty rate); and (ii) a change in the median level of annual, real, equivalised disposable income, with the bottom end of the distribution of income constant. Figure 3 displays one such decomposition, while Table 3 decomposes several relative poverty rate changes into these two components.

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Table 2 Absolute Poverty Rate Profiles and Their Changes, 1995–96 to 2004–05

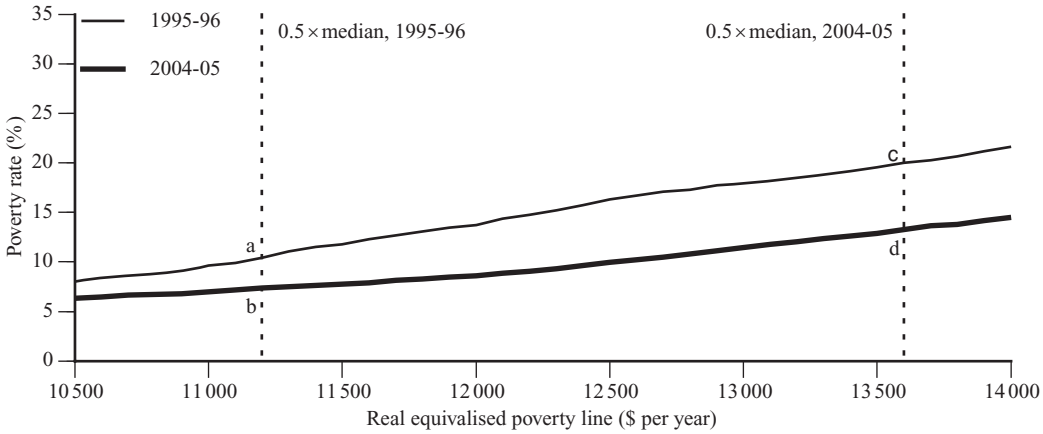
Year	*Poverty line ($ per year)*[a,b]	*Poverty rate (%)*	*Jack-knifed SE*[c] *(%)*
1995–96	6 000	2.50	0.17
	9 000	5.17	0.24
	12 000	13.75	0.50
	15 000	25.56	0.60
	18 000	36.29	0.62
2004–05	6 000	2.64	0.23
	9 000	4.68	0.27
	12 000	8.58	0.36
	15 000	17.72	0.49
	18 000	26.28	0.55

Year	*Poverty line ($ per year)*[a,b]	*Δ in poverty rate*	*SE of Δ in poverty rate*	*Z-statistic*	*P-value (two-tailed)*
1995–96 to 2004–05	6 000	0.15	0.29	0.5163	0.6056
	9 000	−0.49	0.36	−1.3700	0.1707
	12 000	−5.17	0.62	−8.3817	0.0001
	15 000	−7.84	0.78	−10.1203	0.0001
	18 000	−10.01	0.82	−12.1739	0.0001

Notes: (a) All the monetary values are in 2004–05 dollars.
(b) The absolute poverty lines are expressed in (financial year) equivalised disposable income.
(c) SE denotes standard error.

Source: The authors' computations using the *Survey of Income and Housing*, 1996–97 and 2005–06, by the ABS, and confidentialised unit record files.

Figure 3 Decomposition of Poverty Rate Changes



Sources: ABS, *Survey of Income and Housing* – confidentialised unit record files, 1996–97 and 2005–06.

The decomposition of the change in the relative poverty rate can be carried out in two ways, which now will be explained by using a poverty line equal to 50 per cent of the median income as an example (see rows C1–C3 of Table 3). The decomposition is presented graphically in Figure 3, which duplicates part of Figure 2a but adds vertical lines equal in monetary value to 50 per cent of the median income in 1995–96 and 2004–05. The poverty rates at these poverty lines are labelled a, b, c and d.

3.3.1 Decomposition 1

In 1995–96, a poverty line set at 50 per cent of the median income was equivalent to $11 193

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Table 3 Decomposition of the Change in Relative Poverty Rates

Type of poverty line[a] *(1)*	*Value of the poverty line ($)*[b] *(2)*	*Poverty rate (%)* *1995–96 (3)*	*Poverty rate (%)* *2004–05 (4)*	*Change in the absolute poverty rate 1995–96 to 2004–05 (5)*	*Change in the relative poverty rate 1995–96 to 2004–05 (6)*
A1. 30% of the median income, 1995–96	6 716	2.93	3.11	0.18	
A2. 30% of the median income, 2004–05	8 171	4.16	3.91	−0.24	
A3. Change due to a change of median	1 456	1.23	0.80		0.98
B1. 40% of the median income, 1995–96	8 954	5.08	4.61	−0.48	
B2. 40% of the median income, 2004–05	10 895	9.10	6.79	−2.31	
B3. Change due to a change of median	1 941	4.02	2.19		1.71
C1. 50% of the median income, 1995–96	11 193	10.33	7.37	−2.96	
C2. 50% of the median income, 2004–05	13 619	20.08	13.34	−6.74	
C3. Change due to a change of median	2 426	9.76	5.98		3.02
D1. 60% of the median income, 1995–96	13 432	19.35	12.75	−6.60	
D2. 60% of the median income, 2004–05	16 343	30.58	21.36	−9.22	
D3. Change due to a change of median	2 911	11.23	8.61		2.00
E1. 70% of the median income, 1995–96	15 670	27.97	19.75	−8.22	
E2. 70% of the median income, 2004–05	19 067	39.67	29.23	−10.44	
E3. Change due to a change of median	3 397	11.70	9.48		1.26

Notes: (a) The relative poverty lines are calculated as a percentage of the median equivalised disposable (financial year) income.
(b) All the monetary values are in 2004–05 dollars.

Source: The authors' computations using the *Survey of Income and Housing*, 1996–97 and 2005–06, by the ABS, and confidentialised unit record files.

and the poverty rate was 10.33 per cent (see point a in Figure 3). At that same threshold, the poverty rate in 2004–05 was 7.37 per cent (point b), a fall of 2.96 percentage points. By 2004–05, 50 per cent of the median income was equivalent to $13 619, at which threshold the poverty rate was 13.34 per cent (point d), which is 5.98 percentage points higher than 7.37 per cent. In other words, the (13.34 − 10.33 =) 3.02 percentage point increase in the relative poverty rate (from point a to point d) can be decomposed into a 2.96 percentage point fall in absolute poverty (from point a to point b) and into a 5.98 percentage point increase in relative poverty, resulting from the increase in the median income (from point b to point d).

3.3.2 Decomposition 2

In 1995–96, a poverty line equal to 50 per cent of the median income was equal to $11 193 and the poverty rate was 10.33 per cent (see point a). Had the poverty line in 1995–96 been set at $13 619, which is 50 per cent of the median income in 2004–05, the poverty rate would have been 20.08 per cent (point c), which is

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9.76 percentage points higher than 10.33 per cent. At a threshold of $13 619, the poverty rate in 2004–05 was 13.34 per cent (point d), which is 6.74 percentage points lower than 20.08 per cent. In other words, the (13.34 − 10.33 =) 3.02 percentage point increase in the relative poverty rate (from point a to point d) can be decomposed into a 9.76 percentage point increase in relative poverty, resulting from the increase in the median income between 1995–96 and 2004–05 (from point a to point c), and into a 6.74 percentage point fall in absolute poverty (from point c to point d).

Both decompositions demonstrate that the increase in relative poverty from 1995–96 to 2004–05, with the poverty line set at 50 per cent of the median income, can be attributed to an increase in the median income that more than offset a reduction in the density of the lower tail of the income distribution. The same conclusion is reached with poverty lines equal to 40, 60 and 70 per cent of the median income. However, at a poverty line equal to 30 per cent of the median income, both a small increase in the proportion of people in households with incomes below $6716 and an increase in the median income contributed to the small increase in relative poverty of 0.98 percentage points.

4. Poverty Rates and Poverty Rate Changes of Children

The vulnerability of the young makes child poverty a special issue. Whereas, it can be argued that some adults are poor because they have made unwise decisions, these arguments do not apply to children. There also is a concern that growing up in poverty could limit one's earning potential as an adult, thereby perpetuating a cycle of poverty. Children are seen as an investment in society's future, so it is not surprising that reducing child poverty has been a policy objective of previous governments; for instance, a well-known example is Bob Hawke's 1987 election promise that, by 1990, no Australian child would live in poverty. The socially conservative policies of the Howard government promoted the traditional family,[12] but their effect on children from disadvantaged families is complex. For example, the direct effect of the Family Tax Benefit Part B, which was introduced in July 2000, was to increase the income of families with young children and one main income earner. However, it might have had the indirect effect of encouraging married women with children to leave the workforce and encouraging single women with children to enter the workforce, with implications for their family's income.

In this section, we focus on the changes in poverty among children from 1995–96 to 2004–05. Under the equivalence assumption employed throughout this article, the poverty status of children is the same as that of their parents. In line with the ABS (2004, p. 53), we define children as persons younger than 15 years. Some of our results for child poverty are similar to those relating to poverty in the population as a whole: at poverty lines of up to 68 per cent of the median income of the entire population, the relative poverty rates of children increase over the time period considered (see Figure 4 and Table 4), while at poverty lines from $9100–20 000 per annum, the absolute poverty rates of children decrease (see Figure 5 and Table 5).

However, there are some additional points of interest. The first involves comparisons of the top two sections of Table 4 with those of Table 1, and of Table 5 with Table 2. The poverty rate of children exceeds that of the entire population at all poverty lines reported in Tables 4 and 5.[13] However, the differential was smaller in 2004–05 than in 1995–96 at poverty lines equal to 50, 60 and 70 per cent of the median income. For example, at a relative poverty line equal to 50 per cent of the median income in 2004–05, the poverty rate of children is (15.41 − 13.34 =) 2.07 percentage points higher than that of the whole population, while in 1995–96, the corresponding differential is (13.11 − 10.33 =) 2.78 percentage points. Thus, over the time period considered, we see a tendency for the relative poverty rate of children to become more like that of the entire population at the most commonly used poverty lines.

Second, although at most relative poverty lines, the poverty rates of children increase from 1995–96 to 2004–05, the increase is statistically significant over a narrower range

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Figure 4a Relative Poverty Rate Profiles
(dependent children under 15 years)

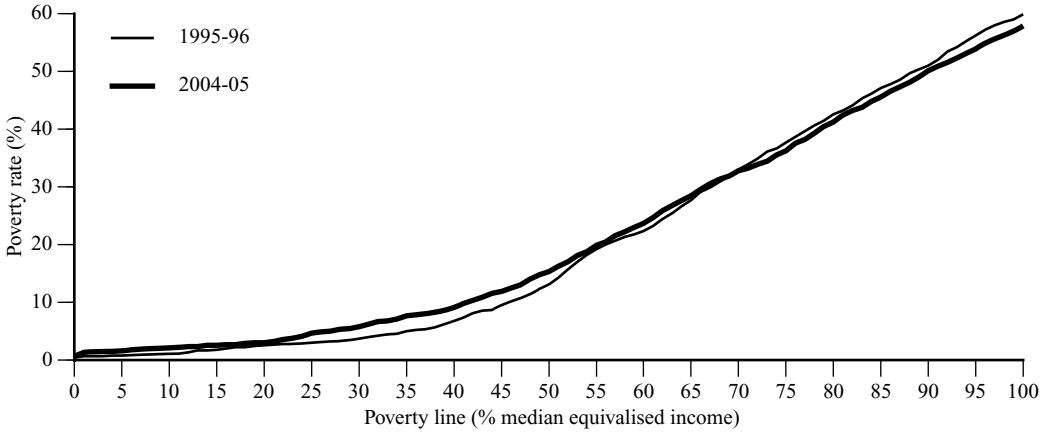
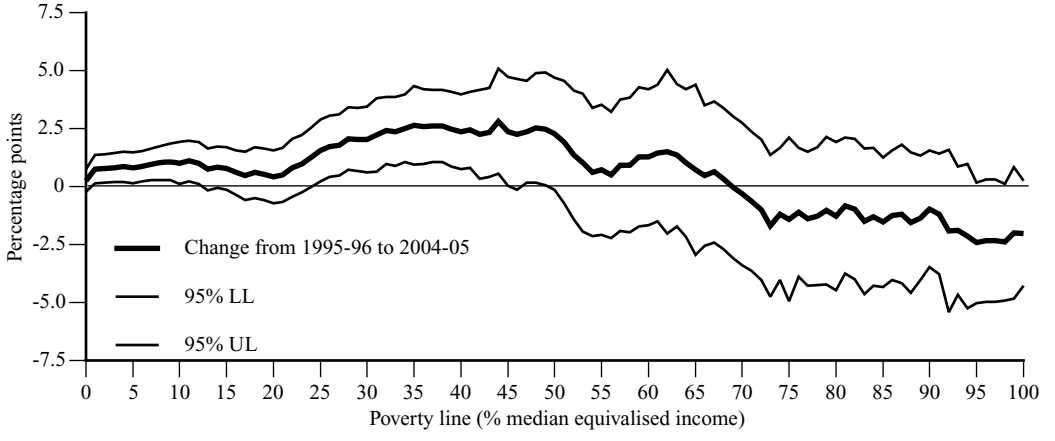


Figure 4b Changes in Relative Poverty Rates
(dependent children under 15 years)



Note: LL denotes lower limit and UL denotes upper limit.

Sources: ABS, *Survey of Income and Housing* – confidentialised unit record files, 1996–97 and 2005–06.

of poverty lines (25–49 per cent of the median income) than the corresponding range for the whole population (compare Figure 4b with Figure 1b). In contrast, the poverty rates of children decrease from 1995–96 to 2004–05 at most absolute poverty lines and the reduction is statistically significant at poverty lines in excess of $10 200 per annum, which is similar to the corresponding range for the whole population (compare Figure 5b with Figure 2b).

How much of the change in the relative poverty rate of children can be attributed to a change in the real value of the poverty line and how much can be attributed to a change in the concentration of children at the bottom end of the income distribution? Table 6 follows the same decomposition procedure for children's poverty rates as Table 3 does for the entire population. The decomposition at a poverty line equal to 50 per cent of the median income (see rows C1–C3 of Table 6) is illustrated graphically in Figure 6.

4.1 Decomposition 1

The 2.29 percentage point increase in the relative poverty rate (from 13.11 per cent at point a to 15.41 per cent at point d) can be

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Table 4 Relative Poverty Rate Profiles and Their Changes, 1995–96 to 2004–05, Dependent Children (under 15 Years)[a]

Year	*Poverty line (% of median income)*[b]	*Poverty rate (%)*	*Jack-knifed SE*[c] *(%)*
1995–96[d]	30	3.74	0.49
	40	6.77	0.51
	50	13.11	0.79
	60	22.38	0.94
	70	33.09	1.07
2004–05[e]	30	5.78	0.53
	40	9.14	0.64
	50	15.41	0.95
	60	23.66	1.16
	70	32.79	1.15

Year	*Poverty line (% of median income)*[b]	*Δ in poverty rate*	*SE of Δ in poverty rate*	*Z-statistic*	*P-value (two-tailed)*
1995–96 to 2004–05[f]	30	2.04	0.72	2.8427	0.0045
	40	2.37	0.82	2.9026	0.0037
	50	2.29	1.23	1.8577	0.0632
	60	1.28	1.50	0.8534	0.3934
	70	−0.30	1.57	−0.1937	0.8464

Notes: (a) All the monetary values are in 2004–05 dollars.
(b) The relative poverty lines are calculated as a percentage of the median equivalised disposable (financial year) income.
(c) SE denotes standard error.
(d) 1995–96: the median equivalent income = $22 386 and the standard error = $219.
(e) 2004–05: the median equivalent income = $27 238 and the standard error = $190.
(f) 1995–96 to 2004–05: the Δ in the median = $4852 and the SE (Δ in the median) = $190.

Source: The authors' computations using the *Survey of Income and Housing*, 1996–97 and 2005–06, by the ABS, and confidentialised unit record files.

decomposed into a 3.14 percentage point fall in absolute poverty (from 13.11 per cent at point a to 9.97 per cent at point b) and into a 5.43 percentage point increase in relative poverty, resulting from the increase in the median income (from point b to point d).

4.2 Decomposition 2

The 2.29 percentage point increase in the relative poverty rate (from 13.11 per cent at point a to 15.41 per cent at point d) can be decomposed into a 10.17 percentage point increase in relative poverty, resulting from the increase in the median income (from 13.11 per cent at point a to 23.28 per cent at point c), and into a 7.87 percentage point fall in absolute poverty (from point c to point d).

Both decompositions demonstrate that the increase in the relative poverty of children from 1995–96 to 2004–05, with the poverty line set at 50 per cent of the median income of the entire population, can be ascribed to an increase in the median income that more than offset a reduced concentration of children in the lower tail of the income distribution. The same conclusion is reached with poverty lines equal to 40, 60 and 70 per cent of the median income. However, at a poverty line equal to 30 per cent of the median income, both the increase in median income and small increases in the proportion of children in households with incomes below $6716 and below $8171 contributed to the increase in the relative poverty of children of 2.04 percentage points.

5. Summary and Conclusions

The years of 1995–96 to 2004–05, the first three terms of the Howard government and part of the fourth term, present a somewhat mixed report card as regards to poverty. The results

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Figure 5a Absolute Poverty Rate Profiles
(dependent children under 15 years)

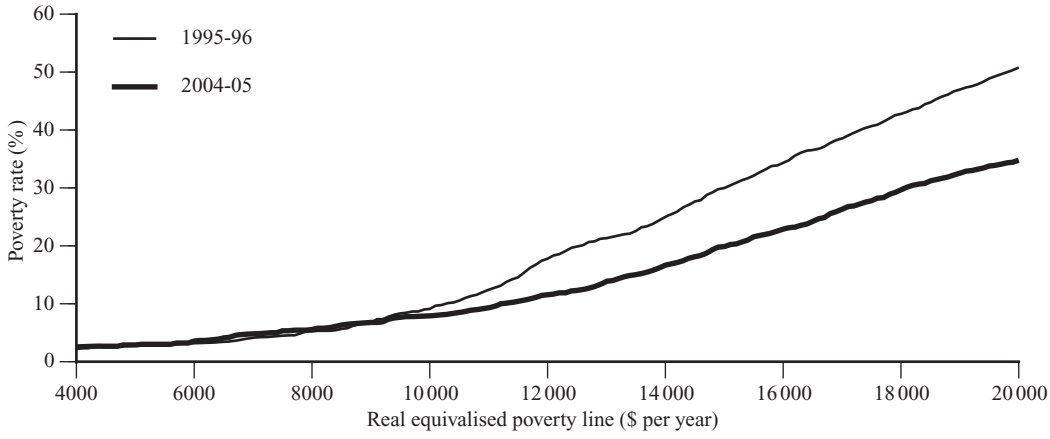
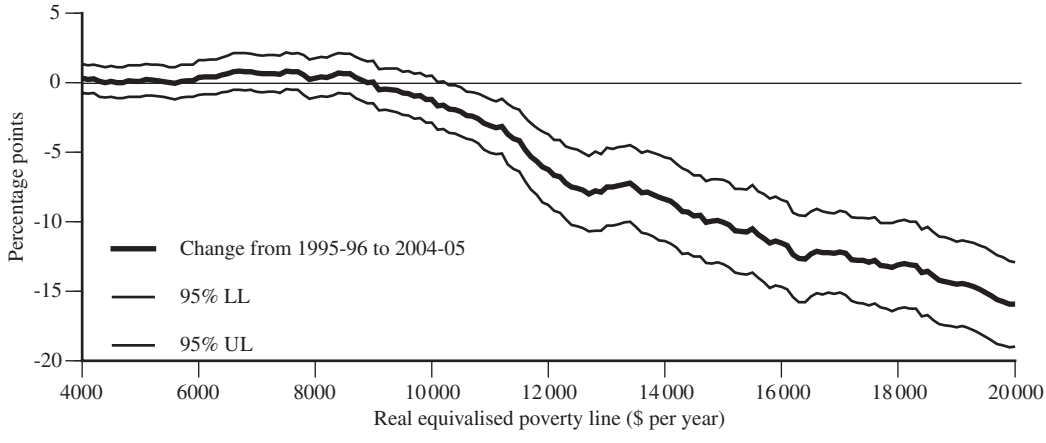


Figure 5b Changes in Absolute Poverty Rates
(dependent children under 15 years)



Note: LL denotes lower limit and UL denotes upper limit.

Sources: ABS, *Survey of Income and Housing* – confidentialised unit record files, 1996–97 and 2005–06.

depend on the type of poverty line used. At a relative poverty line equal to 50 per cent of the median income, we observed an increase of 3.02 percentage points in the poverty rate of the population in general, which is statistically significant, and a 2.29 percentage point increase in the poverty rate of children, which borders on statistical significance (the *P*-value was 0.06). At an absolute poverty line equal to 50 per cent of the median income in 1995–96, there was a decrease of 2.96 percentage points in the poverty rate of the entire population and a 3.14 percentage point decrease in the poverty rate of children, both of which are statistically significant. The decomposition of the relative poverty rate changes presented in this article reconciles these diverse results: the increase in poverty resulting from an increase in the median income more than offset the reduction in absolute poverty that occurred over this time period. The methodological transparency of the decomposition assists in the interpretation of the relative poverty rate changes.

Another lesson to be learned from this study is that the inter-temporal changes in poverty rates that are calculated with sample data need

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Table 5 Absolute Poverty Rate Profiles and Their Changes, 1995–96 to 2004–05, Dependent Children (under 15 Years)

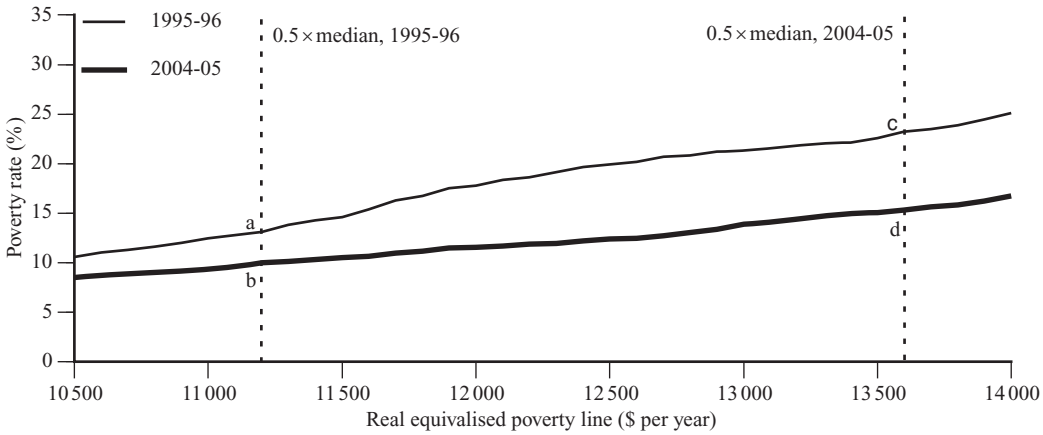
Year	*Poverty line ($ per year)*[a,b]	*Poverty rate (%)*	*Jack-knifed SE (%)*
1995–96	6 000	3.22	0.44
	9 000	6.79	0.52
	12 000	17.81	1.02
	15 000	30.00	1.16
	18 000	42.84	1.11
2004–05	6 000	3.61	0.45
	9 000	6.86	0.57
	12 000	11.58	0.79
	15 000	19.98	1.01
	18 000	29.75	1.15

Year	*Poverty line ($ per year)*[a,b]	*Δ in poverty rate*	*SE of Δ in poverty rate*	*Z-statistic*	*P-value (two-tailed)*
1995–96 to 2004–05	6 000	0.39	0.63	0.6114	0.5409
	9 000	0.06	0.78	0.0814	0.9351
	12 000	−6.23	1.29	−4.8206	0.0001
	15 000	−10.02	1.54	−6.4893	0.0001
	18 000	−13.09	1.60	−8.1802	0.0001

Notes: (a) All the monetary values are in 2004–05 dollars.
(b) The absolute poverty lines are expressed in (financial year) equivalised disposable income.

Source: The authors' computations using the *Survey of Income and Housing*, 1996–97 and 2005–06, by the ABS, and confidentialised unit record files.

Figure 6 Decomposition of Poverty Rate Changes
(dependent children under 15 years)



Sources: ABS, *Survey of Income and Housing* – confidentialised unit record files, 1996–97 and 2005–06.

to be tested for statistical significance before any firm conclusion is drawn about whether poverty has increased or decreased. We found that the observed increases in relative poverty for the entire population were statistically significant at the 5 per cent level at poverty lines between 23 and 68 per cent of the median income. In the case of children, the range was narrower: 25–49 per cent of the median income. The observed decreases in absolute poverty were statistically significant at the 5 per cent level at all poverty lines greater than approximately $9100 per annum for the entire population and $10 200 per annum for children.

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Table 6 Decomposition of the Change in Relative Poverty Rates, Dependent Children (under 15 Years)

Type of poverty line[a] *(1)*	*Value of the poverty line ($)*[b] *(2)*	*Poverty rate (%)* *1995–96 (3)*	*Poverty rate (%)* *2004–05 (4)*	*Change in the absolute poverty rate 1995–96 to 2004–05 (5)*	*Change in the relative poverty rate 1995–96 to 2004–05 (6)*
A1. 30% of the median income, 1995–96	6 716	3.74	4.57	0.83	
A2. 30% of the median income, 2004–05	8 171	5.36	5.78	0.42	
A3. Change due to a change of median	1 456	1.62	1.21		2.04
B1. 40% of the median income, 1995–96	8 954	6.77	6.74	−0.02	
B2. 40% of the median income, 2004–05	10 895	12.02	9.14	−2.88	
B3. Change due to a change of median	1 941	5.25	2.40		2.37
C1. 50% of the median income, 1995–96	11 193	13.11	9.97	−3.14	
C2. 50% of the median income, 2004–05	13 619	23.28	15.41	−7.87	
C3. Change due to a change of median	2 426	10.17	5.43		2.29
D1. 60% of the median income, 1995–96	13 432	22.38	15.03	−7.35	
D2. 60% of the median income, 2004–05	16 343	36.21	23.66	−12.55	
D3. Change due to a change of median	2 911	13.83	8.63		1.28
E1. 70% of the median income, 1995–96	15 670	33.09	22.02	−11.07	
E2. 70% of the median income, 2004–05	19 067	47.24	32.79	−14.45	
E3. Change due to a change of median	3 397	14.15	10.77		−0.30

Notes: (a) The relative poverty lines are calculated as a percentage of the median equivalised disposable (financial year) income.
(b) All monetary values are in 2004–05 dollars.

Source: The authors' computations using the *Survey of Income and Housing*, 1996–97 and 2005–06, by the ABS, and confidentialised unit record files.

Finally, the poverty rate profiles presented in this article show the sensitivity of poverty rates to where the poverty line—relative or absolute—is set. Our results showed that, at poverty lines below 40 per cent of the median income, the poverty rate is low and unresponsive to increases in the poverty line. The poverty rate doubles when the poverty line increases from 40 per cent to 50 per cent of the median income and increases substantially again with an increase in the poverty line from 50 per cent to 60 per cent of the median income. Empirical studies typically are based on one or other of these poverty lines; therefore, our results showed the importance of reporting all three of them.

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Appendix 1: Changes in Poverty Rates Based on the Current Weekly, Equivalised, Household Disposable Income

The results presented in the body of the text are based on income in the previous financial

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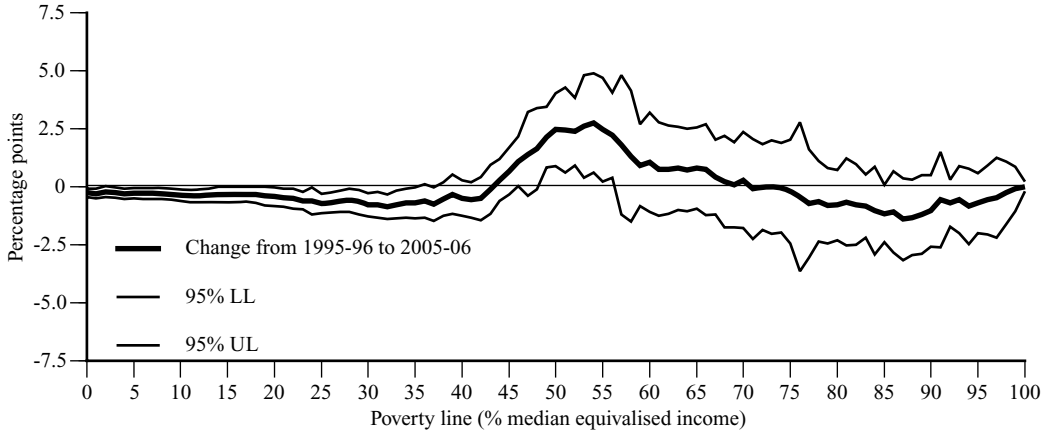
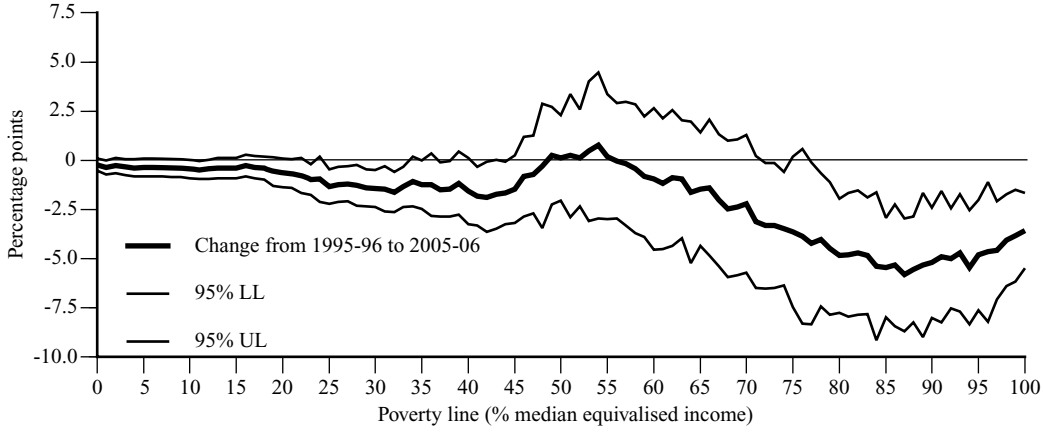
Figure A1 Changes in Relative Poverty Rates



Note: LL denotes lower limit and UL denotes upper limit.

Sources: ABS, *Survey of Income and Housing* – confidentialised unit record files, 1995–96 and 2005–06.

Figure A2 Changes in Relative Poverty Rates
(dependent children under 15 years)



Note: LL denotes lower limit and UL denotes upper limit.

Sources: ABS, *Survey of Income and Housing* – confidentialised unit record files, 1995–96 and 2005–06.

year because we conclude that inter-temporal comparability issues appear to be less severe for annual income than for current income over the period of interest. This appendix presents the changes in relative poverty rates overall and for children, computed using current income, thereby revealing the sensitivity of our results to the income measure used.[14]

A comparison of Figure 1b in the text with Figure A1 in this appendix reveals that the changes in the overall poverty rate are not greatly sensitive to the choice of annual rather than current income. The range of poverty lines over which the poverty rate change is positive and statistically significant is wider under annual income, but at the most commonly used poverty line—50 per cent of the median income—the poverty rate increases by approximately 2.5 percentage points and is statistically significant under both income measures.

However, the profile of change in the relative poverty rate of children is quite sensitive to the use of annual versus current income (compare Figure 4b in the text with Figure A2 in this

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appendix). At a poverty line equal to 50 per cent of the median income, the relative poverty rate of children increases by 2.3 percentage points and is marginally significant when annual income is used but, under current income, the increase is tiny and is not significantly different from zero. An earlier version of our article (Rodgers, Siminski and Bishop 2008) used the 2002–03 SIH as the end point in the analysis, thereby avoiding the comparability problems that we have discussed here. In that paper, the changes in the relative poverty rate of children were far less sensitive to the choice of income measure. This provides further support for our assertion that results based on the current income should be treated with caution in the context of the research questions we have addressed here.

Endnotes

1. Flexible labour markets were promoted particularly under the Workplace Relations Acts of 1996 and 2005, with a major intent to reduce the power of the unions to influence wages and workplace conditions.

2. The Howard government made a number of changes to Australia's income support programs, which tended to favour families with children. Welfare spending rose in real terms, from approximately $53 billion in 1995–96 to $72 billion in 2006–07, with large annual increases of 6, 14 and 11 per cent in 1998–99, 2000–01 and 2003–04, respectively (ABS 1998–2008).

3. A recent exception is Wilkins (2007), who estimated standard errors using a bootstrap technique. The resulting standard errors might be biased as the bootstrap procedure does not take account of the complex designs of the income surveys by the ABS. However, our preliminary analysis suggests that the extent of such a bias is likely to be small, at least over the period covered in our study.

4. In social research, an 'absolute poverty line' has two interpretations (Headey and Warren 2008, p. 49). To some, it means an amount of money that is just sufficient to support a minimal material standard of living in terms of food, clothing and shelter. Others use the term to refer to a poverty line that retains a constant real value over time and, consequently, is independent of changes in general living standards (Citro and Michael 1995, p. 31; Saunders and Bradbury 2006, p. 349). In this article, we use the term in this latter sense.

5. Others have been concerned over the annual income (in the previous financial year) recorded in the SIH of 1994–95 and the SIH of 1995–96 (ABS 2003, p. 14; Saunders and Bradbury 2006, p. 353). These years are outside the period of our investigation.

6. The 1996–97 basic SIH-CURF contains 7245 households, in which live 14 595 people aged 15 years or older and 4278 people aged younger than 15 years. The 2005–06 basic SIH-CURF contains 9961 households, with 19 190 people aged 15 years or older and 5105 people aged younger than 15 years.

7. The CPI used is: CPI, All Groups, Weighted Average of the Eight Capital Cities (ABS 2007a). It averaged 118.72 in 1995–96 and 146.94 in 2004–05.

8. Changes in the overall poverty rates are not sensitive to the exclusion of non-positive incomes. Changes in the child poverty rates are slightly lower (between 0.1 and 0.6 of a percentage point) with such an exclusion. The levels of poverty in both years also are slightly lower (between 0 and 1 percentage point) at most poverty lines with the exclusion (full results are available from the authors).

9. The modified OECD scale assigns the first adult in the household a weight of one point. Each additional person aged 15 years or older receives 0.5 of a point and each child under 15 years of age receives 0.3 of a point. Thus, a couple with two children is considered to have needs that are $(1 + 0.5 + 0.6 =)$ 2.1 times as large as those of a single adult household. In other words, the household contains 2.1 adult equivalents. The disposable income divided by the number of adult equivalents gives the equivalised disposable income of the household, which can be compared with the poverty threshold for a single adult to determine whether or not the household is poor. The OECD scale has become the conventional choice of equivalence scale in the Australian literature and in most international studies.

10. The other type of absolute poverty line is set at a budgeted level sufficient to fulfil basic needs in the initial year and is updated over time for changes in the cost of living. The US Census Bureau publishes official poverty statistics based on such an absolute poverty line. The Henderson poverty line, which has been used in many Australian studies, is a hybrid approach. It originally was set at a budgeted level that was independent of the distribution of income, but when it is updated using changes in per capita household disposable income, it takes on aspects of a relative poverty line. Foster (1998) discussed the various ways in which absolute and relative concepts enter into poverty measurement.

11. A poverty rate defined as the proportion of observations below the median income does not necessarily equal 0.5 exactly. For example, two out of five observations in the set $\{3, 5, 10, 12, 15\}$ are below the median, as are two out of six of the observations in the set $\{3, 5, 10, 10, 12, 15\}$.

12. Spending on family assistance rose in real terms, from approximately $8 billion in 1995–96 to $15 billion in 2006–07, with large annual increases of 33 and 40 per cent in 2000–01 and in 2003–04, respectively (ABS 1998–2008).

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13. In 2004–05, this was true at all relative and absolute poverty lines that we considered. In 1995–96, it was true at the relative poverty lines in excess of 9 per cent of the median income and at the absolute poverty lines in excess of $2200.

14. Changes in the absolute poverty rates based on current income, like those based on annual income, are negative and statistically significant at almost all poverty lines. Consequently, they are not shown here.

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