How has income inequality in Australia changed?

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1. INTRODUCTION

Over the last two and a half decades the volume of literature on income distribution in Australia, like most other OECD countries, has expanded at a rapid pace. This is largely a consequence of the surge in data collection on income distribution in Australia. The only data available on income distribution prior to the late 1960s came from the 1915 War Census, the1933 Census and the 1943 Census; the last corresponded with the 1942/43 income tax return making it possible to estimate income inequality. Since this time the Australian Bureau of Statistics (ABS) has undertaken a number of surveys which have facilitated the collection of data on income distribution. These include more than *six* income distribution surveys, *five* household expenditure surveys and a range of related surveys such as Income and Housing surveys and Employee Earning surveys. Furthermore, access to unit record data has enabled research on income distribution to progress enormously.

Accompanying this increasing wealth of knowledge, however, has been increased confusion. While some studies (Harding, 1994; Boehm, 1994; McGuire, 1994; Saunders, 1993*a*, 1993*b*; Gregory, 1993) argue that there has been an increase in the dispersion of incomes in Australia, others (see Johnson, Manning and Hellwig, 1995; McLean and Richardson, 1986; Jones, 1975) assert that inequality has actually fallen. It is the aim of this paper to elucidate these bewildering and, what appears to be, conflicting results.

This paper is divided into nine parts. Following the introduction, section two briefly addresses some of the reasons why the results of the various studies do not appear to be consistent. The range of income definitions and units of analysis are addressed in sections three and four. Section five discusses the application of equivalence scales while section six briefly reviews some of the methods for measuring inequality. A review of studies on income inequality in Australia appears in section seven. Section eight succinctly reports the results of the surveys in tabulated form. The paper concludes with some brief remarks in section nine.

2. <u>SOURCE OF CONFLICT</u>

Studies of income inequality frequently cannot be compared with one another. This occurs for several reasons and is the primary explanation for what appears to be conflicting data. First, how income (if this is the unit of analysis employed) is defined, for example is net, gross or private income used, is an important point. Perhaps income is not used at all, but instead expenditure is the basis for measurement. Second, what is the unit of measure? Is it the household, the family, an income unit or an individual? Third, were equivalence scales used? If so, then were the weightings the same between studies. The fourth reason why results of studies may appear to conflict is that the income inequality measures may not be the same. For instance, were deciles or quintiles used? Was a ratio of the top x% to the bottom x% the analytical tool chosen or did the study just report the Gini Coefficient without discussing whether the Lorenz Curves intersect(see section six). The fifth reason results may appear to conflict is that the periods examined differ. Sixth, the method and data used may differ. For example, microsimulation analysis may have been used rather than actual observed statistics such as those provided by the ABS and the base year for the microsimulation analysis may differ between studies. Furthermore, studies may be using different types of data. For example, Gregory (1993) used the ABS Labour Force Survey data, while Boehm (1994) utilises ABS Income Distribution surveys. This reason alone is enough for results to differ.

3. UNIT OF MEASUREMENT

Income, in particular money income, is often chosen as the index of material wellbeing. It is widely acknowledged, however, that this is a very narrow definition (see Johnson, Manning and Hellwig, 1995; EPAC, 1995; Raskall and Urquhart, 1994; Travers and Richardson, 1993; Brownlee, 1991). The difficulties associated with obtaining a more comprehensive measure of material well-being, or standard of living, are numerous. One of these reasons is cost. Unfortunately, the large volume of resources required to produce such data makes it prohibitively costly to undertake such an exercise on a frequent basis. As it is, ABS income surveys are conducted only every four to five years due largely to cost (Raskall and Urquhart, 1994, p.16). Another reason such a narrow definition of income is used is that the more extensive the income definition the less precise and certain the outcome. This is because the results are increasingly 'fraught with methodological dilemmas and operationalising difficulties' (Raskall and Urquhart, 1994, p.16). In short, while 'most studies treat material standards of living as synonymous with cash incomes ...', the broader the 'definition of income, the more accurate is the measure of material resources' (Whiteford, 1997, p.40). Moreover, Travers and Richardson (1993, p.24) make the point that when measuring material

standard of living, or more specifically the resources made available to an individual, expenditure is a superior unit of analysis to income. However, quantifying expenditure is fraught with hazard. One procedure used by the ABS to determine households' expenditure found a high proportion (60 per cent for the 1988/89 Household Expenditure Survey) of households reported that their expenditure was in excess of their income (Travers and Richardson, 1993, pp.24-25).

Several studies have tried to go beyond the traditional realm of defining living standard as income, whether cash or in kind. Travers and Richardson (1993), in particular, have addressed this issue. Expressing their dissatisfaction with existing income measures, Travers and Richardson (1993) developed a more comprehensive definition of material wellbeing which they call full income. They do, however, acknowledge the tradeoff between constructing a reasonably precise statistic which is beyond dispute and one which is more inclusive (p.24). Some widely cited studies such as Gregory (1993) use real wages and salaries for their analysis. Alternatively, Boehm (1994) examines gross income. But the most frequently used measure is after-tax disposable income (Saunders, 1994). Jones' (1975) frequently cited study of long-term changes in income inequality is forced to compare gross income for 1968/69 with net income for 1915 due to the limitations of the data available. Studies which analyse more contemporary time periods often examine changes in income distribution using a variety of income definitions. This is possible because of the surge in income distribution statistics over the past two decades. By analysing several different definitions of income these studies are able to assess more fully the extent of the change in distribution, the source of the change and the effectiveness of the Australian government's redistributive policies.

The definition of income employed is largely determined by the purpose of the analysis. For instance, the traditionally used definitions of private, gross and disposable income may suffice in certain circumstances. However, when examining issues such as the effectiveness of the government's redistributive policies, it is important that the income definition employed encompasses the role of non-cash benefits supplied by the government. According to Travers and Richardson (1993, p.27) 'the ABS (1992) estimates the value of government-provided housing, education, health and non-cash social welfare benefits to be 22 per cent of the value of household disposable income. It is clear from these figures that these non-cash sources of material well-being are not trivial'. Given that such a vast number of income concepts exist, we will confine our analysis to those income definitions most commonly used in studies of income distribution in Australia.

Table 1 sets out the definition of income employed by the ABS in its Household Expenditure Survey. These and other concepts of income are defined as follows: frst,

'... factor income is defined as total income in the form of wages and salaries, selfemployment income and property income such as interest on bonds and other interestearnings assets. It reflects the income received by individuals in payment for the supply of labour and capital to the production process in the capitalist economic system' (Saunders, 1994, p.194). Second, *private* or market income is defined as 'total current weekly income of all members of the household before the deduction of taxes and excluding any government benefits' (ABS, 1994, p.2). *Gross* income comprises private income plus direct government benefits to individuals such as pensions and unemployment benefits. *Disposable income plus indirect benefits* simply equals the addition of non-cash benefits to disposable income. Finally, indirect taxes are then deducted leaving *final* income.

4. UNIT OF ANALYSIS

Having established which income concept is appropriate for the task in question the unit of analysis must be determined. Conventionally the units of analysis used are individuals, income units, family and households. The *individual* is clearly the most obvious of the four, containing only a single person. This unit of analysis is often employed when examining changes in the labour market. For instance, how has wage inequality changed over time and has the impact of wage differentials affected labour supply and demand ? (Saunders, 1994, p.196) Table 1 Income Concepts and Components



cash and non-cash benefits may also be interpreted as a social wage. Furthermore, Saunders (1994, p.161) This is what Johnson, Manning and Hellwig (1995) refer to as the social wage. One problem with calling disposable income plus indirect benefits the social wage is that government outlays in the form of both refers to this as the final wage. That is to say, he views disposable income plus in-kind government benefits as final income.

An *income unit* is defined by the ABS (1992b, p.304 as cited in Boehm, 1994, p.3) as comprising

'a group of (related) people who live together and form a single spending unit. It can be considered analogous to the family unit to the extent that it comprises a couple (including de facto), with or without dependent children, or one adult with or without dependent children. Non-dependent children and other adults living in the same household, however, are considered to be separate income units. Income units are classified according to composition as either couple, one parent or one person income units'.

Families, by definition, are 'made up of two or more people related by blood, marriage or a de facto relationship who live together (in a single private dwelling) as a single unit in the sense that they have common housekeeping arrangement'. That is, they share household essentials such as groceries (Johnson, Manning and Hellwig, 1995, p.8). Four commonly analysed households are: sole parent, families, couples without dependent children and families comprised of 'one or more related adults with or without' dependent children (e.g., brother and sister or aunt and dependent niece sharing a house) (Johnson, Manning and Hellwig, 1995, p.8).

The *household* is a similar unit of analysis to the family. Household is a broader definition than family as it includes all groups living under the same roof who share household expenditure. They do not have to be related by marriage or blood as in the case of a family. In short, a household is defined as 'a group of people who live together (in a single private dwelling) and have common housekeeping arrangements. Persons in the same dwelling but having separate catering arrangements constitute separate households' (Johnson, Manning and Hellwig, 1995, p.9). Households may in some circumstances provide the most appropriate unit of analysis as some expenses are shared on a household basis. For instance, consider a household composed of more than one income unit where food and other necessities are shared. The more affluent income unit could be subsidising the poorer one. 'Imagine the situation of a couple paying food and housing for an unemployed adult son or daughter. Treating the income units separately may understate the welfare of the son and daughter and overestimate the welfare of the couple (since it might take no account of the intra-household transfer)' (Johnson, Manning and Hellwig, 1995, p.9).

5. EQUIVALENCE SCALES

The needs of different households (or whatever unit of analysis is employed) varies considerably with respect to size and composition. It is the aim of equivalence scales to overcome this problem by quantifying the relative income needs of different household types. To illustrate, an application of this approach might be to assign the first adult of the household with a weight of 1.0. Each subsequent adult is assigned a weighting of say 0.6, and each child a weighting of say 0.3. The reason the weights for each additional person (whether adult or child) are less than one is because of economies of scale. That is to say, costs increase less than proportionately as the number of people in the household increase. For example, using the aforementioned equivalence scales, a couple with one child will need \$190 ((1×100) + (0.6×100) + (0.3×100))¹ to enjoy the same standard of living as a single person with an income of \$100 (1×100). Hence equivalent gross income for a household is simply the sum of the household's income times the equivalence scale. For the previous example, this is was 100×1.9 .

'Serious effort has been given to the computation of equivalence scales for Australia' (Boehm, 1994, p.3) because final results may be quite sensitive to the smallest changes in these scales. For instance, the more weighting given to children, the lower the perceived standard of living in households with a large number of children. Choosing the correct equivalence scales is therefore an important issue (see OECD, 1996; EPAC, 1995; Bradbury, 1992; Henderson, 1975).

6. METHODS OF MEASURING INEQUALITY

There are several methods for measuring income inequality. These include the Theil Entropy Index, the range, relative mean, variance, standard deviation of logs, the Atkinson index, the coefficient of variation, quintiles/deciles, ratio of top quintile/decile to the bottom quintile/decile, and the most common, the Gini Coefficient. As the number of ways to measure inequality is so extensive, only those discussed in the articles reviewed shall be briefly addressed here (see Coulter, 1989; Kakwani, 1986; Atkinson, 1983; Atkinson, 1973).

The coefficient of variation explains the relative dispersion of outcomes around the mean. It is defined as the ratio of the standard deviation (s) to sample mean (m) expressed as a percentage. That is

$CV = s/m \times 100$

The coefficient of variation adjusts the variation of results for the scale used so that it is unit free. This enables variables with different units of measure to be compared.

Categorising income into quintiles or deciles provides quite detailed information about how income is distributed and which groups have been made better or worse off over time. It is also beneficial to analyse the ratio of the top to bottom quintile (decile). Clearly, the larger the ratio the more income the rich have relative to the poor. This measure therefore provides important information about changes in the dispersion of income.

¹ Monday 1997 Alternatively, this could be expressed as 100 ¥ (1 + 0.6 + 0.3).

The Gini Coefficient, developed in 1912 by an Italian statistician, is more formally known as the Gini concentration ratio. This measure of income distribution is a summary statistic derived from the Lorenz Curve. In short, 'it gives the area between the observed Lorenz Curve and the line of absolute equality as a proportion of the total area under the line of absolute equality' (Pearce, 1989, p.170). This means that the Gini Coefficient must lie between 0 (perfect equality) and 1 (perfect inequality). It is important to note that if the Lorenz Curves intersect it is not possible to say unambiguously which distribution is more equal even though they will have different Gini Coefficients. A fall in the Gini Coefficient only represents a definite decline in inequality if the Lorenz Curves do not intersect. That is, one Lorenz Curve (that with the more equal distribution) lies wholely within the other.

7. <u>REVIEW OF LITERATURE</u>

The studies of inequality in Australia which shall now be reviewed employ a number of the techniques just addressed, with the approach adopted depending of the aim of the study and the availability of data.

7.1 Jones (1975)

One of the most widely cited reviews of income inequality earlier this century was conducted by Jones (1975), who examined changes in income distribution in Australia between 1914/15 and 1968/69. This was made possible when the Australian Bureau of Census and Statistics published *Income Distribution 1968-69*. By comparing data from this survey with that of the 1915 War Census, Jones (1975) was able to analyse long-term trends in the distribution of income in Australia.

Before discussing the results, several important problems associated with the statistics need to be addressed. First, the 1915 War Census required people over 18 to collect, fill out and post the Census back to the statistician. Knibbs (1918, as cited in Jones, 1975) believed that those people who failed to submit the Census were primarily on small incomes. Furthermore, several economists believe that, because the Federal Government was proposing a new income tax at the time of the War Census, people seriously understated their income (Jones, 1975, pp.24-25).

The second problem associated with the statistics is that the two surveys are significantly different. Jones (1975, p.26) cites some of these differences:

'The two income surveys differ in potentially important ways. First, the 1915 War Census dealt with personal income net of certain deductions, the 1968-9 Survey with gross personal income. Second, the 1915 War Census excluded government social benefits from income, thus excluding persons whose sole source of income was the age or invalid pension. Third, there is a minor difference in the age range included: eighteen and over in 1915 and fifteen and over in 1969. Finally, no reference is made in the publication of the results of the 1915 War Census as to how over 20,000 Australians serving in the Egyptian campaign were treated.'

Having acknowledged these potential problems, Jones (1975, p.29) concludes that there has been an unmistakable reduction in income inequality for male income earners, as the Gini Coefficient fell from 0.409 in 1914/15 to 0.354 in 1968/69. It is worth noting that no unambiguous conclusion can be reached as the Lorenz curves for the two periods did intersect. However, Jones (1975, p.32) concludes that 'it would require a mind particularly resistant to evidence to deny that over the last half century there has been a significant reduction in inequality of income distribution'.

7.2 McLean and Richardson (1986)

The primary purpose of McLean and Richardson's (1986) study is to estimate Australia's income distribution for 1933. Having done this they then compare the results for 1933 with statistics from the 1915 war census and various ABS publications for 1981 with the aim of determining if Jones' (1975) observation, that income inequality declined between 1915 and 1968/69, is continuous (McLean and Richardson, 1986).

The 1933 population census was of great importance because it was only the second official survey in Australia which included a question on income distribution. 'For the purpose of establishing trends in ... income distribution over time, the fact that 1933 was a year of deep depression is a distinct drawback' (McLean and Richardson, 1986, p.73). In an effort to address this problem McLean and Richardson (1986) try to expunge the effects of the depression from the data. Moreover, given the differences in definition used in the 1915, 1933 and 1981 surveys there are other considerable problems associated with comparing their data. The definition of income given in the 1933 Census is rather precise. It advised people to calculate income as follows:

'all income for the year ended 30th June, 1933, by way of salary or wages or from any business must be included plus any income from property or other sources. The value of board and lodgings, rations, or other allowances received from an employer must be included.

In every case the income to be stated is the total income for the year without deduction for household or domestic expenditure.

Allowances received by wife from husband should not be included by wife as income nor should allowances from surviving parents or other relations be stated unless received as payment for services rendered.

(McLean and Richardson, 1986, p.69)

Given this definition and the problems associated with the 1915 war census data, discussed by Jones (1975), it is understandably difficult to compare results between the different periods. Further discussion of this, however, is beyond the scope of this paper (see McLean and Richardson, 1986; Jones, 1975).

The results of McLean and Richardson's (1986) analysis (not adjusting for the effects of the depression) found the Gini Coefficient for persons' income distribution² to be 0.4730 in 1915, 0.4978 in 1933, 0.44 in 1979 and 0.45 in 1981. This suggests that individuals experienced an increase in income inequality between 1915 and 1933. The Gini Coefficient fell significantly between 1933 and 1979, suggesting a more equal distribution in 1979 than in 1933. Finally, the Gini Coefficient rose marginally between 1979 and 1981. In short, what this means is that the Gini Coefficient fell 4.9 per cent between 1915 and 1981. If 1933 is taken as the reference point then the fall in the Gini Coefficient is even greater, declining 10.6 per cent.

McLean and Richardson (1986) also look at changes in income distribution for men alone,³ using 1915, 1933 and 1981 as the reference points. They do this by analysing both decile income (as a percentage of median income) and the Gini Coefficient. The trends suggested by the Gini Coefficient are supported by the decile income levels. That is, 'an unambiguous worsening of the income distribution for males' occurred between World War One (1915), when the Gini Coefficient was 0.455, and the Great Depression of 1933, when the Gini Coefficient increased to 0.555 (McLean and Richardson, 1986, p.72). There is also an unambiguous increase in inequality between the depression and 1981', which recorded a significantly lower Gini Coefficient of 0.371 (McLean and Richardson 1986, p.72). Hence income inequality for males appears to have become more equal between 1915 and the early 1980s as the Gini Coefficient fell from 0.555 to 0.371. McLean and Richardson (1986) note, however, that this result is not unambiguous as the Lorenz curves for the two years do intersect. This reflects the fact that while the top 10 per cent of males are worse off and the bottom 10 per cent are better off, the overall changes experienced by the second to the eighth deciles is unclear. McLean and Richardson (1986, p.80) do, however, conclude that 'a reduction in male income inequality is clearly evident between 1915 and 1981, and is of a similar magnitude to that detected by Jones (1975) in his comparison of 1915 and 1969 ...'. Moreover, when McLean and Richardson (1989) adjust the 1933 data for the effects of the depression the conclusion that income was more equally distributed in 1981 than in 1933 still holds.

² This is, when zero income was excluded.

³ This time including zero income.

Finally, in an effort to capture changes in material wellbeing McLean and Richardson (1986) examine income distribution on a household basis rather than on an individual level. They conclude that between 1933 and 1979 'inequality has decreased unambiguously and by a substantial amount within each household group...' (p.80). Hence it would appear that income became more equally distributed for males and households between 1933 and 1981. The reduction in inequality during this period appears, at least for men, to be greater than the reduction in inequality experienced between 1915 and 1981. In short, it appears that McLean and Richardson (1986) found the decline in income inequality not to be continuous. Rather inequality appeared to rise slightly between 1915 and 1933, and fell between 1933 and 1981 so that by 1981 incomes were more equally distributed than in 1915.

7.3 Travers and Richardson (1993)

Unlike many other researchers who examine the distribution of income Travers and Richardson (1993) are concerned with people's overall wellbeing. That is, they do not only consider people's material wellbeing, but also their right to freedom and distributive justice. In an effort to expand knowledge about the Australian people's quality of life, Travers and Richardson (1993) conducted the Australian Standard of Living survey (ASL), the major focus of which was to learn more about people's living standards than was revealed by money income alone.

The ASL survey was conducted by Travers and Richardson in 1987. It took a random sample of the 'Australian population aged between 20 and 74 who lived in private dwellings (that is, were not homeless or in caravan parks or institutions). People who lived in remote country areas were also excluded' (Travers and Richardson, 1992, p.63). The response rate was 65 per cent. In total, of the 1578 dwellings approached 1659 individual responses were received. To date, the ASL survey is likely to provide the most comprehensive information on the standard of living in Australia.

The primary purpose of this study was not to analyse income inequality in Australia. It does, however, have some important findings for the distribution of income and wealth. Travers and Richardson (1993) focus primarily on full income as their unit of measure. This is a much more comprehensive measure than the other types of income mentioned previously. In short, it 'comprises cash income, the value of adult non-employed time, the value of [private] benefits in kind, both given and received, health expenses, debt repayments and the estimated annual value of life assurance and shares' (p.34). Aggregated adjustments are then made with the use of equivalence scales to take account of the size and composition of different households. Once this is done the annual value of

consumer durables⁴ (e.g., cars, boats, house, etc.) is added on, the values of which are all calculated after tax.

Given the exhaustive nature of this measurement, full income exceeds after tax income. Travers and Richardson (1993) state that the median value of full income was 77 per cent higher than the equivalent after tax money income (p.35). Acknowledging that one of the benefits of full income, as a measure of standard of living of different Australians (and hence inequality), is that it is more comprehensive, it does have its disadvantages. In particular, it requires a lot of data and a large number of calculations which may diminish its credibility (Travers and Richardson, 1993, p.41).

The ASL survey found income inequality in Australia, as measured by the Gini Coefficient, to be 0.26 when full income per person was the unit of measure. When the net impact of indirect taxes and government provided education, health services, housing and non-cash social welfare benefits were added to full income, the Gini Coefficient fell to 0.23 suggesting that the overall impact of government activity was to reduce inequality (Travers and Richardson, p.78). Overall, Travers and Richardson conclude that not only is Australia one of the most egalitarian countries in the world, 'it is more so now than in the past' (p.78).

7.4 Harding (1994)

Ann Harding's (1994) paper examines the impact of family, demographic and labour force changes in income inequality for Australia between 1982 and 1993 using both simulation analysis and actual data. Harding (1994) uses three income measures market income, gross income and equivalent gross income to show a more detailed picture of how income distribution is changing. 'Market income shows the current income of the family from wages, self-employment, investment income, etc. before the receipt of any cash transfers from the government. Gross income equals market income plus any cash transfers received... Equivalent gross income equals gross income divided by the family's equivalence scale value'⁵ (p.9).

Harding (1994) uses the ABS data on the monthly Labour Force Survey to establish changes in Australia's socio-demographic structure. She argues that this data is preferable to the ABS Income Survey for two reasons. First, it 'provides a better guide to changes in socio-demographic patterns, as the sample size is double that of Income Surveys and, second, non response is very much lower' (p.2).

⁴ To calculate the annual value of consumer durables Travers and Richardson (p.34) used 'the annual interest (after tax) that could have been received by the household on its purchase price, less an allowance for depreciation'. (For a more detailed discussion see Travers and Richardson, 1993, pp.28-40).

⁵ The value for single adults is 1, for subsequent adults it is 0.56, and for dependent children it is 0.32.

Harding (1994) established several changes in the socio-demographic structure of the Australian populace between 1982 and 1993. For instance, the number of elderly people (over 60) rose by 625,000 to represent 19.2 per cent of the population in 1993 as opposed to 17.9 per cent in 1982. Male workforce participation fell between 1982 and 1993 while female participation rose from 45 per cent to 53 per cent. For the same time period, part-time work for males and females increased by 6 per cent and 5 per cent respectively and the number of sole parents more than doubled. Having reported these and other important changes in the demographic social and labour force profile of the Australian people, she then uses the 1982 and 1990 ABS Income Surveys to investigate changes in income distribution in Australia.

Harding's research has been facilitated by the ABS releasing these income surveys in both micro data and unit record format. Each of these records has a weight attached. 'For example, each of the 30,000 records within the 1990 Income Survey contains a weight or "grossing-up factor", which represents the likelihood of finding persons with a similar set of characteristics in the Australian population' (Harding, 1994, p.6). By changing these weights it is possible (as Harding illustrates) to impose the 1982 social, demographic and labour force structure onto the 1990 Income Survey. It is then possible to test how these changes have effected income inequality. The unit of measure used by Harding as the base for measuring income inequality is the family weight.⁶ This effectively allocates each individual within a family the income of the whole family.

Using actual data from the 1982 and 1990 Income Surveys, Harding found the distribution of market income has become more unequal. The results of this analysis are reported in column one and two of Table 2. The Gini Coefficient for the market incomes of families rose from 0.462 to 0.479 between 1982 and 1990. The coefficient of variation also rose, suggesting an increased dispersion in market income between families. Growing inequality in income was partially offset by tightening and substantially increasing the real value of government cash transfers (Mitchell et al., 1994, as cited in Harding, 1994, p.11). Consequently, the Gini Coefficient for the total gross income of families increased between 1982 and 1990 from 0.389 to 0.395, a

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⁶ Family weight is derived by 'taking the arithmetic mean of the individual person weights for every adult in the family, and then multiplying that weight by the total number of people in the family (including children)' (Harding, 1994, p.9).

Меаѕиге	1982 - actual data	1990 - actual data	1982 structure imposed on 1990	1993 structure imposed on 1990
Market income				
 Mean - \$ per week Gini coefficient coefficient of variation 90/10 ratio 	\$328 0.462 88.0 #	\$602 0.479 96.0 #	\$584 0.474 95.1 #	\$589 0.493 98.8 #
Gross income				
 Mean - \$ per week Gini coefficient coefficient of variation 90/10 ratio 	\$358 0.389 75.5 8.63	\$661 0.395 81.7 10.62	\$644 0.390 80.7 7.69	\$652 0.402 83.3 8.17
Equivalent gross income				
 Mean - \$ per week Gini coefficient coefficient of variation 90/10 ratio 	\$202 0.365 71.7 5.50	\$375 0.365 77.1 4.97	\$358 0.363 77.8 4.87	\$370 0.373 79.2 5.09

Table 2: Measures of Income Inequality For Individuals: Actual and Simulated

Source: Harding 1994, p.11.

smaller increment than market income. Unlike market income, for gross income there is no unequivocal conclusion about the direction of change in distribution from the Gini Coefficient as the Lorenz Curves intersect for the two years. There is, however, strong evidence that inequality increased as the coefficient of variation increased for gross income as did the ratio of income for the top decile to that of the bottom decile. For equivalent gross income the Gini remained constant, the coefficient of variation rose (from 71.7 per cent to 77.1 per cent) and the ratio of the top decile to the bottom decile fell. Hence, there appears to be no clear, or substantial, change in equivalent gross income between 1982 and 1990.

Harding (1994) also uses simulation analysis to answer questions such as 'If the structure of the population had not changed between 1982 and 1990, would there still have been the same rise in the inequality of market and gross income?' (p.13). The results of this analysis are reported in column three of Table 1. The Gini Coefficient, the coefficient of variation and the ratio of the proportion of income earned by the top decile to that of the bottom decile for all three income levels is lower in column three than in column one, indicating that the profound social, demographic and labour force changes which occurred between 1982 and 1990 contributed to greater inequality (Harding 1994, pp.13-14). In other words, had changes in the age distribution, family structure and labour force patterns 'which occurred between 1982 and 1990 not taken place, the distribution of income would have been more equal than it actually was' (p.13). Although this is not a profound conclusion it is beneficial to know that the changes in the demographics of the population have been partly responsible for the growth in inequality.

Harding (1994, p.14) also imposed the 1993 socio-demographic structure on the 1990 income distribution. What this means is that the simulation captured not only change in age and family structure between 1990 and 1993 but also the rise in unemployment which resulted form the 1990 recession. In this scenario, the Gini Coefficient for market incomes rose significantly from 0.479 (for actual 1990 data) to 0.493 (when the 1993 structure was imposed on the 1990 income distribution). 'Rising unemployment since 1990 thus appears certain to have increased the inequality of the distribution of market income among individuals' (p.15). Gross income and gross equivalent income also experience a rise in the Gini Coefficient. This increase was small in comparison to the rise in the Gini Coefficient for market incomes. The reason for this was the safety net provided by the social security system (Harding 1994, p.15).

Harding (1994) also examines the disaggregated results. In short, the results suggested rising unemployment and the fall in full-time male employment between 1990 and 1993 is likely to have resulted in a greater inequality in the early 1990s than in the 1980s'.

7.5 Gregory (1993)

Acknowledging that Gregory's 1993 article, Aspects of Australian and US Living Standards: The Disappointing Decades 1970-1990, does not focus directly on income distribution, it does have some important implications for inequality in Australia. This is because it discusses the 'dispersion of living standards as measured by changes in male earnings from full-time employment' (Gregory, 1993, p.62). Gregory focuses on the labour market, noting that other factors such as taxes, government benefits, and how people group together (i.e., alone, in group houses, etc.) has a strong influence over income distribution.

Growth in male full-time employment is primarily among high and low paying jobs. '[A]fter allowing for population growth, approximately one in three male middle earning jobs disappeared between 1976 and 1990' (Gregory, 1993, p.62). All of the net growth in male full-time non-managerial employment was experienced in the highest and lowest quintiles. The job losses which total 118,000 have been concentrated in the second, third and fourth quintiles. This represents a loss in one-third of jobs in the middle 60 per cent of the earnings distribution (Gregory, 1993, p.66). Employment growth in the top quintile was 23 per cent. This meant it was unable to keep pace with population growth which would have required a net increase in employment growth of 31 per cent. By comparison, the bottom quintile experienced extraordinary growth of 43 per cent. Employment growth therefore has occurred primarily in low weekly earnings (Gregory,

1993, p.66). This could be partly the result of a 10 per cent fall for the bottom decile in real wages within the private sector. Alternatively, growth in the top quintile appears to have exerted upward pressure on real wages in the private sector as they rose 6 per cent (Gregory, 1993, p.62). Fifty-six per cent of all male full-time employment growth was in the bottom quintile. A further 40 per cent was experienced in the top quintile. This leaves an insignificant amount of growth, 4 per cent, to be spread amongst the middle three quintiles. Once again, this shows that growth in employment is biased towards low paid employment (Gregory, 1993, p.66).

Although the 'disappearing middle' is a widely cited phenomena, theories purporting to explain this observation are not as prevalent. 'The leading theories include as causes: the decline in manufacturing employment, the growth of international trade leading to wage pressure on the bottom of the pay distribution, a technological change bias which is increasing demands for skilled labour and the changing demographic structure of the labour force' (Gregory, 1993, p.67).

In conclusion, it seems indisputable that if growth is concentrated in the top and bottom quintiles and real income in the top quintile is rising while real income in the bottom quintile is falling, income inequality must be increasing.

7.6 Boehm (1994)

Boehm (1994) examines the change in income distribution in Australia over the last two to three decades. He defines income as 'regular cash income form all private sources (employment, self employment, investments, rent, superannuation, etc.) plus government direct cash payments such as pensions and unemployment benefits' (ABS 1992, as cited in Boehm 1994, p.2). Boehm, uses gross income rather than net income for two reasons. First, he argues that the ABS data on income tax is of poor quality, by their own acknowledgment. Second, Saunders (1992, 1993a, 1993b as cited in Boehm, pp.2-3) reports that when using ABS statistics the conclusion regarding income distribution is the same whether gross or net income is used. Having established this, it is important to note that Boehm (1994) uses the 'income unit', as defined by the ABS, for the basis of his analysis. He also does not use equivalence scales.

Boehm (1994) uses several data series in an effort to determine whether income inequality has risen or fallen.⁷ First, he examines income distribution by decile classes for all income units. He found income units in deciles 1 to 8 lost income share to the top two deciles, the tenth decile in particular. This would suggest income became less equally distributed between 1981/82 and 1989/90, a conclusion supported by the Gini Coefficient

⁷ Not all Boehm's tabulated data is reviewed here. Only the most relevant statistics are discussed.

which rose from 0.40 to 0.43 for the same period. The fact that income units in both the low and middle deciles are losing their income share suggests 'Gregory's (1993) finding that there was a 'disappearing middle' with a movement between 1976 and 1990 away from the middle earnings jobs to both the high and low paying jobs does not apparently apply generally to all income units as far as the 1980s is concerned' (Boehm 1994, p.6). Rather, it is restricted to male full-time non-managerial employment.

To explore Gregory's (1993) 'disappearing middle' phenomena further, Boehm (1994, p.7) examines changes in income share for full year full-time workers by gross annual earned income decile. He found that there was an increase in income share for persons in the highest decile only. 'But overall it could not be said that there was a movement away from the middle to the lowest as well as to the highest income earners' (Boehm 1994, p.7). Rather, it is a movement away from the low and middle income shares to the top. It is worth keeping in mind, however, that Gregory (1993) examined a longer time period (1976-1990) than Boehm (1981/82 to 1989/90 and used a different unit of measure. Boehm (1994) found that the Gini Coefficient of full-year full-time workers, by income share, increased from 0.26 to 0.28 for males and females combined, indicating an increase in income inequality between 1981/82 to 1989/90.

Third, Boehm (1994) investigates the mean income of all income units by decile class. He found evidence to support the view that there was a 'disappearing middle', as the largest decline, between 1978/79 and 1989/90, expressed as a percentage of total annual income, was experienced in the fourth to seventh deciles. He also found the Gini Coefficient rose from 0.39 in 1978/79 to 0.43 in 1989/90. These results are consistent with his preceding evidence that income inequality appears to be more prevalent in 1989/90 than in 1978/79.

Fourth, Boehm (1994) explores the change in income inequality by decile class for one person income units. Evidence suggesting that income became more equally distributed between 1973/74 and 1978/79 was found. More specifically, he determined that the lowest seven deciles received a greater share of income at the expense of the top three deciles. The Gini Coefficient for this period also fell from 0.42 to 0.37. For the ensuing period 1978/79 to 1989/90 the income shares of the second to ninth deciles fell, with a small increase in income share experienced in the lowest decile (2.1 to 2.3) and a relatively large increase (25.3 to 27.8) in the top decile. The Gini Coefficient for this period increased from 0.37 to 0.39. All this evidence suggests that income inequality increased between 1978/79 and 1989/90. This provides a perfect illustration of how important the difference in time periods makes when analysing changes in income distribution. In short, Boehm's (1994) results suggest income inequality fell between 1973/74 and 1978/79 (i.e., the Gini Coefficient fell from 0.42 to 0.37) while it appears to have risen between 1978/79 and 1989/90 (i.e., the Gini Coefficient increased from 0.37 to 0.39). Overall, between

1973/74 and 1989/90 income inequality seems to have fallen (i.e., the Gini Coefficient fell form 0.42 to 0.39 and the bottom five deciles were made better off at the expense of the sixth to ninth deciles while the top deciles remained unchanged).

Similar results are given for the fifth data set examined, that is, for full-year full-time workers by mean gross annual earned income. Here the Gini Coefficient fell from 0.23 to 0.21 between 1973/74 and 1978/79. It then rose from 0.21 to 0.24 between 1978/79 to 1989/90 resulting in a small increase in the Gini Coefficient from 0.23 to 0.24 over the entire period. The decline in the Gini Coefficient for the earlier period (1973/74-1978/79) may be partially due to women being awarded equal pay (which produced a significant increase in female earnings as a proportion of male earnings) and the approximate doubling of aged and widow pensions during this period (Boehm, 1994, p.14). It is, however, wise to be careful when interpreting improvements in the Gini Coefficient in the 1970s. Boehm (1994, p.9) notes that 'the accelerating inflation involving a wage-wage and wage-price explosion during the first half of the 1970s calls for caution in interpreting the observed movement of the Gini Coefficient'.

In summary, Boehm (1994, p.18) finds the statistical evidence indicates that Australia experienced a decline in income inequality from the late 1960s to the late 1970s. This was 'reversed in the 1980s'. Over the whole period, that is from 1968/69 to 1989/90, there was probably a slight increase in inequality

7.7 McGuire (1994)

McGuire's (1994) paper, which is based on earnings for full-time adult non-managerial employees, aims to investigate changes in earnings dispersions in Australia between 1975 and 1992. Restricting his analysis to this group 'ensures that the results are not affected by the impact of increasing part-time workers on the distribution of weekly earnings. On the other hand, the data also excludes full-time adult managerial employees' (p.29). It is therefore unable to capture the recent escalation in managerial salaries.

McGuire (1994) examines several aspects of changes in the earnings dispersion in Australia. First, he analyses the proportion of full-time adult non-managerial employees categorised by earnings bands and expressed as a percentage of median earnings. His results support recent analysis by King, Rimmer and Rimmer (1992), Gregory (1993) and Borland (1992) (as cited in McGuire (1994, p.28)), who all argue that since the mid 1970s earnings dispersion in Australia has increased. This phenomena is referred to in the literature as the 'law of the disappearing' which has also been identified in most other industrialised countries (OECD, 1996, cited in McGuire, 1994, p.28). The grounds on which McGuire supports the concept of a disappearing middle are that from the mid 1970s to the early 1990s there was a decline in the proportion of middle paid workers and

an increase in the proportion of high and low paid workers.⁸ This is illustrated in Table 3 below. The proportion of people earning less than 75 per cent of median earnings (low paid workers) increased from 9.8 per cent in the mid 1970s to

Percentage of	Aver	age 1975 t	o 1977	Average 1990 to 1992		
median earnings	Men	Women	Persons	Men	Women	Persons
Less than 75%	9.7	6.6	9.8	17.0	10.0	14.3
75% to 90%	23.7	20.8	23.9	20.8	24.5	22.1
90% to 110%	30.1	40.9	29.5	22.9	28.3	24.2
110% to 150%	26.9	25.7	26.9	27.1	27.4	27.2
More than 150%	9.5	6.1	9.9	12.2	9.9	12.2

Table 3: Proportions of employees by earnings band (percentage of all full-time adult non-managerial employees)

Source: McGuire, 1994, p.30.

14.3 per cent in the early 1990s. For the same period, the proportion of middle income earners (those earning 90 per cent to 110 per cent of median earnings) decreased from 29.5 per cent to 24.2 per cent, while for high income earners there was an increase from 9.9 per cent to 12.2 per cent. As a consequence of these results McGuire (1994, p.31) concludes that there has been an 'unambiguous increase in earnings dispersion among full-time adult employees' between the mid 1970s and the early 1990s.

Second, McGuire (1994) examines percentage changes in real earning by decile for fulltime non-managerial employees. He found that all women experienced an increase in real earnings between 1975 and 1992. Moreover, higher paid men and women have experienced larger increases in income than those in low paid employment. Lower paid men in particular were worse off in terms of median earnings in 1992 than in 1975.

McGuire examines this period (1975 to 1992) in two sections - 1975 to 1985 and 1985 to 1992. He found all deciles experienced an increase in income between 1975 to 1985. During the succeeding period (1985 to 1992), however, all groups (men, women, persons) other than women in the top four deciles experienced a decline in real earnings. This reduction in real earnings was most prevalent for low paid men (McGuire, 1994, pp.32-34).

⁸ McGuire (1994) examines earnings for men, women and persons. Our analysis is not primarily concerned with the difference between sexes. Rather we are reporting on the overall picture which is why we analyse persons instead of males and females separately. It is worth noting that Gregory (1993), who also examines full-time adult non-managerial employees, confines his analysis to males. We would expect similar results between Gregory (1993) and McGuire as men make up a larger proportion of the workforce than women.

Third, McGuire (1994) examined movements in real earnings for each decile between 1983 and 1992 for full-time adult non-managerial employees expressed as a percentage fo real earnings. He compared this with results from his simulation analysis to see if movements in real incomes would differ greatly after tax and transfer payments were incorporated. He extends his analyses here to include not only men and women but families as well. The results, reported in Table 4, showed that between 1983 and 1992 low paid workers, particularly men, experienced a significant decline in their real earnings before taxes and transfers were taken into account. The picture, however, appears very different once tax and transfer payments are taken into consideration. Single men, single women and families are nearly all better off after including tax and transfer payments. Only single men in the third decile and families in the fifth decile are marginally worse off. Low income families in the lowest two deciles, for example, experienced improvements in real incomes of 15.8 per cent and 13.5 per cent respectively between 1983 and 1992.

Given the results of the analysis (as displayed in Table 4), it appears that the dispersion in incomes is smaller after tax and transfers have been accounted for. This suggests 'taxes and social security policies adopted since 1983 have been quite effective in protecting low paid workers, especially those with dependent children' (McGuire, 1994, p.34).

Earnings percentile	Before tax and transfer payments			After tax and transfer payments (a)			
-	Men	Women	Persons	Single men	Single women	Families (b)	
10	-5.4	-2.1	-3.6	0.7	3.2	15.8	
20	-4.9	-1.5	-3.6	0.0	4.2	13.5	
30	-3.9	-0.3	-2.4	-0.2	4.5	8.8	
40	-2.6	2.2	-1.4	0.0	5.8	4.2	
50	-0.7	3.5	-0.7	0.8	6.2	-0.3	
60	1.0	4.6	1.0	1.6	6.3	0.1	
70	1.2	6.2	2.7	2.1	6.8	1.1	
80	1.7	8.8	2.6	2.6	8.0	1.5	
90	2.3	7.1	2.0	3.0	6.6	1.2	

Table 4: Percentage movements in real earnings and simulated movements in real incomes after tax and transfer payments, 1983 to 1992 (full-time adult non-managerial employees)

(a) Including income tax, dependent spouse rebate, family allowance and family allowance supplement.

(b) Taxpayer with dependent spouse and two children under thirteen, based on earnings for

full-time adult non-managerial persons.

Source: McGuire, 1994, p.34.

In summary, there has clearly been an increase in earnings dispersion in Australia between 1975 and 1992, suggesting an increase in income inequality. The data also appears to support the 'disappearing middle' hypothesis as the share of middle paid jobs is declining. Furthermore, taxation and social security partially offset dispersion in earnings between 1983 and 1992. Low paid workers with dependent children in particular experienced a 'significant increase in their real income as a result of the introduction of the family assistance supplement' (McGuire, 1994, p.50).

7.8 Saunders (1993a)

Saunders (1993a) aim was to review income inequality in Australia and to place it in the context of deregulation using five different measures of income. The first of these includes the distribution of wage and salary income amongst full-year, full-time (FYFT) workers only. The second and third measurements he uses are private and gross income. 'The fourth is net income, after deductions of personal income tax and the medicare levy' (p.3). The income unit, as defined by the ABS, is the unit of analysis for all four types of income. The fifth and final measurement of income used is equivalent net income (based on the scales proposed by the Henderson enquiry into poverty in Australia). This income measure uses individuals rather than income units which were used in the first four income measures. He does this on the grounds that this final measurement 'comes closest to measuring inequality in the distribution of economic well-being amongst individuals in the economy' (p.4).





V = Equivalent net income of individuals

Irrespective of which distribution is used, it is clear from Figure 1 that there is an upward trend in income inequality in all income units. While private and gross income experienced the largest absolute increase in the Gini Coefficient, it was the first income category (wage and salary income of full-year full-time workers only) which experienced

Source: Saunders, 1993a, p.3.

the largest percentage increase (11.4 per cent). The other income measurements in figure one 'show increased inequality of between 6.6 per cent (in the case of private income) and 7.8 per cent (in the case of gross income)' (Saunders, 1993a, p.4). Government policies and the increase in the social security system appear to have been relatively successful in moderating the upward trend in inequality, the main source of which appears to be greater inequality in the distribution of wage incomes for full-year full-time workers (Saunders, 1993a, p.4.). Hence, Saunders (1993a), provides fuller evidence of increasing inequality in Australia between 1981/82 and 1989/90.

7.9 Raskall (1992)

Raskall and Saunders (1992) was the outcome of a study of social and economic inequality, a joint auspice of the Social Policy Research Centre and the Centre for Applied Economic Research. Its primary focus was to elucidate 'various dimension of inequality in Australia - both economic and social - and to investigate the factors causing them ' (p.i). Under the canopy of this study Raskall (1992) explored the history of inequality in and examined the distribution of income according to survey data for a number of different units of analysis. These include males, females, persons, income units, households and families. Table 5 shows the change in income inequality as measured by the Gini Coefficient for each of these groups over time.

Several important observations can be made from Table 5. Firstly, inequality amongst men remained steady during the late 1960s and 1970s. It did, however, begin to rise in 1981/82 and continued to increase until 1985/86. Second, females experienced a significant decline in income inequality between 1973/74 and 1978/79 which Raskall (1992, p.13) suggests could be due to increased female participation. It may also be due, in part, to the introduction of equal pay for women which was phased in over the three years following 1969 (Norris, 1994, p.159). Because of this large increase for females, the overall trend for males and females combined has been a fall in inequality. Third, income inequality increased consistently after 1973/74 for income units, households

		Unit	of Analysi	S		
Survey Date	Males	Individuals Females	Persons	Income units	Household	Families
1968-69IS 1973-74IS 1974-75HES 1975-76HES 1978-79IS 1981-82IS 1983-84HES 1985-86IS 1988-89HES	0.35 0.35 0.35 0.36 0.37	0.54 0.53 0.48 0.47 0.48	0.48 0.47 0.44 0.44 0.45 0.45	0.39 0.39 0.40 0.41	0.34 0.35 0.37 0.39	0.33 0.31 0.32 0.34 0.36

Table 5: Distribution of Gross Income: Gini Coefficients

Source: Raskall, 1992, p.13.

and families. Income units experienced an increase of 0.02 between 1973/74 and 1985/86. During this same period families experienced a larger increase of 0.05. Unlike for income units and households, data preceding 1973/74 is given for families. It shows a decline of 0.02 in the Gini Coefficient. Taking this into account, the increase in the Gini Coefficient for 1968/69 to 1985/86 is smaller (0.03) than that experienced (0.05) between 1973/74 - 1985/86. Finally, the increase for households and families is much greater than for income units. In short, the trend is clear: economic inequality has increased since the mid 1970s (Raskall, 1992, p.13).

Raskall (1992) also examines changes in the distribution of gross income by analysing quintile shares for individuals, income units and households. The results are reported in Table 6. Using this approach, he was able to conclude that 'greater increases in income inequality occur the larger the size of the unit of analysis adopted' (p.14). For instance, if we examine the change in inequality as measured by the ratio of the highest quintile to the lowest quintile, we can determine that inequality for individuals has fallen 45.5 per cent between 1968/69 and 1985/86. For income units the ratio fell 12.8 per cent between 1973/74 and 1985/86. This smaller reduction in income inequality for income units could partially be explained by the shorter time period. In other words, it may have been unable to capture any improvement between 1968-69 and 1973-74. For households (acknowledging that the data given starts later still), the ratio of the top to the bottom increased by an enormous 34.9 per cent. This is in stark contrast to the decline of 45.5 per cent and 12.8 per cent experienced for individuals and income units

		Individuals		Income Units			Households		
Survey date	Lowest	Highest	ratio of top 20% to bottom 20%	Lowest	Highest	ratio of top 20% to bottom 20%	Lowest	Highest	ratio of top 20% to bottom 20%
1968-69IS 1973-74IS	1.6 1.6	49.1 47.9	30.7 29.4	3.9	43.1	11.1			
1974-75HES							5.5	39.2	7.1
1975-76HES							5.2	40.0	7.7
1978-79IS	2.7	45.7	16.9	4.6	43.2	9.4			
1981-82IS	2.9	45.9	15.8	4.6	44.2	9.6			
1983-84HES							5.1	42.2	8.3
1985-86IS	2.8	46.8	16.7	4.7	45.3				
						9.6			
1988-89HES							4.4	42.3	9.6

Table 6: Gross Income: Quintile (20%) Shares

Source: Derived from Raskall (1992, p.14).

respectively. Raskall (1992, p.14) says that 'this highlights the influence of changes in the composition of family or household types: more aged person households, more sole parents, less married couples'.

Having analysed the results from both Tables 5 and 6 the change in income inequality is far from clear. Table 5 shows income inequality for all groups has risen since the mid 1970s. Table 6, which examines gross income by quintile share, demonstrated a fall in inequality for individual and income units, but a rise in inequality for households. During the 1980s income inequality increased or at least remained constant. Thus, while the change in inequality between 1968/69 and 1988/89 is rather ambiguous, there appears to be a clear increase in inequality during the 1980s irrespective of what unit of analysis is used or how inequality is measured.

	Lowest	2	Quintile 3	e Shares 4	Highest	Gini
Private (Market) Gross (incl. Social	0.3	7.7	17.9	27.3	48.8	0.47
Security)	5.1	10.5	17.2	23.0	74.4	0.57
Disposable (after Tax)	6.3	12.1	17.9	24.7	39.0	0.33
Disposable and Social Wage	7.6	12.9	18.3	24.3	36.9	0.29
Final (Indirect Tax)	7.5	12.7	18.2	24.3	37.3	0.30

Table 7: Impact of Government on Household Inequality: 1984 HES

Source: Raskell (1992, p.18).

Finally, Raskall (1992) examines the impact of government on income distribution using the 1984 Household Expenditure Survey. The results are displayed in Table 7. Even

though this data is a little dated, it is worth discussing so that it can to some extent be compared with a similar, more recent study conducted by Johnson, Manning and Hellwig (1996) which is discussed in section 7.11. In short, the share of income for the lowest quintile rose from 0.3 (private income) to 7.5 (final income) once the impact of government's redistributive functions were taken into account. By contrast, the income share for the highest quintile fell from 48.8 (private income) to 37.3 (final income). This illustrates how the impact of government 'through the tax transfer system, significantly reduces inequality' (Raskall, 1992, p.18). The Gini Coefficient, which fell from 0.47 for private income to 0.29 for social wage, also demonstrates the greater equality which results through government's redistributive activities. Furthermore, social security payments contribute more to reducing inequality than direct taxes. 'The social wage (education, health and housing expenditure by government) reduces inequality by about the same extent as direct taxation; and indirect taxation increases inequality despite its relatively small base in 1983-84. In that regard we see the likely regressive impact of proposals for an expanded consumption tax, particularly if used to reduce personal direct tax' (Raskall, 1992, p.18).

7.10 Saunders (1993b)

The focus of Saunders (1993) study was to analyse 'changes in income distribution amongst individuals in Australia between 1942-43 and 1989-90 ... in the context of previous studies' (such as Jones (1957), McLean and Richardson (1986) and Brown (1955)) conducted over the last 80 years (p.353). Saunders (1993b) goes to great lengths to ensure that the results of his analysis for the 1980s is comparable to previous studies, thus ensuring consistency.

He begins by reviewing a study by Brown (1957) of income distribution in 1942/43. Because Brown classifies income into categories (which is effectively assuming there is no inequality within categories) he is, to some extent, understating the degree of inequality. This inaccuracy should not be significant, however, as Saunders, 1993b, p.358 notes, because Brown (1957) has used a large number (eighteen) of categories. In an effort to ensure consistency, Saunders (1993b) classifies his income into classes corresponding to those of Brown (1957). He also uses unit record data which gives a more accurate result for both decile share and Gini Coefficient.

Table 8 shows that income distribution remained relatively steady between 1942/43 and 1989/90. An important change worth noting is that the lowest three deciles are made marginally better off (when comparing group data for 1942/43 with unit record data for 1989/90) and the top decile is made worse off. Furthermore, 'it is possible that the low coverage of females in the 1942-43 data may have lead to an underestimate of inequality

in that year which, if true, would suggest a fall in income inequality between then and the late 1980s, rather than the stability suggested by the distribution ...' (Saunders, 1993b, p.364).

	1942-43(a)			1989-90(b)			
Decile	Income Share	Cumulative Income Share	Exact Method		Estimated from Grouped Data(c)		
	(IS)	(CIS)	(IS)	(CIS)	(IS)	(CIS)	
First	2.34	2.34	2.39	2.39	2.65	2.65	
Second	2.71	5.05	3.16	5.55	3.05	5.70	
Third	4.31	9.36	3.99	9.54	3.87	9.57	
Fourth	5.66	15.02	5.44	14.98	5.43	15.00	
Fifth	7.56	22.58	7.32	22.30	7.42	22.42	
Sixth	8.57	31.15	9.20	31.50	9.21	31.63	
Seventh	11.13	42.28	11.00	42.50	10.96	42.59	
Eighth	12.24	54.52	13.18	55.68	13.42	56.01	
Ninth	14.25	68.77	16.26	71.94	15.92	71.93	
Tenth	31.23	100.00	28.06	100.00	28.07	100.00	
Gini coefficient	0.409		0.396		0.393		

Table 8: The Distribution of Income in 1942-43 and 1989-90 (Percentages of gross income)

Notes: (a) The data for 1942-43 include only those individuals with annual incomes above £50.

(b) The data for 1989-90 include only those individuals with annual incomes above \$3437.

(c) The income groupings used to estimate the 1989-90 distribution correspond to those used by Brown (1957, Table VIII), updated by movements in mean income between 1942-43 and 1989-90.

Source: Saunders 1993b, p.359.

Another observation to be made from Table 8 is that the results are very similar irrespective of whether unit record data, or categorised data, was used. For instance, the Gini coefficient for 1989/90 is 0.396 for unit record data and 0.393 for grouped data. Hence, it would appear that there is 'no great distortion involved in comparing the approximate inequality measures for 1942-43 with the precise measures for 1989-90' (Saunders, 1993b, p.358). Saunders largely bases his analysis on this assumption. Having established this, we can now discuss how income distribution has changed over time. It is surprising given the magnitude of growth in social security in Australia that income distribution, as measured by the Gini Coefficient, has remained relatively unchanged, falling only 0.016 (or 3.9 per cent). This suggests, as have previous studies, that increased inequality in private income may have partly offset reductions in income inequality achieved through increased redistribution in the form of cash and in kind benefits.

Saunders (1993b) also compares income inequality statistics in 1981/82 and 1985/86 with those for 1989/90 (which he previously compared to 1942/43). To ensure that the data for

the 1980s is consistent with the data for 1942/43, Saunders (1993b, p.360) recalculates the figures (given by Saunders, Stott and Hobbes (1991)) for 1981/82 and 1985/86 in the same manner as he derived the exact 1989/90 figures shown in Table 8. This enables developments in the 1980s to be viewed against the longer term perspective of the past 50 years (Saunders, 1993b, p.361).

The results, as illustrated in Table 9, show that income inequality amongst individuals rose from 0.377 to 0.396 during the 1980s, with most of the increase occuring between 1981/82 and 1985/86. It also shows that between 1981/82 and 1989/90 the highest decile experienced a significant increase in income share at the expense of all other deciles whose income share declined.

Decile		1981-82(a)	1985-86(b)	1989-90(c)	
First		2.43	2.45	2.39	
Second		3.23	3.16	3.16	
Third		4.05	3.84	3.99	
Fourth		5.61	5.29	5.44	
Fifth		7.63	7.37	7.32	
Sixth		9.70	9.43	9.20	
Seventh		11.52	11.35	11.00	
Eighth		13.59	13.46	13.18	
Ninth		16.53	16.52	16.26	
Tenth		25.72	27.12	28.08	
Gini coe	efficient	0.377	0.392	0.396	
Notes:	(a)	The estimates above \$1840.	for 1981-82 includ	e persons with an inco	me
	(b)	The estimates above \$2494.	for 1958-86 includ	e persons with an inco	me
	(C)	The estimates t	for 1989-90 includ	e persons with an inco	me

Table 9: Income Distribution Among Individuals in the 1980s(Shares of gross income)

Source: Saunders, 1993b, p.362.

above \$3437.

Finally, Saunders (1993b) examines gross income by quintile for income units. Finding that the Gini Coefficient increased from 0.40 in 1981/82 to 0.42 in 1985/86 to a further 0.43 in 1989/90. Saunders (1993b) also examined equivalent net income by quintile for individuals. In this instance, the Gini Coefficient rose by the same amount (0.03) between 1981/82 and 1989/90. It did, however, start from a lower base of 0.31 in 1981/82. By 1985/86 it was 0.32, rising to 0.34 by 1989/90. In short, Saunders concludes that 'income inequality increased in Australia between 1981-82 and 1989-90, whether it is measured before tax among income units or after tax among individuals, whether account is taken of differences in need or not, and whether ranking and weighting is based on individuals or income units. These results suggest that not only the distribution of income, but also the distribution of economic well-being has become less equal since 1981-82' (Saunders, 1993, p.364).

In summary, Saunders (1993b) reports the distribution of income in Australia in 1989/90 to be very similar to what it was in 1942/43. He also found evidence to suggest that income inequality in Australia increased during the 1980s.

7.11 Johnson, Manning and Hellwig (1995b)

The focus of Johnson, Manning and Hellwig (1995b) is to analyse trends in the distribution of cash income and non-cash benefits between 1981/82 and 1993/94. This study is important as it is contemporary and provides detailed information on trends in real incomes as well as changes in income distribution. Moreover, these are reviewed not only be household type, but by different income definitions.

Johnson, Manning and Hellwig (1995b) use 'microsimulation' techniques to 'ensure consistent definitions and to correct as far as possible deficiencies in the basic data source...' (1995b, p.iii). In other words they do not use actual data. They use microsimulation analysis to project forward and backward in time using the 1988/89 ABS Household Expenditure Survey as the base.

Their three key findings are as follows: First, 'Australia appears to be a more equal society in 1993/94 than in 1981/82. Those on lower incomes appear to be better off... The share of disposable income for the least well off households (lowest 40 per cent) increased, while the share of the top 20 per cent of households declined slightly'. Second, 'the non-cash social wage appears to have played an important role in this redistributive process'. Third, real incomes in Australia 'were higher in 1993/94 than they were in 1981/82' (1995b, p.v).

Income Definition	1981-82	1993-94	Difference Per cent
Private Gross Disposable Social wage Final	0.489 0.366 0.308 0.255 0.264	0.517 0.352 0.296 0.226 0.237	(5.7) 3.8 3.9 11.4 10.2

Table 10: Gini Coefficient for Equivalised Household Income -
Percentage Change between Years by Income Definition,
1981-82 and 1993-94

Note: An increase in the Gini Coefficient is shown as a negative percentage change figure to indicate an increase in inequality.

Source: Johnson, Manning and Hellwig (1995b, p.3).

Johnson, Manning and Hellwig (1995b) provide substantial evidence supporting their claim that incomes have become more equally distributed between 1981/82 and 1993/94. First, they examine changes in the Gini coefficient for equivalent household income. The results are shown in Table 10.

The table shows that as the definition of income becomes broader income inequality declines until final income is reached, when it increases slightly. It is that income distribution, as measured by the Gini Coefficient, has become more equal for all income definitions except private income, which experienced a 5.7 per cent decline. This suggests that the government's redistributive policies not only offset the increase in private income dispersion, but managed to reduce it. This conclusion is drawn as the social wage fell 11.4 per cent. To illustrate more clearly what each step in the transition from private to final income involves, Table 11 has been included.

Private income	
]-	+ direct government benefits in the form of cash.
Gross income	
]-	- personal income tax
Disposable income	personal meonie ax.
]-	+ non-cash government benefits
Social wage	i non ousir govoriment benefits.
]-	- indirect tax
Final income	monoet tux.

 Table 11 Differences in Income Definition

From this table, it is evident that gross income equals private income plus direct government benefits in the form of cash. Disposable income equals gross income minus personal income tax and so on. Having established this, we can now go on to examine Table 12, which elucidates how much impact the government's various redistribution policies have had in reducing inequality. It is evident that the largest reduction in the Gini coefficient occurs between private and gross income. That means that direct monetary benefits provided by the government have the largest influence, of all major redistributive functions, on reducing inequality. Moreover, the influence of direct government benefits on income distribution increased from 25.1 per cent to 31.9 per cent between 1981/82 and 1993/94.

Income Definition	1981-82	Change from previous definition	1993-94	Change from previous definition
		Per cent		Per cent
Private	0.489	25.1	0.517	31.9
Gross	0.366	15.8	0.352	15.9
Disposable	0.308	17.2	0.296	23.6
Social Wage	0.255	17.2	0.226	23.0
Final	0.264	(3.5)	0.237	(4.9)

Table 12: Gini Coefficient for Equivalised Household Income -
Percentage Change Between Income Definitions Within the Year,
1981-82 and 1993-94

Note: An increase in the Gini coefficient is shown as a (negative) percentage change figure to indicate an increase in inequality.

Source: Johnson, Manning and Hellwig (1995b, p.18).

The inclusion of non-cash benefits in the income definition produced the second largest fall in the Gini Coefficient for both 1981/82 and 1993/94. In 1981/82 non-cash benefits reduced the Gini Coefficient by 17.2 per cent, by 1993/94 this reduction was much higher at 23.6 per cent. It is often thought that the progressive nature of the income tax system is largely responsible for income redistribution in Australia, but according to this study personal income tax, is less responsible for reductions in inequality than direct government benefits and non-cash government benefits. Personal income tax reduced the Gini Coefficient by 15.8 per cent in 1981/82 and 15.9 per cent in 1993/94. a relatively constant reduction in the Gini Coefficient. The inclusion of indirect taxes caused the Gini Coefficient to rise. This result should be expected as indirect taxes are regressive. The Gini rose by 4.9 per cent in 1993/94 when indirect taxes were included compared with 3.5 per cent in 1981/82.

Finally, the government's redistributive function increased between 1981/82 and 1993/94 such that, despite the increase in inequality of private income the government managed to reduce inequality in both the social wage and the final wage. That is to say, between the early 1980s to the mid 1990s income became more equally distributed.

8. AN OVERVIEW OF THE STUDIES

The eleven studies reviewed above are summarised in Table 13 and Figure 2. As can be seen from the table, an array of income definitions and units of analysis have been employed. Some researchers have chosen to use equivalence scales, others have not.

From Figure 2, it is clear how important the period of analysis is to the results. The primary reason some studies conclude that income inequality has risen while others conclude that it fell, is largely a function of the time period analysed. Those studies which reported an increase in income inequality include Boehm (1994), Harding (1994), McGuire (1994), Gregory (1993), Saunders (1993a) and Saunders (1993b). All these studies were conducted between the late 1960s and the early 1990s. Boehm (1994), who decomposed his period of analysis (1968/86 - 1990) into two segments, 1968/69-1978/79 and 1978/79-1990, found that in the first time frame inequality fell, while in the second period it rose. The overall result between 1968/69-1990 was that inequality rose implying that the rise in inequality made later in the period outweighed the slight fall made in the preceding time frame. Raskall (1992) examined the same period (late 1960s to the early 1990s) as the aforementioned authors. Unlike them, he was not able to say that income inequality rose. He reports that the results were unclear between 1968/69 and 1988/89. He was, however, able to conclude that during the 1980s there was a rise in the inequality of income distribution in Australia.

Jones (1975), who analysed income between 1915 and 1968/69, found income distribution became more equal. This conclusion was also reached by McLean and Richardson (1986) who analysed the period 1915 to 1981. McLean and Richardson's (1986) results showed income inequality rose between 1915 and 1933. It then declined producing an overall reduction in inequality between 1915 and 1981.

Saunders (1993b) is the only study to report that income distribution remained relatively constant during the period of analysis. Looking at Figure 2, this result would appear to be a function of the time period analysed (1942/43-1989/90), lying between those where inequality declined (1915-1981) and rose (1968/69-1992).

	Author	McLean & Richardson (1986)	Jones (1975)	Saunders (1993b)	Raskall (1992)
	Conclusion	Income distribution appears to have become less equal between 1915 and 1933. However, between 1 933 and 1981 it became more equal. Over the whole period, 1915 to 1981, inequality appears to have declined. This result, however, is not unambiguous.	There has been a reduction in income inequality for males.	1942/43-1989/90 Income distribu- tion appears to have remained very constant. Found evidence suggesting income become less equally distributed between 1981/82 and 1989/90.	Increasing inequality during the 1980s. (Greater rise in inequality the larger the unit of analysis). Ambiguous change in equality over the entire period 1968/69 and 1988/89.
	Income Inequality Measure	 Gini coefficient Deciles Atkinson Index 	- Gini coefficient	 Gini coefficient Quintiles Deciles 	 Gini coefficient Quintiles
	Data/Method	 War Census (1915) Census of the Common-wealth of Australia, June 1933 June 1933 Income Distribution Australia Census of Population and Housing 	- War Census (1915) - Income distribution 1968/69 (ABS)	 Survey of Income and Housing Costs and Amenities (ABS) Brown (1957) Saunders, Stott and Hobbes (1991) 	 Income Distribution Survey (ABS) House Expenditure Survey (ABS)
	Equivalence Scales Used	Ŷ	°N	Yes (for equiva- lent net income	Ŷ
	Unit of Analysis	 individuals males females household 	- males - females	 individuals income unit 	 males females persons income unit household families
	Income Definition	 net income (1915) (net of certain deductions) income/earnings as defined by 1933 census 	 gross income (1968/69) net income (1915) (net of certain deductions) 	- gross income - equivalent net income	 Private income Gross income Disposable income Disposable and social wage Final income
	Period	1915-1933- 1981	1915-1968/69	1942/43- 1989/90 1981/82- 1985/86 -1989/90	1968/69- 1988/89

Table 13 Summary Table: Studies of Income Distribution in Australis

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Author	Boehm (1994)	Gregory (1993)
Conclusion	1968-69 to 1978-79 - decrease in income inequality 1978-79 to 1989-90 - increase in income inequality 1968-69 to 1989-90 - probably slight increase in inequality	There has been a widening dispersion in earnings for full-time males. This suggests that there has been an increase in income inequality in Australia between 1970 and 1990.
Income Inequality Measure	- Deciles - Gini Coefficient	N/A
Data/Method	 Income Distribution 1968-69 (ABS) Income Distribution, Australia 1978-79 (ABS) Income and Housing Survey (ABS) Income and Housing Survey Australia Income Distribution Survey, Persons with Earned Income, Australia (ABS) Survey, Persons with Earned Income, Australia (ABS) Survey of Income and Housing Costs and Amenities (ABS) 	 Labour Force Survey (ABS) Distribution and Composition of Employee Earnings and Hours (ABS) Weekly Earnings of Employees (Distribution) Australia (ABS)
Equivalence Scales Used	Not used	N/A
Unit´of Analysis	unit income	male full-time non- managerial employment)/
Income Definition	gross income	Focus - labour market (real earnings - wage and salary income)
Period	- 69-896 1989-90	1970-1990

Author	Mc Guire (1994)	Saunders (1993 <i>a</i>)	Travers and Richardson (1993)	Harding (1994)	Johnson, Manning & Hellwig (1995)
Conclusion	There has been a widening dispersion in earnings for full-time adult non- managerial employees. This suggests that there has been an increase in income inequality in Australia between 1975 and 1992. Found evidence of increasing inequality in Australia between 1981/82 and 1989/90		Australia is more equal now than in the past.	lnequality increased for both market and gross income between 1982 and 1990. The outcome for equivalent gross income however is ambiguous.	Australia appears to be a more equal society in 1993/94 than in 1981/82.
Income Inequality Measure	- Deciles	- Gini coefficient	- Gini coefficient	 Gini coefficient Coefficient of variation ratio of top 10% to botton 10% 	- Gini coefficient
Data/Method	 Employee Earnings and Hours (ABS) Labour Force Survey (ABS) 	 Income and Housing Survey (ABS) Survey of Income and Housing Costs and Amenities (ABS) 	- Survey	 Simulation analysis (standardisation) Monthly Labour Force Survey (ABS) Income Survey 	- microsimulation analysis using 1988/89 Household Expenditure Survey (ABS)
Equivalence Scales Used	Ňo	Yes (for equiva- lent net income of individuals)	Yes	Ycs (for equiva- lent gross income)	Yes
Unit of Analysis	- earnings for full-time adult non- managerial employees.	 income unit individuals (only for equivalent net income) 	- Individual	- Individual	Household
Income Definition	- private income - disposable income	 Wage and salary income of full- year, full-time workers only private income gross income net income equivalent net income of individuals 	- Full income	 Market income Gross income Equivalent gross income 	 Private income Gross income Disposable income Social wage Final income
Period	1975-1992	1981/82 - 1989/90	1987	1982-1993	1981/82- 1993/94



more equal

more unequal

constant

unclear

*R1 Johnson, Manning & Hellwig (1995)

- *R2 Raskall (1992)
- *R3 Raskall (1992)
- *R4 Saunders (1993b)
- *R5 Jones (1975)
- *R6 McLean & Richardson (1986)
- *R7 McLean & Richardson (1986)
- *R8 Boehm (1993)
- *R9 Boehm (1994)
- *R10 Gregory (1993)
- *R11 McGuire (1994)
- *R12 Harding (1994)
- *R13 Saunders (1993a)
- *R14 Saunders (1993b)

As regards the 1980s, Harding (1994) and Saunders (1993a, 1993b) report a rise in income inequality. The most recent by Johnson, Manning and Hellwig (1995), on the other hand, reports a decline in income inequality. This difference appears to be, at least in part, the result of the latest study examining more recent data (1981/82-1993/94) than Harding (1994) and Saunders (1993a, 1993b) who analyse 1981/82-1989/90.

9. CONCLUSION

This paper has shown that income distribution in Australia appears to have become more equally distributed between 1915 and the early 1980s. Over the last two decades, however, income inequality seems to have increased, particularly between the late 1970s and the late 1980s/early 1990s. Johnson, Manning and Hellwig (1995) who explored changes in inequality up until 1993/94 found Australia to be a more equal society in 1993/94 than in 1981/82.

Hence, what prima facie appeared to be a bewildering array of conflicting results is relatively consistent. Taking into account considerable technical differences, differences in income definition, units of analysis, inter alia, the results appear to be consistent. Income became more equally distributed earlier this century but declined in the 1980S. Insufficient data exists to draw conslusions concerning the 1990s.

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