

# Redistribution and the Welfare State: Estimating the Effects of Government Benefits and Taxes on Household Income [Proceedings of a Workshop held at the University of New South Wales 13 May 1987]

**Author:**

Saunders, Peter

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## REDISTRIBUTION AND THE WELFARE STATE: ESTIMATING THE EFFECTS OF GOVERNMENT BENEFITS AND TAXES ON HOUSEHOLD INCOME

edited by

PETER SAUNDERS

Proceedings of a Workshop held at the University of New South Wales  
on 13 May 1987



### Social Welfare Research Centre

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## FOREWORD

All activities of government have an impact on household living standards. Government spending and tax policies affect different households in different ways and thus also influence the distribution of income between households. Those policies more closely associated with the Welfare State are intended to equalise the income distribution through redistribution towards those in more disadvantageous circumstances. Any assessment of the achievements of the Welfare State must, therefore, place great emphasis on the redistributive impact of social programmes and the methods used for their finance. Unfortunately, this aspect of social policy analysis in Australia has been hindered by the absence of reliable estimates of the way in which government benefits and taxes are spread across the population.

In March 1987, the Australian Bureau of Statistics (ABS) released an important study which begins to shed light on some aspects of this key question. The study, **The Effects of Government Benefits and Taxes on Household Income** (ABS Catalogue No. 6537.0) presents the results of a study of the effects of government benefits and taxes on the distribution of income of households in 1984. It is based primarily on data collected in the 1984 Household Expenditure Survey, supplemented by relevant data from other sources.

In light of the great importance and significance of results from the ABS study, they need to be given the widest possible coverage. There is also a need for the methodological framework from which they were derived to be subjected to a thorough, critical assessment. The Workshop on which this Report is based was organised with these two objectives in mind.

In addition to two major speakers and three designated discussants, a number of academics, and representatives of key government departments and welfare agencies were invited to attend the Workshop. They were encouraged to express their views on the ABS study itself, stressing the limitations of the analysis and the appropriate role of a body like the ABS in undertaking work of this sort.

In the first of the major papers, Ian Castles, the Australian Statistician, draws on results from the ABS study and compares them with similar results for a range of other countries. His discussion and supporting tables represent a stimulating and welcome addition to the literature on the effects of government benefits and taxes on the distribution of income in modern economies. The paper also illustrates the important lessons to be learnt from comparisons between countries with different social policy environments. In his paper, John Piggott from the Department of Economics at Sydney University cautions against uncritical acceptance of the kind of statistical calculations which are contained in the ABS study. He argues that the assumptions underlying these results imply an economic model which effectively abstracts from many effects of government activity on economic behaviour. He points to several recent studies which suggest that taking account of such aspects can have a major influence on the overall picture of redistribution that emerges.

Both papers raise a number of fundamental conceptual, methodological and theoretical issues in relation to the study of the redistributive impact of social programmes. Some of the more practical considerations were raised in the discussion which took place at the Workshop. By bringing all of these together, this Report should contribute to a more refined analysis of the income redistribution process, a better informed discussion of the issues and, perhaps eventually, a more equitable income distribution itself.

Peter Saunders  
Director  
Social Welfare Research Centre

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**THE EFFECTS OF GOVERNMENT BENEFITS AND TAXES ON HOUSEHOLD INCOMES:  
ESTIMATES FOR AUSTRALIA AND OTHER COUNTRIES**

**Ian Castles  
Australian Statistician  
Australian Bureau of Statistics**

**1. The First Fiscal Incidence Study**

The name 'statistics' was first applied to collections of data relating to matters important to the State - in fact, to 'all knowledge relating to the condition of the State or people'. (Jevons, 1870) Estimates of transactions between the State and the people must therefore be regarded as a vital area of statistical investigation. It appears that the first empirical study of the effects of fiscal transactions on family incomes was undertaken in Britain in 1869. In that year the Chancellor of the Exchequer, having a prospective surplus to dispose of, sought advice on fiscal policy from Professor W.S. Jevons of Manchester University. (As it happens both the Chancellor, Robert Lowe, later Viscount Sherbrooke, and Professor Jevons had spent several years in Sydney at earlier stages in their careers - Lowe in the 1840s and Jevons in the 1850s). Mrs Jevons told the story many years later:

Mr Lowe asked my husband if he could advise him as to which classes of the population - rich, middle, or poor - were most heavily taxed; and after as thorough an inquiry as he was able to make, Mr Jevons arrived at the conclusion that the taxes then fell a little the most heavily on the poorest classes. When he sent this information to Mr Lowe in answer to his request, he also made the suggestion that if Mr Lowe should find himself able to remove the shilling duty from foreign corn in his next Budget, it would, he believed, greatly help to remove the slight extra weight of taxation which he had found fell upon the poor. The duty was taken off in the next Budget, as you know. (Quoted in the preface by Henry Higgs to Jevons, 1905)

Jevons' estimates are shown in Table A. They related to three hypothetical families, chosen 'to represent the classes of labourers, artisans and middle-class persons'. Each family was assumed to consist of man and wife, one child over 10 years of age and one under that age. The consumption of the

families was taken by Jevons to be equal to that of 3.5 adults, with the middle-class family being 'supposed to include also 3 adult servants, making altogether 6.5 adults. (This was almost certainly the first use of 'equivalence ratios'. Houthakker's article on Ernst Engel in the International Encyclopedia of the Social Sciences states that it was Engel who 'proposed what has since become known as an equivalent adult scale to give appropriate weights to persons of different ages and sexes' in a book **The Cost of Man** which was published in 1883. Jevons appears to have the prior claim.) The descriptions 'taxes on necessities', 'taxes on luxuries' and 'direct taxes' in the table are those used by Jevons.

As there were no official household expenditure studies in 1869, Jevons was obliged to put together data from a variety of sources. Estimates of the consumption of necessities in the families of the poorest class were obtained from a Report to the Poor Law Commissioners on the Dietary of Workhouses, estimates of the amount of beer consumed from the Report of the Select Committee on the Malt Tax, and estimates of the expenditure of artisan families from 'information gathered from 43 families in Manchester, partly procured by minute personal enquiry, and partly through the aid of some large employers of labour'.

The taxation incidence assumptions and allocation procedures followed by Jevons were very similar to those that were being used a century later by the Central Statistical Office. He assumed that indirect taxes, including the 'licenses required for the sale of tea, coffee, beer, wine, etc.', were 'always paid for ultimately by the consumers of the articles', and that income tax was borne by the individuals legally liable to pay the tax. He allocated only that part of the poor rates and local taxes as fell upon house property because 'it is difficult to see how to provide for such part as falls upon land and property employed in industry'. In a statement headed 'Undistributed Revenue', Jevons set out the components of certain items which he did not attempt to allocate but which he believed fell 'to a great extent as a charge on industry, and (were) thus spread in a very equal manner over the whole population.'

**Table A:**  
**Taxes as a Percentage of Income at Selected Income**  
**Levels (Jevons' Estimates): United Kingdom 1868**

<b>Family Income (£p.a.)</b>	<b>40</b>	<b>85</b>	<b>500</b>
	<b>%</b>	<b>%</b>	<b>%</b>
<b>Taxes on necessities:</b>			
Flour	0.56	0.22	0.05
Tea	0.44	0.41	0.32
Coffee	-	0.26	0.10
Sugar	1.12	0.80	0.34
Fruits	-	0.05	0.02
<b>Total</b>	<b>2.12</b>	<b>1.74</b>	<b>0.83</b>
<b>Taxes on luxuries:</b>			
Beer	2.5	1.2	0.4
Spirits	-	1.5	0.4
Wine	-	-	0.5
Tobacco	3.0	1.4	0.5
<b>Total</b>	<b>5.5</b>	<b>4.1</b>	<b>1.8</b>
<b>Direct Taxes:</b>			
Local rates and tolls	2.5	2.4	1.9
Income tax	-	-	2.1
House duty	-	-	0.5
Insurance duty	-	-	0.1
Legacy and probate duty	-	-	0.8
<b>Total</b>	<b>2.5</b>	<b>2.4</b>	<b>5.4</b>
Other taxes (say)	-	-	1.0
<b>ALL TAXES</b>	<b>10.1</b>	<b>8.2</b>	<b>9.0</b>

In his report to the Chancellor, Jevons acknowledged;

a fundamental difficulty which I have felt strongly in investigating this subject, namely, that the rates of wages and of profits, the value of property, and in general the relations and interests of all classes have adjusted themselves more or less perfectly to the existing system, so that we cannot be sure that any class which seems to pay a given tax actually bears the whole of its burden ... Considerations of this kind seem to show that the determination of the real incidence of taxation passes altogether beyond the powers of our present science and our present resources of statistical information. We easily discover the apparent incidence, but we know not how far by complicated action and reaction its influence may spread.

Although he was aware of the limitations of the exercise he had conducted, Jevons asserted;

that **no one can possibly prove the existence of any gross inequality of taxation in our present system.** After framing estimates on various information and according to various hypotheses the results always seemed to gravitate around those which I have finally adopted. The mean equality of these results (10.2, 8.2, 9.0 ... per cent) may be partially due to accident, and that any of them may be effected by an error of 1 per cent is as likely as not, yet I believe ... that careful inquiry indicates equality within the limits of error to which the data and methods of reasoning are essentially liable. (Emphasis in the original emphasis)

Jevons concluded that the distribution of market incomes in Britain about 1870 was not significantly changed by the incidence of taxation. He also considered that this was a desirable outcome:

The more carefully and maturely I ponder over the problem of taxation from various points of view, the more convinced I always return to the principle that all classes of persons above the rank of actual paupers, should contribute to the state in the proportion of their incomes.

## **2. The Role of Government : 1870 and Today**

From Jevons' report and from the relevant Budget Papers, it is possible to derive a rough estimate of the relative contributions of the principal forms of taxation, and of the principal components of government outlays, in

Britain about 1870. These are shown as percentages of gross domestic product in Table B, together with comparable estimates for 1984. The table demonstrates the massive changes in the role of government and in the level and composition of taxation which have occurred over the past 120 years. In particular, it shows that income support programs (now the major redistributive mechanism in most countries) did not exist in 1870; and that public outlays were devoted mainly to expenditures of a kind which cannot readily be allocated to individual households - external and internal security, interest on the public debt and the costs of revenue collection.

Jevons' conclusion that the dispersion of after-tax incomes was virtually the same as the dispersion of market incomes was probably true of mid-Victorian Britain, but it would not be true in any country today. In all market economies, the observed distribution of after-tax incomes (however defined) differs markedly from the observed distribution of market incomes; and the scale and composition of these differences themselves differ markedly between countries.

### **3. Objective of the Paper and Results**

The objective of this paper is to identify and quantify some of these differences. The observed distributions of household incomes in Australia, according to various definitions, are compared with those for four other countries; and the observed distributions of direct and indirect benefits and taxes which 'explain' the differences in income distributions are also compared. No attempt is made to examine 'how far by complicated action and reaction' the influence of taxes and benefits may spread. The purpose of the analysis is simply to articulate the sources of difference in the dispersion of household incomes, on various definitions of income.

Tables 1 to 7 in the Appendix present estimates of government benefits, taxes and household incomes for five countries: Australia, New Zealand, Sweden, the United Kingdom and the United States. The estimates for Australia and the United Kingdom are derived from the studies published by, respectively, the Australian Bureau of Statistics and the Central Statistical Office, and the estimates for New Zealand are from a study by Snively shortly to be published by the New Zealand Planning Council. The estimates for Sweden and

**Table B:**  
**Taxes and Government Outlays as Percentages of Gross**  
**Domestic Product in the United Kingdom, 1870 and 1984.**

	1870	1984
	%	%
<b>TAXATION</b>		
Taxes on Income and Capital		
Personal income tax	1.0	11.1
National insurance contributions	-	7.0
Taxes on companies and public corporations	-	2.6
All other taxes on income	-	0.9
Taxes on capital	0.7	0.5
Total	1.7	22.1
Taxes on Expenditure less Subsidies		
Alcohol and tobacco	3.0	3.2
Food	1.0	-
Local government rates	2.4	1.7
All other	1.0	9.1
Total	7.4	14.0
<b>ALL TAXATION</b>	<b>9.1</b>	<b>36.1</b>
<b>GOVERNMENT OUTLAYS</b>		
Current grants to personal sector	-	13.4
Defence	2.5	5.4
Public order and safety	0.4	1.8
Revenue collection	0.2	0.4
Debt interest	2.3	4.9
All other expenditures less subsidies	3.7	17.5
<b>ALL GOVERNMENT OUTLAYS</b>	<b>9.1</b>	<b>43.4</b>

**Note:** The figures for 1870 should be regarded as rough approximations only. The percentages assume that GDP was £1000 million, which is midway between alternative estimates given in C.H. Feinstein, **National Income, Expenditure and Output of the United Kingdom 1855-1965** (Cambridge, 1972). The percentages for 1984 are derived from Central Statistical Office, **United Kingdom National Accounts: 1986 Edition**, Tables 1.2, 4.10, 9.4, 9.5 and 9.6.

the United States, which relate only to **direct** benefits and taxes, are derived from official statistical publications of the respective countries. All of the data relate to 1984 except those for New Zealand, which relate to 1981-82. (Further information on the data sources for all of the Appendix Tables is provided at the end of the Appendix itself).

Obviously there have been large changes in benefits, taxes and incomes since the respective reference years - and most notably in New Zealand where there has been a major change in the structure of taxation. The data are not intended as precise measures of inter-country differences, but as broad indicators of widely differing benefit and tax structures and of the income distributions resulting from these and other influences.

### 3.1 Direct Benefits

The distribution of direct benefits in relation to household incomes in the five countries is illustrated in three different ways in Table 8. The first panel of Table 8 shows that the proportion of all direct benefits paid to households in the lowest private income quintile was highest in Australia at 50 per cent. The corresponding proportions in the other countries were New Zealand 45 per cent, the United Kingdom 39 per cent, Sweden 33 per cent and the United States (on a somewhat different basis) 25 per cent. At the other end of the scale, the proportion of all benefits which were paid to households in the highest private income quintile was less than 6 per cent in Australia, compared with about 7.5 per cent in United Kingdom, over 9 per cent in Sweden, 10.5 per cent in New Zealand and (on the different basis) over 11 per cent in the United States.

The second panel of Table 8 shows, for each of the five countries, the relationship of direct benefits to the gross income of households in each quintile. In the lowest income quintile, direct benefits accounted for a very high proportion of gross income in all countries except the United States, where the proportion was much lower. In the highest income quintile, direct benefits represented a very small proportion of gross income in Australia and the United States, but a substantially higher proportion in the other three countries.



The effect of direct benefits on the distribution of income cannot be assessed by looking at measures of concentration or at measures of scale in isolation. It is necessary to examine the **combined** influence of these two factors. One way of doing this is to look at the proportion of the total gross household income in each country which was paid to households in each income quintile in the form of direct benefits. This is shown in the third panel of Table 8. On this basis, the direct benefits paid to households in the lowest income quintile in Australia was much greater than in the United States, about the same as in New Zealand, somewhat less than in the United Kingdom and much less than in Sweden.

An alternative way of measuring the combined influence of concentration ('targeting') and scale of benefits is by comparing the shares of private and gross income in each income quintile. The data for this purpose are given in Table 10 and are summarised, for the lowest income quintile, in Table C. The difference between the private and gross income shares of the 20 per cent of households with the lowest incomes was substantially greater in Sweden (over 9 percentage points) than in the United Kingdom, Australia and New Zealand (between 5.6 and 6.4 percentage points). The difference between the private and gross income shares of the lowest income quintile in the United States was much smaller than in the other four countries.

### 3.2 Direct Taxes

The effect of direct taxes on household income in the five countries is shown in Table 9 and in the comparison of gross and disposable income shares in Table 10. The proportion of total direct taxes paid by the highest income quintile - as shown in the top panel of Table 10 - was highest in the United States (58 per cent), followed by Australia (55 per cent), the United Kingdom (53 per cent), New Zealand (50 per cent) and Sweden (44 per cent). Although the households in the highest income quintile paid a larger share of all direct taxes in the United States than in any of the other countries, they also retained a larger share of income after direct taxes. As the third panel in Table 10 shows, the share of disposable income received by the 20 per cent of households with the highest incomes was 42 per cent in the United States, 39 per cent in the United Kingdom and Australia and 37 per cent in New Zealand and Sweden.

**Table C:**  
**Shares of Private and Gross Income**  
**Received by Lowest Household Income Quintile**

	Private Income	Gross Income	Difference
	%	%	%
Ranked by private income:			
Sweden	0.25	9.63	9.38
United Kingdom	0.27	6.65	6.38
Australia	0.25	5.99	5.74
New Zealand	0.77	6.37	5.60
Ranked by gross income:			
United Kingdom	1.12	5.62	4.50
Australia	1.02	5.12	4.10
United States	2.08	3.96	1.88

**Source:** Appendix, Table 10.

### 3.3 All Direct Transfers

The net effect of the direct benefits and direct taxes shown in Tables 8 and 9 may be summarised by comparing the private and disposable income shares shown in Table 10. This is done, for the lowest and highest income quintiles, in Table D. For the lowest income quintile, the difference between private and disposable income shares was much greater in Sweden, and much smaller in the United States, than in the other three countries. The comparison for the highest income quintile also shows the redistributive impact of direct transfers to be much greater in Sweden than in the other countries. The share of disposable incomes received by the 20 per cent of households with the highest income was over 14 percentage points lower than their share of private incomes in Sweden, whereas the reduction in income share attributable to direct (cash) transfers was only 9 percentage points in the United Kingdom, 8 percentage points in Australia and New Zealand and 6 percentage points in the United States.

### 3.4 Adjustment for Household Size

In comparing the shares of income of the highest and lowest quintiles, it is important to recognise that the quintiles have been defined by ranking **all** households, irrespective of the number and age of their members, according to their private, gross or disposable incomes. No adjustment has been made for household size. The lower panels of Tables 1-7 of the supporting tables in the Appendix provide information on the average number of persons per household in each income decile in each of the countries. These tables also

**Table D:  
Shares of Private and Disposable Income  
Received by Lowest and Highest Income Quintiles**

	Private Income	Disposable Income	Difference
	%	%	%
<b>- Lowest Income Quintile -</b>			
Ranked by Private Income			
Sweden	0.25	11.34	11.09
United Kingdom	0.27	8.13	7.86
Australia	0.25	7.46	7.21
New Zealand	0.77	7.67	6.90
Ranked by Gross Income			
United Kingdom	1.12	6.79	5.67
Australia	1.02	6.33	5.31
United States	2.08	4.75	2.67
<b>- Highest Income Quintile -</b>			
Ranked by Private Income			
Sweden	51.37	36.96	14.41
United Kingdom	48.56	39.15	9.41
Australia	46.82	38.71	8.11
New Zealand	44.67	37.06	7.61
Ranked by Gross Income			
United Kingdom	48.31	39.37	8.94
Australia	46.68	38.86	7.82
United States	48.26	42.03	6.23

**Source:** Appendix Table 10

show separately the number of adults in couples, the number of 'other adults' and the number of children. In addition, a measure of the average number of 'consumption units' per household is provided, according to an equivalence ratio formula which is shown in Table 13.

These figures permit the calculation, for each decile of **household** income in each country, of the average income per consumption unit. The outcome of such calculations, expressing each value as a percentage of the average income per consumption unit for all households, is shown in Table 12.

In making these comparisons, it would have been preferable to re-rank households in deciles according to their income per consumption unit, but the information required for this purpose is not available. Table 13 does, however, provide a measure of the large differences between the countries in the 'spread' of the average disposable income per consumption unit across income deciles. A comparison between the highest and lowest deciles is shown in Table E. It will be noted that in Sweden, disposable income per

**Table E:**  
**Disposable Income per Consumption**  
**Unit in Lowest and Highest Income Deciles**

	Percentage of Average Disposable Income per Consumption Unit (CU) for all Households		Income per CU in Lowest Decile as a percentage of Income per CU in Highest Decile
	Lowest Decile	Highest Decile	
<hr/>			
Ranked by Private Income			
Sweden	65.2	149.7	44
New Zealand	52.5	148.7	35
United Kingdom	56.5	175.6	32
Australia	45.9	166.4	28
Ranked by Gross Income			
United Kingdom	55.2	176.4	31
Australia	42.9	164.2	26
United States	20.0	196.5	10

consumption unit in the lowest income decile was over four times as great as in the United States, when expressed as a proportion of income per consumption unit in the highest income decile.

### 3.5 Indirect Benefits and Taxes

All of the comparisons made so far relate to money incomes and money transfers. The studies for Australia, New Zealand and the United Kingdom also allocate certain indirect benefits and indirect taxes to households. Although the coverage and treatment of these benefits and taxes differs slightly between the three studies, this is unlikely to have had a significant effect on the results. A summary measure of the effect of indirect benefits and taxes on household incomes is provided by comparing the shares of disposable and 'final' income (i.e. income after taking account of indirect benefits and taxes) for the lowest and highest private income quintiles. This is done in Table F.

**Table F:**  
**Shares of Disposable Income, Disposable Income plus Indirect Benefits and Final Income Received by Lowest and Highest Private Income Quintiles**

	Disposable Income	Disposable Income Plus Indirect Benefits	Final Income	Difference: Final <b>minus</b> Disposable
	%	%	%	%
<b>- Lowest Income Quintile -</b>				
Australia	7.46	9.55	9.67	2.21
New Zealand	7.67	8.59	8.67	1.00
United Kingdom	8.13	9.75	10.37	2.24
<b>- Highest Income Quintile -</b>				
Australia	38.71	35.72	35.89	2.82
New Zealand	37.06	35.68	35.63	1.43
United Kingdom	39.15	36.52	36.53	2.62

A comparison between the income shares shown in the 'disposable income plus indirect benefits' and 'final income' columns reveals that the apparent effect of indirect taxes on the distribution of incomes is quite small. An alternative and equally logical measure is obtained by deducting indirect taxes from disposable income and then adding indirect benefits. Table G repeats the information in Table F, but with the adjustments for indirect taxes and indirect benefits made in the opposite order:

**Table G:**  
**Shares of Disposable Income, Disposable Income Less Indirect Taxes**  
**and Final Income Received by Lowest and Highest Private Income Quintiles**

	Disposable Income	Disposable Income less Indirect Taxes	Final Income	Difference: Disposable/ Final
	%	%	%	%
<b>- Lowest Income Quintile -</b>				
Australia	7.46	7.37	9.67	2.21
New Zealand	7.67	7.71	8.67	1.00
United Kingdom	8.13	8.37	10.37	2.24
<b>- Highest Income Quintile -</b>				
Australia	38.71	39.27	35.89	2.82
New Zealand	37.06	37.08	35.63	1.43
United Kingdom	39.15	40.06	36.53	2.62

### 3.6 Summary Measures of Inequality

The most commonly used summary measure of inequality is the **Gini co-efficient of concentration**, which expresses the area between the **Lorenz curve** (a line plotting the cumulative proportion of income against the cumulative proportion of income recipients) and a diagonal (representing a line of equal incomes), expressed as a proportion of the total area under the diagonal. A close approximation to the Gini co-efficient may be derived by adding the differences between the cumulative proportions of income and income

recipients at the decile points and doubling the result. In Table H, this approximation to the Gini co-efficient of concentration is shown for all of the income measures shown in Tables 1-7 in the Appendix. Again, the indicated distribution of disposable incomes is least unequal in Sweden and most unequal in the United States. The degree of dispersion of final incomes in the three countries for which this measure is shown is remarkably similar.

**Table H:  
Approximate Gini Co-efficients for  
Alternative Income Measures in Five Countries**

	Private Income	Gross Income	Disposable Income	Disposable Income + Indirect Benefits	Final Income
<b>Ranked by private income:</b>					
Australia	0.469	0.363	0.314	0.263	0.263
New Zealand	0.433	0.336	0.290	0.267	0.266
Sweden	0.521	0.294	0.258	-	-
United Kingdom	0.491	0.354	0.311	0.269	0.264
<b>Ranked by gross income:</b>					
Australia	0.462	0.370	0.325	0.278	0.279
United Kingdom	0.486	0.363	0.324	0.288	0.286
United States	0.459	0.406	0.369	-	-

#### **4. Comments on Some Criticisms**

The ABS study follows closely the methodological approach adopted in the studies which have 'been undertaken for the United Kingdom on an annual basis since 1957 by the Central Statistical Office (CSO) and published regularly in **Economic Trends**. The CSO studies are unique and provide an excellent discussion of the methods adopted and a detailed presentation and analysis of results.' (Saunders and Klau, 1985, p.206). The CSO studies have, however, been criticised on various grounds. In the discussion accompanying the

presentation of the results, the CSO has acknowledged the force of some of the criticisms and the ABS has also recognised various limitations of the approach in the explanatory text of **Effects of Government Benefits and Taxes on Household Income**. However, whilst some limitations are acknowledged, there is much to be said also in favour of the value and usefulness of these studies. This concluding section comments on some of the criticisms which have been made - in particular, by Michael O'Higgins of the University of Bath. (See in particular, O'Higgins, 1980, p.31). One strand of criticism relates to the incidence assumptions adopted. The CSO and ABS studies assume 'that the working population is not able to pass the cost of the direct tax back to employers through lower profits, or to consumers through higher prices' and that incidence of indirect taxes is fully shifted to the final consumer, whereas in practice it 'is spread by pricing policies and probably falls in varying proportions on the producers of a good or service, on their employees, on the buyer, and on the producers and consumers of other goods and services'. (CSO, 1986, p.116).

In assuming that indirect taxes **are** entirely shifted forward and that direct personal taxes are **not** shifted back, the CSO and the ABS are following the same approach as did Jevons 120 years ago. Although it is generally acknowledged that the conditions under which these assumptions are valid are unlikely to be fully realised in practice, it is significant that in the paper by O'Higgins and Ruggles (1981) in which the CSO results for 1971 were reworked to provide a more comprehensive allocation of government transactions, the CSO assumptions were (as far as they went and with one minor qualification) accepted in their entirety.

The one qualification was that social security contributions by employers were calculated on two alternative bases : as an indirect tax (i.e., passed forward onto higher prices) as assumed by the CSO, and as a direct tax (i.e., as a tax which is borne by those on behalf of whom the contributions are made). There is no precise equivalent to employer social security contributions in Australia, because the payroll taxes levied on employers in this country are not made on behalf of employees, and cannot in fact be related to individual employees. For this reason alone, the case for treating payroll tax as an indirect tax (as is done in the ABS study) is even



stronger than the case for treating employers' social security contributions in this way.

Moreover, the payroll tax in Australia is not universal or near-universal, as the social security contributions of employers are in most overseas countries. In 1985-86, the ratio of payroll tax to the gross wages and salaries per employee paid by Australian private employers was over ten times greater for the large firms accounting for nearly one-half of total private employment than for the small employers representing about one-quarter of total private employment. Yet gross wages and salaries were not lower on average in the larger enterprises in which payroll tax was much higher : on the contrary, as Table I shows, these enterprises paid substantially **higher** average wages. The proposition that payroll tax is borne by employees, rather than by employers or by the buyers of their output, is therefore difficult to sustain.

**Table I:  
Average Costs per Employee for Payroll Tax, Gross Wages  
and Salaries and Total Labour Costs by Employer Size, 1985-86**

Costs per employee (\$):				
	Percentage of Private Employment	Payroll Tax	Gross Wages & Salaries	Total Labour Costs
Number of employees:				
Less than 10	24	70	14300	15440
10 - 19	9	340	16190	17650
20 - 99	22	770	17060	19160
100 +	45	1000	18750	21530
<b>TOTAL</b>	<b>100</b>	<b>670</b>	<b>17070</b>	<b>19190</b>

**Source:** ABS, **Major Labour Costs, Private Sector, Australia 1985-86**  
(Catalogue No. 6348.0)

A second line of criticism of the methodological approach adopted in the CSO studies relates to the valuation of indirect benefits. A recent EPAC study comments on this problem in the following terms:

To add in-kind benefits to household cash income, the money value of these benefits needs to be estimated. The only information readily available is the cost to government of their provision. The average cost per individual or household can then be computed and attributed to the individual or household as income. While this is the only feasible procedure, there are reasons to expect the money value of in-kind benefits to recipients to differ from the cost of supplying those benefits. In particular, beneficiaries may prefer a cash transfer, which they can spend as they wish, to the provision of services in-kind at equivalent cost. (Office of EPAC, 1987, pp.23-24).

As the EPAC paper notes, the only information readily available on the value of indirect benefits is the cost to government of their provision. The international conventions on national accounts practice also involve the valuation of general government services at their cost rather than their market value.

Finally, the CSO studies have been criticised because they do not allocate all government outlays and revenues, but only those which can be related with some degree of precision to households. It has been suggested that this approach is misleading. For example, O'Higgins has claimed that 'if unallocated expenditures are allocated, whether on a per capita basis, in proportion to income, or in proportion to capital, the overall picture of U.K. redistribution is less equalizing than is suggested by the current incomplete picture', and that 'the partial analyses (i.e., of the CSO type) generally overstate the degree of redistribution in the U.K.' (O'Higgins, op.cit., p.31). These statements are themselves somewhat misleading because they implicitly involve acceptance of the view that it is the distribution of benefits and taxes as such, rather than the changes in income shares attributable to benefits and taxes, which is the proper measure of redistribution. The importance of this distinction has been emphasised in this paper - for example, in the comparison of the redistributive effect of direct benefits as shown in the three panels of Table 9.

The statement that, 'if unallocated expenditures are allocated ... the overall picture of U.K. redistribution is less equalising than is suggested by the current incomplete picture' is only true if attention is focused on the distribution of benefits and taxes. Taking the reworking of the U.K. 1971 by O'Higgins and Ruggles (1981) data as an example, and using the share of benefits and taxes received or paid by the lowest income quintile as the measure of redistribution, the progressive allocation of more benefits and taxes to households **does** result in an apparently less equalising picture as the allocation proceeds. Table J, derived from O'Higgins and Ruggles' results, illustrates this point.

**Table J:**  
**Shares of Benefits Received by and Taxes**  
**Paid by, Lowest Income Quintile : U.K. 1971**

	Share of Lowest Quintile:	
	Benefits	Taxes
	%	%
Direct benefits and taxes	47.7	0.6
Indirect benefits and taxes allocated by CSO	14.8	7.4
Total benefits and taxes allocated by CSO	29.2	4.2
Expenditure and taxes not allocated by CSO	12.3	8.3
Total benefits and taxes allocated by O'Higgins and Ruggles	20.0	4.9

If, however, attention is focused on the changes in income shares resulting from the allocation of progressively higher proportions of benefits and taxes to households, the opposite picture emerges, i.e., the greater the proportion of expenditure and benefits allocated, the **greater** the equalising effect. This is illustrated in Table K which presents, for progressively wider income concepts, the income shares of the lowest income quintile. There is a

question here of whether the addition of 'unallocatable' expenditures to the CSO concept of 'final income', as is done in the last line of Table K, has any real meaning. It is difficult to regard expenditures on defence, for example, as a component of household income, on any commonly-accepted view of what constitutes household income; and O'Higgins and Ruggles do not, in fact, do so.

**Table K:**  
**Shares of Income (Various Concepts)**  
**Received by Lowest Income Quintile : U.K. 1971**

	Share of Lowest Quintile
	%
Private income	1.55
Disposable income	7.01
Final income (CSO)	8.13
Final income (CSO) <b>plus</b> other expenditure <b>less</b> other taxes allocated by O'Higgins and Ruggles	9.23

Equally, however, there is a question about the validity of their procedure in aggregating benefits which are or may be conceived of by households as part of their incomes (income support payments, and benefits-in-kind for health, education, etc.) with expenditures by government which cannot be so regarded (e.g., expenditures on 'non-excludable' goods and services). This procedure implies that the greater the government expenditures on non-excludables, the less redistributive the impact of government expenditures will appear to be. This is an anomalous outcome, because any given degree of redistribution resulting from benefits which are allocable to households is not in fact 'watered down' by, and in proportion to, expenditure on non-excludables such as external and internal security.

It is acknowledged in the ABS study that 'there is no unambiguous way of determining which benefits and taxes are relevant (to households). Accordingly, the dividing line between allocated and unallocated government finance data is to some extent arbitrary.' (ABS, 1987, p.82). This is not to deny, however, that there is a distinction between the allocable and non-

allocable items. There are certain benefits-in-kind which can be, and in fact are, provided to some households but not (or not to the same degree) to other households. The EPAC paper which has already been cited stated that 'The social wage is usually defined as that part of government expenditure which provides cash transfers as well as goods and services of direct benefit to individuals. If these goods and services were not provided by government, they would have to be purchased out of private incomes.' (Office of EPAC, op.cit., p.8).

Just as cash benefits provided to households increase their capacity to buy goods and services, benefits-in-kind in the form of government-provided education, health and housing services increase the capacity of the households receiving them to buy all other goods and services. Putting the matter another way, the boundaries between health and education outlays financed by government and by private households differ between countries, and between groups within the same country; but there are no similar boundaries in the case of expenditures on functions wholly undertaken by government (e.g., defence), or expenditure on most objects of private final consumption. There is therefore a case for incorporating some government expenditures, but not others, in analyses of the effects of government benefits and taxes on household income.

In any case it is not true that the non-allocation of fiscal transactions whose incidence is uncertain creates an 'information gap'. The total amounts of these items are readily available, as are the distributors (e.g., private income; population) which are most commonly employed in attempting an allocation of these revenues and expenditures to households. There is therefore some exaggeration in the following statement which has been made in criticism of the CSO procedures:

As an official government agency, the CSO may feel that it is inappropriate to be taking sides in unresolved methodological disputes, but the effect of their reticence is to leave a significant gap in the information available about the distributional effects of public policy. For example, a full account of the redistributive impact of a shift ... of public expenditures (e.g., from social services to defence and protective services) is not possible under these circumstances.' (O'Higgins and Ruggles, op.cit., p.298).

The contention that the non-allocation of large components of government revenues and expenditures to households is **ipso facto** a limitation of studies of the CSO/ABS type arises from a misunderstanding of the purpose of such exercises. The value of the studies must rest on the judgement of a diverse range of potential users about whether their particular purposes are served, and not on whether they achieve an unattainable and possibly irrelevant degree of fiscal comprehensiveness.

## REFERENCES

- AUSTRALIAN BUREAU OF STATISTICS (1987), **The Effects of Government Benefits and Taxes on Household Income**, Catalogue No.6537.0, Canberra.
- JEVONS, W.S. (1870), Opening Address, Economic Science and Statistics Section of British Association for the Advancement of Science, 1870. Reprinted in Jevons, W.S., **Methods of Social Reform**, London 1886.
- JEVONS, W.S. (1905), **The Principles of Economics**, London.
- OFFICE OF EPAC (1987), **Aspects of the Social Wage: A Review of Social Expenditures and Redistribution**, Council Paper No.27, Canberra.
- O'HIGGINS, M. (1980), 'The Distributive Effects of Public Expenditure and Taxation: An Agnostic View of the CSO Analyses' in C.T. Sandford, C. Pond and R. Walker (eds.) **Taxation and Social Policy**, London.
- O'HIGGINS, M. and RUGGLES, P. (1981), 'The Distribution of Public Expenditures and Taxes Among Households in the United Kingdom' **Review of Income and Wealth**, September.
- SAUNDERS, P. and KLAU, F. (1985), **The Role of the Public Sector. Causes and Consequences of the Growth of Government**, OECD Economic Studies, No.4, Spring.
- UNITED KINGDOM, CENTRAL STATISTICAL OFFICE (1986), **Economic Trends**, July; OHMS, London.

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TABLE 1 : AUSTRALIA 1984 - AVERAGE INCOME, BENEFITS AND TAXES BY PRIVATE HOUSEHOLD INCOME DECILE

Income, Benefits and Taxes	Private Income Decile										
	Lowest 10%	Second decile	Third decile	Fourth decile	Fifth decile	Sixth decile	Seventh decile	Eighth decile	Ninth decile	Highest decile	All Households
- Average weekly value (\$) -											
Private income	-	9.87	75.36	234.50	320.44	399.14	495.66	599.49	740.31	1138.49	401.43
Direct benefits	135.75	126.26	105.29	39.15	27.92	23.11	18.32	15.49	14.80	15.63	52.18
Gross income	135.75	136.13	180.65	273.66	348.36	422.26	513.98	614.98	755.10	1154.12	453.60
Direct tax	1.04	0.71	6.36	30.56	53.26	74.95	104.38	136.16	176.56	331.69	91.60
Disposable income	134.71	135.43	174.29	243.10	295.10	347.31	409.60	478.82	578.55	822.43	362.01
Indirect benefits	85.39	69.00	77.96	79.40	76.26	81.85	88.58	82.14	85.34	102.01	82.78
Disposable income plus indirect taxes	220.11	204.43	252.26	322.50	371.37	429.15	498.18	560.96	663.88	924.45	444.79
Indirect taxes	16.39	14.87	23.02	29.66	33.79	40.06	44.00	48.07	55.03	72.49	37.74
Final income	203.72	189.56	229.24	292.84	337.57	389.10	454.18	512.89	608.86	851.96	407.05
- Average number of persons per household -											
Couples	0.80	0.82	1.14	1.27	1.21	1.46	1.60	1.60	1.67	1.71	1.33
Other adults	0.73	0.72	0.57	0.60	0.68	0.47	0.47	0.51	0.64	1.05	0.64
Children	0.78	0.20	0.56	0.87	1.05	1.11	1.16	1.00	0.93	0.99	0.87
All persons	2.31	1.74	2.27	2.74	2.94	3.04	3.23	3.11	3.24	3.75	2.84
Consumption units	1.01	0.87	1.04	1.19	1.25	1.27	1.35	1.34	1.43	1.70	1.24

TABLE 2 : AUSTRALIA 1984 - AVERAGE INCOME, BENEFITS AND TAXES BY GROSS HOUSEHOLD INCOME DECILE

Income, Benefits and Taxes	Gross Income Decile										All Households
	Lowest 10%	Second decile	Third decile	Fourth decile	Fifth decile	Sixth decile	Seventh decile	Eighth decile	Ninth decile	Highest decile	
- Average weekly value (\$) -											
Private income	11.83	29.31	80.09	221.38	315.14	397.39	491.22	595.04	738.02	1136.91	401.43
Direct benefits	73.33	117.72	118.71	56.77	34.59	30.60	26.49	23.98	19.17	19.89	52.18
Gross income	85.16	147.03	198.80	278.15	349.73	427.99	517.70	619.01	757.19	1156.80	453.60
Direct tax	0.30	2.43	7.53	32.20	52.53	75.99	104.63	134.01	175.99	331.06	91.60
Disposable income	84.86	144.59	191.27	245.95	297.20	352.00	413.07	485.01	581.19	825.73	362.01
Indirect benefits	52.34	74.76	86.00	80.81	79.94	85.50	86.21	87.38	90.00	104.69	82.78
Disposable income plus indirect benefits	137.21	219.36	277.28	326.76	377.15	437.50	499.28	572.39	671.19	930.42	444.79
Indirect taxes	12.07	17.14	23.86	29.73	34.00	39.74	44.40	47.70	56.48	72.31	37.74
Final income	125.13	202.22	253.42	297.03	343.15	397.76	454.87	524.69	614.71	858.11	407.05
- Average number of persons per household -											
Couples	0.26	1.11	1.34	1.30	1.38	1.44	1.59	1.60	1.69	1.68	1.33
Other adults	0.88	0.49	0.51	0.54	0.52	0.53	0.50	0.57	0.67	1.12	0.64
Children	0.16	0.44	0.76	0.90	1.12	1.13	1.09	1.04	0.97	1.02	0.87
All persons	1.30	2.04	2.61	2.74	3.02	3.10	3.18	3.21	3.33	3.82	2.84
Consumption units	0.68	0.95	1.15	1.18	1.26	1.30	1.35	1.38	1.47	1.73	1.24

TABLE 3 : NEW ZEALAND 1981-82 - AVERAGE INCOME, TAXES AND BENEFITS BY PRIVATE HOUSEHOLD INCOME DECILE

	Private Income Decile										
Income, Benefits and Taxes	Lowest 10%	Second decile	Third decile	Fourth decile	Fifth decile	Sixth decile	Seventh decile	Eight decile	Ninth decile	Highest decile	All Households
- Average annual value (\$) -											
Private income	-213	1,642	7,061	11,708	15,137	18,567	22,131	26,797	32,718	50,348	18,589
Direct benefits	6,318	5,815	3,961	2,058	1,874	1,565	1,188	1,439	1,294	1,565	2,708
Gross income	6,105	7,458	11,022	13,766	17,011	20,131	23,319	28,236	34,013	51,903	21,296
Direct tax	483	860	1,507	2,464	3,535	4,665	5,738	7,506	9,602	17,272	5,363
Disposable income	5,622	6,598	9,515	11,302	13,476	15,466	17,581	20,730	24,411	34,631	15,933
Indirect benefits	1,874	1,768	2,280	2,116	2,512	2,647	2,734	2,637	2,705	4,183	2,545
Disposable income plus indirect benefits	7,496	8,366	11,795	13,418	15,988	18,113	20,315	23,367	27,116	38,814	18,478
Indirect taxes	270	415	541	773	840	1,092	1,024	1,207	1,555	2,019	974
Final income	7,226	7,950	11,254	12,645	15,147	17,021	19,291	22,160	25,560	36,795	17,506
- Average number of persons per household -											
Couples	0.62	0.74	1.12	1.30	1.62	1.66	1.76	1.76	1.84	1.90	1.43
Other adults	0.75	0.68	0.43	0.48	0.29	0.33	0.39	0.53	0.64	1.10	0.56
Children	0.50	0.30	0.90	0.90	1.30	1.30	1.40	1.10	1.00	1.20	1.00
All persons	1.87	1.72	2.45	2.68	3.21	3.29	3.55	3.39	3.48	4.20	2.99
Consumption units	0.86	0.83	1.03	1.14	1.29	1.34	1.44	1.45	1.53	1.87	1.28

TABLE 4 : SWEDEN 1984 - AVERAGE INCOME, DIRECT BENEFITS AND DIRECT TAXES BY PRIVATE FAMILY UNIT INCOME DECILE

Income, Benefits and Taxes	Private Income Decile										All Family Units
	Lowest 10%	Second decile	Third decile	Fourth decile	Fifth decile	Sixth decile	Seventh decile	Eighth decile	Ninth decile	Highest 10%	
- Average annual value ('000 kr.) -											
Private income	-1.2	3.3	11.1	27.35	3.0	80.0	99.9	128.6	169.8	254.8	82.7
Direct benefits	51.0	58.7	56.4	42.4	34.2	20.2	18.4	22.8	17.0	13.9	33.5
Gross income	49.8	62.0	67.5	69.7	87.2	100.2	118.3	151.4	186.8	268.7	116.2
Direct tax	7.2	12.3	17.5	19.6	24.2	29.9	36.6	45.7	57.4	97.2	34.8
Disposable income	42.6	49.7	50.0	50.1	63.0	70.3	81.7	105.7	129.4	171.5	81.4
- Average number of persons per household -											
Couples											0.87
Other adults											0.56
Children											0.41
All persons	1.28	1.31	1.35	1.33	1.48	1.57	1.80	2.53	2.88	2.90	1.84
Consumption units	0.69	0.73	0.74	0.73	0.75	0.75	0.80	1.02	1.18	1.21	0.86

TABLE 5 : UNITED KINGDOM 1984 - AVERAGE INCOME, TAXES AND BENEFITS BY PRIVATE HOUSEHOLD INCOME DECILE

Income, Benefits and Taxes	Private Income Decile										
	Lowest 10%	Second decile	Third decile	Fourth decile	Fifth decile	Sixth decile	Seventh decile	Eight decile	Ninth decile	Highest decile	All Households
- Average annual value (£) -											
Private income	-	223	1,331	3,634	6,130	8,120	10,047	12,351	15,540	23,951	8,133
Direct benefits	3,301	2,956	2,689	2,111	1,242	1,034	851	775	653	553	1,616
Gross income	3,301	3,178	4,020	5,745	7,372	9,155	10,899	13,126	16,193	24,504	9,749
Direct tax	-13	1	114	541	1,136	1,625	2,130	2,735	3,600	5,871	1,774
Disposable income	3,314	3,177	3,906	5,205	6,235	7,530	8,769	10,391	12,593	18,633	7,975
Indirect benefits	1,374	1,295	1,320	1,366	1,285	1,464	1,516	1,521	1,546	1,570	1,426
Disposable income plus indirect benefits	4,689	4,472	5,226	6,572	7,521	8,994	10,284	11,912	14,140	20,204	9,401
Indirect taxes	756	756	1,134	1,467	1,764	2,013	2,315	2,668	3,179	4,214	2,026
Final income	3,933	3,716	4,092	5,104	5,757	6,981	7,970	9,245	10,961	15,989	7,375
- Average number of persons per household -											
Couples	0.71	0.67	0.90	1.17	1.38	1.57	1.70	1.75	1.80	1.85	1.35
Other adults	0.74	0.77	0.71	0.64	0.57	0.48	0.48	0.59	0.73	0.87	0.66
Children	0.47	0.19	0.24	0.52	0.69	0.88	0.96	0.94	0.82	0.73	0.64
All persons	1.92	1.63	1.85	2.33	2.64	2.93	3.14	3.28	3.35	3.45	2.65
Consumption units	0.89	0.83	0.92	1.08	1.18	1.27	1.36	1.44	1.52	1.61	1.21

TABLE 6 : UNITED KINGDOM 1984 - AVERAGE INCOME, TAXES AND BENEFITS BY GROSS HOUSEHOLD INCOME DECILE

Income, Benefits and Taxes	Gross Income Decile										All Households
	Lowest 10%	Second decile	Third decile	Fourth decile	Fifth decile	Sixth decile	Seventh decile	Eight decile	Ninth decile	Highest decile	
- Average annual value (£)											
Private income	275	635	1,498	3,532	5,937	8,075	9,896	12,188	15,402	23,889	8,133
Direct benefits	1,989	2,586	2,858	2,284	1,560	1,177	1,123	1,045	847	697	1,616
Gross income	2,264	3,221	4,357	5,816	7,496	9,252	11,019	13,234	16,249	24,586	9,749
Direct tax	8	61	186	519	1,120	1,624	2,102	2,688	3,567	5,864	1,774
Disposable income	2,256	3,160	4,171	5,297	6,377	7,628	8,917	10,545	12,682	18,721	7,975
Indirect benefits	857	1,095	1,445	1,513	1,396	1,510	1,502	1,638	1,657	1,645	1,426
Disposable income plus indirect benefits	3,113	4,255	5,616	6,810	7,773	9,138	10,419	12,183	14,339	20,336	9,401
Indirect taxes	592	809	1,134	1,457	1,788	2,043	2,306	2,701	3,208	4,226	2,026
Final income	2,522	3,445	4,482	5,352	5,985	7,094	8,113	9,482	11,131	16,141	7,375
- Average number of persons per household -											
Couples	0.08	0.65	1.17	1.36	1.46	1.62	1.73	1.78	1.81	1.86	1.35
Other adults	0.97	0.76	0.56	0.54	0.51	0.50	0.50	0.61	0.76	0.89	0.66
Children	0.07	0.22	0.45	0.63	0.72	0.86	0.93	0.97	0.85	0.76	0.64
All persons	1.12	1.63	2.18	2.53	2.69	2.98	3.16	3.36	3.42	3.51	2.65
Consumption units	0.62	0.83	0.92	1.08	1.18	1.27	1.36	1.44	1.52	1.61	1.21

TABLE 7 : UNITED STATES 1984 - AVERAGE INCOME, DIRECT BENEFITS AND DIRECT TAXES BY GROSS HOUSEHOLD INCOME DECILE

	Gross Income Decile										
Income, Benefits and Taxes	Lowest 10%	Second decile	Third decile	Fourth decile	Fifth decile	Sixth decile	Seventh decile	Eighth decile	Ninth decile	Highest decile	All Households
- Average annual value (\$) -											
Private income	988	4,252	7,965	12,457	17,498	22,687	28,587	35,846	46,118	75,405	25,180
Direct benefits:											
Social security and railroad retirement	1,380	2,365	2,799	2,591	2,024	1,695	1,348	1,151	994	964	1,731
Other cash benefits	955	937	705	561	500	483	420	358	327	280	553
Total direct benefits	2,335	3,302	3,504	3,152	2,524	2,178	1,768	1,509	1,321	1,244	2,284
Gross income	3,323	7,554	11,469	15,609	20,022	24,865	30,355	37,355	47,439	76,649	27,464
Direct tax:											
Federal income tax	10	91	397	881	1,475	2,250	3,046	4,312	6,618	14,312	3,339
State income taxes	5	29	98	203	349	520	772	1,063	1,536	3,094	767
Social Security payroll taxes	61	190	424	676	966	1,311	1,649	2,110	2,396	3,553	1,334
Total direct tax	76	310	919	1,760	2,790	4,081	5,467	7,485	10,550	20,959	5,440
Disposable income	3,247	7,244	10,550	13,849	17,232	20,784	24,888	29,870	36,889	55,690	22,024
- Average number of persons per household -											
Couples	0.35	0.59	0.88	1.00	1.15	1.28	1.45	1.56	1.64	1.71	1.16
Other adults	1.00	0.91	0.83	0.80	0.77	0.76	0.69	0.71	0.78	0.93	0.82
Children	0.62	0.56	0.60	0.60	0.70	0.79	0.83	0.86	0.82	0.73	0.71
All persons	1.97	2.06	2.31	2.40	2.62	2.83	2.97	3.13	3.24	3.37	2.69
Consumption units	0.90	0.95	1.06	1.11	1.19	1.27	1.32	1.40	1.47	1.57	1.22

TABLE 8 : DIRECT BENEFITS BY HOUSEHOLD INCOME QUINTILES IN FIVE COUNTRIES

	Household Income Quintile					
	Lowest 20%	Second quintile	Third quintile	Fourth quintile	Highest 20%	All households
- % of Total Direct Benefits in each Quintile -						
Ranked by private income:						
Australia	50.22	27.68	9.78	6.48	5.84	100.00
New Zealand	44.83	22.23	12.70	9.71	10.53	100.00
Sweden	32.74	29.50	16.24	12.30	9.22	100.00
United Kingdom	38.72	29.69	14.08	10.05	7.46	100.00
Ranked by gross income:						
Australia	36.65	33.66	12.51	9.68	7.50	100.00
United Kingdom	28.30	31.81	16.93	13.41	9.55	100.00
United States	24.68	29.14	20.59	14.36	11.23	100.00
- Direct Benefits as % of Gross Income in Each Quintile -						
Ranked by private income:						
Australia	96.37	31.79	6.62	2.91	1.59	11.50
New Zealand	89.41	24.28	9.26	5.10	3.33	12.72
Sweden	98.12	72.01	29.03	15.28	6.78	28.83
United Kingdom	96.57	49.16	13.77	6.77	2.96	16.58
Ranked by gross income:						
Australia	82.28	36.79	8.43	4.44	2.04	11.50
United Kingdom	83.41	50.55	16.34	8.94	3.78	16.58
United States	51.82	33.73	10.48	4.84	2.07	8.32
- Direct Benefits in each Quintile as % of Total Gross Income -						
Ranked by Private Income:						
Australia	5.78	3.19	1.13	0.73	0.67	11.50
New Zealand	5.71	2.83	1.61	1.23	1.34	12.71
Sweden	9.44	8.50	4.68	3.55	2.66	28.83
United Kingdom	6.42	4.92	2.33	1.67	1.24	16.58
Ranked by Gross Income:						
Australia	4.21	3.87	1.44	1.12	0.86	11.50
United Kingdom	4.69	5.28	2.81	2.22	1.58	16.58
United States	2.06	2.42	1.71	1.20	0.93	8.32



TABLE 9 : DIRECT TAXES BY HOUSEHOLD INCOME QUINTILES IN FIVE COUNTRIES

	Household Income Quintile					
	Lowest 20%	Second quintile	Third quintile	Fourth quintile	Highest 20%	All households
- % of Total Direct Taxes in each Quintile -						
Ranked by private income:						
Australia	0.19	4.03	14.00	26.27	55.51	100.00
New Zealand	2.50	7.40	15.29	24.69	50.12	100.00
Sweden	5.61	10.67	15.56	23.68	44.48	100.00
United Kingdom	-0.06	3.68	15.56	27.42	53.40	100.00
Ranked by gross income:						
Australia	0.30	4.33	14.02	26.03	55.32	100.00
United Kingdom	0.39	3.97	15.47	27.00	53.17	100.00
United States	0.71	4.92	12.63	23.81	57.93	100.00
- Direct Taxes as % of Gross Income in each Quintile -						
Ranked by private income:						
Australia	0.64	8.13	16.64	21.31	26.62	20.19
New Zealand	9.90	16.02	22.08	25.69	31.28	25.19
Sweden	17.44	27.04	28.87	30.52	33.94	29.95
United Kingdom	-0.19	6.71	16.71	20.24	23.27	18.20
Ranked by gross income:						
Australia	1.18	8.33	16.53	20.99	26.49	20.19
United Kingdom	1.26	6.93	16.38	19.76	23.10	18.20
United States	3.55	9.89	15.31	19.13	25.39	19.81
- Direct Taxes in each Quintile as % of Total Gross Income -						
Ranked by private income:						
Australia	0.04	0.81	2.83	5.30	11.21	20.19
New Zealand	0.63	1.86	3.85	6.22	12.63	25.19
Sweden	1.68	3.20	4.66	7.09	13.32	29.95
United Kingdom	-0.01	0.67	2.83	4.99	9.72	18.20
Ranked by gross income:						
Australia	0.06	0.88	2.82	5.26	11.17	20.19
United Kingdom	0.07	0.72	2.81	4.92	9.68	18.20
United States	0.14	0.98	2.50	4.72	11.47	19.81

TABLE 10 : PRIVATE, GROSS AND DISPOSABLE INCOME BY HOUSEHOLD INCOME QUINTILES IN FIVE COUNTRIES

	Household Income Quintile					
	Lowest 20%	Second quintile	Third quintile	Fourth quintile	Highest 20%	All households
- % of Private Income in each Quintile -						
Ranked by private income:						
Australia	0.25	7.72	17.92	27.29	46.82	100.00
New Zealand	0.77	10.10	18.13	26.33	44.67	100.00
Sweden	0.25	4.64	16.09	27.65	51.37	100.00
United Kingdom	0.27	6.11	17.52	27.54	48.56	100.00
Ranked by gross income:						
Australia	1.02	7.50	17.75	27.05	46.68	100.00
United Kingdom	1.12	6.18	17.23	27.16	48.31	100.00
United States	2.08	8.11	15.96	25.59	48.26	100.00
- % of Gross Income in each Quintile -						
Ranked by private income:						
Australia	5.99	10.01	16.99	24.90	42.11	100.00
New Zealand	6.37	11.64	17.44	24.21	40.34	100.00
Sweden	9.63	11.81	16.14	23.21	39.21	100.00
United Kingdom	6.65	10.01	16.95	24.64	41.75	100.00
Ranked by gross income:						
Australia	5.12	10.51	17.14	25.05	42.18	100.00
United Kingdom	5.62	10.44	17.18	24.87	41.89	100.00
United States	3.96	9.86	16.34	24.65	45.19	100.00
- % of Disposable Income in each Decile -						
Ranked by private income:						
Australia	7.46	11.53	17.75	24.55	38.71	100.00
New Zealand	7.67	13.06	18.17	24.04	37.06	100.00
Sweden	11.34	12.29	16.38	23.03	36.96	100.00
United Kingdom	8.13	11.43	17.26	24.03	39.15	100.00
Ranked by gross income:						
Australia	6.33	12.07	17.93	24.81	38.86	100.00
United Kingdom	6.79	11.87	17.57	24.40	39.37	100.00
United States	4.75	11.08	17.27	24.87	42.03	100.00

TABLE 11 : EFFECTS OF DIRECT BENEFITS AND DIRECT TAXES ON HOUSEHOLD INCOME SHARES

	Household Income Quintile					
	Lowest 20%	Second quintile	Third quintile	Fourth quintile	Highest 20%	All households
- Difference between Share of Private Income and Share of Gross Income in each Quintile -						
Ranked by private income:						
Australia	+5.74	+2.29	-0.93	-2.39	-4.71	-
New Zealand	+5.60	+1.54	-0.69	-2.12	-4.33	-
Sweden	+9.38	+7.17	+0.05	-4.44	-12.16	-
United Kingdom	+6.38	+3.90	-0.57	-2.90	-6.81	-
Ranked by gross income:						
Australia	+4.10	+3.01	-0.61	-2.00	-4.50	-
United Kingdom	+4.50	+4.26	-0.05	-2.29	-6.42	-
United States	+1.88	+1.75	+0.38	-0.94	-3.07	-
- Difference between Share of Gross Income and Share of of Disposable Income in Each Quintile -						
Ranked by private income:						
Australia	+1.47	+1.52	+0.76	-0.35	-3.40	-
New Zealand	+1.30	+1.42	+0.73	-0.17	-3.28	-
Sweden	+1.71	+0.48	+0.24	-0.18	-2.25	-
United Kingdom	+1.48	+1.42	+0.31	-0.61	-2.60	-
Ranked by gross income:						
Australia	+1.21	+1.56	+0.79	-0.24	-3.32	-
United Kingdom	+1.17	+1.43	+0.39	-0.47	-2.52	-
United States	+0.79	+1.22	+0.93	+0.22	-3.16	-
- Difference between Share of Private Income and Share of Disposable Income in each Quintile -						
Ranked by private income:						
Australia	+7.21	+3.81	-0.17	-2.74	-8.11	-
New Zealand	+6.90	+2.96	+0.04	-2.29	-7.61	-
Sweden	+11.09	+7.65	+0.29	-4.62	-14.41	-
United Kingdom	+7.86	+5.32	-0.26	-3.51	-9.41	-
Ranked by gross income:						
Australia	+5.31	+4.57	+0.18	-2.24	-7.82	-
United Kingdom	+5.67	+5.69	+0.34	-2.76	-8.94	-
United States	+2.67	+2.97	+1.31	-0.72	-6.23	-

TABLE 12 : DISPOSABLE INCOME PER CONSUMPTION UNIT BY HOUSEHOLD INCOME DECILES  
IN FIVE COUNTRIES

	Australia	New Zealand	Sweden	United Kingdom	United States
- As % of Average Value per Consumption Unit for all Households -					
<i>Ranked by private income:</i>					
Lowest 10%	45.9	52.5	65.2	56.5	
Second decile	53.5	63.8	71.9	58.1	
Third decile	57.6	74.2	71.4	64.4	
Fourth decile	70.3	79.6	72.5	73.1	
Fifth decile	81.2	83.9	88.7	80.2	
Sixth decile	94.0	92.7	99.0	89.9	
Seventh decile	104.3	98.1	107.9	92.4	
Eighth decile	122.9	114.8	109.5	109.5	
Ninth decile	139.1	128.2	115.9	125.7	
Highest 10%	166.4	148.7	149.7	175.6	
Average	100.0	100.0	100.0	100.0	
<i>Ranked by gross income:</i>					
Lowest 10%	42.9			55.2	20.0
Second decile	52.3			57.8	42.2
Third decile	57.2			68.8	55.1
Fourth decile	71.7			74.4	69.1
Fifth decile	81.1			82.0	80.2
Sixth decile	93.1			91.1	90.7
Seventh decile	105.2			99.5	103.7
Eighth decile	120.9			111.1	118.2
Ninth decile	136.0			126.7	139.0
Highest decile	164.2			176.4	196.5
Average	100.0			100.0	100.0

**TABLE 13: EQUIVALENCE RATIOS USED IN CALCULATING CONSUMPTION UNITS**

The Swedish estimates of household income distribution make use of the concept of a 'consumption unit' : 1 adult = 0.95 consumption units, 2 adults = 1.65 consumption units, children (i.e., persons under 18) = 0.40 consumption units. These ratios may be converted into; a couple = 1 consumption unit, 1 adult = 0.576 consumption units, children = 0.242 consumption units. The latter ratios (the 'Swedish scale') were used to calculate the average number of 'consumption units' per household shown in the last line of Tables 1 to 7, and the average number of consumption units per household in each decile were used in calculating the estimates of 'disposable income per consumption unit' in Table 12.

For purposes of comparison, the equivalence ratios used are compared below with several other equivalence scales.

Household Composition		Swedish	Kakwani	Whiteford	OECD	ABS	Henderson, Head working
Adults	Children						
1	0	0.576	0.588	0.61	0.59	0.59	0.75
1	1	0.818	0.823	0.88	0.88	1.00	0.96
1	2	1.061	1.059	1.01	1.18	1.18	1.16
1	3	1.303	1.294	1.17	1.47	1.35	1.36
2	0	1.000	1.000	1.00	1.00	1.00	1.00
2	1	1.242	1.235	1.16	1.29	1.18	1.20
2	2	1.485	1.471	1.30	1.59	1.35	1.40
2	3	1.727	1.706	1.48	1.88	1.53	1.60
3	0	1.576	1.412				
3	1	1.818	1.647				
3	2	2.061	1.882				

<b>Sources:</b>	Swedish -	Statistiska Centralbyran, <b>Statistiska Meddelanden</b> Be 21 SM 8603.
	Whiteford -	Whiteford, P. <b>A Family's Needs: Equivalence Scales, Poverty and Social Security</b> , Department of Social Security Research Paper No.27 (1985). 'Simplified' scales, Australian geometric mean.
	Kakwani -	Kakwani, N. <b>Analysing Redistribution Policies: A Study Using Australian Data</b> (1985), p.173.
	Others -	Australian Bureau of Statistics, <b>Social Indicators No.4</b> , ABS Catalogue No.4101.0 (1984), pp.251-52.

## SOURCES

- Australia: ABS, Household Expenditure Survey 1984 : **The Effects of Government Benefits and Taxes on Household Income**, (April 1987) ABS Catalogue Number 6537.0, Table 5.2. Some unpublished data were used in calculating numbers of consumption units per household.
- New Zealand: Snively, Suzanne, **Evaluating the Budget's Distributive Influence on Household Income** (New Zealand Planning Council, forthcoming), Tables 3E.1, 3E.2, 3E.5, 3E.6 and A7.1. 'Children' are defined as those eligible for family benefit. In estimating the distribution of the adult population between couples and other adults, it was assumed that all '2 adults with children' and '3 or more adults' households included one couple, and that, in each income decile, 80% of the households consisting of 2 adults only were couples. The estimates of 'Market Income' are used for Private Income, 'Direct Monetary Benefits' for Direct Benefits, 'Total Income' for Gross Income, 'Household Income Available to Spend' for Disposable Income, 'Government Private Goods' for Indirect Benefits and 'Money Income with Direct Government Transactions' for Final Income. For Indirect Taxes, 'Subsidy Income' is deducted from 'Indirect Taxes' (on final goods only).
- Sweden: Statistiska centralbyran, **Statistiska Meddelanden**, Be 21 SM 8601 and Be 21 SM 8603. 'Factor income' is used for Private Income. Gross income is the total of factor income plus positive transfers. **All data for Sweden relate to income units**, not households (though described as households in the source publications).
- United Kingdom: Central Statistical Office, **Economic Trends**, December 1985. 'Children' are persons under 16. Consumption units were calculated using the distribution of households information in Table 7. In calculating numbers of consumption units, households consisting of 2 adults and 3 or more children were assumed (as in Australia) to have 3.2 children on average and households consisting of 1 adult with children were assumed (as in Australia) to have 1.7 children on average. Retired households with 2 or more adults were assumed to have 2.2 adults on average and non-retired households with 3 or more adults were assumed to have 3.5 adults on average. All households consisting of 2 adults and children are assumed to include 1 couple, and 80% of households consisting of 2 adults (non-retired) and 2 or more adults (retired) are assumed to be couples. Households consisting of 3 or more adults with children are assumed to have 2 children on average.

United States: Bureau of Census, **After-Tax Money Income Estimates of Households : 1984**, Special Studies, Series P-23, No.147 (July 1986), especially Tables 1 and 5 for direct taxes paid.

Bureau of the Census, **Economic Characteristics of Households in the United States : Second quarter 1984**, Household Economic Studies, Series P-70, No.4 (May 1985), especially Tables C, D and F, Table 9 and Table D-3 for income received from direct benefits in gross income ranges. Private income was estimated by deducting income from direct benefits in gross income deciles (estimated from this publication) from before-tax income in gross income deciles estimated from **After-Tax Money Income Estimates of Households : 1984**.

Bureau of the Census, **Money Income of Households, Families and Persons in the United States : 1984**, Consumer Income Series P-60, No.151 (April 1986), especially Table 19 for number of related children in families by income ranges and Table 24 for total income from social security and railroad retirement.

**COMMENTS ON IAN CASTLES' PAPER**

**Peter Saunders**  
**Social Welfare Research Centre**

The recent ABS fiscal incidence study is a timely and welcome addition to the body of statistical evidence which can be brought to bear on the analysis of public policy in Australia. Ian Castles' paper today further extends its usefulness by providing comparisons of the Australian results with similar estimates for several other countries. The remarks which follow are divided into two sections: The first considers some of the methodological and conceptual difficulties of fiscal incidence studies. While many of these are fairly well-known, it is worth giving them some emphasis, if only because they serve as caveats to the interpretation of such results and their implications for policy. In the second part of my remarks, I will focus more specifically on the international comparisons provided in Ian Castles' paper, on the nature of the results themselves and on some of their implications.

I will organise my remarks on the general methodology of fiscal incidence studies under the headings of coverage, valuation and allocation and policy implications. The issues raised under these three headings are not intended to be exhaustive but hopefully do cover most of the major concerns that have emerged in the literature to date.

**Coverage**

The ABS study allocates just under 44 per cent of total government outlays in 1983-84 and almost 60 per cent of total taxation revenue. Although coverage on the outlays side is lower than tax coverage, the actual level of allocated outlays exceeds the level of allocated taxes by \$1.5 million because total outlays were considerably higher than total taxes in 1983-84. Coverage in the UK's fiscal incidence analysis undertaken annually by the Central Statistical Office (CSO) - on which the ABS study is based - is slightly higher, at close to 50 per cent, on the outlays side, but is very similar on the revenue side.

In general, outlays are excluded from fiscal incidence studies of this type on one of three grounds (ABS, 1987, p.83); because it is conceptually



impossible to allocate benefits to individual households (e.g. expenditure on public goods like defence, foreign affairs and law and order), or because the household sector is not the only sector which benefits (e.g. expenditure on economic services like fuel and energy and transport and communication) or because allocation is statistically impossible due to lack of data on utilisation rates (e.g. expenditure on culture and recreation). The first category (public goods) is considered in John Piggott's paper and will not be addressed further, except to note that alternative allocation methods have been employed in other countries, and the sensitivity of results to different methods has then been assessed.

With regard to the latter two categories, it seems to me that these could in principle be allocated with the help of some innovative thinking. For example, the Household Expenditure Survey (HES) collected very detailed information on expenditure on recreation which could be used to allocate expenditure on culture and recreation. With regard to economic services, the argument for exclusion is perhaps weakest of all, since some of the benefits of the outlays which are included in the ABS Study also flow beyond the household sector. Consider, for example, the benefits to the industry sector of outlays on education, on health and on unemployment benefits. Recalling that fiscal incidence studies start from the view that all benefits accrue to households, the rationale for including health outlays while excluding transport outlays becomes problematic. Similar comments can be made on the coverage of revenues, which is restricted to those taxes where the incidence assumptions appear most plausible (although to whom they appear most plausible is never stated). Aside from the question of the consistency of these assumptions - an issue addressed in John Piggott's paper - there again arises the need to broaden coverage to taxes whose incidence is more controversial (the corporate tax and local government rates, for example) and to check the sensitivity of results to alternative incidence assumptions.

One final aspect of coverage relates to the question of tax expenditures. Those tax expenditures which take the form of allowances against personal tax are included in the ABS study, since income tax is imputed net of tax rebates. It would, however, have been extremely useful to see these rebates separated out so that an indication of their incidence could have been assessed. More generally, it would have been interesting to see the

estimated incidence of the superannuation-related tax expenditures and those relating to the non-taxation of imputed rental income. Again, this would have involved some imaginative allocations and would thus have produced controversial results, but the expenditure data collected in HES in principle permit some assessment to be made. Indeed, the method adopted to allocate housing outlays to public housing tenants involved the calculation of imputed rent benefits for this group, which suggests that the method might have been applied more generally.

### **Valuation and Allocation**

As is well known, fiscal incidence studies allocate the costs of providing government services and implicitly assume that these equate to the benefits derived from consuming these services. The limitations of this approach have been widely discussed in the literature and will be considered only briefly here. The essential point is that the last two income concepts developed in the ABS study - disposable income plus indirect benefits and final income - are an amalgam of cash and imputed (cost-based) noncash components. They therefore need to be treated with caution as indicators of household standards of living. If, for example, the perceived benefits that households derive from government spending on education are positively related to household income, then education benefits will bear a stronger relation to income than is revealed by the fiscal incidence allocations. In a somewhat similar vein, to what extent does it make sense to assume that the benefits provided by health services is equivalent to a cash value of the associated costs. My own preference for cash over health service usage is very strong, not because I value cash over service provision, but because I would prefer not to be ill and thus in need of health services in the first place!

This example highlights the general point that provision of public cash transfers and services takes the form of establishing entitlements to specific groups in society; the aged, children, the sick, and so on. These groups are distinct from others who do not have the characteristics which determine eligibility for entitlements, and recognition of this needs to be made when interpreting the results. Some of the characteristics which determine eligibility are readily identifiable - age and family size, for example - and the ABS study takes account of these in presenting separately

results for different demographic groups. These tables are particularly useful and serve to further caution against drawing implications from the aggregate tables where income, social and demographic determinants are not separately identified to the degree that is necessary.

It is also worth noting that government wage and salary payments are included twice in fiscal incidence estimates, once as a component of private income and again when government outlays are allocated to households. The double inclusion of government wage and salary costs is consistent with the national accounts framework of the fiscal incidence methodology, but nevertheless raises interesting questions for interpretation of the results. Increased pay for middle and higher income health service employees, for example, will simultaneously increase the inequality in private income while also affecting the estimated distributional incidence of indirect health benefits. The net effect on the distribution of final income will reflect both changes, but to which should greatest significance be attached?

### **Policy Implications**

Let me now turn to that aspect of fiscal incidence studies to which many of us here today attach greatest potential significance, their implications for policy. There can be little doubt that the main aspect of the results on which policy attention will focus is on the implied redistributive impact of public policies. It is important to emphasise here that fiscal incidence results have relevance to the **redistributive impact** of public policies rather than the extent to which policies achieve their actual **redistributive objectives**. These are often concerned with equality of access or opportunity rather than equality of outcomes as such. But a more fundamental point is that analysis of redistributive effects necessarily involves comparisons between alternative states, at least one of which is hypothetical or counterfactual. Thus, as many observers have noted, comparisons between the distribution of private income and final income provide a very misleading indication of total redistributive impact, because the "no government counterfactual" assumed in such comparisons - the distribution of private income - is not the distribution which would prevail if government did not exist. The existing distribution of private income in fact reflects the existence of government, not only because of government wage and salary

payments but, more importantly, because of the behavioural responses of households to existing government benefit provisions and taxes.

These considerations make global assessments of redistribution extremely hazardous, although fiscal incidence results may be of more use in assessing the redistributive impacts of particular policy changes. However, in this context, it is the **marginal** effects of benefits and taxes that are relevant rather than the total effects, a point developed in John Piggott's paper and thus not explored further here.

Assessment of the redistributive impact of policy changes is closely related to the concepts of progressivity and regressivity within which such discussions are usually couched. I do not wish to discuss the merits of alternative measures of progressivity - although the general point that there is no **single** measure itself deserves emphasis - but rather to focus attention on the alternative household income measures developed in the ABS study. Indeed, the development of these income measures is one of the major achievements and contributions of the study. It is, however, worth observing that the tendency for certain cash transfers to be substituted for tax expenditures, and vice versa, makes the concept of gross income somewhat tenuous, particularly for intertemporal or international comparative purposes. Nevertheless, the income concepts have relevance to the progressivity question, although appropriate policy assessment requires adoption of the income measure relevant to the policy under consideration. The impact of direct benefits, for example, is appropriately assessed against private income, the impact of direct taxes against gross income and the impact of indirect taxes against disposable income. The choice of income concept against which to evaluate the impact of indirect benefits is, however, not so apparent, although gross income is probably most suitable. If this framework is accepted, then it might have been preferable if the ABS study had reversed the order in which indirect benefits and indirect taxes were incorporated in the analysis when going from disposable income to final income, for as the tables stand it is difficult to assess the redistributive effect of indirect taxes against the appropriate concept of disposable income.

Thus, for example, Table 1 of Ian Castles' paper appears to indicate that indirect taxes are proportional because the distribution of disposable income

plus indirect benefits is almost identical to that for final income. In fact, the gini index is identical for both distributions. However, the appropriate income concept against which to judge the incidence of indirect taxes is disposable income and one when compares the share of indirect tax payments with the share of disposable income across the income distribution, one finds that indirect taxes are regressive as one would expect. (See the discussion of Tables F and G in Ian Castles' Paper).

One final aspect of the income concepts worth stressing relates to the use of equivalence scales to adjust household incomes for the size and composition of household members. Such adjustment was not undertaken in the ABS study but instead results are presented for household groupings defined in terms of household characteristics such as family composition, age of household head and principle source of household income. Would the use of equivalence scales to define household equivalent income have been a preferred option? The answer to this question depends, in part, on one's confidence in the equivalence scales used in such an exercise. But there is another factor at issue here. Since the estimated equivalence scales are derived from household expenditure patterns, they will reflect any indirect taxes which influence the composition of spending. An increase in indirect taxes, for example, which raised costs by a greater amount for larger families would increase their estimated equivalence scales and hence lower their equivalent income. The impact of indirect taxes in a fiscal incidence framework would thus, in a sense be double-counted, since it would both lower equivalent incomes and be allocated accordingly to households with the resulting lower equivalent incomes. This is not to argue against the use of equivalent incomes, which in general would contribute greatly to the usefulness of fiscal incidence results, but is intended again to act as a caution against interpretation of the results for policy purposes.

### **International Comparisons**

Finally, I would like to make a few comments on the international comparisons which Ian Castles has presented in his paper. The methodology adopted in each study reported in the paper is broadly similar to that developed by the CSO and adopted in the ABS study, so that the results are, subject to the usual provisos, truly comparative. I will restrict my remarks to those

results in which private income rankings are adopted, although this unfortunately excludes the United States from the discussion. The first thing that struck me on looking at the results for the other countries was the amazing similarity in the distribution of final income. For the three countries for which the relevant gini coefficient is available (Australia, New Zealand and the United Kingdom) the gini for final income varies from 0.263 to 0.266. This is presumably a coincidence rather than the operation of some sinister law of minimum income inequality of which we had not previously been aware!

The comparisons become more interesting when restricted to the impact of cash benefits (i.e. by comparing the distributions of private and gross incomes) because Sweden can then be included. Restricting myself again to private household income rankings, Tables 11, 14, 15 and 17 indicate that the proportion of total direct benefits accruing to the lowest decile is 26.0 per cent in Australia, 23.3 per cent in New Zealand, 15.2 per cent in Sweden and 20.4 per cent in the United Kingdom. Direct benefits are more effectively targeted on low income households under the income-tested arrangements used in Australia and New Zealand than under the social insurance arrangements used in Sweden and the United Kingdom. Despite this, the estimated redistributive impact of direct benefits - as measured by the difference between the lowest decile's share of gross and private income - is considerably greater in Sweden and the United Kingdom than it is in Australia or New Zealand. This reflects the fact that the **redistributive impact** depends both on the **incidence** of direct benefits and their **overall level**. And it is no coincidence in my view that the overall level of direct benefits (or social security expenditure, for this is equal to direct benefits in aggregate) is greater in those countries where benefits have been more universal in nature than in those countries where selectivity has been given greater emphasis. I have written at some length elsewhere on this point and will not develop it further here (Saunders; 1986, 1987). It is, however, one example of the potential contribution to public policy analysis of the kinds of international comparisons contained in Ian Castles' paper.

Finally, I would like to emphasise again my view that the ABS study is particularly timely, if for no other reason than that it will allow the redistributive impact of public policies to be assessed with much more

confidence than was previously possible. The ABS results are obviously not the end of the matter, and they will need to be treated with caution for all of the reasons I have alluded to. But the study represents an encouraging beginning and, even if it has taken Australia more than fifteen years to adopt and apply the CSO approach for assessing the redistributive impact of government benefits and taxes, should lead to better analysis and a more informed debate on social policy than has been possible in the past.

#### REFERENCES

1. Australian Bureau of Statistics (1987), **Effects of Government Benefits and Taxes on Household Income**, Catalogue No. 6537.0, Canberra.
2. Saunders, P. (1986), "Making the Case for Welfare Spending", **Australian Social Welfare Impact**, November.
3. Saunders, P. (1987), "Past Developments and Future Prospects for Social Security in Australia", in P. Saunders and A. Jamrozik (eds.) **Social Welfare in the Late 1980s: Reform, Progress or Retreat?**, SWRC Reports and Proceedings No.65, June.

**STATISTICAL INCIDENCE STUDIES: AN ECONOMIC PERSPECTIVE\***

John Piggott  
Department of Economics  
University of Sydney

**1. Introduction**

This paper discusses critically the measurement of the redistributive impact of microeconomic government intervention - particularly taxes and public expenditure programmes - by means of statistical incidence calculations. The problem of assessing the redistributive impact of government policy is an excellent illustration of the dilemma confronting economists concerned with the policy implications of microeconomic analysis. A rigorous approach requires a complete general equilibrium structure which is difficult to implement empirically and yields results which are complicated to explain to non-specialists. Simpler methods, such as the statistical calculations approach, leave analytically-oriented economists unconvinced about the validity of the results obtained. These latter studies, however, are easier for non-specialists to come to terms with, and have for this reason become very influential in moulding perceptions of the redistributive impact of public policy. This situation suggests there is a risk that policy formulation is being driven by incorrect perceptions of likely impact.

I will argue in this paper that the statistical calculation (SC) of fiscal burden can be an important starting point in investigating the redistributive impact, or 'incidence' of government policies, but that in the absence of further development the estimates as reported can generate seriously misleading perceptions of the redistributive impact of government programmes. There are a number of reasons for this, but a recurring theme is that the statistical approach abstracts from important issues which have received much attention from academic economists concerned with the economic effects of public policy. I do not address the recent ABS (1987) statistical incidence study specifically.

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The paper is organised as follows. Section 2 examines the treatment of taxes in statistical calculations of fiscal incidence. Section 3 discusses the treatment of public goods and other public expenditures. In Section 4, I widen the discussion to address the issue of life cycle incidence calculations, while Section 5 summarises the paper's main conclusions.

## 2. The Tax Side

The SC procedure starts with income by source and consumer expenditure data split by income range. Income sources include labour, capital and transfers; consumer expenditure data disaggregate outlays by commodity. Sometimes savings and housing tenure are recorded as well. Taxes are seen as falling on the sources or uses of income, or some combination. These decisions embody the shifting assumptions employed in the analysis, and (implicitly) determine the underlying economic model. The distribution of the burden of any tax is thus determined by the shifting assumptions and the allocation series. The overall tax burden profile is calculated by adding the burdens for each tax.

When a method is developed which depends on an **implicit** economic model, two negative consequences are risked: First, the procedures adopted may be inconsistent with each other. Secondly, the limitations of the assumptions for interpretation of the results may not be fully recognised. It is therefore instructive to ask whether an economically sensible model can be explicated which would be consistent with the procedure adopted. One model which (more or less) satisfies this requirement is the one-period, two-fixed-factor general competitive equilibrium model which has been widely used in the academic literature over the last 30 years. (The model outlined below finesses the issue of the way in which distortionary factor taxes affect the curvation of the transformation frontier) In the version needed for consistency with the SC approach, capital and labour are transformed into consumption and capital goods (implicitly accounted for by saving), and Leontief-type utility functions are assumed.

One of the major attacks on the SC approach (see Prest, 1955) has been the apparent inconsistency of assuming simultaneously that sources taxes (such as personal income tax) stay put (implying inelastic factor supply schedules)

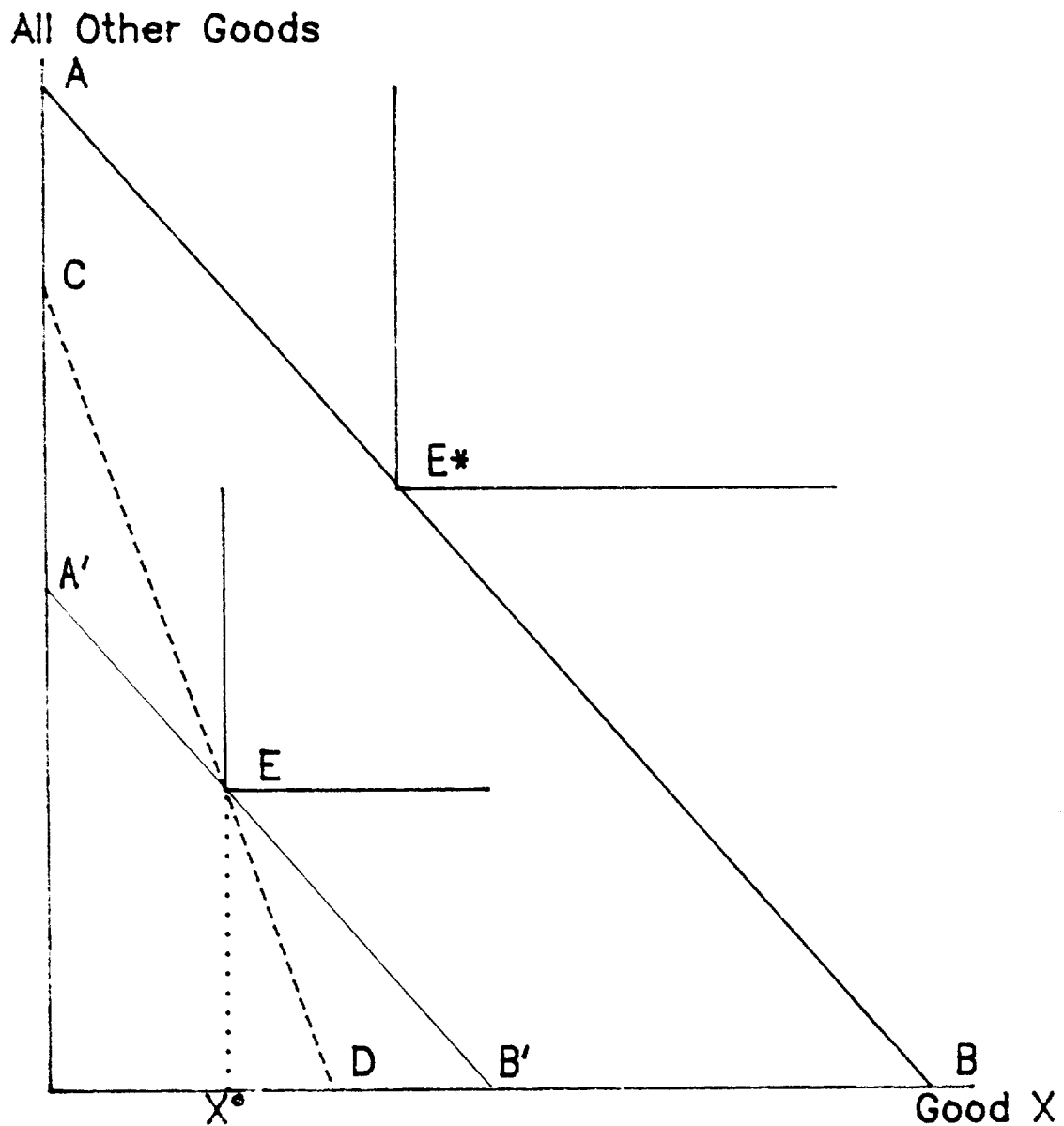
while output taxes are paid by the consumer (implying elastic product supply schedules). This apparent inconsistency can be resolved in a general equilibrium model by assuming the same capital-labour ratio in all industries. This implies a linear transformation frontier, along which cost-covering producer prices remain constant. Although other models could no doubt be developed which would be consistent with the SC approach, the framework used here is much used in analytical public finance, and therefore provides a convenient benchmark for the purposes of this paper.

Under these assumptions, the tax burden for a typical household is as depicted in Figure 1. For analytic convenience we adopt the convention that the benefit to be measured is that arising from the abolition of all taxes. The no-tax budget constraint is given by AB, with the consumer choosing the point E\*. A tax regime comprising both an income tax (equal to AC at **no-tax, or new**, prices) and a tax on X (equal to CA' given that  $X^0$  units of X are consumed) implies the after-tax budget constraint CD. The distance AA' is the geometric analogue of the overall tax burden, and is the compensating variation for this household of abolishing all taxes.

It is now easy to identify the limitations of this model for the interpretation of results. Two points stand out. First, Leontief type utility functions are very unrealistic. Second, a common capital labour ratio across all industries is implausible, especially when industries such as Agriculture and Housing are compared with Manufacturing. **These assumptions combine to effectively eliminate behavioural responses from the model**, even though much of applied microeconomics is concerned with the economic effects of behavioural change when government policy alters.

To gain some sense of how important these limitations of the model are in practice, attention will focus on two studies which compare SC results with estimates based on behavioural models. The models used in these studies rely on the same analytic framework outlined above to rationalise the SC approach, thus facilitating comparisons. The first is King's (1983) study of housing tax reform in the UK. King compares two measures of redistribution, which he terms cash gain and equivalent gain. The cash gain measure corresponds to the SC type measure; the equivalent gain measure includes welfare costs as well.

**Figure 1: The Statistical Calculation Approach to the Measurement of the Tax Burden**



King's calculations of the redistributive impact of removing housing subsidies in the United Kingdom, including the owner-occupier tax break, and redistributing the surplus revenue as lump-sums in proportion to income are presented in Table 1. Two points emerge: First, the cash gain measure exaggerates the size of both gains and losses by income group relative to the equivalent gain measure, and the importance of incorporating behavioural responses is thus illustrated. Secondly, use of the SC estimates biases policy decisions towards the status quo when the alternative policy has desirable efficiency consequences. As Table 1 illustrates, the cash gain column shows the poorest four deciles would lose on average if housing subsidies were removed, while the equivalent gain column indicates that only the poorest two deciles lose on average. One shortcoming of the King approach is that it abstracts from the production side of the economy. The implicit assumption is that the transformation curve between 'housing' and 'other goods' is linear, a limitation which King acknowledges. Table 1 can therefore be interpreted as measuring the error introduced by the implicit Leontief preference assumption of the SC approach.

**Table 1:**  
**The Distribution of Gains by Deciles of Original**  
**Equivalent Income (£ per week, 1973 prices)**

Decile	Mean original equivalent Income	Mean cash gain	Mean equivalent gain
1	11.08	-0.99	-0.09
2	17.41	-0.77	-0.05
3	24.38	-0.39	0.11
4	31.38	-0.10	0.18
5	37.60	0.04	0.23
6	43.58	0.15	0.26
7	49.27	0.22	0.28
8	56.92	0.28	0.28
9	67.46	0.48	0.33
10	102.80	1.04	0.42
Overall	44.19	0	0.20

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**Source:** King (1983), Table 2.

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The second limitation of the SC approach was the implicit assumption of a uniform capital-labour ratio across industries. Table 2 reproduces results from an applied general equilibrium (AGE) model of the United States economy, GEMTAP, reported in Devarajan et al. (1980), together with 'corresponding' SC results. The experiment considered here involves the imposition of a tax on clothing and jewellery, a very labour-intensive industry, with a lump sum redistribution of surplus revenue to consumers in proportion to their after-tax income. Since the taxed product is labour intensive in production, the expectation is that labour will bear some of the burden of the tax, and that in comparing the SC and AGE results, households with capital-intensive endowments should fare better in the AGE estimates. In cross-section studies, the low income retired persons tend to have the most capital-intensive endowments, and the results are in line with these expectations. Since an incremental tax on clothing and jewellery **increases** distortions, the analysis indicates that many more consumer groups lose under AGE calculations than under SC procedures.

In considering the results in Tables 1 and 2, it is important to bear in mind that both report the impact of policy changes occurring at the **margin** of government activity. The pattern and significance of the marginal excess burden of taxation as a proportion of marginal revenue tends to be quite different from the total pattern, and recent research suggests that marginal excess burdens are much higher than was previously thought. Values of between fifty cents and one dollar per dollar of revenue raised are not uncommon. The question of whether marginal or total effects are being analysed in statistical incidence calculations is therefore of some importance (see Piggott and Whalley. 1987), and will be returned to when considering the treatment of public expenditures in Section 3.

Much of the analytic literature on the economic effects of taxation over the last 30 years has focused on the issues exemplified by the results presented in Tables 1 and 2. There appears to be substantial error introduced by ignoring these economic (behavioural) effects, as the SC procedure does. In the studies reported here, factors are assumed to be in fixed aggregate supply and the models abstract from intertemporal effects. Efficiency and relative price changes are thought to be even more important when variable labour supply and saving behaviour are introduced. Again, these are

abstracted from in the SC procedure. I conclude that on the tax side, the SC procedure, while providing a useful data base for the economic analysis of tax policy, will be seriously misleading if the tax burden profiles are interpreted as estimating tax incidence.

**Table 2:**  
**Comparison Between Statistical Calculation (SC) and**  
**Applied General Equilibrium (AGE) Assessment of**  
**the Redistributive Impact of a Tax on Jewellery**

Consumer group (Income class, in Increasing order)	SC estimates	AGE estimates <sup>(a)</sup>
1	.17	.33
2	.07	.18
3	.11	.10
4	.01	-0.3
5	.05	-0.2
6	.01	-0.9
7	.01	-.14
8	-.03	-.19
9	0	-.20
10	-.05	-.23
11	.06	-.22
12	.01	-.08

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**Note:** (a) Derived by taking the geometric mean of columns 3 and 4 in Devarajan, op.cit.. Where signs differed, arithmetic means were used.

**Source:** Devarajan et.al. (1980), Table 7.

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### 3. Government Expenditure

On the expenditure side, the typical SC procedure is to divide government expenditure into transfers and real expenditure, again with an allocation of each by income range. The allocation of real expenditure is usually based on statistical service utilisation series, such as the number of highway miles driven (for expenditure on roads), or the number of students per family (for

education expenditure). The allocation of transfers reflects cash disbursements by government, as reflected in household income receipts of transfers. In some cases, the SC treatment of public expenditures is subject to the same difficulties that were highlighted in the discussion of the tax side of the budget. Transfers provide a good example. These operate as categorical negative taxes. The behavioural implications of public pensions, unemployment benefits, and other transfer arrangements have been much discussed in the economic literature, but the SC approach abstracts from all such considerations.

Assessing the redistributive impact of other types of public expenditure raises further methodological issues. Public goods, by which is meant goods that are non-rival in consumption (such as national defence), are especially difficult to deal with. Three alternative approaches are conventionally used in the SC procedure. First, they can be omitted altogether (as done, for example, in the ABS (1987) study). Second, an assumption is made about the pattern of **total** benefits from public good provision, and values are added into the burden profile on the basis that the total benefit is equal to the total cost of provision (for example, the study by Musgrave et.al. 1974). Thirdly, an assumption is made about the pattern of **marginal** benefits, and these are used to allocate total benefits, once again on the basis that in aggregate, benefits equal costs (for example, Aaron and McGuire, 1970).

The cost of public goods as a proportion of total public expenditure is very substantial - the Musgrave et.al. (1974) study places about half of public outlays in this category - so omission is a poor solution if the ultimate aim is to provide a comprehensive picture of overall redistributive impact. The second approach mentioned above is widely used, and involves the use of an allocation rule in much the same way as is used to distribute more specific public expenditures. The Musgrave study, for example, uses three allocation methods; per capita, in proportion to household income, and in proportion to total taxes paid.

The allocation of real government expenditure on public goods as undertaken by Musgrave et. al. (1974) had previously been criticised by Aaron and McGuire (1970). They argue that public good benefits should be allocated by income range, using the marginal rates of substitution (MRS) between public

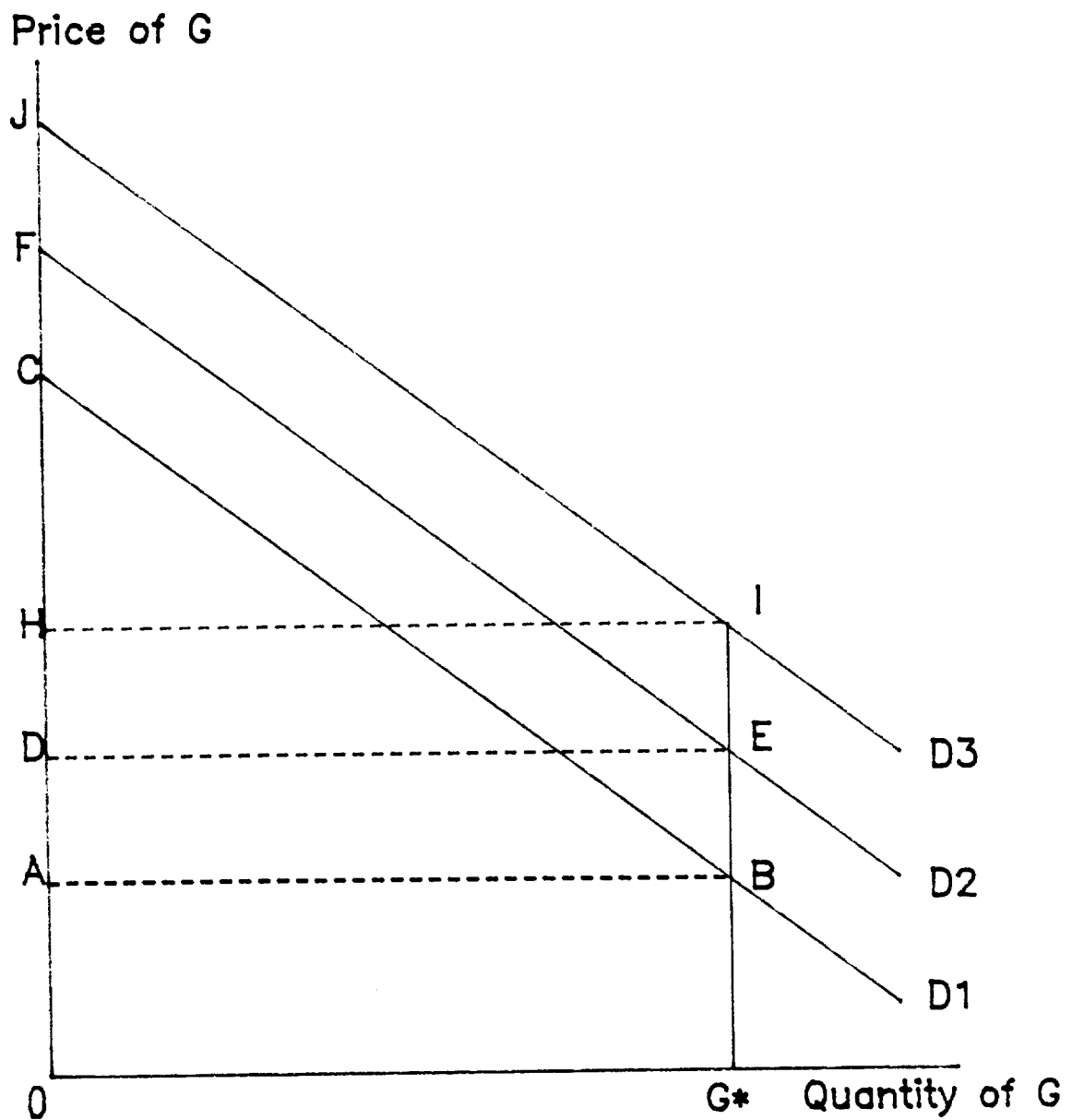
and private goods as weights. The pattern of benefits will thus depend upon the utility function assumed. Both of these approaches share the following features. Firstly, government activity is treated as a zero-sum game, in which total costs must equal total benefits. This assumption is inconsistent with the idea of co-operative gain which provides the economic rationale for public good provision. Secondly, neither approach distinguishes between marginal and total impacts. These two points have been developed by Piggott and Whalley (1987), who use an applied general equilibrium (AGE) model with a public good incorporated to investigate the economic impact of both small and large changes in public good provision.

An important feature of their results is the difference in distributional impact across income ranges for small and large changes. (See Piggott and Whalley, *op.cit.*, Table 2). For a five per cent reduction in public goods and taxes, poor households gain significantly more than middle income households, who in turn gain less than rich households. While the effects are small, they are uneven across income ranges. For large changes this is not the case. The reason for this difference is that for a small change, the impact of the change in public good supply operates at the **margin**, while for a large change the **average** effect dominates.

This can be represented diagrammatically using Bowen-type personalised demand functions for public goods, as in Figure 2. In Figure 2,  $D_1$ ,  $D_2$ , and  $D_3$  represent the personalised, compensated demand functions for the public good (G) for three households. The appropriate level of provision of the public good involves the vertical summation of the demand curves, and their intersection with the marginal cost curve. Suppose that public goods provision initially is at the level  $G^*$ . For a **small reduction** in G, effects across households are given by the marginal rates of substitution for each household in the neighbourhood of  $G^*$  (denoted in Figure 2 by OA, OD, and OH, respectively). For a **complete removal** of G, the associated welfare effects are given by the total consumer surplus areas under these demand curves (ie. by the areas  $OG^*BC$ ,  $OG^*EF$ ,  $OG^*IJ$ , respectively). Effects at the margin can thus be widely dispersed, while effects on average over all public sector provision are similar. This clearly suggests that net fiscal incidence calculations have to be interpreted quite differently, depending upon whether small or large changes in public sector activity are being considered.



**Figure 2: Average versus Marginal Effects of Changes in the Provision of Public Goods**



Typically, SC results for small changes ignore the marginal welfare costs of raising taxation revenues, independently estimated by Ballard et al. (1985) and Stuart (1984) to be substantial. Calculations for large changes (such as the Aaron-McGuire analysis where both taxes and expenditures are removed) ignore the dominant effect of the consumer surplus effects from non-marginal changes in the level of provision of public goods.

The use of the costs of real goods and services to estimate the benefits to households from public sector provision is misleading even when the goods are private (that is, rival in consumption). The marginal benefits from compulsory public insurance for medical care, for example, are unlikely to be equal to the marginal social cost, because care will be demanded up to the point where marginal benefit is equated with marginal private cost. (This effect, of course, occurs even when the insurance is private. The market fails because of information asymmetries, and leads to both moral hazard and adverse selection problems.) The most ambitious study of patterns of demand for medical care is the Rand study in the United States (see Newhouse et.al., 1982, for an overview of this work). One much-quoted finding from their research is that individuals facing unsubsidised prices will demand only half the medical care of those for whom the service is free. If this is true, then the effect of the subsidy on demand behaviour is of considerable quantitative importance, and a simple cost allocation rule is unlikely to give an accurate picture of the pattern of benefits.

More generally, it is possible to argue that cost allocation rules are not satisfactory for benefit attribution for almost any publicly-provided private good. There are usually two points of attack. Firstly, the price charged by the public sector, which in the absence of ration constraints will equal the marginal private benefit, will not usually reflect marginal social cost. Secondly, many of the goods which are provided publicly are associated with an externality or market failure of some kind, and this will further complicate the calculation of benefit. (The significance of these points is explored in the context of an example in Section 4.)

As with the tax side, SC procedures for dealing with the redistributive effects of government outlays ignore important economic effects which have been extensively investigated in the professional and academic literature.

In many cases there is evidence to suggest that the pattern and level of benefit will not be reflected by cost patterns, and that the use of cost data is therefore likely to be misleading if the aim is to assess the redistributive impact of public expenditures.

#### 4. Life Cycle Issues

A repeatedly-stated qualification to annual calculations in the empirical fiscal incidence literature is that it would be more satisfactory to make calculations on a lifetime basis. Annual calculations are unsatisfactory, partly because a person's current income is a bad measure of his/her underlying real income, especially because government activity redistributes a person's lifetime income over his/her lifetime more than it alters its total. The 'annual income' approach thus gives the wrong impression on two counts: First, it exaggerates the basic inequality of incomes; and second, it exaggerates the amount of redistribution.

There has been remarkably little research so far on life cycle impacts of government policy, although a notable exception is Layard (1977). The discussion here is therefore fairly general, focusing on tax and expenditure issues in turn. It is useful to begin by asking how the SC procedure might be modified to take account of intertemporal or life cycle effects. The tax side of the simple general equilibrium model outlined in Section 2 above can be reformulated, transforming 'consumption goods' and 'capital goods' into 'present consumption' and 'future consumption'. It is then necessary to recognise that future consumption and saving are both taxed.

Whalley (1984) has explored these effects numerically using Canadian data for 1972 and Table 4 reproduces some of his results. The left hand ('standard') column in Table 4 is based on standard cross-section assumptions and generates a tax burden profile for Canada much the same as that of Musgrave et.al. (1974). When capital taxes on saving are included however, the incidence pattern becomes much more progressive. (see the 'progressive' column in Table 4) A related intertemporal effect concerns human capital accumulation, which is not taxed under any legislation, so far as I am aware. Such a model yields a tax burden profile which is sharply regressive, since human capital is concentrated in the upper part of the distribution. The

'regressive' column in Table 4 reproduces Whalley's illustrative estimates under this last scenario. These calculations dramatically illustrate the way in which the model assumptions determine the incidence picture that emerges. They also highlight a need for lifetime rather than annual incidence calculations.

The only study of which I am aware that attempts an empirical analysis of life cycle tax incidence is by Davies et al. (1984). They use data from the 1971 Canadian Survey of Consumer Finances to construct synthetic longitudinal lifetime profiles of earnings and transfer payments for a sample of 500 households. Households are assigned inheritances by simulating patterns of mortality and bequests. These data are then used in a life cycle simulation

**Table 4:**  
**Incidence under Alternative Assumptions:**  
**Calculations for Canada, 1972.**

Household Income Classes (\$ Can.)	Incidence assumption:		
	Standard	Progressive	Regressive
Under 6,500	27.5	25.9	29.9
6,500- 7,500	32.7	32.2	37.7
7,500- 8,500	35.4	34.9	45.2
8,500-10,000	35.0	34.9	49.9
10,000-11,500	36.1	36.0	47.3
11,500-13,000	35.3	37.0	47.3
13,000-14,500	35.6	37.6	46.3
14,500-16,000	35.7	39.2	46.3
16,000-18,500	37.8	42.2	43.3
18,500-21,000	37.1	41.1	43.1
21,000-25,000	37.4	44.5	49.8
25,000 and over	43.0	59.5	21.0

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**Note:** Whalley assumes that capital bears **all** of the burden of capital taxes and labour bears **all** of the burden of payroll and social security taxes.

**Source:** Whalley (1984), Tables 5 and 7.

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model to generate lifetime consumption profiles and bequests. The earnings, transfer and inheritance data, along with the model output, provide the series on which the allocation of taxes are based, and an SC-type exercise is then carried out to calculate the lifetime tax burden profile.

The major result is that under standard competitive assumptions, lifetime and annual incidence calculations both produce mild progression in tax rates across household groups. While the income tax is less progressive in lifetime than in annual calculations, other taxes are found to be less regressive, partly because income and outlays correspond more closely in lifetime than in annual estimates. Perhaps more importantly, lifetime incidence calculations were found to be more robust to alternative incidence assumptions than annual calculations. In the lifetime context, key series such as earnings, transfer payments, and consumption are less heavily concentrated in particular percentiles of the population than is true in annual data. As a result, changing the allocation series for any particular tax does not have the large effect on incidence results found in annual calculations.

On the expenditure side, too, lifetime benefits are of greater interest than annual benefits. Benefits from education, for example, are much more complicated when viewed in a lifecycle context than as a simple one-off subsidy to consumption of education services. Given perfect capital markets, of course, the annual calculation would suffice, since education could be purchased by anyone, whether or not it was subsidised, by borrowing. Capital markets are, however, not perfect, and a young person without appreciable non-human wealth may not be able to borrow to finance his/her education.

The benefits from education subsidies may therefore far exceed the cost of provision, since a market failure is being corrected as well as a subsidy being offered. This would remain true even if government loans at (risk-free) market rates of interest, were substituted for subsidy policy. The net benefits from access to such loans could be expected to far exceed the cost of bad debts. The policy of public loans could no doubt be set up to cost the government nothing, yet still confer substantial lifetime benefits on recipients. In this last case, the SC approach would not count the benefit at all, since costs are equal to zero.

Consideration of lifetime income redistribution leads naturally to questions about the redistribution of income between generations, an issue which has barely been recognised, let alone analysed, except in the very narrow context of the establishment of unfunded public pension schemes. As a hypothetical example, suppose that at a particular date government policy causes a continuing, uniform, and fully anticipated inflation, and that the nominal interest rate adjusts according to the tax-modified Fisher effect:

$$i = (r+p)/(1-t)$$

where  $i$  is the nominal interest rate,  $p$  is the rate of inflation,  $r$  is the net-of-tax real rate of return, and  $t$  is the average of marginal tax rates. Assume further that interest payments on owner-occupier mortgages are not tax-deductible. Such a policy will transfer purchasing power from the younger working generation to the older working generation and the retired, through two channels. Firstly, the interest payments on home mortgages are much higher than they would be if there were no inflation ( $p = 0$ ); secondly, because the retired on the whole face lower marginal tax rates than workers, their net-of-tax real interest receipts are higher than they would be if inflation were zero. These kinds of effects are among the most interesting and important in analysing the incidence of government policy, but have been given little attention so far, either by academics or by policymakers.

## 5. Conclusions

I have argued in this paper that while statistical incidence calculations can provide a valuable starting point for assessing the redistributive impact of government policies, they do not of themselves provide consistent answers to questions about the patterns of gains and losses to particular household groups, and should not be so interpreted. There are a number of reasons for this. Firstly, since behavioural effects are abstracted from, excess burdens of taxation are not taken into account in statistical tax incidence calculations. Recent research has suggested that at the margin, excess burden may be a large proportion (fifty to one hundred per cent) of revenue raised, and omitting excess burdens from redistributive calculations is therefore likely to introduce major errors. Secondly, relative price movements which may occur in re-establishing equilibrium following a tax

policy change can substantially affect the redistributive patterns of the tax change predicted from a model in which gross-of-tax factor prices remain fixed. This is particularly likely to be the case where substantial changes to the taxation of labour and savings are involved. The economic effects of taxes on labour and savings have been extensively analysed in the economics literature over the last fifteen years, yet they but are completely ignored in statistical incidence calculations.

Thirdly, statistical calculations of fiscal incidence ignore the consumer surplus gains from co-operative supply of public goods. Such gains can dominate the redistributive pattern of a policy change, especially if major alterations in the level of provision of a public good is involved. Under these circumstances, benefit allocation according to cost will not give an accurate indication of the level or patterns of benefits. Fourthly, many private goods which are provided, either partly or wholly, by the public sector are associated with market failure or other special characteristics. These characteristics often provide the rationale for public intervention in the first place. Ignoring them introduces a further source of error. Examples in the body of the paper include aspects of health and education provision, two of the most costly of government expenditure programmes in Australia, and these suggest, once again, that allocations by cost are unlikely to provide reliable guides to the level and pattern of benefits.

Finally, statistical incidence studies are invariably based on annual calculations. A life cycle approach is strongly preferred, partly because annual income is a poor guide to underlying real income, and especially because much redistributive government policy alters the distribution over individual life cycles more than it changes the distribution of lifetime resources across individuals.

## REFERENCES

- AARON, J.H. and McGuire, M.C. (1970), 'Public Goods and Income Distribution', **Econometrica**, Vol.38, pp.907-20.
- BALLARD, C., Shoven, J., and Whalley, J. (1985), 'The Welfare Cost of Distortions in the United States Tax System : A General Equilibrium Approach', **American Economic Review**, March, pp.128-138.
- DAVIES, J., St.Hilaire, F., and Whalley, J. (1984), 'Some Calculations of Lifetime Tax Incidence', **American Economic Review**, September, pp.633-649.
- DEVARAJAN, S., Fullerton, D., and Musgrave, R. (1980), 'Estimating the Distribution of Tax Burdens', **Journal of Public Economics**, Vol.13, pp.155-182.
- KING, M. (1983), 'Welfare Analysis of Tax Reforms Using Household Data', **Journal of Public Economics**, Vol.21, pp.183-214.
- LAYARD, R. (1977), 'On Measuring the Redistribution of Lifetime Income', in M. Feldstein and R. Imman (eds.), **The Economics of Public Services**, Macmillan, London.
- MUSGRAVE, R.A., Case, K.E. and Leonard, H. (1974), 'The Distribution of Fiscal Burdens and Benefits', **Public Finance Quarterly**, Vol.2, pp.259-311.
- NEWHOUSE, J.P., Manning, W. et.al. (1982), 'Some Interim Results from a Controlled Trial of Cost Sharing in Health Insurance', **New England Journal of Medicine**, pp.1501-1507.
- PIGGOTT, J. and Whalley, J. (1987), 'Interpreting Net Fiscal Incidence Calculations', **Review of Economics and Statistics**, forthcoming.
- PREST, A.R. (1955), 'Statistical Calculations of Tax Burdens', **Economica**, Vol.32, pp.122-136.
- STUART, C. (1984), 'Welfare Costs per Dollar of Additional Tax Revenue in the United States', **American Economic Review**, Vol.74, June, pp.352-362.
- WHALLEY, J. (1984), 'Regression or Progression - the Taxing Question of Incidence Analysis', **Canadian Journal of Economics**, XVII, November, pp.654-682.



# COMMENTS ON JOHN PIGGOTT'S PAPER

Neil Warren  
University of New South Wales

It was interesting to hear Ian Castle's reference in his paper to the comments of Jevons. A more extensive study than that by Jevons was undertaken by Samuel (1919) on which Cannon (1927) said the results were '... absolutely useless ... I think they are will-o'-the-wisp'. (p.66). What this highlights is that while fiscal incidence studies have been regularly undertaken over the last century, the criticisms of them have also continued for just as long. In our particular case, John Piggott's comments on the ABS study have a basically similar, if less emotive flavour, to those of Cannon (1927) in his comments on Samuel (1919).

What should not be lost on us, however, is that criticisms of fiscal incidence studies usually emanate from a failure by the incidence studies to satisfactorily qualify what is being presented. In my interpretation of the thrust of the Piggott paper, I would say that two points are being raised:

- (i) Fiscal incidence studies too often give some **answer** and then go looking for a **problem** to apply it to.
- (ii) The results of fiscal incidence studies fail to acknowledge the **economic model** implied in their results.

Both points are critical to studies like those undertaken by the ABS, and by Warren (1987). Each must acknowledge that in an ideal world, the determination of fiscal incidence is a general equilibrium problem. Failure to recognise this point results in the strong comments evident in not only Cannon (1927), but in Prest (1955), Dewulf (1975), Bird and Dewulf (1973), Meerman (1978) and Bird (1980). Some, such as Gillespie (1979) might argue that they are essentially undertaking general equilibrium type studies, but the arguments are far from convincing.

Some solace could once be taken by those undertaking fiscal incidence studies from the arguments of Musgrave (1959). Here, it was argued that while the

absolute incidence of government on the economy cannot be observed, we could feasibly ascertain the impact of a revenue neutral change in government policy on the economy since then, any distortionary effects and resulting excess burdens will be of minor consequence. John Piggott in his paper has put paid to that argument. He argues that it is possible for excess burdens to be significant at the margin, being as much as fifty to one hundred per cent of the value of the fiscal change.

However, while Piggott's criticisms of the statistical calculation (SC) of fiscal incidence is important, it should not be lost upon us that general equilibrium (GE) studies also suffer from their own limitations. The latter involves the specification of the model's behavioural assumptions and basic economic assumptions. As Piggott states: 'model assumptions determine the incidence picture that emerges'. This is as much the case with GE studies as the SC studies.

Probably the advantage of the GE models is the transparency of their modelling assumptions. These include the specification of demand and labour supply elasticities, substitution between factors and commodities, and the degree of market competition. This transparency has the advantage of making explicit the necessary qualifications which should attach to the results presented. This was the essence of the second note point made above. Being explicit about these assumptions is crucial to an appreciation of their limitations. This transparency in assumptions is not evident in the ABS study.

Returning to my first note point above, what it seems to me John Piggott is saying and which needs to be brought out more explicitly, is that we need to think about what we want or what the **questions** are, before we start offering up the **answers**. Different approaches yield different results, but they may be addressing different questions. Get the questions sorted out first and then proceed to derive the answers. In this context, lifecycle issues may become important and in other instances, may not. In concluding, I would like to note that I have very little disagreement with the thrust of Piggott's paper. It provides a good balance to the ABS study, keeping us aware of the necessary qualifications which must attach to SC type fiscal incidence studies.

## REFERENCES

- BIRD, R.M. (1980), 'Income Redistribution Through the Fiscal System: The Limits of Knowledge', **American Economic Review: Papers and Proceedings**, May, pp.77-81.
- BIRD, R.M. and DeWULF, L. (1973), 'Taxation and Income Distribution in Latin America: A Critical Review of Empirical Studies', **IMF Staff Papers**, Vol.20(3), pp.639-62.
- CANNON, H. (1927), Submission to the **Report of the Committee on National Debt and Taxation**, Minutes of Evidence, Vol.1.
- DeWULF, L. (1975), 'Fiscal Incidence Studies in Developing Countries: Survey and Critique', **IMF Staff Papers**, Vol.22(1), pp.61-131.
- GILLESPIE, W.K. (1979) 'Tax Expenditure and The Redistribution of Income in Canada: 1951-1977', **Conference on Canadian Incomes**, May 10-12, Economic Council of Canada.
- MEERMAN, J. (1978), 'Do Empirical Studies of Budget Incidence Make Sense?' **Public Finance**, Vol.33(3), pp.295-313.
- MUSGRAVE, R.A. (1959) **The Theory of Public Finance: A Study in Public Economy**, McGraw Hill, Kogakusha, Japan.
- PREST, A.K. (1955), 'Statistical Calculations of Tax Burdens', **Economica**, Vol.22, pp.234-245.
- SAMUEL, H. (1919), 'The Taxation of Various Classes of People', **Journal of the Royal Statistical Society**, Vol.LXXXII.
- WARREN, N.A. (1987), 'Changes in Australian Tax Incidence Between 1975-76 and 1984-85', forthcoming in J.G. Head, **Australian Tax Reform: In Retrospect and Prospect**, Australian Tax Research Foundation.

## **SUMMARY OF GENERAL DISCUSSION**

**Prepared by Vicki Le Plastrier  
Social Welfare Research Centre**

The general discussion which took place at the Workshop revealed the following key aspects of the ABS study as requiring further elaboration:

- . The underlying assumptions of the Fiscal Incidence Study (FIS)
- . The taxation data used in the analysis
- . The similarities and/or differences between the ABS study and its U.K. counterpart, the CSO studies
- . The question of access to the detailed allocation methods used in the ABS study and, more generally to future unit record file data.

### **Underlying Assumptions**

Participants sought information on the **range** of indirect benefits included in the ABS calculations, the **basis of allocation** to households and the treatment of **capital** outlays. It was revealed that health and education dominate the indirect benefits in the ABS estimates; housing benefits help make up the balance (which amounts to between 10 and 15 per cent of total indirect benefits). Discussion revealed that demographic characteristics of the household (including the number of students on a full-time versus part-time basis, and the ages of household members) and health services use (obtained from the ABS **Australian Health Survey 1977-78**) form the basis for allocating indirect benefits on education and health, respectively.

The ABS analysis did **not** make reference to the actual criteria by which government payments are made (such as government contributions to child care fees being a function of household income), nor to education or medical expenditures made by households and recorded in the Household Expenditure Survey (HES). The ABS recognised that a more refined allocation of benefits might have been accomplished had additional data been obtained from both State and Commonwealth authorities, although the rather definite picture that emerged from the analysis would not have been altered substantially by such refinements.

The ABS was conscious of an inconsistency in its treatment of benefits. For **direct** benefits, the HES data provided the total, which was allocated on the basis of reported income, whereas for **indirect** benefits ABS Public Finance Statistics provided the relevant totals, which were allocated on the basis of the demographic characteristics of the household. As for extending the FIS to the corporate sector, whilst not an impossibility this could prove difficult given the somewhat poorer quality of the data from self-employed respondents.

Continuing with the underlying assumptions, Workshop participants sought the rationale for the decision to amalgamate the value of benefits attributed to current and capital outlays, despite the apparent precision of the estimates of respective benefits from each outlay (especially in the area of Housing). Capital outlays have been the subject of considerable debate in both the UK and Australia, with the result that they are **excluded** from the CSO analysis but **included** in the ABS study, despite the fact that there is provision within the model to separate capital outlay benefits from current outlay benefits.

As a final point on the underlying assumptions of FIS, Workshop participants called on the ABS to present much greater discussion of its assumptions and to water-down its claim of having estimated the **net fiscal effect** of government expenditure and taxation policies. It was suggested that the ABS should present the relevant estimates of household taxation payments and consumption of various services (health, education etc.), but leave the summation and the determination of the overall fiscal effect to the interested reader.

### **Taxation Data**

Turning to taxation matters, a number of queries revolved around the **source** of the taxation data used in the ABS study, the treatment of particular taxes, and reconciliation between the ABS tax data and alternative tax estimates. The taxation data for both direct and indirect taxes were derived from simulation models estimated on income and other household characteristics. Despite limited information, estimates were made (from **Taxation Statistics**, published by the Commissioner for Taxation) of tax

deductions which amounted to a fairly constant 2.8 per cent across income ranges. The ABS procedures succeeded in allocating virtually all (97 per cent) of personal income taxes paid, with the distribution across deciles being remarkably similar to the published **Taxation Statistics** data.

Comparisons have not been made of the **simulated** income tax payments and payments **reported** by households in HES. We do know, however, that income reported by households in the survey closely follows income reported to the Taxation Commissioner.

The future may also see the ABS FIS results applied to the Tax Summit (White Paper) estimates to see how the conclusions reached in 1985 now stand. Given the difficulty of trying to relate **current** income to **past** reported tax payments, there are no plans to include actual tax data in the information collections as a future alternative to simulated data. As a final point on taxation, the ABS is to consider disaggregating the tax incidence results to permit closer analysis of the impact of each component of tax on the redistribution of income. A request for the disaggregation stemmed from concern over the inconsistency in the treatment of several taxes; all personal income taxes are assumed to stay put whereas payroll tax (together with sales tax, custom and excise duties) are assumed to be passed on.

### **Comparisons with the CSO Studies**

The **similarities** between the ABS and CSO analyses are threefold;

- . simulations are used in both studies to estimate **indirect benefits**.
- . **direct benefits** are derived in both studies from reported income.
- . **indirect taxes** are obtained in both studies from simulation models.

The main differences are twofold: First, whereas the CSO study is expressed in terms of **annual** income, the ABS analysis is based on **weekly** income. Secondly, whereas direct tax payments are **reported** tax payments in the UK study, the ABS used **simulated** direct tax payments data.

### **Date Accessibility**

On the question of **data access**, which absorbed a considerable proportion of general discussion at the Workshop, participants pointed to the ABS's unfair

advantage over outside researchers. They voiced serious concern over the potential dangers inherent in the ABS (alone) carrying out research such as the FIS - the principle danger being the risk that the (widely-circulated) bottom line of the ABS findings could be treated as the "new truth". Participants stressed the need for the ABS to provide researchers with sufficient data to permit the application of alternative methodologies to enable an assessment to be made of the sensitivity of the results to different approaches. In particular, participants were keen to address the somewhat narrow focus of the ABS approach, which treats expenditure benefits as **one-way** flows, thus precluding measurement of the **social** gain associated with any given reform.

On the specific accessibility issue, ABS officers indicated that the question of what data can be released depends on legislative provisions as well as economic considerations. They also noted that the manipulation of data into a form suitable for release is a costly exercise in terms of ABS resources. Assuming that some users' requirements will **not** be met (with the release of the second-half of the HES tape), the ABS recognised the need to establish some other way of providing the information to permit the necessary research to be carried out. It was pointed out, however, that it is inconceivable (to ABS) that outsiders will ever have sufficient data to replicate its FIS exercise. On a more positive note, the release of some of its estimates adjusted by equivalence scales is a future possibility. Finally, it was noted that a more detailed account of the concepts and methods used more generally in the Household Expenditure Survey is due to be published towards the end of 1987.

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**WORKSHOP OVERVIEW**

**Bruce Bacon**  
**Department of Employment and Industrial Relations**

What I thought I should do in these remarks is give an overview of the contributions to the Workshop and make some observations of my own as I go. In doing so, I will not try to cover everything that was discussed today but rather focus on some of the issues that struck me during the Workshop. Let me begin with Ian Castles' contribution. As usual, Ian's paper shows his mastery over the subject matter and his ability to draw on his historical insights into the topic at hand, which I always find quite a fascinating and useful perspective. I should note, however, that John Piggott has some difficulties with the environment in which the historical perspective was placed. Ian Castles' main theme was to demonstrate how the use of similar studies from across different countries permitted some useful and interesting comparisons to be made. While I do not wish to dwell on the details of the results, my observation here was to wonder at the mix of the statistical effect versus the real effect in the rankings that were obtained and discussed in the paper.

In his discussion of Ian Castles' paper, Peter Saunders concentrated on three questions, the coverage issue, the valuation and allocation issue and the policy implications. I'll mention some of the more important observations which were raised by him, and by others during the general discussion. The first issue raised by Peter Saunders which I would like to reinforce, is the issue of cost versus benefits, both within the household and to society at large. This issue is important when trying to interpret the fiscal incidence results, and I believe one that should have been addressed in more detail. The question of why public goods are not covered in the ABS study was raised by a number of speakers who noted that some allocation rule such as per capita, in proportion to income, or in proportion to life expectancy, are conventionally used in fiscal incidence studies to allocate public good benefits. It would in fact be a relatively simple matter to actually produce a set of ratios for each of these allocation mechanisms and supply those, although I would imagine that researchers could do their own allocation on the public good issue with relative ease.



Turning to the policy implications that Peter Saunders drew, I think the main point to emphasise here is the distinction between equality of access and opportunity rather than equality of outcome as such. In this context he raised the issue of equivalence scales and what exactly they mean. His point is quite valid that the equivalence scales, when used across the full range of both direct and indirect benefits and taxes, have to be questioned. The problem I have here is that without the use of equivalence scales, one has great difficulty in making comparisons between different household groups of different size. I would suggest the issue here might come down to a distinction between absolute equivalence scales and marginal equivalence scales, a concept that researchers might wish to look at in more detail. Finally, I have considerable sympathy with his final closing point that the ABS study should lead to better analysis and more informed debate, although John Piggott had some opposing views on that.

I must thank John Piggott for a very lucid presentation and summary of the general analytical framework and methodology of fiscal incidence studies. I found this discussion in his paper quite useful. The main point that John was trying to make was that it is the marginal approach that is of greatest interest and relevance to policy makers and he felt that a study such as the ABS study gives no insight into this issue. Under the marginal approach, you really need to capture the behavioural responses in looking at fiscal incidence and if you don't achieve this, you tend to bias against policies that have efficiency gains. One of John Piggott's main concerns, in contrast to Peter Saunders, was the problem of perception that is carried with publication of results from studies like the ABS study. He was concerned with the way politicians, the media and the community would tend to (mis)interpret these results, which could take on some 'official' status coming from a body like ABS.

Neil Warren, in his discussion of John Piggott's paper, argued that fiscal incidence studies attempt to provide the answers without looking in sufficient detail at the questions, a point to which I'll return in a moment. The other main point that Neil was making was that we should be looking at the differences between the results that occur when a researcher undertakes an absolute incidence study, a differential incidence study and a general equilibrium approach. This naturally led on to the question of availability

and accessibility of the data necessary to develop a consistent framework in which all three approaches could be studied.

So what are the basis issues that flow from this Workshop? The basic issues have to be related to the policy questions one wishes to answer. In addressing that, one can ask whether the marginal incidence approach is the only relevant approach, or whether there is some merit in the absolute approach. This is an issue which hasn't been addressed in sufficient depth at the Workshop. If the marginal approach is the only way to go, then what relevance does a study like this ABS fiscal incidence study have? If we ask instead what questions the ABS study **does** ask, I would suggest that it simply asks the question 'Who pays the taxes and who gets the benefits?' The ABS study identifies the target groups in the population of importance for policy consideration and I think that the detailed tables provided in the study go a long way towards answering this question. No attempt is made to undertake a marginal analysis and the ABS results should not be used for this purpose.

John Piggott made mention of the importance of the life cycle analysis. I feel that the ABS study does allow policy advisors to make some interesting life cycle comparisons. There is sufficient information within the published tables to actually construct pseudo-life cycle populations. For instance you could take married couples with one, two or three children and construct a pseudo-life cycle structure comprising in stages, a single unmarried adult, a childless married couple, a married couple with one child under 5 years, a married couple with two children, a retired couple, and so on. One can do this for married couples with two income earners, and for married couples with only one income earner. With this sort of approach, constructed from the tables provided in the ABS study, some important policy questions can be addressed. The general equilibrium approach as summarised by John Piggott answers further questions, which have important policy implications that need to be addressed. However, I have some problems with reconciling how one handles the general equilibrium approach in the context of the detail that is being attempted with the ABS study. I can see that it may be possible to construct a workable general equilibrium data base of the necessary detail and the feasibility of this should be investigated. However, I do think there are some major practical problems in constructing and utilizing such a complicated analytic tool in the policy environment.

The issue of assumptions has been raised a number of times at the Workshop, mainly in the context of the omissions of assumptions on the behavioural side from the ABS study. Others would argue that in fact the ABS study has tried to be quite open about all the assumptions that have been made. This issue should also be addressed by those undertaking general equilibrium analysis. The assumptions made within that approach also need to be explicitly stated. For example, what assumptions are being made about the degree of competition within the general equilibrium framework. This is an interesting point because John Piggott's model makes the competitive assumption, yet in his paper he made the observation that the model could be used to analyse the public good problem of imperfections in the market. I wonder how one can rationalise the perfect competition assumption with the existence of market imperfections.

In some sense I think that a lot of the discussion has been at cross purposes. If one wants to take the view that there were two opposing teams, I think the position taken by those two teams is such that one did not get down to the issues of what the policy implications were and how to address the policy problems with the two approaches. Lastly, I would say that the issue underlying a lot of the discussion was 'What is the appropriate role of a body like the ABS'? Although no consensus was taken, I felt there was general approval of the move the ABS had taken towards undertaking more analytic studies in its own right. In this context, I was really surprised at how much the discussion at the Workshop focused on issues of data accessibility. That struck me as quite interesting, although maybe it was because Ian Castles was here that participants felt they had a unique opportunity to address those burning questions directly to him. Overall, I think that this Workshop has shown that there is considerable interest in the ABS fiscal incidence study and similar work of this type. The ABS has, and will continue to have, a role to play and if it does further analysis of this type I think that this Workshop has demonstrated the interest with which such work will be received.

At one stage, John Piggott made the observation that he felt that there was a strong dichotomy between the approaches being followed on the one hand by the academics, and on the other by the bureaucrats. I hope that this is not the case; I certainly don't think it is. I think that was an extreme view he

was putting, and in any case, to end on an optimistic note, I am sure this Workshop will go a long way towards closing the gap if indeed there is one.

**LIST OF WORKSHOP PARTICIPANTS**

Mr Phillip Anderson	Tax Policy Division, The Treasury
Dr Bruce Bacon	Labour Economics Division, Department of Employment and Industrial Relations
Mr Jeff Bascand	Centre of Policy Studies, Monash University
Mr Bruce Bradbury	Social Welfare Research Centre, University of New South Wales
Ms Helen Bronwlee	Australian Institute of Family Studies
Professor Bettina Cass	Social Security Review, Department of Social Security
Mr Ian Castles	Australian Statistician, Australian Bureau of Statistics
Mr Martin Castrel	Social Security Division, Department of Finance
Mr Ian Creagh	Commonwealth Department of Education
Mr Peter Dempster	Office of EPAC
Professor Sol Encel	School of Sociology, University of New South Wales
Mr Phil Gallagher	Department of Community Services
Ms Ann Harding	Department of Social Security
Mr Adam Jamrozik	Social Welfare Research Centre, University of New South Wales
Professor Frank Jones	Department of Sociology, Australian National University
Mr Glen Jones	Department of Economics and Financial Studies, Macquarie University
Professor Nanak Kakwani	Department of Econometrics, University of New South Wales
Mr Anthony King	The National Institute of Economic and Industry Research
Ms Vicki Le Plastrier	Social Welfare Research Centre, University of New South Wales

Dr Mark Lyons	Australian Council of Social Service
Dr Peter McDonald	Australian Institute of Family Studies
Mr Frank Maas	Australian Institute of Family Studies
Professor John Nevile	Department of Economics, University of New South Wales
Mr John Palmer	Australian Bureau of Statistics
Mr David Peetz	Office of the Minister of Employment and Industrial Relations
Dr John Piggot	Department of Economics, University of Sydney
Mr Phil Raskall	Office of the New South Wales Minister for Housing
Dr Peter Saunders	Social Welfare Research Centre, University of New South Wales
Dr Elizabeth Savage	Department of Economics, University of Sydney
Mr Tim Skinner	Australian Bureau of Statistics
Ms Suzanne Snively	Department of Social Welfare, New Zealand
Ms Clare Stapleton	Social Welfare Research Centre, University of New South Wales
Mr Don Stewart	Social Welfare Research Centre, University of New South Wales
Dr Chris Trengrove	Centre for Policy Studies, Monash University
Dr Joan Vipond	Social Welfare Research Centre, University of New South Wales
Ms Cathy Walters	Department of Social Security
Dr Neil Warren	Department of Economics, University of New South Wales
Mr Peter Whiteford	Social Welfare Research Centre, University of New South Wales
Dr Judith Yates	Department of Economics, University of Sydney



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