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INCOME INEQUALITY IN AUSTRALIA AND NEW ZEALAND: INTERNATIONAL COMPARISONS AND RECENT TRENDS

BY PETER SAUNDERS

Social Policy Research Center, University of New South Wales, Australia

HELEN STOTT

Department of Statistics, New Zealand

AND

GARRY HOBBES

Social Policy Research Center, University of New South Wales, Australia

In this paper we present results on the distribution of income in Australia and New Zealand that can be compared with those for a range of other advanced countries. The framework of analysis, concepts and definitions used have been developed as part of the Luxembourg Income Study (LIS). Using data for the early 1980s, the results indicate that the income distributions in Australia and New Zealand are not, as previous research has suggested, more equal than those in other countries. Neither country has an equivalent net family income inequality ranking in the top half of the eight countries studied. Further analysis indicates increasing inequality in Australia in the first half of the 1980s and, on the basis of some indicators, in New Zealand also. The paper does not investigate the causes of these increases in inequality, although the results indicate that the rise in property income has been a factor behind them.

1. INTRODUCTION

Recent research using the Luxembourg Income Study (LIS) data base has advanced understanding of the extent and causes of international differences in poverty and income inequality and the results have led to the adoption of alternative definitions and assumptions (Smeeding, Torrey and Rein, 1988; Buhmann *et al.*, 1988). In this paper we extend previous analysis of income distribution and redistribution using the LIS data base by including Australia and New Zealand in the comparisons. Both of these countries have traditionally been seen as having a relatively high degree of income equality and the first aim of the paper is to assess whether or not this view is confirmed using the data and methodological framework developed as part of the LIS project. A second aim of the paper is to investigate changes in income inequality in Australia and New Zealand over the period 1981–86, again using the LIS framework and methodology to extend earlier results produced by the authors (Saunders and Hobbes, 1988;

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Saunders, Hobbes and Stott, 1989a). This period is of particular interest as it was one of considerable and rapid economic and social reform in both Australia and New Zealand, initiated by Labor governments intent on fundamental economic restructuring of both macro- and micro-economies, while also addressing equity and other social objectives.

Inclusion of Australia and New Zealand into international comparisons of income distribution and redistribution is of interest because of a number of unique features of income distribution and redistribution in the two countries. Both countries rely on a selective means-tested approach to income support financed from general revenue, rather than the earmarked earnings-related contributory systems that characterize much of continental Europe. It has also been argued that both countries have pursued egalitarian objectives primarily through wage policies rather than through income support policies (Castles, 1985) and few would disagree with the perception that the income distributions of both Australia and New Zealand are seen as relatively equal in international terms.

The perception of equality in Australia and New Zealand has, in part, resulted from earlier studies which indicated that both countries had relatively equal income distributions. For example, a study by Lydall (1968) of the distribution of employment incomes in twenty-five countries led him to conclude:

> "The broad picture seems, then, to be that, amongst non-communist countries, the degree of dispersion of pre-tax employment income is related roughly to the degree of economic development, *although Australia and New Zealand are exceptionally equal on this criterion* (Lydall, 1968, p. 157; emphasis added)."

Similarly, Sawyer's comparative income distribution study published by the OECD (Sawyer, 1976) showed the distribution of income in Australia to be more equal than that in many other OECD countries, while Easton (1980; 1983) has presented results indicating that, in the mid-seventies at least, the New Zealand income distribution was more equal than that in many other advanced countries. Both Sawyer and Easton, however, were aware of the limitations of the data they were working with, and thus of the need for caution in interpreting their results. It was precisely these kinds of concerns that led to the formation of the LIS project. The first issue addressed in this paper is thus whether the conclusions from this earlier work stand up to a rigourous analysis of the more truly comparative data that the LIS project has assembled.

In broad terms, the economic and political experience of both Australia and New Zealand during the eighties was very similar. Throughout this period, both countries faced balance of payments difficulties and a continuing loss of traditional export markets. In the early-eighties, both elected reformist Labor governments intent on public sector reform and general economic deregulation designed to improve competitiveness. A second question is thus to look at how the economic and social policies introduced in the early years of these new governments influenced income inequality in both countries. At present 1985-86 is the latest year for which Australian data sufficient for this purpose are available, thus the analysis has been restricted to changes in income distribution between 1981-82 and 1985-86. This is unfortunate, as many of the major tax and social security

reforms in both countries that are likely to have important immediate and direct effects on income inequality have been implemented since 1985-86.

The paper is organised as follows. In the following section we present the comparative income distribution results for the early eighties and explain in more detail how the results for Australia and New Zealand were derived. In section 3 we draw attention to the different demographic characteristics of the LIS survey data in each country that need to be considered when drawing implications from the LIS comparisons. In section 4 we investigate changes in the Australian and New Zealand income distributions between 1981-82 and 1985-86, and discuss these changes within the context of the economic and political changes that occurred in each country over the period. Finally, in section 5 we summarise the main findings to emerge from the analysis.

2. Income Inequality in the Early 1980s

The number of countries included in the LIS project is continually increasing. At the time that the analysis reported in this paper began, Australia had just formally joined LIS but the Australian LIS data file in Luxembourg was not fully operational. At the present time (February, 1990) both the first round (early-eighties) and second round (mid-eighties) of Australian LIS data are operational, but not the second round of data for the full range of countries now associated with the LIS project. New Zealand has not yet joined LIS, largely because confidentiality requirements embodied in the New Zealand *Statistics Act 1975* have prevented public release of unit record data. The approach used in this study thus involved re-arrangement of the Australian and New Zealand data files within each country (with the advice and guidance of those associated with the LIS project) in order that they conform as closely as possible with the standardised LIS concepts and variables. These amended files have then been used to duplicate the LIS comparative analysis of income distribution and redistribution undertaken by O'Higgins, Schmaus and Stephenson (1985), as well as to investigate changes in income inequality in Australia and New Zealand in the first half of the eighties.

The standard LIS concepts and definitions described in Smeeding, Schmaus and Allegreza (1985) have been applied to the Australian and New Zealand unit record files as closely as possible. The data used are from the unit record file from the *1981-82 Income and Housing Survey* collected and released by the Australia Bureau of Statistics (ABS) and the unit record file from the *1981-82 Household Expenditure and Income Survey* collected and held by the New Zealand Department of Statistics (NZDS). These files contain detailed socio-economic data on 20,100 income units and 3,500 households, respectively.[1] For both countries, it was necessary to impute income tax liabilities from other data available on the files.[2] In Australia, this was done using a tax imputation model

[1]The distinction between the Australian income unit concept and the LIS family definition is further explained later. The basic unit for the New Zealand survey is the household, and problems of comparability with the other LIS data sets should be borne in mind when assessing the results.

[2]The Australian income data reported below refer to income for the financial year ending 30 June 1982; for New Zealand, the income data refer to income for the financial year ending 31 March 1982. In both countries, the individual is the basic tax unit, although some tax concessions depend upon family circumstances. Neither country has any form of earmarked employer or employee social security contributions.

developed at the Social Policy Research Centre. In New Zealand, a Simulation System for Evaluating Taxation (ASSET) model developed by the NZDS and described in Broad (1982) was used to impute tax liabilities.

One aspect of the Australian data is worth noting at this stage, as it has a bearing on the interpretation of results presented later. The unit of analysis traditionally used by the ABS and by Australian researchers utilising ABS data is the income unit. Income units consist of single adults, sole parents with dependants, and married couples (de jure or de facto) with or without dependants. Dependants are defined as single persons aged under 15 years, or aged 15 to 20 years and in full-time education. This definition implies that an adult child living with his parents is regarded as a separate income unit, as is an elderly parent living with his offspring's family. In contrast, the LIS family unit concept includes all persons living together and related by blood, marriage (including de facto) or adoption, with the proviso that there is only one married couple or sole parent per family. Under the LIS family definition, older children living with their parents, or a single elderly person living with his offspring's family would be included in the family and not, as in the Australian definition, as a separate income unit.[3,4]

Part A of Table 1 shows the distribution of gross family income for all countries (except Israel) included in the original LIS study, along with the distributions for Australia and New Zealand.[5] Several broad features of these results are worthy of emphasis. The share of gross family income of the lowest quintile of families is below 6 percent in all countries except Sweden, while the combined share of the bottom two quintiles is less than 17 percent in all countries except New Zealand and Sweden. The share of the highest quintile exceeds 40 percent in all countries except Norway and Sweden. In contrast to these differences, there is a considerable degree of stability across countries in the share of the fourth quintile, which varies in a very small range from 24.7 percent (in Germany and New Zealand) to 25.4 percent (in Norway). The Gini coefficient is lowest in Sweden (0.33) and highest in the United States (0.41).

The limitations of relative inequality measures like the Gini coefficient in providing an unambiguous welfare ranking of income distributions when the underlying Lorenz curves intersect have been noted by Atkinson (1970). Furthermore, as previous research using the LIS data base has shown, there are many

[3]The Australian LIS data for 1981-82 have now been adjusted to conform to the LIS family concept. However, this had not been undertaken for either 1981-82 or for 1985-86 at the time the analysis began, and it was for this reason that the Australian income unit concept has been used throughout the paper. For further discussion, see footnote 7.

[4]A second aspect of the Australian data relates to the treatment of negative self-employment income in 1981-82. Such incomes were re-coded to zero by ABS prior to release of the data file. As a consequence, the tax imputations for that year are imprecise for those affected by the re-coding. This in turn raises some doubt about the comparability of the Australian data for 1981-82 with data for the other LIS countries (and New Zealand). Furthermore, since the re-coding was not repeated in 1985-86, intertemporal comparisons of the Australian data are also compromised to some extent, an issue that should be kept in mind when assessing the Australian results discussed in section 4.

[5]The differences between the results shown in Table 1 and those presented in Table 2 of O'Higgins, Schmaus and Stephenson reflect refinements to the LIS data base that were incorporated between 1985 and 1990. These refinements made minor differences to the results in all cases except Germany. In the German case, the survey data had been revised to correct coding errors and to exclude households with negative or zero incomes.

TABLE 1

INTERNATIONAL COMPARISONS OF INCOME DISTRIBUTION

	Australia (1981–82)	Canada (1981)	Germany (1981)	New Zealand (1981–82)	Norway (1979)	Sweden (1981)	United Kingdom (1979)	United States (1979)
A: The Distribution of Gross Family Income among Quintiles of Families (Percentage Shares of Total Gross Income)								
Lowest quintile	4.6	4.7	5.7	5.7	5.1	6.7	4.9	4.0
Second quintile	9.8	11.1	11.6	11.4	11.4	12.3	10.9	10.1
Third quintile	16.6	17.8	17.6	17.6	18.3	17.2	18.2	16.7
Fourth quintile	24.8	25.3	24.7	24.7	25.4	25.0	25.2	25.1
Highest quintile	44.1	41.2	40.3	40.5	39.7	38.9	40.8	44.2
Gini coefficient	0.40	0.37	0.35	0.35	0.35	0.33	0.36	0.41
B: The Distribution of Equivalent Net Family Income among Quintiles of Individuals (Percentage Shares of Total Equivalent Net Family Income)								
Lowest quintile	7.7	7.6	9.8	8.2	10.2	10.9	9.0	6.4
Second quintile	13.0	13.3	14.3	13.5	14.7	16.0	13.5	12.8
Third quintile	17.5	17.9	18.0	17.6	18.3	19.0	18.0	18.0
Fourth quintile	23.6	23.7	22.8	23.7	22.8	23.0	23.4	24.2
Highest quintile	38.2	37.4	35.2	37.0	34.0	31.1	36.1	38.6
Gini coefficient	0.31	0.30	0.25	0.29	0.24	0.20	0.27	0.32

Source: The methods and sources used to devise the results for Australia and New Zealand are described in the main text. The results for the other countries are derived from the January 1990 version of the LIS data base.

cases where the LIS income distribution Lorenz curves do in practice intersect (Buhmann *et al.* 1988; Table 6, p. 127). However, on the basis of Lorenz curves constructed from the quintile shares shown in Table 1, Sweden unambiguously stands alone as having the most equal gross income distribution. This is followed by three countries—Germany, New Zealand and Norway—with very similar distributions, but where intersecting Lorenz curves prevent an unambiguous inequality ranking.[6] The Lorenz curves for all three countries lie wholly inside that for the United Kingdom, whose Lorenz curve in turn lies wholly inside that for Canada. Finally come Australia and the United States, although again the intersection of Lorenz curves prevents an unambiguous ranking of their relative income inequality positions. In relation to the distribution of gross family income, the results in part A of Table 1 thus cast serious doubt on the traditional view that Australia is a country characterised by relative equality in its income distribution. On this measure, the degree of income inequality in Australia is unambiguously greater than that in New Zealand, a country whose income distribution has a relatively high equality ranking according to this measure.[7]

In order to derive income distributions which have a closer correspondence to the distribution of economic welfare, it is necessary to consider the distribution of equivalent net family income rather than that of gross (unadjusted) family income. Following O'Higgins, Schmaus and Stephenson (1985) and other LIS research, a common set of equivalence scales has been used to derive equivalent income. These LIS scales, when normalised to unity for a three person family, allocate a value of 0.5 to the first individual in any unit, a value of 0.25 to each individual from the second to the ninth member of the unit, and set the scale to 3.0 for all units with ten or more members. Because the LIS scales do not distinguish between adult and non-adult members of the family, a couple with one child is, for example, given the same equivalence as a sole parent with two children. If the needs of children are in fact lower than those of adults, and if family size increases primarily because the number of children increases, then the LIS scales will tend to overstate the equivalence scale for larger families and thus understate their equivalent income.[8]

The impact of such understatement on the distribution of equivalent income will depend upon a number of factors including average family size and the

[6]Shorrocks and Foster (1987) have recently shown that for two distributions A and B, where the Lorenz curve for distribution A intersects the Lorenz curve for distribution B only once from above, distribution B is more unequal than distribution A according to all standard transfer sensitive inequality measures if and only if the coefficient of variation of distribution B is at least as great as that of distribution A. This test has not, however, been applied in this paper.

[7]Application of the LIS family definition to the Australian data produces quintile shares of 4.4 percent, 10.4 percent, 17.3 percent, 25.1 percent and 42.9 percent, respectively, compared with those shown in part A of Table 1. On this basis, the Australian Lorenz curve remains wholly outside that for Canada, but now lies inside that for the United States. Thus while alternative income unit concepts affect the shape of the Australian income distribution (as they would in other countries) the relative position of the Australian distribution remains broadly unchanged. The same is true for the distributions shown in part B of Table 1.

[8]Whiteford's (1985) survey of the results from equivalence scale research indicates that the needs of children are well below those of adults. Such differences cannot, however, be incorporated into the generalised approach based on an equivalence elasticity dependent only upon family size used by Buhmann *et al.* (1988).

position of larger families in the income distribution. Where comparisons are made between countries with greatly differing average family sizes, inequality measures and rankings may be affected. This emerged from the analysis by Buhmann *et al.* (1988), in which the authors concluded:

> "... that equivalence scales have in general no great effect on the rank order of measured inequality across countries *as long as average family size is not extremely large* (Buhmann, *et al.*, p. 128; emphasis added)."

Following O'Higgins, Schmaus and Stephenson (1985), the distribution of equivalent net income was expressed using the LIS equivalence scales and in terms of quintiles of individuals, although the ordering of individuals in the distribution was undertaken on the basis of net equivalent family income. Thus the lowest quintile of the distribution, for example, contains the 20 percent of *individuals* who are in *families* with the lowest equivalent net incomes. The resulting distributions of equivalent net family income are shown in part B of Table 1.[9]

The effect of taking account of direct tax liabilities, adjusting for needs using the LIS equivalence scales, and giving individuals an equal weight in characterising the income distribution is to reduce inequality in all countries, but by varying degrees across countries. The share of the lowest quintile now exceeds 7 percent in all countries except the United States, while the share of the highest quintile is less than 38 percent in all countries except Australia and the United States. The distribution of equivalent net income among individuals is most equal in Sweden, where the share of the highest quintile is less than three times that of the lowest quintile. Constructing Lorenz curves from these quintile shares as before now permits a clearer inequality ranking of countries. Sweden has the most equal distribution followed by Norway, Germany, the United Kingdom and New Zealand in that order. Next come Australia and Canada with very similar distributions but with Lorenz curves that intersect at the bottom end of the distribution. The income distribution in the United States is now unambiguously less equal than that in any of the other countries.[10]

The results in part B of Table 1 suggest that the Australian and New Zealand income distributions are more similar than was suggested by the results in part A of the table, although the New Zealand income distribution still remains clearly more equal than Australia's. However, the fact that neither country has an equality ranking in the top half of the eight countries included in this study indicates that earlier perceptions of relatively equal income distributions in both Australia and New Zealand need to be reconsidered. Those perceptions are not borne out by the results shown in Table 1.

[9]These results for Australia differ from those published previously (Saunders and Hobbes, 1988; Table 4, p. 31), particularly in relation to the shares of the third and highest quintiles. The estimates shown in part B of Table 1 are derived from a revised computer program in which an earlier error has been corrected.

[10]As noted in footnote 7, Australia's ranking is unaffected if the LIS family definition replaces the Australian income unit concept.

3. Further Analysis of the Comparative Results

Despite the very important contribution to comparative research attributable to the standardised definitions developed and applied as part of the LIS project, important differences between countries nonetheless remain and need to be acknowledged and noted when interpreting LIS-based comparisons. One such difference relates to the timing of the data sets used in this and other research associated with the LIS project. The results in Table 1 refer to years between 1979 and 1982, a period of considerable turbulence in the world economy and generally low economic growth.[11] This is likely to have contributed to increased inequality between 1979 and 1982 in light of evidence suggestive of countercyclical movements in inequality (Blinder and Esaki, 1978).

For at least two of the countries for which the first round of LIS data refer to 1979—the United Kingdom and the United States—recent studies have confirmed that income inequality increased in the 1979-82 recession. In the United States, for example, Danziger and Gottschalk (1989) and Danziger, Gottschalk and Smolensky (1989) provide evidence of increasing income inequality between 1979 and 1982. The results presented by Danziger and Gottschalk indicate a decline in the share of aggregate family income of the bottom 40 percent from around 16.8 percent in 1979 to below 16 percent by 1982 (Danziger and Gottschalk, 1989; Figure 2). Similarly, the work of O'Higgins (1985) and Nolan (1989) points to increased income inequality in the United Kingdom over the period. O'Higgins notes that recession has been the main factor behind increasing inequality in the United Kingdom, although this was significantly modified (but not totally offset) by the redistributive impact of social welfare spending. It is not possible to assess the extent to which these trends would affect the income distribution comparisons in Table 1 if a common year was adopted for each country, nor the impact on the inequality rankings of countries. It does, however, indicate the need for caution in being too definitive about the comparative results, and points to the need for future LIS research to be based where possible on data at similar positions in the economic cycle of each country.

A second factor relates to the different demographic structures in each of the countries included in Table 1, and how these are adjusted by the use of equivalence scales. Because Australia and New Zealand are both characterised by a relatively large average family size, the equivalence scale issue is worthy of further examination. In Table 2 the LIS equivalence scales (standardised to unity for a single person so that the number of equivalent adults in each family is more apparent) are compared with national scales commonly used in each country. It is clear that, for Australia and to a lesser extent New Zealand, there are considerable differences between the LIS equivalences and the national scales. Relative to the national scales, the LIS scales overstate the costs of additional family members (particularly children) and thus produce lower estimates of equivalent income in larger families. For example, a family comprising two adults and two children with an income of $400 will have an equivalent income of $160 using

[11] Economic growth for the OECD region averaged 1.4 percent a year between 1979 and 1982. (OECD, 1988, Table R.1.).

TABLE 2

A COMPARISON OF THE LIS AND NATIONAL EQUIVALENCE SCALES

Family Type	Equivalence Scale		
	LIS	Australia[a]	New Zealand[b]
Single adult	1.00	1.00	1.00
Couple	1.50	1.33	1.54
Couple, 1 child	2.00	1.53	1.86
Couple, 2 children	2.50	1.83	2.17
Couple, 3 children	3.00	2.24	2.43
Single parent, 1 child	1.50	1.21	1.40
Single parent, 2 children	2.00	1.52	1.75

Sources: [a]Australia: Whiteford (1985), Table 2.3, p. 13. These scales are those used by the Poverty Commission in its report *Poverty in Australia*, published in 1975.

[b]New Zealand: Department of Social Welfare (1988), Table 1, p. 25. These scales have often been used and quoted in research studies in New Zealand.

the LIS scale, $219 using the Australian scale, or $184 using the New Zealand scale. Such differences will affect the ranking of families in the equivalent income distribution and thus influence measures of the distribution of equivalent income. Given that the resulting sensitivities are likely to be greater where average family size is greater (Buhmann *et al.*, 1988) the use of a common set of equivalence scales can affect the comparisons, in the sense that the degree of inequality may change, even if this does not in turn affect inequality rankings. This is not to suggest that national equivalence scales should be used instead of a common set. An alternative could be to use common data and methods of estimation to derive the equivalence scales for each country and then apply these in income distribution comparisons.

Mention has already been made of the different demographic and family structures in each of the countries included in this analysis. In Table 3 some of these differences between countries are indicated, and how these differences vary across the income distribution within countries is shown. Several points stand out. As noted earlier, average family size is relatively high in both Australia and New Zealand. While average family size varies between 2.4 and 2.7 persons in six of the eight countries, it is below 1.9 in Sweden and over 3.0 in New Zealand.[12] Family size also varies across countries within income quintiles, but by much less in the top two quintiles than in the bottom three. Average family size in the lowest three quintiles of gross family income is about twice as high in New Zealand as in Sweden, with the remaining countries lying between these extremes. There are also great differences in the proportion of families with children, again particularly in the lower quintiles. Finally, the proportion of elderly families differs greatly overall, with the variation again greater in the lower quintiles. Together, the results in Table 3 suggest that families in the lowest gross income

[12]It is not possible to estimate the extent to which differences in average family size reflect national differences (which cannot be standardised by the LIS project) in the way in which families are defined. Certainly the New Zealand household definition is considerably broader than the Swedish family definition which, as Smeeding, Schmaus and Allegreza (1985) note, defines all adult children aged 18 and over as separate families.

TABLE 3

SELECTED CHARACTERISTICS OF INCOME DISTRIBUTIONS

(Families Ranked by Gross Family Income)

	Australia	Canada	Germany	New Zealand	Norway	Sweden	United Kingdom	United States
A. Average Number of Persons per Family:								
Bottom quintile	1.53	1.59	1.26	1.99	1.21	1.08	1.30	1.63
Second quintile	2.22	2.22	1.77	2.69	1.89	1.29	2.10	2.16
Third quintile	2.70	2.76	2.69	3.23	1.55	1.55	2.81	2.56
Fourth quintile	3.20	3.22	3.03	3.44	3.28	2.54	3.12	3.13
Top quintile	3.59	3.50	3.41	3.76	3.51	2.93	3.54	3.41
All Families	2.64	2.65	2.43	3.02	2.49	1.88	2.57	2.58
B. Percentage of Families with Children[a]								
Bottom quintile	18.1	18.2	2.4	28.1	7.9	2.9	4.7	19.8
Second quintile	27.5	28.7	14.1	43.3	26.3	6.3	23.4	29.6
Third quintile	46.2	45.4	46.3	57.2	49.7	16.2	47.3	38.8
Fourth quintile	54.9	55.4	52.7	56.8	70.3	44.2	51.7	52.9
Top quintile	52.5	53.1	52.1	56.2	75.7	54.2	50.5	51.1
All Families	39.8	40.1	33.5	48.3	46.0	24.7	35.5	38.4
C. Percentage of Elderly Families[b]								
Bottom quintile	39.8	36.8	71.0	48.5	64.2	52.4	74.5	39.7
Second quintile	29.5	26.1	46.1	23.1	43.9	36.0	37.1	33.8
Third quintile	7.5	10.0	10.1	8.3	14.4	20.6	11.2	15.9
Fourth quintile	5.8	7.4	10.3	3.4	7.8	13.8	5.4	8.1
Top quintile	4.7	5.2	6.4	3.9	6.1	6.1	4.7	5.9
All Families	17.4	17.1	28.7	17.4	27.3	25.7	26.5	19.7

Source: LIS data base.

[a]Children are defined as those aged 17 or under.

[b]Elderly families are defined as those where the head is aged 65 or over.

quintile are mainly elderly people (often single) without children in the four European countries, but are more frequently families with children in the four non-European countries. What is also striking about Table 3 is that the demographic differences between the Swedish data and that for the remaining countries are as great if not greater than the income distribution differences shown in Table 1.

4. Changes in Income Inequality in Australia and New Zealand, 1981-82 to 1985-86

Now that we have described and analysed income distribution comparisons in the early eighties, our attention focuses on developments between 1981-82 and 1985-86 in Australia and New Zealand.[13] Throughout the first half of the eighties, both countries continued to struggle with economic problems that had been facing them for some time.[14] While in broad terms these difficulties—largely associated with trading problems resulting from a loss of traditional export markets—were similar in both countries, their detailed policies were also markedly different in several respects. A cornerstone of the post-1983 Australian Government's economic strategy was the Accord, an incomes policy agreed to with the Australian Council of Trade Unions (ACTU) in 1983 and re-negotiated several times subsequently. Under the Accord, wage restraint was guaranteed (and delivered) by the ACTU in exchange for increases in social expenditures, the introduction of equitable tax reforms and, subsequently, enhanced occupational superannuation coverage, personal tax cuts and improved income support for low income families (although some of these latter policies were implemented after 1986).

In New Zealand, in response to accelerating inflation, a wage-price freeze was introduced in mid-1982 and for the following two years was accompanied by rising unemployment. After this freeze was lifted in February 1984, the resulting economic instability and the election of the Labour Government in July 1984 saw the re-introduction of a price freeze until November of that year. The new government encouraged a more market oriented approach to wage determination than that existing under the Accord in Australia, although emphasis was also given to additional income support measures targeted on low income families. Tax reform in New Zealand proceeded more quickly than in Australia, yet despite this the major tax reform was not implemented until October 1986 (i.e. after the period to which the data used in this study refers), when a 10 percent comprehensive goods and services tax was introduced and accompanied by considerable reductions and simplifications to the personal tax system.

Both Australia and New Zealand experienced economic growth over the 1981-86 period somewhat higher than other OECD countries, suffered a less severe recession in 1982 than elsewhere, but took longer to recover from it. Throughout the period, inflation was relatively high in both countries, although

[13]The data sources for 1985-86 are, respectively, the *1986 Income Distribution Survey* and the *1985-86 Houshold Expenditure and Income Survey.*

[14]A more detailed discussion is contained in section 4.1 and the Appendix of Saunders, Hobbes and Stott (1989b). This paper is available on request from the authors.

it declined markedly up to 1984—in relative terms faster than in other OECD countries—but rose thereafter, at a time when it continued to fall in the OECD as a whole. By 1986, inflation in Australia was three and a half times the OECD average, while in New Zealand it was over five times the OECD inflation rate.

However, it is in the area of labour market performance that Australia and, to a lesser extent, New Zealand have achieved most. Employment growth in Australia during 1981-86 was twice that for the OECD and its employment record between 1984 and 1986 was even more impressive. Employment growth in New Zealand was also relatively high until 1986, when a net reduction in employment stands in contrast to the moderate jobs growth experienced elsewhere in the OECD. In terms of unemployment, Australia was close to the OECD average over the period, although with a more marked reduction than elsewhere since the peak of 1983. Unemployment in New Zealand was about half the OECD average throughout the period and it also declined more rapidly after 1983. The overall impact of these policies on income distribution in the two countries is now considered.

Reference has already been made (in footnote 4) to the re-coding of negative incomes from self-employment on the Australian file for 1981-82. Unlike the 1981-82 unit record file, actual losses from self-employment were provided on the 1985-86 file (as they are on the New Zealand file for both years). In order for the Australian results for 1985-86 to be comparable with those for 1981-82, it was decided to suppress the information on actual self-employment losses in 1985-86 and treat these as zero, as was done by necessity in 1981-82.[15] A further problem with the Australian data was that the owners of limited liability companies (as well as their income from such) were recorded as self-employed in 1981-82, but as wage and salary earners in 1985-86. This does not, of course, affect analysis of overall income inequality but does impact upon comparisons of income composition between 1981-82 and 1985-86 to an extent that cannot be estimated with any degree of reliability.[16]

Estimates of the main changes in overall income composition in both countries between 1981-82 and 1985-86 are presented in Table 4. The main change indicated here is the declining importance of self-employment income in Australia, although this is largely due to the definitional change just referred to. When wages and salaries are combined with self-employment income, there is a combined decline in labour income of 3.8 percentage points in Australia and 4.0 percentage points in New Zealand. In contrast, property income rose sharply in both countries over the period, reflecting both the strong performance of the stock market and the increased level of interest rates. Despite the broad policy emphasis in both countries on the need for greater reliance on market forces, the importance of market incomes in gross income actually declined over the period,

[15]Comparisons of results derived from both procedures in 1985-86 indicate that re-coding negative self-employment incomes to zero caused the income share of the lowest quintile to rise by up to 0.5 percentage points and the shares of the two highest quintiles to fall correspondingly. It should be noted that although these differences do not appear large in absolute terms, they are high relative to the observed changes in income inequality over the period.

[16]In 1985-86, wages and salaries from ownership of limited liability companies (after deducting losses from trusts, etc.) amounted in total to 4.3 percent of total gross income.

TABLE 4

CHANGES IN INCOME SOURCES AND TAXES, 1981-82 TO 1985-86

(Expressed as percentages of gross income)

	Australia		New Zealand	
Income Component	1981-82	1985-86	1981-82	1985-86
Wages and salaries	69.8	71.2	70.8	67.9
Self employment income	13.7	8.5	10.7	9.6
Property income	5.3	8.0	4.8	7.5
Factor Income	88.7	88.0	86.3	84.9
Occupational pensions	1.1	1.5	0.7	0.9
Market Income	89.8	89.4	87.0	85.8
Government cash benefits	9.1	9.8	12.1	13.2
Private transfers/other	0.9	1.1	0.9	1.0
Gross Income	100.0	100.0	100.0	100.0
Income tax	18.6	21.5	26.5	27.9
Net Income	81.4	78.5	73.5	72.1

albeit only slightly in Australia. The relative importance of both government transfers and taxes rose, the rise in income taxation being particularly marked in Australia, where income tax revenue was a growing proportion of a rising overall tax burden.

In Table 5 we present the income distributions for Australia and New Zealand in 1985-86 and, for ease of comparison, those for 1981-82. Part A presents the distribution of gross family income among families, while part B uses the tax imputation models and LIS equivalence scales (Table 2) to derive the distribution of equivalent net family income among individuals. Families are ranked by gross family income in part A of the Table, and by equivalent net family income in

TABLE 5

CHANGES IN INCOME INEQUALITY, 1981-82 TO 1985-86

	Australia		New Zealand	
	1981-82	1985-86	1981-82	1985-86
A. The Distribution of Gross Family Income Among Quintiles of Families				
Lowest quintile	4.6	4.4	5.7	5.7
Second quintile	9.8	9.4	11.4	11.9
Third quintile	16.6	15.9	17.6	17.6
Fourth quintile	24.8	24.7	24.7	24.1
Highest quintile	44.1	45.6	40.5	40.8
Gini coefficient	0.40	0.42	0.35	0.35
B. The Distribution of Equivalent Net Family Income Among Quintiles of Individuals				
Lowest quintile	7.7	7.6	8.2	7.6
Second quintile	13.0	12.5	13.5	13.6
Third quintile	17.5	17.2	17.6	17.6
Fourth quintile	23.6	23.6	23.7	23.6
Highest quintile	38.2	39.3	37.0	37.5
Gini coefficient	0.31	0.32	0.29	0.30

part B. The distribution of gross income among families became somewhat more unequal in Australia between 1981-82 and 1985-86, reflecting a decline in the gross income shares of the lowest four quintiles and a significant rise in the share of the highest quintile. In New Zealand, the distribution of gross family income changed much less overall, although there was a movement in income shares away from the fourth quintile towards the second and top quintiles. In the New Zealand case, the Lorenz curves for 1981-82 and 1985-86 intersect, so it is not possible to be unambiguous about the direction of change of income inequality.[17] What is clear, however, is that the distribution of gross family income in New Zealand was more equal than that in Australia in 1985-86, as it was in 1981-82.

The results in part B of Table 5 tell a broadly similar story. After taking account of income taxes, adjusting income for family needs, re-ranking the distributions and giving individuals equal weighting, both countries are now seen to have experienced an increase in income inequality. In Australia, the change is primarily due to a decline in the share of the lowest three quintiles and a rise in the share of the highest quintile. In New Zealand, the increase in inequality arises largely from a decline in the income share of the lowest quintile and a corresponding increase in the share of income going to the top quintile, a classic "reverse Robin Hood" redistributive change. It was noted in section 3 that in 1981-82 the distributions of equivalent net family income in both countries were more similar than their gross family income distributions. The data in Table 5 confirm that this was also the case in 1985-86, and that the distribution of equivalent net family income remained more equal in New Zealand than in Australia. Finally, it is worth noting that while the changes indicated in Table 5 are relatively small in size, the magnitude of the distributional changes over the period within the two countries appears more considerable when compared with the range of observed differences in income distribution across countries at a point in time shown in Table 1.

Changes over the period in the composition of gross income in the lowest and highest quintiles of individuals, ranked according to the gross income of their family are shown in Table 6. In the lowest quintile, government cash benefits are by far the most important income source in both countries, and their importance increased markedly in New Zealand. This highlights the key role that income support measures play in redistributing income towards those at the lower end of the distribution. Wages and salaries are the second largest income source in the lowest quintile, accounting for around 25 percent of gross income. Despite the stronger overall employment growth in Australia, the relative importance of wage and salary income in the lowest quintile declined, although it increased somewhat in New Zealand. This again reflects the demographic composition of the lowest quintile which, as Table 3 indicates, contains many elderly people.

Wages and salaries are easily the most important income source in the highest quintile, although income from self-employment and property income are also much more significant. The overall growth in importance of property income

[17]The Lorenz curves for New Zealand intercept twice, which means that the test developed by Shorrocks and Foster (1987) referred to in footnote 6 cannot be applied. In any case, the curves are very close together even when they do intercept, and the differences are so small as to be statistically and practically insignificant.

TABLE 6

CHANGES IN THE COMPOSITION OF GROSS INCOME IN THE LOWEST AND HIGHEST QUINTILES OF INDIVIDUALS 1981-82 TO 1985-86[a]

	Australia		New Zealand	
Income Source	1981-82	1985-86	1981-82	1985-86
A. Lowest Quintile				
Wages and salaries	2.2	1.8	2.4	2.7
Self employment income	0.4	0.2	0.2	−0.4
Property income	0.5	0.5	0.6	0.6
Occupational pensions	0.1	0.1	0.1	0.1
Government cash benefits	5.7	5.7	5.9	6.5
Gross Income[b]	9.1	8.5	9.7	9.6
B. Highest Quintile				
Wages and salaries	23.9	27.2	24.5	24.9
Self employment income	7.2	3.7	6.2	6.1
Property income	2.3	4.2	2.0	3.6
Occupational pensions	0.2	0.3	0.2	0.2
Government cash benefits	0.4	0.3	0.8	0.9
Gross Income[b]	34.3	36.0	34.3	36.3

[a]Quintiles are derived by ranking individuals according to the gross income of their family. The income shares are based on the family totals in each quintile.

[b]Gross income also includes private transfers and other sources of income.

(Table 4) is reflected in a greater contribution to gross income in the highest quintile but a constant contribution to gross income in the lowest quintile. This suggests that the increased importance of property income has been an important factor underlying the observed increase in income inequality in both countries. The relative importance of wage and salary income in the top quintile also increased in both countries, but by far more in Australia. It is tempting to draw conclusions from this about the relative impact of Australia's incomes policy approach to wage determination compared with New Zealand's greater reliance on a market-orientated wages policy (albeit in a country with high trade union coverage and centralised wage negotiations). However, the definitional change for Australia in the treatment of the owners of limited liability companies referred to earlier contaminates the data and does not allow firm conclusions to be drawn. When income from wages and salaries is aggregated with self-employment income, the relative importance of total labour income in the highest quintile in both countries becomes much closer, and changes over time virtually disappear.

5. SUMMARY AND CONCLUSIONS

In this paper we have addressed two aspects of the distribution of income in Australia and New Zealand. The first relates to how the income distributions of both countries compare with those for a range of other industrialised countries in the early eighties. The framework adopted for this analysis was that developed as part of the Luxembourg Income Study (LIS) and the data for Australia and New Zealand were re-organised to conform as closely as possible with the LIS concepts and definitions. The income distribution comparisons presented in the

paper cast doubt on the validity of the view that the income distributions of Australia and New Zealand are relatively equal in international terms. Neither appear in the top four (of eight) countries when ranked by the degree of equality in the distribution of equivalent net family income. Although the inequality ranking of countries (particularly New Zealand) shows some sensitivity to the precise income measure used and how the income distribution is characterised, neither country ranks as highly equal, particularly on the basis of equivalent net family income comparisons. The comparisons all indicate somewhat greater equality of incomes in 1981–82 in New Zealand than in Australia.

In the paper we investigated some of the reasons for these results, pointing in particular to differences in the timing of the LIS data for different countries. In light of the evidence of increasing inequality between 1979 and 1982 in some of the countries with data for 1979, it is at least possible that a different comparative picture could emerge if the data for each country were for the same year. Differences in the demographic structure of the countries were also noted and their potential impact on inequality rankings discussed. Recent LIS research which has indicated that inequality rankings are quite sensitive to the equivalence scales used to define equivalent income, particularly where average family size is large, is of relevance to both Australia and New Zealand. The fact that equivalence scales commonly used by researchers in both countries differ markedly from the LIS equivalence scales is another aspect worth emphasising.

The second issue addressed in the paper relates to changes in income inequality in Australia and New Zealand between 1981–82 and 1985–86. The period was one of broad similarity in the economic and political experience of both countries. There were, however, significant differences in policy emphasis in each country, and in the speed with which reforms were introduced. Many of the major reforms to the income tax and income support systems of both countries took place after 1986 and are therefore not reflected in the data and results reported in this paper. However, the results indicate that income inequality increased in Australia between 1981–82 and 1985–86, and, depending on the indicator used, in New Zealand also. Although the data do not permit an accurate assessment of the relative importance of the factors contributing to the increase in inequality over the period, it appears that the rise in property income has been of significance.

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