INDUSTRY COMMISSION

Proceedings of the

Industry Commission conference on

Equity, Efficiency and Welfare

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2 November 1995.

The views expressed in these conference proceedings are those of the authors and do not necessarily reflect those of the Industry Commission. References to the views printed in this publication should be attributed to the authors and not to the Industry Commission.

Forming the Productivity Commission

The Federal Government, as part of its broader microeconomic reform agenda, is merging the Bureau of Industry Economics, the Economic Planning Advisory Commission and the Industry Commission to form the Productivity Commission. The three agencies are now co-located in the Treasury portfolio and amalgamation has begun on an administrative basis.

While appropriate arrangements are being finalised, the work program of each of the agencies will continue. The relevant legislation will be introduced soon. This report has been produced by the Industry Commission.

Productivity Commission

Forming the EPAC BIE IC

Industry Commission Conference on Equity, Efficiency and Welfare

In November 1995 the Industry Commission held a conference to explore the relationships between equity, efficiency and welfare in Australia. This publication brings together the papers presented at that conference.

The diverse work of the Commission brings it into constant contact with people and organisations who are deeply concerned about these issues. Questions are being raised about the capacity of our social welfare system to address the needs of low income earners, to promote equitable outcomes and to support structural adjustment and growth. The Commission is also acutely aware that while the discipline of economics can provide important insights, there are other perspectives which need to be taken into account in addressing these complex questions.

In recent years the Industry Commission has been asked to examine significant issues in which the interactions between equity and efficiency objectives and the operation of the welfare system are central concerns. These have included inquiries into workers compensation, pharmaceuticals, public housing and charitable organisations. The Bureau of Industry Economics (BIE) and the Economic Planning Advisory Commission (EPAC), which are being brought together with the Industry Commission to form the Productivity Commission later in 1996, also have considered policy options in 'human service' areas.

This work has brought equity considerations into sharp focus for the Commission and has raised fundamental questions about the appropriate form of government participation in these policy areas. In particular, questions arise

about the adequacy of markets and market type mechanisms in establishing appropriate incentives in the supply and demand for human services such as education and health.

This conference was aimed at increasing the Industry Commission's understanding of the theoretical and practical perspectives on such matters. To achieve this aim, the Commission brought together a range of academics, researchers, practitioners in the welfare area and executives from central policy agencies.

We were particularly interested in understanding the state of knowledge in the economics profession about this important area so that the Productivity Commission would be better placed to consider the interaction between equity, efficiency and welfare in its future work.

The conference was provided with excellent papers which helped to stimulate forthright debate amongst participants. I thank all participants for their valuable input, and particularly the presenters and discussants for their efforts.

I would also like to thank those involved in organising the conference and editing the proceedings, particularly Paul D'Arcy, James Latham and Debra Spear.

Bill Scales AO
Chairperson

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1. KEYNOTE ADDRESS: THE BIG TRADEOFF REVISITED

Howard Glennerster

1.1 The efficiency issue becomes critical

The founding fathers, and mothers, of the social policy tradition in the United Kingdom — Tawney, Eleanor Rathbone, Tom Marshall and Richard Titmuss, were not primarily interested in issues of efficiency. Beveridge, it is fair to say, was much more centrally concerned with the problems of efficiency. The first prophets main concerns were with equity, the family, democracy and the quality of human relationships. For Tawney, in the 1930s, the main enemy was fascist tyranny then advancing across Europe. Extremes of wealth and income were the breeding grounds for such politics. As he said in the introduction to the second edition of *Equality* (1938), democracy required at least some limits to extremes of income, wealth and status, otherwise it was a farce.

For Marshall the evolution of social rights, along side legal and political rights, created a coherent alternative to Marxism. The principle of full citizenship would provide the effective intellectual barrier to Soviet communism, which, when he was writing his seminal work in the 1940s, threatened western Europe (Marshall 1950). In many ways he was proved right. The young people I talked to in the late 1980s from Eastern Europe, and who are now trying to rebuild these societies, were not inspired by naked capitalism, red in tooth and claw, but by the promise that it was possible to combine the freedoms and efficiencies of a market economy with social rights to health and education and a decent minimum standard of living for all that would not exclude members of a society from 'full membership' of that community. This is why I find it so odd that the New Right have sought to knock away that third leg of the citizenship stool, social rights. It was precisely that vision *that* proved attractive to the countries of Eastern Europe. That is not to say that Marshall's theory is wholly consistent nor that Marshall did not have doubts about where it was leading later in his life (Rees 1995). With Ralf Dahrendorf, his PhD student, Marshall became concerned that rights claimed without responsibilities were leading to economic imbalance — a growth in the scale of state activity that was challenging the balance between capitalist production and citizenship rights. These were in tension, as Marshall recognised, but never fully resolved. As

Dahrendorf (1982) put it, in reviewing Britain's state at the beginning of the Thatcher years:

> Man does not live by bread alone. Certainly, (but) man needs bread to live. Economic stability is the first item on the agenda of Britain's future... The century-long slide has to be arrested. But Britain must not become so preoccupied with bread that it forgets its virtues, the values for which we work and eat. Economies are never a purpose in themselves (*On Britain,* p 188)

Whether Britain heeded his warning is something to which I shall return.

Titmuss (1968) was concerned, above all, with the quality of human relations in society — the way social institutions treated those who bore the costs of 'human progress' and economic efficiency. It is this message that is least easy to hear in today's harsher debates.

Rathbone (1924) was primarily concerned with the impact of low incomes on the capacity of families to bring up children, indeed to have children at all. She drew on New South Wales as her inspiration for a scheme that would link pay to family responsibilities! But she was aware that certain kinds of income support or minimum wage laws would have perverse economic effects and indeed it was this efficiency case that finally won over the British Cabinet to agree to universal family allowances at the end of the Second Word War (Macnicol 1980).

For all these prophets, however, economic efficiency was a secondary concern, drawn into the debate from time to time to win additional converts, as with Titmuss on blood or Tawney with education, or Rathbone with the minimum wage, but never really seriously top of their agenda. Yet, the lesson of the past twenty years is that if a regime cannot deliver the economic goods it will, in the end, perish. It was Eastern Europe's economic failure that doomed it, not its absent political rights or its dubious social equality. It was the United Kingdom's relatively poor economic performance that laid the ground work for Mrs Thatcher's appeal and the changes she was able to carry through, not the failure of its welfare state. It is for this reason, I think, that the current academic social policy generation in the United Kingdom (UK), and elsewhere, has invested much more of its energies in contemplating the two way interactions between social policy and the economy.

There is a second reason for this current concern with the economy and social policy. In the past twenty years the economies of *most* advanced nations have ceased to develop in a mildly egalitarian way. After perhaps a century or more of gradual equalisation in incomes and wealth, economies have tipped the other way (Gardiner 1993). In the UK, economic change has generated a steadily widening income distribution in the market place for the past fifteen years, only

added to by social policy changes (Rowntree 1995; Hills 1995). There has not merely been an increase in the spread of incomes but the incomes of the lowest decile have fallen in real terms.

Economists have been interested in welfare states' impact on economic growth but they tend to presume that it is a one way relationship and a negative one too! Adam Smith was concerned with the disincentive effects of the Poor Law. Modern writers, even ones sympathetic to social policy, like Okun, represent its contribution as a negative trade off, all be it a morally necessary one. Their actual research results have not been so clear. For the most part they have failed to show any simple relationship between economic growth and welfare spending, some show positive effects, some negative but weak ones. These studies, especially those that relate to social transfer expenditure, have recently been reviewed in an important paper by Tony Atkinson (Atkinson 1995). He argues that they begin from no clear theoretical position. High welfare spending may be the result of poor economic performance, inability to adapt to changing world markets producing unemployment for example, not the other way round. Economists have been muddled in their specification of the relationships, notably whether they are expecting growth rates or levels of expenditure and Gross Domestic Product (GDP) to be negatively correlated and for what reasons. They have been insensitive to all the measurement problems that beset such comparisons. Above all their theories about why social policies should affect growth have been poorly specified and operate largely at a macro level. The real story, he claims, lies in the detail, in the design of social programmes and the impact they have on incentives. Certainly, this is also the conclusion of two recent major reports in the UK, the Labour Party's independent Social Justice Commission (IPPR 1994) and the Rowntree Inquiry on Income and Wealth (1995). For example, it is simply not worth the wives of unemployed men entering the labour market or even keeping their current jobs under the present social security rules in the UK. The costs of returning to work for many low paid make it a highly risky venture. These are important economic inefficiencies caused by the welfare state. They are what Atkinson means by saying that the issues lie in the fine grain of social security system design, not in its size per se.

1.2 The inter dependence of the economy and social policy

Yet even this critique misses the profound way in which social welfare systems and economies interact in ways it is very difficult to capture in an econometric model.

In the past twenty years the UK economy has changed remarkably. Within less than five years a third of the economy's manufacturing jobs disappeared. A major restructuring took place. Whatever one may feel about the speed and the brutality of the process, it is very difficult to avoid the conclusion that some kind of change was needed. It is also very difficult to imagine that it would have been politically feasible if there had been no safety net in place and a rather effective one. Mrs Thatcher could not have changed British industry without the welfare state.

The same is true of the profound changes happening in Eastern Europe. When the World Bank visited these economies after the fall of the communist regimes, they concluded that to make the economics of transition work the *first* priority was a social safety net (Barr et al 1994).

Moreover, if the functions of the welfare state were not performed by some kind of public organisation they would have to be performed by some private agency and employers would have to pay their employees more to meet these costs. If there were no unemployment or sickness benefit and if health care costs or the education of their children fell to employees to pay, wage demands would rise — the direct labour supply price would rise because employees would have to finance these risks themselves and the private cost of doing so is higher than the pooled risk public costs. Certainly, the nature of the labour contract would change in a major way, as Atkinson points out. Does the United States' high spending on health care, heavily supported by large employers, increase its economic performance? Most health economists, and the large corporations who pay the high private health insurance contributions such a system involves, would not subscribe to that view.

Again macro correlational studies, whether they are sociological or economic, tend to ignore the effectiveness of welfare institutions themselves. Total spending on welfare is either assumed to be good or bad. Yet the real question is — are these services providing what users want? That, surely is the deep or real meaning of efficiency. Many of the reforms to the British welfare state in the past decade and those in the Scandinavian countries have been about trying to improve the micro efficiency of those institutions. That is what 'quasi markets' and the moves to decentralise budgetary control claim to achieve. It is a moot point whether they have succeeded, I think they have, to some extent.

I have studied the General Practitioner (GP) fundholding system at close quarters for over four years (Glennerster 1994) as you may know and before that some of the worst housing estates in the country. All of this changed my world view. It is only when viewed at close quarters that one sees the extraordinary abuses that exist within what is, in many ways a very effective social service, like the National Health Service. I came across consultants who

had never been seen in a local clinic for fifteen years despite the fact that it was part of their duties. Or others who had never been seen in the hospital after eight in the morning or systematically kept patients on long waiting lists in order to boost their private clinic attendances and their own income. Blood tests had to wait for weeks to be done for the GP because it was in no one's interests or power to do anything to hurry them up. An even worse story can be and has been told about public housing in many European countries (Power 1993). As my colleague Julian Le Grand put it in his inaugural lecture at the London School of Economics (LSE) this summer — the traditional social policy view was that those working in the social and health services were 'all knights' or 'angels'. What do you do when you recognise that many are knaves and that the incentive structures of the organisations in which they work are multiplying the number of knaves? Additional 'voice' power for clients is not enough. The reserve power to 'exit' is crucial — either exercised individually by parents or patients or collectively by GPs, the patients' advisors and advocates.

1.3 Equity consequences of inefficient social services

What has all this to do with equity? First, traditional supporters of welfare provision often tend to assume that all social services are provided with equal efficiency across the board. They are not. Working conditions, stress and the shear size and attractiveness of the task varies enormously between schools or public housing estates or clinics and hospitals. Pay structures are rigid and vary little to take account of these differences. The result is that poor people get far inferior services. The quality of the environment on the estates I worked on, and the shear danger, was many times worse that in suburban areas. The quality of general practice in the UK varies so much from one area to another that it is barely conceivable that you are in the same society let alone observing something called a National Health Service. The comparative efficiency of public services has at least as important equity consequences as traditional income distribution measures. That does not make this an easy topic to study and it has uncomfortable lessons for public sector union policy.

Second, competitive efficiency reforms may have equity side effects. Again I can illustrate this from my work on the UK National Health Service reforms. My conclusion is that decentralising hospital budgets to GPs who then face completion is a good way to both control costs and get good purchasing of hospital care. But it does carry a very great danger if the GPs are not given sufficient reward for taking on potentially expensive patients. Cream skimming the healthy and letting the chronic sick and other costly patients go hang could be the consequence. The British Government has not taken this danger

seriously enough and not varied the capitation formula sufficiently — it is all too complicated. We may end up with efficiency gains and serious equity losses. Again the devil is in the detail — system design.

Thirdly, inefficiencies in the social services drive the most articulate users and voters out of the public into the private sector. They then cease to be high social spending preference voters and the service begins to spiral downwards. In this situation the poor lose out twice over. They suffer the loss of high standard services and the effect of being treated differentially in services confined to the less advantaged. There is some evidence that long waiting lists in the NHS may be an important correlate of private health insurance spending (Besley forthcoming). Areas with poor state schools produce a demand for more private education and as state spending has fallen so private spending has risen in the UK (Glennerster and Low 1990). Thus there is more than speculation behind this view.

1.4 So, what makes an efficient and equitable welfare state?

First, it has to be efficient at achieving its own purposes:

- making it possible for an individual or household to distribute income through a lifetime in response to fluctuating needs when the market cannot or is inefficient at doing so;

- providing a basic standard of living to those unable to do so in the market place;

- ensuring that life's basic entitlements are available to all its citizens — access to a clean environment, shelter, health care, education and training to a level appropriate to the sophistication of the society;

- undertaking these functions with humanity so as to retain people's self respect; and

- retaining the support of the median voter for these values — or some other mathematical representation of a winning coalition!

Equity requires the institutions that deliver these purposes, public, private or a mix of the two, to be effective and responsive to the needs of all sections of the population. Thus organisational design, the incentives acting on those institutions and within them, become crucial to social policy not some boring bit of management or administration.

Second, however, it must undertake these functions in a way that minimises the deleterious effects that they might have on the income generating powers of individuals in that society, above all the poorest. To abandon the poor to high

marginal rates of effective tax on the grounds that they do not matter much and their contribution to the GDP is not that great, is to exclude this group of poor people from the main stream of society. It is to exclude them from the thing that gives status in a capitalist society — work.

That means minimising unnecessary perverse incentives caused by the thoughtless design of these programmes. In the decade to come the design of our health and welfare systems, public and private, is going to be even more important than ever. Why?

1.5 A larger bucket will be needed

Left to itself a free enterprise economy will produce differences in incomes and wealth that will affront the morality of most members of most societies and endanger their stability. This case was argued with great succinctness and eloquence by Arthur Okun in his Godkin lectures in 1974 entitled 'Equality and Efficiency: the Big Tradeoff'. Yet you had to recognise, Okun claimed, that the redistribution required to temper the outcome of the market would reduce the efficiency of the economy. Something would be lost in the transfer — Okun's 'leaky bucket' analogy. There would be some disincentives to work and to save. If the bucket got too leaky the trade off would be unacceptable.

But the incomes generated by the market have grown markedly more unequal as we have seen. It is now not possible to say measures taken to encourage economic growth will necessarily have a benign impact on equality and social cohesion.

Countries that wish to sustain the same income relativities as twenty years ago have needed much larger buckets. The UK is a case in point. Between 1979 and 1987 the welfare state redistributed incomes roughly one third more than it had done in the period of relative prosperity after the second world war. Yet incomes after taxes and benefits still became more unequal. Original incomes were widening even faster than the welfare state's redistribution (Glennerster 1995). This has two effects. First, the scale of redistribution and hence its potential negative side effects on incentives grow. Second, since so much more of the voters money is going on the poor there seems to be less to show in the quality of services voters do notice and benefit them directly — like education and health.

Why this reversal of the long term trend to greater equality or at least stability in the distribution of income?

The Rowntree Inquiry (1995), that my colleague John Hills did so much to compile, has tried to tease out the factors at work.

The rapid changes in the structure of the world labour market and of the pattern of demand have changed the structure of industry in ways we are familiar with — more low skill as well as high skill jobs. But the pattern of income dispersion was as great within industrial and service sectors as it was between occupations. A number of factors illustrate the interaction between social policy and the wider economy very well. Against the background of a changing world economy the labour market in the UK rewarded those with education and training and experience much more highly than it had done a decade earlier. The economy's demand for human capital outpaced the education system's capacity to supply it. At the other end of the age range it dispensed with workers at a far earlier age. In the mid 1970s very few men age 55 were outside the labour market. By 1991 nearly 40 per cent were. Most of those over 60 were retired, unoccupied or long term sick. This does seem a remarkable waste of human talent. There are things we can do both to raise qualification levels and encourage the employment of older people. The distribution of income is in *it*self a part product of the failures of social policy.   Long term unemployment is partly the result of our failure to intervene actively enough to help the long term unemployed back into contact with the labour market. The overall labour supply would be greater and hence wage costs lower if we could keep such people economically active.

1.6 Marginal effective tax rates matter

Evidence is accumulating that high levels of marginal direct tax rates are not good for productivity or even revenues. People can modify their tax attracting behaviour in ways that thwart the tax authorities — whether this is reducing real work or engaging in hidden work. Feldstein's (1995a) analysis of the additional revenue gained from the United States tax reforms of the mid 1980s is instructive. The growth in taxable income was significant from those in a panel study after reforms which reduced marginal tax rates, an effect especially noticeable from the higher income groups. Evidence on savings is more mixed. Martin Feldstein argued twenty years ago that the existence and the generosity of social security schemes reduced individuals' propensity to save and he has recently returned to the charge (Feldstein 1974; 1995b). Private schemes are funded, state schemes are not. More savings generate higher investment and higher growth. The case can be widened. The more insecure families feel the more they may save. The original debate was hotly contested and is far from proven from international experience (Aaron 1982). If we look at the savings ratios in advanced OECD type economies we find that they vary from the Belgians who save over 20 per cent of their incomes, to the Danes and the Japanese who save about 16 per cent with Italy, France Spain and Germany not

far behind. All have relatively generous welfare states and social security systems. The UK, with its less generous system is a lower saver, with the USA and Australia round about the 5 per cent mark. The Dutch, with a welfare system not very different from their Danish and Belgian colleagues next door, save only 1 per cent! There must be something else going on.

In the Anglo Saxon countries affected by the new right, I leave you to decide whether this includes Australia, attempts have been made to reduce welfare expenditure through targeting cash benefits on lower income groups and removing general subsidies, above all on rents in the UK. This has been combined with an attempt at increasing industrial efficiency, reducing inflation and union power by increasing the levels of tolerated unemployment. This has lead to an astonishing rise in the number of people dependent on income tested benefits, especially those of working age. Numbers have probably trebled in the past twenty five years. Nearly a third of the population are now living in households dependent on some kind of means tested benefit (DSS 1995). The UK social security system is now well on the way to being a largely income tested regime. The disincentives to work created by the employment and poverty traps that result have become a major focus of attention. Easing the disincentives back into work have become a prime concern for all political parties but they flow from two decades of incremental system miss-design. For example, the Government is now insisting that social housing agencies charge 'market' rents and the government then subsidises the individual to enable him or her to pay these rents. New accommodation in the poorer parts of London is being provided by social housing agencies who are required to charge nearly £100 a week, more than a single mother or a low income worker can earn in a week. This gets paid by the state if the family earns nothing but if a member returns to work it will become increasingly payable. Very few women in families on income support work, while most of those not on income support do. Entering the legitimate labour market or increasing work effort for such families is a mugs game as Frank Field's (1995) recent book vividly describes. We have been systematically punching larger holes in a larger bucket. This is an odd thing for a right wing government to have been doing. It is a classic example of what I mean by thoughtless system design. I take the point made by Mitchell, Harding and Gruen (1995) in a recent paper, that the effects of effective high marginal tax rates in such schemes may be exaggerated because system designers will try to minimise their effects — Australia has shown itself aware of these issues in policy design — I only wish the British, at least, had been half so clever.

Redistribution is not merely about taking money from the rich and giving it to the poor, it is also about moving income from one part of the life cycle to another and the need to do that will grow. A recent OECD study suggests that

many of the pension promises made in the seven largest economies are unsustainable and are going to have to be changed. With no changes in policy before the middle of the next century pension payments from the public purse would reach between 15 and 20 per cent of the GDP in Germany, Japan, France and Italy but only between 5 and 8 per cent in the UK, the United States and Canada. Like Australia the UK has moved to redesign its pension provisions. Once again less intelligently than you *might* I think. UK policy is currently to reduce the relative value of its basic Beveridge state pension until it more or less disappears early next century. This assumes that private pensions become the prime vehicle for retirement. This despite the fact that the labour market is creating much less security. For reasons sociologists are more qualified to answer than I am marriages are less stable. Womens' pension rights remain both limited low and uncertain. If we are to rely on the private sector to meet retirement needs, system design, public regulation, catering for the needs of the most vulnerable groups like those I have mentioned becomes *more* complex than in a universal state scheme. It is equally difficult to target public pensions on the poor and avoid disincentives to save. Again using a mixture of public and private solutions to income in retirement presents a more, not less, difficult problem of system design.

The fact is that there is no sign of the state getting out of its social policy role — only changing its costume.

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DISCUSSION

Sue Richardson

Professor Glennerster's paper provides a clear identification of major themes emerging in the development of the welfare state in developed countries. I want to raise several issues that struck me when considering this paper. In part this will be idiosyncratic.

The demand for 'more'

First, as Howard puts it, if a regime cannot deliver the economic goods, it will perish. While I think this is probably true, it is interesting to explore a little more what we mean by 'deliver the goods'. We now have in this country, and in Britain, one of the highest material standards of living in the history of the world. Is that sufficient delivering of the goods? Is that enough? Or does 'delivering of the goods' mean continuously having more? And, if it does mean having more, does it mean having more than we have had before or does it mean having more than other people have? I believe that it probably means both.

Let me tell a story that illustrates my point. It is of a Bangladeshi woman who is currently employed in a miserable job with a miserable wage. She sends most of her earnings to her mother and her son, who are in a village several hundred kilometres away. She sees them once a year or so and she lives on her own. Yet she claims, 'I must be the happiest woman in the world.' Why? The reason is that she has recently left her violent husband who used to beat her virtually daily and abuse the child and kept her in miserable poverty. She sees herself as the happiest woman in the world because her circumstances have improved, for her, dramatically. From our perspective, she is still in dreadful circumstances.

It is my expectation that if in 5 years' time the woman is asked if she is still the happiest woman in the world she would say no because she has got used to her very modest level of independence and freedom from being beaten daily and is now no longer getting the immediate satisfaction that the transition of her state initially provided.

It is in that sense that, as human beings, we are extraordinarily adaptable to our circumstances. Importantly, however, we adapt to the good as well as to the

bad and we adapt to our current standard of living, and thus what we get a kick out of is 'more'.

It raises the important question of at what cost do we pursue 'more'? As Howard says, the change that we have observed in Western economies has been rapid, deep and brutal. Governments could not have stood in the way of those changes. But should governments take steps which amplify those changes or should they take steps which seek to moderate those changes, even if, in the act of moderating those changes, the rate at which we have more is reduced?

Is a consequence of striving for 'more' having the majority of men aged 55 to 65 now outside the labour force? What they are doing has not really been examined but they are certainly not in the work force. They have suddenly been pushed aside. They are no longer productive, contributing members of our society. This is not fair, just or decent. It is not even efficient, but it is a consequence of these dramatic changes that have been going on.

As Howard says, in Britain 30 per cent of the population are now dependent on welfare. Is that efficient? The United Kingdom and New Zealand have gone for more 'more' and, as Howard draws to our attention, government policy has actually amplified inequality. That is, inequality in the income that people receive post government intervention has increased even more rapidly in those countries than inequality in market incomes.

Notably, in Australia, the opposite is the case: that is, inequality in incomes after government intervention has actually grown less rapidly than inequality in market incomes. I believe Australia has not paid a high price for having this ameliorating rather than amplifying effect on inequality, at least for the present. We may have time bombs lurking that will hit us in the future but for the present the actual macroeconomic results have been pretty impressive over the past 15 years.

The importance of policy design

I heartily endorse the point made by Professor Glennerster regarding the importance of the details of policy design.

There is a dangerous tendency for policy makers to make generalised assumptions about the impacts of welfare policies, in particular, the proposition that increased welfare activity will reduce efficiency in any sense. It depends crucially on how that welfare is delivered.

We have to recognise in our welfare policy design that welfare providers are not angels: they are ordinary, self-interested mortals like the rest of us and will react to the incentive structures contained within the welfare system. The welfare

system has to be designed so that ordinary self-interested individuals working within those social welfare systems will produce the intended results of a social welfare system and not pervert or corrupt them.

We also have to recognise that the recipients of the welfare system also respond to incentives, particularly financial incentives. If people are payed to be unemployed, to be invalid, to be sole parents, to be aged with little income, then they will respond to that. As one my colleagues at Flinders University described it in crude economic language, the government has a perfectly elastic demand for these services, the services of sole parents and invalids and unemployed and aged who are unable to support themselves in their old age, at the market price. The government pays for these services and not surprisingly there's a supply that comes forth for that. These are just the realities of life and they have to be recognised in the design of social welfare systems.

I believe in Australia there are some examples of quite clever policy designs which recognise these factors. For example, I believe the Higher Education Contribution Scheme (HECS) is a clever design of social welfare which has the effect of both promoting equity and promoting efficiency in partially financing higher education.

The size and growth of welfare services

Professor Glennerster's paper notes that the true growth in the welfare system is exaggerated by examining government budget data alone. Whilst I agree with this point, I disagree with his reasoning. Professor Glennerster argues that if government expenditure on welfare such as unemployment insurance and health insurance was removed, pressure will be placed on employers to provide for this in the labour market.

I believe that this is a somewhat unbalanced perspective on who actually supplies the welfare services. Before we had systematic social welfare services, that is prior to the Second World War, services such as care for the aged, the invalid and children were provided by women at home. Post World War II there has been a transfer of some of that responsibility from the household to the government sector. There is no doubt that if we ignore the large amount of social welfare services that are provided within the family, we grossly overestimate the growth in social welfare activities that has occurred in developed countries in the post-war period.

Defining 'equity'

Professor Glennerster speaks — and I am sure that it is only because of the limited time that he had available - as if efficiency and equity are straight forward ideas. I believe they are quite complex and I believe we need to be clear about what we mean by equity. Howard focused almost entirely upon a notion of equity that says 'we are more equal if we have a more compressed distribution of annual income'. This ignores several other dimensions of equity, most obviously the issue of the distribution of wealth.

It also ignores the issue of mobility. I believe one of the most important ways of judging whether a society is equitable is the extent to which we have high levels of mobility between the socio-economic status of parents and that of their children. Such mobility means that you do not inherit your socio-economic status, you earn it through your own efforts. A society that is open in that way will be able to sustain greater levels of inequality in the distribution of current income because if everybody is able to have a go at getting the high incomes, they are more willing to tolerate the existence of high incomes.

In addition to that, I believe that inter-generational mobility is also a very powerful notion of equality in its own right. I would like to see a systematic examination of social welfare policies to see the consequences of those for the openness of our society, for the mobility of one generation relative to its parents. That is particularly important when one is looking at the design and financing of education systems but also just the environment in which children are brought up. I think valid fears are expressed about the growing up of a generation of people dependent on welfare, who do not have images of other ways of life and of other possibilities, so that only the most remarkable people manage to escape from inheriting that status from their parents.

The relationship between equity and efficiency

Finally, I would like to just raise a few other ways in which we have both a tradeoff between equity and efficiency and also a complementarity between equity and efficiency. While Professor Glennerster draws attention to both of these issues, I think the range of examples could be expanded a little and it would be useful to have that debate over the course of this conference.

One trade off between equity and efficiency arises from the attempt to be equitable by treating people who are alike in like ways. In order to do that in a comprehensive manner, the design of the welfare systems and tax systems must be very complex because there are all sorts of ways in which people differ. This is costly to do and it also produces all sorts of unintended incentive effects.

So there is a trade off between equity and efficiency, between going for simple social welfare and tax structures which we know will treat unfairly all sorts of groups, but which we also know will not have these powerful disincentive effects and will be simple to understand and to administer.

The notion of 'user pays' is another example of where we have a trade off between efficiency and equity. There is no doubt that user pays can be a powerful mechanism for ensuring efficient delivery of services. But by definition it also means that only those who have the money can buy the service. A transfer from a mechanism by which a particular service has been allocated on different criteria to one in which it is allocated according to ability to pay is going to change the distribution of income, probably making it less equal.

The targeting of welfare expenditure can be efficient in some ways but may not be equitable. For example, services provided only to the poor tend to be poor services. It can be efficient to say we are only going to provide education for the poor, for the people who cannot afford to buy education for their children, but if that is done the results are almost certainly poor education services for those people who are in the government system. Similarly, welfare targeting can be equitable but not efficient. If only those who are most in need are paid, then the outcome can be very high marginal tax rates. So that while targeting those most in need appears to be equitable, it can actually be profoundly inefficient because of the huge incentive effects that the very high marginal tax rates impose.

A final example of the trade off lies in the wage fixing arrangements of the Industrial Relations Commission. This system appears to have worked to compress the wage distribution via minimum wages — an equitable result. However, it can arguably said to have had two significant effects. First, to the extent that the minimum wage arrangements are set above market rates they may add to the level of unemployment. Second, a relatively flat earnings profile may reduce the return to human capital and hence the incentive to acquire skills.

Let me turn now to complementarities between efficiency and equity, and I think it is worth paying a lot of attention to the complementarity between equity and efficiency because it is an area where we can really produce optimal outcomes.

Professor Glennerster focuses on the distribution of current money income. In fact it is this part of our notion of equity which is most likely to confront tradeoffs with efficiency. There is much more scope for complementarity, however, between the inter-generational mobility dimension of equity, and efficiency. For example, promoting access to education and providing

pathways for people to decent jobs which are independent of who their parents are will be more likely to produce meritocratic outcomes that are efficient as well as fair.

General discussion

The discussion was wide ranging and covered several issues, including:

- the existence of high effective marginal tax rates at low income levels in Australia, their impacts on labour supply and appropriate policy responses;
- the need to take a dynamic perspective in considering welfare policy issues;
- the information limitations that bedevil welfare policy making; and
- the need for social benchmarks to complement economic targets.

The importance of welfare system design: poverty traps

A significant issue in discussion was the existence of "poverty traps" in the design of the welfare state, their impact on labour supply and the appropriate policy responses to this problem.

Discussion drew out the symmetry between the incentive effects of high marginal income tax rates for the general population and the incentive effects of poverty traps for low income earners. It was noted that if general marginal tax rates of 50 per cent and over were thought to have incentive effects, then clearly the incentive effects of very high effective marginal tax rates for low income earners, taking into account the combined impacts of means tested income benefits and general tax levels, must be even greater. Labour supply is likely to be more elastic with respect to changes in the effective marginal tax rate at the low end of the income scale than the high end.

It is difficult, however, to be conclusive about the incentive impacts of high effective marginal tax rate variations given the lack of research on this issue in Australia.

Discussion then turned to the appropriate policy response to the existence of poverty traps. Essentially three options were identified:

1. *Do nothing:* It was acknowledged that some might argue that in order to keep the general rate of income taxes down to relatively low levels it is necessary for a small number of people to endure poverty traps over a low income band. The benefits across the entire population, it might be argued, outweigh the costs to a small number.

2. *Seek to address the incentive effectives for those caught in poverty traps through other policy tools.* It may be argued that poverty traps are a necessary consequence of targeted welfare and that alternative policy instruments should be used to address the negative incentive effects (for example, case management approaches for the unemployed to facilitate and encourage a transition into, or back into, employment).

3. *Seek to reduce the existence of poverty traps.* It was noted that the elimination of poverty traps by spreading the withdrawal of support payments over a wider income band was clearly possible, but would have very significant cost implications. It is a matter for research as to whether these costs outweigh the benefits of lowering effective marginal tax rates at low income levels.

    It was also noted that there may be opportunities to reduce existing poverty traps in Australia through better coordination within the welfare system. While Australia benefits from having responsibility for most income support program under the one government agency, there are many significant specific programs that lie outside this boundary, such as income support for education and housing. The latter has the added complication of being substantially the responsibility of a different level of government in Australia. There is a lack of coordination between these elements of the welfare system leading to effective marginal tax rates of over 100 per cent in some cases.

Lifetime income and design issues

Following on from the issue raised by Dr Richardson, there was some discussion of the community's demand for ever higher standards of living.

It was acknowledged that it is possible to satiate society's demand for "more" without high growth if each individual's income increases over their life cycle. But this may have implications for social policy for the aged. It was noted that in the UK younger generations are earning less on average in real terms than previous generations, and this can have a major impact on attitudes.

Design in a dynamic environment

Participants noted that policy development in a rapidly changing environment was difficult. Critical recent trends include:

*   the diversification in family unit structures away from the "two parents plus children" households;

- the increasing pre-tax and benefits income inequality in Australian society; and

- the move toward increasingly open international competition and globalisation of the world economy more generally.

It was also noted that policy design needed to consider the dynamic responses to changes in the welfare system. For example, an increase in hospital funding will lead to an increase in the use of hospitals which will flow on to community care and institutional non-acute care.

Information limitations

A critical problem in addressing these complex issues is information limitations. Although dynamic modelling tools have become more sophisticated in recent years, the lack of information continues to bedevil the development of welfare policy. One participant gave the example of difficulties in matching records of welfare recipients between agencies involved in the delivery of income benefits. The problems are even more marked in areas where there are mixed Commonwealth and State government responsibilities.

The need for social benchmarks

One participant argued for the need to develop social benchmarks that complement and parallel economic targets. This would assist in ensuring the full social, as well as economic, impacts of policies and policy proposals are considered in evaluations. For example, it was stated that the radical economic restructuring that has occurred in New Zealand has had major social consequences in terms of affordability of, and accessibility to, social services that may not have been as clearly recognised as the economic consequences.

2. SUPPLY AND DEMAND IN SOCIAL WELFARE SERVICES

John Paterson[1]

2.1 Introduction

This paper examines the supply of and demand for social welfare. However I am going to approach the topic from the organisational perspective rather than a purely economic perspective.

The discussion that I am initiating here gives the traditional tools of economic analysis a minor role and I am arguing that the structure and locus of power, whether that is expressed through the dollar or not, is the prime issue in social welfare. What the system is made of determines most of what it does.

I will first describe a production system giving an example from my own past. This will be followed by an examination of the characteristic features of the three main purchasing loci: purchasing inputs by grant funding; purchasing outputs, such as the Victorian system; and individual consumer based purchasing arrangements. Finally I will use this to analyse the structural characteristics of the Australian health and welfare system.

2.2 The production process

To assist in understanding the discussion on production systems and the loci of control, it is useful to look first at a real life production system, such as the sewer production process. While this may seem far removed from health and welfare, the important characteristics of this production system are as relevant to public hospitals and women's refuges as they are to sewer production.

So how is a sewer laid? It is a relatively simple and cyclical process: a route is surveyed, the trench is dug, different components of construction happen in various stages, inspection occurs, the trench is filled and covered, and the site

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[1] This paper has been edited by staff of the Industry Commission from a recorded transcript of Dr Paterson's oral presentation.

rehabilitated. Within the organisation there are a number of organisational units that provide the people or the equipment to do this, so surveying is done by Survey, trench digging by Plant Hire Construction, and so on.

When production is running smoothly, it works in a cyclical process as each half kilometre is laid. Things can go wrong at any stage, for example, if a surveyor is sick and there is no one available then they cannot get the plant on site, or the plant hire will not send plant because they are not going to have equipment sitting around idle. Equally, until plant hire has dug the trench, stores will not start sending materials to the site in case it is stolen while waiting for the trench to be dug, and trades will not arrive until the materials are ready by the side of the trench waiting for them, and inspection will wait until somebody absolutely guarantees the whole job is done so that they do not have to come back twice. And so it goes (see Figure 1.1).

Figure 1.1:   Production planning network system
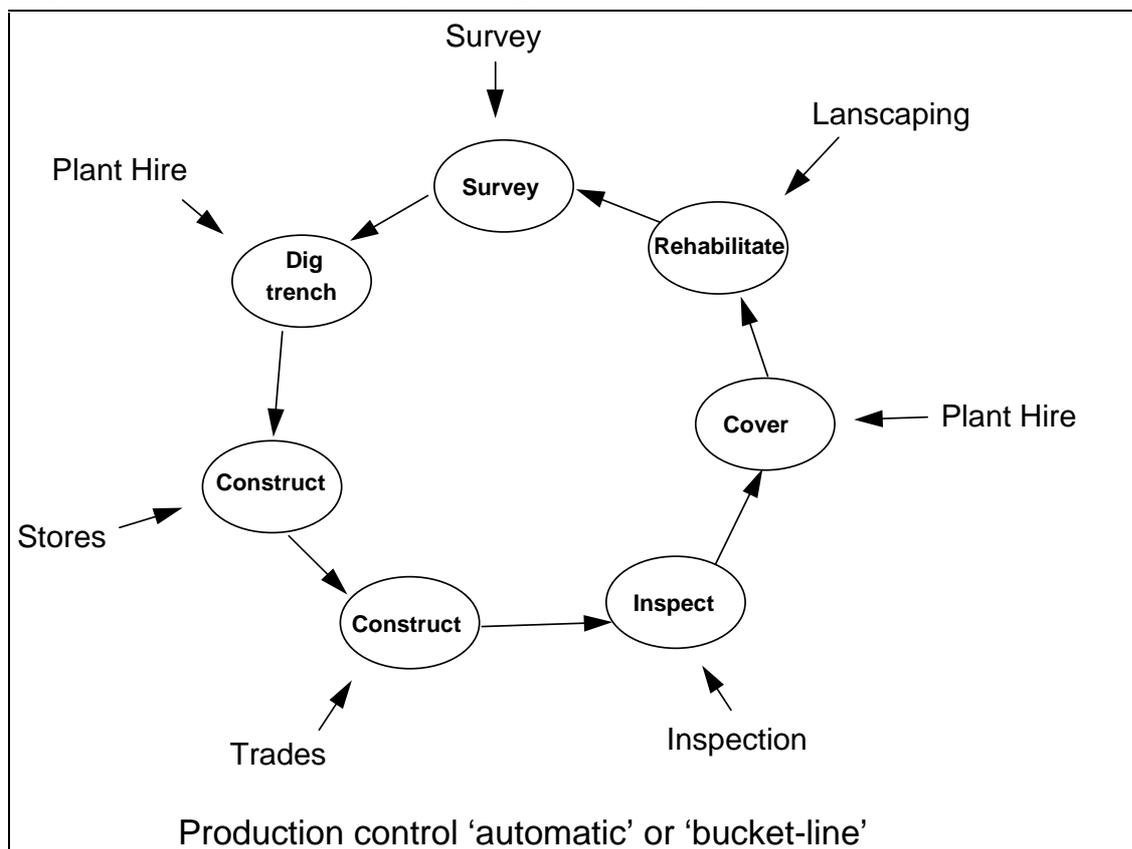
In such a production planning network system, there is some activity-free slack left in each of those stages. So for the standard production rate there is a good

deal of redundancy built into the system to ensure that errors or delays do not become cumulative. That, in itself, appears to be a good idea, given the nature of this production process, where the resources are controlled by a group of horizontally equal providers of services. Each provider wishes to make sure their particular efforts are efficient by separating them from others, this being achieved by providing slack between the activities.

However, things can go wrong. Wet weather can slow the whole system down, and getting a system like this running again and working is very difficult. Therefore once a project gets behind it tends to stay behind.

So what happens when the process is disrupted? All the production teams start ringing each other. Probably there is not a better action if you have production being organised by six or eight contributing resource centres. Depending on the business rules that apply in the organisation, the number of interconnections required to coordinate this sort of system is between $n(n-1)$, (that is, roughly n^2), through to 2^n under some circumstances. Thus there is exponential growth in interconnections, and therefore for anything but the simplest production system, when it breaks down, it really does breaks down and is very difficult to get started again. For this reason it is best to design the system so that a re-start is unnecessary. Thus slack is built into each element in the process.

When I was at the Hunter District Water Board in 1983, on one project it came to pass that some workers did not come to work on a Wednesday, although they were working on a project that up till this time was working at half the usual rate and therefore was well behind. I asked the project supervisor about this and he explained: 'the workers and I struck a deal that we would do this on a job and finish basis. We set a quota that would get us through the work by the end of the programmed time, and that required twice the standard rate, or four times the rate actually achieved on this job to do it, This is the first week under that system and they finished on Tuesday afternoon.'

How did they achieve this? Within the Board, everyone has a lot of history, and therefore all owed favours to each other. The project team had actually called in all their dues. They set up a number of bilateral dealings with their suppliers and the production time they achieved was not four times the prior history or twice the standard rate but over eight times.

The bottom line to this story is how six men with an incomplete secondary education discovered just in time production and got the day off.

The Japanese discovered how to run production lines by precisely this principle. They use the term 'Kanban'. They discovered this in the 1960s and the West discovered that they were doing it in the 1970s. Using the example of motor vehicle production, the crew travelled with the motor vehicle and had the power

to pull in what they needed from anywhere in the plant, and all suppliers were expected to have it ready when the crew wanted it. Not before, not after, not a misfit. It had to be there, it had to fit, it had to work the first time. The Japanese found they could out produce the world in almost anything requiring production processes. They did this basically by driving a production line from the front end.

The workers at the Board, when they had to turn their minds to it, took no time at all to re-invent this system because we all re-invent it when we really need to. In a disaster situation, they put the power with the person at the front end and say, 'Right, you let us know what you want and we will get it there and we'll do the very best we can to support you.'

So production organisation, the miracle of the modern Japanese production revolution, was to drive the system from the front end, not from the back end. That is, pull the production from the front, do not push it through from a group of resource bins at the rear, each having equal say and doing it on their terms. All authority lies at the front end of the system.

This spectacular gain in productivity was achieved without any intervention of a pricing system as such. However they had invented what the Russians used to call 'blat' — a system of reciprocal favours — which is what kept their production systems going. Under that system if someone wanted to make quota for the month they had to have deals with a variety of people to ensure they were served rather than someone else down the line. So while there was a pseudo-price system, it was not the monetary price system that economists normally deal with.

So these workers had discovered how to use blat to make a production system work with no money, no pricing, and a revolution in the efficiency, probably the best job the Board had ever done. The incentives were right. The techniques were basic, they were just pull production and a system of blat.

2.3 The three production systems

I will now discuss the three models of service provision. With each of these it may be useful to keep in mind the production process discussed above. I will examine the models of service provision one at a time to examine what happens depending on where the locus of purchasing power is.

Here I am emphasising power not pricing. That is, not the finesse of distorting pricing systems and multi-part tariffs, rather the most rudimentary aspect of purchasing — the one with the dollars has the power.

Provider control

Provider control (see Figure 1.2) is the traditional approach to government provision of service, either directly or through non-government bodies. The characteristics of this system are described below.

It is provider driven

It does what providers think best, and any connection between that and any output that anyone else had in mind, let alone the client, is problematic.

Figure 1.2:   Provider control
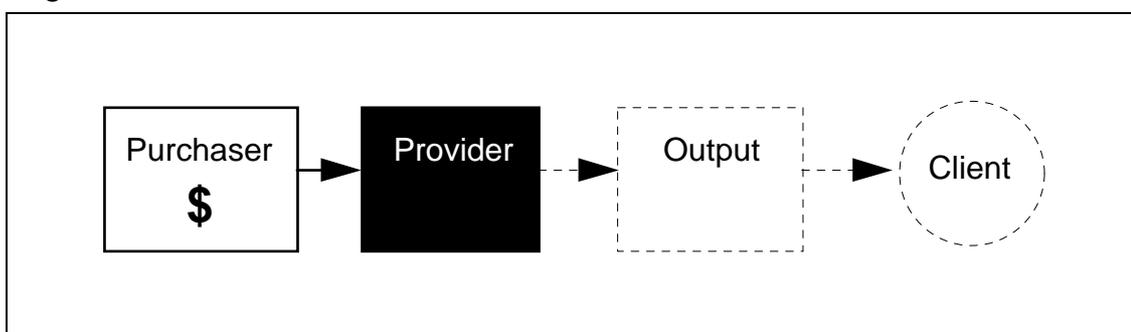
There is little output

There is usually little output: the organisations are usually very inefficient because output is not what they are about. Rather they are there for other reasons, often legitimate, like development of professional skills, creation of clinical chairs, promotions and so on.

There is a customerless tendency

There is the ultimate tendency of these sort of back-funded or push production organisations to become a customer-less environment. This reminds me of the old 'Yes, Minister' episode, where the most efficient hospital in the United Kingdom was the one that had no patients.

We had many customer-less organisations in Victoria until we started purchasing outputs rather than paying people to be providers. There are still some provider control organisations.

However although they may have few clients, they do do things. They embellish professional values, they publish papers, they give themselves research time, and so on. Thus it is not that you cannot have great teaching hospitals based on this system — that are admired across the world and generate

trips and conference papers galore — but at the patient end you will still find people queuing for hours in emergency for the most trivial attention. The customer is irrelevant.

There is under and over use of resources

There is simultaneous under and over use of resources. Using the teaching hospital as an example, they would much rather do a heart-lung transplant than operate on an ingrown toenail. There are no papers, no glory, no drama, no funding, in ingrown toenails. There is always an interest in the things which appeal to the providers and thus the people that appeal to them get grossly over-serviced. If you are seriously ill, they will do everything. This is how they manage to extract their $50,000 of value from the last two weeks of most people's lives. They are not there for patients, rather they are there for other reasons. The product mix is, as Henry Ford used to say, any colour you want so long as it is black.

Volume and quality are seen as invariably in conflict

Generally the rest of society thinks that doing a good job means doing a cheapish job appropriate to the requirement of the customer, and doing it right the first time. If it is exorbitantly expensive, then it is not a good job. In the hospital system, they do not accept that idea. Services are driven by the professional values of the provider, not what the patient wants. Thus the patient receives the highly expensive or questionable services the provider wishes to provide, rather than the value for money they would prefer.

Purchaser control

Under this system the providers do what the purchasers think best, not what the providers think best.

This has a number of results, which are outlined below.

Figure 1.3:   Purchaser control
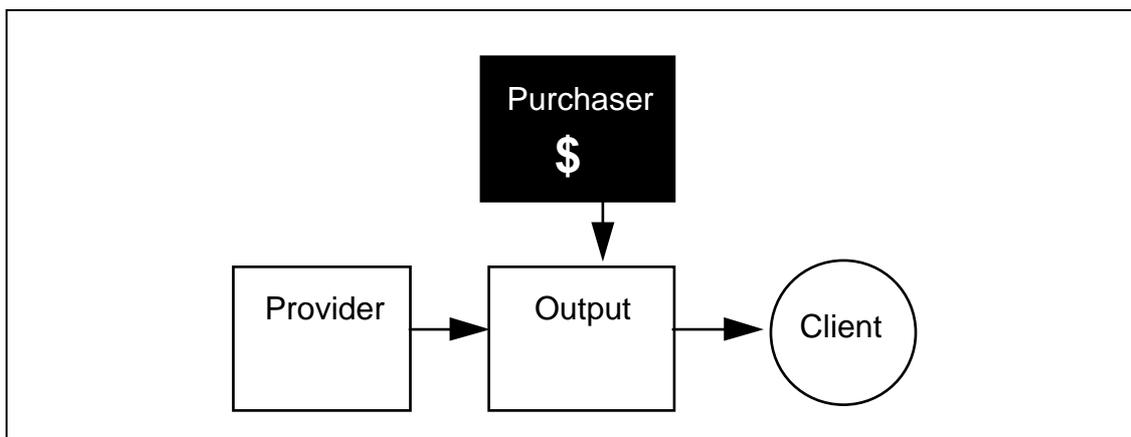
Output is increased

There is much more output because providers are paid to the work and the purchaser sets the price, so they have to work hard and smart to balance their budgets, and they do.

More even spread of services

Because providers are now funded on outputs they will do the things that pay and if the price is loaded to favour ingrown toenails, then they will actually do a lot of them. There are not only more customer services, but a more even spread between different procedures.

Hard 'volume' orientation

In this system, however, after survival volume becomes paramount to the service provider. Product mix is usually determined by the instruments and it is here that the major shortcoming of this system lie: we have commoditised the outputs to say 'this is the package we are buying,' and the purchaser has no more idea basically than the provider about what the client wants.

Instrument bias

This is shown in the famous Soviet cartoon, 'Comrades, we have finished the month's production. Our target was 100 tons of nails and here it is,' and there is one big nail up on a gantry. If you change the production specification to numbers of nails then they will produce tacks and pins. From this you get trial and error type planning, what I would call cat and mouse production and there is a huge amount of that in these systems, and we at the Department of Health

and Community Services do a lot of it, constantly changing the rules as producers invent a means of compensating for them. The things you measure, they do more of, but they do that by letting go the things you forget to measure or cannot, and as you try to measure more, the whole thing becomes over specified.

Volume/quality conflict

Volume and quality are still seen in conflict and this lead to a lot of complaints because providers will cut corners on the things that patients care about (because the patient is not the one paying) but doctors do not (because they control the production system), including aspects of product mix if you give the freedom to do that.

Customer control

The alternative to the above two systems is customer control. This is where the provider does what the client thinks best. It has rapid response and a multi attribute demand function, that is, a client can actually say, 'I do not only want this sort of surgery, but I want it in a setting with clean toilets, respectful staff, no queues, easy admission procedures with well coordinated medical procedures.' This system can deliver those kinds of services.

Figure 1.4:   Customer control
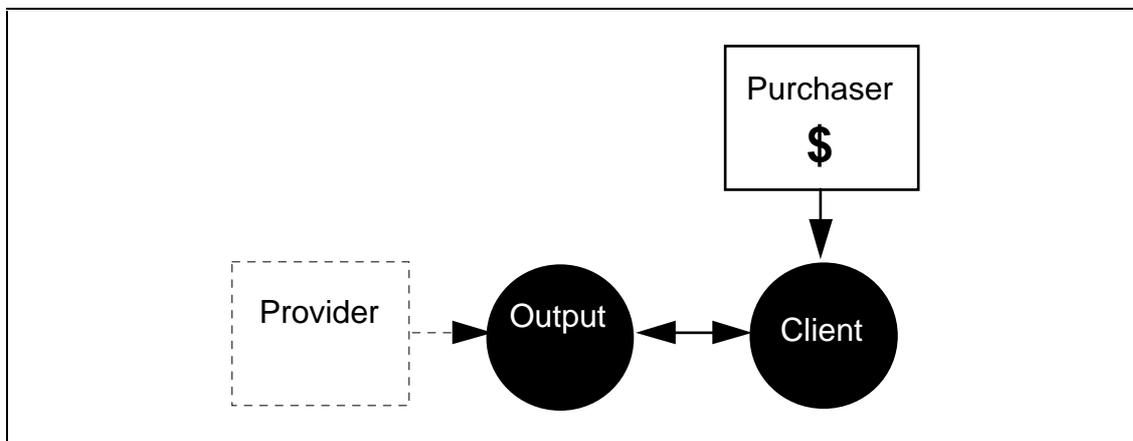
As can be seen in the Figure 1.4, the customer is in control. The professionals do real work, rather than the make work that suits their professional ambitions or their lifestyle choices. Distribution of outputs between rich and poor, location, and so on, depends on the purchase instruments. If you try and over

specify, you produce real problems in this system because you can give providers too little freedom to do their work.

Information is the vital ingredient in customer control

One of the main reasons put forward for why this system is not introduced into the health and welfare sector is the imbalance in information between patients and doctors. That is, the client is not in a position to make a informed choice and only the doctor knows what is best for the patient. Now, to some extent, that has been true in the past. However, with modern capabilities, it is not necessarily true any more. A record system and a whole group of other artefacts based on that, can easily rebalance the knowledge disparity between the provider and the consumer, or in a complex case, the consumer and his or her agent.

Product mix meets market and quality enhances volume sold

Quality is not biased: that is, providers will do the things that the clients favour rather than the things the professions favour or government has specified in targets and instruments.

So, rather than there being a perceived trade off between throughput and quality, the providers that provide better quality, will be rewarded with higher throughput by customers.

The Australian health and welfare system

The Australian health and welfare system, comprises, by Commonwealth calculation, 60 separate Commonwealth programs which are matched by the States and Territories to a greater or lesser extent. A representative group of these is shown in Figure 1.5 (the bubbles in the diagram are roughly the size of the dollars spent by the Commonwealth, not including State government and private expenditure).

Medicare hospital funding is actually slightly bigger than Medicare benefits. Pharmaceuticals and nursing homes are in the next rank and then there are a number of others programs, which include major welfare programs like Home And Community Care (HACC).

Figure 1.5: Health system financing
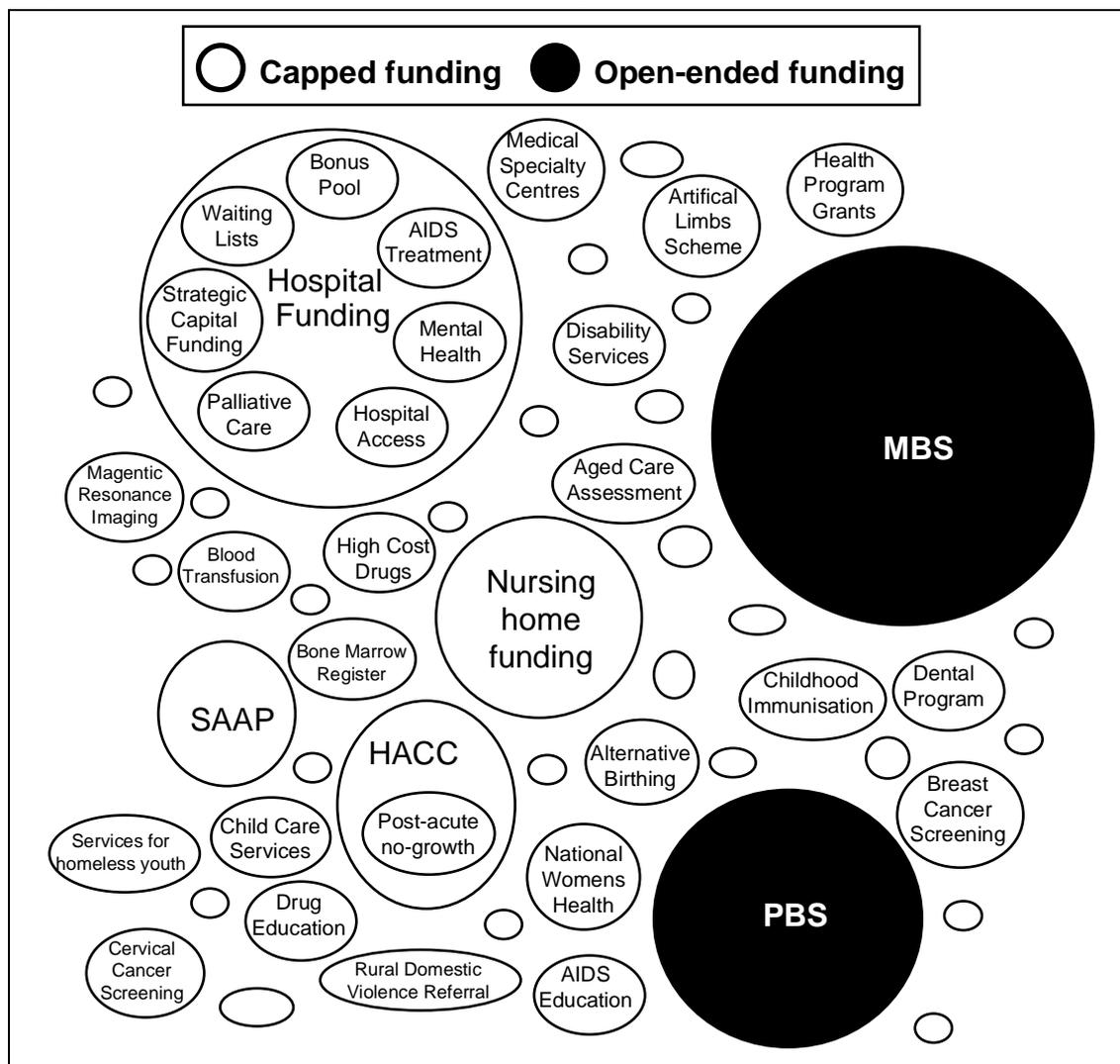
This system has a number of key features:

- each of those bubbles is actually a provider dedicated money stream. For example, Medicare funding only goes to doctors and hospital funding only goes to hospitals. This creates a series of local monopolies, which suits providers. It is an input funded system, although some are volume-driven, such as Medicare and the Pharmaceuticals Benefit Scheme which are voucher-like systems;

- there is minimal hierarchy of programs, thus it is a disordered system of 60 provider monopolies, each of equal power;

- because each of the providers has the funds vested in them, they are free to do substantially what they want within their area but not to cross

boundaries. So doctors can prescribe pharmaceuticals but they cannot call in home care services, district nursing or physiotherapy; and

- both the Medical Benefits Scheme (MBS) and Pharmaceuticals Benefit Scheme (PBS) are uncapped allowing them to expand with demand. But everything else is not only capped but severely rationed. Because of this all the surplus demand flows into MBS and PBS. This means that if you cannot get what you need because the service is rationed, then the only service you can get is for a doctor to prescribe you Valium or Serapax, even if what you needed was physiotherapy. That is the essential structuring principle of the Australian health system.

For most people the walk in/walk out doctor service is all they see of the health system, and it appears to work quite well and generally it does. However this service is only 20 per cent of the health system. The remaining 80 per cent of services are used by the old, the disabled, accident victims and so on. For these people the system works badly. They have unlimited access to fee for service medicine, but severely restricted access to all other services.

Returning to what I described as push production systems, they consist of hierarchically equal provider groups, each with its own ear-marked funding stream and no need to deal with each other.

Basically, a push production system can do a few things on a guaranteed basis. If you wish to build a bomb, or put a dog in space, you can focus all the political authority on the system and get it done, regardless of cost. As Bert Kelly used to say, if you spend enough money you can grow bananas on the South Pole, and that is what they do.

However a push production system cannot produce a complex set of outputs because it only produces anything at all well by requisitioning. If you have universal requisitioning it becomes self-defeating and the system fails.

In conclusion, we have a ghetto of 10 per cent of the Australian economy organised on the principles that brought the downfall of the Soviet Union, but because Australia is so rich we can produce a semblance of a health system by spending huge amounts.

Until we put the purchasing power at the consumer end, it will not get much better. There are many ways of doing this. For example there is the British GP Fund Holder system which is crude but effective. It is crude because it still provides a provider monopoly, but at least it is the GP acting as the client's agent and not the service providers themselves.

Thus we could greatly improve our health system just by reorganising production. As previously discussed, six Hunter Water Board workers worked

it out in a day. The answer is obvious it just requires the commitment to implement it.

DISCUSSION

Jeff Richardson

It would be fair to say that in the post-war period, the health sector has had three distinct phases:

- a period of expansion, when there was a belief that allocating more resources to health was both efficient and equitable;

- a period after the mid-1970s when budget caps were imposed on health systems throughout the world (except the United States), continuing with the old system with little regard to efficiency and possibly with equity consequences; and

- the 1990s, where the emphasis has been to a much greater extent on efficiency. The dilemma that we could face is that efficiency could be obtained at the expense of equity.

John Paterson's paper has covered many of the issues associated with the improvement of services in the health sector. I wish to add some points to this, and to raise a few issues regarding equity.

Technical efficiency

There is little doubt that efficiency in the health system is as important as efficiency in other parts of the economy. John Paterson is correct in saying that we have had a system for many years in which incentives have been inappropriate, and that this has had a serious effect on efficiency. The Australian health system should therefore be capable of large improvements in efficiency.

In the health sector, people respond to incentives just as elsewhere. So the first principle in improving efficiency is that we need a set of prices, or at least incentives, that are conducive to efficiency (an example is casemix funding of hospitals). I would expect prices to be related to marginal cost. For other reasons, I would hope that there would also be some form of budget cap or supply constraint.

The chief problem we face in achieving improvement in technical efficiency is to ensure that there is effective quality control. When we try to achieve

technical efficiency through incentives — for example, selective tendering for contracts — we need to accompany this with some form of quality assurance.

Allocative efficiency

In the health sector, perhaps the greater concern is not technical efficiency, but allocative efficiency. How do we actually create a system where a single purchaser can select what is best for the health care objective, as distinct from what a particular budget and what a particular program permits?

The first solution is patient empowerment, the pull system as John calls it; the second solution is some sort of agency relationship.

Patient empowerment

If we examine the pull system, or patient empowerment, we come to the major distinguishing feature of the health system where I may have some difference of opinion with John Paterson. This concerns the extent of informational efficiencies and informational asymmetries. I believe that informational deficiencies are the dominating feature of this sector. With perhaps 10 per cent of services, patients are able to make some sort of evaluation of the service. In the vast majority of complex services which consume the greatest volume of our resources, it is extraordinarily difficult to make judgments and the consumer is disempowered.

Why can we be confident of this? The reason is that the evidence shows that not only do patients lack the information for making good judgments about outcomes, but that doctors also lack this information. An estimate in a recent study for the Organisation for Economic Cooperation and Development suggested that as few as 20 per cent of the services carried out in the medical sector have been evaluated, and that most interventions are based on conventions, not good systematic evidence (Oxley and McFarlan 1994).

The second problem with simple patient empowerment is that the evidence also indicates that patients do not wish to be the decision-makers, probably in recognition of the fact they lack the technical information and that they know it. The Rand Corporation study of the effects of co-payments found that the services dropped were indistinguishable from the remainder of the services. Patients simply lack the capacity to discriminate between useful and less useful services at the margin.

So the conclusion that I would draw is that an absolute prerequisite for allocative efficiency, and for equity, is that services must be divided into those

which the patient can judge and is willing to judge, and those where the patient cannot judge or will not judge.

Agency relationships

So how do we reorganise the health sector to obtain allocative efficiency with patients being in the driving seat rather than the provider, while also recognising the patients' lack of information? There are three approaches that are available to us, one of which is currently being explored by the Council of Australian Governments (COAG). In the COAG proposal, services are divided into general services, acute services and coordinated care, the idea being that coordinated care will occur where we have services of great complexity, where the patient lacks technical expertise. This is a very limited proposal and certainly does not address the problem of judging acute services where we also know that patients lack information.

The second approach is a form of budget holder or a purchaser/provider system in which patients have an agent for the large majority of services; an agent who can direct and advise. Patients go to an agent, perhaps a regional authority, and the agent negotiates with providers and attempts to achieve an allocatively efficient basket of services. The difficulty in this case is achieving effective competition between the agents, so that patients are not involuntarily assigned to an agent who has no incentive to improve the service they provide.

The third approach is the full managed competition model. This is where we again have agents as budget holders, but there is competition between these agents to attract patients. This has tremendous theoretical attraction. The patient is very much in the driving seat. The agent has the technical information that the patient does not have for making complex allocative decisions; for example, deciding whether or not the person needs a hip replacement or a walking stick; whether or not drug therapy is better than behaviour modification. However it is the patient who ultimately holds the decision making power.

This system has been piloted in the Netherlands, and although the answers are not fully in, two lessons can be learnt. First, competition between agents has resulted in a revolution in quality assurance measures, encouraging and enhanced quality. Second, agents must be given a premium related to risk. Otherwise there are massive problems of cream skimming; that is, agents try to attract low risk people who are profitable while ignoring costly high risk people.

In summary, to empower the patient, I do not believe the evidence shows that it can be achieved by the patients themselves. Due to the asymmetry of information, especially in complex areas, agency relations are necessary.

Equity

Although there is major scope for microeconomic reform to improve allocative efficiency, there are possible consequences for equity.

In the health sector equity takes a slightly different form from elsewhere. The common liberal economic view is that, as a general rule, individuals make choices and then live with the consequences. However the population is concerned with the health outcomes for individuals regardless of the choices they may have made.

Health is assigned special status. The second issue appears to be an extraordinarily strong desire for egalitarianism, a reduction in the differences in the health outcomes between population groups. Australian surveys show overwhelming support for equal outcome/equal treatment.

The dilemma we face is as follows: currently patients are offered limited information and limited options. With an effective pull system (perhaps based upon agency relationships), we would expect information and choice to improve. However, given insurance that covers all services, those services which are marginal can still be demanded, and therefore there will be a demand for their inclusion in Medicare. So the dilemma with full information is that we could face not more cost-effective health but less cost-effective health and an escalation of expenditures.

The obvious solution is to have multiple schemes, in which there is a basic government scheme which provides cost-effective services and then, in other schemes, to allow marginal services to be paid for out of pocket by the users. The difficulty is, in the short run, this will lead to a perception of inequality; the rich will clearly go to those schemes providing the additional services. This will be perceived as better quality care. In the long run, there is more than a serious possibility that a multi-tier system will lead to the public system being progressively suborned, as in the case of the United States Medicaid scheme. Once the wealthy and the educated leave the public system and going to the private system, then there is political pressure to allow the public system to deteriorate. So, in the longer term, we will have the reality of an unequal health system and this would seem to violate one of the strongest principles of equity. We face a classic prisoner's dilemma. Each wealth person would have a personal incentive to move to the better scheme. The resulting deterioration of the public scheme could then offend that persons notion of social justice.

Consequently, I think we have a dilemma. We urgently need microeconomic reform. The most obvious approach to this, given informational problems, is to use agents. When we do this at the level of the whole health system, we will have pressure for a multi-tier system. This solution will lead to an ethical

dilemma. We could either restrict information on service availability, which is what happens in health systems at the moment; or we could create an uneven playing field between the rich and the poor. We could financially penalise those who opt for the non-public system to try to keep the public system viable. Either way, I think we have some very ethical choices to make.

General discussion

The discussion focussed on the role of the agency model in the provision of health and welfare services, in particular:

- the role of public health in the agency model;
- case management;
- implementing an agency model in Australia; and
- the British experience in implementing an agency model.

The role of public health

The role of public health and its relationship with the debate on models of health services delivery was discussed. It was generally agreed that many aspects of public health make it different to most other health services, and while some public health services could be integrated into the overall agency model, there is a place for public health services to be provided outside the agency model.

Case management

The discussion then moved to how current reforms in the health sector relate to the models of government service provision and health care proposed by both John Paterson and Jeff Richardson.

It was noted that in many services there exists, or is proposed, a key 'case manager' role. This exists in labour market programs and some aged care programs and is proposed for such areas as housing tenancy managers, supported accommodation, and health care coordinators.

This model is not the same as a client driven agency model. Case management is used in many situations, some of which are not voluntary (for example, case management may be a condition of receiving unemployment benefits). In addition, the case manager is not an agent chosen by the client, and although case managers organise services for the client, they do not specifically represent

them. Instead the case manager is a representative of the government appointed to coordinate services.

Implementing an agency model

A number of points were made regarding the practicalities of implementing the agency model:

- in order to allow such a system of agents and competitive service providers, the current funding arrangements would need to be changed. Currently funding to community organisations for the provision of many community services does not include the cost of administration or infrastructure. Funding for these aspects of service provision would be essential for the development of a competitive market for health and community services;

- although output funding is now a generally accepted practice, the main issue arising from the discussion is that there is no consensus on how far reform should go towards consumer empowerment. For example, more research is needed on whether there is any role for state paternalism in some areas; and

- given a general shift towards more consumer empowerment, and a devolution of decision making away from government, there may be a role for accountability and redress systems in the design of an agency model. This may be particularly important in the health system, where failure in the system may have serious physical implications for consumers; and

- although there may presently be flaws in the agency model, the system is certainly better than the system we currently have. Many of the problems that may occur in the agency system can be almost entirely mitigated by skill in the design of the new system.

Dr Paterson illustrated the process of patient decision making in an agency model of health care by comparing it with the contract implied in the purchase of an airfare. While the ticket (contract) specifies destination, type of transport, times of departure and arrival and so on, the contract does not allow the passenger to fly the plane. In a similar manner, contracts under the agency model would specify the doctor, what the procedure should achieve and so on, but would leave the actual decision making about the treatment to the service provider and not the patient.

The experience in Britain

One participant outlined experience in Britain, which suggests that agents value stability in service provision when awarding contracts to service providers: it is not in their interests to let the local hospital close, unless it is considered to be so bad that patients would be better off without it.

The second issue that arose in the British agency model was an equity problem. This was the problem of 'cream-skimming', which occurs when there is competition between agents, and certain high cost, risky patients are discriminated against by agents who prefer low cost, low risk patients. In the British fund holding experiment, for example, it was found that 50 per cent of the budget is spent on 5 per cent of the patients. The incentive then is for the agent not to contract with those five per cent of expensive patients. Therefore it is important that funding formulae for individual patients reflect the risk of high costs for each patient, in this way there is no incentive for agents to take one patient over another.

Calculating these risks may be difficult, although a study in Britain (Glennerster and Matsaganis 1994) showed that basic information held by General Practitioners may be enough to calculate these risk probabilities.

This demonstrates the importance of design in ensuring that a new system operates correctly.

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3. THE DELIVERY OF WELFARE SERVICES: WHAT LEVEL OF ACCESS?

Peter Travers

3.1 Issues that will not go away

If one is interested in the future of social welfare, it makes sense to take at least a cursory glance at the past. Yet when we do that, one of our first discoveries is that there seems to be very little new under the sun. There are some debates in social policy that simply will not go away. One historian has described, for instance, the manner in which the debate in Britain on the responsibilities of the family as opposed to the community for caring for the elderly goes back at least to the early eighteenth century, with regular swings occurring in roughly 40-year cycles (Thomson 1991). The elderly generally are regarded with sympathy, and not to blame for their fate. However, in the early eighteen century, spending on the elderly declined, but increased sharply in the latter part of the century and in the early nineteenth century. By the 1820s, it was being argued that public welfare spending was weakening initiative, the desire to work hard, and family responsibility, and by the 1830s, welfare spending in general was in decline. Spending on the aged held up relatively well until around 1870, when a strong reaction to welfare prodigality set in. Within twenty years, spending on the aged was cut by two thirds, and there were frequent prosecutions of sons, and some of daughters, who neglected their filial obligations. In 1908 came a shift in emphasis to the old age pension. The 1940s saw the peak of collective responsibility, with the inevitable reaction coming after 1979.

Even the early eighteenth century may be too recent a point to begin the discussion. I had not thought of 'King Lear' as a reflection on social policy until I read Ignatieff's *The Needs of Strangers* (Ignatieff 1984). Lear, you will recall, had abdicated his kingdom in favour of his daughters Regan and Goneril. He expected to be able to rely on their filial devotion to provide him with what was due to his station. He would need, for instance, a retinue of a hundred knights. But his daughters challenge this interpretation of need. Why not fifty knights? Why not twenty five, or, ten, or five? And finally, 'What need one?' (Lear, act 2, scene 2). At this point, Lear cries out:

> O, reason not the need! Our basest beggars
> Are in the poorest things superfluous.

> Allow not nature more than nature needs,
> Man's life is cheap as beast's.

In other words, the offer to meet someone's needs, as distinct from what is their due, what is their desert, what they have earned, leaves them precarious. Even the poorest beggars can be challenged on whether they really need the extra blanket, the second shirt, or another bowl of soup. Yet the claim that what one really needs is a retinue of a hundred knights is indeed a tall order. (I recently put the case of Lear to a group of mental health workers. They said they would discuss with him his delusional thoughts.) Ignatieff's reading of Lear does not produce a reconciliation of the conflicting claims of need and desert, nor of other goals, such as freedom, solidarity, and equality. Rather, he dismisses as utopian the belief of writers as diverse as Rousseau and Marx that it is possible to reconcile all human needs (Ignatieff 1994: 136). This gives us a clue, I believe, as to why some social policy debates are never concluded.

If the world is such that not all values can be reconciled and pursued simultaneously, then at the very least, one would expect to have to make very difficult choices. Let us take, say, the claim by some parents to have the right to determine the intellectual, religious, social, and economic circumstances in which their children will be brought up. This may be countered by the claim that in the name of social solidarity, equality, and the right of all children to enjoy the preconditions for enjoying genuine freedom themselves, a uniform system of general primary and secondary education may be desirable (Berlin 1969: liii). These two views may be represented by different political factions. But the clash of values occurs also within individuals themselves (Berlin 1969: 102; Rein 1976: 24).

I think this point is worth stressing. The philosopher Lescek Kolakowski once wrote a piece entitled 'In Praise of Inconsistency' (Kolakowski 1971) where he observed that it is only the fanatic who pursues relentlessly a single value, through thick and thin. Non-fanatics try to juggle conflicting goals, without renouncing any of them.

This leaves us with what Rein has described as 'a general tendency in social policy to develop in a cyclic rather than a linear manner. Since the problems are in essence intractable, and can rarely be resolved without sacrificing some strongly held values, the issues tend to be recurrent' (Rein 1976: 24). Rein even went on the imply that a social policy analyst could acquire a reputation for prescience by always arguing against whatever happened to be the current fashion!

3.2 The resilience of welfare institutions

In apparent contrast to the view that social policy operates in some kind of never-ending cycle is the observation that social welfare institutions are remarkably resilient. Even regimes as committed to welfare state cut-back as the Thatcher and Reagan administrations were rarely successful, and then only when they hid from voters what they were doing (Pierson 1994). One of the most striking features of the Australian welfare state is the extent to which the institutional features it adopted in 1908 — means-testing plus funding from general revenue — have endured to this day.

The contrast between the cyclical and enduring features of welfare states is only apparent, however, if we distinguish between the politics of welfare state expansion and contraction. Welfare state retrenchment operates on mature welfare states that involve huge expenditure and large organised constituencies (Pierson 1994). In addition, parties committed to welfare state retrenchment are also committed to other goals, and they too face the discovery that not all values can be pursued simultaneously. For instance, Pierson notes that Thatcher did not follow two of the more successful strategies adopted by Reagan — weakening the welfare state funding base by cutting the overall level of taxation, and decentralising authority to promote fiscal competition between local jurisdictions. Each of these strategies would have clashed with other pillars of the Thatcher agenda — the desire to run a tight monetary policy to fight inflation and to diminish union power, and the desire to weaken Labour Party enclaves in local government (Pierson 1994: 178–9).

The limited success of Reagan and Thatcher demonstrates how difficult it is to change the direction and shape of mature welfare states. There is no contradiction in maintaining both that change is difficult, and that some central debates keep returning.

I propose to illustrate this by looking at the Australian experience since 1908. I will describe the paradox of welfare state institutions being remarkably enduring, yet constantly in turmoil, as the debates of yesterday recur again and again. I shall describe a significant change that is currently under way in Australia's apparently settled retirement income system. Finally, I shall reflect on the prospects for the near future for the Australian welfare state.

3.3 Enduring institutions: the age pension, insurance, and means-testing

The most striking example both of recurrent debates and of an enduring institution is the history of the key-stone of the Australian welfare state, the provisions for income support for the aged.

The Invalid and Old Age Pension Act of 1908 was based largely on the New South Wales Old-Age Pension Act of 1900. The two overlapping issues that were the focus of debate were whether the pension should be means-tested or universal, and whether it should be financed by means of compulsory insurance contributions rather than from general revenue. One issue on which there was consensus was that the pension should be seen as a right, not as charity. In general, Labor members opposed means-testing on the grounds that it would cause stigma and penalise thrift, and that the pension was due to all as a right they had earned by their labour (NSWPD 14 Nov 1900: 4973, 4991, 4998, 5440). The defenders of means-testing stood these arguments on their head and claimed that precisely because the pension had been earned, and was not a gratuity, there should be no risk of stigma (ibid, 4969). Though there were strong proponents of a contributory, insurance-based system, the insurance approach was in the end rejected as impracticable in current circumstances. An insurance-based scheme would not tackle the immediate problem of poverty; nor would it help married women, the sick and the unemployed. There would be problems collecting contributions from itinerant farm workers. Since there was no income tax to recoup payments to the well-off, means-testing was seen as essential. (Dixon 1977: 11–12; NSWPD 14 Nov 1900: 4968, 4973, 4991).

When the federal old-age pension legislation was debated in 1908, the issue of means-testing did not loom large. Labor members who in principle favoured universalism supported the Bill as a step in the right direction (CPD 4 June 1908: 12021). Financing of the federal old-age pension by means of a contributory scheme was not seen as a serious possibility at this stage, largely because the newly federated Commonwealth had very limited possibilities of raising new taxes. In addition, Labor pressed its customary claim that the right to the pension was based on prior contributions to the wealth of the nation, rather than on contributions to an insurance scheme (CPD 4 June 1908: 12021).

Between 1910 and 1914, social insurance was again being debated. An extremely eloquent case for social insurance was made by the Commonwealth Statistician, Knibbs, following an examination of existing European schemes (Knibbs 1910). Knibbs gave short shrift to the rhetoric of those who claimed the old-age pension was not a charity. It was both a charity, and one that operated on an inquisitorial basis. He contrasted that with the virtues of social insurance,

where thrift, manliness, and self-reliance would be enhanced. In addition, 'the solidarity of each community requires that all classes belonging to the community should be protected by the strength of the community as a whole, against the incidents of misfortune on one class or on the individual.' (Knibbs 1910: 88).Though these ideas were taken up tentatively in various policy speeches, nothing came of them, and the issue was eventually overtaken by preoccupation with the looming war. In any case, the non-contributory scheme had become a sacred cow (Dixon 1976: 45). In other words, Pierson's thesis that mature welfare states are difficult to modify seems to have applied in this case within a few years of the inception of the flat rate pension financed from general revenue.

A further attempt to introduce an insurance-based scheme in 1927–28 failed in face of Friendly Society opposition, though by now insurance was no longer seen as impracticable and was firmly on the political agenda (Dixon 1976: 52).

The most determined attempt to introduce a social insurance scheme came with the proclamation of the National Insurance Act in July 1938. Yet in the face of bitter opposition by the Labor Party, unions, the medical profession, communists and anti-socialists, the government lost heart and abandoned the project (Watts: 1987: 16).

The Whitlam Labor Government appointed a committee of inquiry into national superannuation in 1973 (Hancock Committee) which advocated a national superannuation scheme in its final report in 1976 (Hancock 1976). The national superannuation scheme would be non means-tested, and rise to 30 percent of AWE. Hancock gave first priority to universal coverage at an adequate level for all Australians. The scheme involved two-tier payments, the first at a flat rate, and the second 'purchased benefit' in proportion to contributions. This was explicitly designed to avoid the perception of the scheme being seen as merely another tax, and secondly to give some recognition to the principle of income maintenance (2.37). Occupational superannuation would complement the national superannuation scheme, 'providing for those who cannot maintain earlier living standards on national superannuation pensions alone' (Hancock 1976: 46). Its proposal to abolish the mean test was not supported by the Australian Council of Social Service, the Brotherhood of St Laurence, or by the Chairman of the concurrent Committee of Inquiry into Poverty (Hancock 1976: 15). The Liberal Government in power in 1976 rejected its recommendations outright, mainly on the grounds of cost.

The opposition of the welfare lobby to a non-means-tested scheme is curious. It is typical of a strong strand of thought that has rapidly gained ground in the 1980s, and argues that the focus of the welfare system should be on the relief of poverty, to the exclusion of all other considerations. What is curious is that an

argument that in most countries is associated with the far Right should in Australia come from the Left. It also comes from the Right, of course. Both sides of politics now concur that benefits should be targeted to those in 'greatest need', and the only points of contention today are the levels of benefit and the definition of 'greatest need'.

The Hawke Government's Social Security Review stated categorically that the opportunity for introducing a national superannuation scheme had passed, despite a guarded commitment to the 'consideration' of such a scheme in the 1983 Accord between the Labor Party and the Australian Council of Trade Unions (Foster 1988: 183, 205). A national superannuation scheme was formally rejected in the government's 1989 policy statement, *Better Incomes: Retirement Income Policy into the Next Century* (Howe 1989).

3.4 The means-test liberalised; the means-test restricted

An account of the means-test on the Age Pension that ended around 1976 would tell a simple story. It would be an account of a linear progression from 1908 to the present, with constant relaxation of the test. In 1908, the eligibility was so stringent that only a third of those of pensionable age were covered by the scheme (Dixon 1976: 167). Though some were excluded on grounds of race, residence, or as 'not deserving', the bulk were not eligible because of the means-test. Of the many liberalisations of the test, the most significant were the exclusion of the family home in 1912; the introduction of a tapered means-test in 1969 with a reduction of the withdrawal rate from 100 to 50 per cent; the abolition of the means-test for those over 75 in 1973, and for those over 70 in 1975; and finally the abolition of the property test in 1976. Pension coverage of the age pension peaked at 76 per cent (adjusted to 80.3 if recipients of veterans' pensions are include) in 1980/81 (Saunders 1987).

Yet within two years of the abolition of the property test, steps were taken to halt this liberalisation by freezing the level of the income-free pension in 1978. Far more dramatically, the Treasurer of the newly-elected Hawke government announced in May 1983 the government's intention to re-impose an income test on pensioners aged 70 and over. 'That problem (of providing decent support for the aged) has been almost totally bedevilled by the way in which the available resources have been sprayed about indiscriminately' (CPD 19 May 1983: 806). In August of the same year, the decision was announced to re-introduce the assets test. The relative ease with which this reversal was achieved led at least some commentators (for example Travers 1991) to foresee the beginning of a linear trend towards an ever more stringent focus on those in greatest need.

Current outlays (before income tax) on the age pension are now only 56 per cent of what they would be under a universal scheme.[1]

3.5 Innovation or continuity?

By 1985, with both an income and assets test on the age pension reintroduced, and with something like a consensus on both sides of politics, and including most of the welfare lobby, that scarce resources should be concentrated on those in greatest need, the Australian welfare state seemed to have reverted to type. Unlike the European welfare states with their almost exclusive focus on income maintenance rather than on poverty relief (Barry 1990), the Australian model seemed to be evolving ever more closely towards a pure version of poverty relief. With hindsight, we can now see that 1985 may yet prove to be a turning point in Australia's welfare history.

In the original version of the Accord between the Labor Party and the ACTU in 1983, there was a carefully worded promise to give 'immediate priority (to the) consideration of the possible role for a national superannuation scheme' (Foster 1988: 205). We have already seen that a national superannuation scheme was formally rejected by the government in 1989. What actually emerged was something very different. In the 1986 re-negotiation of the Accord ('The Accord Mark II') at the time of the balance of payments crisis, it became impossible to sustain the original Accord promise of wage-indexation. As a tradeoff, the union movement accepted a package that included a 'wage-tax tradeoff', and payments for increased productivity taking the form of the equivalent of a three per cent wage rise in the form of employer-funded superannuation. Occupational superannuation rather than a national scheme was thus given a major boost.

The 1985 move towards greater coverage of occupational superannuation was patchy in its implementation. Many employers simply did not comply. In 1991–92, the government announced a much tighter requirement for a Superannuation Guarantee to cover almost all employees from 1 July 1992. The original 3 per cent is now in the process of being increased until by 2002 there will be a 9 per cent contribution from employers, 3 per cent from employees, and, for most employees, a means-tested matching 3 per cent contribution from government.

The most remarkable feature of the Superannuation Guarantee Contribution (SGC) is that it represents a shift from a single focus in retirement income policy, poverty relief, to a dual focus on poverty relief and income maintenance. The means-tested age pension remains 'the foundation stone of retirement

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[1] Calculations made using STINMOD.

incomes policy' (Treasurer's Budget Speech, 1995), but it is now complemented by an income maintenance scheme based on quite different principles. The basis of entitlement is desert rather than poverty. To this extent, it would be welcomed by Knibbs and the many other proponents of social insurance over the past century.

With the introduction of the SGC, Australia's retirement income policy is no longer as distinctive in international perspective as it has been. Thus, 17 of the 21 countries listed by Gallagher and Preston (1993: Table 2) have benefits that are earnings or contribution related. However, Australia does retain some peculiarities. Bateman and Piggott have summarised the principal differences between the SGC and most overseas schemes.

Table 3.1   A comparison of superannuation schemes

Australian Superannuation Guarantee	*Typical overseas schemes*
Governmentally mandated, privately provided	Governmentally mandated and provided
Fully funded	Typically unfunded
Defined contributions	Defined benefit
Lump sum permitted	Typically indexed pension only
Contributions, fund earnings and benefits taxed	Typically benefits only taxed

Source: Bateman and Piggott, 1993.

Though the investment risk lies with the contributor, this is offset to a great extent by the existence of the cushioning effect of the current age pension — at least as long as the current scheme remains unchanged (Bateman and Piggott: 24).

The oddest feature of the present scheme is surely that it allows a contributor to take superannuation as a lump sum, rather than as a pension, and still eventually to qualify for the means-tested age pension. The continued existence of this option is testimony to the enduring power of tradition rather than to the coherence of a new set of retirement policies.

Before moving to ask what we are to make of the apparent radical innovation of SGC, I will compare current debates in Britain and Australia to highlight my argument that debates on such issue as means-testing versus universal provision always take place against the legacy of existing institutions.

3.6 Means-testing in Britain and Australia

The first thing that strikes an Australian observer of current debates on means-testing in Britain is that it is a burning current issue to a far greater extent than it is in Australia. The incentive effects of means-testing are certainly discussed in Australia, especially in relation to unemployment payments, as evidenced by the changes in policy announced in the White Paper *Working Nation* (Australia 1994). However, the vehement tones used to describe means-testing in a recent report of the Social Security Committee of the House of Commons (Great Britain 1995) are rarely heard in Australia today.

> [At the beginning of this century] both left and right were aware that any welfare legislation would impact on human motivation and thereby on the character of recipients. Both sides of the debate were anxious to look at reform which strengthened the independence of families and individuals. At all costs people had to be kept off the Poor Law. The reason for this was not simply that the Poor Law was a cost on local rates. Admittance to the Poor Law cut people off from civil society. It awarded welfare as long as people withdrew from the labour market. We see here the roots of the dependency culture.

> Means-tests tend to impact in a negative way on the character of our fellow citizens. Individuals gain help if they have no resources of their own. While many do not have an income from which to save, others know it doesn't pay to do so. The saver is disqualified from help. Similarly, applicants know that to declare honestly their resources may result in ineligibility. So honesty has a financial penalty set against it. Means-tested help is lost when a person returns to work. So claimants who find work are fined. Similarly, effort once at work is countered by loss of means-tested supplements. In other words, means-tests penalise all those attributes which a sound and sensible country wishes to see fostered in a wide a manner as possible (Great Britain 1995: par 96–97).

The background to the Committee's harsh judgment on means-testing is the enormous increase in the proportion of the population now receiving them.

> Means-tests have been supported historically as the most effective way of targeting or concentrating help on the poorest members of society. But clearly something is amiss when approaching half of all individuals are living in households claiming at least one of the three major means-tested benefits. Either income distribution has so changed that the number now eligible to draw means-tested benefits goes way beyond what was ever envisaged, or the negative side effects of means-tests impacting on people's honesty and motivation has taken its toll, or, as we fear, some means-tested benefits are open to large-scale criminal activity, or a combination of all three (Great Britain 1995: par 100).

The Committee goes on the propose that it now investigate alternatives to the present wide-spread use of means-testing, such as an insurance-based system, and how universal coverage might be achieved in a flexible labour market when large numbers of people are working part time. The Social Security Secretary, Peter Lilley, has already dismissed the proposal, and said there is no viable short-term alternative to the current system (*The Times* 9 August 1995).

If, as the Social Security Committee suspects, there is widespread behavioural adaptation to the system of means-testing in Britain, could similar adaptation be expected in Australia? The first point to make is that the answer to that question has to be largely speculative (Whiteford 1995). However, there are at least some hints of behavioural adaptation in both countries, but they vary according to the specific methods of targeting. For instance, older Australians hold relatively greater wealth in the form of financial assets and housing that fall outside the assets test. Their British counterparts rely more on a relatively generous system of Housing Benefits for tenants. 'Given the different roles played by public housing and by owner-occupied housing in the two countries, it appears that more older Australians would be better-off under the Australian system than under the British system, while more older Britons would be better under the British system than under the Australian approach' (Whiteford and Kennedy 1994).

In some cases the British system of means-testing is harsh by Australian standards. In Australia, nursing home care is highly selective in terms of need, but not income. There is a modest flat fee covering about 25 per cent of costs. Admission and service provision are highly regulated. In a recent report, Gregory identified a major problem in that nursing homes have a fixed income that depends on the level of dependency of residents, and not on the quality of the nursing home as a place to live. Moreover, since the number of nursing homes is closely regulated, and all operate at near to full capacity, there is no financial incentive to improve the quality of the homes (Gregory 1994: 79). Gregory canvasses two models to tackle this problem. Both involve some degree of means-testing of the fees paid by residents.

His 'public financing model' would require more capital expenditure by government. A possible option would be for means-tested payments by residents of the full *accommodation* component of their care (that is, $36 per day instead of the current $24), though they would still receive the *health care* component, that is, the further $59 per diem.

Gregory's second option is the 'market forces' model. Government would still regulate the number of beds that would be subsidised, with a target of 40 places per 1000 of the over 70 population (80). Nursing homes would be permitted 'to charge residents higher amounts, keeping those funds to contribute to the quality of care and accommodation on offer to potential residents'. (80) The best-case outcome would be that more homes would be built, with increased competition for the (still limited) number of subsidised residents.

Neither of Gregory's means-testing options is remotely similar to the British situation where those with more than £8000 capital are not eligible for any government subsidy.

In the case of nursing homes, we thus have at least four variations on means-testing:

1. current Australian practice. Strict selection according to medical need. Flat rate charge, irrespective of means. It covers 66 per cent of accommodation costs, and none of health care costs;

2. Gregory public finance model: Increase charge to more affluent residents by 50 per cent to cover full cost of their accommodation, but leave health care component free to all;

3. Gregory market model: Allow homes to increase charges, but retain present subsidy. Further means-testing would be needed to ensure quota of low income residents, and also to place cap on fees of others; or

4. British model: Strict means-test, after which subsidy ceases.

The present outcry in Britain regarding the means-test on nursing home care is instructive. It is being described as 'a short-sighted policy of the buccaneering right' (Ogilvy 1995). The Thatcherite vision of a property-owning democracy in which wealth 'cascades down the generations' of 'a nation of inheritors' is seen to be under direct threat. Last year alone, 40,000 families lost their inheritance when their elder parents' homes were sold to pay for long-term care. The inevitable counter-strategy of parents transferring their assets to their children might have been predicted. So should the political implications, not just from angry middle-aged children, but also from angry elderly parents who interpret what is happening as ignoring their National Insurance contributions over the decades, their war service, and other sacrifices. Old age is seen as being treated as a 'problem' rather than an achievement (Ogilvy 1995).

Is this a case for insurance? Private cover would be a nightmare. At present, the only actuarial clues for assessing risk are gender and parental illnesses. But that may change with the improvement in genetic testing. Even worse would be the problem of adverse selection, with the worst risks being turned away or offered prohibitively high premiums. The government would be left with the bad risks — and a more expensive welfare state (Thomas 1995). Thomas sees this as an obvious case for the need for compulsory social insurance. 'If William Beveridge were around today he would worry less about pensions and more about care' (ibid). This solution has, in fact, been adopted in Germany where the government introduced a compulsory care costs insurance scheme in January 1995 (Guardian Weekly September 10, 1995: 11).

The examples of retirement income support, and of nursing home care illustrate the way in which apparently similar issues such as means-testing can only be understood against the backdrop of the legacies of the past.

3.7 Discussion

In this paper I have argued that some issues are perennial and in principle irresolvable. There is a genuine clash between values such as solidarity, equality, and freedom, just as there is between the egalitarian relief of need and inegalitarian payment according to desert. I have said that even the same individual may well subscribe to all these values, and have to choose between them in practice. Since such a choice involves renouncing in practice values which one still holds, it is therefore not the least surprising that certain issues such as means-testing and targeting of services tend to recur.

The Australian welfare state is similar to others in that there have been perennial debates on the extent to which one should focus on greatest need, as opposed to moving to a contributory system that would emphasise continuity of one's standard of living as one encounters the vicissitudes of life. Where Australia has been unusual is that the principal institution of the welfare state was established on a means-tested, non-contributory basis. After repeated attempts throughout the century to change this focus, it is now happening, almost by stealth.

The move from such a heavy focus on the relief of need to a second, compulsory strand of income maintenance means we are entering territory in which we have no experience. The move to compulsory superannuation came about in part because of the failure of the previous very generous system of tax incentives to encourage voluntary savings (Gallagher 1995: 26). To date, the first stages of the new system are in place; they have the support of the trade union movement and of wide sections of the community (Zagorski and Carne 1995). However, the present opposition parties have not committed themselves to do more than preserve what is already in place, should they come to office.

On the face of it, the new system has much to commend it. It will enhance public savings. It will, for the first time, provide continuity of income for a large proportion of the population. To the extent that it removes people from the age pension, it will remove them from exposure to the negative effects of means-testing. It might even be seen as an expression of community solidarity in that for the foreseeable future, the bulk of the population will have an interest in both the means-tested pension and in the SGC.

The problems the SGC faces are also many. Some relate to legacies of the past, in particular the option of lump sum payments. Moreover, we simply do not know how acceptable compulsory savings will be in a country that has such a limited tradition in this area. A new feature whose implications have to date received minimal discussion is that people will be subject to investment risk. The benefits people will ultimately receive are not defined at all. In their

critique of the World Bank's espousal of such schemes, Beattie and McGillivray conclude that they involve an unacceptably high degree of risk for workers and pensioners (Beattie and McGillivray 1995; World Bank 1994).

One proposal to tackle the problems caused by the lump sum payment option and also those associated with the means-tested pension is that of the Institute of Actuaries of Australia (IAA) (IAA 1994). The IAA proposal is one of some complexity, but its main features are a three tiered universal age pension, a modified SGC, and voluntary superannuation. For illustrative purposes, the IAA proposal sets the pension at 25 per cent of average weekly ordinary time earnings (AWOTE) (2.2.2)[2] and tentatively suggests that indexation should be according to movements in the CPI with 'periodic adjustments' to re-align pensions 'partially or fully' to earnings (6.6). In addition to the basic pension, there would be compulsory and voluntary superannuation. The compulsory superannuation would be similar to the present SGC, but capped at 6 per cent of employer contributions. The IAA plan favours the development of defined benefit plans, and points out that in contribution-based plans such as the SGC, the amount of income that emerges from such plans is essentially arbitrary: 'it depends directly upon the success or otherwise of the fund's managers in investing the fund's assets and containing administrative costs' (IAA 1994: 3.3; 5.13).

The IAA proposal is one of the more thoughtful variants on the most radical way of curing the ills of means-testing, that is, the resort of some form of basic income[3]. The IAA proposal defends its non-means-tested payment on the ground that the richer recipient of the 'universal' age pension under their scheme would pay back some 50 per cent in tax (IAA 1994: 3.2). The clawback could be higher if it were thought necessary, via a tax surcharge.

The IAA proposal (together with a supplementary paper of August 1994) has been criticised by the Retirement Income Modelling Task Force on various grounds including a very significant decrease in superannuation related national savings, markedly higher costs to government, especially for those on higher incomes, and a net inter-generational transfer from non-pensioners to pensioners (Gallagher 1994).

One question that must be asked of a proposal such as that of the IAA is how robust would the basic pension be in the face of moves to bring about welfare state retrenchment. Pierson's account of the fate of the various programs in

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[2] Pensions are currently indexed to 25 per cent of male total average weekly earnings (MTAWE) which are some 19 per cent higher than AWOTE.

[3] The basic income literature is large. For representative examples, see Duncan and Hobson, 1995; Parker 1991; Van Parijs 1990, 1991, 1992.

Britain and the US is instructive here. It is not the case that means-tested programmes always fared worse than universal ones. 'Beyond a point, it becomes difficult to make means-tests meaner' (Pierson 1994: 170). A more fruitful strategy for a government wishing to maximise savings is to focus on the universal programmes, precisely because they are so large and allow so much scope for economies. The experience of the means-testing of the previously universal family allowance in Australia is a good example of this. There was very little political opposition to the move, and though the means-test is generous (only 25 per cent of families with dependents are excluded), savings are substantial[4].

According to Pierson's analysis, the crucial issue is not so much whether programmes are means-tested or not, but rather how great are the savings that can be made, and whether retrenchment can be done surreptitiously enough to avoid too much political pain. The Thatcher government did, in fact, have substantial success in making savings in relation to the universal basic pension. This was done in 1980 by the simple device of changing indexation of the pension from the highest of prices and earnings to indexation to prices only. Over forty years of 2 per cent real annual earnings growth, this would produce a replacement rate of roughly half that provided in 1980 (Pierson 1994: 59).

A universal basic pension of the type proposed by the IAA would be a prime target for retrenchment. The IAA illustrative proposal already has a basic pension that is indexed to the CPI, albeit with periodic 'full or partial' adjustment to earnings. The British experience shows how just how dramatic a difference it can make if that adjustment is omitted.

The IAA proposal, on the other hand, highlights some of the real problems with the current scheme: the incentive to 'double dip'; the negative effects of means-testing; the risks entailed in a plan where benefits received are so dependent on the vagaries of the market.

I have said the IAA proposal refers to 'the negative effects of means-testing'. The first thing that needs to be said about the negative behavioural effects of means-testing in Australia is how little evidence we have (Gallagher et al 1992; Whiteford 1995). However, in their recent paper on targeting welfare, Mitchell, Harding and Gruen (1994) gave convincing answers to some of the usual objections to targeting, including the 'social' arguments (intrusion, stigma and social cohesion). They also point out that the type of beneficiary seems to affect the level of generosity of all systems, whether means-tested or not, with the retired being typically treated better than average, and sole parents worse than

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[4]   It would cost nearly $600m to make basic family payment universal if present rates were retained (STIMNOD).

average. I believe this last observation gives a hint as to the direction debates on means-testing might usefully take, not only with regard to levels of generosity, but also with regard to the claimed social effects of means-testing, such as the creation of dependency and helplessness.

Let me give an example of an aspect of means-testing that may or may not have negative consequences, depending on the design and administration of a particular scheme. There is a considerable body of theoretical and experimental psychological literature on the causes of learned helplessness[5] (Peterson, Maier, and Seligman 1993). According to this literature, a person who is subjected to repeated evidence of their inability to control outcomes, and of outcomes that are themselves unpredictable, is at risk of experiencing a sense of helplessness and dependency. In such circumstances, a person may experience helplessness not only in relation to the factors they cannot control, but also experience a sense of generalised helplessness.

In the case of means-tested welfare state programmes, a person may experience lack of control and unpredictable outcomes in relation to two separate phases of having their eligibility for payments determined and maintained. First they must come within the category for which a payment is made (age, sole parent, unemployed, sick etc), and secondly, they must be eligible under a means-test. In the case of the age pension, the categorical requirements are far easier to establish than in the case of sole parenthood, unemployment, or sickness. Moreover, once established, the primary criterion (age) does not become problematic at a later date as can the primary criteria in the case of the other payments.

These differences between the requirements for establishing and maintaining membership in the pension category are not peculiar to a means-tested system. What means-testing does is to add a further layer of uncertainty, unpredictability, and lack of control. It is unlikely that means-testing will produce similar effects of lack of control and unpredictability among all pensioners. For instance, age pensioners whose assets and income are clearly within the free area are unlikely to have to re-establish repeatedly their eligibility under the means-test. But age pensioners whose assets and income fluctuate, and who are also affected by changes in rules such as those on deeming, are more likely to be affected by uncertainty, unpredictability, delays and errors in payments, and a sense of loss of control. The truly horrendous problems occur when the interaction of the requirements of various types of payment results in a degree of complexity that tests to the limits even those who

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5   I am grateful to Jim Barber for his assistance and advice in this area.

are expert in the system (Raper 1995). The psychological literature would predict that to the extent that any clients of the welfare state suffer loss of control, they would be prime candidates for experiencing a sense of helplessness and dependency.

In its recent report, the House of Commons Social Security Committee proposed to examine the destructive side of means-tested welfare (Great Britain 1995: 101). I am suggesting that, in Australia, what we need to know over and above the formal rules of entitlement, is how payments are actually administered, and the extent to which there are variations between different categories of payment. The number of contacts that occur with the Department of Social Security, the length of time for which a client is confident that eligibility will continue, the number of delays and errors, and the sheer complexity of the programmes involved, would all be important variables. I would be surprised to find uniform effects for all types of means-testing, and I would expect, rather, that some forms of means-testing have more negative consequences than others.

To sum up, I am suggesting that despite Australia's long experience with means-testing, we know surprisingly little about what I suspect to be one of its more destructive features. However, I think we already know enough about means-testing to welcome a scheme such as the new SGC which promises to lessen the numbers dependent on the means-tested age pension.

I also welcome the SGC approach because it redresses what I have long regarded as an imbalance in welfare provision is Australia, that is, an excessive preoccupation with poverty relief to the neglect of income maintenance.

Though the SGC promises to redress some of the negative features of the existing system, it is itself a high-risk strategy. Some of those risks can be forestalled by prudent planning. It would be wholly in keeping with the argument of this paper that other negative features of the SGC that will undoubtedly emerge over time will reflect the inevitable choices between competing values that are inherent in the policy making process.

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DISCUSSION

Robert Gregory

I believe that one of the main problem with the debate regarding the welfare system is that it is difficult getting from the broad picture (for example, empowering the client) to the actual detail of the operation of the system on a day-to-day basis. In this discussion I am going to focus on issues surrounding the day-to-day operation of welfare systems. I will particularly focus on aged care, an area where I have done significant work in recent years. These examples should show why many abstract models are hard to implement when looking at a particular case, rather than a generalised model.

Cost control and rationing

The first issue I wish to raise is cost control and rationing. In the aged care sector it costs approximately $30,000 per year to keep an frail aged person in a nursing home. What would happen if a person assessed as being infirm and requiring nursing home care is provided with $30,000 directly (and thus gains the ability to arrange their care as they like) rather than the government providing a place in a nursing home? What happens if we adopt a client driven system, and fund the client rather than the service provider?

First, perhaps as many as three out of four people who are infirm enough to be eligible to enter a nursing home are not in nursing homes but instead are cared for at home. If you introduce a client funding system and set a criterion to receive funding equivalent to that for entering nursing home care, then potentially all frail aged persons may receive funding — those who would have been in nursing homes and those who are cared for at home. Therefore you may be funding three or four times as many people.

Second, many of the frail aged who live in the community are supported by close relatives. In many cases the older person themselves would be incapable of managing a $30,000 budget, in which case it would be the responsibility of the carer. However, how do you ensure that the carer uses all the money provided for the care of the frail aged person and does not divert some of the money to themselves or others?

Thus it is not easy to implement a system of funding the client, first, because of the budgetary pressures that would be caused by moving to a entitlement

system, and second, by the problems cause by the role of carers in the provision of support to older persons.

So, if the government cannot afford to provide nursing home level care or funding to all frail aged, how are places rationed? The process used to ration places is important as it affects how well that rationing system is accepted. In the area of nursing homes rationing is not strictly on the basis of need. Instead a rule is used that states that although there used to be 70 beds per 1000 people over 70, it is now necessary to cut that to 40 beds. Once this rule was established, the infirmity entry requirements for nursing homes were adjusted upwards in order to fulfil that rule.

If the reverse system was used, that is, the rule stated that: 'nursing home care is available to anybody who needs it', then the problem becomes one of defining need. By setting the level of service provision first, the level of 'need' is determined automatically. In addition, it was easier to get that rule accepted because that rule then became the mechanism to ensure an equitable distribution of nursing home beds between geographic areas.

Substitution between forms of care

Rationing systems such as this may have unintended side effects. For example, a frail aged person does not have to enter a nursing home to receive care. They could enter an aged persons hostel. These hostels have the right to charge fees. So providing the aged person is not too infirm (hostels do not offer the same level of care as nursing homes) they can pay certain fees and get hostel care as a substitute for nursing home care.

As the government has reduced the amount of nursing home places available aged persons have spilled over into hostels and community care. The government therefore has increased its contributions to hostels and community care, but at a much lower level than that for nursing homes.

However, after this shift in provision the cost of the additional places in hostels and community care is actually greater than the cost savings from the reduction in nursing homes. Why is this?

Frail aged persons displaced from nursing homes into hostels or community care were generally more infirm than those already in hostels and community care. This placed additional pressure on the hostels and community care facilities and some financial compensation was offered. This compensation system was not based on providing additional funding only for *new* clients. Rather, the compensation was an increase in the amount funded per person for

all clients. That new funding encompassed so many people and attracted so many new entrants that the new system actually costs more than the old.

The substitution possibilities in the welfare area raises all sorts of complexities about the knock-on effects of rules and rule changes. This makes it very difficult to understand the dynamics of the sector. For example, it is not easy to determine how much of the additional money being spent on community care can be accounted for by new clients, how much is from additional expenditure on clients from nursing home substitution, and how much is from hostel substitution.

System design

The next point I wanted to make is regarding system design. Nursing homes are paid with a system where frail aged persons are assessed for their infirmity and then the nursing home is funded according to this classification.

Most nursing homes operate in the non-government sector, and must make a profit from this funding. These will attempt to spend as little as possible. One of the things they do, for example, is not repair the building because any money spent on repairs will not increase their income flow, which is already fixed. There is no incentive to undertake repairs.

This can be seen again in the funding system which is known as CAM/SAM. The variable CAM component is for the provision of care and the SAM component covers standards costs such as laundry and food services. Government regulations stipulate that all CAM funding must be accounted for as being spent on care. SAM funding is not monitored however, and it is from this funding that the nursing home makes its profit.

This creates a distortionary effect, as the incentive for the nursing home is to have as much of the necessary expenditure classified into the CAM care component. That is, if they can have an activity which normally is part of the SAM component classified as care, then they can make a greater profit out of the SAM component. One example is called plating, where a nurse delivers the meals. In this way what is essentially a administrative task is classified as care and that cost is assigned to the CAM budget.

Also, who feeds the patient? Does the nurse feed the resident or does the cheaper hired hand? So there are a number of areas where there are ambiguities in the classification of tasks. And so the system starts to develop of large number of rules in order to clarify how it should operate.

When examining these rule systems, it is important not to examine each rule in isolation, as any rule in isolation can appear not to make sense. The question

that should be asked is does the system require these rules to make it work? If so then the system and the rules must be assessed as a package. And so, as a result you may end up with a set of rules which appears to be unnecessarily detailed, but is required in order to make the system work.

Another example is residential care fees. Nursing homes are not allowed to charge fees. However one of the main forms of fees in hostels is the lump-sum payment given by the client to the hostel when they first enter, and then when they die or move on they or their heirs receive most of the lump-sum back. However, suppose the aged person is in a room which is part of a hostel, but with a nursing home room on the other side of the corridor. When they deteriorate and become eligible for nursing home care and move across the corridor, should, at that point, the nursing home hostel owner give the lump-sum back to the client?

The nursing home operator may argue 'Same person, same place, we should keep the money', which appears to be a sensible argument. However if that position is accepted then fees have been introduced into the nursing home system. So while the rule seems to be arbitrary and somewhat pointless, it actually serves an important purpose (ensuring fees are not charged for entering nursing homes).

Therefore one of the big issues in this sector is the plethora of rules. However it is important to remember, when considering these rules, that they are important for the integrity of the system, and so should be considered to be an integral part of the system.

Finally, it should be noted that in the aged care sector the government is deemed by the public to be responsible for much of what happens. This makes it difficult for the government not to be involved in developments in the sector, for they are ultimately held responsible by the public for any developments.

The whole area is very politically sensitive, and for that reason it is very difficult to make progress and naive to focus only on the economics of the sector as the basis for policy development.

General discussion

Much of the discussion focused on the nursing home sector and how the issues raised in Peter Travers' paper are applied in that sector.

It was noted that one of the benefits of distributing essential services, such as nursing home care, in a non-market manner is that it allows governments to intervene less in the distribution of market income and still achieve this equity aims as market income becomes less important in securing essential items.

It was put forward that one of the main characteristics of the current system is the invisible cost shifting of aged care to the household sector. Currently much of the support for the frail elderly is done in the home by carers, who are mostly women. It was suggested this will become a contentious social issue, and the use of non-market household care may decline rapidly. This is because the advancement in the position of women over the last 25 years. The current group of carers who have little prospects in the labour market, will be replace by women who are full participants in the labour market, and have the potential for good careers and earnings. For these women the prospect of years of unpaid care is less attractive than it was to previous generations.

In response to Bob Gregory's discussion of the issues facing cashing out of nursing home benefits, one participant pointed out that there are administrative devices, such as trusteeship and guardianship, which are already used for dependent people, and these should solve most of the problems relating to individuals spending money set aside for the care of others.

It was claimed by one participant that the move to income testing of benefits has been regressive because the recent cost savings made from income testing have gone to cutting the top marginal tax rate. In this way it is a transfer from the middle of the income distribution to the top.

One participant discussed the experience in the British aged care system in providing uncapped services. Until two years ago, there was basically a voucher system, where the government effectively gave free nursing care at a private nursing home of their choice, paid out of the social security system, to anybody who was disabled and wished to have residential care. Cost rose from approximately $100 million in 1970 to approximately $2500 million ten years later. People were revealing a demand for nursing care that the government was unable to cope with, and thus the government introduced a cash limited budget for local authorities to provide aged care. The local authorities can provide as much aged care as possible, within the confines of a fixed budget.

4. EQUITY AND EFFICIENCY: POLICY CONSIDERATIONS

Fred Argy

4.1 Introduction

Governments are constantly being urged to step up the pace of structural reform because of the potential benefits for efficiency and national productivity.

Yet, as every economist knows, an economic reform package is not necessarily 'welfare enhancing' simply because it raises efficiency (in terms of average real incomes per head). The impact of the reforms on other dimensions of well-being such as the distribution of opportunities, incomes and wealth, the level of long-term unemployment, the quality of life and inter-generational equity also need to be considered.

Up to a point, there is little or no conflict between these goals. Many social and environmental reforms involve little or no efficiency cost and indeed often provide a climate more conducive to economic growth. Equally, many reforms which improve efficiency also enhance other welfare goals — or at least require only a small sacrifice of other welfare goals.

Some reforms, however, can adversely affect other aspects of welfare such as quality of life and distributional equity. This potential conflict arises for example with economic reform proposals which seek to: promote more intense exploitation of our depletable natural resources; reduce dead-weight, compliance and incentive costs; deregulate the wage structure; or reduce business regulation in areas such as occupational, health and safety.

Sometimes win/lose reforms can be introduced in tandem with others such that most people gain on balance from the package; but this is not often feasible.

The paper focuses mainly on tradeoffs between fairness — low long-term unemployment, distributional justice and inter-generational equity — and efficiency — maximisation of real Gross Domestic Product (GDP) per head.

It stresses the lack of knowledge in the economics profession about the nature of such tradeoffs and about community attitudes to them. It suggests that this is an area crying out for more research, especially by bodies actively involved in advising on economic reform, like the Industry Commission.

Within the limits of information available to them, how should economists involved in public policy debate seek to resolve a conflict between fairness and efficiency?

The paper outlines several distinct schools of thought on this matter. It rejects the 'big bang', efficiency-first approach to reform, that is, simply making sure there are more potential winners than losers and then 'bulldozing' the reforms through the losers. Equally however, the paper does not accept that important reforms must be held up until all significant re-distributional effects have been eradicated.

Instead the paper argues that where the redistribution effects are clearly regressive there is a strong welfare case for compensation.

Where compensation is not practical, or where the available methods of compensation have such severe economic disincentive or compliance costs that they would risk leaving everyone worse off, policy is faced with a difficult decision. It is arguable that if the redistribution is expected to be large and regressive, while the potential efficiency gains are relatively small and uncertain, the proposed reforms should be watered down or at the very least phased in very slowly and gradually.

This approach would shift the goal of reform from efficiency to overall community well-being and in the long run it should facilitate rather than hinder structural change.

Undoubtedly application of the proposed approach will require a degree of subjective judgment (for example, what is a regressive effect and why is it bad?). But at least this will be an open and integral part of the analysis. By ignoring distributional issues, many economists are making value judgments too but these are hidden rather than transparent.

In any case, whatever economists might say, public policy is about distribution just as much as efficiency, and economists who ignore distribution (because of a a reluctance to indulge in inter-personal comparisons) are marginalising their contribution to policy; furthermore they run the risk that governments, in an attempt to deal with distribution effects, will adopt a third or fourth best reform option.

4.2 Defining performance benchmarks/goals for economic reform

A set of economic reforms is only justified if it increases the overall wellbeing of Australians.

An improvement in human wellbeing is impossible to measure comprehensively, but there are at least six ultimate tests or criteria which can be applied — some material and some non-material.

The first criterion is the impact of the reforms on *real incomes per head*, as traditionally measured. This needs no explanation.

The second criterion is its impact on the *degree of instability of incomes*, that is, what it does to the security and volatility of incomes.

This is relevant to welfare because short term instability has an economic cost, for example long-term unemployment and investment risk, but more importantly because people generally prefer to have incomes rising steadily rather than fluctuating around a rising trend.

Thus a reform which allows employers more flexibility in hiring and firing and hours of work will tend to enhance productivity and real per capita incomes; but if it leads to more job insecurity, incomes volatility and casualisation of work, it is not (in the absence of compensation measures) *necessarily* welfare-enhancing.

A third performance test is the impact of reform on long-term *unemployment and under-employment*.

A program of economic reform which produces higher per capita incomes but rising structural unemployment (for example a set of reforms which involves large-scale displacement of unskilled labour at a time of limited alternative employment opportunities for such labour) is not *necessarily* welfare-enhancing.

High and sustained unemployment involves economic efficiency losses — in terms of potential output, erosion of skills, increased resistance to structural and technological change etc. However, it is a distinct and separate welfare goal from efficiency because of what it means for the dignity, self-respect and self-fulfilment of the individual. With most people the availability of government income support, however generous, is not an adequate substitute for a full-time job.

The fourth reform criterion is the impact on *the distribution of opportunities, incomes and wealth*.

A program of economic reform (such as labour market deregulation) which is expected to raise average per capita incomes is not necessarily welfare-enhancing if it is likely to be associated with growing disparities in income and wealth, increased levels of poverty and less equal access to jobs and public services such as education.

This is because the poor generally have a higher marginal utility than the rich, a person's *relative* standard of living has a bearing on his or her dignity and self-esteem, and a reduction in access reduces ability to compete equally for market opportunities and is therefore inconsistent with any criterion of fairness.

Moreover a reform policy which is consistently and repeatedly insensitive to distribution effects might well be self-defeating (that is, fail to raise real per capita incomes) in the long term.

The equity/efficiency tradeoff is discussed later in the paper.

A fifth performance test for any economic reform should be its impact on the *quality of life*, broadly defined as the non-market and non-material sources of enjoyment and happiness available to the existing population. These include: leisure; health and life expectancy; housing standards; incidence of crime and accidents; the diversity of educational and cultural opportunities available to us; the quality of our air and water; the availability of (and value of services provided by) public goods such as parks and wilderness, museums, roads etc; the level of noise, and the conditions under which people work (including not only the quality and safety of the physical working environment but also the length of journeys to work and the extent of employee participation, mutual trust and shared commitment).

Importantly, the quality of life benchmark also includes the degree of personal freedom, the scope for self-advancement, the degree of political stability, how much say people have in how the society is run and to what extent they feel domestically and internationally secure and economically independent from the rest of the world.

All these quality of life aspects should ideally form part of the utility function which economists focus on: to many people, they are as highly valued as real spending power over goods and services (real incomes).

An economic reform designed to improve efficiency and competitiveness but which adversely affects any of these quality of life dimensions (for example any form of business deregulation which results in a deterioration in working conditions or a reduced capacity to enjoy leisure or increased noise and pollution) is not *necessarily* welfare-enhancing.

The sixth and final performance test is *inter-generational equity*.

The relevance of this is obvious: a set of economic reforms may produce a substantial rise in real incomes, employment and quality of life over a period of say a decade, and yet allow, say, its natural environment to be damaged in a way which, while having no immediate effects, has the potential to severely

reduce the quality of life of future populations. Is this an improvement in national welfare?

What the pursuit of inter-generational equity would entail in practice is not clear. At the very least it would mean ensuring that:

- the fiscal burden on future generations (net tax and other payments to government as per cent of income) is no higher than that faced by the current generation, for example, accumulating public pension liabilities are matched by corresponding assets (this would require as a starting point some form of generational accounting as in New Zealand);

- increases in foreign liabilities are matched by productive assets and are not frittered on consumption;

- public infrastructure is maintained in an adequate state;

- the income gained by the community as a whole from the exploitation of its depletable resources is used to provide an income for future generations; and

- the nation's renewable environmental capital is fully maintained (Harris 1991).

An economist who attempts to put valuation and shadow prices on all these non-measurable aspects of welfare would have to be brave indeed; but this is no excuse for ignoring them altogether, because this only makes the value judgments less transparent — it does not remove the need for them.

In a separate report for the Committee for Economic Development of Australia (CEDA) the author tried (in an unashamedly subjective way) to evaluate Australia's economic performance on these six criteria (Argy 1992). It concluded that, while per capita incomes have increased substantially over the last two decades, the performance of the economy on the other five criteria has been patchy or even disappointing.

This question will not be pursued here, but it is worth noting the growing challenge to conventional national accounts in the recent literature. One group in the United States has tried to devise a 'genuine progress indicator' (GPI), which captures output not traded in the marketplace, allows fully for environmental effects and depletion of resources, and places a higher weight on income if it is evenly distributed. On this basis GPI in the United States has declined steadily and dramatically since the mid 1970's (*Economist* 1995).

4.3 Tradeoffs between goals

The six benchmarks or goals for evaluating economic reform are often in conflict with each other, that is, a set of economic reforms might rate highly on some criteria but poorly on others.

(a) complementarity or low sacrifice

This is not always the case however. It is possible to devise a win/win reform program which performs well on all six criteria at the same time — or at least enables us to do better on one or two criteria without affecting any of the others. There are also situations where the sacrifice ratio associated with undertaking or not undertaking reform is relatively small and need not be a matter of great policy concern.

The pursuit of inter-generational equity need not conflict with economic growth. For example, active policies of energy conservation; the development of environmentally friendly export industries (such as 'clean food', untouched wilderness); policies which encourage greater retirement provision; and policies which facilitate the build-up of adequate and efficient infrastructure can all promote both economic efficiency and inter-generational equity.

Similarly, there is a good deal of complementarity between equity and efficiency. Many efficiency-enhancing reforms increase the cake available for distribution without having adverse (regressive) distributional effects, or entail only a relatively small cost to equity. This is largely true, for example, of reforms:

- which simply involve the application of more cost-effective methods of delivering welfare and other social goals; see Industry Commission reports on Workers' Compensation (1994), Occupational Health and Safety (1995b) and the activities of Charitable Organisations (1993);

- which seek to rationalise Commonwealth/State functions and responsibilities;

- which help to break down anti-competitive practices, such as in the professions, banking or taxi licences (IC 1994);

- which improve work place efficiency but with compensating wage increases for all; or

- which reduce structural mismatch in the labour market, through improved job information, training, counselling, work experience and mobility assistance.

Conversely some reforms involve only small efficiency gains but high social costs, for example, reforms which pursue 'small government' mainly for ideological or cosmetic purposes.

And some social reforms can improve equity without greatly hindering efficiency — and indeed may positively promote economic growth to the extent that they promote social peace and cohesion, reduce uncertainty, help to maintain the nation's stock of human capital, reduce the personal income risk associated with economic change, break down resistance to structural change and economic reform, enhance opportunities for self-advancement and remove economically irrational forms of discrimination.

(b)   equity v/s equity

Many policy decisions involve conflicts between alternative social goals. One example is the perceived tradeoff between downward flexibility in real wages and higher long term unemployment. Wage deregulation may help the long-term unemployed, which is an advance in equity, but their cost is borne disproportionately by the working poor — an issue taken up again in Section 4.5.

Equity/equity tradeoffs can also arise in the application of social reforms: thus, it may seem equitable to extend means testing to many public services such as health and education (that is, claw back 'middle class welfare') if it releases more resources for assisting the poor; but if the budgetary savings are used to reduce top marginal tax rates, or if the effect is to increase the risk of poverty traps and welfare dependency, intensify anomalies between those below and above the welfare threshold and to increase middle-class resistance to the welfare system as a whole, is the ultimate effect equitable?

These are illustrations of the point that 'contrary to popular versions of economics, policy decisions do not involve a simple trade off between efficiency and equity; they also involve quite complex choices between various fairness criteria' (Abelson 1987)

(c)   efficiency versus other goals

There remain very real conflicts between efficiency and the other welfare goals. These can arise for several reasons: scarce resources relative to ends; complex inter-dependencies between the goals; limited policy instruments relative to goals; and so-called government failure.

Examples of such conflicts include:

- the excessive exploitation of our natural resources raises current incomes but at the expense of future generations;

- an increase in personal income taxes to pay for welfare increases has dead-weight, compliance and incentive costs;

- increased wage flexibility may improve competitiveness but increase inequality;

- reforms which reduce business regulation can damage the environment or erode workers' rights and working conditions;

- an 'activist' interventionary industry policy designed to promote regional development and sustain employment may produce efficiency losses (see the Appendix);

- the introduction of user pricing may enhance efficiency but (in the absence of compensation) it can have very adverse distributional effects; and

- a more cost-effective instrument of welfare delivery may sometimes involve a sacrifice of quality or service.

On many of these issues the conflict of objectives is intrinsic, in that they involve genuine differences about values, priorities and the kind of society desired. In addressing them, one group of economists might attach great weight to such values as employment security, stability, worker protection, fair distributional outcomes and protection of the environment. Another group might put more stress on economic efficiency and development, low inflation, and on such values as individual freedom of choice, individual responsibility, self-help, self-reliance (less dependence on government) and equality of opportunity.

4.4 Understanding efficiency/equity tradeoffs

The tradeoff between efficiency and equity poses especially difficult problems for public policy: estimation of the effects of a policy reform on distribution is no easy task; if the information suggests that the redistributional effects are undesirable, a resolution of the efficiency/equity conflict must entail difficult value judgments; and the task is further complicated by our inadequate state of knowledge about the nature of the tradeoff between efficiency and equity.

For governments to choose intelligently between equity and efficiency they need to have sound, objective information on:

(a) the feasible tradeoffs, that is, the impact of efficiency reforms on distribution and the impact of redistribution policies on efficiency; and

(b) the community's preferred tradeoffs. or its 'social indifference curve'.

On the first — the assessment of feasible tradeoffs — the challenges for economists are enormous. Firstly, we cannot always determine who are the losers and winners, even in broad terms. Fortunately the work of bodies like the National Centre for Social and Economic Modelling (NATSEM) on the distributional effects of public policy changes provides some of the basic information needed for such an assessment. But a lot more work is needed on the effects of structural reform on distribution.

More importantly, there is no agreement among economists as to the nature of the efficiency costs from the pursuit of redistribution policies. Some (including Keynes) have argued that a 'generous' welfare system (especially provisions for the elderly) reduces the incentive to save; that high unemployment benefits discourage employment; that tightly means tested welfare benefits cause 'poverty traps'; that high marginal tax rates, which may be required to finance redistributive policies, impact adversely on work, saving, investment and innovation; and more generally that egalitarian policies can, if pushed too far, seriously disturb the balance between effort, skill or intelligence on the one hand and reward on the other.

A strongly argued view along these lines can be found in the submission by the Institute of Public Affairs to the 1988 Inquiry by the Catholic Bishops' Committee of Justice (Clarnette 1988).

Judgments are necessarily involved on such issues. The nature of the relationships is rather conjectural and the evidence somewhat inconclusive (EPAC 1988a). For example, it can be argued that the net impact of higher marginal income taxation on the incentive to work, innovate and accept risk is far from clear; and that the effect of changes in income distribution on saving rates is fairly small relative to other influences — such as income levels, inflation, interest rates, net wealth and demographic changes (EPAC 1988b).

Final judgments on such matters will often be influenced by ideology. Thus conservative governments will tend to attach excessive importance to the potential economic benefits of a less progressive tax system — and in so doing may impose unnecessary hardship. It has been argued, for example, that the sharp increase in inequality in the United Kingdom in the Thatcher years 'could have been mitigated by different tax and benefits policies without seriously jeopardising the productivity improvements, which probably did not depend on personal tax cuts' (Crafts 1991).

The second task — assessing the preferred tradeoff between equity, quality of life and incomes per head — is no less difficult. It requires answers to such questions as: how much growth would the community be prepared to actually give up to, say, increase equality or even just protect the existing level of

equality? Conversely, how much additional inequality, air and water pollution etc would the community be willing to tolerate in pursuit of economic growth?

Are such questions capable of a sensible answer? Whose preferences are we trying to assess? Those of the majority? How does one add up the preferences of different individuals in society? Is it reasonable to assume that in our political system the Government's preferences ultimately reflect those of the majority?

How reliable are public opinion polls and what do they reveal?.

Despite their complexity, such questions need to be addressed before any sensible choices can be made. It is only if the preferred and feasible tradeoffs are broadly understood that economists can offer sensible, well-balanced advice on policy (Withers, Throsby et al 1994).

There is here a fruitful research role for the Industry Commission, an issue taken up again in the final chapter.

4.5 Options for resolving efficiency/equity tradeoffs

In its last annual report the Industry Commission states: 'the statutory requirement that the Commission approach industry policy issues from the perspective of the community as a whole, rather than from any particular industry or group, is intended to produce fairer outcomes' (IC 1995a: 46).

How is an economist to determine what is a 'fair outcome' of reform for the 'community as a whole'? At the risk of over-simplification, one can define five schools of thought on this broad question.

(i) The *pure efficiency school* argues that distributional equity is a matter for politicians and philosophers, and that the role of an economist is simply to advise on whether the total measurable output gains of a policy reform are likely to exceed total output losses.

According to this school (which can also be called the Kaldor–Hicks school) an economist only needs to show that:

- an increase in aggregate real income is likely as a consequence of the reform;
- it would be *possible* for winners to compensate losers and still be better off than before; and
- the reform is *capable* of receiving unanimous consent.

Having satisfied themselves on these counts, economists need not worry about the actual distribution outcome, other than to advise governments on the cost-effectiveness of alternative methods of delivering their social goals.

The main objections to this approach are that:

- it often ignores or plays down the wider dimensions of welfare, for example, quality of life and the environment;

- it assumes losers have broadly the same utility function as the winners;

- the welfare of future generations is unlikely to get adequate consideration; and

- it assumes that cost-effectiveness can be value-neutral, that is, that the quality and level of access of a service is exactly the same no matter who or how it is delivered.

The basic reason why this approach does not offer adequate welfare criteria was given by Little 40 years ago:

> 'Scarcely anyone would want to say that all changes, such that the gainers would overcompensate the losers, must be good. For most people it would depend on who the uncompensated losers were....It seems improbable that .. a change, which for instance made the rich so much richer that they could (but would not) overcompensate the poor, who were made poorer, would .. increase the welfare of the community....We do not believe that any definition of an increase of wealth, welfare, efficiency, or real social income which excludes income distribution is acceptable' (Little 1957: 90, 92, 93).

Quite apart from its conceptual limitations, the pure efficiency approach limits the potential contribution economists can make to public policy, because governments need to know the distributional effects of any proposed efficiency-enhancing reforms and often need help in making reasonable value judgments on these distributional effects.

(ii) The *individual freedom school* argues that it is not equitable for an individual to be denied the fruits of his or her work effort, self-reliance and self-help; so long as there are fair rules and processes in place (including equal opportunity for everyone, the rule of law, private property rights, government integrity etc) and so long as there is a decent subsistence safety net (to protect the right to life), the outcomes of any efficiency-improving reform can be assumed to be equitable, and economists do not need to worry further about it.

This school seems to be gaining ground in the United States. It bravely confronts the equity issue head-on rather than run away from it. But it too is unacceptable. Fair rules and processes are a necessary but not sufficient condition for equitable outcomes, especially if the distribution of income and economic power was very uneven at the start.

The approach raises many questions:

- is growing inequality in distributional outcomes really consistent with fair rules, including equal opportunity?

- while it is fair to reward people for their extra effort or for disutility, is it equitable to allow people to retain in full the earnings from natural endowment, innate talent or capacity, luck, economic power and inherited wealth?

- is it fair to ignore differences in need and hence in marginal utility or capacity for happiness?

- what would such an approach mean for social peace and cohesion?

(iii) The *idealist school* is at the other end of the spectrum. It argues that economists should not only be concerned with raising efficiency (output per head) but should also be trying to get closer to the 'optimum distribution of welfare'.

This is an ethically defensible (indeed laudable) approach but it is asking too much of an economist:

- it begs the question of what is an optimal distribution: is it equal outcomes for all, to all according to their need, or some weaker version of these?

- it avoids the critical issues of how an ideal distribution can be reconciled with efficient allocation of resources and if it cannot whether it might not make everyone, including the poor, worse off in the end; and

- it fails to acknowledge that pre-existing conditions have determined choices and legitimate expectations: 'in the real (second best) world, policies which move society closer to some ideal fair state may not be fair in practice' (Abelson 1987).

(iv) The *Pareto optimising school* argues that a policy change is desirable only if it makes some people better off and no one worse off.

According to this school, economists are not entitled to make any interpersonal comparisons of welfare; so it defines a welfare enhancing reform as one where every individual is in a preferred position as a consequence of the reform. If an economic or social reform involves a significant group of losers these people should either be compensated or the reforms should not proceed.

Since in practice it would be very hard to identify all potential losers and decide how much would be required to compensate them, such an approach would be very stultifying for economic and social progress and economists would have little or nothing to say on policy, except where they were dealing with win/win situations. It would inject an excessive bias in favour of the status quo. It is at

the other end of the spectrum to the efficiency school: whereas the latter embraces reform too readily by ignoring distributional effects, the Pareto optimising school makes reform very difficult by insisting on distributional neutrality.

(v) The final school of economic thought takes a *pragmatic approach to equity*.

It takes the existing social structure as its starting point and argues that a policy reform is worth having if

- it enhances efficiency (that is, real incomes per head);

- the increase in material welfare is not at the expense of other dimensions of welfare; and

- an attempt is made to neutralise significant redistributional effects where these are either the result of inequitable processes or involve clearly inequitable outcomes.

These welfare criteria simply recognise that if there are actual losers as well as winners, and if the initial situation was already one of wide inequality and the change was expected to increase further this inequality, the effects on overall well-being are likely to be at best uncertain and at worst perverse (Little 1960; Abelson 1987).

4.6 Preferred approach

The 'big bang', efficiency-first approach to reform — that is, simply making sure there are more *potential* winners than losers then 'bulldozing' the reforms through the losers — is not acceptable. Nor is it acceptable to hold up important reforms until all the distributional effects have been eradicated.

The writer believes that the so-called pragmatic approach offers the best prospect of maximising community welfare when policy is faced with an efficiency/equity conflict.

Adoption of this approach does not imply a belief that the existing social structure is in any sense optimal, that is, produces more economic welfare than any alternative distribution.

There is certainly a need to look critically at the existing social structure and how it can be improved. No one can deny, for example, that much more needs to be done to lift the education and health opportunities available to our indigenous people. However the paper is only concerned with the incremental welfare effects of economic reform.

Within this narrow perspective, the challenge for policy makers is to ensure that proposed reforms are not only *potentially efficiency-enhancing* but also *actually welfare enhancing*.

This obviously means that if the efficiency gains are potentially large but these are more than offset by unavoidable declines in other dimensions of welfare such as the quality of life or inter-generational equity, the reforms should not proceed.

It is less obvious what should be done if a set of reforms is *potentially welfare enhancing in overall terms* but involves losers as well as winners. In such circumstances, the following working rules could be adopted:

(i)   where the sacrifice ratio is low, that is, where only a small amount of redistributive equity needs to be sacrificed to achieve substantial efficiency benefits, the distributional effects can be ignored for policy purposes and the conflict largely resolved through public education and information (conversely the efficiency effects can be ignored if they are small relative to the equity costs);

(ii)   where a number of individual reforms have offsetting distributional costs and benefits, an attempt should be made to overcome the impasse through log rolling, that is carrying out reforms in tandem and bundling them together in such a way that most people gain on balance from the package;

(iii)   where log rolling is not practical and the redistribution effects are large and regressive (in the sense, say, of widening the gap in disposable household income, after tax and transfer benefits, between the lowest income quintile and the median income), every effort should be made, through the tax/transfer system or labour market adjustment programs, to compensate losers, even if it involves some economic disincentive effects;

(iv)   if compensation is not feasible or acceptable (for example, because of the risk of a tax revolt or financial market instability) the reforms should be phased in gradually or implemented only partially; and

(v)   where a policy reform involves a change in the existing legitimate set of rules and expectations, and entails an absolute reduction in the real incomes of some people, compensation should be provided to these people, or the changes phased in slowly, even if the redistribution is not regressive.

Working rule (iii) assumes that:

· those in the lowest income quintile will generally have a much higher marginal utility than others, as the most basic needs are generally satisfied first;

- other redistribution effects (for example, between the second and fourth quintile) have lesser welfare significance and can be largely ignored (subject to iv above); and

- an increase in inequality, as defined above, is bad even if it is not associated with any increase in poverty, that is, in the numbers unable to 'live decently' (Richardson 1995).

The rest of this chapter elaborates on working rules (i) to (v) outlined above.

Public education and information

Often the conflict is more apparent than real; the disagreement may be basically about methods of pursuing particular social goals rather than about the goals themselves or the priority to be given to them (see Appendix). Other times the decision to go ahead or not with a particular reform involves a relatively low sacrifice ratio. In such cases the tradeoffs should not be difficult to resolve — provided governments could set aside ideology and dogma and actively seek to build up public understanding and consensus through education and information.

Consultation and consensus-building are an important means of smoothing the process of implementation, especially in a country like Australia where there is reasonable national consensus on basic goals such as growth, equity and the environment. While consultative processes can slow down the reform process at times, they should, if done well, contribute to a more effective, less wasteful and perhaps fuller implementation of the desired reform program (Marsh 1990).

Log rolling

The number of potential losers can be minimised by carrying out the reforms in tandem, that is, through a broad-based program of structural reform which groups together individual reforms in such a way that most people gain on balance from the package.

For example, greater human resource and wage flexibility at the enterprise level and strong pro-competition policies (which tend to widen disparities in market incomes) can be coupled with labour market and wage subsidy programs directed at the long-term and structurally disadvantaged unemployed, the provision of better public services such as education and health which promote equal opportunity, a decent welfare safety net and structural adjustment assistance — all paid for through higher taxes and withdrawal of some middle-class welfare benefits (for example on higher value housing and superannuation, health and tertiary education).

Compensating losers

Where redistributional effects are clearly regressive and unfair, compensation is generally a first best option.

Ideally the particular losers should be identified, targeted and compensated through the tax and transfer system. This is not just a matter of allowing the welfare safety net to operate, as many contend. A low-wage worker whose take-home pay is reduced by 10 per cent but is still at work does not get much relief from the existing social security safety net. What is required is either additional tax rebates for the working poor or an extension of the social security system.

However such options may not be feasible (for example because of the difficulty of identifying the losers) or it may not be acceptable to governments or financial markets, for example because of their implications for the budget deficit or higher income tax levels or financial market instability, or because of fears it might create too many distortions. In that case, second best options like cross-subsidisation or regulation should not be ruled out.

Compromising on efficiency

If, for one reason or another, compensation is rejected, what should be done?

If the reforms are so welfare-enhancing overall and the redistribution effects comparatively small, it may be justified to proceed with them. Otherwise, the reforms should be phased in gradually (incrementally) or implemented only partially; or alternative less efficient reform options adopted.

Compensating for unfair processes

As noted in chapter 1 it can be argued that a society is built on established rules and legitimate expectations, including the rule of law, equality of access and opportunity, honest and fair government processes, reasonable stability in the distribution of incomes etc. Existing rules and regulations are also capitalised into asset prices. Any sudden change in these rules and expectations which severely affected the incomes and wealth of a significant group of people would hardly be equitable even if these people were not poor to begin with.

Another way to put this ethical dilemma is to ask a hypothetical question: if Australian society was being established today, would *everyone* in it agree to a general policy rule that all reforms which enhanced aggregate real incomes should be implemented, even if there was a possibility that some sections of the population could be consistently made worse off by these reforms?

If one assumes that people are (i) selfish rather than altruistic (ii) would only engage in a voluntary agreement to establish society if they expected to receive some net gains and (ii) are basically risk-averse, the answer to the question posed would have to be no.

So a set of reforms which produce such a result are inequitable and contrary to the implicit rules on which that society was based.

It follows that if a proposed major package of reforms was contemplated was likely to be disruptive for many people, for example, trade liberalisation and labour market deregulation, and which breached a long-term policy commitment, there would be a strong case for compensatory measures such as structural adjustment assistance, or for phasing in the reforms slowly. The case for compensation or gradualism would apply even if the people affected were not poor or disadvantaged in the conventional sense.

These issues are discussed in Corden (1974), Abelson (1987), Pincus and Quiggin (1993).

Likely criticism of preferred approach

The preferred approach to economic reform outlined here is likely to be criticised from both ends of the ideological spectrum.

The Right, apart from questioning the practicality of compensation, will argue that an attempt to preserve the existing level of social equality will tend to reduce individual freedom (for example. if it requires prohibitive levels of taxation or close policing of welfare eligibility); and that it is any case counter-productive: by blunting economic incentives, redistribution policies may so impair economic efficiency, saving, growth and stability that in the long run the least advantaged members of the community will actually be worse off.

These arguments are debatable. One could in fact turn the freedom argument on its head: wide income and wealth inequalities and high concentrations of economic power are not consistent with fair equality of opportunity and access, and hence with true liberty of the individual (Rawls 1971: 278).

As well, the impact on incentives has often been exaggerated and is often an acceptable price to pay for the greater good; where the effects are very severe this is not a justification for proceeding with the reforms without any compensation but rather for modifying the reforms themselves.

From the Left, the criticism would be that the welfare criteria proposed do not go far enough. They would see it as necessary and desirable to explicitly strive for much greater equality of incomes and wealth than at present (as opposed to

merely protecting the poor and avoiding further inequality). This view is understandable, but for reasons explained in the previous chapter, the question of what is a 'fair' distribution of incomes and wealth (and what its pursuit will do to the overall size of the economic cake) is too complex and judgmental for an economist to attempt. It is in any case a separate issue from the one addressed here viz the incremental welfare effects of incremental reform.

4.7 Applying the preferred approach to labour market reform

The issue of labour market reform raises in stark form the choices between efficiency and distributional justice.

A more decentralised, deregulated industrial relations system allows room for greater flexibility in work organisation, human resource management and wage structures, and facilitates the development of more enterprise-based trade union structures.

It generally produces better results for productivity, competitiveness and structural unemployment than a centralised system (although the impact on inflation is less clear) — but it does so at a social cost.

A government wishing to move down the path of labour market deregulation can choose from four policy options.

Option 1: it can opt for uncompromising labour market deregulation and switch quickly and decisively to a New Zealand-type system based on individual employment contracts. It would do away with awards and industrial tribunals, greatly reduce the role and involvement of trade unions, and allow complete downward flexibility in wages and conditions, subject only to a very basic set of minimum conditions.

At the same time it may decide to make no provision for compensation (and indeed if the New Zealand experience is any guide, it may move in the opposite direction, that is, reduce the progressivity of the tax system and the levels of 'social wage' and welfare benefits).

Option 2: the Government can compromise a little on efficiency by adopting a less radical approach to deregulation (for example by setting higher minimum standards than in option 1 and by introducing the reforms more gradually and incrementally) — but again without any attempt at compensation.

Option 3: the Government can rely heavily on active labour market programs designed to reduce structural mismatch and assist the reintegration of disadvantaged unemployed persons into the labour force, with the cost of these programs financed through higher taxes.

Option 4: the Government can (as in option 1) proceed quickly with complete labour market deregulation — but unlike option 1 fully compensate the working poor through the tax and transfer system.

It is useful to look at the likely winners and losers under each of these options — compared with a hypothetical centralised, highly regulated wage system.

Under the first option (full deregulation without compensation), many of the existing longer-term unemployed would be better off (in that they would find it easier to get jobs, almost certainly with a higher take-home pay than when on unemployment benefit). So too would the relatively skilled and higher-paid workers, executives and shareholders (in that they would all benefit from higher productivity in the work place and, in all probability, higher economic growth).

The main losers, especially in the short-term, would be lower paid unskilled workers (see discussion below on New Zealand's experience). So under this option, relatively poor workers are asked to pay exclusively or disproportionately for the costs of labour market reform, even though these reforms make the rest of the community much better off.

This option has very uncertain welfare effects, in that the losers are poor (high marginal utility) and the winners are mostly well-off people (low marginal utility). The political sustainability of the reforms in the long run can also be questioned.

By contrast:

- adoption of option 2 (partial, gradual deregulation) would delay the efficiency benefits relative to option 1 but ease the impact on losers;

- adoption of option 3 (high level of regulation with active labour market programs) would mean foregoing important efficiency gains relative to option 1 (because of continued enterprise rigidities, disincentive effects from higher taxation etc); but there would still be significant efficiency benefits relative to doing nothing and these would be shared among *all* employed workers; and

- under option 4 (full deregulation with full compensation), most of the efficiency gains of option 1 would be retained (subject only to possible disincentive tax and welfare effects) and it would be a win/win outcome: higher paid workers, executives and rentiers would give up a part of their potential gains to avoid reducing the living standards of unskilled workers.

Option 4 has a lot going for it but would almost certainly be impracticable to implement in full because of tax revolts, risks of financial market instability and the difficulty of identifying losers.

In the view of the writer, a judicious combination of options 2 to 4 would produce the best welfare outcome. Under this mixed approach to labour market reform:

(i) awards would be further simplified, rationalised and made less prescriptive, so as to achieve improved functional flexibility (more flexible human resource management practices, work organisation and working hour arrangements, including less prescriptive starting and finishing times); this could have big effects on efficiency but, subject to certain safeguards, minimal adverse effects on distribution and quality of life;

(ii) the market would determine the degree of dispersion in market wages and conditions, but this dispersion would be constrained by a universal safety net with half a dozen key minimum entitlements (wages, standards and conditions); this would be set at or slightly above the lowest rates in existing full-time awards, and with provision for regular increases in real terms over time to match the growth of the economy;

(iii) employees would have complete freedom to join (or not join) a trade union and bargain collectively, without any discrimination by employers against unionised workers; the right to strike would be fully protected, but unions would be encouraged to become more accountable to their members and more enterprise or workplace based and coverage of membership, and coverage of membership would be more open to competition;

(iv) existing social security benefit rates would be fully maintained in real terms, and so too would the level of access to public services;

(v) cost-effective labour market programs (including wage subsidies, retraining facilities, counselling, case management etc) would be strongly supported, with the aim of raising the skills, work experience and job preparedness of disadvantaged workers;

(vi) the impact on lower paid employees would be further alleviated by reducing the burden of taxation at the lower end of the working income spectrum, for example, through tax rebates similar to the United States program of earned tax credits for the working poor (which would also have the incidental effect of increasing work incentives for the unskilled unemployed; and

(vii) the budgetary cost of interventionary and compensatory policies would be met through increased taxes which bear principally on those at the higher end of the income spectrum — the main beneficiaries of labour market deregulation.

This package may not offer quite the same potential 'efficiency' gains as the libertarian package but it is more likely to ensure a 'fair outcome' for 'the community as a whole' (the Industry Commission objective noted earlier). It is an integrated package in that any one of the elements cannot be removed without destroying the fine balance between efficiency and equity. If, say, components (iv) to (vi) cannot be implemented, it is at least arguable that a government should then fall back on option 2, that is gradual and partial deregulation of the labour market — for example maintain the present 'no disadvantage' test, retain a strong industrial tribunal etc.

Many will dispute that such a compromise approach to economic reform is in any sense optimal. They will argue that unless we went the whole way with deregulation without worrying about expensive compensatory measures (option 1), our international competitiveness and employment would suffer greatly and in the long run everyone would be worse off. This is a very debatable argument:

- the gains in productivity from labour market deregulation come mainly from improvements in functional flexibility, which are part of our proposed reform package anyway, rather than from increased flexibility in pay and conditions;

- while the literature is ambiguous, the level of wage dispersion does not appear to be a major factor in a country's employment performance (Coelli, Fahrer and Lindsay 1994); and

- even though the preferred package outlined here involves less downward wage cost flexibility and higher taxes than does option 1, there would be at least partially offsetting benefits for competitiveness and employment from the proposed wage and training subsidies, the greater incentive of low-wage workers to search for work (instead of remaining on welfare benefit), and the likelihood of a lower real exchange rate.

Compared with option 1, the preferred package would result in:

- slightly lower average living standards (reflecting slightly lower productivity and a lower real exchange rate);

- broadly the same level of employment; and

- much less income inequality.

This is likely to produce a better overall welfare outcome.

The experience of the United Kingdom economy in the 80's is interesting. Its productivity and inflation performance improved quite dramatically. This was mainly the result of some important supply side reforms, especially those which increased domestic product market competition and improved functional

flexibility and employer/employee relations at the enterprise level. These achieved large economic gains at only small social cost.

On the other hand, other Thatcher policies such as complete wage deregulation and tax reductions for the rich probably contributed only little to the 'economic miracle' but came at a high social cost — in the form of a sharp and sustained increase in income inequality (Crafts 1991). Were these measures really welfare-enhancing? And were they an essential part of the United Kingdom economic recovery?

Similar comments can be made about the Rogers/Richardson structural reforms in New Zealand.

New Zealand has clearly adopted a more radical, speedier and more confrontational reform program than Australia.

The four broad areas in which New Zealand has been bolder are: microeconomic reform, especially in transport and the waterfront; fiscal consolidation and transparency; inflation targeting and central bank independence; and labour market deregulation.

New Zealand's political institutions, history and social attitudes are different from Australia and the New Zealand approach may not be feasible in its entirety in Australia. But the more interesting question is whether it is desirable for Australia to try and go down the same path.

Many commentators have focused on the last three to five years and noted that, in terms of such basic indicators as per capita GDP growth, saving, investment, unemployment, and the current account deficit, the New Zealand economy has out-performed Australia's. This is largely true and it is looking increasingly likely that the New Zealand economy will continue to perform relatively well for at least a few more years.

But it is far too early to conclude from this that New Zealand's reform path is 'superior' to Australia's:

(i) Superior micro-economic and labour market reform should be reflected in superior factor and labour productivity growth, but this is apparently not the case for the decade 1984–94 (Fane 1995, Hall 1995) and recent official data on labour productivity per hour does not alter the broad picture. This may suggest that the New Zealand economy has not yet benefited greatly from its microeconomic reforms, and that its recent strong economic performance may reflect a mix of other influences such as more favourable terms of trade, a sharp redistribution to profits, friendly financial markets, strong macroeconomic management, and to some extent increased hours of work per employee.

(ii) New Zealand's recent strong economic growth has come after a dismally poor performance in the 1980's and may therefore simply represent the usual catch up forces at work. These forces may have further still to go (the absolute gap in living standards between Australia and New Zealand is still larger in absolute terms now than in 1983).

Given the two points above, it is far too early to assert, as some have, that New Zealand is on the threshold of sustained 'economic miracle' like that experienced by many of the so-called Asian tigers.

(iii) Any potential economic gains for Australia from adopting the New Zealand approach need to be weighed against the social costs. The nature and extent of the social costs are unclear but they appear to have been quite significant in the short-term.

A Business Council of Australia (BCA) survey of the impact of the *New Zealand Employment Contracts Act 1991* (ECA) showed that 42 per cent of employees had an increase in take-home pay, 40 per cent reported no change, and 18 per cent a reduction (BCA 1993). The same picture emerges from a more recent opinion poll (ACTU/ACOSS 1996) which found that 18 per cent of respondents saw the ECA as 'personally bad' for them.

There is no doubt that the main losers in New Zealand so far have been the low-income wage earners (the unskilled, casuals, temporaries etc). This is what one would expect a priori given the policies adopted on wage minima, trade unionism and the tax/transfer system; but it is also evident from recent opinion polls: about 20 per cent of the lowest income earners approved of the ECA compared with some 60 per cent of the highest income earner (ACTU/ACOSS 1996).

While an increase in inequality has also occurred in Australia (as in many other countries), the trend has been much less pronounced here because of the deliberately cushioning role the Government has played — through the tax/transfer system, active labour market programs, and a more gradualist and partial approach to labour market deregulation. In New Zealand such as role was deliberately spurned, especially in recent years.

In the light of the above, it is difficult to draw any firm policy conclusions from the New Zealand experience. Nonetheless three tentative observations can be made.

First, after 12 years of reform, it appears that at best the economic gains so far have been small relative to the social costs. This assessment may need to change if the economy continues to gain relative ground and the government seeks to further mitigate the social effects, but at this stage it is far from clear that the reforms have been welfare-enhancing.

Second, it can be argued that some of the reforms adopted in New Zealand have produced or seem likely to produce important economic gains without any major social consequences or adjustment traumas. This includes the *Fiscal Responsibility Act 1994*, the more liberal approach to foreign direct investment, the removal of cabotage on coastal shipping, the corporatisation of airports and ports, the deregulation of stevedoring, increased reliance on a broad-based value added tax, the facilitation of collective *enterprise-based* bargaining and functional workplace flexibility, and increased union contestability and accountability. These initiatives all deserve serious consideration in Australia.

On the other hand, some of the New Zealand reforms have probably contributed only little to its strong economic performance and yet have entailed a high social cost. Such reforms include: the flattening and lowering of income tax rates; the sharp lowering in minimum wages and conditions; the deliberate encouragement of staff to negotiate individually with employers; the weakening of the arbitral and grievance redress machinery; the severe cuts in welfare and housing assistance (partly cushioned by the increase in voluntary support, but this in turn creating inequities of its own); and the rather slow recognition of the role which active labour market programs can play — both in helping to equip the longer-term unemployed for better quality jobs and in lessening the risk of a 'two class society'.

It is arguable, for example, that the minimum wage (currently equal to about $A 5.40 per hour compared with about $A 9 per hour for the *lowest* rate in Australian federal awards) could have been set appreciably higher, welfare benefits need not have been reduced and the progressivity of the tax system could have been reduced less than it was without hurting the momentum of economic growth, while greatly reducing the social cost.

The Rt. Rev Richard Randerson (Assistant Bishop, Anglican Diocese of Canberra and Goulburn) said recently (ACOSS conference, 13 October 95) 'As a New Zealander who has recently come to this country, my assessment is that there have been some significant economic achievements, but some enormous social costs which could have been mitigated were there a political will to do so'.

4.8 Implications for industry commission inquiries

If the approach proposed in this paper were accepted, what would it imply for the work of bodies like the Industry Commission which advise governments on economic reform?

First, if reforms under consideration were likely to have major redistributional effects, the Commission would attempt to assess these effects (as well as any other welfare effects such as on quality of life).

Secondly, its reports would provide information on how the community viewed such efficiency/distributional tradeoffs — along the lines of the pioneering work done by Withers, Throsby and Johnston (EPAC 1994) — this would further assist governments in making their decisions.

Thirdly, if the redistribution effects were seen to be adverse, the Commission would explore the options available for compensation, and advise on which ones were likely to have the least harmful effects on efficiency.

Fourthly, if compensation were thought to be impracticable (for example because losers were not easy to identify) or undesirable (because of potentially severe disincentive effects), the Commission report would canvass alternative reform options which might retain many of the efficiency gains with smaller adverse distributional effects.

The Commission is already moving in these directions, but only cautiously. This caution is understandable, as inquiries based on such an approach would be more resource consuming and take longer to complete, and the findings would have a lesser 'shock effect' and could even slow the pace of reform in some areas (such as the labour market).

On the other hand, there would be two important advantages. Value judgments which are now only implicit would become fully transparent; and the Government would be in a better position to intelligently judge the merits of proposed reforms and choose from the menu of options for compensation (where required).

Governments need to know the likely redistribution effects of a proposed policy change and the most efficient ways of dealing with these effects. Bodies like the Industry Commission should be giving them more information relevant to their decision-making processes.

4.9 Conclusions

The paper has stressed that structural reform decisions should not be based solely on efficiency outcomes.

If one could devise a genuine indicator of community welfare — one which not only encompassed non-market output gains but gave adequate weight to quality of life, distributional equity and inter-generational equity — and always ensured that economic reforms met this test, there could never be any problem dealing

with a conflict between efficiency and equity. But this is not feasible at present, and public policy has to face complex tradeoffs.

The tradeoff which poses most difficulty for public policy economists is between efficiency and equity. In resolving this tradeoff, the most widely supported approach among economists is to ignore distributional effects and simply ensure that the potential gains in output clearly exceed the losses.

This approach is rejected because it avoids key welfare issues. Moreover it is not very helpful for public policy; in a country like Australia, both political parties accept, as a 'basic proposition', that 'democratic government is about not only the will of the majority but also the consent of the minority' (John Howard 1989).

The paper proposes instead a set of working rules designed to take us closer to welfare maximisation. These are:

- if the reforms involve significant redistributional effects and these are clearly regressive, the effects should be neutralised or greatly softened. This can be done in or one or more of the following ways:
  - by implementing offsetting reforms in tandem;
  - by compensating those who are relatively poor;
  - by adopting less radical reform options; or
  - by a gradualist or partial approach to radical reform.
- other redistribution effects can be ignored unless the reforms involve 'unfair processes' (a clear breach of trust or violation of legitimate expectations), in which case compensation or some form of structural adjustment assistance is needed.

In essence this paper is a plea to economists to be wary about offering firm policy advice which:

- is based predominantly on GDP effects;
- has little regard for the fact that we live in a second best world of distortions and established rules and expectations;
- focuses heavily on static equilibrium gains and largely ignores short-term adjustment costs; and
- above all, fails to allow for distributional effects as an integral part of the analysis (and when considering equity goals does so in terms only of how to achieve these goals most efficiently).

Many of the proposals for labour market reform illustrate well these pitfalls. New Zealand currently stands as a model of the efficiency-first approach to

reform (with the benefits trickling down to everyone over time). The jury is still out on the economic effectiveness of this approach, although the portents are favourable; but the short-term social costs of the New Zealand reform program have been so great that the overall welfare effects of the program are at best ambiguous and at worst negative. What is sad is that, with some careful redesign of the reform package, most of the economic benefits could have been retained without the social costs.

There are implications from all this for the work of bodies like the Industry Commission.

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Appendix: Conflict on methods rather than goals

Policy disagreement is often about the merits of alternative levels and methods of government intervention rather than on ultimate goals. It hinges on what governments are and are not good at.

Both the pro-market or 'libertarian' school and the interventionist or 'statist' school agree that the market is far from perfect and that governments have a clear responsibility not only to provide an appropriate macroeconomic environment, but also to correct where it can for market failure (for example by requiring minimum information disclosure and prohibiting certain types of anti-competitive behaviour) and ensure an adequate supply of 'public goods'.

Beyond that however, there is a wide area of disagreement on the appropriate role of governments. This can be illustrated with industry policy.

The statist school has faith in the ability of governments to intervene effectively to correct for what they see as frequent failure of markets to allocate resources in an optimum way — failures which they believe occur because markets are ill-informed or unduly myopic or risk averse or too swayed by speculative influences. They also see markets as incapable of ensuring adequate aggregate levels of employment and they view industry policy as a means of correcting for this failure.

The libertarian school accepts that such market failures can and do occur, but it believes that government intervention would tend, more often than not, to produce an even worse outcome than the market. Governments, they say, are generally less able to pick future successful industries or sectors than the market; they also tend to become captives of rent-seeking lobby groups or firms and find it hard to extricate themselves once an error of judgment is recognised.

Moreover, it is argued that their intervention causes taxes, interest rates or the exchange rate to rise, and this then tends to crowd out some otherwise viable marginal industries; and it may generate dead weight losses. Finally, governments are generally stretched to the limit and if they become involved in detailed industry planning they may be forced to neglect some of their core tasks.

As a result, say the libertarians, government intervention can make us less competitive and in the long run damage our potential for employment growth.

These are interesting issues but mostly they do not involve a choice between efficiency and equity. Rather they are about the most efficient way of maintaining high employment and economic growth in the long term.

Similarly, there are alternative ways of pursuing *distributional equity*. The mix of instruments favoured by the libertarians differs markedly from that favoured by the statists.

Libertarians would first seek to correct for market failure by removing regulatory or monopolistic impediments to the efficient functioning of markets.

They would also substitute private welfare (welfare organisations, family and social networks) for public welfare, where the former can deliver the service as or more efficiently.

To the extent that public instruments of income support are necessary, libertarians would be inclined to rely overwhelmingly on transfers to individuals through the tax/welfare system (for example, a negative income tax and targeted education or health vouchers) — in preference to other methods of redistribution such as (a) the direct provision of services at sub-economic prices or (b) indirect methods, such as wage and financial regulation. They would argue that the latter methods are more remote from the main purpose in hand and interfere more with the efficient functioning of markets and the exercise of free choice.

By contrast, statists would be happy to use the full gamut of available government instruments — financial and wage regulation, government business enterprise pricing policies etc to further their social goals.

It is not possible to be sure about the relative distributional effects of these alternative delivery strategies. They are often perceived to be very different, but they are probably not: once the technical issues are resolved the distributional effects become quite small. So the issue boils down simply to one of relative efficiency.

In such cases public education can help to reduce or eliminate conflict. There is here a major role for bodies like the Industry Commission.

DISCUSSION

Nanak Kakwani

Introduction

Fred Argy's paper deals with a large number of policy issues concerning equity and efficiency. The paper makes a useful contribution in raising many important issues but it lacks a conceptual framework for defining and measuring equity and efficiency. The main focus of the present discussion will be on the conceptual problems involved in the resolution of equity and efficiency conflicts.

Conceptual issues

Economic growth is generally measured in terms of logarithmic changes in per capita incomes of the people. This is, obviously, a narrowly focused measure of country's economic performance. Its major drawback is that it is completely insensitive to changes in the distribution of income. Any economic reform that is undertaken will affect both the average income and income inequality. A high level of economic growth accompanied by worsening inequality may lead to an absolute reduction in incomes of some people in the society. If these people happen to be already poor, then economic growth leads to a greater misery for some people and hence lower welfare. A social welfare may be defined as a function of average income and income inequality in the society. Economic growth must be measured in terms of changes in the social welfare rather than in terms of its one component which is the average income.

The Pareto optimality criterion is widely used in welfare economics. A change is a Pareto improvement if it makes no one worse off and someone better off. A situation will be Pareto optimal if there exists no change that is a Pareto improvement. It means that an economy can be optimal in this sense, even when there is a considerable disparity between the rich and the poor, as long as nobody can be made better off without making anybody else worse off. Obviously, any income distribution with fixed total income is Pareto optimal, because any redistribution of income that makes someone better off is going to make someone worse off. Thus, the Pareto optimum situation is consistent with

a high degree of inequality. Fred Argy correctly rejects Pareto optimising school of making any policy reform.

To make any distributional judgement of a policy, it is necessary to have ideas about the relative gains and losses of different persons and also of their relative levels of welfare. This means that interpersonal comparisons of welfare are unavoidable. Sen (1973) argues that despite the widespread allergy to interpersonal comparisons among professional economists, such comparisons can be given a precisely defined meaning.

The alternative policy reforms give rise to different income distributions. The question is: how should we rank these different distributions? A usual method is to specify a Bergson–Samuelson type social welfare function:

$$W = W(x_1, x_2, ..., x_n)$$

which is an increasing and quasi-concave function of incomes $x_1, x_2, ..., x_n$ of the n individuals in the society. If it is further assumed that social welfare is homothetic, W can be written as

$$W = W(\mu, I) \tag{1}$$

where μ is the mean income of the society and I is an inequality measure.

The social welfare function as defined in (1) provides a trade off between the average income and income inequality. The social welfare can be increased either by increasing the average income (through efficiency) or by reducing inequality (through equity). Accordingly there are two schools of thought. The pure efficiency school places a greater emphasis on efficiency which means improving the mean income with little consideration given to inequality. And similarly, the pure equity school emphasises mostly the redistribution reforms.

Fred Argy's paper rejects both these extreme schools of thought. It suggests a compromise between efficiency and equity on the following line.

1. 'Where only a small amount of redistributive equity to be sacrificed to achieve substantially efficiency benefits or where only a small amount of efficiency gain needs to be foregone to achieve important redistributive goals'.
2. 'Where most people gain from the package'.
3. 'Where the redistributive effects are clearly regressive'.

These criteria are somewhat vague. it is not clear how much is substantial efficiency benefits or how important is the redistributive goal. To make these ideas more specific, (1) can be written as

$$dW = \frac{\partial W}{\partial \mu}d\mu + \frac{\partial W}{\partial I}dI$$

(2)

which shows that a change in social welfare is the sum of the two components; the first component being the contribution of efficiency to welfare and another the contribution of equity to welfare.

This equation provides a method of deciding whether we should or should not proceed with a reform. The equation shows that even if the redistributive effects are clearly regressive, the reform may result in an improvement in welfare when the positive contribution of efficiency is larger than the negative contribution of equity.

To implement the welfare enhancing reforms, we need to know the social welfare function. It is indeed a difficult task to specify a social welfare function. The different social welfare functions may give rise to different policy prescriptions. One way to solve this problem is to depend on a partial ranking approach.

Let L(p) be the Lorenz function which is the fraction of total income received by the lowest pth fraction of individuals. Kakwani (1984) has proved that income distribution X is welfare superior t income distribution Y if and only if

$$\mu_x L_X(p) \geq \mu_y L_y(p)$$

for all $0 \leq p \leq 1$, where μ_x and L(p) are the mean income and Lorenz curve of distribution X, respectively. This result holds for all social welfare functions which are increasing, quasi-concave and symmetric. This is a remarkable result in the sense that one can judge between the distributions (or reforms) without knowing the form of the social welfare function.

In the diagram, the area OCB is the maximum social welfare (equal to μ, the mean income). Some of the welfare is lost because of inequality in the society. The actual welfare of the society is given by the area ODBC. The area ODB is the cost of inequality or the welfare loss due to inequality. If a reform shifts the curve ODB upwards, then that reform enhances social welfare. Note that this criterion for judging alternative policies can be applied only if the curves given by equation $\mu L(p)$ do not interest.

Needs and welfare

The paper does not address the issue of individual needs. The concept of relative needs is, of course, closely connected with the patterns of individual welfare functions. A person with income x and less needs has a higher welfare

than a person with the same income and more needs. A social welfare function that takes account of needs can be written as

$$W = W\left(\frac{x_1}{N_1}, \frac{x_2}{N_2}, ..., \frac{x_n}{N_n}\right)$$

where x_i is the income of the ith person whose needs are measured by N_i. We will have complete equality if x_i is proportional to N_i. If on the other hand, we want to have maximum efficiency, then x_i should be proportional to the marginal productive contribution of the ith person. The marginal productive contribution of a person may not be closely related to the person's needs thus resulting in a conflict between efficiency and equity. Fred Argy has provided some examples of such conflicts. For instance, a progressive personal income tax results in a greater equality of disposable income but at the same time, it has dead-weight, compliance and incentive costs. One should not reject a progressive personal income tax because of its adverse effects on efficiency. One should empirically evaluate the efficiency and equity contributions of alternative income tax schedules. Similarly, one should evaluate empirically the impact of various welfare programs on social welfare. The well targeted welfare transfers can significantly enhance social welfare despite their adverse effects on work, saving, investment and innovation.

Fred Argy argues that there may not always exist a conflict between equity and efficiency. Many efficiency-enhancing reforms increase the cake available for distribution without having adverse distributional effects. He gives an example of deregulation of the banking industry. It is not clear whether this example provides a complementarity between equity and efficiency. The banks have increased their fees substantially particularly on small accounts which may have had an adverse effect on equity.

The relationship between equity and efficiency is very complex. To understand this relationship, we need to know people's productive contributions and needs. The problem of assessing relative needs is indeed a very serious one, and these can be hard problems of decidability. The policy reforms mentioned in the paper are at most conjectural. There needs to be a lot of empirical work in order to be able to arrive at the welfare enhancing reforms.

Benchmarks for economic reform

Fred Argy gives six benchmarks for economic reform. These benchmarks are not independent of each other. The first benchmark relating to increasing per capita real income needs no further comment. The second benchmark is concerning the degree of instability of incomes. This issue can be tackled by

some kind of insurance against falling incomes. The government welfare programs are supposed to provide this insurance when people are unable to earn income from the market operations. The government role in providing this insurance has implications for both equity and efficiency which are not spelt out.

The third benchmark is long-term unemployment. Again the elimination of long term unemployment has implications for both equity and efficiency. One way to reduce long term unemployment is to let the minimum wages fall which may result in higher inequality and poverty (working poor). These implications should have been spelt out.

Fred Argy suggests that inequality should be measured by the gap in disposable household income between the lowest income quintile and the median income. This is a bad measure of inequality. It is completely insensitive to transfers of income among the bottom 20 per cent and top 80 per cent households. Further, the inequality is measured on the basis of households and not individuals. Our main concern should be with inequality among individuals. Finally, one can not define quintiles without introducing the concept of need.

Fred Argy does not include poverty as a main benchmark for reform. He views that inequality is bad even if it is not associated with any increase in poverty. It is possible that increasing inequality may be associated with a reduction in poverty. Will it still be regarded as bad?

Summing up

To sum up, the paper suggests several macro policies for the Australian economy but the effects of these policies on equity and efficiency have not been spelt out clearly. We have argued that the relationship between equity and efficiency is complex and a lot of empirical work needs to be done before we can arrive at appropriate welfare enhancing policies. The policy suggestions given in the paper are at most conjectural.

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General discussion

At the start of the discussion it was pointed out that the topic of distributional consequences of economic decisions has a long history. From the original welfare economics of Pareto through the various theories based on his work economists have attempted to take into account the distributional consequences of policy decisions, however at no point was there ever conclusive agreement on how this was to be done. The discussion thus focused on three main issues relating to policy advice:

- the role of economists;
- the interaction between efficiency and equity; and
- the functioning of Fred Argy's performance benchmarks.

The role of economists in economic policy making

A range of different opinions on the role of economists in giving policy advice was given. Some participants argued that the best course for economists when giving policy advice is to provide information on the distributional consequences of policy action, but not to try to apply distributional weights to the consequences, nor to advise whether the particular distributional consequences are a good or a bad outcome.

The Australian tax system provides a vehicle for redistribution of wealth, so that the worst distributional consequences of a policy change can be remedied through this system. It is up to politicians to make value judgments on distribution and choose the appropriate policy response. However this view was qualified for governments other than the Commonwealth Government, for while the Commonwealth Government has a broad tax base, particularly income tax, and a wide ranging transfer payments system, both State and Local governments do not have the taxation and expenditure instruments to allow for significant redistribution programs.

It was argued that economic reform may not even be discretionary. To a large extent Australia is an open economy working in an international market, thus many reform issues must be undertaken in response to pressures form abroad. At most these reforms may be delayed, but not abandoned. Even then the delay of some reforms may create greater distributional problems. Delaying many small reforms for distributional reasons may mean that a larger set of reforms must be undertaken at a later date, for which it is hard to address the distributional consequences.

Some participants suggested that policy advice can explicitly deal with distributional issues. Rather than merely stating that there are distributional

consequences, more research should be done into these distributional consequences. This way the decision makers can be presented with information on the consequences, who are affected and possibly policies to remedy these distributional consequences.

One participant pointed out that there are a number of different views on distribution, for example 'maximise the position of the least well off' or 'flatten the income distribution'. However research into the basis of governments' distributional decisions has shown that generally governments choose tax and revenue patterns simply to maximise the position of the median voter. Should advise to government reflect this priority, or present a wide set of alternatives?

It was also argued that there are limits to the use of the tax/transfer system to counter the distributional consequences of reforms. Increasing redistribution generally leads to higher marginal tax rates, which can have adverse economic consequences. Therefore it may be more useful to modify the reform proposal to deal with distributional consequences directly, rather than relying on the tax/transfer system.

Interaction of equity and efficiency

The complementarity of equity and efficiency was raised. It is mostly assumed that there is a tradeoff between equity and efficiency, but there do exist areas where equity and efficiency can both be enhanced through policy reforms. It was suggested that not enough effort is put into searching out these areas and exploiting them.

One participant reminded the participants that many problems caused by market failure reduce both equity and efficiency. Thus by solving many of these market failure situations both efficiency and equity can be improved.

It was suggested that the complementarity of equity and efficiency is generally a non-issue. The conflict between equity and efficiency is an issue that consumes large amounts of public policy resources. Pointing out that equity and efficiency are sometimes complements does not reduce conflict between equity and efficiency as an important and complex issue.

Performance benchmarks

Regarding the performance benchmarks, some discussion occurred around the instability of income test presented by Fred Argy. It was argued that most income instability is caused by macroeconomic forces. Microeconomic structural reform does affect income, but only a once-off upwards or

downwards shift in income, depending whether the individual is in the group of winners or losers. It does not make income more unstable. Regarding long-term unemployment, it was viewed that this is a partially a consequence of economic reforms, but also of macroeconomic policy failure, and also due to a lack of microeconomic reform.

When examining the distributional consequences of policy decisions, it is important to measure not only the direction of the consequences, but also their magnitude. It was suggested that economics is good at measuring the direction of the impacts, but not at measuring the magnitude. Yet it is the magnitude that is most important it determining whether to proceed with the policy. For example, it is widely accepted that increasing the minimum wage level increases unemployment. However if it is only by a small amount then it may be worthwhile, if it is by a large amount then it is probably not.

5. A MICROSIMULATION/APPLIED GENERAL EQUILIBRIUM APPROACH TO ANALYSING INCOME DISTRIBUTION IN AUSTRALIA: PLANS AND PRELIMINARY ILLUSTRATION

Peter Dixon, Michael Malakellis and Tony Meagher

5.1 Introduction

At the Centre of Policy Studies (COPS) and the National Centre for Social and Economic Modelling (NATSEM) we are working towards the creation of an integrated microsimulation/applied-general-equilibrium (MS/AGE) framework for analysing income distribution in Australia. This work will be supported over the next three years by an Australian Research Council grant to the two Centres.

MS relies primarily on a theoretical framework built up from the characteristics — economic, social and demographic — of individuals. The power of the approach lies in its capacity to handle distributional information at very high levels of disaggregation, typically tens of thousands of individuals. From a policy point of view, this capacity is important because policy makers are often interested in the effects of their proposals on quite small groups in society and because many policy issues of interest are only defined at a very detailed level. From a modelling point of view, the capacity is important because it permits the detailed treatment of demographic developments in society which is essential for forecasting changes in income distribution.

However, changes in the incomes of individuals generally depend not only on changes which apply to them directly (such as a change in income tax rates or a change in the eligibility rules for a government benefit), but also on changes which are mediated by the operation of markets (such as a change in the terms of trade or a change in defence spending). Hence, MS models tend to be restricted both in the range of issues they can address and in the range of adjustment mechanisms they can bring to bear on any particular issue. For this reason, the application of microsimulation models has been largely confined to policy changes originating in the tax and transfer system.

AGE models can be characterised as economy-wide models which include disaggregated commodity and factor markets. The number of such markets is

typically of the order of tens or hundreds. AGE models are very versatile in terms of their applicability and incorporate the responses of numerous economic agents (such as producers, consumers, investors, governments, exporters and importers) to any change in their economic environment. For distributional modelling, the disaggregated treatment of factor markets is especially relevant. Most individuals receive most of their income in the form of factor payments (that is, wages and profits). Moreover, particular individuals derive their factor incomes from particular industries and occupations, and the implications of a policy change for different industries and occupations may deviate quite widely from the implications for the economy as a whole. However this potential for distributional analysis is difficult to fully realise in AGE models, because they identify only a relatively small number of income recipients (typically about a hundred households).

It follows that there are strong complementarities between the MS and AGE approaches to distributional analysis, and that those complementarities provide an opportunity for an advance in the field. NATSEM and COPS are well placed to take advantage of this opportunity. In microsimulation, substantial new work has been undertaken in the last few years at NATSEM. NATSEM's static model STINMOD (Lambert et al. 1994) has become the best known and most widely disseminated microsimulation model yet developed in Australia. It is outstanding for the detail of the tax-transfer system it incorporates and for its accessibility to non-expert users. The dynamic model DYNAMOD (Antcliff 1993) is in an advanced stage of development and is due for public release in 1995.

In AGE modelling, COPS has been working since 1991 on the development of a new dynamic AGE model of the Australian economy, the MONASH model (Adams et al. 1994). This model builds on earlier experience with the static model ORANI (Dixon et al. 1982) and its forecasting extension ORANI-F (Horridge et al. 1993). Although the MONASH model is not yet available to users outside COPS, the list of independent applications of the ORANI model over the years is a long and varied one (Powell and Lawson 1990). At COPS, the Monash model is used on a regular basis to provide detailed economic forecasts by industry, occupation and region to a variety of clients in the both the public and private sectors.

Our hope, then, is to add a new dimension to existing techniques for modelling changes in the distribution of income by linking the microsimulation models of NATSEM with the applied general equilibrium models of COPS. The resulting systems will be suitable for forecasting and for analysing the distributional implications of a variety of social and economic changes including:

- the internationalisation of the Australian economy;

- regional development policies;
- labour market deregulation;
- environmental taxes; and
- the ageing of the population.

Such complex systems were first envisaged more than 35 years ago by the pioneer of microsimulation (Orcutt 1957), but they have had to await recent advances in computer technology and modelling theory, as well as the availability of unit record data from large socio-economic sample surveys, before becoming a practical proposition.

Methodologically, our strategy is to link a microsimulation model and an AGE model into a single integrated system via sets of common interface variables. Two kinds of linked systems will be involved.

(i) the static system

This system is described schematically in Figure 5.1. It is designed for comparative static policy analysis and hence it begins with the specification of a change in government policy. Many changes (type A, say) can be accommodated directly by the AGE model. However, because of the limited information about individuals contained in AGE models, some (type B, say) must first be fed through a static microsimulation. Type B changes typically include detailed reforms to the tax-transfer system The results of the microsimulation then form an input to the AGE model via Static Interface I. The interface variables in this case are the changes in average net direct tax rates (that is taxes minus transfers) for each of the households identified in the AGE model. Next, the solution of the AGE model provides inputs to a static microsimulation via Static Interface II, the interface variables being the employment of labour by occupation, the employment of capital by industry and factor prices. The microsimulation provides inputs for a second AGE simulation, and the system is solved iteratively until the changes in the interface variables at each round have become sufficiently small to be ignored. The effects of the policy change on the distribution of income are obtained from the final solution of the microsimulation model.

Figure 5.1:   A new method of analysing income distribution: the static system
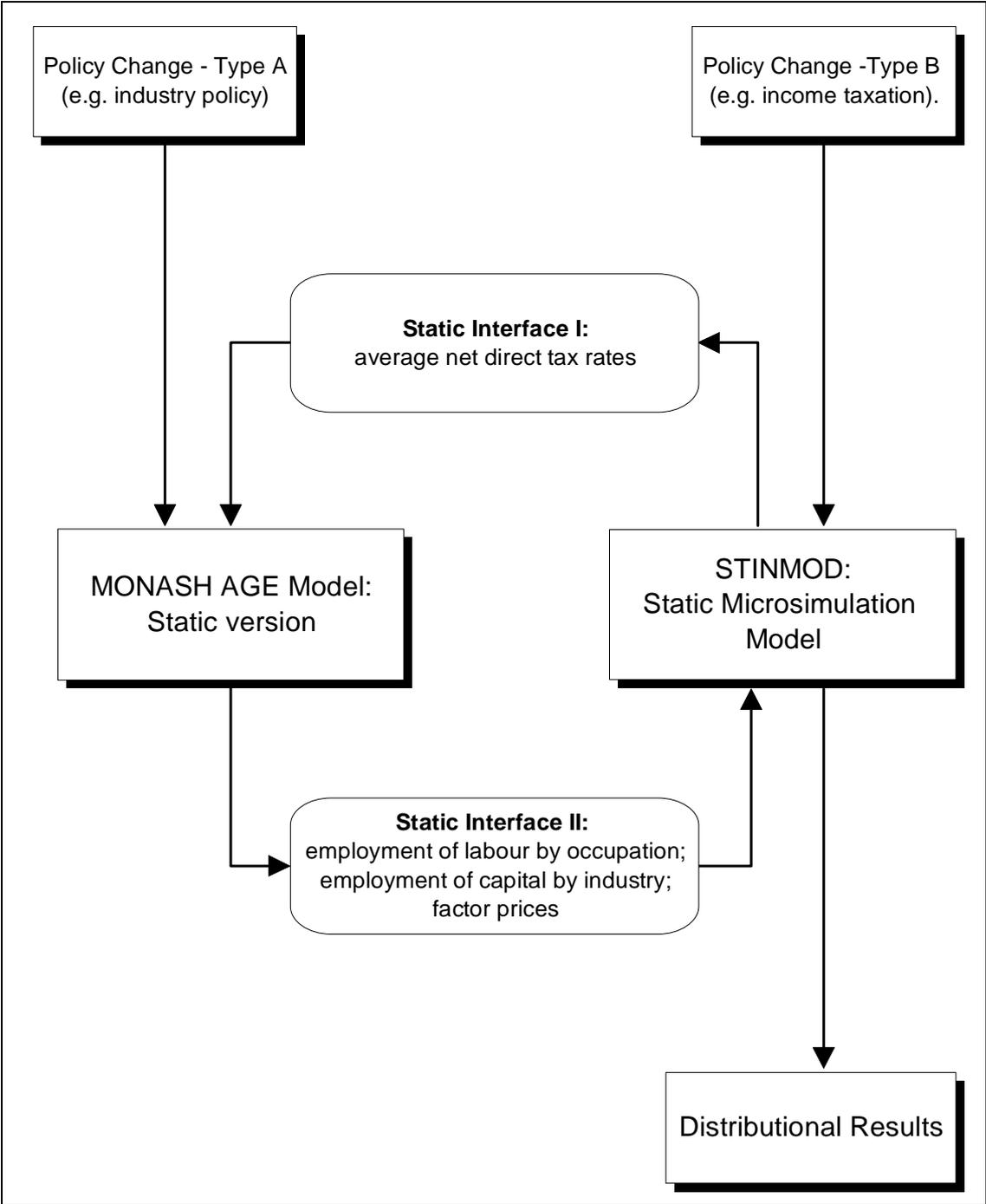
The first advantage of the linked system is that it increases the range of applicability of the AGE model. Policy changes of Type B would be inaccessible to the AGE model in stand-alone mode. Similarly, and more

importantly, policy change which originate outside the tax-transfer system now become accessible to the microsimulation model, via the variables of Static Interface II. Indeed, in the linked system, a model like STINMOD becomes invested with the same range of policy applications and the same range of behavioural responses as the AGE model. The system also allows a time horizon to be added to the STINMOD menu of options. In stand-alone mode, STINMOD computes only the impact or "morning after" effects of a policy change. In the linked system, it can also compute the effects after a short-run adjustment period (capital stocks fixed) or a long-run adjustment period (capital stocks variable). A prototype of Static Interface II already exists in the work of Meagher and Agrawal (1986).

(ii)   the dynamic or forecasting system

The proposed dynamic system is illustrated in Figure 5.2. According to this figure, a simulation with the dynamic AGE model MONASH takes as inputs:

*   information about prospects for the macro economy provided by a macroeconomic model such as the Murphy model or the Federal Treasury's TRYM model, or by the commercial forecaster Syntec Economic Services, depending on the application;

*   Industry Commission (IC) estimates of changes in protection implied by the industry policies of the government;

*   forecasts for export prices and volumes compiled by the Australian Bureau of Agricultural and Resource Economics (ABARE) and the Bureau of Tourism Research (BTR);

*   estimates of future changes in technology and consumer tastes based on research undertaken by COPS (Dixon and McDonald 1993a and 1993b); and

*   NATSEM estimates of changes in the average net tax rates of households implied by any proposed changes in the tax-transfer system.

The MONASH solution in its turn provides inputs to the dynamic microsimulation model DYNAMOD via Dynamic Interface II. The interface variables are essentially the same as those of Static Interface II, except that they now come with a time path extending over the forecasting period. The DYNAMOD model also takes as inputs the same set of macro forecasts as the MONASH model. Next, the DYNAMOD solution feeds back into the MONASH model and the macro box via Dynamic Interface I, whose variables include labour force participation, immigration and internal migration. The system is solved iteratively in this manner until its solution has converged to a

satisfactory extent. The distributional forecasts are obtained from the final solution of the DYNAMOD model.

Figure 5.2:   A new method of analysis of income distribution: The dynamic system
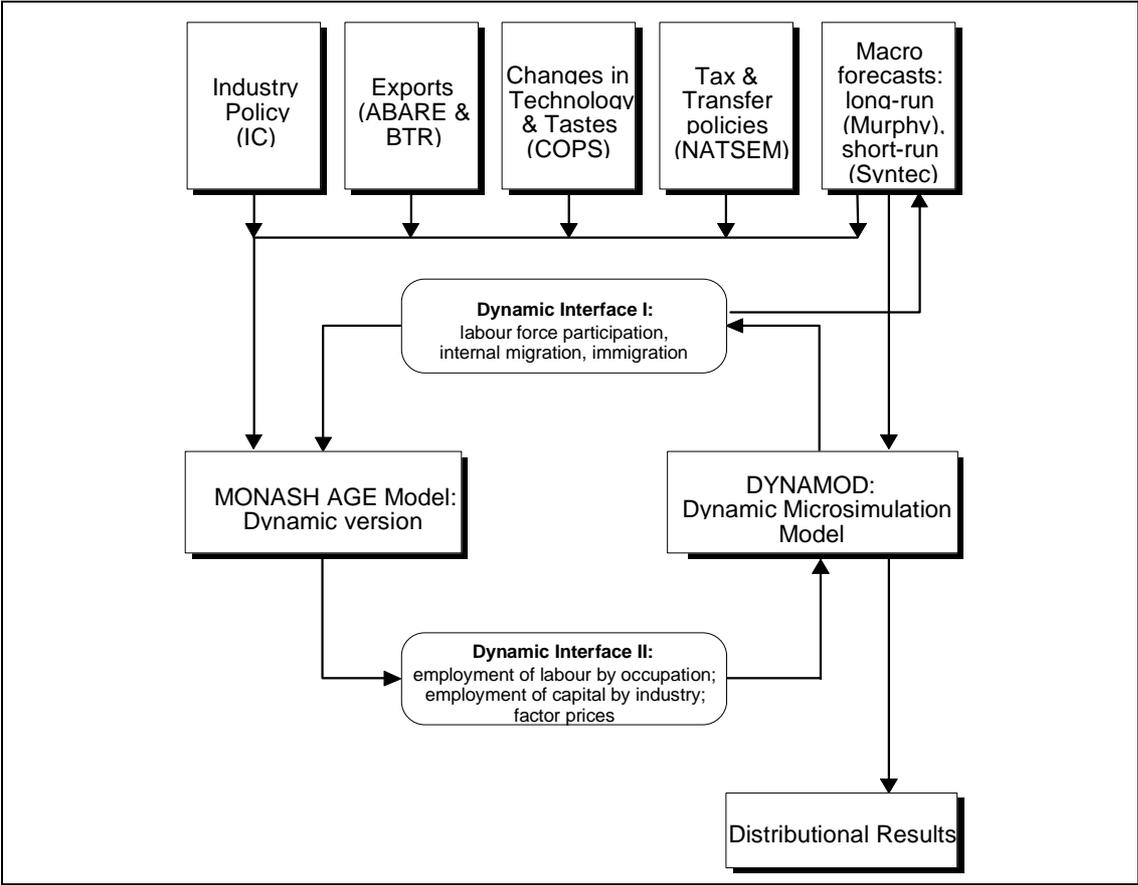
For comparative dynamic analysis, the solution of the linked dynamic system provides a base scenario. The exogenous inputs and/or the parameters of the MONASH or DYNAMOD models are then adjusted to reflect some alternative government policy, say, and the forecasts are recomputed. The effects of the alternative policy are then described in terms of deviations from the base scenario.

From the microsimulation viewpoint, the linked dynamic system delivers significant improvements in the variety of information that can be brought to bear on the model's forecast. In particular, the industry-specific information prepared by the IC, ABARE, COPS and the BTR become accessible to DYNAMOD via the variables of Dynamic Interface II. From the AGE

viewpoint, DYNAMOD supplies demographic information which is essential for plausible distributional forecasting — but which is not currently included in the MONASH model. These issues are discussed in more detail in Meagher (1995).

In the remainder of this paper we provide an illustrative MS/AGE distributional calculation of the effects of productivity improvements of the type that may be generated by microeconomic reform. In both the MS and AGE parts of the calculation we use models built at COPS.[1] In section 2 we outline our methodology. The details of the microeconomic reform experiment are presented in section 3 and the AGE results are presented in section 4. Section 4 is divided into two parts. The first contains a discussion of the macroeconomic results and the second contains the microeconomic results. In section 5 we present the MS results. Concluding remarks are in section 6.

5.2 Methodology

The methodology that we use for this exercise can be divided into two parts. First, we use MONASH, a dynamic AGE model of the Australian economy, to compute two sets of projections about the prospects of industries and occupations over the next ten years. The first set of projections is our base forecast and it reflects our best guess about how the economy will evolve over the next decade. In the second set of projections we revise our base forecast to account for additional microeconomic reform.

The second part of our methodology involves using the two sets of projections produced by MONASH to estimate distributional effects. For each set of projections, we make an MS calculation of the implications for different types of households. These households are identified from the 1990 Survey of Income and Housing Costs and Amenities (or IHS data, for short) which shows the amounts of income received from various sources in 1989–90 by about 30 thousand persons.

In the next two subsections we give an overview of the MONASH model and explain how we translate MONASH results into distributional effects.

An overview of the MONASH Model

MONASH, a descendant of ORANI, has been built at Monash University by the Centre of Policy Studies (COPS) and the IMPACT project. In building

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[1]   Our collaborative work with NATSEM commences in 1996.

MONASH, the objective of the COPS/IMPACT team was to provide an enhanced replacement of ORANI for policy analysis and forecasting.

The model is represented schematically in Figure 5.3. Like its predecessor, the primary focus of MONASH is on the microeconomy. This emphasis is reflected by the disaggregation of occupations, sectors, and regions. The advances of MONASH over ORANI can be summarised in four broad categories:

(i)   Treatment of time,

(ii) Timeliness of data,

(iii) Ability to incorporate information from a range of external sources, and

(iv) Disaggregation.

In contrast to ORANI, MONASH is a dynamic model capable of generating year-to-year time paths for its variables. In its standard form, the model produces annual results (both forecast and comparative-dynamic) for 112 industries, 282 occupations and 56 regions over a ten year time horizon. The time paths projected by a dynamic model depend very much on the initial conditions provided by the data. The initial conditions used by MONASH are obtained from an updated version of the 1986–87 input-output tables published by the ABS. The 1986–87 tables are up-dated to reflect the latest available information about the economy (see Dixon and McDonald 1993a and 1993b).

To date, most applications of MONASH have been to forecasting. To enhance its forecasting performance, MONASH has been designed to accommodate information from a range of specialists. As depicted in Figure 5.3, we take on board information about exports, industry policy and the macroeconomy. Information about the prospects of exports are taken mainly from ABARE (Australian Bureau of Agricultural and Resource Economics). The BTR (Bureau of Tourism Research) provides information about exports related to tourism. Our assumptions about industry policy, such as the levels of tariff protection, are taken from the Industry Commission. The macroeconomy and business cycle dynamics are largely exogenous in MONASH forecasts and are taken from Syntec Economic Services (1995). Our scenario on technical change and changes in consumer tastes is based on research conducted at COPS (see Dixon and McDonald 1993a and 1993b).

Figure 5.3:   The MONASH framework
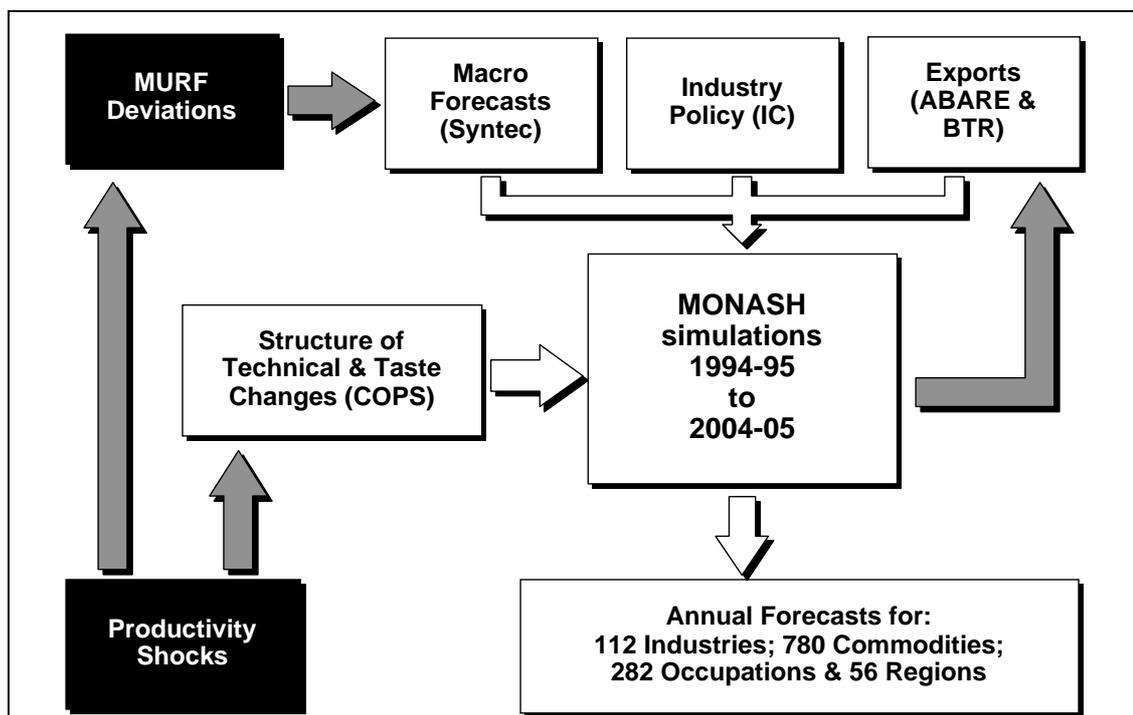
For comparative dynamic analysis the forecasting strategy outlined above is modified. The modifications are indicated in Figure 5.1 by the shaded arrows and dark boxes. We use the Murphy Model (MM), a macro-dynamic model of the Australian economy, (see Murphy 1988, 1992) to inform MONASH about the macroeconomic implications of the assumed microeconomic reform. As depicted in Figure 5.3, results produced by MM are used to revise the forecasts of the macroeconomic aggregates provided by Syntec Economic Services. The industrial structure of the microeconomic reform shocks enter our comparative dynamic calculations as a modification to the COPS technical change assumptions. This is indicated in Figure 5.3 by the shaded arrow going from the box labelled 'Productivity Shocks' into the box labelled 'Structure of Technical and Taste Changes (COPS)'. With the macro effects of the microeconomic reform shock already accounted for through the MM modifications of the Syntec macroeconomic scenario, we avoid double counting by ensuring that the modifications to the COPS technical change scenario affect sectoral productivity relativities but not overall productivity.

In our forecasting work the quantities and prices of most exports are exogenous. This treatment of exports is inadequate for comparative dynamic analysis. For example, a shock that affects domestic cost conditions should be allowed to influence export volumes. To capture these effects we augment MONASH with

equations that make the export volume of each commodity sensitive to its costs relative to its domestic currency price. This modification is depicted in Figure 5.3 by the feedback arrow going into the exports box.

Calculation of the distributional effects[2]

The distributional forecasts rely primarily on the 1990 IHS data which shows the amounts of income received from various sources in 1989–90 by about thirty thousand persons. The income sources fall into five broad categories: wages and salaries, income from unincorporated enterprises, property income, government benefits and other income. Using population weights published as part of the survey, the individual income profiles can be combined to form profiles for various broad income groups of interest. In this paper we consider fifty four such groups (referred to as demographic groups) differentiated by family type and region of residence.

To compute growth rates in the incomes of the selected demographic groups, the distributional model draws partly on population projections of the ABS and partly on the MONASH forecasts. Average annual rates of growth over the forecast period from both sources are used to age the IHS data by one year. A provisional income forecast is obtained by adjusting the IHS population weights by age, sex and region according to the ABS projections. The provisional forecast is then modified in various ways to bring it into line with the MONASH projections. In the remainder of this section, the methods used to determine the income growth rates are discussed for each of the five broad categories of income in turn.

Wages, salaries and supplements

For labour incomes, the computation involves seven steps.

(i)   Among the 30,444 respondents to the income survey, 10,849 did not work at all during 1989–90. All persons belonging to the latter group, including 461 who collected some unemployment benefits during the year, are assumed to remain outside the employed labour force during the forecast period.

(ii)   The respondents who did work at some time during 1989–90 are divided first into six groups according to their region of residence. Each of the regional groups is then divided into 72 subgroups differentiated by family

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[2]   The discussion in this section follows Meagher (1996). However, the treatment of employment in subsection (a) has been extensively revised.

type and occupation, the latter choice reflecting the view that occupation is more important than industry in determining a person's employment opportunities. Let

$$L_{msg}^{(0)} \quad (m = 1,..,8 \; ; \; s = 1,..,6 \; ; \; g = 1,..,9)$$

represent the number of persons with occupation m who reside in region s and belong to family type g. Here, the eight occupations[3] are the major groups of the Australian Standard Classification of Occupations (ASCO), the six regions are the Australian states[4], and the nine family types are described later in Section 5.

(iii) For the included respondents, the income survey records the number of weeks during 1989–90 that each was employed, unemployed or not in the labour force. Hence the average labour force status over the year, measured in person-years, can be calculated separately for the 648 groups defined at step (ii), that is,

$$L_{msg}^{(0)} \; = \; E_{msg}^{(0)} \; + \; U_{msg}^{(0)} \; + \; N_{msg}^{(0)} \; ,$$

where the E's represent the numbers of employed persons, the U's represent the numbers unemployed and the N's represent the numbers not in the labour force.

(iv) A provisional forecast for labour market status in 1990–91 is obtained by adjusting the IHS population weights in accordance with ABS population projections, Series D. This yields

$$L_{msg}^{(1)} \; = \; E_{msg}^{(1)} \; + \; U_{msg}^{(1)} \; + \; N_{msg}^{(1)} \; .$$

(v) MONASH provides forecasts of the demand for labour by industry. They are converted to forecasts of demand by occupation using regional employment matrices from the 1991 Census, updated to 1993/94 on the basis of Labour Force Survey data. In performing this conversion, estimates of the occupational share effect (that is, of changes in the

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[3]   The psuedo-occupation *Defence forces* which appears in the IHS occupational classification is distributed across the ASCO groups.

[4]   The Northern Teritory is included with South Australia and the Australian Capital Territory is included with New South Wales.

distribution of employment across occupations within industries) are included[5]. Although the IHS unit record data identifies only the 8 ASCO major groups, supplementary data was obtained for each of the selected demographic groups which enabled the MONASH results to be processed at the minor group level (that is, for 52 occupations) and then aggregated to the major groups. That is, at the major group level, the labour demand forecasts by occupation are specific to each demographic group, and important distributional information is not lost in the aggregation. These forecasts are denoted E^*_{msg}.

(vi) If $E^*_{msg} \leq L^{(1)}_{msg}$, the provisional forecasts are revised according to

$$E^{(2)}_{msg} = E^*_{msg} ,$$

$$U^{(2)}_{msg} = U^{(1)}_{msg} + (E^{(1)}_{msg} - E^*_{msg}) \, U^{(1)}_{msg} \, / \, (U^{(1)}_{msg} + N^{(1)}_{msg}) ,$$

$$N^{(2)}_{msg} = N^{(1)}_{msg} + (E^{(1)}_{msg} - E^*_{msg}) \, N^{(1)}_{msg} \, / \, (U^{(1)}_{msg} + N^{(1)}_{msg}) ,$$

$$L^{(2)}_{msg} = E^{(2)}_{msg} + U^{(2)}_{msg} + N^{(2)}_{msg} = L^{(1)}_{msg} .$$

That is, jobs are allocated on the assumption that the ratio of the number of unemployed to the number without a job remains constant for each demographic group. This approach implies that some persons who are nominally not in the labour force are encouraged to rejoin the labour force if the demand for labour increases sufficiently quickly. If

$$E^*_{msg} > L^{(1)}_{msg} ,$$

the provisional forecasts are revised according to

$$E^{(2)}_{msg} = L^{(1)}_{msg} ,$$

$$U^{(2)}_{msg} = N^{(2)}_{msg} = 0 .$$

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5   The estimation of the occupational share effects is described in Meagher (1995).

(vii) At the conclusion of step (vi), there is unmet demand of

$$D_{ms}^{(2)} = \Sigma_g \ (E_{msg}^* - E_{msg}^{(2)})$$

for labour of occupation m in region s. These jobs are allocated between family types in proportion to the number of persons (of occupation m in region s) belonging to the family type who are without a job. Hence the final forecasts of labour force status are given by

$$E_{msg}^{(3)} = E_{msg}^{(2)} + D_{ms}^{(2)} \ (U_{msg}^{(2)} + N_{msg}^{(2)}) \ / \ \Sigma_g \ (U_{msg}^{(2)} + N_{msg}^{(2)}) ,$$

$$U_{msg}^{(3)} = U_{msg}^{(2)} - D_{ms}^{(2)} \ U_{msg}^{(2)} \ / \ \Sigma_g \ (U_{msg}^{(2)} + N_{msg}^{(2)}) ,$$

$$N_{msg}^{(3)} = N_{msg}^{(2)} - D_{ms}^{(2)} \ N_{msg}^{(2)} \ / \ \Sigma_g \ (U_{msg}^{(2)} + N_{msg}^{(2)}) ,$$

$$L_{msg}^{(3)} = E_{msg}^{(3)} + U_{msg}^{(3)} + N_{msg}^{(3)} = L_{msg}^{(2)} .$$

It turns out that, in the forecasts reported in this paper, $D_{ms}^{(2)} < \Sigma_g \ (U_{msg}^{(2)} + N_{msg}^{(2)})$ for all m and s, and hence the available workforce is never exhausted.

(viii) The rates of change in wages, salaries and supplements are then given by

$$\hat{W}_{msg} = \hat{E}_{msg} + \hat{W} \quad (m = 1,..,8 \ ; \ s = 1,..,6 \ ; \ g = 1,..,9) ,$$

where $\hat{W}$ is the rate of change in the nominal wage rate and $\hat{E}_{msg}$ is the rate of change in $E_{msg}^{(3)}$.

Income from unincorporated enterprises

The computation for this category involves four steps.

(i)   The income or net profit Y_n derived by the nth person in the income survey[6] from the operation of unincorporated enterprises can be written

$$Y_n = G_n - D_n - I_n,$$

where G_n represents gross operating surplus[7] or gross profit accruing to the nth person, D_n represents consumption of fixed capital or depreciation, and I_n represents interest payments. The equation can also be written as

$$y_n K_n = g_n K_n - d_n K_n - i_n r_n K_n,$$

where K_n is the amount of capital owned by the nth person, y_n is the net rate of profit, g_n is the gross rate of profit, d_n is the rate of depreciation, i_n is the rate of interest and r_n is the debt ratio. To prepare a database suitable for forecasting, we begin by assuming that the rate of depreciation, the rate of interest and the debt to equity ratio are the same for all unincorporated enterprises. Then

$$Y_n = y_n K_n = (g_n - \bar{d} - \bar{i}\,\bar{r}) K_n,$$

that is, the variations in Y_n between individuals recorded in the income survey arise only from variations in the amount of capital K_n they own and in the gross rate of profit g_n they earn on that capital.

(ii)   Next, an estimate $\bar{y}$ of the average net rate of profit in 1989–90 is deduced from the range of rates published by the ABS. Given $\bar{y}$ and the total values of net profits, gross profits, depreciation and interest payments obtained from the national accounts, the average amount of capital $\bar{K}$ employed per person in unincorporated enterprises can be determined, along with $\bar{d}$, $\bar{i}$ and $\bar{r}$.

(iii)   The net profit rates y_n implicit in the income survey are then assumed to be drawn from a normal distribution with mean $\bar{y}$ and standard deviation $\bar{y}$ (that is, with about two thirds of the observations in the range zero to $2\bar{y}$), and with no y_n greater than 2.5 times $\bar{y}$. Apart from the mean, these

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[6]   The survey identifies the industry j and the region s in which the nth person conducts her/his enterprise. This information is utilised in the fourth step.

[7]   Gross operating surplus consists of imputed wages of owner-operators, and returns to fixed capital, land and working capital.

parameters are chosen as a matter of economic judgement. The capital stocks K_n are assumed to be drawn from a normal distribution with mean $\bar{K}$ and standard deviation $3\bar{K}$, with no K_n less than zero. This time the standard deviation is chosen to cover the range of the Y_n's reported in the income survey. Twenty thousand values of the product $y_n K_n$ are then selected at random and the nth individual is assigned the capital stock corresponding to the product that most closely approximates value of Y_n reported by that individual.

(iv) The forecast average annual rate of growth of the gross operating surplus earned by all enterprises operating in a particular industry and region is available from MONASH. Incorporated and unincorporated enterprises are not distinguished in the model, so the same growth rate is assumed to apply to both types. Let the average annual growth rate (in per cent) be given by

$$100\Delta G_{js} \ / \ G_{js} \text{, where}$$

$$G_{js} \ = \ g_{js} \, K_{js}$$

is the total gross profit earned by all unincorporated enterprises in industry j in region s (or in industry js for short). Then the average annual change in total net profit is given by

$$\Delta Y_{js} \ = \ \Delta G_{js} \ - \ (\bar{d} + \bar{i} \, \bar{r}) \, \Delta K_{js} \, ,$$

where ΔK_{js} is the average annual change in the amount of capital owned by the enterprises. Thus we have enough information to determine the average annual rate of growth $\hat{Y}_{js}$ in the total income earned by all unincorporated enterprises in industry js. However, the growth rate $\hat{Y}_{js}$ cannot be simply assigned to all the individual enterprises operating in that industry because some made profits and some made losses in the base period (that is, in 1989–90). If $\hat{Y}_{js}$ is positive, the incomes of the corresponding individual enterprises ought to increase. But the application of a positive rate of growth to the income of an enterprise originally making losses would increase its losses and reduce its income. Consequently we define the average annual change

$$\Delta y_{js} \,=\, \Delta Y_{js} \,/\, K_{js}$$

in net profit expressed as a share of base period capital in industry js. The average annual rate of growth (in per cent) in the income of an individual enterprise n operating in that industry is then given by

$$\hat{Y}_n \,=\, 100\Delta y_{js} K_n \,/\, Y_n \,.$$

Property income

Property income consists of interest, dividends and rent, with the last category being further subdivided into landlord rent and imputed rent on owner-occupied dwellings. We begin by describing the method for imputing rent, a method that contains the following three steps for most of the income units involved.

(i)   The IHS data records the value K_n of an owner-occupied dwelling[8] and the amount M_n of any outstanding debt incurred in its purchase for each income unit n in the survey. If income unit n is not an owner-occupier, both variables have zero values. Hence the total value of the owner-occupied stock of dwellings is given by

$$K \,=\, \Sigma_n \, K_n$$

and the total value of associated debt by

$$M \,=\, \Sigma_n \, M_n$$

(ii) Values for total gross operating surplus G, total depreciation D, total interest payments I and total net income Y associated with owner-occupied dwellings are available from the national accounts. Hence we can obtain the corresponding average rates $\bar{g}, \bar{d}, \bar{i}$ and $\bar{y}$ from

$$\bar{g} \,=\, G \,/\, K, \text{ etc.}$$

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[8]   As the meaning is clear from the context we have not introduced specific notation to distinguish between the capital stock of the unincorporated enterprise sector, the housing stock of owner-occupiers and, later, the housing stock of landlords.

(iii) The average values $\bar{g}$, $\bar{d}$, and $\bar{i}$ are then assumed to apply to all owner-occupiers, so that the rent imputed to the nth income unit is given by

$$Y_n = (\bar{g} - \bar{d}) K_n - \bar{i} M_n$$

If the income unit contains two parents, the rent is allocated equally between them.

Some of the survey respondents who own their dwellings outright, that is, for whom M_n is zero, did not reply to the question concerning the value of their dwellings. For these income units, the following alternative procedure is adopted. The IHS data contains information on the amount of gross rent paid by income units to private landlords. From this data, the average gross rent $G1_{ij}$ by type of dwelling i (separate house, terrace house, flat, etc.) and number of bedrooms j is computed, along with the average rent $G2_k$ by region k. In this regional classification, the capital city in each State is identified separately from the rest of the State. An owner-occupier of a dwelling of type ijk is then imputed the gross rent

$$G_{ijk} = G1_{ij} \times G2_k / G2$$

where G2 is the average for all regions. Assuming the same values of g, d, and i apply as for other owner-occupiers, the corresponding values of the housing stock K and net rent Y can determined for the income units involved.

For landlords, rental income is given directly in the income survey and the task is to impute ownership of the housing stock. We begin by assuming that the debt ratios r_n of the landlords are drawn from a normal distribution with the same mean and standard deviation as the distribution for owner-occupiers. Values of r_n equal in number to the number of landlords are chosen at random from this distribution and ranked in descending order. The landlord with the largest loss in the base period is then assigned the first value, that is, the largest debt ratio. The same values of g, d and i are assumed to apply to landlords and owner-occupiers, yielding the value

$$K_n = Y_n / (\bar{g} - \bar{d} - \bar{i} r_n)$$

for the housing stock rented out by the nth income unit.

At this stage, the growth rates in the rental incomes of both landlords and owner-occupiers can be calculated in the same manner as the rates for incomes from unincorporated enterprises. In this case, the calculations are based on the rate of growth in the gross operating surplus of the *Ownership of dwellings* industry.

For the two remaining categories of property income, namely, interest and dividends, the provisional forecasts are accepted as final.

Government benefits

Government benefits are divided into four types: unemployment benefits, other taxable benefits, non-taxable benefits and benefits from overseas. Income from unemployment benefits for a selected group depends on the number of benefit recipients and the size of the benefit per recipient. The latter is assumed to be indexed to the national consumer price index while the rate of change in the former is obtained as a by-product of the calculation for wages and salaries already described. For other taxable benefits and non-taxable benefits, the number of recipients is assumed to vary with population growth and the benefit per recipient to vary with the national CPI. Benefits from overseas governments are assumed to be unaffected by developments in the domestic economy.

Other income

The final category, that is, other income, is divided into taxable and non-taxable components, and includes superannuation, alimony and income provided by relatives. Both components are assumed to vary with population.

Summing over the five broad categories gives gross income. Taxable income is obtained by subtracting from gross income the imputed rent of owner-occupiers, non-taxable government benefits and non-taxable other income. The total amount of income tax paid is taken from the national accounts, while its distribution is determined by IHS data. In calculating the growth rates in net incomes, the average rate of income tax for each demographic group is assumed to remain constant.

5.3 Details of the experiment

Our first task is to use MONASH to produce base and revised projections. The base scenario that we use in this exercise is the December 1994 COPS/SYNTEC forecasts reported in Syntec (1995). To compute the revised scenario we modify the base scenario to allow for additional microeconomic reform.

We model the additional microeconomic reform in the revised scenario as improvements in labour productivity. The labour productivity shocks that we use are taken from Hargreaves (1994).[9] The sectoral composition of these shocks is diverse and their temporal profile indicates that the microeconomic reforms are assumed to be phased in gradually. The productivity shocks that we use are listed in Table 5.A1 in appendix A. In Figure 5.4 we give a less detailed representation of the productivity shocks.

Figure 5.4: Labour productivity shocks
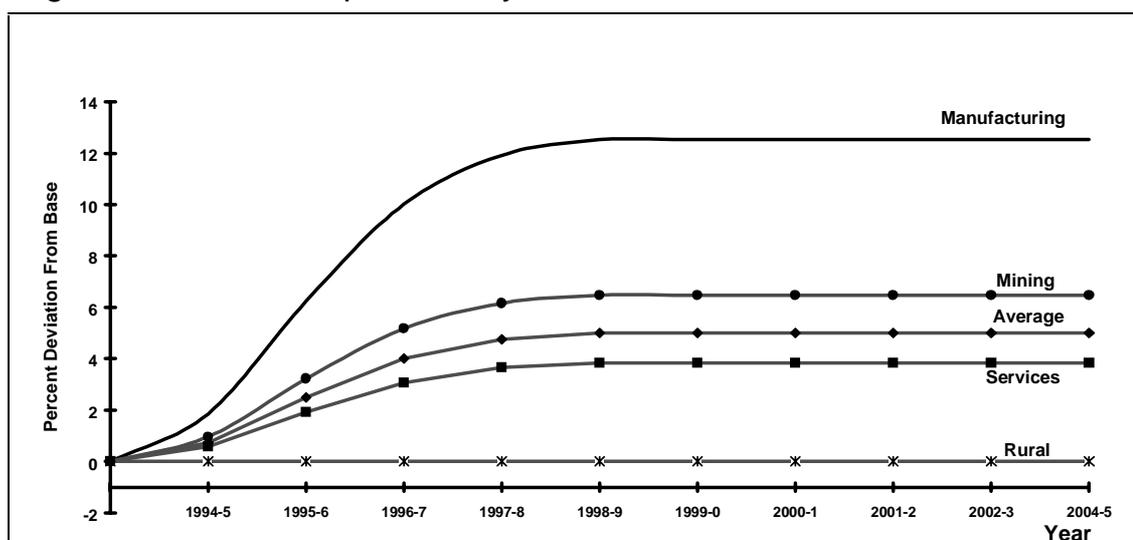
A feature of the shocks is that the aggregate technical efficiency of labour improves gradually (following a logistic curve) over the first five years then remains steady for the remaining five years of the experiment. In year five and beyond aggregate labour productivity is 5 per cent higher than it is in the base scenario. The productivity improvement favours the Manufacturing sector; in the long run, labour productivity in this sector is about 12 per cent higher than base. The Mining sector, with about 6 per cent labour productivity improvement in the long run, gets more than the economy-wide average. The Services sector gets about 4 per cent improvement in labour productivity which is a little below the economy-wide productivity shock. Labour productivity for industries in the rural sector is assumed to remain at its basecase values.

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9   The productivity shocks in Hargreaves (1994) are derived from estimates provided by Filmer and Dao (1994). We acknowledge that some of the productivity improvements assumed by Filmer and Dao emanate from reforms that have already been accounted for in our base scenario (e.g., announced tariff reductions). Thus, our revised scenario reflects the implications of *additional* microeconomic reform.

The economic environment in which the productivity shocks are to be examined is conditioned by our assumptions concerning the degree to which improvements in labour productivity are passed on to wages, the conduct of monetary policy, the behaviour of the government and the behaviour of the rest of the world.

We assume that the monetary authority does not to accommodate the productivity shock. The supply of money, therefore, is assumed to remain at its basecase levels. Similarly, we assume that the domestic productivity shock does not to affect the behaviour of the rest of the world. The government is assumed to behave in a manner that is broadly consistent with maintaining its expenditure as a constant share of Gross Domestic Product (GDP). Government business enterprise investment is assumed to move in line with private investment.

In the first five years, when the *growth* in productivity is greater than in the basecase, only half of each year's productivity shock is immediately passed through to real wages. Full pass-through occurs with a lag.

5.4 Results from the MONASH simulations

In the following three sub-sections we present a selection of MONASH projections. In section 4.1 we discuss the macro results which are obtained from MM. This discussion is confined to those variables that are used to modify the MONASH macroeconomic environment. In section 4.2 the sectoral results are, for the most part, analysed at the four-sector level. More detailed sectoral results are discussed in section 4.3

Macroeconomic results

The macroeconomic results are summarised in Figure 5.5 to 5.10. The main features of these results are captured by the time path of the per cent deviations of real GDP from the basecase (Figure 5.5).[10] In 1994–95, the first year of the simulation, the size of the economy remains almost unchanged (actually contracting slightly) despite labour productivity increasing by almost 1 per cent in that year. In all other years, the economy is bigger than it was in the corresponding year in the basecase. In the long run, the economy is projected to be about 5 per cent bigger than it was in the absence of the productivity

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[10] Hereafter, a time path which depicts the per cent deviations of a variable from its basecase values will be referred to as 'the path of variable X'. The 'per cent deviation' qualifier will be used only when an ambiguity arises.

improvement. Unlike the time path of labour productivity, the time path of real GDP is not monotonically increasing. The path of real GDP has a trough which bottoms in 1999–00 and two peaks; one occurs in 1997–98 and the other in 2002–03.

To structure our analysis, the macro results are divided into three periods: long run, short run and the transition between the short and long run. The long run in MM is characterised by convergence to optimising behaviour in production and to balanced growth. These features allow the long run results to be interpreted within a well understood paradigm. By indicating the direction in which the economy is tending, the long run results also provide insights about the behaviour of agents in the short and medium run. The short and medium run results are more difficult to explain because the behaviour of agents is not derived from well specified optimisation problems. We regard 2004–05 as representative of the long run and discuss the results pertaining to this year first. Next we discuss the projections relating to 1994–95, the first year of the simulation. For convenience we refer to 1994–95 as the short run. Finally, we discuss the results that relate to the transition of the economy from the short run to the long run.

Figure 5.5:   Real GDP, consumption and government expenditure
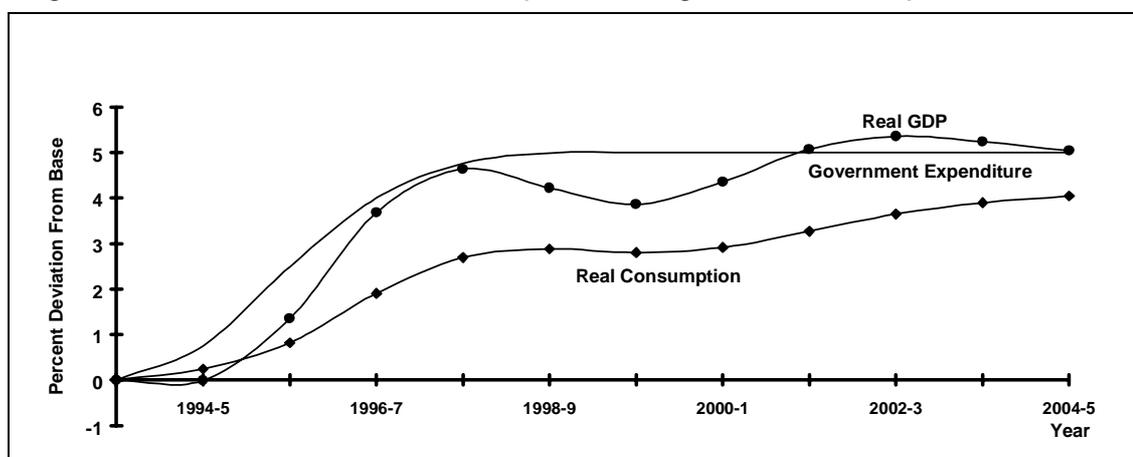
Figure 5.6:   Real total investment (source of waves)
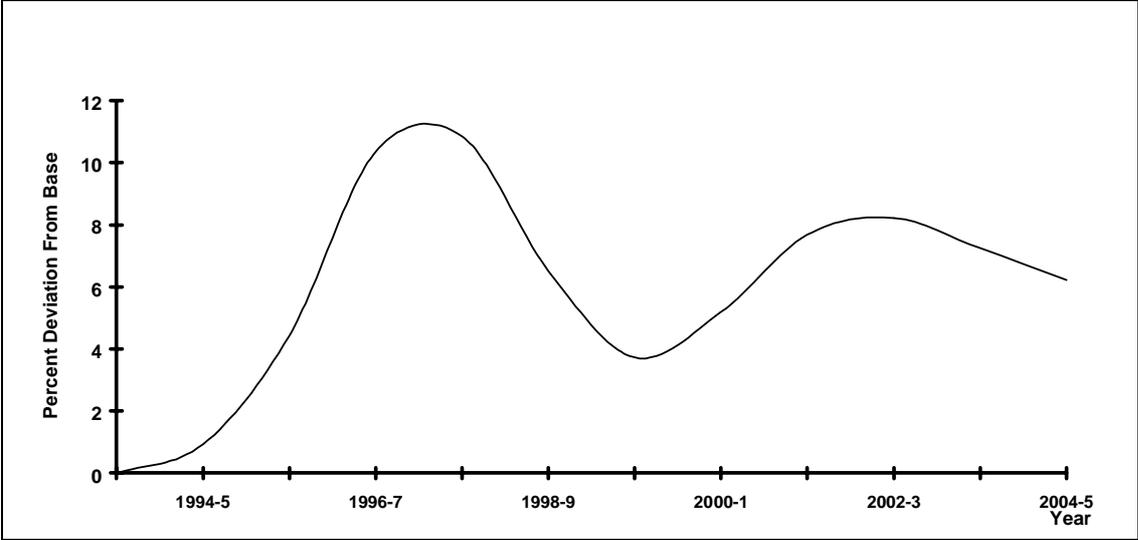
Figure 5.7:   Real exports, imports and real exchange rate
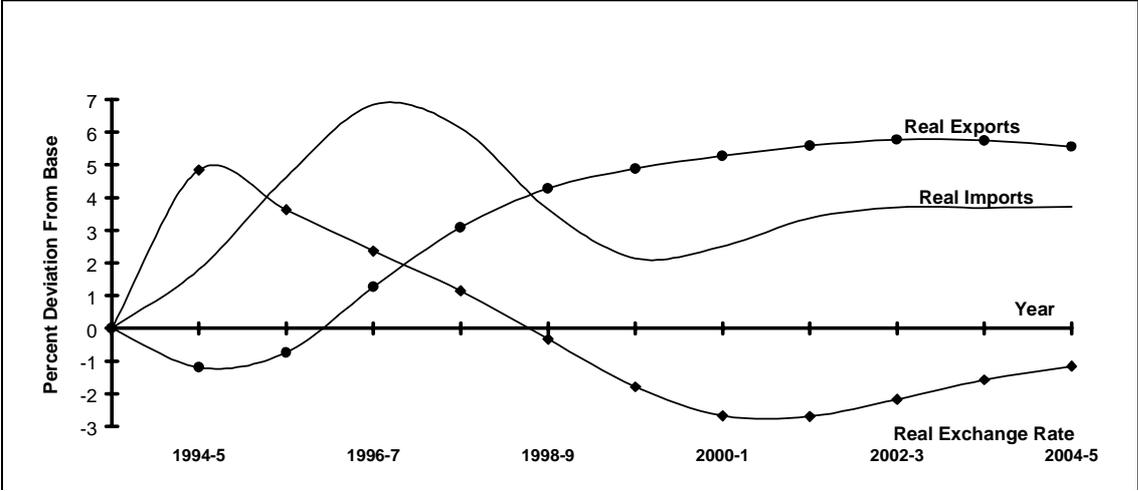
Figure 5.8:   CPI and TWI exchange rate (AF)
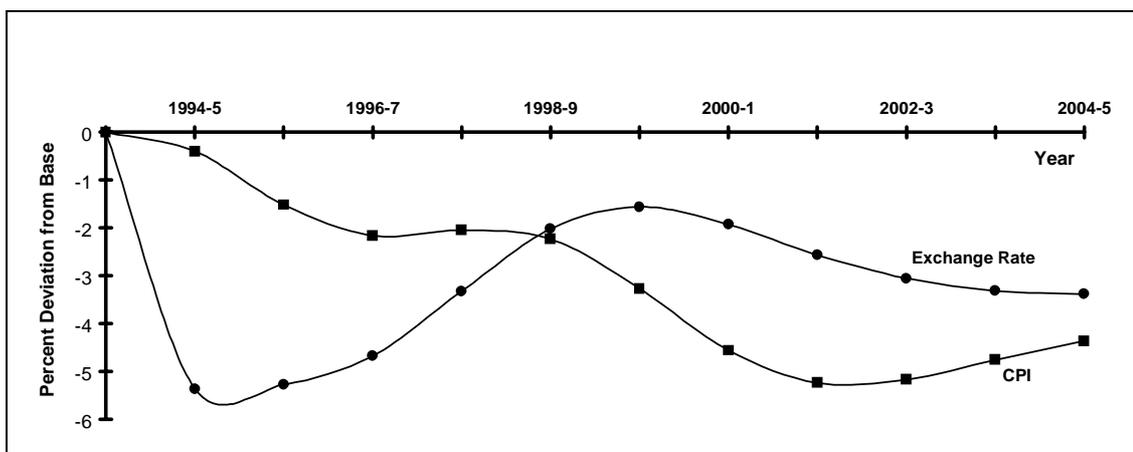
Figure 5.9:   Terms of trade
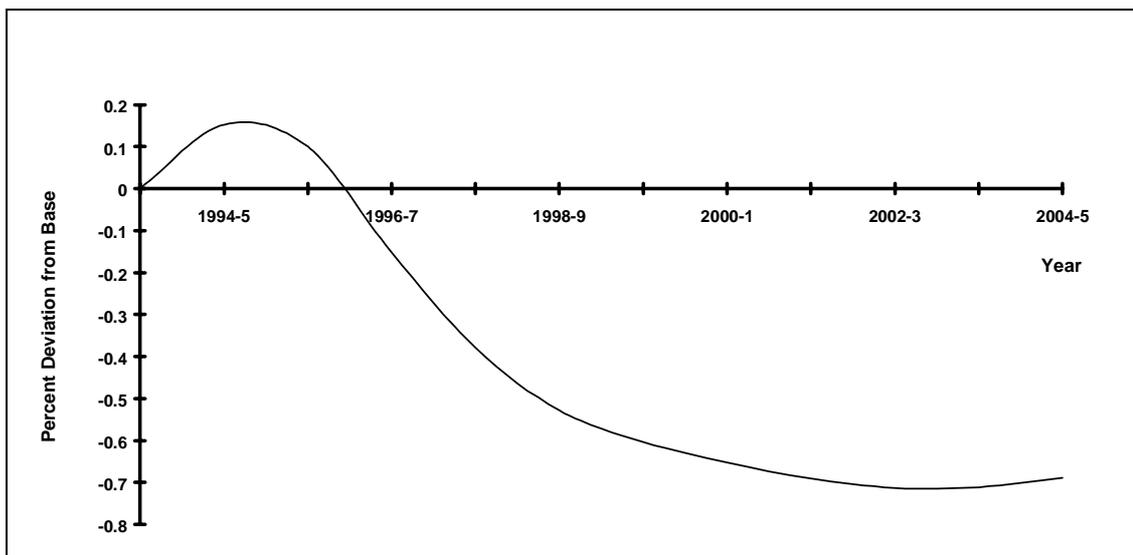
Figure 5.10:   Real wage, employment and average productivity
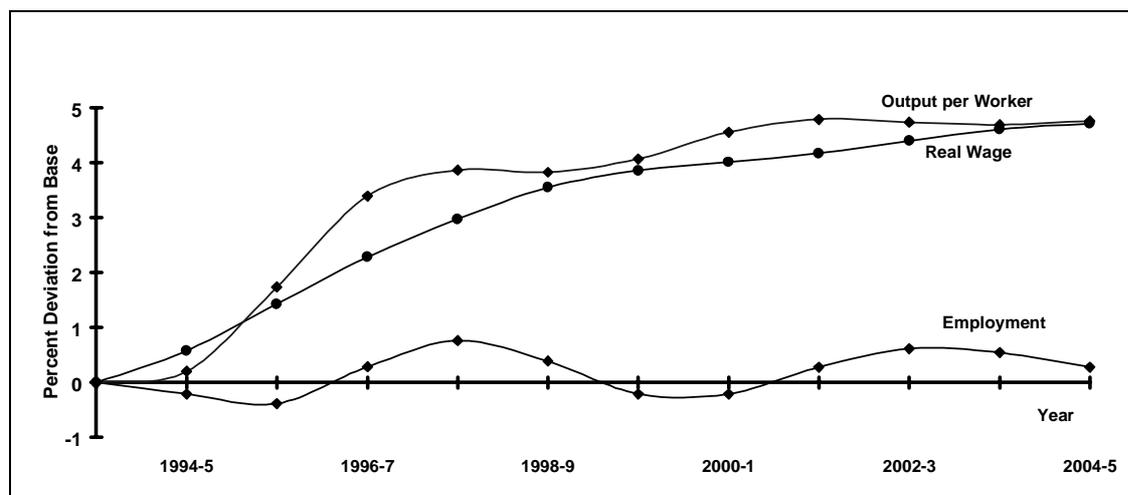
Long run results

A property of the version of MM that we are using is that a 5 per cent increase in labour efficiency (Harrod-neutral technical change) combined with a 5 per cent increase in the size of the rest of the world (more precisely, a 5 per cent increase in the demand for Australian exports) will have the long run effect of increasing all real endogenous variables by 5 per cent. If in addition the money supply is held constant then all domestic price variables will fall by 5 per cent.

In the experiment reported in this paper we do not expand the size of the rest of the world. The productivity shock expands the size of the Australian economy and, as our results show, keeping the size of the rest of the world unchanged results in a deterioration in the terms of trade (see Figure 5.9).[11] The deterioration in the terms of trade implies that the long run expansion of the economy will be less than 5 per cent and not balanced. The assumption that the money supply does not accommodate the productivity improvement means that nominal variables will tend to fall by about, but not exactly, 5 per cent.

In Figure 5.5 the path of real GDP converges to about 5 per cent in 2004–05. However, inspection of the results in Figure 5.5 to 5.7 reveals that the expansion in the size of the economy is not balanced. In 2004–05 real consumption is projected to be about 4 per cent higher than it was in the corresponding year in the basecase; real investment is around 6 per cent higher; real government expenditure is, by design, 5 per cent higher; real exports are 5.5 per real government expenditure is, by design, 5 per cent higher; real exports are 5.5 per cent higher and real imports are about 3.5 per cent higher.

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[11]   Australia is assumed to have some market power in its export markets.

The paths of the two nominal variables depicted in Figure 9 indicate that by 2004–05 the productivity shock has the effect of decreasing domestic prices by a little less than 5 per cent.

Given the steady-state properties of MM, it is notable that real GDP in 2003–04 increases by 5 per cent despite the deterioration in the terms of trade. The reason for this is that MM has not converged to its steady state by 2004–05. In this experiment we actually solve MM over 20 years but report results for the first 11 years only.[12] MM projects that real GDP will increase by 4.9 per cent in 2011–12 which, as expected, is slightly less than the increase in productivity.[13] The slight increase in employment in 2004–05 is also attributable to the fact that the model has not reached its steady state. In the steady state the non-accelerating-inflation rate of unemployment (NAIRU) and the participation rate do not change. Hence, employment does not change.

Short run results

The main feature of the short run results is that real GDP responds sluggishly to the labour productivity improvement. Although not obvious in Figure 5.5, real GDP actually falls by a small amount in 1994–95. The short run in MM is characterised by sticky prices for non-traded goods and labour. The slow response of real GDP to the productivity shock is demand driven. Private consumption rises by about 0.25 per cent, investment rises by about 1 per cent and government expenditure rises by 0.75 per cent. However, as shown in Figure 5.7 export volumes decline by more than 1 per cent and import volumes increase by about 2 per cent in 1994–95. The fall in net exports is explained by the large appreciation of the real exchange rate. Agents in the financial markets are assumed to have perfect foresight and hence they anticipate that the productivity improvement will have a deflationary effect in the long run. Arbitrage on financial assets pushes the real exchange rate up to ensure that asset holders cannot profit from the deflation. The nominal exchange rate, shown in Figure 5.8, appreciates by a little over 5 per cent in 1994–95. Domestic prices are sticky in the short run hence the real exchange rate appreciates by about the same amount (see Figure 5.7).

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[12]　The reason for this is that MONASH uses the first 11 years of results produced by MM. We solve MM for 20 years (80 quarters) to minimise the effects of the terminal conditions on the results used by MONASH.

[13]　Although not reported, the results that MM produces for the year 2011–12 are almost identical to the results that a steady state version of the model produces.

Because output and the capital stock remain largely unchanged in the short run, the productivity improvement results in a fall (about 0.2 per cent) in the number of persons employed.

Transition from short run to the long run

The paths of the shocked exogenous variables are smooth. Yet Figure 5.5 shows that the transition of the economy from the short run to the long run is not smooth. The wave in the path of real GDP emanates from the behaviour of investors. Given that the capital stock must expand by close to 5 per cent in 2004–05 we expect that investment must grow strongly in the preceding years. However, as Figure 5.6 shows, the growth in investment is not smooth. Real aggregate investment grows strongly between 1994–95 and 1997–98. In 1997–98 investment is about 11 per cent higher than it is in the same year in the basecase. By 1999–00, however, investment is only 4 per cent above its basecase value. After 1999–00 investment again grows strongly so that by 2002–03 it is 8 per cent higher than base.

In MM the key factors influencing investment are the difference between the actual and required rate of return, the natural growth rate of the economy, the tightness of monetary policy and an accelerator mechanism. In the model the natural growth rate of the economy is a function of population growth and labour productivity growth. Because of the productivity shock, the natural growth rate of the economy rises quite sharply between 1994–95 and 1996–97 then falls back to its base value over the next 5 years. The strong growth in investment in the first 4 years is due largely to the influence of the natural growth rate and is reinforced by the accelerator mechanism. The fall in the natural growth rate after 1996–97 slows down investment but after 1999–00 investment again grows strongly. The growth in investment after 1999–00 reflects the rise in the actual rate of return relative to the required rate of return and the effective loosening of monetary policy (reflecting the combination of lower prices and a fixed supply of money).

As depicted in Figure 5.10 the path of aggregate employment does not deviate greatly from the baseline. In Figure 5.10 the path of the real cost of labour, given by the nominal wage deflated by the price of domestic output, is above the baseline and rising over the simulation period. In efficiency units, however, the path of the real cost of labour after 1994–95 is always below the baseline.

Despite the fall in the real cost of using labour, aggregate employment does not always increase. The reason for this is that the growth in output is not sufficient to accommodate the improvement in labour productivity without the need to reduce the number of workers. In the first two years of the simulation the

capital stock and output respond sluggishly to the improvement in labour productivity. This results in the small reductions in aggregate employment in 1994–95 and 1995–96. Similarly, the slowdown in the rate of growth in output between 1997–98 and 1999–00 (see Figure 5.5) results in aggregate employment falling marginally in 1999–00 and 2000–01.

The 1 year lag between the output and employment response is largely due to the modelling of growth in labour demand as a function of the lagged change in the capital-output ratio. In Figure 5.10 the sluggish output response in 1994–95 and the slowdown in output growth from 1997–98 to 1999–00 are reflected in the path of output per worker. Figure 5.10 also shows the strong association between aggregate employment and, with a lag of 1 year, the difference between the real wage per worker and output per worker.

5.5 Sectoral results

A selection of sectoral results are presented in Figures 5.11 to 5.13. Like the analysis of the macro results the order of our discussion of the sectoral results proceeds with the long run first, the short run second and, finally, the results pertaining to the transition between the short and long run.

Long run results

The sectoral output results are presented in Figure 5.11. In the long run the Manufacturing sector gets the biggest output boost (that is, about 6.7 per cent) followed by Mining (about 6 per cent), Services (5.2 per cent) and Rural (almost 3.6 per cent). The ranking of the long run output responses is the same as the ranking of the sectoral productivity improvements. Because of the large productivity improvements the Manufacturing sector gets the largest direct cost reductions. As shown in Figure 5.12 the cost reductions in the Manufacturing sector encourage strong growth in exports of the manufacturing commodity. The Manufacturing sector also benefits from import replacement and the expansion of the domestic market.

The long run output performances of the Mining and Manufacturing sectors are not as disparate as their respective productivity shocks. On average the long run elasticity of demand for the Mining commodity is greater than that of the Manufacturing commodity. This reflects the greater reliance of the Mining sector, compared with the Manufacturing sector, on international markets.

The growth in output of the Manufacturing sector is greater than that of the Mining sector and this is reflected in the long run export results for the two

sectors (Manufacturing exports are about 8.3 per cent higher in 2004–05 while Mining exports are 6.2 per cent higher).

The Services sector consists predominantly of firms that supply goods and services to the government as well as goods and services that are used as margins. Government demands are assumed to move in line with the economy-wide productivity improvement while demands for margins move in line with domestic output. The long run output performance of the Services sector is, therefore, closely related to real GDP.

The Rural sector produces most of the traditional export commodities (for example, Wool, Wheat, Sheep and Barley) yet, as Figure 5.12 shows, it does not participate in the export boom created by the productivity improvement. The reason for this is that the Rural sector does not get any direct benefits from productivity improvements and it is adversely affected by wage increases that emanate in the sectors that experience productivity improvements. The export performance of the Rural sector is particularly sensitive to its costs and, hence, it loses export share. The increase in the Rural sector's output is largely accounted for by the indirect benefits that it gets via the expansion in the size of the domestic market.

Figure 5.11: Sectoral outputs
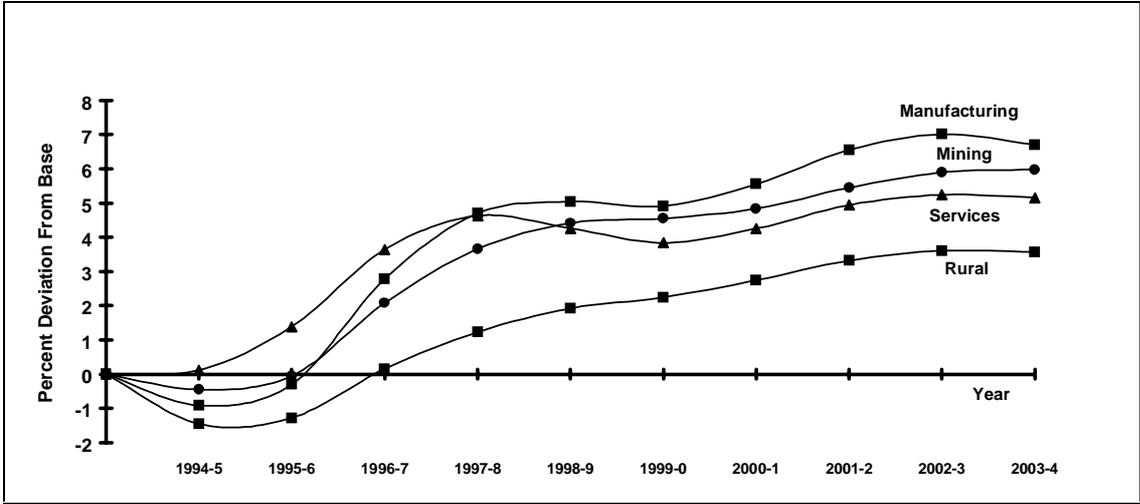
Figure 5.12: Exports by sector
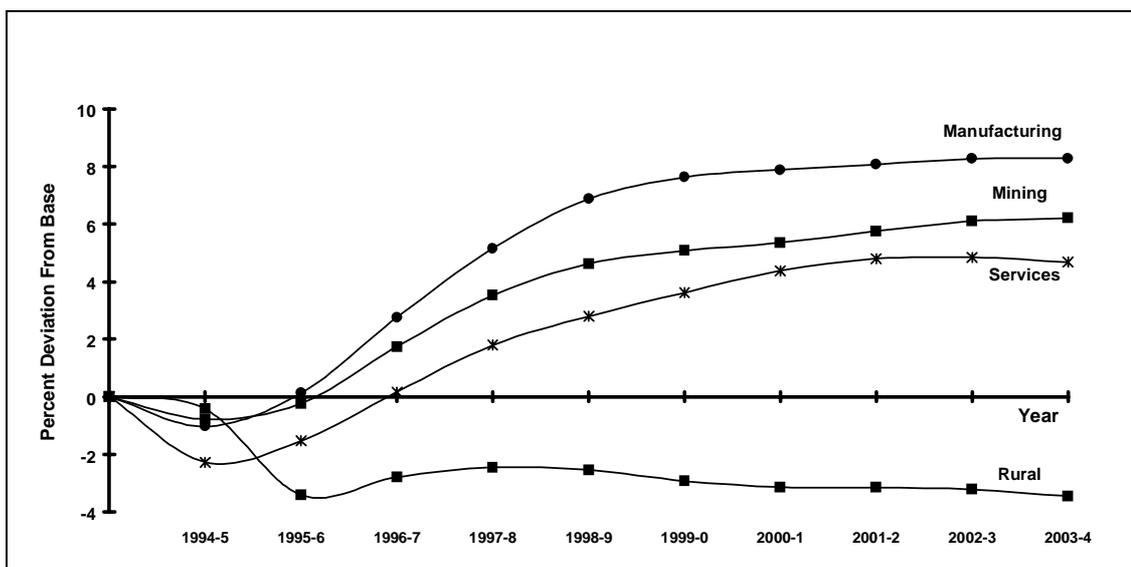
Figure 5.13: Sectoral employment
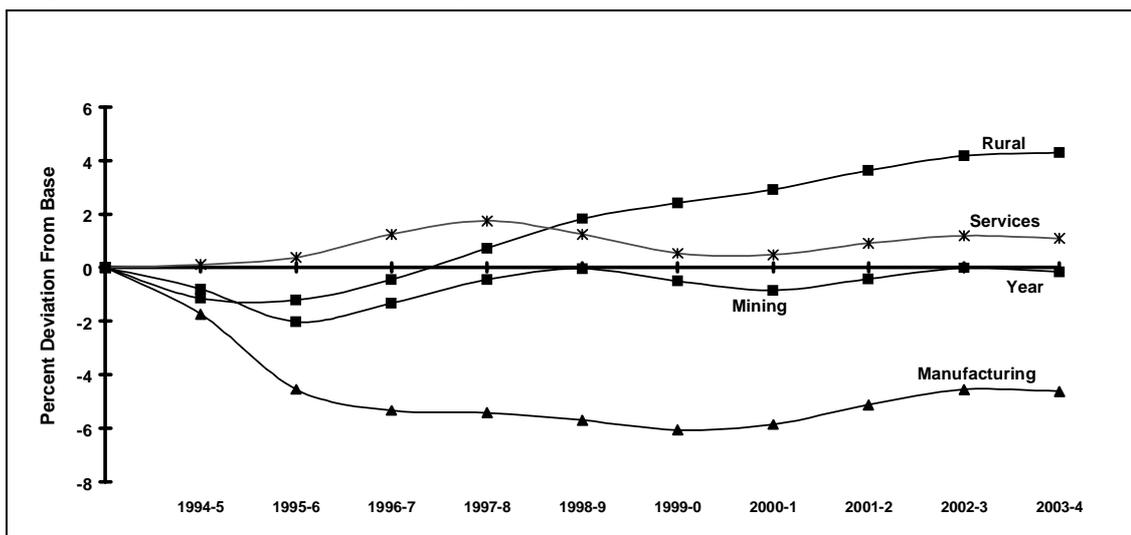
The long run employment results depicted in Figure 5.13 reflect the dominance for employment of the direct impacts of the productivity improvement. The aggregate employment effect is small in the long run and the ranking of the sectors on the basis of employment prospects is the reverse of the sectoral output ranking. MONASH projects that the Manufacturing sector, which receives the biggest productivity improvement, will have the poorest long run employment prospects. Employment in this sector falls about 4.6 per cent below the baseline in 2004–05. In contrast, the Rural sector is projected to have the

best employment prospects in the long run (about 4.3 per cent above baseline) despite the fact that it does not directly benefit from the productivity shock.

Short run results

In the short-run output and employment contract in all sectors except Services. The Mining sector reduces its output and employment in 1994–95 by 0.5 and 0.8 per cent respectively. The main reason for this is that exports of the Mining commodity contract by about 0.4 per cent in that year. Output in the Manufacturing sector contracts by a little over 0.9 per cent while employment decreases by just under 2 per cent. The main reason for the contraction in the Manufacturing sector is the loss of domestic sales. The real appreciation of the exchange rate makes the Manufacturing commodity relatively more expensive than the foreign substitute. The Services sector increases its output slightly (about 0.1 per cent) despite losing about 2.3 per cent of its export sales (mainly Tourism). The Services sector benefits from the small increase in private consumption and government expenditure. The employment response of the Services sector reflects the subdued output result.

Transition from long run to short run

In the transition from the short to the long run the time path of output by the Services sector is similar to the path of real GDP. As explained above, because of the nature of its outputs the fortunes of the Services sector are dependent on government expenditure, which is assumed to move in line with the productivity improvement, and on domestic activity. Domestic activity moves very closely with the productivity improvement. The wave in the path of real GDP is evident in the path of output by the Services sector. This reflects the inclusion of the investment-dependent construction industries in the Services sector.

The Rural sector's output moves in line with the expansion in the size of the domestic market. The path of the Rural sector's output does not exhibit the cyclical behaviour evident in the path of GDP largely because its sales structure is not heavily dependent on investment.

The Manufacturing sector grows quite strongly after 1994–95 because the large productivity improvements that it enjoys make it more competitive. Its export performance is very strong as is its performance in replacing imports. The Manufacturing sector also gets a boost from the expansion in the size of the domestic market. The slower growth in Manufacturing output between 1997–98 and 1999–00 reflects the slowdown in domestic demand, particularly investment, over this period.

The output performance of the Mining sector reflects its export performance. The strong growth in Mining exports reflects the comparatively large improvements in the sector's productivity, and hence in its competitiveness.

5.6 More detailed sectoral results

While the sectoral results presented above are instructive, the implications of a productivity improvement on income distribution must be analysed at a more disaggregated level. For the purposes of this paper the disaggregated MONASH results are too cumbersome to be presented in a meaningful way. Instead, in the following sub-section, we give a flavour of the more detailed results by referring to MONASH'S projections of output and employment at the 21 sector level of aggregation. Later, in section 5.7, we exploit the full sectoral disaggregation (112 industries) of MONASH to evaluate the distributional effects of our assumed productivity changes.

Table 5.1 contains a summary of our December 1994 forecasts of output and employment growth over the next decade (base scenario) as well as revisions of those forecasts which take into account the productivity shocks (revised scenario). For each scenario we report the average annual per cent growth rates of sectoral output and employment over the decade spanning 1994–95 to 2003–04. On the basis of these averages sectors are accorded a rank which indicates their relative output or employment performance.

The mapping of the 21 sectors listed in Table 5.1 to the 4 sectors discussed previously is as follows: sectors 1 and 2 in this table map directly to the Rural and Mining sectors; the Manufacturing sector is made up of sectors 3 through 12 and the Services sector consists of sectors 13 through 21.

Key features of the base scenario sectoral projections

Table 5.1 shows that the sectoral results at the 4-sector level of aggregation mask the disparate performances of industries within each sector. For example, in our base scenario, output growth in the Services sector as a whole is about the same as that of the economy but much of the good news comes from the strong growth performance of the Communications sector (average annual growth of 6.71 per cent over the decade). The favourable growth projections for the Communication sector are based on the trend towards communication-using technology throughout the economy.

Table 5.1:   Summary of the output and employment projections in the base and revised scenarios

Sector	Output projections				Employment projections			
	Base scenario		Revised scenario		Base scenario		Revised scenario	
	Average annual growth 1994-95 to 2003-04[1]	Rank	Average annual growth 1994-95 to 2003-04[1]	Rank	Average annual growth 1994-95 to 2003-04[1]	Rank	Average annual growth 1994-95 to 2003-04[1]	Rank
1 Agriculture, Forestry and Fishing	2.73	17	3.09	18	1.57	9	1.99	7
2 Mining	3.99	5	4.60	6	-0.06	14	-0.08	14
3 Food, Beverages and Tobacco	2.89	14	3.44	16	-0.20	16	-1.51	18
4 Textiles, Clothing and Footwear	0.79	21	1.43	21	-2.77	21	-3.81	21
5 Wood, Wood Products and Furniture	2.89	13	3.64	11	-0.26	17	-0.82	17
6 Paper, Paper Prods., Printing and Publishing	4.94	3	5.49	3	2.07	8	1.35	8
7 Chemical, Petroleum and Coal Products	3.97	6	4.60	5	0.72	11	0.89	11
8 Non-metalic Mineral Products	1.54	20	2.22	20	-1.67	19	-1.64	19
9 Metallic Mineral Products	3.00	12	3.64	12	0.30	12	0.30	12
10 Transport Equipment	2.52	18	3.46	15	-0.42	18	-0.75	16
11 Other Machinery	5.28	2	6.05	2	1.32	10	0.96	10
12 Other Manufacturing	2.80	15	3.53	14	-0.15	15	-0.65	15
13 Utilities	3.14	10	3.67	10	-2.20	20	-3.07	20
14 Construction	3.28	9	4.01	8	3.04	3	3.22	2
15 Wholesale and Retail Trade	4.37	4	4.81	4	3.67	1	4.04	1
16 Transport and Storage	3.09	11	3.61	13	0.08	13	0.06	13
17 Communication	6.71	1	7.35	1	2.40	6	1.33	9
18 Finance, Property and Business Services	3.40	8	3.91	9	2.35	7	2.78	5
19 Public Administration and Defence	2.51	19	3.02	19	2.53	5	2.37	6
20 Community Services	2.76	16	3.28	17	3.09	2	2.96	4
21 Recreation and Personal Services	3.88	7	4.30	7	2.67	4	3.00	3

Note: 1   The numbers in this are growth rates expressed as percentages.

The output projections for industries in the Manufacturing sector are also very diverse. For example, in our base scenario the Manufacturing sector encompasses the economy's second-best as well as the worst performing industries. The strong performance projected for the Other Machinery sector is related to ongoing technical change involving the use of electronic equipment (especially computers). In the 1980's sales of the Other Machinery commodity were dominated by imports. More recently the Other Machinery sector has enjoyed strong growth in the supply of component parts as well as the servicing of electronic equipment. At the other end of the scale, the poor growth prospects forecast for the Textiles, Clothing and Footwear sector are based mainly on the continuing reductions in protection and strong import competition. We also assume that changes in tastes away from clothing and footwear, estimated for the 1980's, will continue.

The base scenario employment projections in Table 5.1 are less optimistic than are the output projections and there is a strong bias towards employment growth in the Services sectors. Apart from the Community Services sector, the average annual growth of employment in all other sectors is projected to be less than their output growth. The main reason is that the technical efficiency of primary factors is projected to continue increasing. Primary-factor-augmenting technical change is projected to be rapid in most sectors other than the Services industries. The base scenario output and employment projections for sectors 13 to 21 (the Services sector) are generally less divergent than is the case for the remaining sectors. Among the industries in the Services sector, the Communications and Utilities industries are notable exceptions to this pattern. The employment projections for the Communications sector are far less optimistic than the output projections largely because of continuing labour-saving reforms in Telecom. Similarly, the employment prospects for the Utilities industry are adversely affected by microeconomic-reform initiatives that are in place or planned.

Key features of the revised scenario sectoral projections

After the productivity shocks the average annual growth in output over the decade is revised upwards for all sectors. However, the improvements in the prospects for sectoral outputs are not uniform. The changes in the relative fortunes of the sectors can be deduced by comparing their rank (based on output performance) before and after the shocks. In our revised scenario the biggest winner is the Transport Equipment sector which moves up three positions in the output rankings (from 18th in the base scenario to 15th in the revised forecasts). The smallest winners from the productivity shocks are the Food, Beverages and

Tobacco and the Transport and Storage sectors which move down 2 positions in the output rankings.

The Transport Equipment sector benefits most from the productivity shock because its output is dominated by motor vehicles. As is shown in Table 5.A1 in appendix A the Motor Vehicle industry gets a large productivity improvement. The Motor Vehicle industry is very trade oriented and the direct benefits that it gets from the productivity improvement stimulates its output via export growth and import replacement. Motor vehicles have a high expenditure elasticity of demand and, hence, the industry also benefits from the expansion in the size of the domestic economy.

The relatively poor performance of the Food, Beverages and Tobacco sector is related to the low expenditure elasticity of its output as well as subdued export sales. The low expenditure elasticity means that the Food, Beverages and Tobacco sector does not benefit greatly from the expansion in the size of the economy. The increase in export sales by this sector is below average because its key exports, such as meat products, use inputs from the Agriculture, Forestry and Fishing sector which have become relatively expensive. The relatively poor performance of the Transport and Storage sector is also related to the fortunes of the Agriculture, Forestry and Fishing sector. The Agriculture, Forestry and Fishing sector is a big user of the Transport and Storage output and it does not benefit greatly from the productivity improvements

According to the revised employment projections in Table 5.1 the productivity shocks do not have a big impact on the employment prospects of most sectors. Relative to our base scenario, employment in the Communication sector is the biggest loser from the productivity shock (dropping 3 positions in the employment rankings). In the base forecasts we projected that the average annual growth rate of employment in the Communication Sector would be 2.40 per cent; after allowing for the productivity shock we revise this forecast down to 1.33 per cent. The reason for this pessimistic forecast is that the Communication sector's output remains largely unchanged despite the very large productivity improvement imposed on this sector (its cumulative productivity gain by 1998–99 is 19.4 per cent). The reason that the productivity shock has so little effect on the Communication sector's output is that the demand for the service that this sector provides is not very price sensitive.

The biggest improvement in employment prospects is in the Finance, Property and Business Services sector (Finance for short). The Finance sector's employment ranking improves by two positions as a result of the productivity shocks. While this sector does not benefit directly from the productivity shock, its output is not adversely affected by cost increases. The demand for Finance

services is not very price sensitive and output in this sector moves roughly in line with the overall growth in the economy.

As mentioned previously, labour productivity improvements can produce conflicting output and employment responses. The output and employment projections for the Textiles, Clothing and Footwear sector provide a good example of this conflict. In the base scenario average annual growth in this sector's output is projected to be 0.79 per cent. Following the productivity shocks this projection is revised up to 1.43 per cent. However, the improvement in the Textiles, Clothing and Footwear sector's output prospects does not help workers in this sector. According to our results the productivity shock lowers employment growth from –2.77 per cent per annum to –3.81 per cent.

5.7 The distributional implications of microeconomic reform

Table 5.2 shows how the microeconomic reform affects the distribution of income between different income sources for Australia as a whole. In compiling this table we have taken average annual changes in variables of the MONASH model over the period 1994–95 to 2003–04 and applied them to income data for 1989–90 from the Income and Housing Survey. Consider first the results for income from *Wages salaries and supplements*. In the base scenario, the real wage rate is forecast to increase by 1.20 per cent per annum and this increase is taken to apply to all employees. Hence, for the occupation *Managers and administrators,* 2.99 percentage points of the 4.19 per cent increase in real income from wages, salaries and supplements is due to an increase in employment. The occupation which experiences the most rapid employment growth is *Salespersons and personal service workers* (4.26 per cent). This result is due partly to the relative concentration of sales workers in the *Wholesale and retail* trade industry which, from Table 5.1, is forecast to enjoy employment growth of 3.67 per cent per annum compared with 2.20 per cent for aggregate employment. More specifically, about 35 per cent of workers in this occupation are employed in retail trade and about 9 per cent in wholesale trade. However, the increase in aggregate employment and the changes in the distribution of employment across industries (the industry share effect) account for only 3.34 percentage points of the employment growth for the occupation. The remaining 0.92 percentage points result from the occupational share effect, that is, from changes in the distribution of employment between occupations within industries. The forecasts for the occupational share effect, which are the same in both the base and revised scenarios, are based on historical experience over the period 1986 to 1994 (Meagher 1995).

Table 5.2:   Income components, Australia

Income Component	1989/90 Gross income shares (per cent)	Forecast change in real income (per cent)	
		Base scenario	Revised scenario
Wages, salaries and supplements –			
Managers and administrators	9.15	4.19	4.85
Professionals	12.37	4.43	4.86
Para-professionals	5.29	3.05	3.40
Tradespersons	9.75	2.37	2.78
Clerks	10.26	3.28	3.75
Salespersons and personal service workers	6.65	5.46	6.13
Plant and machine operators, and drivers	5.46	0.93	1.19
Labourers and related workers	7.50	2.16	2.59
All occupations	66.43	3.36	3.83
Income from unincorporated enterprises –			
Agriculture, forestry, fishing and hunting	1.93	6.73	7.74
Mining	0.05	-2.04	-2.77
Manufacturing	0.15	-2.15	-3.12
Construction	1.36	-3.01	-2.49
Wholesale and retail trade	1.51	6.34	7.02
Transport, storage and communication	0.69	6.10	5.93
Finance, property and business services	1.65	5.19	5.54
Community services	0.25	28.07	28.51
Recreation, personal and other services	0.37	4.73	4.93
All industries	7.97	4.97	5.49
Property income –			
Dividends	0.77	1.73	1.72
Imputed rent on owner occupied housing	1.47	15.45	16.74
Landlord rent	0.45	15.63	16.93
Interest	9.48	1.81	1.80
All property income	12.16	3.96	4.15
Government benefits –			
Unemployment benefits	1.35	-3.02	-3.01
Other taxable benefits	8.55	1.72	1.71
Non-taxable benefits	1.90	0.88	0.88
Benefits from overseas governments	0.16	1.79	1.78
All government benefits	11.96	1.05	1.04
Other income –			
Taxable income n.e.c.	1.34	1.90	1.89
Non-taxable income n.e.c.	0.14	0.93	0.92
All other income	1.48	1.81	1.80
Gross income	100.00	3.26	3.64
Income taxes	18.07	3.13	3.50
Net income	81.93	3.30	3.67

Just as the industry share effect and the occupational share effect enhance each other to the benefit of sales workers, they both work against employment of the slowest growing occupation, *Plant and machine operators, and drivers*. Employment prospects for this occupation are diminished by its relative concentration in the *Road transport* (about 25 per cent) and *Clothing* (about 5 per cent) industries, both of which are forecast to contract. The forecast growth rates for these industries are –1.10 and –2.56 per cent per annum respectively, and they underpin the rates for the more highly aggregated industries *Textiles, clothing and footwear* and *Transport and storage* reported in Table 5.1. The occupational share effect contributes and additional reduction of 0.61 percentage points.

The forecasts for *Income from unincorporated enterprises* are somewhat more variable across industries than those for *Wages, salaries and supplements* across occupations in percentage change terms. Income from the former source depends on the amount of capital that a person owns and on the rate of return the person achieves on that capital. It is not true that a person who owns a large amount of capital will necessarily derive a large amount of income from it and, when allocating capital between persons, we have assumed that large profits and large losses are both associated with significant ownership. Furthermore, when the economy expands and rates of return improve, as they do in both the scenarios considered here, we assume that all owners participate in the increase in income (or reduction in losses). Hence, an owner who achieved a zero income from a non-zero holding of capital in the base period (that is, in 1989–90) will have an infinite increase in income from this source in the forecast. In general, the percentage change in *Income from unincorporated enterprises* will tend to be large when the base period rate of return is small, that is, when income is small relative to the base period capital stock.

Turning to *Property income*, the same kind of considerations lie behind the large percentage increases in income from housing. The owner-occupied housing stock is about 1.5 times as large as the total capital of the unincorporated enterprises and the landlords' stock is about 0.4 times as large. Hence even modest increases in rates of return produce large increases in income. Note that the gross rent imputed to owner occupiers in the base period was $22 billion but, in accordance with the national accounts, this was reduced to an income of only $3.95 billion after deducting depreciation and interest payments. Dividends and interest payments are assumed here to vary with population growth, as given by the series D projections of the ABS. The average growth over the forecast period is 1.19 per cent per annum, but the projections vary from –1.64 per cent to +5.11 per cent across age, gender and region. It is this variation that explains the difference between the forecasts for

dividends and interest. The treatment of dividends is quite rudimentary and excludes income from capital gains associated with the retained earnings of the corporate sector. Also, as interest is an income transfer rather than an income source, a thorough treatment of role of the corporate sector would reduce total income from interest to zero.

Government benefits are assumed to be indexed to the CPI which is forecast to increase at 4.98 per cent per annum in the base forecast. As already mentioned, aggregate employment growth (2.20 per cent) exceeds average population growth (1.19 per cent); hence the number of unemployment benefit recipients falls and real income from this source contracts by 3.02 per cent. The growth rates of other types of government benefits and of *Other income* simply reflect population growth.

When the forecasts for the base scenario and the revised scenario are compared, it is immediately obvious that the effects of the microeconomic reform on the distribution of income between income sources is small compared to the differences between the base period and the base forecast. From Table 5.1, the reform improves the favourable employment outlook for *Wholesale and retail trade* but exacerbates the poor outlook for *Textiles, clothing and footwear* and for *Transport and storage*. Hence it has the effect of increasing, albeit only slightly, the spread of the changes in income from *Wages, salaries and supplements* across occupations. For unincorporated enterprises and housing, the reform introduces largely offsetting increases in capital growth and reductions in the rates of return on capital (especially on capital in the *Construction* industry). As the population projection is the same in each scenario, differences in *Government benefits* and *Other income* are due to rounding errors except for unemployment benefits. The contraction in income from this source is slightly reduced in the revised scenario because the forecast for aggregate employment (2.22 per cent per annum) is slightly higher than in the base scenario.

To illustrate the effects of the microeconomic reform on the distribution of income between different income groups, we consider the nine family types identified in the Income and Housing Survey. The family types are described in Table 5.3 and the distributional results are presented in Table 5.4.

Table 5.3: Description of family types

Code No.	Description
1	Married couple with no dependent and no non-dependent children or other relatives
2	Married couple with dependent children but no non-dependent children or other relatives
3	Married couple, no dependent children but with non-dependent children, and no other relatives
4	Married couple with dependent children and also with non-dependent children or other relatives
5	Lone parent with dependent children but with no non-dependent children or other relatives
6	Lone parent with dependent children and also with non-dependent children or other relatives
7	Lone parent with non-dependent children with or without other relatives
8	One person
9	All other family types

Table 5.4: Distribution of Income between family types, per cent

					Family Type					
Income Category	1	2	3	4	5	6	7	8	9	All
Income components as shares of gross income, 1989–90										
1 Wages, salaries and supplements	56.52	77.83	70.97	73.73	44.41	54.07	56.56	58.52	61.53	66.43
2 Income from unincorporated enterprises	7.19	10.69	7.53	10.99	3.02	-6.85	7.83	4.56	0.74	7.97
3 Property income	19.68	5.20	13.31	7.82	2.85	6.60	15.10	15.44	12.62	12.16
4 Government benefits	14.01	5.92	7.16	7.02	46.08	42.60	18.73	19.29	21.68	11.96
5 Other income	2.60	0.36	1.03	0.45	3.64	3.58	1.78	2.19	3.43	1.48
6 Gross income	100	100	100	100	100	100	100	100	100	100
7 Income taxes	16.73	21.17	18.28	19.43	7.99	9.43	15.31	15.90	13.66	18.07
8 Net income	83.27	78.83	81.72	80.57	92.01	90.57	84.69	84.10	86.34	81.93
Real changes in income components, base scenario										
1 Wages, salaries and supplements	3.44	3.37	3.31	3.12	3.54	2.69	3.21	3.56	2.60	3.36
2 Income from unincorporated enterprises	5.50	4.79	4.76	4.90	6.65	-1.88	2.83	4.78	29.31	4.97
3 Property income	3.46	5.09	4.16	5.14	8.06	5.19	3.92	3.66	4.13	3.96
4 Government benefits	1.58	-0.32	0.97	0.91	0.50	1.06	1.58	1.31	1.45	1.05
5 Other income	1.93	1.45	2.29	1.31	1.10	0.74	2.19	1.67	2.14	1.81
6 Gross income	3.29	3.38	3.36	3.31	2.27	2.40	2.97	3.16	2.72	3.26
7 Income taxes	3.11	3.30	3.20	3.14	2.29	2.21	2.79	2.99	2.56	3.13
8 Net income	3.33	3.40	3.39	3.35	2.27	2.42	3.00	3.19	2.75	3.30
9 Per capita net income	1.75	2.62	1.94	2.22	1.58	1.67	1.67	2.01	1.88	2.10
Real changes in income components, revised scenario										
1 Wages, salaries and supplements	3.91	3.82	3.83	3.57	4.00	3.14	3.66	4.04	3.02	3.83
2 Income from unincorporated enterprises	6.09	5.26	5.26	5.46	6.87	-0.76	3.59	5.28	28.83	5.49
3 Property income	3.62	5.31	4.37	5.49	8.50	5.53	4.17	3.85	4.34	4.15
4 Government benefits	1.57	-0.29	0.93	0.91	0.50	1.06	1.58	1.29	1.47	1.04
5 Other income	1.93	1.44	2.28	1.30	1.10	0.73	2.18	1.66	2.13	1.80
6 Gross income	3.63	3.80	3.79	3.73	2.50	2.60	3.32	3.49	3.01	3.64
7 Income taxes	3.44	3.71	3.63	3.55	2.53	2.39	3.13	3.31	2.84	3.50
8 Net income	3.67	3.82	3.82	3.77	2.49	2.62	3.35	3.52	3.04	3.67
9 Per capita net income	2.10	3.04	2.38	2.64	1.80	1.86	2.02	2.34	2.17	2.48

As their descriptions are quite involved, we shall refer to the family types by their code numbers. From Table 5.2, we know that earned income (either from wages or self-employment) is forecast to increase more rapidly than income from other sources. For the economy as a whole, earned income as a share of gross income is about 75 per cent. Of the nine family types, the earned income share exceeds the national average for three, namely, types 2, 3 and 4. From Table 5.4, the real gross incomes of these three types grow at a faster rate than the national average. Only two family types have earned income shares of less than 50 per cent, namely, types 5 and 6. These two types also have the smallest growth in real gross income. The effect of the reform is to increase the real gross incomes of all family types but the ranking remains the same.

5.8 Concluding remarks

Most individuals receive most of their income in the form of factor payments (that is, wages and profits). A forecast of changes in the distribution of income, therefore, will be improved if it is informed by a well constructed forecast of changes in factor markets and their associated commodity markets. Forecasts that rely entirely on modelling changes in the personal characteristics of individuals, as is typically the case in microsimulation studies, have a limited capacity to take into account developments that affect individuals only indirectly through the operation of markets. Furthermore, for purposes of distribution, the level of disaggregation at which the markets are modelled is important. Particular individuals derive their factor incomes from particular industries and occupations, and the prospects for different industries and occupations may deviate quite widely from the economy's general macroeconomic prospects.

In this paper we have described techniques for utilising detailed economic forecasts for the Australian economy to determine likely future changes in the distribution of income, and employed those techniques in a comparative dynamic analysis of the distributional effects of microeconomic reform. The centrepiece of the forecasting system is a large dynamic applied general equilibrium model, the MONASH model. Via the markets incorporated in the MONASH model, a range of otherwise intractable information has been brought to bear on a forecast over the period 1994–95 to 2003–04 of the incomes of groups of individuals belonging to various family types. The range includes detailed scenarios on macroeconomic developments in both the world and domestic economies, changes in the foreign demand for Australia's exports, changes in the world prices of all internationally traded goods, changes in protection, changes in indirect taxes and primary factor saving technical

DISCUSSION

Cliff Walsh

I believe the theoretical framework within which this integrated microsimulation and general equilibrium modelling work is based is appropriate and the future directions for the work outlined by Professor Dixon are very promising. This paper represents an important first step in what is a crucial challenge for economic policy advisers in Australia: that is, providing the information on policy proposals that link the anticipated efficiency gains with the anticipated distributional consequences.

There is clearly more to evaluating policy choices than considering measures such as changes in total Gross Domestic Product (GDP), or income per head. The distribution of income and wealth and many other variables also ought to be included when advising on policy choices. The puzzle it seems is how do we measure the welfare effects as opposed to the purely economic efficiency effects of policy changes? And what do we do with those measures once we have them?

The importance of considering distributional consequences in policy design

A review of the key welfare economics and public finance literature (for example, Pareto, Kaldor, Hicks, Bergson and Samuelson) indicates that economists have no agreed views about how distributional outcomes should be reflected in policy advice or by policy decisions.

Nevertheless, in providing information relevant to policy choices, economists should include information about the distributional consequences of those policy choices. I believe many reforms have been achieved because it has been demonstrated that the distributional effects of particular policies have been entirely other than what politicians originally thought was likely to be the case. For example, I believe that financial deregulation ultimately came about because the Labor Party came to believe that it could be beneficial in its effects on low income people rather than adverse, which was their starting point assumption. The agreement to reduce protection against imports into Australia provides another example. This policy direction gained momentum when some

of the distributional effects of protection were more strongly emphasised (for example, through price effects, protection was harming, not helping, the poor).

So distributional outcomes do matter and our capacity to provide information to politicians about distributional outcomes is therefore critical. The problem is that providing distributional information can sometimes be a negative, from an economic perspective, as well as a positive. That is, it could lead to putting efficiency improving reforms into doubt because they may well have negative distributional effects. For example, some people argue that labour market reforms may well involve real wage reductions for some groups of people. Further analysis is required to test this hypothesis. If it is true, then policy design needs to take into account and address these negative distributional impacts.

We should not shy away from the fact that reform may involve negative or perverse income distribution changes. Economists have got a bad name over a long time for saying at one level distribution matters, but at another level never giving politicians the information about the distributional effects.

Instead, we have to look for packages that will help to make efficiency improving policy change possible, where the distributional implications would potentially be negative, whether by using the tax transfer mechanism, or other policy changes. For example, I believe that in 1985, the then Federal Treasurer (Paul Keating) could have ensured the implementation of a broad based consumption tax if he had offered it as part of a package of reforms to the social welfare system that actually offset what the welfare groups, the ACTU and, to a certain extent, even the business community saw as its negative impacts. Packaging of reforms, incorporating compensation for adverse distributional consequences, is important.

Distributional impacts and 'reform fatigue'

I also believe that the so called 'reform fatigue' that the Commonwealth is diagnosed as currently suffering is actually, to an extent, a product of the recognition of the cumulative distributional effects of the reforms that are being implemented or are proposed. Government is not reform fatigued, it is actually politically challenged by this. The Wills by-election loss forcefully drew Labor's attention to the fact that there are regionally concentrated distributional consequences of micro economic reform. That led directly to the Kelty review and the McKinsey report, and it led to regional development programs in Working Nation to offer measures which would 'compensate' regions for the costs to them of national reform policies.

Economic policy advisers should have warned Labor about the regional effects of its policies in advance, and offered some way of addressing or ameliorating them. This is not an argument for putting a stop to micro economic reform. Rather, its an argument for packaging reforms that address the differential regional impacts.

The comment has been made before that it is difficult enough to deal with regional economies based on the States and the Territories. But being politically realistic there are at least as many regional economies as there are seats in the House of Representatives. Each of them is a regional economy that people, for various reasons, care about and distinguish from other regions. Economists have to recognise that economic regions are the basic unit of analysis, and that the factors that are driving different parts of regional Australia are going to become increasingly different, over time as globalisation proceeds.

This leads me to the importance of the community in people's perceptions. For example, the States have recently received the results of some polling that illustrate people's preparedness to support local community programs over national issues. At the end of a discussion about the roles of governments people were given $10 to spend on Commonwealth, State and community programs. What they did was they spent three dollars on the Commonwealth, two dollars on the State and five dollars on the community. The results barely differed across the States. The conclusion I draw from this is not that people do not care about State governments, but they care much more about their local regional economy, and if we do not understand that, either as politicians and political analysts or as economic analysts, we are going to get completely out of tune with the way that the community thinks and feels.

So in my view, what people diagnose as reform fatigue is to a certain extent, reform realism. Politically speaking, we are being differentially affected by current policies and politicians are responding to that.

Concluding comments on the Dixon paper

To come back to the Dixon et al paper, as an overall comment I think it is an important step in fulfilling the minimum role that economists must play — that is providing the information that links the efficiency gains with the distributional consequences. I do have two particular issues I would like to raise.

First, I believe we do need to consider more carefully what information we need to convey to politicians about distributional change. I believe for policy purposes that we are much more interested in what is happening to real consumption than we are in what is happening to income, in the sense that Peter

has modelled it. I also believe that we need data on what is happening to regional distributional changes that are going on as a result of micro reforms.

Second, I found it surprising that the effects of micro reform on income distribution appeared to be, on average, relatively small. A priori, I would not have expected that to be the case, and I wonder how robust that result is to the particular sort of reforms that we are dealing with. For example, if a single reform was examined, rather than all micro reforms simultaneously, I wonder whether the type of conclusions would vary dramatically.

Having said that, I believe that this is a very exciting development and I am not surprised that the Centre of Policy Studies and the National Centre for Social and Economic Modelling are trying to get together to make sure that they become the lead players in the new modelling framework as well as the old one.

General discussion

The discussion initially focused on the features of the modelling work undertaken by Professor Dixon and then broadened into a discussion of the policy implications from this type of distributional analysis.

Assumptions underpinning the microsimulation/AGE model

In discussion, the following features of the modelling work were discussed:

Impact of microeconomic reform on the economy

It was noted that the model assumes a fixed long run 'non-accelerating inflation rate of unemployment' (NAIRU). Yet one of the benefits of microeconomic reform is to raise the productive capacity of the economy; that is, to reduce the NAIRU. As reductions in unemployment will have significant distributional consequences, this would appear to be an important consequence of microeconomic reform that is not reflected in the results.

Distribution of employment growth across households

It was suggested that employment growth may not be distributed evenly across households in different income groups. For example, for some family groupings at low income ranges there may be significant poverty traps that limit employment growth relative to the rest of the distribution. It was noted that as the developmental work progresses, it will be possible for these factors to be built into the microsimulation model and imported to the AGE model.

Assumptions regarding the welfare sector

The level of productivity growth in the welfare sector is an assumption inserted in the model, rather than an endogenous variable. It was noted that the model is structured in a 'top down' manner, so that the macroeconomic results generated through the Murphy module are fed into each sector. Accordingly, there is no feedback from assumptions of trends in the welfare sector back to the macro results.

Recognising the existence of rigidities and significant lag periods

The preliminary conclusions presented in Professor Dixon's paper suggested that the distributional consequences of microeconomic reform are not very significant. Some participants queried this result.

One participant noted that it contrasts with the actual experience of the United Kingdom, which has been through a significant period of microeconomic reform, and where there have been large distributional consequences.

It was suggested that the United Kingdom experience may be explained in part by a number of factors that are not captured in the modelling work. These include:

- the fact that a number of particular regions bore the brunt of economic restructuring;

- the existence of substantial housing rigidity; and

- the existence of very high marginal effective rates of tax for the unemployed and other barriers affecting long term unemployed people returning to the workforce.

These rigidities mean that the time lag for bringing unemployed people back into employment can be a very long one and hence the distributional consequences over the medium term can be large. Conversely, the distributional benefits of microeconomic reform may only appear after a significant time lag, although in the long run they may be significant.

Implications for policy development and evaluation

Participants queried whether the modelling work, when fully developed, could assist in fully evaluating the distributional consequences of a policy proposal by providing information on:

- *the relative impact on households in different income ranges*

   Professor Dixon noted that the choice of units in his paper upon which the distributional analysis was based could be improved. Alternatives include

dividing the population by income deciles, as well as age, sex and regions. This is a straightforward extension within the microsimulation/AGE framework.

- *the scope for compensation where the reform has a regressive impact*

  This could be modelled within the microsimulation/AGE framework, for example, by increasing social welfare payments in line with real income. The effect of increased taxes could also be modelled.

- *the best method of compensation, taking into account disincentive effects, or alternative set of reforms that may be a second best reform from an efficiency point of view, but might produce a better welfare outcome.*

  Professor Dixon noted that these types of models were not very helpful for providing this information. Efficiency issues are not well handled within the model. For example, there is no recognition of market power differences across industries and the likely impacts on economic outcomes. They are designed for distribution between industries, occupations, regions and now distribution between people.

One participant noted that a portfolio of distributional information was required in assessing the effects of microeconomic reform. He noted the concern about the immediate and tangible effects in terms of the displacement of those people whose workplaces are affected by the reform. Information on the size of these immediate effects and on the experience of these people over a subsequent period is an important issue in the evaluation of microeconomic reform policies. In addition, data are needed on the second round and long term effects. From a political perspective, information on the impact of the marginal voter is also important.

Another participant argued that recommendations on compensation for those affected by reform should be added to this "portfolio of information". Attempting to provide this information would highlight the fact that it is not always possible to compensate for distributional impacts within the current tax/transfer system.

It was argued that more could be done to bring this issue of compensation fully into the analysis. For example by developing the component of the model whereby employment growth is allocated across family groupings. A large part of social security reform in recent years has been aimed at certain types of families (such as sole parent families) to increase their employability. By reflecting this trend in the model compensation can be brought into the structure of the model rather than left as something to be sorted out once the economic analysis has been completed.

6. MEASURING INCOME INEQUALITY AND TAX PROGRESSIVITY: AN INTRODUCTION

John Creedy

6.1 Introduction

There are very many ways of measuring the statistical dispersion of incomes and hence the impact of tax changes on income dispersion. There are also many ways of describing the precise extent to which an income tax structure is progressive; progression arises if the average tax rate increases over the whole range of incomes. But many studies are motivated by the idea that inequality is in some sense a 'bad' thing. Concern is therefore usually with the question of whether a change in income distribution, perhaps brought about by a tax change, represents an 'improvement'.

The difference between the purely statistical or descriptive measures and the use of inequality measures in order to make statements implying 'good' or 'bad' changes is the introduction of value judgements. Such value judgements cannot be avoided in any attempt to describe a change in income distribution in terms of an improvement or deterioration. The widely used Pareto criterion, according to which a change which makes at least one person better off without making anyone worse off is judged to be an increase in efficiency, is itself a value judgement. The role of the economist is therefore to examine the implications of adopting a variety of value judgements. The extensive research on inequality and tax progressivity measures that has been carried out over the last quarter century has been motivated by the desire to relate the measures explicitly to value judgements.

This approach has produced an extensive and often technical literature. The purpose of this paper is to provide an introduction to a small number of inequality and tax progressivity measures, concentrating on those which have received most attention. The emphasis is on the link between the measures and evaluation involving value judgements. First, Section 6.2 introduces the basic method of presenting an income distribution, the Lorenz curve, which plays a central role in what follows. Section 6.3 describes two inequality measures, the Gini and Atkinson measures, which are used extensively in the literature. Section 6.4 investigates the form of social welfare function associated with the

inequality measures. In each case it is possible to express social welfare, starting from a basic expression of value judgements, in terms of arithmetic mean income and its inequality. This gives rise to the concept of an abbreviated social welfare function.

The use of explicit value judgements and their associated inequality and welfare measures makes it possible to provide unequivocal comparisons between any pair of income distributions. Much attention has, however, been given to the question of whether there is a broad range of agreement using only a minimum of assumptions about value judgements. For example, when would a change in income distribution be approved by a large range of people who share only a few simple principles? Similarly, what kind of change in a tax schedule would constitute an improvement, using a minimum specification of value judgements? A flavour of the sort of the results obtained by this literature is given in Section 6.5. The link between tax progressivity and inequality is discussed in Section 6.6, which also provides numerical examples. It must be stressed that the discussion applies only to the case where the pre-tax income distribution is not affected by the tax structure itself. Furthermore, attention is restricted to the treatment of individuals whose non-income characteristics are considered as being irrelevant so that, for example, differences in 'needs' are ignored. Brief conclusions are given in Section 6.7. A certain amount of technical discussion is used although every attempt has been made to keep this to a minimum. For much more extensive and technical treatments, see the surveys by Cowell (1977), Morris and Preston (1986), Jenkins (1991) and Lambert (1993a, 1993b).

6.2 The Lorenz curve

This section introduces the Lorenz curve, a valuable method of summarising income distribution data. This provides a convenient descriptive tool and, more importantly, is fundamental when welfare comparisons are being made. Suppose there are N individuals whose incomes are denoted y_i, i = 1, . .., N. These incomes are assumed to be ranked in ascending order such that $y_1 < y_2 < ...< y_N$. The *Lorenz curve* shows diagrammatically the relationship between the proportion of *people* with income less than or equal to a specified amount, and the proportion of total *income* obtained by those individuals. Typically the poorest, say 10 per cent of people will have less than 10 per cent of total income, and even the poorest 80 per cent of people usually have substantially less than 80 per cent of total income. The proportion of people whose income is less than the k th income in the list is given by k/N. The corresponding proportion of total income is expressed as $\sum_{i=1}^{k} y_i / \sum_{i=1}^{N} y_i$. For example,

when k = 1 the associated proportion of people is 1/N while the proportion of total income is $y_1 / N\bar{y}$ where $\bar{y}$ denotes the arithmetic mean income level. If everyone has the same income level, $y = \bar{y}$, then for all k the proportion of total income is $k\bar{y}/N\bar{y} = k/N$ and is equal to the corresponding proportion of people. When incomes are unequal, the fact that they are ranked in ascending order means that the proportion of people is always below the proportion of total income, except when k = N. Typically the Lorenz curve looks like the curve shown in Figure 6.1. If everyone except person N has a zero income, then $\sum_{i=1}^{k} y_i$ is zero for all k < N. This case of extreme inequality therefore produces a curve that follows the bottom and right hand edge of the box. Any distribution having a Lorenz curve that is unambiguously closer to the diagonal of equal incomes than another distribution can therefore be said to be more equal. If two Lorenz curves intersect, there is an obvious problem in making an unequivocal ranking of the two distributions in terms of their inequality. Further criteria need to be brought to bear on the comparison in such a case.

Figure 6.1: The Lorenz curve
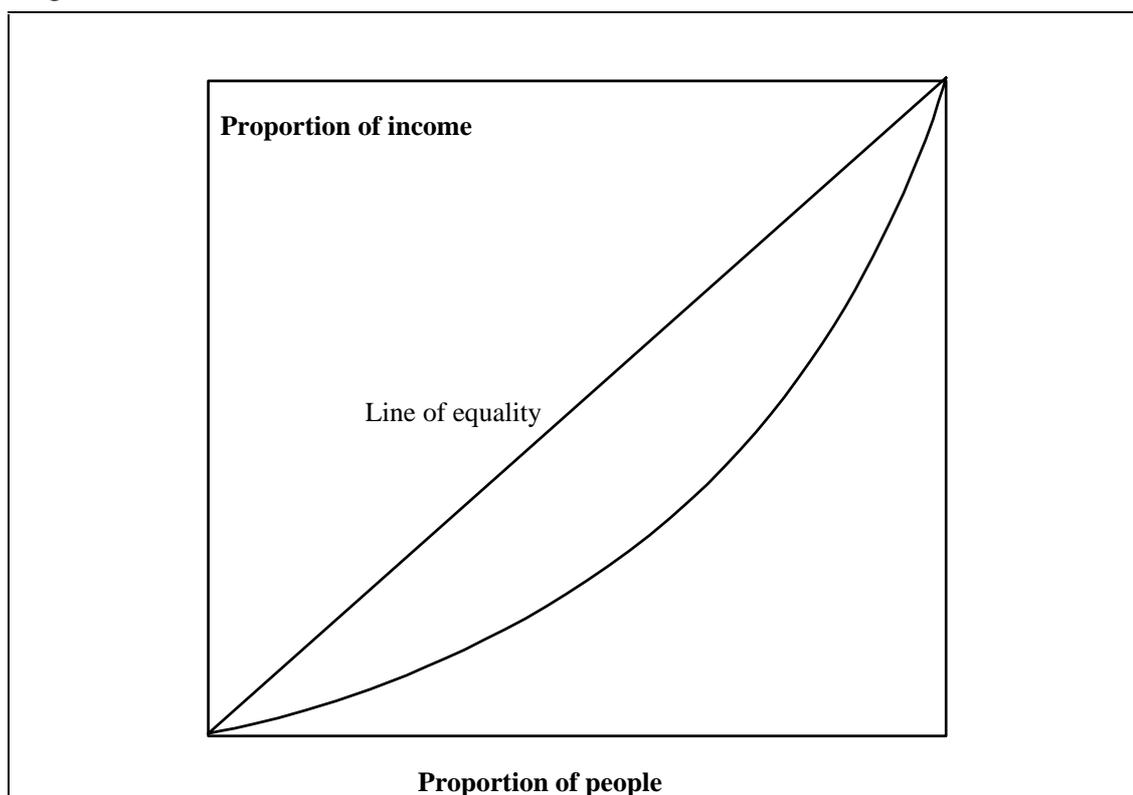
An example of the calculations involved in producing a Lorenz curve is shown in Table 6.1 for the simple case where there are just five individuals, whose incomes are given in the second column. The proportion of people with incomes less than or equal to y_i is denoted $F(y_i)$ and in this case is simply $i/5$, since the individuals are ranked in ascending order and the index, i, represents the rank. The total income obtained by those with incomes less than or equal to y_i is given by $\sum_{j=1}^{i} y_j$ and is shown in the fourth column of Table 6.1. The fifth column translates the total income values, in column four, into values which represent the proportion of total income. These proportions are denoted $F_1(y_i)$. The Lorenz curve is obtained by plotting the values in column five on the vertical axis with the corresponding values given in the third column on the horizontal axis; hence it represents $F_1(y)$ plotted against $F(y)$.

Table 6.1:   Individual incomes

person i	y_i	$F(y_i) = \dfrac{i}{N}$	$\sum_{j=1}^{i} y_j$	$\sum_{j=1}^{i} y_j / \sum_{j=1}^{5} y_j = F_1(y_i)$
1	10	0.2	10	.056
2	20	0.4	30	.167
3	30	0.6	60	.333
4	50	0.8	110	.611
5	70	1.0	180	1.000

Note: $\bar{y} = \Sigma y_i / 5 = 36$

Table 6.2:   A grouped income distribution

Class i	Range	Midpoint y_i	Number N_i	Relative frequency $N_i/N = f_i$	$F(y_i^u) = \sum_{j=1}^{i} f_j$	$\dfrac{y_i f}{i}$	$\sum_{j=1}^{i} y_j f_j$	$F_1(y_i^u) = \sum_{j=1}^{i} y_j f_j / \bar{y}$
1	1 – 5	3	4	.100	.100	0.30	0.30	.022
2	6 – 10	8	12	.300	.400	2.40	2.70	.200
3	11 – 15	13	10	.250	.650	3.25	5.96	.441
4	16 – 20	18	7	.175	.825	3.15	9.10	.674
5	21 – 25	23	4	.100	.925	2.30	11.40	.844
6	26 – 30	28	3	.075	1.000	2.10	13.50	1.000

Note: $N = \sum_{i=1}^{6} N_i = 40; \; \bar{y} = \sum_{i=1}^{6} y_i f_i = 13.5$

Individual income distribution data are not always available, and most published data give grouped frequency distributions. An example is given in Table 6.2 where the individual data are grouped into six classes, as shown in the second column of the table. The midpoint of each class is given in the third column, and the assumption is usually made that all the individuals in each class are concentrated at the class midpoint; in this way the process of grouping involves a loss of information. The midpoints are denoted y_i, where the i subscript represents the ith class rather than the ith individual. The number of individuals in each class is denoted N_i and is shown in the fourth column. These values are converted into relative frequencies, f_i, in column five, so that $f_i = N_i/N$. The proportion of people with incomes less than or equal to the *upper value* of each class is given in the sixth column; hence, if the upper value of the ith class is y_i^u, then $F(y_i^u) = \sum_{j=1}^{i} f_j$. The steps involved in producing the proportions of total income, $F_1(y_i^u)$, are shown in the last three columns of Table 6.2. The proportions are given by $F_1(y_i^u) = \sum_{j=1}^{i} y_j f_j / \bar{y}$ where $\bar{y}$ is the arithmetic mean value of income. Notice that $\bar{y}$ is equal to $\sum_{i=1}^{6} y_i f_i = 13.5$. In the case where individual data are available, the equivalent of f_i is $1/N$, so $\bar{y} = \sum y_i (1/N)$.

6.3 Inequality measures

It has been suggested that the Lorenz curve allows an unambiguous inequality comparison of income distributions only if the curve for one distribution lies entirely outside that of another distribution. If Lorenz curves intersect no such overall comparison is possible. However, it is often required to rank distributions when they cross, and even for those which do not intersect, some measure of their extent of the difference is required. For such purposes it is necessary to produce a single summary statistic which measures inequality. The most commonly used inequality measures are the Gini and Atkinson measures, and these are discussed below.

The Gini measure

The Gini inequality measure, G, is related directly to the Lorenz curve. It measures the extent to which the curve departs from the 45° line of equality, using the ratio of the area enclosed by the diagonal and the Lorenz curve, divided by the area below the diagonal. This relationship ensures that the value of the Gini coefficient lies between zero (for complete equality) and one (for extreme inequality). The area below the diagonal is equal to 1/2, given that the

height and base are both unity. Therefore G is twice the area enclosed by the Lorenz curve and the diagonal. It is possible to show that an alternative way of expressing the Gini measure is the following:

$$G = 1 + 1/N - (2/N^2) \sum_i (N + 1 - i) (y_i/\bar{y}) \tag{1}$$

where $y_1 < y_2 < . . . < y_N$. This expression shows that the Gini measure depends on the ranking of individuals incomes, as well as their size.

For computational purposes it is often useful to write G as:

$$G = (2/\bar{y}) \, Cov\{y, F(y)\} \tag{2}$$

where Cov{ } denotes covariance; on the use of covariance expressions in this context, see Jenkins (1988).

The extended Gini measure

The expression for G in terms of covariance is useful for numerical work, and also suggests an extension of the Gini measure which allows for a parameter, v, that reflects different welfare judgements about inequality. Following Yitzhaki (1983), the extended Gini, G(v), takes the form, for v >1:

$$G(v) = -\frac{v}{\bar{y}} \, Cov\{y, (1 - F(y))^{v-1}\} \tag{3}$$

Substitution shows that G(2) = G. The further interpretation of the parameter, v, will be discussed in Section 6.4.

Atkinson's measure

Atkinson's (1970) measure, unlike the Gini measure, is not based directly on the Lorenz curve, but is directly related to a social welfare function, W, expressed as the following function of individual incomes y_i (for i=1,...,N):

$$W = \frac{1}{N} \sum_i U(y_i) \tag{4}$$

where $U(y_i)$ represents the social value attached to individual i's income; this should not be confused with i's own utility function. The form of the function U reflects the inequality aversion of the decision-taker or individual making the judgements. Atkinson (1970) concentrated on the implications of assuming:

$$U(y) = \frac{1}{1-\varepsilon} y^{1-\varepsilon} \qquad \varepsilon \neq 1, \varepsilon > 0 \tag{5}$$
$$= \log y \qquad \varepsilon = 1$$

The relationship between $U(y)$ and y is thus concave, reflecting the judgement that an increase in incomes at the higher range of the distribution contributes less to social welfare than an equal increase in lower incomes. A measure of concavity, based on the extent to which the slope of $U(y)$ falls, is given by $-yU''(y)/U'(y)$, and for (5) this is equal to the parameter ε. In the present context, ε is a measure of relative inequality aversion.

A corner-stone of Atkinson's approach to the measurement of inequality is the concept of the equally distributed equivalent level of income, y_e. This is defined as the level of income which, if obtained by everyone, produces the same social welfare as the actual distribution. Hence y_e is defined by:

$$W = \frac{1}{N} \sum U(y_i) = U(y_e) \tag{6}$$

and y_e is given by $U^{-1}(W)$. The Atkinson inequality measure, $A(\varepsilon)$, is defined in terms of the proportional difference between arithmetic mean income and the equally distributed equivalent level. Hence:

$$A(\varepsilon) = (\bar{y} - y_e)/\bar{y} = 1 - y_e/\bar{y} \tag{7}$$

Using (5) and (6), the equally distributed equivalent is:

$$y_e = \left[\frac{1}{N} \sum_{i=1}^{N} y_i^{1-\varepsilon} \right]^{1/(1-\varepsilon)} \tag{8}$$

The value of y_e can therefore easily be calculated given a set of incomes.

In view of the fact that the choice of ε reflects a value judgement, it is usual in investigating income distributions to report results for a range of values of ε. In theoretical studies, such as the analysis of taxation, the aim has been to try to understand the structure of models and the implications of different attitudes towards inequality. It has been seen that the extended Gini, $G(v)$, involves a parameter v. This has a role similar to Atkinson's ε. Thus $G(1) = A(0) = 0$ and $G(\infty) = A(\infty) = 1 - y_1/\overline{y}$, where y_1 is the minimum income.

6.4 Social welfare functions

It was seen in the previous Section that the Atkinson inequality measure is based explicitly on a social welfare function. The nature of this welfare function is examined more closely in the first subsection. Although the Gini measure was defined in terms of areas in the Lorenz diagram, it can be linked explicitly to welfare functions, as shown in the second subsection below.

The Atkinson-based welfare function

A further feature of Atkinson's approach is that it is possible to express social welfare in terms of $\overline{y}$ and $A(\varepsilon)$. This is particularly useful as it enables the implied tradeoff between the two objectives of raising average income and reducing its inequality to be seen directly. From (7):

$$y_e = \overline{y}(1 - A(\varepsilon)) \tag{9}$$

so that substituting into (6) gives welfare per person expressed in terms of $\overline{y}$ and $A(\varepsilon)$ as:

$$W = U\{\overline{y}(1 - A(\varepsilon))\} \tag{10}$$

It is however usual to write W simply in terms of the equally distributed equivalent income, as in (9), rather than $U(y_e)$. This way of writing the welfare function is called the *abbreviated welfare function*. The nature of the tradeoff between 'equity and efficiency' is the same for both forms. Changes in $\overline{y}$ and $A(\varepsilon)$ which leave W unchanged are given by:

$$\left.\frac{d\overline{y}}{dA(\varepsilon)}\right|_W = \frac{\overline{y}}{1 - A(\varepsilon)} \tag{11}$$

These results apply to any form of U, but Atkinson concentrated on the constant relative inequality aversion case.

The parameter ε reflects the concavity of the function U. A very useful feature is that ε also affects the convexity of the social indifference curve showing combinations of y_i and y_j for persons i and j for which W is constant. Substituting (5) into (4) and totally differentiating gives:

$$\left.\frac{dy_i}{dy_j}\right|_W = -\left(\frac{y_j}{y_i}\right)^{-\varepsilon} \tag{12}$$

The marginal rate of substitution between y_i and y_j therefore depends only on the ratio of incomes and not on their absolute levels. Furthermore, (12) holds for any two individuals in a population and does not depend on their ranks in the distribution, or on the incomes of other individuals. An indifference curve is shown in Figure 6.2, where B is the point representing the incomes y_1 and y_2. This curve is symmetrical about the 45^0 line through the origin. A value of $\varepsilon = 0$ gives an indifference curve through B which coincides with the 45° line through B and C. This reflects the absence of any aversion to inequality. An infinitely high value of ε would give an L shaped indifference curve, which reflects extreme aversion. The extent of aversion to inequality is therefore reflected by the shape of the indifference curve in relation to these two extremes. For the two-person case the equally distributed equivalent income is obtained from point A, so that the Atkinson inequality measure is the ratio AC/OC.

Figure 6.2: Social indifference curves
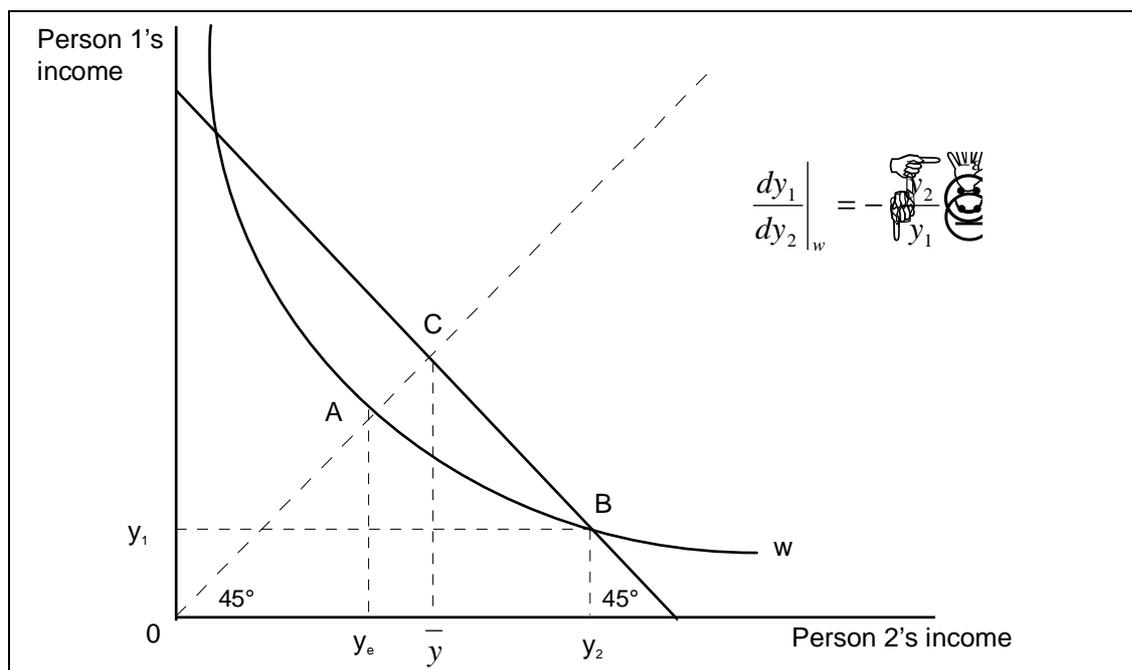
A Gini-based welfare function

The Atkinson measure and its associated abbreviated social welfare function are based directly on the use of a welfare function such as that in (5).   Following Atkinson's contribution, attempts were made to relate the Gini measure to explicit value judgements.   It was found that it is   not consistent with an individualistic social welfare function which is increasing, symmetric and differentiable, such as (5).   Nevertheless, social welfare functions have been proposed which are consistent with the use of the Gini measure.   These are discussed in the present section in relation to their implications for inequality aversion. First, Sen (1973) proposed a 'pairwise maximum' criterion according to which the welfare level of any pair of individuals is equal to the income of the poorest of the two. He then showed that average welfare across all pairs is equal to $\bar{y}$ (1–G). This result essentially arises from the mean-difference basis of the Gini measure.

An alternative approach was suggested by Lambert (1985), whereby each individual's utility depends on income and the income distribution, so that in general terms utility is U(y, F). Lambert showed that, in considering the class of welfare functions, W = $\int$ U (y, F) dF(y), two separate cases give rise to an abbreviated welfare function involving the Gini measure. One case involves U

reflecting relative deprivation while in the other case U is specified in terms of the rank position of each individual in the income distribution. For both specifications, welfare can be written as $\bar{y}$ $(1–kG)$, where the parameter, k, is restricted to the range $0 < k \leq 1$. Substituting the expression for G from (1) and totally differentiating, gives:

$$\left.\frac{dy_i}{dy_j}\right|_W = -\left\{\frac{k(N + 1 - 2j) + N}{k(N + 1 - 2i) + N}\right\} \tag{13}$$

Thus the marginal rate of substitution is constant and depends on k, N and the rankings of the two relevant individuals. In producing (13), it is assumed that the transfer does not affect the rankings of individuals. This contrasts with the results for the Atkinson inequality measure, reflecting the different perspectives of the two measures. The Atkinson measure is said to reflect the 'wastefulness' of inequality (so that the rankings of the two individuals in the distribution do not matter) whereas the Gini measure is said to reflect the 'unfairness' of inequality. In the case of just two persons (13) reduces to:

$$\left.\frac{dy_i}{dy_j}\right|_W = -\left\{\frac{2 - k}{2 + k}\right\} \tag{14}$$

Furthermore, substitution of j =N = 2 and i = 1 into (1) gives:

$$G = \frac{1}{2} - \left(\frac{y_1}{y_1 + y_2}\right) = \frac{1}{2}\left(\frac{\bar{y} - y_i}{\bar{y}}\right) \tag{15}$$

The situation corresponding to the two-person Gini-related welfare function is shown in Figure 6.3, for comparison with Figure 6.2. Using (15) the Gini measure is (EC/OC)/2. When k = 1 the line AB has the slope of 1/3, obtained by substituting into (14).

Figure 6.3:   Social indifference curves
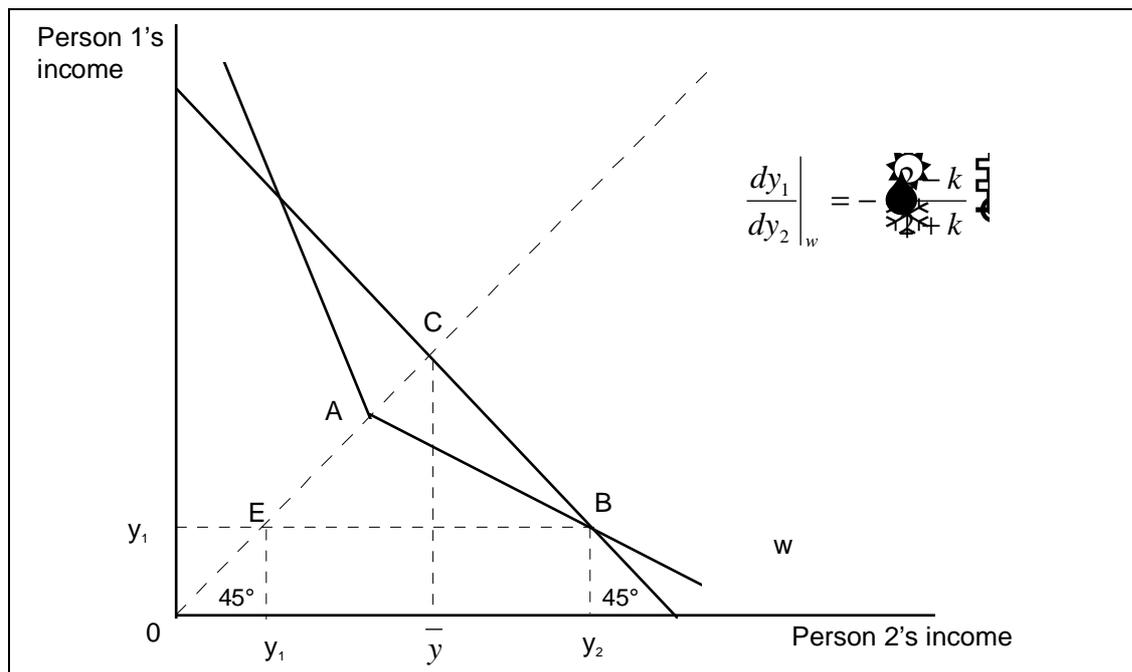
Social welfare and the extended Gini

The extended Gini measure can be used in evaluating social welfare by using the abbreviated form G(v) so that $W = \bar{y}\,(1-G(v))$. It has been shown by Muliere and Scarsini (1989) that a rationale for the use of this abbreviated welfare function involves an extension of Sen's 'pairwise maximin' criterion. If the welfare of any v-tuple of individuals is the income of the poorest person, then the average of the welfare of all v-tuples is equal to $\bar{y}\{1-G(v)\}$. Remember that $v = 2$ gives the standard Gini. The implications for social indifference curves can be seen as follows. Substituting for G(v) using (3) gives:

$$W = \bar{y} + v\,\mathrm{Cov}\{y, (1 - F(y))^{v-1}\} \tag{16}$$

Since $y_1 < y_2 < ... < y_N$, the required covariance, Cov{ }, can be expressed as:

$$\mathrm{Cov}\{\ \} = \frac{1}{N} \sum_i y_i\,(1-i/N)^{v-1} - (\bar{y}/N) \sum_i (1-i/N)^{v-1} \tag{17}$$

Substitution of (17) into (16) and differentiating, gives:

$$\frac{dy_j}{dy_s}\bigg|_W = \frac{N + v\left(1 - s/N\right)^{v-1} - \sum(1-i/N)^{v-1}}{N + v\left(1 - j/N\right)^{v-1} - \sum(1-i/N)^{v-1}} \tag{18}$$

This result may be compared with the corresponding results in (13).

6.5 Lorenz curves and welfare comparisons

Section 2 introduced the Lorenz curve as a way of representing income distributions, and stated that two distributions can be compared in terms of their inequality if one distribution has a Lorenz curve that lies entirely inside that of the other distribution. This idea is also reinforced by the result that an income transfer from a richer to a poorer person, that does not change their ranking, will shift the Lorenz curve inwards towards the line of equality. The idea that inequality is reduced by such rich-to-poor transfers is widely accepted.

Where Lorenz curves intersect, and such unequivocal comparisons cannot be made, particular summary measures of inequality can be used, such as Atkinson's measure. This measure was shown to be linked to an explicit social welfare function which has an abbreviated form given by $\bar{y}\,(1-A(\varepsilon))$. This form can be used to compare alternative tax structures directly. For example, different tax structures that give rise to different combinations of $\bar{y}$ and A can be compared in terms of their total welfare. However, in introducing his measure, Atkinson (1970) also obtained a more general result involving Lorenz comparisons that has formed the starting point of many investigations.

Consider the class of welfare functions which take the form $W = \frac{1}{N}\sum U(y_i)$ where U, reflecting the decision maker's value judgements, is increasing and concave.   The fact that U is increasing means that this class represents "Paretian" welfare functions (since an increase in any y_i, with all other values unchanged, increases total welfare) and the concave property implies that a transfer of \$1 from a richer to a poorer person increases social welfare. The idea that such transfers increase social welfare is referred to as the *Principle of Transfers*. The role of transfers in affecting the Lorenz curve was mentioned at the beginning of this Section. The two results can be combined to obtain a simple but powerful result linking Lorenz curves to the broad class of welfare

functions. Atkinson showed formally that for distributions with equal means, Lorenz dominance, such that the Lorenz curve of distribution A lies entirely inside that of distribution B, implies that social welfare under A exceeds that under B for all welfare functions in the above class. This result provides the welfare interpretation of Lorenz dominance which was mentioned briefly above. It also holds if the dominating distribution has a higher arithmetic mean than the dominated distribution.

Because of the restriction to equal means, this important result can be applied to comparisons between tax structures which are revenue neutral. Lorenz dominance in terms of the post-tax income distributions for two tax structures implies a welfare ranking without imposing further restrictions on the form of U. When the arithmetic means of the distributions differ, Shorrocks (1983) has shown that the appropriate concept is that of the generalised Lorenz curve. This relates the cumulative amount of income, rather than its proportion, to the corresponding proportion of people. Hence the generalised Lorenz curve

relates $\bar{y} F_1(y)$ to $F(y)$. When means differ, Atkinson's result stated above can be translated directly in terms of generalised Lorenz curves. Generalised Lorenz dominance can be used to establish welfare rankings in some cases where the Lorenz dominating distribution has the relatively smaller arithmetic mean. Furthermore, there may be cases where Lorenz curves cross, so that Atkinson's result cannot be used, but the generalised Lorenz curves do not cross.

When Lorenz curves and generalised Lorenz curves cross, further restrictions need to be imposed on the welfare functions in order to make unequivocal comparisons, it is not always necessary, however, to make precise assumptions about the form of U, depending on the nature of the distributions being compared. Various conditions have been established, for example, in relation to the class of welfare functions which, in addition to being increasing and concave, reflect what is called the 'principle of diminishing transfers'. This is more specific than the principle of transfers, and requires that transfers at the lower end of the income distribution are valued more highly than those in the higher ranges. The means that the third derivative of U is positive. For a complete summary of the results, see Lambert (1993). It may be mentioned that the constant relative inequality aversion form of U used in developing the Atkinson inequality measure is itself a special case of a function displaying the principles of diminishing transfers, since $d^3U/dy^3 = (1+\varepsilon) \varepsilon y^{-(2+\varepsilon)}$.

Consider the hypothetical distributions, each containing five individuals, shown in Table 6.3. For each distribution, the income of each person is shown, along with the corresponding values of the proportion of total income obtained, F_1,

and the values of $\overline{y}\,F_1$. These figures provide the necessary information for the Lorenz curve and generalised Lorenz curve of each distribution, remembering that the proportions of people take the values of 0.2, 0.4, 0.6, 0.8 and 1.0 for

each distribution. The total income is given by the value of $\overline{y}\,F_1$ corresponding to the richest person. Hence it can immediately be seen that for distributions 1, 2 and 4 the arithmetic mean income is 50, while for distribution 3 it is 70.

A comparison of distributions 1 and 2 shows that the Lorenz curve of the latter is inside that of the former.   Hence all Paretian social welfare functions satisfying the principle of transfers would rank distribution 2 above 1.   In comparing 1 with 3, the Generalised Lorenz curve is required, and it can be seen from Table 6.3 that the curve of 3 is higher than that of 1, so that distribution 3 dominates. This is despite the result that the Lorenz curves cross. Hence the higher mean of distribution 3 more than compensates for the fact that some inequality measures would rank it as more unequal than 1.   But in comparing 2 and 3, the generalised Lorenz curves intersect once; that of 2 is initially above that of 3, but the higher mean of the latter means that it eventually crosses. This means that, without further restrictions on the social welfare function, no unambiguous comparison of 2 and 3 can be made.

Table 6.3:   Alternative income distributions

Distribution 1			Distribution 2			Distribution 3			Distribution 4		
y	F_1	$\overline{y}\,F_1$	y	F_1	$\overline{y}\,F_1$	y	F_1	$\overline{y}\,F_1$	y	F_1	$\overline{y}\,F_1$
10	.04	10	20	.08	20	20	.057	20	15	.06	15
20	.12	30	30	.20	50	30	.143	50	20	.14	35
40	.28	70	50	.40	100	40	.257	90	30	.26	65
70	.56	140	60	.64	160	100	.543	190	70	.54	135
110	1.00	250	90	1.00	250	160	1.00	250	115	1.00	250

Table 6.4:   Alternative summary measures

e	$A(e)$	y_e	$A(e)$	y_e	$A(e)$	y_e	$A(e)$	y_e
.4	.11	44.48	.05	47.55	.11	62.44	.11	44.63
.8	.22	38.86	.10	45.07	.21	55.33	.21	39.61
1.2	.33	33.54	.15	42.63	.30	49.12	.30	35.24
1.6	.42	28.93	.19	40.30	.37	44.09	.37	31.68

v	$G(v)$	$\bar{y}(1{-}G)$	$G(v)$	$\bar{y}(1{-}G)$	$G(v)$	$\bar{y}(1{-}G)$	$G(v)$	$\bar{y}(1{-}G)$
1.2	.28	35.80	.19	40.52	.30	49.08	.30	34.95
1.6	.35	32.33	.24	38.11	.36	44.70	.37	33.25
2.0	.40	30.00	.27	36.40	.40	42.00	.40	30.00
2.4	.43	28.59	.29	35.27	.42	40.57	.41	29.01

Distributions 1 and 4 have the same arithmetic mean but their Lorenz curves and generalised Lorenz curves intersect, so that further restricions are necessary. Remember that cases can arise where, for equal means, the Lorenz curves can cross but the generalised Lorenz curves show a clear ranking. Distribution 2 also clearly dominates distribution 4.   The Lorenz curves of distributions 3 and 4 intersect twice, but the generalised Lorenz curve of distribution 3 unambiguously dominates that of 4:   hence inequality comparisons require more specification, but welfare comparisons are the same for all Paretian welfare functions satisfying the principle of transfers.

Welfare comparisons between distributions 3 and 2, and between 1 and 4, therefore require further restrictions on the social welfare function used. Table 6.4 shows extended Gini and Atkinson inequality measures, along with the corresponding values of social welfare functions.   It can be seen that distribution 3 has a higher social welfare than 2 for all the cases shown in the table, despite the higher inequality. For social welfare based on the Atkinson measure, distribution 4 dominates 1 for all degrees of inequality aversion shown, since it has lower inequality measures. However, social welfare using the standard Gini measure (where $v = 2$) is identical for distributions 4 and 1. When $v < 1$, distribution 1 is judged to be superior to 4, and this ranking is reversed for $v > 2$.

Finally, the idea of tax progressivity can be related to Lorenz curves. A given tax yield can be considered as being obtained using a proportional tax, which leaves the Lorenz curve unchanged. Then a revenue-neutral progressive change in the tax structure can be considered. The system is progressive if the post-tax Lorenz curve dominates (lies inside) that of the pre-tax distribution. The links between Lorenz dominance, reductions in inequality and increases in social

welfare can thus be made. Such general results are important in appreciating the relationships among the various concepts and in understanding the types of overall comparison which may be made using a minimum of assumptions about the social welfare function. They can be used to establish results which are very robust. However, it is often useful to evaluate tax changes in terms of explicit social welfare functions, inequality and progressivity measures. Alternative measures are therefore described in the next section.

6.6 Tax progressivity measures

First, it is useful, following Lambert (1993b: 160), to distinguish between the two concepts of *progression* in the tax rate structure and of *progressivity*. The first concept relates to the nature of the tax structure alone, and as stated earlier a structure is said to be progressive if the average rate rises, that is, if the marginal rate exceeds the average rate at all income levels. The second concept refers to the effectiveness of the tax structure when applied to a given income distribution. The effectiveness of a given tax function can vary substantially depending on the form of income distribution.

Given the focus of the present paper, emphasis is placed on examining the progressivity of alternative structures, using the following measures.

Gini and concentration measures

For notational convenience, suppose that x_i is a measure of individual i's pre-tax income, and this is transformed into post-tax income y_i. Individuals can be ranked in ascending order so that $x_1 < x_2 < ... < x_N$. If G_x denotes the inequality of gross income, it can be written from (2) as:

$$G_x = \frac{1}{\bar{x}} \int \int v(x, F(x)) \qquad (19)$$

where $\bar{x}$ is the arithmetic mean gross income and $F(x)$ is the distribution function. In the present case $F(x)$ takes the simple form whereby $F(x_i) = i/N$.

Pre-tax income x is transformed to y using the tax system $y = x - t(x)$, and the corresponding Gini measure of net income, G_y, may be obtained in the same way, after re-ranking individuals according to y. If, however, the ranking by x

is maintained, an alternative measure of the distribution of net income, called the concentration index, C_y, is given by:

$$C_y = \ldots v(y, F(x)) \qquad (20)$$

This concentration measure can be related to a type of Lorenz curve. If the proportion of total post-tax income (retaining the ranking of individuals by pre-tax incomes) is related to the proportion of individuals, $F(x)$, the resulting curve is called a 'concentration curve'.   The concentration measure is the corresponding Gini measure; that is, C_y is the ratio of the area enclosed by the concentration curve and the diagonal of equality, to the area below the diagonal. Similarly, a tax concentration curve can be obtained by plotting the proportion of total tax paid against the proportion of income, with the ranking in each case according to gross incomes. A similar concentration index, C_t, of tax paid, $t(x)$, may be obtained in the same way by substituting $\bar{t}$ for $\bar{y}$ and $t(x)$ for y in equation (20).

Progressivity measures

Kakwani's (1977) index of progressivity, K, is defined as the difference between the tax concentration index and the Gini measure of x:

$$K = C_t - G_x \qquad (21)$$

If the tax is proportional, the tax concentration curve coincides with the Lorenz curve of gross income and K= 0. If those with relatively higher incomes pay proportionately more of their income in taxation (the average tax rate increases with income), the tax concentration curve lies outside the Lorenz curve of gross income.

Another progressivity measure was proposed by Suits (1977). Jenkins (1988) has shown that the Suits measure of progressivity, S, can be expressed as:

$$S = \sum_{t} \, \text{cov}(t(x), F_1(x)) \; - \; G_x \qquad (22)$$

where $F_1(x)$ is the first moment distribution of x, given by $F_i(x) = \sum_{j=1}^{i} x_j / \bar{x}$.

The redistributive effect of a tax system can be measured in terms of the reduction in a measure of inequality from the pre-tax to the post-tax distributions of income. Any inequality measure could be used, but there is a particular role for the Gini measure, given its use in defining the Kakwani progressivity measure. The Reynolds–Smolensky measure of redistributive effect, L, is the difference between the two Gini measures of x and y, so that:

$$L = G_x - G_y \qquad (23)$$

Horizontal equity

In producing the various measures above, care has been taken to distinguish which ranking of individuals is appropriate. This is because it is not necessarily the case that individuals are placed in the same order when ranked according to pre-tax and post-tax incomes. In practice the ranking may change because a different tax formula is applied to different people, if they are judged to have different non-income characteristics which are relevant. This obviously involves a value judgement. But if individuals have similar non-income characteristics, any change in their ranking as a result of a tax structure can be regarded as an indication of horizontal inequity. The Atkinson–Plotnick index of horizontal inequity (re-ranking), P, may be defined as:

$$P = \frac{G_y - C_y}{2\,G_y} \qquad (24)$$

This expression differs slightly from that suggested by Plotnick (1981), using just the numerator, but follows that given by Jenkins (1988). If only a single time period is being considered, and all individuals face the same tax function, it is unlikely (unless the tax function is rather unusual) that there will be any re-ranking. However, in a multi-period context where individuals' earnings fluctuate over time, it is possible for the rankings to change. An individual with

a fluctuating income stream will pay more tax if there are increasing marginal tax rates, compared with someone having the same total income but in the form of a steady income stream.

Relationship between measures

Define the aggregate tax rate, g, as total tax revenue divided by total income. An important relationship between the various measures defined above, obtained by Kakwani (1984), is as follows:

$$L = K \{g/(1 - g)\} - 2G_y P \qquad (25)$$

This shows that if there is no re-ranking, $P = 0$ and the reduction in the Gini coefficient arising from the tax structure, L, is proportional to the Kakwani measure of disproportionality of tax payments. However, a change in the tax system which, for example, increases the disproportionality of tax payments need not necessarily reduce the (Gini) inequality of net income. This is because the net effect depends on what happens to the aggregate tax rate. The possibilities are greater when re-ranking can occur. The relationship in (25) can be rewritten for the extended form of the Gini measure, and corresponding concentration measures, involving the additional parameter reflecting attitudes towards inequality.

Numerical examples

In order to illustrate these measures, consider just 10 individuals whose pre-tax incomes are independent of the tax structure. Suppose that they face a tax function such that $t(x) = 0$ if x is less than or equal to a threshold, a, but $t(x) = t(x - a)$ when $x > a$. This type of system, having a single marginal rate applied to income measured in excess of a tax-free threshold, is frequently used in economic models and is examined in detail in the following chapters. The hypothetical incomes are shown in Table 6.5 in ascending order, along with the corresponding values of $F(x)$ and $F_1(x)$. The last two columns could be used to draw a Lorenz curve.

The values of x were actually generated by taking random drawings from a lognormal distribution with mean and variance of logarithms of 5 and 0.5 respectively. The effects of applying three tax functions to the pre-tax incomes are shown in Table 6.6. In each case $t = 0.30$, and comparisons are made for values of the tax-free threshold, a, of 60, 80 and 110. As the threshold

increases, it can be seen that the average amount of tax falls, as expected. In the third structure, the threshold exceeds the pre-tax incomes of the poorest two individuals so they pay no tax. The various summary measures of inequality and progressivity are shown in Table 6.7. The Atkinson inequality measure is shown for four values of inequality aversion, ε, ranging from 0.2 to 0.8.

Table 6.5:   Pre-tax incomes

Individual number	pre-tax income, x	F(x)	$F_1(x)$
1	103.93	0.100	0.053
2	109.27	0.200	0.109
3	116.92	0.300	0.169
4	119.93	0.400	0.230
5	128.99	0.500	0.297
6	218.49	0.600	0.408
7	221.51	0.700	0.522
8	251.92	0.800	0.651
9	254.69	0.900	0.781
10	427.13	1.000	1.000
Arithmetic mean	195.28		

The values of x were actually generated by taking random drawings from a lognormal distribution with mean and variance of logarithms of 5 and 0.5 respectively. The effects of applying three tax functions to the pre-tax incomes are shown in Table 6.6. In each case t = 0.30, and comparisons are made for values of the tax-free threshold, a, of 60, 80 and 110. As the threshold increases, it can be seen that the average amount of tax falls, as expected. In the third structure, the threshold exceeds the pre-tax incomes of the poorest two individuals so they pay no tax. The various summary measures of inequality and progressivity are shown in Table 6.7. The Atkinson inequality measure is shown for four values of inequality aversion, ε, ranging from 0.2 to 0.8.

The effect of increasing the tax-free threshold can be seen from these results. All measures of inequality of net income fall and all the measures of progressivity rise. However, this is not a general result, as shown in the next chapter where inequality is eventually found to rise as the threshold is increased further. A result in Table 6.7 that may not be anticipated is the finding that the various covariance terms are identical for the thresholds of 60 and 80. The explanation of this result is that for these thresholds, all individuals pay tax and the tax structure is linear. As soon as some individuals are affected by the

threshold, as when a = 110, there is no longer a linear transformation for all incomes.

Table 6.6: Alternative tax-free thresholds

a = 60		a = 80		a = 110	
y	t(x)	y	t(x)	y	t(x)
90.75	13.18	96.75	7.18	103.93	0.00
94.49	14.78	100.49	8.78	109.27	0.00
99.84	17.07	105.84	11.07	114.84	2.07
101.95	17.98	107.95	11.98	116.95	2.98
108.29	20.70	114.29	14.70	123.29	5.70
170.94	47.55	176.94	41.55	185.94	32.55
173.06	48.45	179.06	42.45	188.06	33.45
194.35	57.58	200.35	51.58	209.35	42.58
196.28	58.41	202.28	52.41	211.28	43.41
316.99	110.14	322.99	104.14	331.99	95.14
$\bar{y} = 154.69$	$\bar{t} = 40.58$	$\bar{y} = 160.69$	$\bar{t} = 34.58$	$\bar{y} = 169.49$	$\bar{t} = 25.79$
	g = .2078		g = .1771		g = .1321

Table 6.7: Alternative summary measures

Measure	a = 60	a = 80	a = 110
Net income			
G_v	.2261	.2176	.2074
A (.2)	.0172	.0160	.0145
A (.4)	.0341	.0315	.0286
A (.6)	.0502	.0466	.0423
A (.8)	.0658	.0611	.0555
Cov (y, F(x))	17.4860	17.4860	17.5755
Cov (t, F(x))	7.4940	7.4940	7.4044
Cov (t, F_1(x))	8.2135	8.2135	8.1396
C_v	.2261	.2176	.2074
C_t	.3693	.4334	.5743
K	.1135	.1775	.3184
L	.0298	.0382	.0484
S	.1489	.2192	.3754

Note: The Gini measure of pre-tax inequality is 0.2558. The Atkinson measures, for ε = 0.2, 0.4, 0.6 and 0.8 respectively, of pre-tax income are 0.0220, 0.0434, 0.0640 and 0.0838.

Different treatment of individuals

In the above examples the concentration measure of y, C_y, is always equal to the Gini measure, G_y, because the rankings of individuals by pre-tax incomes are identical. Hence there is no horizontal inequity. In order to illustrate the result of re-ranking, suppose that each individual faces a different value of the threshold, a, while everyone faces the same marginal rate, t. Table 6.8 shows, for the same pre-tax incomes as in Table 6.5, the effects of applying different thresholds. In generating the values shown in Table 6.8, each value of the threshold was a random drawing from a lognormal distribution having an arithmetic mean of 80 and a variance of logarithms of 0.2 (so that the mean of logarithms is log 80 – 0.2/2); in practice the differences arise from different non-income characteristics.

Table 6.8:   Varying thresholds

Individual number	tax-free threshold	tax paid	net income
1	113.27	0.00	103.93
2	69.08	12.06	97.22
3	68.11	14.64	102.27
4	111.71	2.47	117.46
5	75.80	15.96	113.03
6	109.55	32.68	185.81
7	164.47	17.11	204.40
8	56.40	58.66	193.27
9	72.15	54.76	199.93
0	77.44	104.91	322.22
		$\overline{t} = 31.32$	$\overline{y} = 163.95$
		$g = .1602$	

In this example, the concentration measure, C_y, is 0.2118 whereas the Gini measure, G_y is 0.2152. This difference arises because of the re-ranking observed in Table 6.6; a ranking of individuals by net income would place them in a different order (given by 2, 3, 1, 5, 4, 6, 8, 9, 7, 10). The Atkinson–Plotnick inequity measure is therefore equal to 0.0081.

6.6 Taxation and the social welfare premium

As suggested earlier, it is of interest to evaluate changes in the tax structure using a measure of social welfare. It is possible to make a direct link between welfare changes and inequality changes when the abbreviated form of a welfare

function is used. The rationales for the Atkinson and Gini measures differ significantly, but both give rise to an abbreviated social welfare function defined in terms of only arithmetic mean income and inequality. In general terms, the abbreviated social welfare function based on the inequality measure, I, and arithmetic mean, μ, is expressed as:

$$W = \mu(1 - I) \tag{26}$$

One way of expressing the social welfare resulting from a tax system is to measure the welfare in excess of that which would arise from a proportional tax which raises the same revenue. This is referred to as the 'welfare premium', and can be obtained, for a fixed pre-tax distribution of income, as follows.

Arithmetic mean income after tax, $\bar{y}$, is given by $\bar{x}$ $(1-g)$, where g has been defined as the overall tax ratio, and in a proportional tax system, pre- and post-tax incomes have the same relative inequality $I_x = I_y$. Hence social welfare, W_p, for a proportional tax which raises the same net revenue as the actual tax, can be expressed as:

$$W_p = (1 - g) \ \bar{x} \ (1 - I_x) \tag{27}$$

The social welfare from the progressive tax, W_y, is given by:

$$W_y = (1 - g) \bar{x} \ (1 - I_y) \tag{28}$$

Hence the welfare premium, Π, from progressive tax is obtained by subtracting W_p from W_y. After rearrangement, this becomes:

$$\Pi = (1 - g) \bar{x} \ (I_x - I_y) \tag{29}$$

Alternative measures of the welfare premium, for the alternative tax structures considered above, are illustrated in Table 6.9, where in each case $t = 0.3$.

Table 6.9:   Measures of the welfare premium from progression

Inequality measure used	a = 60	a = 80	a = 110	varying thresholds as in Table 6.8
Gini	4.0651	6.1402	8.2114	6.6559
A (.2)	0.7368	0.9648	1.2697	1.0385
A (.4)	1.4525	1.9017	2.5008	2.0324
A (.6)	2.1409	2.8028	3.6839	2.9746
A (.8)	2.7969	3.6616	4.8107	3.8597

If pre-tax incomes depend on the tax structure because of labour supply incentive effects, then the above convenient expression in (29) no longer holds.

There are thus several dimensions which need to be examined when investigating the effects of changes in taxation. Although there are interdependencies between the various measures, it must be remembered that they do not always move in the same direction. An empirical study which concentrates, for example, only on a summary measure of inequality of net income, may well omit changes that are important in an overall evaluation.

6.7 Conclusions

The purpose of this paper has been to provide a brief introduction to inequality and tax progressivity measures, emphasising the link between the measures and value judgements. Fist the Lorenz curve, as an extremely useful device for providing a 'visual' impression of an income distribution, was defined. It was seen that Lorenz curves can give a partial ordering of income distributions in terms of their inequality; an ordering cannot be given when they intersect. A complete ordering of distributions requires specific measures of inequality and two extensively used measures, the Gini and Atkinson measures, are described. The social welfare functions associated with these measures, particularly the abbreviated forms involving the arithmetic mean and inequality, were then examined. The welfare functions can be used to provide complete orderings of distributions. The use of the Lorenz curve, and the associated concept of the generalised Lorenz curve, to provide partial welfare orderings of distributions, was then discussed. Finally, several tax progressivity measures, and the welfare premium from progression, were described. Any comparison of distributions and of tax systems cannot escape value judgements. For this reason the paper has concentrated on showing how such judgements can be made explicit, so that the implications of adopting alternative values can be examined.

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DISCUSSION

Patricia Apps

The paper presented by Professor Creedy provides an introductory survey of the literature on measuring inequality and tax progression. As the survey indicates, the focus of this literature is on the derivation of measures which combine information on the statistical dispersion of incomes and an evaluation based on ethical views concerning inequality. As noted in the introduction, the 'extensive research on inequality and tax progressivity measures that has been undertaken over the last quarter century has been motivated by the desire to relate the measures explicitly to value judgments'.

The paper goes on to state that the 'use of explicit value judgements and their associated inequality and welfare measures makes it possible to provide unequivocal comparisons between any pair of income distributions'. The paper also points out that the literature has given much attention to the 'question of whether there is a broad range of agreement using only a minimum of assumptions about value judgements. For example, when would a change in income distribution be approved by a large range of people who share only a few simple principles? Similarly, what kind of change in a tax schedule would constitute an improvement, using a minimum specification of value judgements?'.

These questions represent a set of issues which are clearly of interest in analysing inequality and the distributional impact of tax policy. However I would suggest that they represent a relatively limited subset of the difficulties associated with the computation of inequality measures, and that the literature surveyed has tended to neglect other more important concerns. For example, the problem of obtaining a measure of 'income' which is related directly to the notion of the 'well-being' of individuals in which we are interested would seem to be of overriding importance, yet is given relatively little attention. Studies of inequality frequently present results for measures defined on observed income variables which may be poorly correlated with the opportunity sets of individuals or the concept of well-being relevant to the analysis of the distributional effects of government policy.

In the following discussion I will suggest that the inequality literature has focused too narrowly on the construction of the kinds of indices described in the paper, and has neglected, among other issues, two problems which are of central

importance to measuring inequality. The first is that already noted, the information problem associated with making welfare comparisons on the basis of observable variables such as money income. A second limitation of many applied studies is that they do not attempt to develop a consistent and empirically relevant model of inequality as the underlying framework for the computation of inequality measures. The presumption would seem to be that inequality can be attributed to the endowments of individuals, and that the income generating capacity of these endowments can be captured perfectly by observed income variables for which data are readily available. I shall examine each of these problems in turn, explaining their significance and the way in which an empirical study which purports to compute seemingly objective measures of inequality can incorporate assumptions concerning the measurement of well-being, the origins of inequality and ethical views which are highly specialised and very much open to debate.

Information problems associated with measuring inequality

In analysing inequality for policy purposes we must first of all define the concept of well-being in which we are interested, and then select an appropriate empirical methodology for dealing with the information problems involved. The policy significance of the information asymmetries associated with measuring inequality has long been recognised in the tax literature and forms the basis of the theory of optimal taxation. A summary is provided by Atkinson and Stiglitz (1976) in the context of the tax problem in the following terms. If we assume that inequality is due to the given characteristics of individuals, in particular to their endowments and tastes, and we accept the premise that, ceteris paribus, a reform which reduces inequality is socially preferred, then ideally the government would impose lump sum taxes on individuals according to these given characteristics. The difficulty which arises is that while the characteristics may be known to the individual they cannot be easily observed, and the government is therefore constrained to taxing indicators, such as observed income. Because such indicators are not perfectly correlated with the characteristics in which the government is really interested,[1] a welfare ranking or index of inequality defined on a selected indicator is inevitably associated with errors.

These are further considerations. Ideally comparisons between *individuals* are required. However individuals typically form multi-person households of

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[1] There is also the moral hazard problem. The indicators may also be under the control of the individual, and so taxing them may cause efficiency losses due to incentive effects. The resulting trade-off between equity and efficiency is of course a central concern of the optimal tax literature.

varying sizes and demographic profiles. This presents a range of complications. The problems which arise in making welfare comparisons between households with varying demographic profiles, in particular, with different commitments to children, has been the focus of the equivalence scale literature. However, much of this literature has up until recently shown little interest in developing an approach to modelling the family decision process which takes account of the multi-person nature of households and the distribution of income and consumption among family members.   Hence many issues relevant to the measurement of inequality have yet to be resolved.[2]

A further difficulty which needs to be recognised, and one which is of crucial importance in measuring tax progressivity, is that comparisons between *traditional* households (defined as those in which one partner, typically the female, specialises in domestic production) and *non-traditional* households (those in which both partners choose to work in the market place) must take account of household production.   Studies which compute measures of inequality using observed household income ignore the greater contribution of domestic production to the well-being of traditional households, and consequently can generate entirely misleading results for welfare rankings and inequality measures.   However, any attempt to incorporate household production is fraught with data problems. This is largely because, apart from a few very notable exceptions,[3] economists have shown remarkably little interest in household production, even when analysing tax reforms where it can be shown that results are highly sensitive to underlying assumptions on domestic output and prices.[4] To construct reliable measures of inequality we require an income variable which, unlike household income, takes account of variation in the allocation of time to household production.   Apps and Savage (1989) examine alternative income variables and, given the limitations of available data, suggest the use of *primary income*, defined as the income of the partner with the higher private income, in preference to household income.   The use of household income can be shown to lead systematically to results supporting reforms which reinforce traditional gender roles and, in turn, inequality within and across families.[5]   Findings of this kind illustrate the way in which the

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[2] For a critique of the equivalence scale literature and the specification of a model which takes account of the multi-person nature of families, see Apps and Rees (1995).

[3] See Becker (1965) and subsequent contributions by a relatively small group of economists to the economics of the family motivated by the Becker model.

[4] See Apps, Killingsworth and Rees (1996) for an analysis of the sensitivity of welfare rankings and estimated labour supply parameters to alternative assumptions concerning domestic production.

[5] For a detailed explanation of this result, see Apps (1995).

choice of income variable for constructing measures of inequality can incorporate ethical views contrary to those specified in the literature and discussed in the paper.

Market failure and the efficiency cost of inequality

Bias in the measurement of inequality and tax progressivity may enter not only through the choice of income variable but also through assumptions concerning the determinants of inequality. As already noted, the literature on measuring inequality typically treats incomes as fixed, and can therefore be interpreted to assume implicitly that inequality is due to given endowments and, moreover, that those endowments generate incomes in perfectly competitive and complete markets. This kind of model is inconsistent with the overwhelming evidence of inequality due to conditions of market failure, particularly in insurance markets.

Many forms of so called 'welfare' assistance represent, from a technical point of view, second best policy solutions to problems generated by the failure of private markets to perform well in a wide range of areas of insurance, notably the provision of contracts to cover such risks as those associated with health, longevity, and unemployment. As the literature on the economics of uncertainty and insurance shows, many of these failures arise from the technical nature of the information problem involved, and will inevitably require a significant degree of government intervention for reasons of efficiency, as well as for the purpose of averting the distributional impact of the poor performance of private markets in these areas. The merits of such policies therefore cannot be adequately evaluated on the basis of a social welfare function defined on fixed incomes, because gains accrue not only from the distributional merits of the policies but also from the contribution they make to the efficiency of markets and the overall economy.

The widespread failure of capital markets to perform well is also a major generator of inequality. An obvious example is the impact of children on family resources. The observation that the cost of children significantly reduces the living standards of lower and middle income families can be attributed to capital market failure. In a world of complete information and perfect markets it would be possible for a child (or its parent as agent) to borrow against its future income to cover all the costs of childhood. The fact that family and child poverty are linked reflects various forms of market incompleteness. The case for public intervention in support of child costs therefore can be based on the existence of this kind of market failure. And so again there are efficiency reasons as well as distributional arguments for transfers to lower and middle income families, and these are lost in the computation of inequality measures

which presume a given endowments model of inequality. Moreover, we are unlikely to obtain reliable estimates of the effects of government policies unless our analysis is based on an empirically relevant modelling approach.

Concluding comment

The preceding comments indicate the limited scope of the literature on measuring inequality and tax progressivity surveyed in Professor Creedy's paper, and suggest the need for a fundamental redirection of attention so that future research might provide more useful and reliable information on inequality and the distributional impact of policy reforms.

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General Discussion

The general discussion focused on the limitations of these standard measurement tools in terms of the dimensions of inequality that are not incorporated in these measures, and their usefulness for assisting policy formulation and evaluation.

Dimensions of inequality that are not recognised in standard measurement tools

There was general agreement that the standard inequality measurement tools relate to a very narrow concept of inequality. In particular it was noted that they do not address inequality from a life cycle and inter-generational perspective. In discussion, Professor Apps emphasised that adopting a view of capital market failure as a cause of inequality underscored the need to take a lifetime perspective on inequality measurement. In addition, these measures do not address non-income dimensions of inequality such as time spent at work.

It was also noted that these measures ignore the significant practical issue of defining and measuring income. Much work is currently being undertaken within the bureaucracy to develop a more satisfactory measure of income and the impact of governments on individual welfare. This work demonstrates that to address adequately the question of the distributional effects of policy requires a whole of government perspective. That is, it needs to take account of the interplay of all government welfare programs and their total net effect on individuals. This includes activities such as health and education that do have a large effects on income distribution (as the National Centre for Social and Economic Modelling has demonstrated) as well as the tax/transfer system.

The point was made in discussion that despite the above criticisms, these tools are clearly useful for measuring income inequality once income has been appropriately defined and measured.

There was some discussion about the validity of the assumptions underpinning these measurement tools. In particular, some participants challenged Professor Apps' assertion that it is unclear whether or not, as a society, we actually want Australia to be more equal and the view that the reduction in marginal tax rates at high income ranges implemented in recent years was driven purely by the desire to increase income at this end of the scale and not on any efficiency grounds. They argued that there was at least anecdotal evidence of high income elasticity of labour supply at the upper ends of the distribution. It was recognised, however, that there is no strong empirical evidence either way on this issue.

The nature of inequality in Australia

There was considerable discussion about the complex forces generating inequality in Australia, and the need to look beyond simple macroeconomic measures to understand the nature of inequality and to develop appropriate policy responses.

One participant argued that some groups at the lower income levels, such as ethnic migrant males, are becoming increasingly marginalised from society. Different welfare responses are required to address the needs of these people. The efficiency and equity of the mainstream welfare system only have a marginal impact on these people.

These groups can be marginalised from labour market participation, in that they are more often out of work than in work and when they are in work it is not very satisfactory work. Just as importantly, they are marginalised from many services of the welfare state, for example, justice and health services. These groups can also be marginalised in their own ethnic communities because they are an embarrassment and in many ways they do not live up to the cultural expectations.

The participant argued that whatever policies that are formulated to improve the operation of the 'mainstream' welfare state, specific mechanisms will still be needed to rectify this marginalisation of particular groups in society. The efficiency and effectiveness of these welfare responses should be subject to the same rigorous analysis as mainstream welfare.

Other participants raised the potential for economic restructuring to create a pool of long term unemployed. It was noted that if welfare services reinforced the marginalisation of these groups, it would be introducing a long term dynamic that may undermine inter-generational equity values.

The use of these tools in evaluating policy proposals was discussed further. It was pointed out that many reforms can be income-increasing and inequality increasing. The advantage of these tools is that they make explicit the value judgements about the willingness to trade off equity and efficiency. The tools require some specification of these value judgements in order to evaluate policy proposals.

7. ESTIMATES OF POVERTY AND INCOME DISTRIBUTION IN AUSTRALIA IN MAY 1995

Ann Harding[1]

7.1 Introduction

The most recent microdata tape available from the Australian Bureau of Statistics (ABS) with comprehensive details of the incomes of Australians is the 1990 Income Survey. The 1993/94 Household Expenditure Survey microdata tape will be released early in 1996. At the moment, therefore, microsimulation offers perhaps the only means of providing up-to-date estimates of poverty and income distribution in Australia.

The analysis contained within this paper is based upon the publicly available STINMOD static microsimulation model, developed by the National Centre for Social and Economic Modelling (NATSEM) at the University of Canberra. This model ages the 1990 Income Survey microdata to account for social and economic change during the past five years, imputes receipt of all the major government cash transfers and the usage and value of the major publicly provided government services such as health and education, and simulates the payment of income taxes (see Appendix A for technical details and references). While the static ageing and imputation procedures used by NATSEM are complex and comprehensive, it must be appreciated that the following results can only be regarded as estimates or 'best guesses', as five years is a long period of time over which to attempt to age microdata. The reliability of the estimates will be improved when STINMOD is rebased to the forthcoming 1993/94 Household Expenditure Survey next year.

Section 7.2 of this paper examines the estimated income distribution for May 1995 and looks at the impact of cash transfers, income taxes and non-cash benefits upon the distribution of income produced by the market. It also analyses the social and economic characteristics of those within each decile of income.

Section 7.3 analyses estimated poverty rates, using the Henderson poverty line for June 1995. It examines how poverty differs by family type, state of residence and housing tenure. Section 7.4 concludes.

7.2 Income distribution

It is not immediately obvious which of the many possible measures of income should be used to rank Australians. The aim is to approximate living standards, so that those with the lowest living standards are at the bottom of the distribution and those with the highest at the top. Disposable income equals the private or 'pre-government action' income of a family, plus any cash payments they receive from government (such as age pension or family payments), minus income taxes paid. This income measure thus takes into account the impact of both cash transfers and income taxes. This measure, which should really be termed 'before-housing disposable income', is the measure favoured in many Australian studies of income distribution.

One problem with using such 'before-housing' income measures is that they understate the relative standard of living of the aged, who typically have very low housing costs compared with other types of families (because of their high home ownership rates and low mortgage repayments). A more satisfactory measure of living standards is probably to add imputed rent to income. However, imputed rent has not yet been added to the STINMOD database. Another less satisfactory alternative, but one which is arguably better than 'before-housing' measures, is 'after-housing disposable income' — that is, the amount of money families have left to spend after paying mortgages, rates and rent.

There are problems with using such an income measure to rank families. For example, it can be argued that some families with very low after-housing incomes are not really 'poor', but are choosing to incur very high mortgage costs because they wish to purchase an asset. In addition, a very small number of families have negative incomes after housing costs are deducted from their after-tax incomes (especially the self-employed), and there may be doubts about how accurately their low after-housing incomes reflect their real economic welfare. On the other hand, use of before-housing measures imparts a strong and systematic bias to the results, because of the strong changes in housing costs during the lifecycle. The following tables use after-housing disposable income to rank Australians, but information about how different the results would be if before-housing measures were used instead is also provided.

A final issue is that two families with an after-housing disposable income of $300 a week do not enjoy the same material well-being if one consists of a

single person and the other comprises a couple with four children. To take account of such differences in need, an equivalence scale has been applied. In the following analysis, individuals have therefore been ranked by *the equivalent after-housing disposable income* of their family, with the equivalence scale used being the simplified Henderson equivalence scale (which takes account of the number of adults and children dependent upon the family's income, as well as the costs of work).

The market or private income of families is shown in the first column in Table 7.1. The poorest 10 per cent of Australians live in families with an estimated market income of $100 a week in May 1995. The top 10 per cent live in families with an estimated market income of $1,925 a week — or 19 times as much as the bottom 10 per cent. Cash transfers are highly progressive, declining sharply from an estimated $200 a week for the bottom 10 per cent of Australians to only $10 a week for the top 10 per cent. Income taxes are also redistributive, rising from an estimated $10 a week for the bottom 10 per cent to $500 a week for the top 10 per cent.

As a result of the tax/transfer system, the gap between rich and poor is reduced, with the before-housing disposable income of the top 10 per cent of $1,435 amounting to only five times as much as the $290 a week received by the bottom 10 per cent (Table 7.1).

Housing costs do not differ substantially across the income distribution, generally ranging from $60 to $80 a week (Column F in Table 7.1). The exception is for those in the bottom 10 per cent of the population who are, of course, placed in this decile partly because they face unusually high housing costs (because the ranking is based on an after-housing income measure). As Table 7.A1 in Appendix A also makes clear, this is one area where ranking by before or after-housing income makes a substantial difference to the conclusions which are drawn. Thus, when the ranking is by equivalent before-housing disposable income, the housing costs of the bottom decile are roughly half those of the top decile. This is in part related to the lifecycle effects referred to earlier, with the aged being heavily concentrated in the lower third of the income distribution when before-housing income measures are used to rank individuals (see Table 7.A2).

Table 7.1 also shows the non-cash benefits received by Australian families via their usage of public health, education and housing services (see Appendix A for details of the modelling and imputation of these benefits). Such benefits are redistributive, declining in dollar value as income increases. Those in the second bottom decile live in families which receive some $200 a week in non-cash benefits — roughly double the amount received by the top 10 per cent. (Those in the bottom decile receive slightly less than the second bottom decile,

because of the larger numbers of single people — see Table 7.2. In addition, while there are 1.9 children on average in families in the second bottom decile, there are only 1.4 children on average in families in the bottom decile.) For the second bottom decile, non-cash benefits amount to 60 per cent of after-housing disposable income, declining smoothly to only eight per cent for the top decile. Non-cash benefits are thus progressive in impact (that is, redistributive towards lower income families), although they are not as progressive as cash transfers.

Once account is taken of the needs of families, the degree of inequality in the income distribution widens again. After taking account of private incomes, cash and non-cash payments from government, and income tax liabilities, the estimated equivalent family after-housing final income of the top 10 per cent of the population is $1,740 a week, about eight times greater than the $220 a week received by the bottom 10 per cent (Column K in Table 7.1). As Table 7.1 illustrates, once the needs of different types of families are reflected in the income measure, the incomes of the bottom 70 per cent of Australians decline (Column K versus Column I). This is principally because such families have slightly more than 2.9 members, which is the average for all of Australia (Table 7.2). Conversely, those in the top three deciles live in families of below average size, so that their incomes have to support fewer people (decile 10, for example, averages 2.3 people per family — see Table 7.2). As a result, their equivalent incomes are higher than their unadjusted incomes.

Does it make any difference if indivduals are ranked by the before-housing income of their families, rather than the after-housing? The key conclusions remain the same, but the apparent degree of inequality is reduced appreciably. For example, the top 10 per cent of Australians receive only six times as much equivalent after-housing final income as the bottom 10 per cent when equivalent before-housing disposable income is used to rank individuals (see Column K in Table 7.A1 in Appendix A). This compares with eight times as much after ranking by after-housing income.

What type of families are at the top and bottom of the income distribution? Couples with children are the most numerous family type in Australia, with an estimated 46 per cent of all Australians living in this type of family (final column in Table 7.2). Couples with children are slightly under-represented at the very bottom of the income distribution, with an estimated 41 per cent of all those in the lowest income decile belonging to such families. Sole parents are

Table 7.2: Estimated demographic and economic characteristics of individuals ranked by decile of equivalent after-housing disposable income in May 1995

| | Decile of equivalent after-housing disposable income | | | | | | | | | | |
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*All*
	%	%	%	%	%	%	%	%	%	%	%
Aged single	3.3	4.5	10.3	12.4	8.8	6.4	3.3	2.2	1.5	2.1	5.5
Aged couple	2.9	2.2	6.4	18.0	16.2	10.1	7.6	4.2	3.5	4.7	7.6
Couple, no children, at least one employed full-time	4.9	3.6	4.2	5.1	7.4	9.9	15.0	20.2	24.5	32.9	12.8
Couple, no children, Ð other, incl. unemployed	6.0	4.0	3.2	5.2	2.5	2.6	2.1	1.1	0.5	0.5	2.8
Couple, children, at least one employed full-time	21.0	41.1	49.3	42.5	46.0	53.6	50.1	44.9	38.8	31.1	41.8
Couple, children Ð other, incl. unemployed	19.6	12.2	3.4	1.5	1.5	0.1	0.3	0.1	0.2	0.2	3.9
Sole parent	12.7	17.2	9.0	5.0	5.5	4.4	3.2	2.9	2.2	1.0	6.3
Single, employed full- or, part-time	5.6	3.9	4.7	4.5	6.1	9.9	15.5	22.5	27.4	25.7	12.6
Single, unemployed or not in labour force	19.2	7.1	4.0	2.4	2.1	1.0	0.3	0.1	0.2	0.5	3.7
Other	4.7	4.3	5.4	3.4	3.8	2.1	2.5	1.7	1.3	1.4	3.1
Total	100	100	100	100	100	100	100	100	100	100	100
Av. no. of dependent children	1.4	1.9	1.6	1.2	1.2	1.2	1.2	0.9	0.8	0.6	1.12
Av. no. of aged	0.06	0.07	0.16	0.30	0.25	0.16	0.11	0.06	0.05	0.06	0.13
Av. no. in family	3.0	3.5	3.3	2.9	3.0	3.0	2.9	2.6	2.5	2.3	2.9

Table 7.1: Estimated weekly family income received by individuals, ranked by decile of equivalent family after-housing disposable income in May 1995

Decile	Private income	Cash transfers	Total income	Income tax paid	Before-housing disposable income	Housing costs	After-housing disposable income	Non-cash benefits	After-housing final income	Equivalent after-housing disposable income	Equivalent after-housing final income
	A	B	C = A + B	D	E = C Ð D	F	G = E Ð F	H	I = G + H	J = G ∗ equiv. scale	K = I ∗ equiv. scale
	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw
1	100	200	300	10	290	125	165	155	320	150	220
2	255	190	445	40	405	80	330	200	525	295	400
3	390	130	520	70	450	70	380	185	565	360	475
4	400	130	530	75	460	60	400	165	565	410	540
5	535	100	635	105	535	65	465	170	635	465	600
6	725	60	785	150	635	80	555	155	710	535	675
7	890	35	925	195	730	80	645	155	800	615	775
8	1 005	20	1 025	230	795	75	715	130	845	715	885
9	1 195	15	1 210	300	910	80	830	115	945	860	1 055
10	1 925	10	1 935	500	1 435	85	1 350	105	1 455	1 430	1 740
All	740	90	830	165	665	80	585	155	735	585	735

Note: All income figures are rounded to the nearest $5. There are about 1.75 million Australians in each decile. Note that most income distribution studies use before-housing disposable income. In this case, applying an equivalence scale usually results in a narrowing of the gap between those at the top and bottom of the income distribution (principally because the aged, who have low cash incomes but higher equivalent incomes, are concentrated in the bottom two deciles). However, using *after-housing* income measures makes a large difference, as the aged are concentrated in deciles 4-6 of equivalent after-housing final income. Consequently, applying an equivalence scale to the after-housing income measures increases rather than reduces the gap between the very top and bottom of the income distribution Ñ although aggregate inequality, measured by either the Gini coefficient or the coefficient of variation, is reduced by applying the equivalence scales. This provides an interesting pointer to the very significant impact of housing costs on relative standards of living. The housing costs for the bottom decile are also higher than those for any other decile. Those with particularly high housing costs are obviously more likely to end up in the bottom decile than when before-housing measures are used. It also seems likely that many of those in the bottom decile are in transitory circumstances as, for a small number, housing costs very substantially exceed income.

over-represented, with this being the family type of 13 per cent of all those in the bottom decile. Single people who are unemployed or not in the labour force also predominate, accounting for about one-fifth of all those Australians in the lowest 10 per cent.

When ranking by equivalent after-housing disposable income, the aged make up only six per cent of those individuals in the bottom decile (Table 7.2). The aged tend to be clustered in deciles 3 to 6, around the lower to middle ranges of the income distribution. Couples with children are also over-represented in the middle of the income distribution accounting, for example, for more than half of all of those in the 6th income decile.

At the top of the income distribution, well-paid full-time jobs, two incomes and/or fewer dependents predominate. On average, those in the top decile live in families with a gross cash income of $100,000 a year (or $70,000 a year after the payment of income tax). An estimated one-third of those in the top decile are couples without children, with the overwhelming majority holding two full-time jobs (see Figure 7.1). Only seven per cent of those in the top decile are couples without children where one partner works full-time and the other works part-time, while another five per cent consist of couples without children with only one full-time income earner. Couples without children in the top decile have an estimated average total yearly cash income of $102,500, or $75,000 after paying income tax.

Figure 7.1: Family characteristics of those Australians in the top decile, May 1995
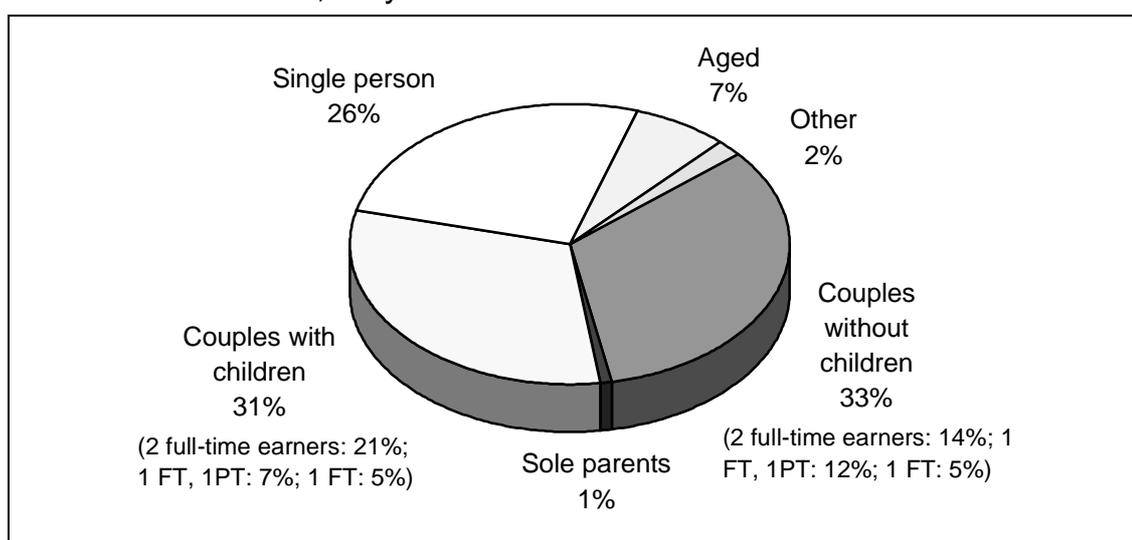
Note: The top decile is defined as the most affluent 10 per cent of Australians ranked by equivalent after-housing family disposable income.

About another one-third of Australians in the top decile belong to couple with children families (Figure 7.1 and Table 7.2). Again, in the overwhelming majority of such cases both parents are working, with 14 per cent consisting of two full-time working parents and 12 per cent consisting of one full-time and one part-time parent. Only just under six per cent of all those in the top decile live in couple with children families where only one parent works. The average gross cash income of couple with children families is $143,000, with an average after-income-tax income of $106,000. (Couples with children, of course, require higher cash incomes than couples without children to make it into the top decile, as they have to support more people and the equivalence scale takes account of this when ranking the living standards of different types of families.)

A futher one-quarter of those in the top decile are single people working full-time in well-paid jobs. The average gross income of this group is $55,500, while their average disposable income is $40,500 a year. Not surprisingly, there are relatively few retired people or sole parents at the top of the income spectrum — although about seven per cent of all those Australians in the top decile belong to aged families.

It should be noted that ranking by a before-housing income measure gives a different impression of which types of families are in the middle and, in particular, at the bottom of the income distribution. As noted earlier, the aged tend to have lower than average housing costs, so they look relatively poorer if equivalent before-housing disposable income is used to rank Australians. Thus, if the before-housing measure is used, the aged make up 16 per cent of decile 1 and almost one quarter of deciles 2 and 3 (see Table 7.A2 in Appendix A). Similarly, families with children (who face high housing costs) tend to look relatively more affluent when the before-housing measure is used to rank individuals, so that more couples with children appear in deciles 6 to 8. However, ranking by before-housing measures makes little difference to family composition at the top of the income spectrum.

7.3 Poverty estimates

The following results present poverty estimates using the Henderson after-housing poverty line. The simplified Henderson equivalence scale is used to set the relative needs of different types of families, with a few minor amendments (see Appendix A). For the June quarter 1995, the Henderson after-housing poverty line assumes that a single earner couple with two children require more than $319.16 per week to spend, after meeting their income taxes and housing costs, to be out of poverty.

All analyses of poverty rates suffer from the problem that even small movements in the poverty line can move thousands of families into or out of 'poverty'. (This is because large numbers of social security recipients are typically clustered in the income ranges where poverty lines are usually set.) In addition, during the 1980s the Henderson poverty line increased much more quickly than median family income, driven by strong employment growth and an indexing methodology which arguably overstates the rise in community incomes (Mitchell and Harding 1994; Harding 1995). Consequently, Table 7.3 also shows the poverty rates which would prevail if the poverty line was set at 90 and 110 per cent of the usual Henderson poverty line. The 90 per cent line is only a few dollars week apart from the poverty line which would be derived using the Henderson equivalence scales but setting the line for the reference family at *half average family income*. Thus, it provides almost exactly the same results as would be given using the alternative half average family income poverty line. Given the uncertainties about both the data and the precise level at which the poverty line should be set, the following poverty rate results are best used as a guide to the relative problems faced by different groups, rather than as definitive estimates of 'poverty' in Australia today.

Focussing on the standard Henderson poverty line results, Table 7.3 suggests that about 11 per cent of Australians now live in after-housing poverty, or about 1.9 million Australians. Of these, an estimated 592,000 are children aged 0 to 14 years and the remaining 1.3 million are people aged 15 or more. The risk of being in poverty varies significantly with the type of family that one lives in. Only seven in every one hundred single aged people are in poverty, and four in every one hundred people living in aged couples. The aged now have the lowest average poverty rate of any of the family types considered below.

Sole parents continue to be the group most likely to be in poverty, followed by non-elderly single people. About one in every five individuals living in sole parent families and one in every six younger singles are in poverty, according to the Henderson poverty line. Couples with children are the third most 'at-risk' group, with 10 per cent being below the Henderson line.

Table 7.3:   Estimated after-housing poverty rates for individuals, classified by family type, May 1995

Type of Family	90% of Henderson poverty line			Henderson poverty line			110% of Henderson poverty line		
	Estimated poverty rate%	Estimated no in poverty '000	Estimated % of total in poverty	Estimated poverty rate %	Estimated no in poverty '000	Estimated % of total in poverty	Estimated poverty rate %	Estimated no in poverty '000	Estimated % of total in poverty
Single aged person	5.7	54	3.9	6.7	63	3.4	8.4	80	3.3
Aged couple	3.5	46	3.3	4.0	53	2.8	5.2	69	2.8
Single non-aged	14.6	423	30.4	16.4	476	25.1	18.5	535	21.7
Sole parent	13.1	147	10.6	22.4	252	13.3	33.8	379	15.3
Couple, no children	6.2	178	12.8	7.6	217	11.4	8.9	255	10.3
Couple with children	6.6	542	39.0	10.2	834	44.0	14.0	1144	46.5
Total	*8.0*	*1391*	*100*	*10.9*	*1895*	*100*	*14.2*	*2462*	*100*
Couples									
- 1 child	5.9	119	17.2	8.3	168	15.4	10.7	216	14.2
- 2 children	6.5	223	32.3	9.1	311	28.7	12.5	429	28.2
- 3 children	6.1	114	16.6	11.0	207	19.0	15.2	286	18.8
- 4+ children	10.4	87	12.6	17.8	149	13.7	25.5	213	14.0
Sole parent									
- 1 child	11.5	48	7.0	16.5	69	6.3	23.7	99	6.5
- 2 children	13.5	36	8.1	20.6	85	7.8	32.6	135	8.8
- 3+ children	14.8	43	6.3	33.5	98	9.0	49.7	145	9.6
All with children	7.4	690	100	11.7	1086	100	16.4	1523	100

Source: See Appendix A

The risk of being in poverty rises with the number of children in the family (Table 7.3). For married couples, poverty rates for those with one to three children are reasonably similar, at 8–11 per cent. Only for large families with four or more children does the risk rise sharply, to 18 per cent. For sole parents, the likelihood of being in poverty according to the Henderson poverty line increases steadily with the number of children, from 17 per cent for those with one child to 34 per cent for those with three or more children.

The risk of being in poverty is only one side of the coin, however. Although couples with children have a lower probability of experiencing poverty than sole parents, they are a far more numerous type of family. As a result, about 44 per cent of all those Australians in poverty live in 'couple with children' families, according to the Henderson poverty line. Younger singles make up one-quarter cent of the poor, and sole parents another 13 per cent (Table 7.3). Similarly, looking only at families with children, because couples with two children are so numerous, they make up almost 30 per cent of all those with children living in poverty (Table 7.3).

The 90 per cent Henderson poverty line assumes that single earner couples with two children require $288 a week after paying income taxes and housing costs to escape poverty — about $30 a week less than the standard Henderson poverty line. Using this lower poverty line results in a 35 per cent drop in the proportion of Australians assumed to be in poverty in May 1994 — from 11 to 8 per cent. As discussed earlier, the 10 per cent drop in the poverty line results in this 35 per cent drop in the poverty rate because of the clustering of families within these income ranges.

The lower poverty line would not change conclusions about which three groups in the community faced the highest risk of poverty — but it would suggest that single people faced a greater risk than sole parents (in sharp contrast to both the 100 and 110 per cent poverty lines). Essentially, this just means that about 100,000 sole parents — or just under 10 per cent of all sole parents — are concentrated in the small income range between the 90 and 100 per cent Henderson poverty lines. In contrast, a higher proportion of single people are below the 90 per cent line.

Use of the lower 90 per cent poverty line would also suggest a smaller increase in poverty with increasing family size. Thus, the estimated poverty rate for couples with four or more children is 18 per cent with the standard Henderson poverty line but only 10.4 per cent with the 90 per cent Henderson poverty line. Again, this simply indicates that about eight per cent of all couples with four children have incomes which place them in the very narrow income range between the two poverty lines.

Table 7.4: Estimated after-housing poverty rates by state, May 1995

Capital city	Poverty rate	Rest of State	Poverty rate	State	Poverty rate
Sydney	11.5	Rest of New South Wales	11.1	New South Wales	11.4
Melbourne	10.4	Rest of Vic	10.1	Victoria	10.3
Brisbane	11.9	Rest of Queensland	13.1	Queensland	12.5
Adelaide	9.0	Rest of South Australia	12.7	South Australia	9.9
Perth	9.0	Rest of Western Australia	12.6	Western Australia	9.8
Hobart	11.9	Rest of Tasmania	10.3	Tasmania	10.9

Table 7.4 examines estimated after-housing poverty rates by State, using the standard Henderson poverty line. Queensland appears to have the highest poverty rate, of 12.5 per cent. This result is driven in large part by rural Queensland, with the poverty rate for those living outside Brisbane being 13.1 per cent. NSW has the second highest poverty rate, of 11.4 per cent. This seems likely to be the result of higher than average housing costs in Sydney. The average estimated housing costs for those below the after-housing Henderson poverty line in Sydney are $155 a week, compared to an average $105 for all those living in Sydney and $80 for all Australians.

Table 7.5 shows what types of families fall below the after-housing Henderson poverty line in each State. Single aged people in Victoria appear to face a higher after-housing poverty risk than elsewhere in Australia, with a poverty rate of nine per cent. Tasmania has the lowest poverty risk for single aged, of only two per cent.

In most States, couples with children are the most numerous groups in poverty with, for example, about half of all those who are poor in NSW living in this type of family. Couples with children in NSW, Queensland and Tasmania face the highest poverty risks, with about 11 in every 100 persons living in this type of family being in poverty.

Table 7.5:   Estimated after-housing poverty rates by State and family type, May 1995

State	Single aged		Aged couple		Single person		Couple with no children		Couple with children		Sole parent		All	
	No.	Poverty rate (%)	No.	Poverty rate (%)	No.	Poverty rate (%)	No.	Poverty rate (%)	No.	Poverty rate (%)	No.	Poverty rate (%)	No.	Poverty rate (%)
NSW	25,000	7	25,000	5	161,000	16	73,000	8	311,000	11	77,000	20	672,000	11
VIC	21,000	9	13,000	4	118,000	16	42,000	6	189,000	9	68,000	27	451,000	10
QLD	9,000	6	5,000	2	99,000	19	48,000	8	166,000	12	61,000	28	388,000	12
SA	2,000	3	2,000	2	31,000	13	27,000	10	57,000	10	20,000	19	139,000	10
WA	5,000	7	8,000	7	42,000	15	18,000	6	73,000	9	16,000	15	161,000	10
TAS	500	2	0	0	11,000	19	8,000	9	25,000	11	5,000	20	49,000	11
ACT/NT	1,000	7	0	0	15,000	18	1,000	2	13,000	6	5,000	14	35,000	8
Australia	63,000	7	53,000	4	476,000	16	217,000	8	834,000	10	252,000	22	1895,000	11

Note: All numbers rounded to nearest 1000 and percentages to whole digits. Figures for Tasmania and ACT/NT should obviously be treated with extreme caution, because of low sample size.

Table 7.6:   Estimated after-housing poverty rates by housing tenure, May 1995

Housing Tenure	Estimated poverty rate %	Estimated no. in poverty '000	Estimated % of total in poverty
Owned outright	4.4	270	14
Purchasers	9.9	536	28
Public rental	24.7	219	12
Private rental	22.7	560	30
Rent	16.6	222	12
resident/relative rent free	7.7	72	4

Table 7.6 examines the housing tenure of those below the Henderson after-housing poverty line in May 1995. The two most significant tenure types below the poverty line are those who are purchasing their home (536,000) and those renting from private landlords (560,000). However, these two groups face very different poverty risks. Thus, about 23 per cent of all those renting privately are below the poverty line, compared with only 10 per cent of those purchasing their own home. Only a minority of those below the poverty line are in public housing (12 per cent). However, this group face the highest risk of being in poverty, with about an estimated one-quarter of public housing tenants having after-housing incomes below the poverty line. This in part reflects the tighter targeting of public housing during the past decade, towards the most vulnerable groups in the community.

7.4 Conclusions

All of the estimates in this paper are based upon the STINMOD static microsimulation model developed by NATSEM, and can only be regarded as indicative, given the current absence of up-to-date ABS microdata.   The analysis suggested that the most affluent 10 per cent of Australians lived in families with a private or 'pre-government action' income of about $1,925 a week — about 19 times as much as the bottom 10 per cent.   However, the cash transfer and non-cash benefits provided by government, together with income taxes, substantially decreased income inequality. (It should be noted that no account was taken of indirect and company taxes in this analysis.) The after-housing final income of the top 10 per cent was estimated at $1,455, about 4.5 times as much as the $320 a week received by the poorest 10 per cent of Australians.

Taking account of needs, however, increased the gap between the top and the bottom, as the bottom 70 per cent of Australians lived in families of above-average size, while the top 30 per cent lived in families of below-average size. After applying an equivalence scale, the top 10 per cent of Australians received an equivalent after-housing final income of $1,740, about eight times greater than the $220 received by the bottom 10 per cent.

Analysis of the characteristics of the top decile showed that just under 30 per cent were two income couples without children, while another 26 per cent were two income couples with children. About one-quarter were single people.

Aggregate poverty rates derived using the standard Henderson poverty line suggested that about 11 per cent of Australians lived in after-housing poverty — about 600,000 children aged 0–14 years and 1.3 million adults. There are some grounds for concern about whether the Henderson line is set too high, as a result of an inappropriate indexing methodology. When the poverty line was set at 90 per cent of the standard Henderson poverty line, the poverty rate fell to eight per cent. The risk of being in poverty increased with the number of children and was highest for sole parents, younger single people and couples with children. Residents of Queensland and NSW faced the highest poverty rates among the States, while the highest risks by housing tenure type were for public housing tenants.

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Appendix A: The STINMOD model and technical issues

The analysis in this study is based on the STINMOD database — NATSEM's static microsimulation model (Lambert et.al., 1994). STINMOD is a publicly available computer model of the major Federal government revenue and expenditure programs. The model is applied to a microdatabase of 18,700 Australian families, whose characteristics were captured by the ABS in their 1990 Income Survey. For these results, this database has been aged to May 1995, to more accurately represent the current social and economic characteristics of the population (see Percival 1994a for a description of the ageing and reweighting techniques used). Social security, veterans, and AUSTUDY cash payments and income tax liabilities have been imputed, generally using program rules and payment rates current from January to July 1995 (see Schofield and Paul 1994; Lambert 1994 and Percival 1994b for detailed descriptions of the imputation procedures). While highly sophisticated ageing procedures have been applied to the 1990 data, it must be recognised that the income survey is now five years out of date, and all figures can only be regarded as estimates.

The family income units used in STINMOD are based on those used for the calculation of DSS and Austudy entitlements. A family is defined as the reference person and spouse (if any), any children living at home aged less than 15, and any children aged 15 to 24 still living at home and studying full-time. Current (or weekly) income is used and zero incomes are included. (Many other studies of poverty have used annual income.)

On the original file, each person is given a weight, which represents the likelihood of finding a person with a similar set of characteristics in the Australian population. For example, a person weight of 300 means that it is estimated that there are 300 Australians with similar characteristics to a person actually included within the sample for the Income Distribution Survey. The weight of a family is the average of the weight of the parents in the family. This weight is then multiplied by the total number of individuals in the family (including any children). This means that the tables in the paper deal with individuals, classified by the income and characteristics of the family in which they live. (Another way of looking at this is to say that the results are for families, weighted by the number of individuals in the family.) This procedure is consistent with international best practice in this field.

When attempting to put families of varying size and composition on an equal footing, the Henderson after-housing simplified equivalence scales have been used. These scales allow for differences in the number of adults and children in the family, as well as the costs of work. In using these scales, unemployed people have been assumed to incur the same costs in searching for work as the

employed do in working (following Saunders and Matheson 1993). Self-employed families have not been excluded from the analysis, unlike some other studies employing the Henderson scales. Single people aged less than 20 who are still living at home with their parents have been excluded from both the income distribution and poverty analysis. (This is because of concerns that the income of this group does not accurately measure their standard of living, because of effective income transfers from their parents.) Dependents aged 18 or more have been given the same equivalence scale points as non-working spouses.

The results are based upon the Henderson poverty line (HPL) for June 1995. There are a number of possible variants of the HPL, and the results can vary greatly depending upon the exact approach used. One key decision is whether a 'before-housing' or 'after-housing' costs line is used. The results use the after-housing approach, as this provides a clearer picture of the resources available to families after meeting their housing costs.

During the past year, NATSEM has expanded the scope of the STINMOD database to include imputed non-cash benefits from public health, housing and education. These non-cash benefits have been assumed to be incident upon the users of the services and valued at the cost to government of their provision.

Health expenditure of all governments in Australia of around $23.8 billion in 1992/93 was allocated in the study. The health sectors modelled were public hospitals and other institutional services (excluding nursing homes), which made up $15 billion or almost two-thirds of total outlays; medical practitioner and other clinical services ($6.5 billion); pharmaceutical services ($1.6 billion); and public health and health research ($0.8 billion). Health expenditure was generally distributed to families within STINMOD based on the average utilisation rates for each service of their members, classified by age, gender and State (see Percival and Schofield 1995). For example, for each person on the STINMOD database, the average number of occupied bed days in hospitals was imputed and multiplied by the average cost per bed day for each State. There were two exceptions to this. First, two types of pharmaceutical subsidy were estimated — general and concessional (with the latter available to health care and other card holders). Second, expenditure on public health and health research was distributed equally to each person (given the difficulty in defining who benefited from these outlays). All health outlays were inflated by the change in aggregate health outlays as recorded in the National Accounts to arrive at 1995 estimates.

Education outlays of about $18.5 billion in 1993/94 were allocated. It cost the government, for example, almost $6,700 to educate a full-time university student for one year, and this amount was added to the income of STINMOD

families containing such a student. Average outlays per student were allocated to families with members studying in pre-schools, primary and secondary schools (split into government and non-government sectors), universities and other higher education institutions, and TAFE colleges (see Paul 1995).   Of these, the most important were primary and secondary school outlays ($11.5 billion), higher education ($3.7 billion) and TAFE ($2.2 billion).   Education outlays not elsewhere classified (about $120 million) were distributed equally among all students All education outlays were inflated by the change in aggregate education outlays as recorded in the National Accounts to arrive at 1995 estimates.

Public housing benefits of about $775 million in November 1993 were allocated, comprising the rent subsidies provided to low income public housing tenants by State and Territory governments. The value of the subsidy was calculated as the difference between estimated actual rent paid and the estimated market rental value of the property (Landt, 1994). This amounted to about one quarter of total government housing expenditure, with no attempt being made to impute the benefits of public housing construction or maintenance (that is, the capital expenditure) to families within STINMOD. This was inflated by the rents component of the consumer price index to derive estimated 1995 values.

Tables 7.A1 and 7.A2 are directly comparable with Tables 7.1 and 7.2 within the body of the paper, except that persons have been ranked by the equivalent before-housing disposable income of their family, to show the difference made by using before and after-housing income measures. In Tables 7.1, 7.2, 7.A1 and 7.A2 the two equivalent income measures in the final two columns have been scaled, so that the average equivalent income measure is the same as the average non-equivalent income measure. That is, for example, the value of equivalent after-housing disposable income for every person has been scaled so that the mean value equals the mean value for after-housing disposable income. This allows easy identification of whether taking account of needs improves or worsens the relative position of a particular type of family.

Table 7.A1:   Estimated weekly family income received by individuals, ranked by decile of equivalent family before-housing disposable income in May 1995

Decile	Private income	Cash transfers	Total income	Income tax paid	Before-housing disposable income	Housing costs	After-housing disposable income	Non-cash benefits	After-housing final income	Equivalent after-housing disposable income	Equivalent after-housing final income
	A	B	C = A + B	D	E = C - D	F	G = E - F	H	I = G + H	J = G ∗ equiv. scale	K = I ∗ equiv. scale
	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw	$ pw
1	40	205	245	0	240	60	180	155	335	200	280
2	145	220	365	15	350	60	290	180	470	310	420
3	310	155	465	45	415	65	355	185	535	360	475
4	410	125	535	70	465	65	405	175	575	410	535
5	595	80	675	110	565	80	485	175	660	455	585
6	780	45	825	160	665	85	580	165	745	530	670
7	930	25	955	205	755	90	665	155	815	610	770
8	1 045	20	1 065	245	820	90	725	135	860	710	880
9	1 205	10	1 215	305	915	95	820	110	930	850	1 045
10	1 955	10	1 965	510	1 455	110	1 345	105	1 450	1 410	1 715
All	740	90	830	165	665	80	585	155	735	585	735

Note: All income figures are rounded to the nearest $5. There are about 1.75 million Australians in each decile.

Table 7.A2:   Estimated demographic and economic characteristics of individuals ranked by decile of equivalent before-housing disposable income in May 1995

| | Decile of equivalent before-housing disposable income | | | | | | | | | | |
	1	2	3	4	5	6	7	8	9	10	All
	%	%	%	%	%	%	%	%	%	%	%
Aged single	12.5	10.9	8.9	8.4	5.9	2.9	2.0	1.4	0.7	1.3	5.5
Aged couple	3.4	12.7	16.5	15.4	9.9	6.5	3.4	2.9	2.0	3.2	7.6
Couple, no children, at least one employed full-time	3.8	1.8	3.7	6.1	8.9	12.1	14.8	18.7	25.4	32.4	12.8
Couple, no children, Ð other, incl. unemployed	7.1	6.5	4.5	3.2	2.5	1.8	1.1	0.4	0.0	0.4	2.8
Couple, children, at least one employed full-time	12.4	27.1	44.8	45.9	54.0	58.1	56.6	48.6	38.2	32.5	41.8
Couple, children, Ð other, incl. unemployed	19.6	12.2	3.4	2.2	0.9	0.4	0.1	0.2	0	0.2	3.9
Sole parent	15.0	14.0	6.7	6.6	6.3	4.8	4.6	2.3	1.8	1.0	6.3
Single, employed full- or, part-time	4.3	1.8	2.7	4.9	5.9	9.8	14.8	23.9	30.3	27.3	12.6
Single, unemployed or not in labour force	18.3	8.6	3.6	2.6	2.3	0.7	0.2	0.3	0.2	0.2	3.7
Other	3.7	4.3	5.2	4.9	3.2	3.0	2.3	1.3	1.2	1.5	3.1
Total	100	100	100	100	100	100	100	100	100	100	100
Av. no. of dependent children	0	0.5	0.6	1.0	1.4	1.6	1.7	1.7	1.6	1.7	1.12
Av. no. of aged	0.43	0.41	0.23	0.09	0.05	0.03	0.03	0.02	0.01	0.02	0.13
Av. no. in family	2.7	3.1	3.2	3.1	3.2	3.2	3.0	2.7	2.4	2.3	2.9

DISCUSSION

Nanak Kakwani[1]

In this paper, Ann Harding produces estimates of poverty and income distribution in Australia in May 1995 by means of the publicly available STINMOD static micro simulation model applied to the 1990 income survey microdata. Many interesting conclusions emerge from the paper. The most striking conclusion is that a significant degree of poverty still exists in Australia. On the basis of disposable income (after housing cost), about 11 per cent Australians still live in poverty — about 500,000 children aged 0–14 years and 1.3 million adults. This result is in complete contrast to the Prime Minister Bob Hawke's 1987 pledge to end child poverty. 'No child will live in poverty' was an attractive slogan. it seems that it has remained a slogan with no serious attention given to the child poverty.

It must, however, be emphasised that the poverty rates depend crucially on the poverty line that is employed. The poverty line employed in the study is the one determined in 1975 by the Commission of Inquiry into Poverty headed by the late Professor R.F. Henderson. The Commission suggested that a household consisting of head, dependent wife, and two children will be in poverty if its income falls short of 56.6 per cent of seasonally adjusted average weekly earning (AWE) for Australia.

The poverty line that the Commission originally used consisted of the basic wage plus child endowment (now called family allowance) for a standard family of husband, wife and two children. This amounted to $55 per week in 1966. Since this figure turned out to be 56.6 per cent of the seasonally adjusted average earning in Australia in that year, the Commission set the same poverty norm for other years. Thus the poverty line for the standard family remained at 56.6 per cent of that before-tax seasonally adjusted weekly earning. The poverty line under this approach changes in accordance with the average earning of the wage and salary earners.

Recently, it has been suggested that the Henderson poverty lines should be updated by movements in seasonally adjusted household disposable income per capita (HDIPC). This updating procedure is considered to be superior because it reflects movement in all household incomes rather than just those of people

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[1] I am grateful to Professor John Nevile for his helpful comments on this discussion.

on salary and wages. Ann Harding has followed this procedure in arriving poverty lines (which I present in Table 1). For the June quarter 1995, a single earner couple with two children require more that $319.2 per week to spend, after meeting their income taxes and housing cost, to be out of poverty.

The Henderson approach to measuring poverty is often referred to as a 'relative approach' in which the poverty line changes with the society's average level of living standards. An alternative approach is the 'absolute' approach in which the poverty line is fixed in real terms. Under this approach, the poverty line changes over time by means of an overall consumer private index. Thus, the observed differences in poverty measure the real change in poverty (corrected for price changes).

Table 1: Poverty lines in Australia, June 1995 ($ per week)

Household type	Head in workforce			Head not in workforce		
	Cost without housing	Housing cost	Total cost	Cost without housing	Housing cost	Total cost
Couple	215	79	294	173	79	252
Couple + 1 child	267	86	353	226	86	311
Couple + 2 child	319	93	412	278	93	371
Couple + 3 child	371	100	472	330	100	430
Couple + 4 child	423	108	531	381	108	490
Couple + 5 child	472	115	587	431	115	546
Single person	148	72	220	106	72	178
Single person + 1 child	203	79	282	161	79	240
Single person + 2 child	255	86	341	214	86	300
Single person + 3 child	307	93	401	266	93	359
Single person + 4 child	360	100	460	318	100	418

Although the 'relative' approach is widely used in Australia, it has serious drawbacks. The most severe criticism of the relative approach is that it may show a reduction in poverty when people's incomes may be falling all round resulting in a fall of the standard of living of the poor as well as the non-poor. A reduction (or increase) in poverty will show up only if there is a change in the relative income distribution. A poverty measure based on a relative approach is, in fact, a measure of inequality. Poverty should then be viewed as an issue of inequality. If that is our view of poverty, then it is unnecessary to specify poverty lines. Instead, we should look at various measures of inequality. Poverty is distinct from inequality. Sen (1983) has put this view as:

> A sharp fall in general prosperity causing widespread starvation and hardship must be seen by any acceptable criterion of poverty as an intensification of poverty. But the stated view of poverty 'as an issue of inequality' can easily miss this if the relative

distribution is unchanged and there is no change in 'the differences between the bottom 20 or 10 per cent and the rest of the society.

Rejection of relative view of poverty must not be confused with being indifferent to the contemporary standard of living of this society. The poverty line should, of course, take into account current standards of living and should only be defined in relation to the living standards of a particular society at a particular time. The Henderson poverty threshold changes every quarter in line with the average earnings. This is in my view is not correct. The standard of living of a society does not change over night unless there is a disaster such as earthquake. The poverty threshold must change only gradually as the standards of society adapt itself to new conditions. It would be inappropriate to change the poverty threshold monthly or quarterly as data become available. The standard of living of a society is more stable than what is indicated by monthly or quarterly changes in economic situations. The weakness of Henderson poverty approach becomes quite obvious when Ann Harding states 'during the 1980s the Henderson poverty line increased much more quickly than median family income, driven by strong employment growth and an indexing methodology which arguably overstates the rise in community incomes'.

In order to determine the poverty lines for households other than the standard one (husband, wife and two children), we need to assess the relative needs of households of different size and composition. The problem of assessing relative needs is indeed a very serious one. The needs of a person depend on several factors including health, age, sex, occupation, environment, tastes and several other characteristics. It will, indeed, be a hopeless task to quantify all these factors. In order to cope with these problems, economists construct equivalent-income scales that would facilitate the comparison of households of different size and age composition.

The Commission of Inquiry into Poverty used an equivalent scale that was produced in 1954 by the Budget Standard Service of New York. It is mentioned that the Commission adapted the New York equivalent scale because of the 'almost complete lack of material in Australia on which to base judgement of this kind'.

Ann Harding has used the Henderson scale which is based on the cost of prescribed quantities of goods and services consumed in New York 1954. This scale is hardly relevant to the contemporary Australian life styles. The Poverty Inquiry Commission recognised this problem and recommended that 'further inequity be instituted to devise a set of relative rates of pension-benefit for different income units appropriate to Australian conditions'.

The poverty lines based on the Henderson scale, presented in Table 1, show that the marginal cost for every child is exactly the same irrespective of the age of the child. It is therefore, assumed that all children within a household have equal needs irrespective of their age. A baby should cost to the family as much as a teenage child. Another major drawback of the Henderson poverty approach is that it overlooks the economies of scale that operate for many items of consumption; particular, housing. Because of economies of scale, the marginal cost of child should be a decreasing function of household size. But, the Henderson scale assumes exactly the same marginal cost, even for housing consumption. This methodology would invariably over estimate the true poverty among the large households (particularly those with children).

To analyse inequality and poverty we need to rank individuals or families according their levels of welfare. The measurement of individual welfare levels is indeed a difficult task. Ann Harding chooses to rank individuals by the equivalent after-housing disposable income of their families. She has not provided a sufficient justification of this choice. If the richer households spend greater proportion of their income on housing than the poorer households, a larger proportion of the richer may become concentrated in the lower deciles which would result in a completely misleading picture of inequality and poverty. It is interesting to find from Ann Harding's results that the lowest decile has an average housing cost of $125 per week whereas the top decile has an average of only $85 per week. This suggests that Harding's choice of welfare measure is deficient. One may consider several alternatives. The most popular one is the needs adjusted total household expenditure. From the welfare point of view, this measure has been argued to be well-founded in economic theory (Deaton 1980).

According to the Henderson poverty thresholds, housing cost is about one third of the total cost. This component of the poverty line can have a considerable impact on the poverty measurement. It is well known that house prices vary substantially across various regions. Therefore, a household welfare measure must take into account the regional price variations especially for the housing cost. This has not been done by any poverty study undertaken in Australia.

In the study, social security payment and income tax liabilities were imputed for each family according to the family characteristics as revealed by the 1990 ABS income survey. These are not the actual social security payments received nor the actual taxes paid by the families. There may exist a huge gap between what families ought to receive and what they actually receive. This would considerably bias the inequality and poverty estimates. It would be useful to get an estimate of the magnitude of this bias. This has not been attempted.

To sum up, the Henderson methodology to measure poverty has many serious drawbacks. Unfortunately, this methodology continues to be used widely in Australia. It is now the time that the Henderson poverty lines be abandoned. A new inquiry should be instituted to devise poverty standards that are appropriate to Australian conditions.

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General discussion

A number of different views were expressed during the discussion, on the advantages and disadvantages of the poverty-line concept, on alternative measures, and a number of specific comments on Ann Harding's paper.

The poverty-line

The view was expressed that a poverty-line is an inadequate measure of poverty. A number of reasons were given for this:

- the poverty-line in Australia currently uses an essentially 'arbitrary' figure as the cut off point below which people are in poverty;

- using a single figure as the defining cut off point means that anybody above the poverty-line is not poor and anyone below is. However poverty is not a threshold event. The more income you have, the better off you are and the less income you have, in some senses, the worse off you are. Thus no single number can provide information on poverty, no matter how well it is calculated; and

- the distribution of income is not smooth, especially at the bottom end of the distribution. A peak occurs where the level of social security benefits

falls. If the poverty-line is placed just below this point, there are few people in poverty, if it is placed it just above, there are many people in poverty. Thus the poverty-line does not provide particularly useful information.

The poverty-line was supported by some participants. While its failings were acknowledged, it was also pointed out that it has served an important role in society in identifying need. A measure of disadvantage is needed for policy making, and while the poverty-line has problems it is currently the only measure available. An agreed and accepted alternative measure should be established before the poverty-line is rejected.

The argument that the poverty-line was 'arbitrary' was refuted by another participant. The poverty-line involves a judgment, which is different from 'arbitrary'.

In response to the closeness of the poverty line and the bulge in income distribution, it was mentioned that the Henderson poverty-line has been a driving force in the formation of social security policy in Australia, so it is no coincidence that social security payments fall at approximately the same income level as the poverty-line.

Alternatives to the poverty-line

One participant presented an alternative measure. He suggested it may be better to examine the bottom end of the income distribution than to use a poverty-line. This would involve choosing the bottom 10 to 15 per cent and looking at how these people live their lives. This would provide more information than could be produced by ABS data or simulations, which ignore both time and wealth, but also other less tangible items. For many reasons, some people on low incomes live comfortably, while some do not, and a richer description of peoples lives is needed in order to pick this up. After describing how people are living, it can be determined whether this constitutes poverty and decisions can be made regarding any actions that may be required.

This view was also reflected in the comments of a participant who argued that poverty measurement should not just include a monetary measure but should examine the minimum level of social participation in employment, housing and a range of other areas.

However another participant pointed out a problem with this method: it does not allow the researcher to determine if the number of people in poverty is increasing or decreasing as the bottom 10 per cent of the income distribution is always selected. Therefore an alternative method to determine changes in

poverty would be to examine changes in the average income level of this group compared to the average income of the whole population.

Examining the income level of the bottom 10 per cent of the population distribution does not necessarily rely on a relative concept of poverty. It does require a judgment as to what are the minimum levels of need in society with which to make a comparison, in a similar way that many aspects of the welfare system require judgments.

It was also argued that although this method may not be any less 'arbitrary' than the Henderson poverty line, at least it is transparently so.

Comments on Ann Harding's paper

A number of points were made regarding the measurement of poverty in Ann Harding's paper:

- the ABS estimates the household sector to be approximately one and a half times the size of the market economy, as measured by Gross Domestic Product (GDP). Many of the people on the lower end of the income distribution would have higher consumption of household production. Therefore the measures of poverty may be substantially different if household production and time use is included;

- the inclusion of time/household production is important for the middle rank of the income distribution. For example, a couple with one spouse earning $50,000 is much better off due to the additional spare time than a couple where both spouses work and earn $25,000 each;

- in the view of one participant it is a fallacy that there are economies of scale in increasing family size, when time is included. That this area needs more research was agreed by participants;

- the distribution of housing by household income is very flat. Housing therefore is one of the most important redistributive forces, and we should make sure we do not destroy it, through, for example, the taxation of imputed rents;

- it was noted by one participant that the Department of Social Security is funding a budget study to research a measure of absolute poverty, and will also examine the cost of children and the cost of housing; and

- it was also raised that two additional dimensions of poverty need to be examined: the incidence of inherited poverty; and the effect of locational disadvantage.

8. UNPACKING INEQUALITY: WAGE INCOMES, DISPOSABLE INCOMES AND LIVING STANDARDS

Peter Saunders[1]

8.1 Introduction

The study of income distribution, once a quiet backwater of applied economics, has been transformed into a vibrant subject of intense analytical and policy interest. Although the separation of questions of efficiency and equality remains fundamental to the study of economics and an article of faith among most economists, such separation cannot withstand the rigours of public policy formulation. It is thus not surprising to discover that even the Industry Commission cannot ignore the distributional dimensions of its proposals for enhancing allocative efficiency. There is an increasing demand to know what is happening to inequality, why it is happening, who or what is responsible and what can be done about it. For those working in the field of social policy where issues of inequality, access to resources and social justice have always been paramount, these developments are most welcome.

The subject of economic inequality is, of course, an extremely broad one. This paper focuses on the distribution of money income and the role that wage incomes play in influencing that distribution, at a point in time and over time. This includes not only the disparity of wage incomes among those who receive them, but also inequalities in access to wages — the incidence and effects of unemployment. The paper draws primarily on Australian material, but international evidence and cross-country comparisons will also be used to illustrate the argument. The analysis will focus on developments over the 1980s, because that is the period for which detailed income distributional data are currently available. The conclusions reached will hopefully have relevance for current developments, although the extent to which past trends have withstood the impact of recession must await the release and analysis of more recent data.

Much of the paper focuses on the distribution of wage and salary incomes among individual full-time workers. This is an important component of overall inequality but one which covers only one source of income and only one segment (albeit a large one) of the population. It has particular importance for Australia over the last decade or so given the role that the Accord has played in influencing the pattern of wage outcomes and in establishing the pre-conditions for non-inflationary growth. More generally, focusing on changes in inequality of labour incomes reflects the widespread increase in this dimension of inequality in many Organisation for Economic Cooperation and Development (OECD) countries over the 1980s (OECD 1993).

What is happening to labour market earnings sets the scene for overall developments in inequality of living standards. However, understanding the distribution of living standards also requires analysis of the impact of other sources of market income, of transfer incomes and the incidence of direct taxes and how these impact upon working and non-working people. Furthermore, the distribution of disposable incomes is generally analysed at the family or income unit level, within which income is assumed to be pooled and shared equally among individual members. This requires an adjustment to be made for differences in need using an equivalence scale which allows the distribution of the economic well-being of individuals living in different family circumstances to be estimated. Some account also needs to be taken of the contribution of time spent outside of the labour market to the overall level of well-being.

Understanding how each of the links in this overall distributional chain affects the pattern of inequality provides an indication of the relative importance and impact of market processes, of public redistributive mechanisms and, by implication at least, of private (between and within family) redistributional transfers.

This chain of redistributive processes has been used to shape the paper, which is organised as follows. Section 2 analyses the role of employment and wage incomes in overall inequality and investigates the anatomy of the distribution of income in Australia and how it changed between 1981–82 and 1989–90. Section 3 analyses the distribution of wage incomes among full-time Australian workers, while Section 4 explores the links between the distributions of earnings and disposable incomes in Australia and other countries. Section 5 brings national and international data to bear on the analysis of the links between earnings inequality and the distribution of economic well-being when account is taken of the family circumstances of individual workers and the estimated market value of time spent outside of the paid labour force. The main conclusions of the analysis and some of its implications are briefly discussed in Section 6.

It is worth emphasising at the outset that the main aim of the paper is to describe and analyse the observed distributional developments rather than to seek to explain them in a causal sense. The findings may help to point to possible causes, but no explicit attempt has been made to identify the structural factors or processes which have caused the distribution of income to be as it is, nor why it has changed.

8.2 The anatomy of inequality

In 1989–90, over 62 per cent of total household income was received in the form of wages, salaries and supplements.[2] Clearly, wage income represents the primary source of income for the majority of Australian households. In 1989–90, the proportion of gross (before-tax) income accounted for by wage and salary income varied from around 16 per cent in the lowest quintile, rising through the next three quintiles to 40 per cent, 75 per cent and 80 per cent, respectively, before declining slightly to 77 per cent in the top quintile (reflecting a decline in the top decile) (Figure 8.1). These variations reflect several factors, including the demographic structure of families in each decile (those in the lower deciles are mainly retired), the ways in which earnings vary with age and experience for those below retirement age, and the average number of earners in families within each decile.[3]

The impact of these latter factors is illustrated in Figure 8.2(a), which shows that when families are ranked by their equivalent disposable incomes, the number of earners in each family is a major determinant of distributional position.[4] Most of the families at the bottom of this distributional ranking have at most one wage earner, while most of the families at the top have at least one. This pattern is even more marked if the analysis is restricted to couples, where the percentage of families in each decile with two earners increases even more markedly across the distribution (Figure 8.2(b)). There are relatively few single-earner couples in the top half of the distribution, which is dominated by two-earner couples.

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[2] ABS, *Australian National Accounts, 1993-94,* Catalogue No. 5204.0.

[3] The term 'family' is used for convenience, although Figures 1 and 2 are actually derived on the somewhat narrower income unit concept.

[4] The equivalence scale used to derive equivalent disposable income is the Henderson scale which is explained in Appendix F of the First Main Report of the Commission of Inquiry into Poverty (1975). Although subject to extensive criticism, the Henderson scale is still widely used in Australian distributional analysis, including by the Australian Bureau of Statistics (ABS, 1994a) and the Australian Institute of Health and Welfare (AIHW, 1993). Among its many attractive features, family need in the Henderson scale increases as more family members join the labour force.

Figure 8.1:   Wage and salary income by deciles of income unit gross income, 1989–90
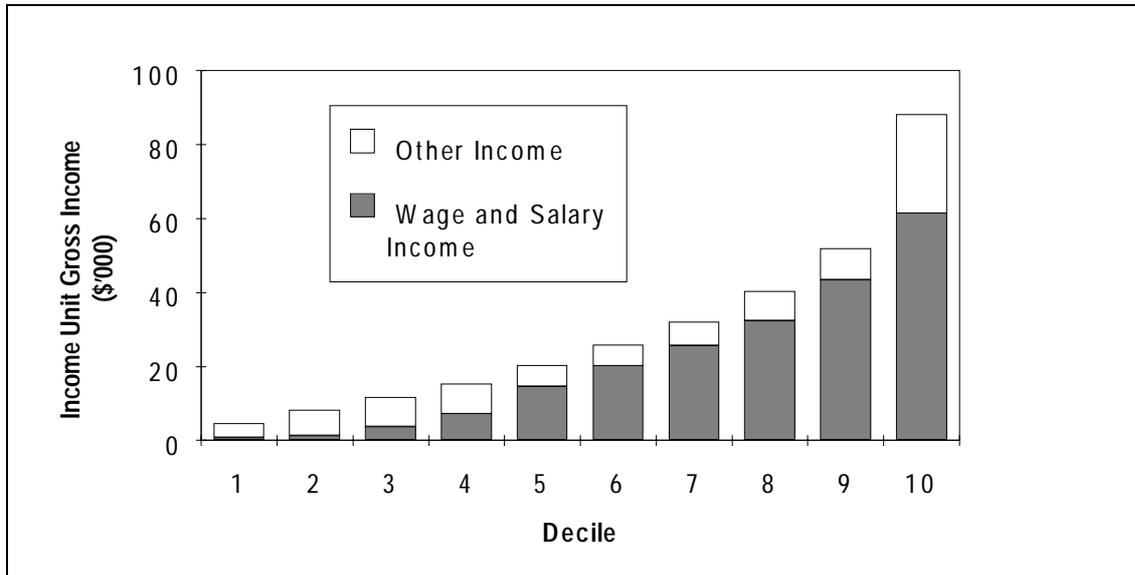

Figure 8.2(a): Number of wage and salary recipients by deciles of equivalent disposable income: all income units, 1989–90
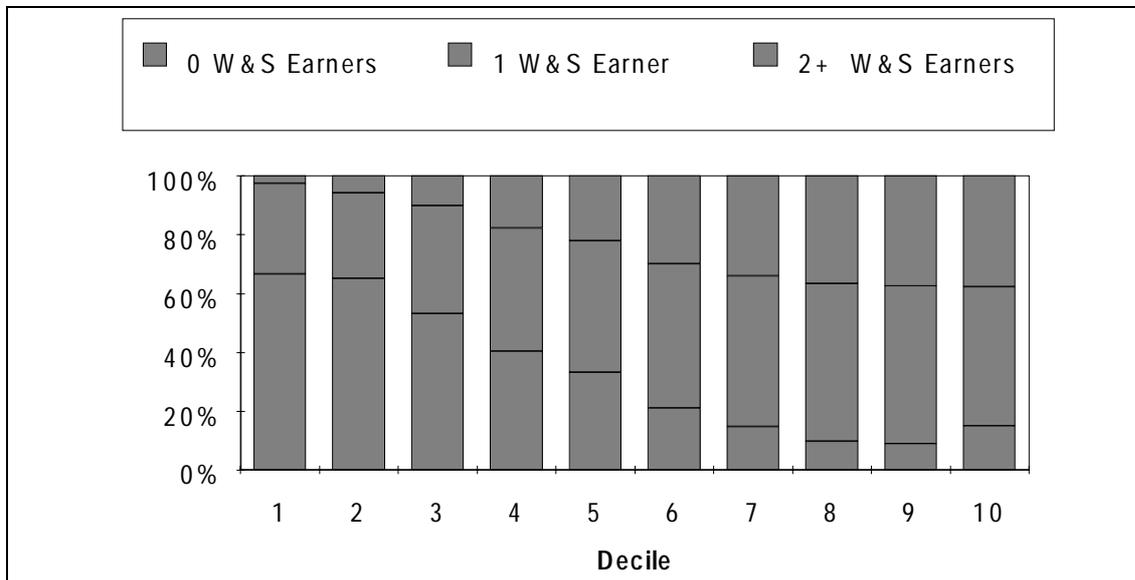
Figure 8.2(b): Number of wage and salary recipients by decile of equivalent disposable income: couple income units, 1989–90
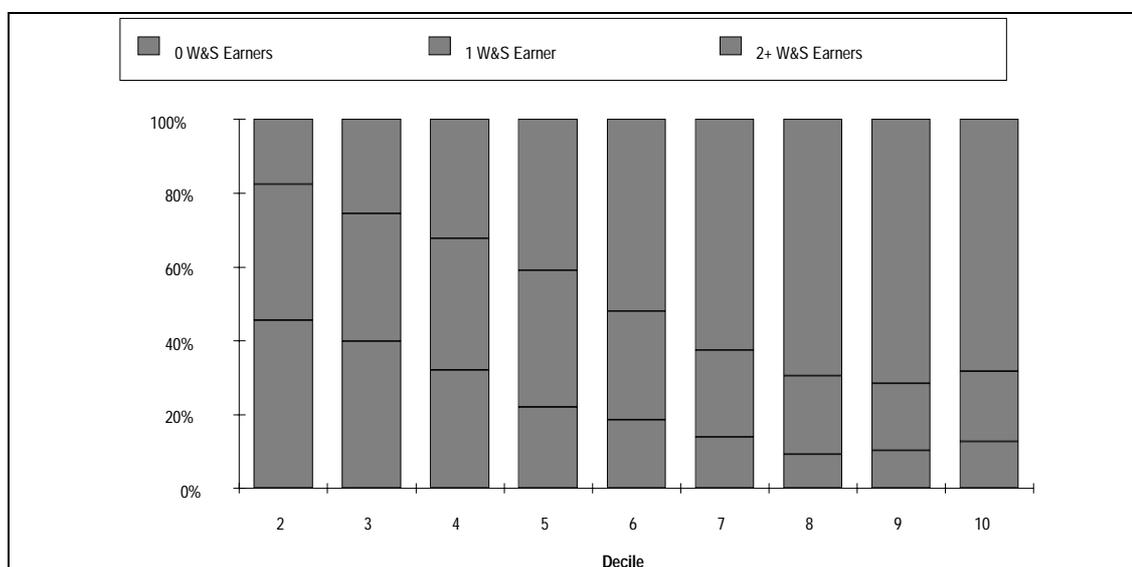
Having established the importance of wage incomes, Figure 8.3 uses unit record data from the *1981–82 Income and Housing Survey* and the *1990 Survey of Income and Housing Costs and Amenities* to illustrate the anatomy of the distribution of income in Australia and how it changed over the period. Six separate distributions are shown, with both the scope of the income concept and the coverage of the sample expanding moving from left to right in the diagram. These separate distributions provide the first overview of distributional developments over the 1980s and the first clue to what factors underlie them.

The first distribution in Figure 8.3 refers to the distribution of wage and salary income (WS) among full-year full-time (FYFT) workers.[5] The second is the distribution of total earned (or primary) income (wages, salaries and income from self-employment) among all individuals with positive earnings (EY) in each year. The third is the distribution of total private (or market) income among all income units (PY), measured before the receipt of transfers and payment of taxes. The next two distributions show the degree of inequality of post-transfer, pre-tax gross income (GY) and of post-transfer, post-tax

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[5] FYFT workers are defined as those who worked more than 49 weeks during the course of the year, less than half of which were worked on a part-time basis. This definition of full-time workers is equivalent to that used by the Australian Bureau of Statistics (ABS, 1992). Inequality amongst this group primarily reflects variations in wage rates, because there is little variation in either weeks or hours worked across the sample.

Figure 8.3:   Changes in the distribution of income as measured by the Gini coefficient: 1981–82 to 1989–90
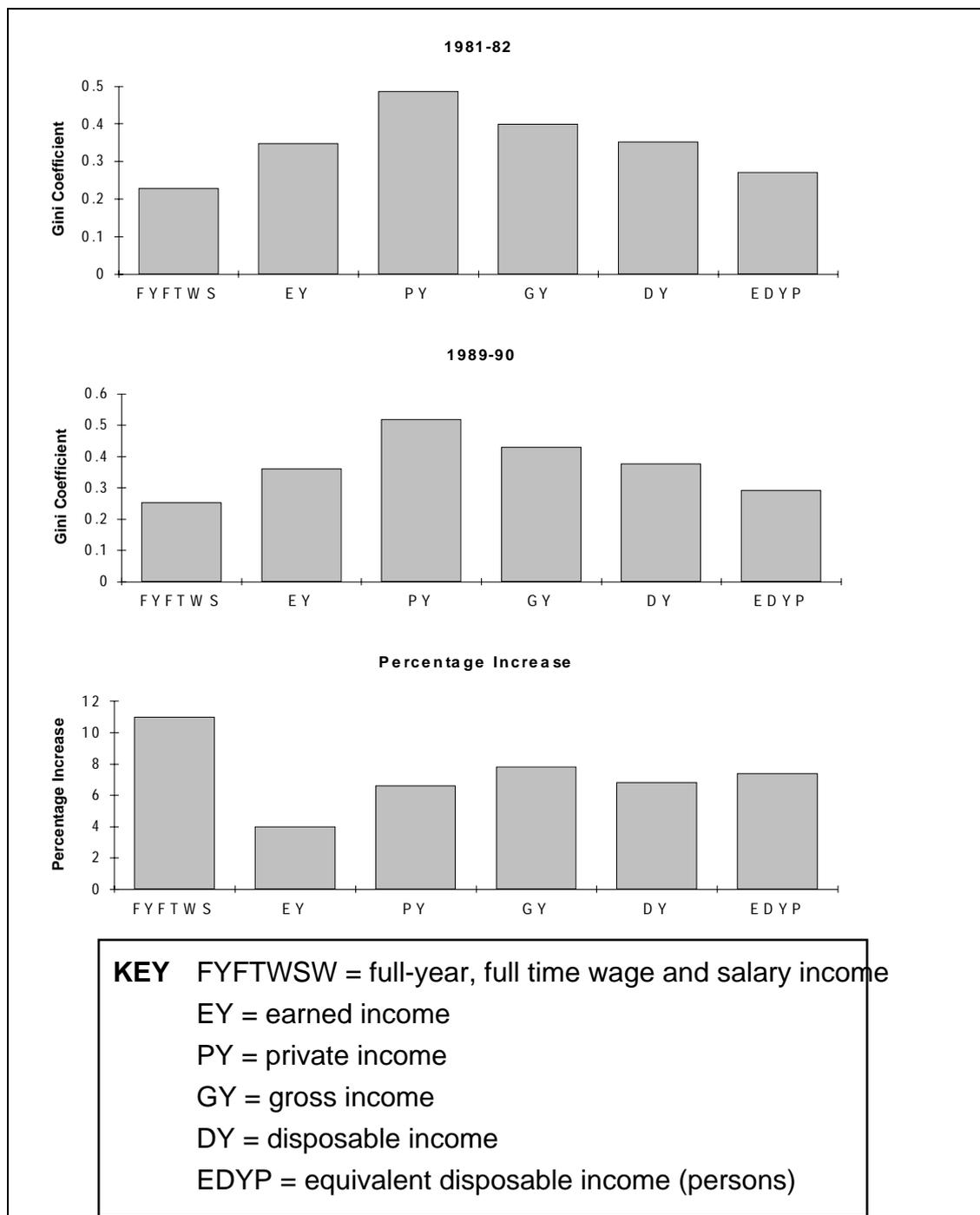
Source: Saunders (1995)

disposable income (DY) among all income units. The final distribution uses the detailed Henderson equivalence scale to derive the distribution of equivalent

disposable income, which is then person-weighted and expressed on an individual basis (EDYP). This final measure is now widely accepted as the best household income based indicator of the distribution of economic well-being amongst individuals.

In constructing all six measures, income has been measured on an annual basis and each measure includes all those in the sample for whom annual incomes are recorded in the two surveys. The inequality measure used in Figure 8.3 is the gini coefficient, although the broad pattern of results is similar for other conventional inequality measures. The three panels of Figure 8.3 show, respectively, the degree of inequality in the six distributions in 1981–82, in 1989–90, and the percentage change between the two years.

Three features emerge from these results. First, even when focusing on inequality in the narrow sense of the distribution of money incomes, the degree of inequality varies greatly according to the scope of the income concept, the coverage of the sample and the unit of analysis employed. In order to establish the extent of the change in inequality (though not the direction of change) it is thus necessary to first decide which aspect of inequality is being considered. Second, in both years inequality is lowest for the distribution of wage incomes among FYFT workers, but increases considerably once part-time (and part-year) employment, self-employment earnings and unearned incomes — mainly interest, rent and dividends — are included.

Moving from private income (PY) to gross income (GY) and to disposable income (DY) shows that the transfer and income tax systems are both progressive in their incidence. However, the precise degree of progressivity of these two systems should be interpreted with care because they are treated differently in the data. The receipt of government cash transfers is recorded directly by recipients in each survey, while the payment of taxes has been imputed on the basis of information provided on the level and source of pre-tax incomes. The estimates of disposable income thus reflect how much tax should have been paid, not how much actually was paid. Overall, however, the combined effects on inequality of the transfer and tax systems — which primarily address issues of vertical inequality — are similar in magnitude to the equivalence adjustment — which mainly account for the existence of horizontal inequities.

The final point, which emerges from the lower panel of Figure 8.3, is that all six distributions became more unequal between 1981–82 and 1989–90. The largest proportional increase in inequality took place among the wage incomes of FYFT workers, even though this distribution still remained the most equal of the six distributions in 1989–90. This feature of the change in inequality over the 1980s underlies its characterisation as being essentially a market-driven

phenomenon — despite the impact of the Accord and other labour market interventions. It is also worth noting that while the trend in disposable income inequality was only about half that for FYFT wage incomes, disposable income inequality still increased over the period by around 6 per cent.[6] The tax-transfer system thus managed to stem the rising tide of wage income inequality, but did not reverse it.

What emerges most clearly from this analysis is that the degree of inequality among the primary labour force has a substantial impact on the overall income inequality profile. Other factors — including the impact of unemployment, of part-time work, the receipt of capital income and the correlations between these alternative incomes for particular individuals and between different individuals within income units are also important, but what is happening in the labour market and to the structure of wages is critical.

The impact of unemployment on inequality is reflected (though not identified) in Figure 8.3 in the distributions of earned income (EY) and private income (PY), both of which include people who have been unemployed for all or part of the year. Given the nature of the labour market, the impact of the incidence of unemployment among *individuals* on income inequality among *families* is not as clearcut as it probably once was, although the limited time-series evidence analysed by Saunders (1992) indicates that inequality and unemployment are positively related. Table 8.1 presents another perspective on this relationship by comparing the wage incomes of those working full-time at the time of the 1990 income survey according to whether or not they had experienced a spell of unemployment over the course of 1989–90. These estimates reveal that those who had been unemployed tend to earn less when they re-gain employment. While around half of all full-time workers were earning less than $500 a week in 1990, this percentage was almost three-quarters for those workers who had experienced a spell of unemployment during the year ending in June 1990.

Part of the reason for this may reflect the downward adjustment of the reservation wage during spells of unemployment. In addition, however, it seems that unemployment is more prevalent amongst the low-paid and while this has the effect of reducing the impact of unemployment on inequality, it highlights the perilous position of those in low-paid work and underlines the need for policy interventions which protect them.

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[6] The gini coefficient is most sensitive to distributional changes close the modal value of income. If an alternative top-sensitive inequality measure like the coefficient of variation is employed, the changes in inequality are greater than those shown in Figure 3. The increases in inqulity of FYFT wage incomes and equivalent disposable incomes over the period then become 11.4 per cent and 19.2 per cent, respectively.

8.3 The distribution of full-time wage incomes in the 1980s

Despite the growth in part-time and casual work, participation in full-time work still comprises the core of the labour force and accounts for the bulk of wage incomes. In 1981–82, wage and salary income accounted for 69.8 per cent of total gross household income, while the wage incomes of FYFT workers alone accounted for 57.6 per cent of gross income. By 1989–90, both percentages had increased, to 70.8 per cent and 59.3 per cent, respectively, despite the decline in the proportion of full-time employment in total employment.[7]   Understanding the nature and causes of the trends in the distribution of wage incomes for those in full-time employment thus has a major bearing on the nature and causes of the overall distributional trend.

Table 8.1:   The Distribution of full-time wages in 1990 by unemployment experience during 1989–90

Gross weekly wage income ($)	All full-time workers in 1990	Those who experienced some unemployment during 1989–90	Others
Under 350	14.6	24.4	13.9
350 – 499	35.1	48.3	34.1
500 – 799	37.3	22.3	38.4
800 and over	13.0	5.1	13.5
Total	100.0	100.0	100.0

Source: 1990 Survey of Income and Housing Costs and Amenities, unit record file.

Although this relationship is by no means exact, investigation of wage income inequality is a logical stage at which to begin to consider overall income inequality, not least because of what is shown in Figure 8.3.

The distributions summarised in the first three columns of Table 8.2 indicate that the change in inequality of wage incomes among FYFT workers over the 1980s took the form of a decline in the shares of the four lowest quintiles and an increase in the share of the top quintile, particularly the top decile.[8]   If, instead of defining the deciles in the conventional way according to the basis of the overall distributional ranking, the technique used by King, Rimmer and Rimmer (1992) and Gregory (1993) is applied in which the decile boundaries

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[7] ABS, *The Labour Force, Australia,* Catalogue No. 6203.0, various issues.

[8] Replicating this analysis on a current income basis for full-time workers at the time of the 1982 and 1990 surveys indicates a much smaller increase in inequality (a rise in the gini coefficient of 4.3 per cent compared with 11.4 per cent for period incomes) with the main distributional change being a decline in the share of the second quintile and an increase in the share of the top quintile.

are held constant relative to median income, the issue of whether or not there has been a 'disappearing middle' in the distribution of wage incomes can be investigated.

The results from such an exercise need to be treated with caution, particularly in a situation where the change in inequality is itself influencing the relationship between the median and other measures of central location.[9] As Belchamber (1995) has demonstrated with the use of a counter-example, that it is possible for job growth which is concentrated in the middle and upper sections of the distribution to increase the median of the distribution and for the resulting increase in boundary cut-offs expressed relative to the median to give the semblance of an increase in the number of jobs at the bottom of the distribution. His analysis of earnings data between 1985 and 1991 leads him to reject the 'disappearing middle' hypothesis in favour of a 'vanishing bottom' characterisation of developments over the period (Belchamber 1995: Figure 8.3).

Despite the problems highlighted by Belchamber, the estimates presented in the final column of Table 8.2 provide little evidence of a disappearing middle in the distribution of wage incomes between 1981–82 and 1989–90. The main overall feature of the changes indicated by both these estimates and those shown in the other columns of Table 8.2 is perhaps more accurately described as one of an 'accelerating top' than a 'disappearing middle'. It is certainly the case that however you look at these data, those in the top decile fared best in terms of recorded wage incomes over the 1980s.

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[9]   Between 1981–82 and 1989–90, the ratio of the mean to the median of the distributions shown in Table 2 increased from 1.068 to 1.117.

Table 8.2: Changes in the distribution of wage incomes among full-year full-time workers between 1981–82 and 1989–90

Decile	Income share in 1981–82	Income share in 1989–90	Change in share	Percentage of FYFT workers in income brackets held constant relative to the median
First	3.81	3.66	–0.15	10.13
Second	6.28	5.95	–0.33	10.64
Third	7.35	6.93	–0.42	9.42
Fourth	8.10	7.77	–0.33	8.76
Fifth	8.91	8.61	–0.30	11.04
Sixth	9.74	9.48	–0.26	7.69
Seventh	10.80	10.58	–0.22	9.12
Eighth	12.02	11.87	–0.15	10.43
Ninth	13.84	13.85	+0.01	10.68
Tenth	19.16	21.29	+2.13	12.09

Source: *1981–82 Survey of Income and Housing Costs* and *1990 Survey of Income and Housing Costs and Amenities,* unit record files.

Further insight into the factors contributing to the change in wage income inequality can be gained by applying the technique of inequality decomposition. This technique has been employed in previous analyses of income distribution in Australia by Meagher and Dixon (1986), Saunders (1993a) and Raskall, McHutchison and Urquhart (1994). Following these studies, the measure of inequality used is half the squared coefficient of variation ($CV^2/2$) which is a member of the generalised entropy family of decomposable inequality indices derived by Shorrocks (1984).

Each member of this class of inequality measures has the property that total inequality can be decomposed into the weighted sum of inequality within a series of exclusive and exhaustive population sub-groups and a between-group inequality based only on mean incomes and the size of each of the sub-groups. The latter term indicates how much inequality would exist overall if each member of each sub-group had the mean income of the group as a whole (Jenkins 1991).

There are, of course, an infinite number of ways in which the sub-groups can be defined for the purpose of such analysis. If the number of sub-groups is small, it is to be expected that most of the inequality will be within groups — all of it by definition in the limiting case of only one group. As the number of groups increases, more inequality will be due to the between-group component — all of it by definition in the limiting case where each group contains only one individual (or income unit). Despite these reservations, the method has the advantage that it can provide an insight into the relative importance of the

factors which determine overall inequality at a point in time and help to identify what factors are contributing to the change in inequality over time.

In practice, the decomposition analysis is restricted by the availability of data on a consistent basis across the two income surveys. Unfortunately, classification changes introduced in the mid-1980s make it difficult to undertake a consistent decomposition by occupation for the two years. Four decompositions were thus undertaken on the basis of gender, age, education and industry. The categories used in the last three of these were: *age:* less than 25 years, 25–34 years; 35–44 years, 45–54 years, 55–64 years, and 65 years and over; *education:* highest level attained less than the Higher School Certificate (HSC), HSC, trade certificate, other certificate or diploma, and degree; *industry:* agriculture, mining, manufacturing, utilities, construction, wholesale and retail trades, transport, communications, financial services, public administration and defence, community services, and recreation and culture. The decomposition results for the wage incomes of FYFT workers for each categorisation and for each year are presented in Table 8.3.[10]

These results confirm previous research which indicates that most of the inequality of Australian income unit incomes exists within rather than between socioeconomic categories.[11] The estimates for 1989–90, for example, imply that if all FYFT males received the average wage income of all men, while all FYFT females received the average wage income of all women, total wage inequality would virtually disappear, even if the average male-female wage income differential remained unchanged. The implication is that the great bulk of inequality among FYFT wage incomes occurs within gender groups, not between them.

Table 8.3 indicates that among FYFT workers, inequality between the sexes is less important than inequality between different industries, age-groups or levels of educational attainment. The between-group inequality term contributes most to overall inequality when the groups are classified by the highest level of educational attainment, although the relative importance of this factor declined by about a third between 1981–82 and 1989–90. These results, although highly aggregative and relatively simple, cast some doubt on the role of increased returns to education as an explanation of the trend towards wage inequality in Australia in the 1980s.

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[10] Replicating these results on a current (weekly) income basis at the time of survey produces very similar results to those shown in Table 3.

[11] It is worth emphasising that use of the income unit as the unit of analysis precludes the existence of any income inequality within income units.

Table 8.3:   Inequality decomposition by gender, age, education and industry for full-year full-time workers, 1981–82 and 1989–90

(Decomposition of CV²/2)		*1981–82*			*1989–90*	
Basis of decomposition	*Overall inequality*	*Within group inequality*	*Between group inequality*	*Overall inequality*	*Within group inequality*	*Between group inequality*
Gender	0.094	0.087	0.007	0.145	0.138	0.007
		(92.6)	(7.4)		(95.2)	(4.8)
Age	0.094	0.081	0.013	0.145	0.133	0.012
		(86.2)	(13.8)		(91.7)	(8.3)
Education	0.094	0.078	0.016	0.145	0.127	0.018
		(83.0)	(17.0)		(87.6)	(12.4)
Industry		0.084	0.010	(	0.138	0.007
		(89.4)	(10.6)		(95.2)	(4.8)

Source: See Table 8.2.
Note: Percentage contributions to overall inequality are shown in brackets.

If that factor were important, one would expect to find that the relative size of between-group inequality for different education groupings had increased over the 1980s, not decreased as Table 8.3 indicates.[12]   Finally, the fact that the between-group term is lowest (and declines most) for the decomposition by industry groups suggests that the so-called 'de-industrialisation thesis' which attributes the rise in earnings inequality to structural changes associated with the decline in manufacturing cannot explain much of the level or trend in wage income inequality in Australia over the 1980s.

8.4 From wage incomes to disposable incomes

Given their aggregate size, it is not surprising that the distribution of wage incomes exerts a considerable influence on the distribution of disposable incomes. That influence will, however, be conditioned by the pattern of receipt of non-wage market incomes, as well as by the redistributive impact of tax and transfer instruments. Furthermore, if an equivalence scale is used to adjust for family needs, how needs vary with wage incomes will influence how wage incomes translate into equivalent disposable incomes (EDY). These factors

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[12] These findings are consistent with those derived from the more thorough analysis of the same data undertaken and reported by Borland and Wilkins (1994). They find that while changes in the distribution of, and return to, unobservable skills acted to increase earnings dispersion between 1982 and 1990, this was not true for changes in the distribution of, and return to, educational attainment or years of experience.

suggest that while the relation between the distributions of wage income and equivalent disposable income may be close, it will not be exact.

This is illustrated for the sample of FYFT workers in Table 8.4, which shows for 1989–90 the movements between the distributional quintiles when the basis on which people are ranked is changed from wage and salary income (vertical scale) to individual equivalent disposable income (horizontal scale). The entries in each cell of the matrix in Table 8.4 indicate the percentage of FYFT workers who fall into each quintile combination of the two alternative distributional rankings. Thus, for example the top left hand entry indicates that 7.6 per cent of the sample fall within the lowest quintile of the distributions of both wage and equivalent disposable incomes, the next entry indicates that 5.9 per cent fall in the first quintile of wage incomes and the second quintile of equivalent disposable incomes, and so on.

Table 8.4:   Cross-classification of the quintile rankings of wage incomes and equivalent disposable incomes for full-year full-time workers in 1989–90

| | | *Quintiles of the distribution of equivalent disposable incomes* | | | | |
		1	*2*	*3*	*4*	*5*
Quintiles	1	**7.6**	5.9	4.0	1.3	1.1
of the	2	4.2	**4.3**	5.7	4.7	1.2
distribution	3	3.9	3.2	**3.8**	6.0	3.1
of wage	4	3.2	3.6	3.5	**4.4**	5.4
incomes	5	1.1	3.0	3.1	3.7	**9.3**

Source: See Table 8.1.

If the rankings of the two distributions were identical, the diagonal entries in Table 8.4 would all equal 20 per cent and the off-diagonal entries would all be zero. In fact, the five diagonal entries sum to only 29.4 per cent, implying that over 70 per cent of FYFT workers move at least one quintile when the basis on which their distributional ranking is determined changes from wage income to equivalent disposable income. The distributional ranking of one third of the sample moves by more than one quintile, while almost 11 per cent of the sample move their ranking by more than two quintiles.

The reasons for these changes have relatively little to do with the progressive impact of transfers and taxes, because these tend to narrow vertical income differences without greatly altering the income rankings. Rather, the changes reflect several factors, including the impact of tax and transfer instruments such as family and rent assistance measures on the transfer side and the dependent spouse rebate on the tax side which influence horizontal equity by affecting

families with given levels of income in different ways. Even these only affect the distributional rankings to the extent that the structure of provision does not mirror differences in need as captured by the equivalence scale.

More significant is the fact that the rankings will also change if incomes from sources other than wages and salaries are not positively correlated with wage incomes. Included here are incomes from self-employment, from interest, rent and dividends and from superannuation — each of which will not necessarily be closely associated with *current* wage incomes. Finally, there is the fact that some of the individual FYFT workers in the sample will be members of the same income unit (as husband and wife) and will thus have a level of family disposable income (even after the equivalence scale adjustment) which may be considerably higher than their individual wage incomes. For all of these reasons, it is clear from Table 8.4 that while in aggregate the distribution of wage incomes exerts a considerable influence on the distribution of overall economic well-being, this relation is far less exact at the level of the individual worker — even among those who are working on a full-time basis.

A similar exercise to that described above for Australia has been undertaken on a comparative basis for nine countries by Fritzell (1991).[13] Using data from the Luxembourg Income Study covering years in the mid-1980s, Fritzell compares how the distributional position of individuals changes when the ranking basis changes from factor income (earnings plus capital income) to disposable income. Both income measures were adjusted for need using the OECD equivalence scale in an attempt to allow for cross-country differences in demographic structure.[14] The indicator of distributional change used by Fritzell is the percentage of people whose ranking changes by more than one decile: Table 8.5 summarises his results for the entire population in each country and for the economically active population (aged 20–64 years) only.

The cross-country differences shown in Table 8.5 are considerable, even after older and younger people are excluded. In Sweden, one quarter of the economically active sample change their distributional position by more than one decile when moving from a factor income to a disposable income ranking. In Germany and the United Kingdom, the ranking of one-fifth of the population changes by more than one decile, while in Australia the figure is much lower — close to one-fortieth. Of course, the degree of inequality in the distributions themselves will have some impact on the results, because a move of one decile is more substantial when the deciles themselves are more widely spaced. These

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[13] The issue of how distributional rankings alter in Australia when the income concept changes has also been addressed by Saunders (1994) and Travers and Richardson (1995).

[14] The OECD equivalence scale assigns a weight of 1.0 to the first adult in each unit, 0.7 to other adults and 0.5 to each child.

differences are not, however, large enough to explain the variations shown in Table 8.5, the broad pattern of differences remaining even after the degree of income inequality in each country has been standardised to that existing in the United States.[15] Fritzell concludes that the degree of market dependence — by which he means the extent to which an individual's factor income ranking determines their disposable income ranking — differs greatly between countries, reflecting differences in tax and social policies as embodied in the welfare state of each country.

Table 8.5:   Percentage of individuals whose distributional ranking changes by more than one decile when moving from factor to disposable income

Country	Entire sample	Economically active sample
Australia	8.3 (0.4)	2.3 (0.3)
Canada	9.6 (0.5)	3.6 (0.4)
Germany[1]	44.2 (1.9)	18.5 (1.7)
Netherlands	47.2 (1.5)	10.1 (1.1)
Norway	27.3 (0.9)	13.2 (0.8)
Sweden	47.4 (1.0)	25.4 (1.0)
United Kingdom	24.2 (1.0)	19.8 (1.1)
United States	12.5 (0.5)	4.8 (0.4)

Source: Fritzell, 1991, Tables 2 and 4.

Notes: The absolute size of the 5 per cent confidence intervals are shown in brackets.

   1 Pre-unification (West) Germany.

Australia lies at one end of this spectrum, being the country where the hierarchy of market rewards has the largest determining influence on the eventual ranking of economic well-being. This will come as no surprise to those familiar with the role of the Australian wage determination system and the evolution of what Castles refers to as a 'wage earners' welfare state' (Castles 1985, 1994). However, in light of the trend to increasing wage income inequality described earlier, these results suggest that, if past patterns persist, either a greater degree of inequality in overall economic well-being will have to be tolerated, or the redistributive role of the tax and transfer systems will have to be strengthened. From this perspective, moves to further 'free-up' the Australian labour market and expand the scope of enterprise bargaining will need to be accompanied by offsetting tax and benefit measures if the trend to inequality is not to accelerate.

This research has relevance for the more general debate over alternative strategies for achieving income equality. That debate distinguishes between

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[15] Fritzell, 1991, Table 3.

those strategies which seek equality by influencing the distribution of primary incomes generated in the labour market and those which seek to achieve greater equality of disposable incomes through redistribution. Policies pursued under the former strategy include direct intervention in the wage determination process and education and training programs designed to change wage differentials indirectly by influencing patterns of relative labour supply. Included under the latter strategy are tax and transfer policies which redistribute market incomes leading to a more equal distribution of disposable (or secondary) incomes.[16]

Investigation of the relationship between the distributions of primary and disposable incomes using a comparative framework can help to shed light on the extent to which different countries have followed these different strategies, and to what effect. Figure 8.4 contributes to this task by comparing the degree of inequality in the distributions of primary and disposable income in a range of OECD countries.[17] The distributional estimates used in Figure 8.4 have been produced as part of a study of income distribution in OECD countries which uses data from the Luxembourg Income Study (Atkinson, Rainwater and Smeeding 1995). Because primary incomes can be so low for those with no or only a marginal attachment to the labour force, the inequality measure used in Figure 8.4 is P75/P25, the ratio of the 75th to the 25th percentile.

Given the difficulties involved in interpreting these data, particularly those relating to the counterfactual problems alluded to earlier, not too much weight should be placed on any single explanation. explanation. Where tax and benefit systems guarantee a generous and comprehensive minimum income, for example, primary income is likely to be low as a consequence for those so protected. Highly targeted benefit systems can also cause substitution effects which depress primary income leading to the appearance of a highly redistributive benefit system. These issues of cause and effect are deeply intertwined in the observed data and are extremely difficult to unravel.

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[16] The very formidable conceptual and practical problems associated with specifying a counterfactual against which the actual redistributive impact of these policies can be assessed are acknowledged but not addressed.

[17] Primary income is defined, as before, to equal to the sum of total wage and salary income and income from self-employment.

Figure 8.4:   Inequality in primary income and disposable income (Ratio of 75th to 25th percentile)
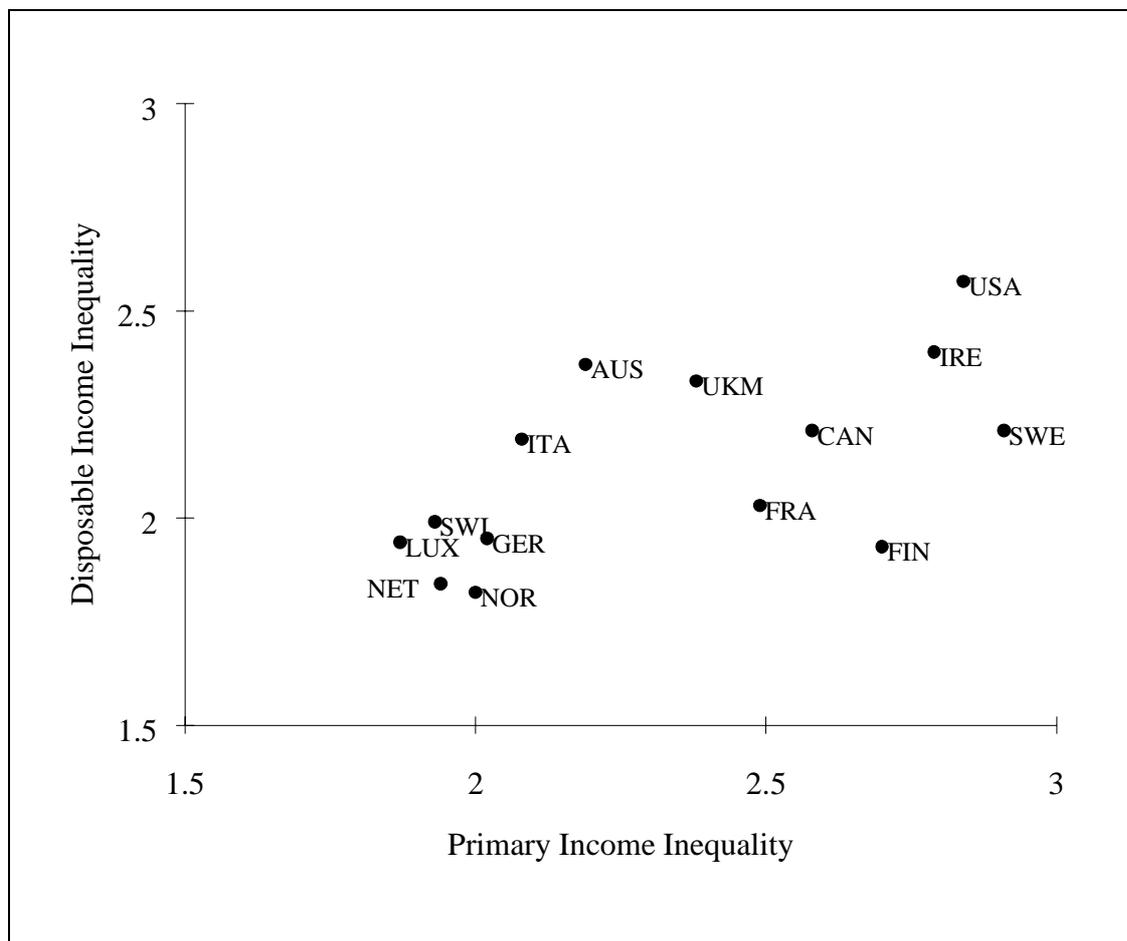
However, the main point to note from Figure 8.4 is that there is a positive and statistically significant association between the degree of inequality in primary and disposable incomes.[18] International evidence thus supports the proposition that the final degree of inequality of disposable income follows closely the degree of inequality which emerges in the labour market. This finding, albeit preliminary and extremely tentative, adds weight to the need to understand how labour market processes and institutions influence inequality in labour earnings, and thus shape the overall income inequality profile.

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[18] The cross-national correlation coefficient between inequality in primary and disposable incomes is 0.63 and highly significant at the five per cent level, almost so at the one per cent level.

8.5 From earnings to living standards

Section 3 analysed the distribution of the wage incomes of full-time Australian full-time workers. That analysis is now extended to trace through the relationships between inequality in individual earnings and family earnings, and to provide an estimate of the distributional impact of the value of time spent not participating fully in the labour market. The single most important feature which distinguishes earnings from other sources of income is that the receipt of earnings requires the immediate sacrifice of something else. That something else is time, or what economists rather quaintly refer to as 'leisure'.

Although microeconomic theory emphasises the distinction between income and utility (or standard of living) the implications of that distinction has not permeated much of the distributional literature. This situation is beginning to change, as researchers embark on the task of computing indices of living standards which include estimates of the value of time spent in both paid (market) and unpaid (non-market) activities.[19] To the extent that estimates of the marginal value of non-market time are positive, the living standards of families with the same monetary incomes will differ if they enjoy different amounts of non-market time. This will generally be the case even if the equivalence scale incorporates an adjustment for the costs of work, as the Henderson scale does, for example.

In exploring the distributional consequences of imputing a value to non-market time, a comparative framework is again applied using data for five countries (Australia, Canada, (West) Germany, the Netherlands and the United States) from the Luxembourg Income Study. Such an approach has the potential to provide insight into how different national policies with respect to child care and family taxation affect the extent and nature of female labour supply. It also allows the sensitivity of results to different rates of labour force participation to be investigated.

The methodology is used here to investigate two specific issues. The first concerns how inequality changes when the focus shifts from the earnings of individuals to family earnings, or at least to the combined earnings of both partners in couples.[20] The second is the distributional impact of the fact that not all individuals are fully employed in paid work, whilst some who are employed may not be paid their full potential earnings.

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[19] The two main approaches to the valuation of non-market time are the replacement cost and opportunity cost methods. Both are discussed in ABS (1990). The approach adopted here is similar to that employed to estimate the value of the non-employed time component of full income by Travers and Richardson (1993).

[20] The analysis is restricted to couples where both partners are aged between 25 and 55 years.

These two issues are not unrelated in the broader context of changes in the level and distribution of family well-being. To the extent that additional labour supply by family members has helped to supplement market incomes which might otherwise have declined, there is a consequential fall in the amount of leisure or time spent in unpaid domestic work or other activities. This in turn implies that comparisons of market income alone provide a misleading basis for comparing standards of living which incorporate an estimate of the value of time spent outside the labour market. Where total labour supply varies between families and is changing over time, estimates of the distribution of economic well-being and how it is changing will also be distorted.

The first part of the analysis is undertaken using the 'zero earning counterfactual' to estimate the impact of female earnings on family earnings, by comparing the distributions of male and family earnings. The key to the second part of the analysis involves replacing actual market earnings (which will be zero for those who are unemployed or engaged in full-time domestic or other unpaid work) by an estimate of earnings capacity. This involves estimating earnings functions for those workers who are engaged in full-year full-time market work, from which an estimate of the full-time earnings capacity of each individual is obtained as a prediction.[21] Actual earnings (whether positive or zero, full-time or part-time) are then replaced by the regression model prediction of earnings capacity and the degree of inequality is re-calculated.[22]

The details of the variables used in the earnings function estimation are provided in Table 8.A.1 in the Appendix and the preferred results are shown in Tables 8.A.2 and 8.A.3. The model specifications were chosen after a good deal of experimentation with alternative formulations and variable definitions.[23] The results confirm the role of the two human capital variables (education and experience) in all five countries, although only weak effects were found for Australian women. In general, the results indicate that the returns to education are higher in North America than in Europe, with Australia close to North America for women but with the return to education for Australian men being

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[21] The method used to predict earnings capacity follows that originally developed by Garfinkel and Haveman (1977) and amended recently by Haveman and Buron (1993) to allow for a stochastic influence on the earnings capacity of individuals with given age, education and other characteristics. It is described in more detail in Saunders, O'Connor and Smeeding (1994).

[22] The earnings functions were estimated separately for males and females and were based on samples of all FYFT workers (married and single) in the relevant age range.

[23] Further details are provided on pp.31–35 of Saunders, O'Connor and Smeeding (1994) and are not repeated here.

particularly low.[24] The lifetime earnings-experience profile follows an inverted U-shaped pattern in each country, with earnings peaking between 30 and 35 years after labour force entry.

Surprisingly, the presence of young children does not always have a significant impact on female earnings, while only in Australia is the size of the impact of young children on female earnings larger in absolute terms than the impact of older children. The results also reveal that there is a pronounced negative earnings differential for those born overseas in four of the five countries for men, though not for women. Finally, the results indicate that married men have higher earnings than single men in all five countries, whereas the earnings of married women tend to be lower than those of single women. The presence of children also tends to depress women's earnings but not men's. These aspects of the results thus suggest that, at least in terms of foregone earnings, women bear a direct financial burden associated with both marriage and child-rearing. In stark contrast, there is a clear 'marriage premium' in the male earnings structure in all five countries.

Many features of the results reported in Tables 8.A.2 and 8.A.3 are of interest in themselves and warrant further discussion. In particular, the cross-country differences need to be analysed in the context of how wage determination structures and processes and other public policies (for example, education, training and child-care) operate in each country. However, their main purpose here is to predict the earnings capacity of each individual in each country's sample of couples aged 25–55, from which it is possible to investigate how the distributions of earnings capacity and observed market earnings differ in each country.[25]

The results of this exercise are reported in Table 8.6. The first two columns summarise for each country the actual distributions of earnings — first for the earnings of the male member of each couple and then for the combined earnings of both partners. Two aspects of these distributions are worth drawing attention to. First, there is a good deal of cross-country variation in earnings inequality

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[24] This finding is consistent with the relatively low within-group inequality term shown in Table 3 for the decomposition by level of education.

[25] The earnings capacity estimates are derived directly from the predictions of the earnings function for each individual in the sample in each country. These predictions are then disturbed by a stochastic factor which can be thought of as reflecting the impact of chance on earnings outcomes; further details are provided in Saunders, O'Connor and Smeeding (1994).

among prime-aged males, with Australia falling between North America, where the degree of inequality is greatest, and Europe where it is lowest.[26]

On the basis of these results, the distribution of Australian earnings in the mid-1980s looks similar to that in North America at the bottom of the distribution and much like that in Europe at the top. The second feature of the results in Table 8.6 worth noting is that when the market earnings of spouses are also taken into account, the gini coefficient declines in all five countries, though only marginally in Australia, Canada and the Netherlands. However, only in Canada and the United States do wives' earnings lead to an unambiguous decline in earnings inequality.[27]

The last two columns of Table 8.6 investigate how inequality varies when actual earnings are replaced by earnings capacity. This substitution is undertaken in two stages. First, in column 3, the earnings of all those with positive earnings is replaced by their earnings capacity. Because the earnings capacity estimates assume that everyone works full-time and is paid their full earnings potential (as captured in the estimated earnings functions) comparisons of the results in columns 2 and 3 show how the incidence of part-time work, part-year spells of unemployment and the receipt of earnings below market potential (which may reflect discrimination in the labour market) affect inequality. The replacement of actual earnings by the earnings capacity of those in work leads to no clearly discernible pattern of distributional effects — within or between countries. In aggregate, the overall effects are small, except in Australia, where inequality rises by 7.4 per cent, reflecting an increase in the share of the top quintile.

Finally, in column 4 of Table 8.6 all individuals are assumed to receive their estimated full-time earnings capacity. Comparison with the estimates in column 3 indicates the change in inequality if the unemployed and those not in the labour force (for example, those involved in full-time domestic work) were to become fully-employed at market earnings. In interpreting these estimates, it should be remembered that no account has been taken of how wage levels themselves would adjust in the face of such large scale increases in labour supply. Nor does the method allow for differences between those who have chosen their existing hours of paid work and others (for example, the unemployed) whose choices have been involuntarily constrained. Despite these

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[26] The male earnings distributions shown in Table 6 are similar to those derived from the Luxembourg Income Study data by Green, Coder and Ryscavage (1992).

[27] Saunders (1993b) has estimated that the impact of wives' earnings on family income inequality among Australian couples aged 25–54 was equalising in both 1981–82 and 1989–90.

Table 8.6:   The distribution of individual earnings, family earnings and
earnings capacity in five countries

	Earnings of the (male) family head	(Quintile Shares) Family earnings (head and spouse combined)	Earnings capacity (earners only)[1]	Earnings capacity (all adults)[1]
Australia, 1985–86				
First	5.8	6.6	6.7	10.3
Second	15.8	15.0	13.6	14.7
Third	19.6	19.4	18.4	18.6
Fourth	23.8	23.9	24.3	22.7
Fifth	34.9	35.0	37.0	33.7
Gini coefficient	0.285	0.282	0.303	0.233
Canada, 1987				
First	5.0	6.8	7.8	10.9
Second	14.2	14.2	13.9	15.0
Third	19.4	18.9	18.5	18.5
Fourth	24.7	23.8	23.8	22.7
Fifth	36.6	35.8	36.1	33.0
Gini coefficient	0.314	0.291	0.283	0.222
(WEST) Germany, 1984				
First	8.8	9.7	9.3	12.9
Second	15.8	14.6	14.7	16.3
Third	18.5	18.4	18.9	18.9
Fourth	22.8	23.4	23.3	22.2
Fifth	34.2	33.8	33.8	29.6
Gini coefficient	0.251	0.244	0.246	0.169
Netherlands, 1987				
First	8.3	9.1	8.3	13.7
Second	15.5	14.4	13.9	16.8
Third	18.6	18.0	18.5	19.1
Fourth	22.7	23.4	24.5	21.9
Fifth	35.0	35.0	34.7	28.4
Gini coefficient	0.262	0.261	0.269	0.147
United States, 1986				
First	5.3	6.8	7.2	9.7
Second	13.0	13.5	13.2	14.2
Third	18.1	18.2	17.8	18.0
Fourth	24.0	23.8	23.7	23.0
Fifth	39.4	37.8	38.2	35.2
Gini coefficient	0.345	0.310	0.308	0.256

Source: Saunders, O'Connor and Smeeding, 1994, Tables 4 and 11.

Note: The derivation of the earnings capacity estimates is explained in the text, with supporting estimates
presented in the Appendix.

limitations, the main point to note is that there is a very large reduction in
inequality in all five countries moving from actual earnings (column 2) to

earnings capacity (column 4), ranging from 17 per cent in Australia and the United States to over 44 per cent in the Netherlands.

Such comparisons provide an indication of the combined impact on inequality of part-time work, unemployment and non-participation in the labour market. To the extent that each of these activities involves those affected in supplying fewer hours of paid-work to the labour market thus leaving more time to devote to other pursuits, the distribution of earnings capacity incorporates an estimate of the value of time involved in non-market activities. In this sense, they provide a more comprehensive measure of the distribution of living standards or economic well-being than is provided by observed earnings alone.

8.6 Concluding discussion

This paper has ranged over a number of topics associated with wages and the distribution of income. The common thread which links them is the impact of employment and access to a labour market income on the level and distribution of wage incomes, earnings, disposable incomes and living standards. The widening disparities in earnings, now well-documented, has become a matter of considerable concern in Australia, as it has in many other countries (EPAC, 1995). The recent OECD *Jobs Study* has noted that this trend has been accompanied by falling real wages at the bottom of the wage distribution in several OECD countries (including Australia) and that a new class of 'working poor' has emerged (OECD 1995: 21–22).

The results indicate that the wage incomes of full-time Australian workers are distributed more equally than broader income concepts. Although the distribution of wage incomes among full-time workers became more unequal over the 1980s, it does not appear that the trend can be described as reflecting a disappearing middle; rather, it reflects a pulling away of those in the top decile of the distribution from the remainder. Several pieces of evidence indicate that increasing unemployment is associated with greater inequality of total earnings, although the nature of this relationship requires further study. Among the full-time workforce, the substantial increase in inequality over the 1980s appears to reflect an increase within rather than between socioeconomic categories.

Overall, the results confirm that Australian developments broadly mirror those identified by Atkinson (1993) for the United Kingdom, with the rise in inequality reflecting two factors — the shift from full-time work and the increased disparity in labour market earnings. Finally, the cross-national comparisons highlight the very important role which the distribution of factor incomes (mainly earnings) plays in Australia in shaping the distribution of disposable incomes.

Sustained levels of unemployment have given rise to increased concern that full employment may not become a reality in the foreseeable future. Instead, industrial economies look set to experience periods of economic growth associated with increased participation and thus accompanied by little or no decline in unemployment, interupted by sharp recessionary interludes during which the levels of unemployment and long-term unemployment ratchet ever-upward. Whatever the truth of such scenarios, it does seem that what happens in the labour market will continue to hold the key to the attainment of social justice in Australia — both within the workforce and within society as a whole.

This explains why such intense interest has focused on labour market and industrial relations policies and the arguments which underlie them. At one extreme are those who favour a deregulatory approach designed to increase flexibility encourage growth and the rising real wages which will ultimately flow from the growth in national income. At the other are those who stress that Australian wage and labour market policies have, on the whole, performed well in the past and should form the foundation on which to build further reforms. The results in this paper do not directly address the relative merits of these alternative positions. They do, however, highlight the central role which labour market incomes — and access to those incomes — play in the broader distributional context.

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Appendix A

This Appendix presents the detailed earnings function estimates which were used to derive the earnings capacity estimates presented in Table 8.5 in the main paper. The variables used in the regression models are defined in Table 8.A.1, while Tables 8.A.2 and 8.A.3 present the earnings function estimates for females and males, respectively. These estimates were derived from observations for each country on a sample of all individuals in the relevant age range (25–55 years), including both single and married people.

Table 8.A.1: List of explanatory variables Included in the Estimated Earnings Functions

Variable name	Definition
EXPER	Age in years *minus* years of education *minus* five
EXPSQD	EXPER squared
EDUCI	No or very low education
EDUC2	Low education
EDUC3[*]	Education to high school level or equivalent
EDUC4	Education beyond high school but below college level
EDUC5	College level education or higher
OCC1	Professional or administrative occupation
OCC2	Sales, service or clerical occupation
OCC3[*]	Blue collar occupation
INDI	Primary industry
IND2[*]	Manufacturing industry
IND3	Commerce industry
IND4	Other service industry
IND5	Financial service industry
IND6	Utilities industry
IND7	Construction industry
NATIVE	Equals 1 if native born, equals zero otherwise (i.e. overseas-born)
MARRIED	Equals 1 if married, equals zero otherwise
YNGCHILD	Equals 1 if youngest child aged under 6, equals zero otherwise
OLDCHLD	Equals 1 if youngest child aged 6 or over, equals zero otherwise

Note: Variables indicated with an asterisk (*) were used as the control in the estimated regression equations.

Table 8.A.2: Regression estimates for women aged 25–55 who worked
full-year, full-time (dependent variable = log wage:
standard errors in parentheses)

	United States 1986	Canada 1987	Australia 1986	Nether– lands 1987	Germany 1984
Sample size	1811	1747	951	267	405
Constant	9.398*	9.581*	9.42*	10.003*	10.060*
	(0.070)	(0.096)	(0.134)	(0.081)	(0.116)
Experience	0.034*	0.029*	0.009	0.052*	0.019*
	(0.006)	(0.007)	(0.011)	(0.007)	(0.010)
Experience Squared	–7.912*	–5.132*	–1.251	–8.322*	–2.826
(X10,000)	(1.3410)	(1.615)	(2.718)	(1.660)	(2.459)
Low/No education[1]	–0.254*	–0.307*	na	–0.371*	na
	(0.096)	(0.071)		(0.041)	
Low education	–0.135*	–0.186	–0.019	–0.135*	–0.222*
	(0.049)	(0.043)	(0.065)	(0.036)	(0.051)
Other education	–0.138*	0.108*	0.095	na	–0.010
	(0.031)	(0.034)	(0.065)		(0.061)
College education	0.366*	0.330*	0.321*	0.299*	0.268*
	(0.034)	(0.043)	(0.082)	(0.053)	(0.072)
Professional[2]	0.254*	0.375*	0.405*	na	0.309*
	(0.049)	(0.065)	(0.072)		(0.078)
Sales, service, clerical	0.034	0.094	0.155*	na	0.119*
	(0.056)	(0.062)	(0.058)		(0.058)
Primary[3]	–0.194*	–0.045	–0.222	0.211	0.430
	(0.106)	(0.097)	(0.151)	(0.220)	(0.347)
Commerce	–0.308*	–0.218*	–0.193*	–0.079	–0.109
	(0.045)	(0.060)	(0.072)	(0.054)	(0.072)
Other service	–0.172*	–0.148*	0.100	0.099*	–0.053
	(0.038)	(0.053)	(0.062)	(0.044)	(0.054)
Financial services	–0.074	–0.142*	0.093	na	0.070
	(0.048)	(0.064)	(0.083)		(0.074)
Utilities	0.122*	0.014	–0.034	0.113	0.092
	(0.057)	(0.071)	(0.099)	(0.074)	(0.132)
Construction	0.106	–0.016	0.126	0.065	0.234
	(0.115)	(0.126)	(0.209)	(0.105)	(0.162)
Native-born	0.019	–0.009	0.006	na	0.001
	(0.027)	(0.037)	(0.042)		(0.050)
Married	–0.037	–0.085*	0.022	0.039	0.005
	(0.027)	(0.029)	(0.042)	(0.028)	(0.040)
Child < 6	–0.104*	0.000	–0.338*	0.007	–0.138*
	(0.036)	(0.042)	(0.065)	(0.084)	(0.066)
Child > = 6	–0.126*	–0.156*	–0.150*	–0.155*	–0.128*
	(0.027)	(0.032)	(0.048)	(0.052)	(0.043)

Notes: 1 The missing education category is High school education.

2 The missing occupational category is Blue collar.

3 The missing industry category is Manufacturing.

* Statistically significant at the 10 per cent level.

Table 8.A.3: Regression estimates for men aged 25–55 who worked
full-year, full-time (dependent variable = log wage:
standard errors in parentheses)

	United States 1986	Canada 1987	Australia 1986	Nether–lands 1987	Germany 1984
Sample size	3352	3460	2709	1776	1603
Constant	9.483*	9.835*	9.572*	10.203*	10.005*
	(0.055)	(0.051)	(0.067)	(0.051)	(0.151)
Experience	0.029*	0.033*	0.026*	0.051*	0.043*
	(0.005)	(0.004)	(0.006)	(0.004)	(0.004)
Experience Squared (X10,000)	–4.287*	–5.135*	–4.851*	–6.984*	–8.010*
	(1.063)	(0.842)	(1.370)	(0.819)	(0.977)
Low/No education[1]	–0.492*	–0.221*	na	–0.479*	na
	(0.079)	(0.034)		(0.025)	
Low education	–0.252*	–0.090*	–0.059*	–0.173*	–0.119*
	(0.034)	(0.024)	(0.035)	(0.025)	(0.025)
Other education	0.168*	0.087*	0.025	na	0.090*
	(0.027)	(0.022)	(0.033)		(0.023)
College education	0.411*	0.286*	0.220*	0.271*	0.290*
	(0.028)	(0.028)	(0.042)	(0.031)	(0.028)
Professional[2]	0.147*	0.107*	0.236*	na	0.276*
	(0.027)	(0.023)	(0.026)		(0.026)
Sales, service, clerical	–0.035	–0.058*	0.078*	na	0.102*
	(0.029)	(0.024)	(0.031)		(0.020)
Primary[3]	–0.224*	0.069	–0.209*	–0.085	–0.013
	(0.061)	(0.032)	(0.045)	(0.062)	(0.050)
Commerce	–0.165*	–0.170*	–0.113*	0.001	–0.062*
	(0.031)	(0.027)	(0.034)	(0.024)	(0.026)
Other service	–0.228*	–0.156*	–0.070*	–0.002	–0.096*
	(0.027)	(0.025)	(0.031)	(0.020)	(0.021)
Financial services	0.019	–0.101*	0.012	na	0.140*
	(0.051)	(0.045)	(0.041)		(0.038)
Utilities	0.083*	–0.003	0.095*	–0.014	–0.061*
	(0.034)	(0.027)	(0.033)	(0.030)	(0.028)
Construction	–0.043	–0.154	–0.015	–0.032	–0.096*
	(0.039)	(0.036)	(0.043)	(0.028)	(0.029)
Native–born	0.178*	0.062*	0.018	na	0.060*
	(0.025)	(0.024)	(0.023)		(0.024)
Married	0.112*	0.054*	0.090*	0.057*	0.018
	(0.025)	(0.023)	(0.029)	(0.022)	(0.022)
Child < 6	0.014	0.002	0.002	0.022	0.025
	(0.027)	(0.023)	(0.028)	(0.021)	(0.022)
Child > = 6	0.029	0.005	–0.004	0.021	0.005
	(0.022)	(0.020)	(0.027)	(0.020)	(0.017)

Notes: 1 The missing education category is High school education.
2 The missing occupational category is Blue collar.
3 The missing industry category is Manufacturing.
* statistically significant at the 10 per cent level.

DISCUSSION

Jennie George

My comments will not be of a highly sophisticated, technical or economic nature. That is not my area of expertise. I am delighted, however, that key people around at this table who are very instrumental economic players, are at last recognising that economic policy cannot be seen in isolation from impacts on people.

I appreciate that the Industry Commission is broadening the debate, and I think that it is a very healthy sign because at the end of the day inequalities in our society are increasing. The question then is, what do we, as a nation, do about it? Do we follow the path that New Zealand appears to be following? In that country the Minister for Finance, Mr Birch, was recently quoted as saying inequalities are growing, that they will continue to grow, and that in his judgment that was a good thing. I would hope that there would be enough people of good sense and good will that have some influence in shaping economic and social policy that do not believe that increasing inequality is good for the nation.

It has been the union movement's position that Australia cannot rely just on the framework of wage incomes and market incomes to address the issue of inequality. From the 1980s onwards we have built in a broader view that some people, including many in paid work, still need protection by way of payments. These may take the form of social security transfers or other payments such as fee relief for child care, or paid maternity benefit.

However, even with these transfers, inequality cannot be erased, so it is in the market wage area that we must still focus much of our effort. Peter's paper shows that wage policy is a very important determinant in the overall equation of equality and inequality, so we cannot afford not to put a lot of emphasis on wages policy.

Peter does not discuss at any length the two alternative labour market models that exist, the one that talks about the need for greater labour market flexibility and the model that we have been living under for the last decade or so. In my judgment, any model that attempts to deregulate the labour market further can only result in increasing inequalities, particularly if this is also accompanied by the abandonment of an Accord framework which would no longer provide the

union movement some leverage over the level of social security payments and the social wage.

What is interesting in Peter's paper is that it shows that wage incomes are more equal than non-wage market incomes, and that the tax transfer system is progressive in its incidence. This confirms work that has been done on the effect of transfer payments and the general access of people to publicly funded services. This emphasises the importance of a tax transfer system, and the importance of it operating in a progressive way.

It is true that wage inequality did rise in the 1980s but that was because the union movement was applying a measure of restraint in terms of wage claims for the regulated award covered sectors of the work-force. For their first five years of the Accord we actually suffered real wage cuts as a conscious policy of the union movement in an attempt to help fight inflation and bring down unemployment.

Peter's analysis ends at 1989–90, so I think it would be interesting to see what has happened in the last few years. Generally the union movement has abandoned the notion of wage restraint, because the union movement was the only ones that were restrained while the top end of town were making hay while the sun shines. It would be interesting to see whether or not there is a difference over the last few years commensurate with the changes that have occurred in wages policy generally.

Peter's paper probably confirms Grant Belchamber's analysis that there is little evidence of a disappearing middle in the wage income distribution, but that there is some evidence of a vanishing bottom and an accelerating top. Grant postulates that some of that vanishing bottom is probably the outcome of the tariff reduction regime and the loss of low skill jobs in areas like clothing, textile and footwear. And we all agree that the top has accelerated free from any wage restraint and often free from any criteria of productivity, as opposed to the conditions attached to many wage increases.

As I indicated earlier I believe there is common agreement now that inequality has continued to rise in terms of market incomes. I think I am on safe ground to say that the Accord framework has moderated the worst excesses of that income inequality. In addition, social security payments are also important. Research shows that family payments contributed an extra 43 per cent to the earnings of some very low paid workers. Twenty years ago such payments added only an extra 8 per cent to the family wage. So in the absence of those supporting social payments, many low income families would be much worse off.

There is one issue that disturbs me somewhat, but for which I do not yet know the answer. It is the issue surrounding the trade offs available to people on low

incomes between gaining a higher market income and losing social security benefits. I am having more unions which represent low paid workers, raising some concern with me regarding the ACTU's position on this issue, it is an issue on which I certainly will want to do a lot more work.

The nature of the problem was confirmed to me in some discussions we had with workers in New Zealand who were actually toying with the idea of rejecting a quite modest 2 per cent wage increase for fear that it would affect their access to some public hospitals in the public health system.

The other main protection for the low income working poor has been the award safety net. Without that award safety net, in the deregulated environment, then the most vulnerable have no protection. For some people that is considered to be not a bad way to go. For example, the head of the Business Round Table in New Zealand told a group that met with him that the current union wage in New Zealand, which is $250 for 40 hours a week, should be removed and that the only basic safety net should be the social security system. Although that is taking labour market deregulation to its driest extreme, that line of argument has a certain economic currency.

The second issue that was interesting in the New Zealand experience was the relationship between the industrial wage and the level of social security benefits. They deregulated the labour market in New Zealand, which pushed down real wage outcomes, they then used lower wages partly as the rationale to explain the cuts in social security benefits.

In conclusion, I believe Peter's paper adds another dimension to the debate. It is one of a number of papers pointing in a similar direction, that there is growing inequality in this society, and it is particularly evident in terms of wage outcomes. The main issues flowing from this are the role of the tax transfer system and the implications of further deregulation of the labour market in terms of the very low paid.

General discussion

A number of issues that were raised in Peter Saunders paper and were discussed by participants, these were:

- marginal rates of taxation;
- returns to education;
- replacement rates;
- regional differences;
- the effects of labour market deregulation;
- income distribution; and
- the social wage.

Marginal rates of taxation

One participant raised the issue of the marginal tax rate, particularly the elasticity of the response to changes in the marginal tax rate for various groups. It was argued that for high income earners, generally motivated professional males, the incentive effect of a higher marginal tax rate is low. However for many women, for example working mothers or single parents, the incentive effect is quite high.

Returns to education

Some participants raised the issue of returns to education. Peter Saunders' paper presents evidence that returns to education were reasonable low compared to what many conference participants expected them to be, and that these returns contributed little to the increase in inequality observed over the 1980s (Section 8.3). It was also observed that returns to education had risen over the 1980s in other Western countries, a trend not reflected in Australia.

The experience in Britain, as recounted by one participant, was different. Up to 40 per cent of the changing income differentials were explained by increasing returns to education. In the UK there was a shortage of higher education in the 1980s, and the increase in demand for higher education caused by industrial change drove up the returns to education. In Australia there was a rapid expansion in the supply of university places during the 1980s and this may have compensated for the increasing demand and thus not pushed up Australia's returns to education.

Replacement rates

Replacement rates were discussed by a number of participants.   The replacement rate is the ratio of unemployment benefits to individual's prospective wage levels, and it measures to some degree the incentive effects of the interaction of social security payments and market incomes. This issue was raised in relation to the efficiency effects of targeted welfare and of microeconomic reform. For example, it was suggested that if the labour market was further deregulated then this would lead to lower wages and thus a higher replacement rate. This may lead to higher unemployment and lower efficiency. This also occurs when social security payments are targeted.

Thus it was generally agreed that the replacement rate can place limits on reform strategies. The two main responses to a too high replacement rate are to lower social security benefits or to allow individuals to take some benefits into employment with them. It was noted that the Working Nation statement on employment gave implicit acceptance of this issue through the use of a wage subsidy.

However a problem can occur in that a poorly designed policy can lead to large increases in part-time and casual employment subsidised by the social security system. A counter point to that argument was presented: part-time work may be a 'stepping-stone' to full-time work. In this regard it may be useful to subsidise part-time employment.

It was noted by a participant, however, that when analysing the issues surrounding the replacement rate we should not forget the basis of social security: need. That is, welfare payments are based on need, and providing a certain standard of living to individuals and families, and not just on the incentive effect of these payments.

Regional differences

The ability of regional differences in wage levels to help in the alleviation of unemployment was noted, and the flexibility of the current system questioned. In response it was pointed out that regional variations do occur in awards.

Lack of data to allow the tracking of families

A number of times during the discussion the poor quality data regarding income distribution was mentioned. The main problems are that it is not timely and it does not allow the tracking of individuals (which is important for some of the more complex analysis). For example, it is impossible at the moment to

determine if current low-income families are the same families that had low incomes a decade ago.

The effects of labour market deregulation

The effect of labour market deregulation was discussed. Although data for the last five years is scarce, a practitioner said that they believed the data would show the middle and top of the income distribution doing reasonably well, but the bottom doing worse. In particular this bottom group would do worse than social security as the only increase available to them is the $8 safety net increase, while those on social security generally received fully indexed payment increases. This leads to a compression of the relativities between social security benefits and wages for low income workers, increasing the replacement rate for them.

It was also identified that although inequality has increased in a number of countries, the nature of this change is not always the same. The trend in Australia was mostly for the top end of the income distribution to rise, causing inequality to rise. The experience may not have been the same in other countries.

The social contract

Some discussion occurred regarding the nature of a social wage (government provided benefits to individuals, as opposed to market income). It was noted that to some extent, the social wage was used during the 1980s as a balance to the reduction in real wages that occurred under the Accord. Some participants argued that this helped to moderate the income distribution effect of the Accord. Because of the importance of this social wage, the Department of Prime Minister and Cabinet has funded a project to examine the nature of the social wage over the 1980s.

Appendix: Conference attendees

Prof Patricia Apps	Law Faculty, The University of Sydney
Mr Fred Argy	
Mr Gary Banks	Executive Commissioner, Industry Commission
Father David Cappo	Australian Catholic Social Welfare Commission
Mr John Cosgrove	Commissioner, Industry Commission
Prof David Cox	Dept of Social Work, La Trobe University
Prof John Creedy	Dept of Economics, University of Melbourne
Prof Peter Dawkins	Institute of Applied Economic and Social Research, The University of Melbourne
Prof Peter Dixon	Centre of Policy Studies, Monash University
Mr Robert Fitzgerald	Australian Council of Social Services
Ms Jennie George	ACTU
Prof Howard Glennerster	London School of Economics
Prof Bob Gregory	Centre for Economic Policy Research, Australian National University
Prof Ann Harding	National Centre for Social and Economic Modelling, University of Canberra
Mr Keith Horton-Stephens	Commissioner, Industry Commission
Mr Tor Hundloe	Commissioner, Industry Commission
Mr Neil Johnston	Department of Social Security
Mr Maurice Joyce	Commissioner, Industry Commission
Prof Nanak Kakwani	Dept of Economics, University of New South Wales
Mr Michael Lambert	NSW Treasury
Prof Mark Lyons	Centre for Aust Community Organisations and Management, University of Technology, Sydney
Ms Alison McClelland	Social Policy and Research, Brotherhood of St Laurence
Dr Tony Meagher	Centre for Policy Studies, Monash University
Ms Helen Owens	Commissioner, Industry Commission
Dr John Paterson	Department of Infrastructure, Victoria
Mr Jeff Rae	Commissioner, Industry Commission
Prof Jeff Richardson	Dept of Economics, Monash University
Dr Sue Richardson	Dept of Economics, University of Adelaide, Commissioner, Industry Commission
Dr Peter Saunders	Social Policy Research Centre, University of New South Wales
Mr Bill Scales	Chairperson, Industry Commission
Prof Richard Snape	Associate Commissioner, Industry Commission
Dr Peter Travers	Faculty of Social Sciences, Flinders University
Prof Cliff Walsh	Centre for Economic Studies, Centre for Economic Studies

Mr Glen Withers   Economic Planning and Advisory Council