Employment and the Economy

Dennis Rose

New Zealand Planning Council

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Foreword

This is the first volume of papers to be published by the New Zealand Planning Council as part of its on-going commitment to employment-related issues. Concurrent with its release is the issuing of two other volumes dealing respectively with Self-Employment and Small Businesses, and Young People, Education and Employment. Further publications are envisaged over the next year or so.

With the exception of a Planning Council statement on Real Wages and Employment, which reflects a collective council viewpoint and which appears at the front of this volume, all the material in the volume represents the research and analysis of the council's senior economist, Dennis Rose. The views expressed are those of Mr Rose and are not necessarily endorsed by the council. Indeed, with respect to the paper on "The Limits of Markets and Planning Mechanisms" (and particularly the discussion of this topic in the first paper, "An Overview of the Employment System"), there was a divergence between the council and Mr Rose on some key conclusions. Such differences are regarded by the council as a healthy element in the debate on policies and the council believes it important that Mr Rose's work is made publicly available as his personal contribution to a discussion which inevitably attracts controversy.

Dennis Rose's credentials for engaging in this debate are impressive. He has worked as an economist in both the public and the private sectors and he is a former director of the New Zealand Institute of Economic Research. Much of his work has been in the form of contract assignments and he has worked on a range of industry and trade union related issues.

The papers in this first volume give some fresh and important insights into the factors that condition and determine employment in New Zealand. They reinforce the by-now widespread perception that there are no easy answers to our employment problems. These are not papers that seek to propound glib solutions. Rather they endeavour to broaden our understanding of complex economic forces and, in so doing, to improve our capacity to develop rational and effective policies.

Consistent with the Planning Council's statutory mandate, these papers, including the council's own statement, give essentially a medium-term perspective on the policy issues, but this does not mean they lack relevance for the decisions and the responses that we have to face now and in the near future. Only as the nature of our structural problems are better understood, can we address ourselves realistically to their policy implications.

It is the council's hope that these papers will be widely read and discussed. Some of the analysis is necessarily rather technical, but an attempt has been made to present the arguments in ways that are comprehensible to a lay audience.

The council puts on record its appreciation of the work which Dennis Rose has put into these papers and which he is currently devoting to further essays for publication in later volumes of this series. We believe that they represent a significant contribution to policy understanding in this difficult and contentious area.

I. G. Douglas
Chairman

A Statement by the New Zealand Planning Council

REAL WAGE RATES AND EMPLOYMENT

Introduction

1. New Zealand's current rate of unemployment contrasts bleakly with the post-war decades of full employment. Unemployment imposes a heavy burden on the unemployed and their dependants. It also imposes costs on society as a whole through lost production, wasted opportunities, social turmoil and blighted lives.

2. The manifest inability of the economy to provide sufficient job opportunities to meet the current aspirations of all our people creates something of a moral and intellectual crisis. Does the emergence of substantial unemployment reveal a less than whole-hearted commitment to full employment, or does it reveal inability to devise the means to secure an accepted goal?

3. There is considerable intellectual disagreement about the causes of unemployment and what policies should be adopted in pursuit of full employment. It seems clear that any solution will depend on action on many fronts and this reflects into a need to research a wide range of possible policies.

4. One issue which needs attention in any review of options is the relationship between real wage rates[1] and employment. Wages (including salaries) are what most of us live on and they are the primary element in the cost of production. Is it possible for wage rates, the "price of labour", to move out of line in ways which cause unemployment? If so what would tell us whether we are in such a situation now?

5. In recent months the Planning Council has spent some time considering this issue. It has had available to it a range of material including recent articles by New Zealand economists and a working paper prepared by a member of the secretariat[2]. In this note the Council places on record its own assessment of the real wage question. As a group Council is not qualified to enter into all the detail of the debate but recognising the importance of the issue we believe that it will be useful for us to try and define the limits of our common understanding.

The Council Position

6. In the Council's view the "correct" pattern of real wage rates is something which emerges from a properly functioning economic system. The average level of real wage rates cannot simply be set into the system by Government or by anyone else. Despite its obvious centrality the average real wage rate is not a variable which any one party has the power to control. Rather in any country the sustainable level of real incomes (including wages) is determined by the real productive structure of the economy and the terms on which it trades with the rest of the world.

7. The Council's position can be summarised by a series of propositions in three key areas.

8. *First — the need for policies which help secure higher real incomes*

(a) a prime aim of longer-term economic management is the securing of higher sustainable levels of real income including wages. Clearly as a people, we have a long-term interest in being a high rather than a low wage economy provided other objectives such as equity and social justice are also being met

(b) this means that we should place a premium on policies which will assist the movement of capital and labour into areas likely to yield the best returns under future conditions

(c) a failure to develop policies which enable private and public decision makers to identify such areas of advantage is a major element explaining current employment problems

(d) only enterprises whose cost structures are compatible with both adequate profitability and international competitiveness will be able to expand output and employment in New Zealand's increasingly internationally oriented product and financial markets

(e) important parts of the labour market are also international in orientation. In particular the rights of common access enjoyed by Australians and New Zealanders mean that many skilled wage rates are influenced by Australian conditions

(f) these last two considerations underline the need to continue developing policies in ways which will encourage the better use of our productive resources.

9. *Second — the need to maintain balance between real incomes and productive structures*

(a) as we have already noted the sustainable level of real incomes (including wages) is determined at any point in time by the real productive structure of the economy and the terms on which it trades with the rest of the world

(b) attempts in the short term to enjoy real incomes at higher than sustainable levels are likely to be: frustrated by inflation; financed by overseas borrowing which must be serviced from future incomes, or enjoyed by some at the expense of others, including the unemployed, who are forced to accept lower incomes

(c) divergences between actual and sustainable levels of real income may result from movements in a range of variables including nominal wage rates and the rates of income enjoyed by other groups in the community

(d) it seems clear to the Council that in the period from the mid-1970s New Zealand has attempted to sustain real incomes including wages, at levels which could not be sustained on the basis of the current economic structure. Although in the short term such divergence may well have helped maintain employment (at a cost in terms of increasing debt), in the longer run it has discouraged employment growth by inhibiting the expansion of the economy into new areas of profitability. Quite simply, current output and employment would have been higher had we tightened our belts earlier.

(e) in assessing changes in real wage rates it is necessary to distinguish between the *real product wage rate* (the ratio between nominal wage rates and output and other prices relevant to the employers of labour) and *the real income wage rate* (the ratio between nominal wage rates and prices paid by wage earners for the things which they consume). Both are relevant in considering linkages between real wage rates and employment.

(f) taken along with changes in output per person the real product wage rate determines the real cost of labour per unit of output, which, in turn, is a fundamental determinant of any industry's ability to produce competitively and thereby to sustain output and employment, and earn the profits necessary to encourage future investment

(g) on the other hand the real income wage rate as modified by taxation (and hours worked) is a primary element in real household incomes, which, in turn, are an important element in demand and thereby an important determinant of output and employment

(h) this positive linkage between wage rates demand and output is not variant. Wages are but one element influencing aggregate demand and the two variables may move in divergent and sometimes even contrary directions. Nevertheless wage rates as costs and wage rates as incomes normally carry contrary implications for output and employment.

10. *Third — the need to develop the means by which we reconcile our sometimes conflicting objectives*

The circular links between productive structure and income levels, and the possibility of conflict between the on-going goal of rising real incomes and the need for short-term balance, create particular problems for policy-makers. Their scope for action is limited but may be critical in three key areas:

(a) they need to maintain appropriate balance in macro policy formation and in addition need to decide on the extent (if any) to which use should be made of incomes policies, particularly in periods of radical external change. On the latter point we can note that in the relatively stable international economic climate of the 1950s and 1960s New Zealand operated, through the general wage order and related systems, a form of incomes policy arguably with a degree of success. The radically changed and volatile circumstances of the 1970s and 1980s seem, to us, to demand a different and much more flexible approach. The primary emphasis has to be on securing appropriate balance in macro policy

(b) in promoting appropriate patterns of investment there are advantages in building common perceptions amongst investors and workers. If, for example, they have developed a common understanding of the likely impact of technological change in their industry, they will be in a better position to negotiate the inevitably difficult adjustments which face them. Overall market conditions form the bedrock on which such a common perception must be based but there is a need to consider the means by which the social partners build their working understanding of prospects in their industry

(c) thirdly, there is a need to secure sufficient flexibility in labour markets to encourage the movement of people to areas of new opportunity. The diversity of developments in different sectors of the economy requires a matching flexibility in the labour markets. There is a need for people to move to areas of new opportunity and for occupational wage rates that are responsive to emerging patterns of demand

Inset 2*

(d) finally, the distributional implications of the suggested policy need to be taken into account. In any period of adjustment, there is always a danger that the effective burden of restraint will be borne more heavily by those at the lower end of the income scale. There is, therefore, a need for accompanying measures to ensure that social inequalities are not increased.

Conclusion

11. The real wage rate is clearly an important variable but we caution against any tendency to conclude that it provides a kind of automatic lever which could be used to secure full employment. Despite its obvious centrality the linkages between real wages and employment are complex and in some respects conflicting. Moreover, the real wage rate is not a variable which any one party has the power to control. It is not possible to set the "correct" real wage into the system. Rather the "correct" real wage is something which emerges from a properly functioning system. The sustainable real wage is determined by real world forces rather than by government edict.

12. Government's role can still be vital. In a period of rapid structural change it is particularly important to develop institutional responses which are sensitive to the emerging pattern of productive opportunities. As noted earlier, Council sees a need for institutional responsiveness at macro, sectoral and micro levels. Appropriate balance in macro policies is a pre-condition of successful performance in the economy at large. It needs to be supported by policies which ensure that investment decision-makers have a clear view of future possibilities and of opportunities for individual and joint action.

Above all, there is a need for adaptability and flexibility of response from all producers including wage earners. Finally, government's social policies will need to underwrite this process of change. If these aims can be secured then we will have laid the basis for a sustained return by New Zealand to the desirable position of being a high rather than a low wage economy.

Footnotes

1. The real wage rate is defined as the ratio between wage rates and prices. Various wage and price measures are available and selection amongst these depends upon the purpose of the comparison. The usual measure for wage rates is the prevailing wage rates index which is a composite index designed to approximate the average movement in ordinary time earnings for all employees; skilled, unskilled and managerial, in the various sectors of the economy. The prevailing wage rates index does not include the earnings of self-employed persons or any element of return to capital.

2. Rose, D., "Wage Rates and the Demand for Labour", in this volume.

Introduction

The re-emergence of unemployment as a major problem after several decades of full employment, raises a range of questions for policy-makers. What factors determine the level of employment and unemployment in the New Zealand economy? To what extent are those factors amenable to public policy? If, as most observers suggest, significant unemployment is likely to continue, at least for the foreseeable future, what is society's responsibility to the unemployed?

The papers in this volume focus on the links between the functioning of the economy, economic management, and employment. They do not address the important issues which arise around government programmes for the unemployed.

All the papers have been developed within the context of the Planning Council's on-going employment project. Most of them were originally prepared for discussion within council; sometimes as a means of defining work priorities and sometimes as a basis for discussion of a particular issue. It will probably be helpful to give the reader some feel for the origins of each paper.

"An Overview of the Employment System" is based upon an exploratory paper prepared for the Planning Council in April 1983 and used for discussing work priorities. It was subsequently circulated amongst a number of professional colleagues. The response included many detailed comments which have been taken into account in revising the paper, and some fundamental arguments, particularly on the role of medium-term planning.

The paper "Wage Rates and the Demand for Labour" combines two prepared (in April and August 1984) as a basis for discussion by the council of the real wage issue. Any person interested in policy responses to unemployment must form some judgement on the professional controversy which has arisen around this question. The council's own collective view on the matter is presented at the beginning of this volume. Data supporting the various charts and tables presented in the authored paper are available from the Planning Council and are held on file POP/EM 1/8/2.

"Inter-sectoral Variations in Real Wage Rates" reproduces a more technical working paper which examines the relative variability of output prices, input prices and nominal wage rates. The paper relates to an argument about the extent to which current unemployment patterns arise from inflexible labour markets. The paper suggests that the leverage which any wage negotiator is able to exercise on sectoral real product wage rates and thereby employment may be very low.

The note on "Rates of Growth" relates to the debate about the extent to which New Zealand's poor growth record in recent years stems from adverse external circumstances. The note, which was prompted by a question from the previous Minister of National Development, the Hon W.F. Birch, makes use of the small Macro model used within the council's National Sectoral Programme.

The controversial question of linkages between "Technical Change and Employment" is briefly reviewed in the next paper which was prepared as a means of identifying possible future work areas for Council. The paper contains no original work but may be of interest to some readers.

The volume concludes with a discussion of "The Limits of Markets and Planning Mechanisms". This paper builds on two earlier Council papers. The first (June 1983), developed the concept of an interactive planning mechanism outlined in the first overview paper in this volume. The council rejected the central thrust of that proposal but agreed to further discussion of the underlying issues. These were taken up in an October 1984 paper which met with a substantial degree of council acceptance and which provides the framework for the extended version presented here.

The underlying theme of this volume is the search for economic policies which would secure a return to full employment. One should not underestimate the difficulty of that task. It is clear that a return to the employment conditions of the post-war decades is going to be very hard to achieve. In a broader historical and international light, those were very favoured and successful years. It also needs to be recognised that policy in a sense plays on the margin of the system. Even when that system functions badly, it provides jobs for the great majority of those seeking work. The challenge is to devise policies which move the economy towards full employment without undermining its basic vitality and drive.

In working in this area, I have enjoyed ciritical encouragement from many colleagues and I am particularly grateful to all those who took the time and trouble to write to me on various aspects of the problem. My thanks also to council and secretariat members for some very interesting discussions and disagreements, and finally to Annelies Windmill, Morwen Thomas and others for their skill in preparing the material for publication.

Dennis Rose

AN OVERVIEW OF THE EMPLOYMENT SYSTEM

Introduction

1. This note aims to provide an overview of the employment system. In economic terms paid labour is a commodity and unemployment reflects, for whatever reason, an imbalance between the supply of and the demand for labour. This makes it convenient to discuss the determinants of employment and unemployment in terms of factors influencing labour supply and demand. At the same time labour is unique as a commodity. We think, we vote, and we can vote with our feet. The political tests imposed upon the labour market are consequently much more demanding than those which apply to most commodities. There is an inescapable policy interest in any discussion of employment. To what extent should or can the labour market be self-regulating and to what extent is its successful functioning dependent upon government actions in structuring and managing the economic environment?

2. These things acknowledged, a consideration of factors affecting supply and demand provides the obvious framework for discussion in this area. This note builds on the following schema:

Factors affecting labour supply

(a) short-term
(b) long-term

Factors affecting demand for labour

(a) short-term
(b) longer-term
  (i) view from the firm
  (ii) public planning perspective

The distinction drawn between short and long term influences is not hard and fast but turns on the idea that long-term changes depend upon some prior process such as the provision of new capital equipment, or the working through of attitudinal changes such as in a community-wide trend towards earlier retirement. Within each section there is a description of the major economic forces at work. The approach is essentially schematic and is aimed at identifying (but not at measuring or formally specifying) the more important linkages. Where appropriate the possibility of modifying the flow in question through changes in public policy is discussed.

Labour Supply

Short-term

3. For most of the population, the need to work dominates the years between formal education and retirement. For the majority, work means paid work, either as an employee or on one's own account. For about half the adult female population and for some men, work means housework and childrearing. In discussing employment policy we are primarily concerned with those who are active in or who seek a place in the paid economy. Although the labour force has a large and relatively stable core, in the sense that most who are in work today will also work tomorrow, it is subject to considerable flux with many people changing jobs and crossing and recrossing the boundary between paid and unpaid work. The decision on whether or not to seek paid work is affected by circumstances such as family situation, age, and alternative sources of income including interest, rents, and benefit payments. It is also sensitive to changing circumstances in the economy itself. Thus the poor prospects of finding work in adverse times may discourage some persons who would actively seek work in more prosperous times. Others may be induced by adversity to seek work so as to supplement declining family incomes.

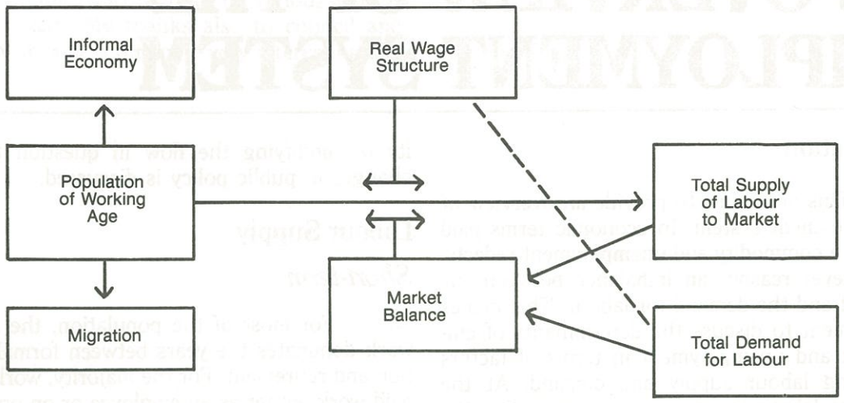
4. Schematically short-term labour supply can be thought of in the following way. At any point in time we have a given population of working age, structured according to experience and acquired skills. Faced with the prevailing labour market situation (including prevailing wage levels, demand for labour and levels of unemployment) the population:

(a) offers itself for employment, either for wages or salaries or in self-employment on a regular basis; or

(b) opts into the informal economy — this is taken to include unpaid housework, subsistence, and fringe entrepreneurial activity; or

(c) moves within or beyond the country in the expectation of getting a better deal elsewhere.

Chart 1 SUPPLY OF LABOUR



5. Chart 1 presents the above schema diagramatically.

6. Success in finding work is much influenced by a person's past work experience and pattern of skills. Under conditions of unemployment, two possible policy responses are to assist people identify job openings in industries (or areas) where their skills are in demand or to assist them to acquire new and more relevant skills. The first response is a normal part of the function of both public and private employment agencies. If in a particular area there is a surplus of particular skills then, depending on job availability, people may be prepared to apply those skills elsewhere or to lower their expectations and enter jobs with a lower skill requirement. In such cases, the main policy emphasis is in assisting job search. Where, however, there is a deficiency of higher grade skills, then training is an appropriate response: either retraining to assist horizontal mobility within the hierarchy of skills or upgrading of skills to permit upward movement.

7. The need for positive labour market and training policies to meet shortages in specific skills is of course a permanent feature of the economy through all phases of the business cycle. This acknowledged, there is obvious merit in placing increased emphasis on training during periods of downturn. A short-term labour surplus provides a low-cost opportunity to secure both national and individual benefits from enhanced levels of skill. It is however important not to raise unreal expectations amongst trainees and programme managers as to probable short-term changes in job availability. Of themselves training programmes cannot be expected to exert a major influence on the overall balance between supply and demand for labour.

Labour Supply

Longer-term

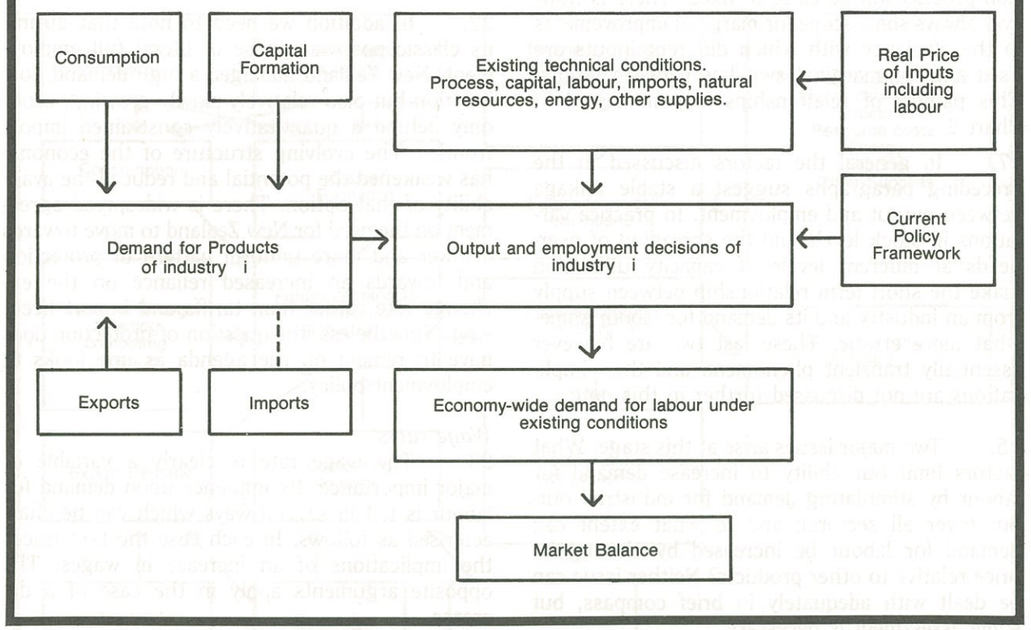
8. To a degree the size of the future labour force is predictable simply in terms of demographic trends. In practice, economic and other forces affect both the size of the population of working age and participation rates within it.

9. Migration is an important influence on the size of the population of working age. Changes in birth rates have an effect only after a long period (although changes in dependency ratios may have an earlier effect upon participation rates), while changes in mortality amongst those of working age are sufficiently small to be ignored.

10. In recent years net emigration has significantly reduced the rate of increase in the size of the population of working age. In the five years to March 1981, there was a net outflow of 71,700 persons aged 15+. During this same period there was an inter-censal increase of 95,500 persons aged 15+. These changes contrast markedly with those during the five years to March 1976. During that period there was a net inflow of 72,700 persons aged 15+, whilst total population in this group increased by 248,000.

11. This swing in migration had the effect of lowering the inter-censal rate of increase in population aged 15+ from 2.42 percent per annum in 1971-76 to only 0.85 percent per annum in 1976-81. It is clear that until very recently net emigration has strongly reduced the rate of increase in the population of working age and has thus tended to reduce the supply of labour.

Chart 2 SHORT-TERM DEMAND FOR LABOUR



12. The period between the 1971 and 1981 censuses saw marked, but largely offsetting, changes in labour force participation rates, as below:

	Percentage of adults actively engaged or seeking work	
	1971	*1981*
Males, 15-64 years	88.5	86.2
Females, 15-64 years	38.9	45.8
Persons 65 years and over	11.1	5.8
Total	57.3	58.0

A marked rise in the labour force participation rate for females aged 15-64 was almost fully offset by a reduction in the equivalent male participation rate and a dramatic drop in that for persons aged 65 years and over.

13. Over the decade as a whole the number of persons actively engaged or seeking work rose by some 214,000. The increase in participation rates accounted for some 17,000 of this increase.

14. We have identified a wide range of factors which help create a state of continuing flux in the supply of labour. Although social and political factors properly constrain the ability of governments to use most of these factors as instruments for economic fine-tuning, it is clear that policy-making in many areas would be assisted by a clearer understanding of factors such as:

(a) the determinants of migration
(b) the determinants of both short and long-term changes in participation rates
(c) increases in part-time working, reduced working weeks, long service leave and moves to the informal economy
(d) the micro functioning of labour markets including the influence of regulatory and other standards upon the conditions of supply.

Demand for Labour

Short-term

15. The demand for labour at both national and industry levels derives from a complex set of forces including, principally, output decisions and the technical conditions of production including input prices. An industry's output decisions depend upon an assessment of its ability to supply competitively and profitably in response to prospective levels of demand in whatever is the relevant range of consumption, investment and export markets. That assessment will be much influenced by the structure of costs faced by the industry and will be affected by judgements on possible changes in government policies and in competing supply from abroad.

16. The derived demand for labour is moderated by the technical conditions operating within the firm. Technical conditions comprise both the physical characteristics of the production process itself, the proportionate quantity requirements of the various inputs per unit of output and their

cost. At any point in time the firm has to make production decisions on the basis of its extant set of capital equipment and in this sense its production process will be close to fixed. There is however always some scope for marginal improvements in the efficiency with which different inputs are used and for marginal switches between inputs. This pattern of relationships is summarised in Chart 2.

17. In general the factors discussed in the preceding paragraphs suggest a stable linkage between output and employment. In practice variations in stock levels and the spreading of overheads at different levels of capacity utilisation make the short-term relationship between supply from an industry and its demand for labour somewhat more erratic. These last two are however essentially transient phenomena and their implications are not discussed further in this note.

18. Two major issues arise at this stage. What factors limit our ability to increase demand for labour by stimulating demand for industrial output (over all sectors); and to what extent can demand for labour be increased by altering its price relative to other products? Neither issue can be dealt with adequately in brief compass, but some assessment is necessary.

Demand stimulation

19. The potential for increasing employment up to the full employment level by stimulating demand for industrial output is constrained by the need to maintain appropriate balance in the overall pattern of macro-economic policy. Depending on circumstances this potential may be constrained by a need to avoid policies which increase demand for imports, or by the requirements of anti-inflation policy. The promotion of employment is but one of the objectives of macro policy and most of the major macro policy instruments impact upon more than one of those objectives.

20. It follows that appropriate macro policies cannot be determined with reference to employment needs alone. A widespread recognition of this fact itself constrains the potential for promoting employment through demand stimulation. Employers' decisions on whether or not to take on extra staff in response to a surge in demand will be conditioned by their assessment of whether or not that surge can be sustained. A widespread expectation that a policy cannot be sustained may itself be sufficient to negate the policy.

21. Despite these limitations the overall question of the relationship between demand management and employment remains an important issue. It seems best however to discuss it within the context of overall macro policy and as such is more properly addressed within the work programme of the Economic Monitoring Group of the Planning Council rather than within the employment project.

22. In addition we need to note that during its classic post-war phase of literal full employment, New Zealand managed a high demand, low inflation but also relatively slowly growing, economy behind a quantitatively constrained import frontier. The evolving structure of the economy has weakened the potential and reduced the availability of that option. There is widespread agreement on the need for New Zealand to move towards a lower and more uniform pattern of protection and towards an increased reliance on the exchange rate rather than tariffs and import licensing. Nonetheless, the question of protection does have to remain on the agenda as one looks at employment policy.

Wage rates

23. The wage rate is clearly a variable of major importance. Its influence upon demand for labour is felt in several ways which can be characterised as follows. In each case the text traces the implications of an increase in wages. The opposite arguments apply in the case of a decrease.

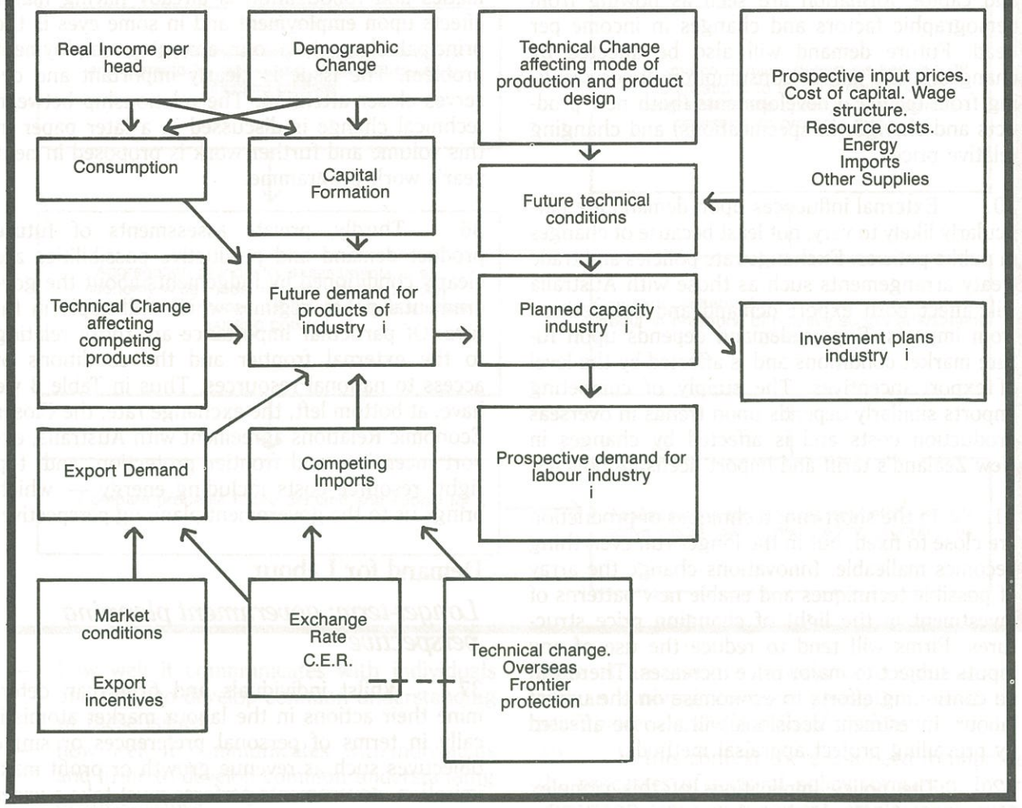
(a) *the wage-income effect* — wages as the largest single category of income are a major element in demand. An economy-wide increase in wages can on this account, be expected to increase consumption demand and thus stimulate output and employment

(b) *the substitution effect* — a general increase in wage rates relative to prices for other inputs (including both materials and other factor inputs) can be expected to induce some substitution of these other inputs for labour as employers attempt to minimise costs. In the short run, the potential for such substitution is frequently narrowly restricted but in the longer run the position is quite different.

(c) *the price effect on output demand* — to the extent that an increase in wage rates is not offset by reduced use of labour, the consequent cost increase must be financed — if this is done by passing increased costs on into prices then, depending on market conditions, reduced sales are likely, thus lowering output and in turn employment. Such reductions are particularly likely in export markets.

(d) *reduced returns to capital* — an increase in wage rates that is not offset by reduced use of labour or recovered through price increases must lead to a reduction in operating surplus. In the limit this may mean bankruptcy, with job loss for some employees. More generally such reductions in operating surplus reduce the incentive to invest

Chart 3 FUTURE DEMAND FOR LABOUR — THE VIEW FROM THE FIRM



and lower the firm's ability to fund investment and pay dividends. Reduced investment reduces employment in capital goods producing industries and lowers prospects for output and employment growth in future. Reduced dividends to households can also be expected to reduce consumption.

24. These four principal linkages between wage rates and the demand for labour are of fundamentally different type. The wage-income effect on employment will generally be positive and depends upon the flow-back of wage incomes through consumption. The other three linkages are all likely to be negative in their impact upon employment.

25. Given the complex pattern of relationships operating between wage rates and employment, it is not surprising that quantification of these links has proved problematic and contentious, both here and abroad. The question is discussed further in papers which appear later in this volume.

Short-term demand — other matters

26. In addition to the two major demand questions so far discussed there is a complex of other issues relating to short-term demand for labour. These include the full gamut of micro level interventions including: government and local authority job creation schemes; private sector job creation schemes, including wage subsidisation, tendering for the services of the unemployed; and promotion of cooperative and own account activity. A paper on small business and self-employment is being published in a companion volume.

Demand for Labour

Longer-term: View from the firm

27. Chart 3 presents a diagrammatic schema. The basic form mirrors that of short-term demand for labour but everything becomes flexible and liable to change. In addition, we now need to take account of decisions to expand or contract productive capacity.

28. Firms make their plans for future capacity in the light of assessments of future demand and of changes in technical conditions and production costs. Together these effectively determine feasible rates of return and thereby help determine future levels of investment.

29. The factors determining future demand are very much more complex and uncertain than those acting on current demand. Consumption and capital formation are seen as flowing from demographic factors and changes in income per head. Future demand will also be affected by changes in the mix of consumption goods resulting from technical developments (both new products and changes in specifications) and changing relative prices.

30. External influences upon demand are particularly likely to vary, not least because of changes in public policies. Exchange rate policies and trade treaty arrangements such as those with Australia will affect both export demand and competition from imports. Export demand depends upon future market conditions and is affected by the level of export incentives. The supply of competing imports similarly depends upon trends in overseas production costs and is affected by changes in New Zealand's tariff and import licensing policies.

31. In the short run, techniques of production are close to fixed, but in the longer run everything becomes malleable. Innovations change the array of possible techniques and enable new patterns of investment in the light of changing price structures. Firms will tend to reduce the use of any inputs subject to major price increases. There will be continuing efforts to economise on the use of labour. Investment decisions will also be affected by prevailing project appraisal methods.

32. The policy implications of this complex picture are numerous but three are of particular importance.

33. First, the real wage rate is again very much in evidence and, in this longer-term perspective, in a somewhat less controversial way. Real incomes, including real wages, are the primary determinant of demand. Real wages and the real rate of return to capital are jointly amongst the primary determinants of the appropriate technical means of production. It is reasonably evident that one of the principal conditions of longer-term balance is that real consumption standards and therefore real income levels correspond to those attainable in terms of the future productive structure of the economy and its available resources, including labour. Although there will always be some room for a residual haggle about the split of factor incomes between labour and capital, it is certainly possible to conceive of movement towards an equilibrium wage rate.

34. In the shorter run in which we live: with an economy that is well out of balance, in the process of significant structural change, and continually being stressed and restressed by external events, the path is not so clear.

35. Secondly, Table 3 highlights the importance of technical change in determining future levels of labour demand. The revolution in informatics and robotization is already having major effects upon employment and in some eyes is the principal element in our emerging employment problem. The issue is clearly important and deserves closer attention. The relationship between technical change is discussed in a later paper in this volume and further work is proposed in next year's work programme.

36. Thirdly, private assessments of future product demand and productive possibilities are clearly conditioned by judgements about the governmental policy regimes which will apply in future. Of particular importance are those relating to the external frontier and the conditions of access to national resources. Thus in Table 3 we have, at bottom left, the exchange rate, the Closer Economic Relations agreement with Australia, export incentives and frontier protection, and, top right, resource costs including energy — which brings us to the government planning perspective.

Demand for Labour

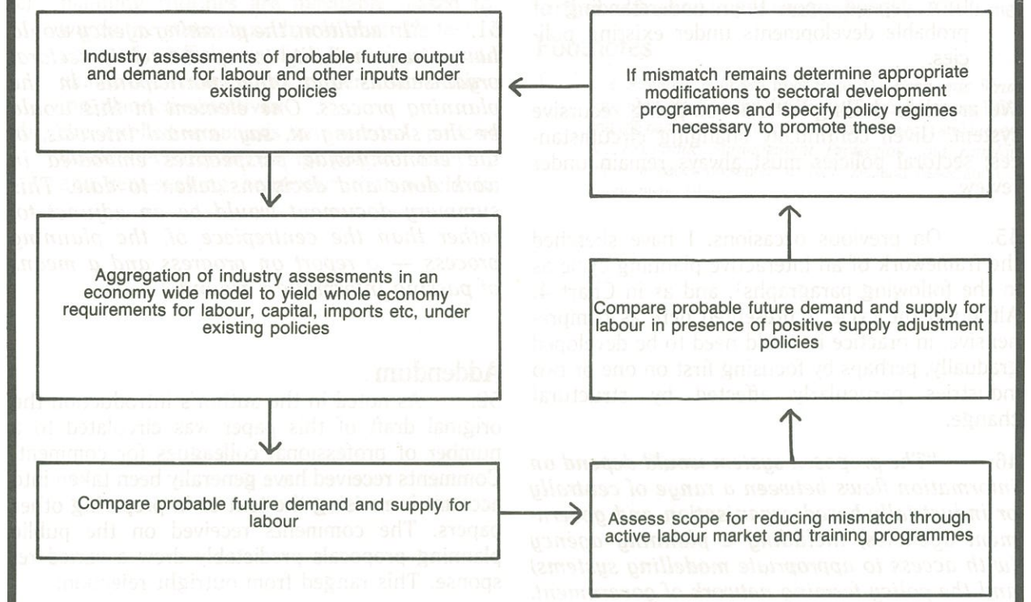
Longer-term: government planning perspective

37. Whilst individuals and firms can determine their actions in the labour market atomistically in terms of personal preferences or single objectives such as revenue growth or profit maximisation, governments perforce must take a wider view. The traditional tests of government's economic policies are whether they act to promote higher incomes, full employment, equity, low inflation and external balance and when these objectives conflict, whether government's actions achieve acceptable trade-offs between them.

38. Much that government does will necessarily affect growth in the economy and the behaviour of labour markets even where those effects are not the immediate aim. Measures it takes for primarily social reasons — compulsory schooling, benefits for the sick and aged; rules on monopolies, on unions, and wage bargaining systems; macro economic measures such as exchange rate regimes, taxation and public sector borrowing; sectoral measures such as conditions of access to national resources, tariffs and basic industry regulation. Finally government is itself an important producer of services such as transport, education and research and as such an important employer.

39. All such measures impact upon the growth of the economy and upon conditions affecting the supply and demand for labour. Major factors determining the effectiveness of these measures include:

Chart 4 FUTURE DEMAND FOR LABOUR — GOVERNMENT PLANNING PERSPECTIVE



— how well it communicates with individuals and firms to develop common understanding of these issues
— how well it communicates with individuals and firms to develop common understanding of these issues

40. It is clear that over the last decade or so there have been failures in both these areas. The consensus of the 1950s and 1960s on the structure and management of the economy for full employment has weakened in the face of changed external and internal circumstances. There is an emerging agreement that more discussion is needed between government, employers, unions and others on economic management, social assistance and the operation of the labour market.

41. Somewhat stronger views are developing on the need for rationalisation of sectoral interventions — with some markedly different perspectives:
— some calling for virtually complete dismantling
— many favouring reduction and greater reliance on market related forms of intervention
— some calling for more formalised and systematic intervention

There is however widespread agreement that change is necessary and that change will entail accelerated structural adjustment. The process of adjustment is likely to work more smoothly, rapidly and beneficially, with less unemployment, if there is an effective process of communication and an evolving common perception about the pace, pattern and duration of change.

42. In this context there is a need to improve the processes of sectoral policy formation. In an important sense our current employment problems stem in part from a failure in development planning. Historically New Zealand has moved through two main overlapping phases of pastoral expansion and protected manufacturing development. The policy rules appropriate during that period were relatively simple and for a significant period the economy enjoyed, admittedly in favourable external circumstances, literal full employment. The current drive for a more exposed and internationally competitive economy creates a need for a more sophisticated balancing of sectoral and macro policies.

43. The practical issue is to assist the formulation of policies which promote target objectives and to ensure policy-makers and those affected understand the pattern of trade-offs associated with any policy package.

44. The essential problem is one of communication. Our planning procedures need to acknowledge:
(a) that the great bulk of commercial investment decisions will be made by autonomous enterprises
(b) that the decisions are sensitive to public

policy rules promoted in pursuit of objectives such as full employment

(c) that the public policy-makers' decisions in turn depend upon their understanding of probable developments under existing policies.

We are thus dealing with an on-going recursive system. Given continually changing circumstances, sectoral policies must always remain under review.

45. On previous occasions, I have sketched the framework of an interactive planning cycle as in the following paragraphs[1], and as in Chart 4. Although the cycle is presented here as comprehensive, in practice it would need to be developed gradually, perhaps by focusing first on one or two industries particularly affected by structural change.

46. *"The proposed system would depend on information flows between a range of centrally or industrially-based organisation and government agencies, including a planning agency (with access to appropriate modelling systems) and the policy forming network of government.*

47. *"The sectorally based organisations would be autonomous and, for the most part, private sector-based. They would be invited to maintain on a rolling basis a forward examination of sectoral development options and to quantify as far as possible the likely course of sectoral developments under current policies and under any alternative policy frame that the sector might think appropriate. Quantification would desirably include employment and the value of investment, output exports and imports.*

48. *"The output of these sectoral programmes would be brought together by the planning agency to give a national picture of probable developments under current policies and their sensitivity to changes in policy.*

49. *"The agency would compare the labour demand forecasts generated by the above process with probable developments in labour supply and from this draw conclusions on the likely direction of labour market imbalances. These projections would be used to inform discussion of possible policy changes designed to correct emerging imbalances in employment and elsewhere.*

50. *"Policy-making would remain the responsibility of the usual policy-forming network of government. However, to the extent that the planning agency was able to quantify linkages between policy regimes, probable sectoral development paths and potential demand for labour, it would make a major contribution to policy debate.*

51. *"In addition, the planning agency would have a responsibility to report back to sectoral organisations and other participants in the planning process. One element in this would be the sketching at, say, annual intervals, of the economy-wide perspectives embodied in work done and decisions taken to date. This summary document would be an adjunct to, rather than the centrepiece of, the planning process — a report on progress and a means of passing information around."*

Addendum

52. As noted in the author's introduction the original draft of this paper was circulated to a number of professional colleagues for comment. Comments received have generally been taken into account in revising the text or in preparing other papers. The comments received on the public planning proposals predictably drew a varied response. This ranged from outright rejection:

"After New Zealand's experience with government intervention, I cannot imagine how rational dispassionate, disinterested observers could ever think that we need planning . . . The best plan for New Zealand is to establish constitutional rules which take the operation of the economy out of political control."

Through ambivalence:

"I'm afraid I'm as uncertain as most people about the kind of programme set out . . . In some moods, its desirability seems self-evident, especially if it remains flexible . . . At other times, I'm more impressed by the need for the kind of innovation and entrepreneurship which is unlikely to come from industry establishments or bureaucracies . . ."

To support:

". . . To ensure equilibrium in the labour market five years hence, action on policy parameters, including industrial developments need to be taken now. The present equilibrium constellation of exchange rates, protection and new projects can only be judged in the light of the likely . . . situation in some future horizon year."

53. The greater number of comments received were critical, the major arguments raised being:

(a) the planning proposal was specified in terms of industries but the information required could only be supplied by firms. It was unlikely that they would agree to this

(b) the market provides a much better and cheaper source of information than any feasible planning process

(c) planning routines are inevitably biased towards the status quo. In contrast the test of economic efficiency lies in adjusting to changed circumstances rather than achieving planned objectives

(d) the explicit emphasis on sectoral policies would inevitably encourage political lobbying and rent-seeking behaviour that would be inimical to the promotion of economic efficiency.

54. The question of planning approaches is further addressed in the final paper in this volume.

Footnotes

1. The quotation is drawn from Rose, D., *Economic Structure: Organisation and the Market*, Turnbull Lecture, 1983, and the basic schema first developed in Rose, D and Lowen, K., *Economic Management Protection and Employment*, a paper presented to New Zealand Association of Economists, 1980

WAGE RATES AND THE DEMAND FOR LABOUR

I INTRODUCTORY

Introduction

1. The linkage between wage rates and employment is understandably contentious. For employees any suggestion that current employment results from too high a level of wages is likely to be threatening; it seems to imply a need to reduce rates of pay in future and to suggest that their past actions in the labour market have contributed to current problems.

2. The issue is also contentious because it reaches to the unsettled core of economic theory. Generations of economists have grappled with the connections between wage rates, profits, employment and output. Different schools of thought (for example Keynesian, post-Keynesian, neo classical and Marxist), picture these linkages in different ways. These differences should not be overstated. A need for realism encourages each school to take account of persistent real world linkages. That said, there is much room for debate and this is compounded by problems of statistical verification in quantitatively muddy waters.

3. This essay aims to provide an accessible but reasonably detailed overview of the real wage question in the context of current policy formation in New Zealand. It draws primarily on the experience of the seventies and early eighties and attempts to focus on the implications for employment policy. It also identifies areas in which further empirical or theoretical research could be expected to assist firmer judgements on key issues. The essay is in four parts:

(a) a mapping of the main linkages together with some definitions
(b) a review of recent developments in the major variables under review
(c) a look at the various attempts to model key relationships econometrically
(d) a discussion on policy implications.

The Major Linkages

4. It will be useful to restate the major linkages between wage rates and employment as summarised earlier in the overview of the determinants of employment. Wage rates, it was argued, will affect both the supply of and the demand for labour.

5. We have not been able to address the question of linkages between real wage rates and the supply of labour within our current work programme. Although most of those who are in paid employment need to work and would not change their participation decisions in the face of marginal community-wide changes in real incomes, some would. Slight changes on the margin of large aggregates can be significant and the question of the responsiveness of labour supply to changes in real wages rates clearly deserves closer attention.

6. This paper focuses on the relationship between wage rates and the demand for labour. A number of distinct influences need to be considered. I characterise these as follows. In each case I have traced the implications of an increase in wages. The opposite arguments apply in the case of a decrease.

(a) *the wage-income effect* — wages as the largest single category of income are a major element in demand. An economy-wide increase in wage rates can on this account be expected to increase consumption demand and thus stimulate output and employment.

(b) *the substitution effect* — a general increase in wage rates relative to prices for other inputs (including both materials and other factor inputs) can be expected to induce some substitution of those other inputs for labour as employers attempt to minimise costs. In the short-run the potential for such substitution is frequently narrowly restricted but in the long run the position is quite different.

(c) *the price effect on output demand* — to the extent that an increase in wage rates is not offset by reduced use of labour, the consequent cost increase must be financed — if this is done by passing increased costs on into prices then, depending on market conditions, reduced sales are likely, thus lowering output and in turn employment. Such reductions are particularly likely in export markets.

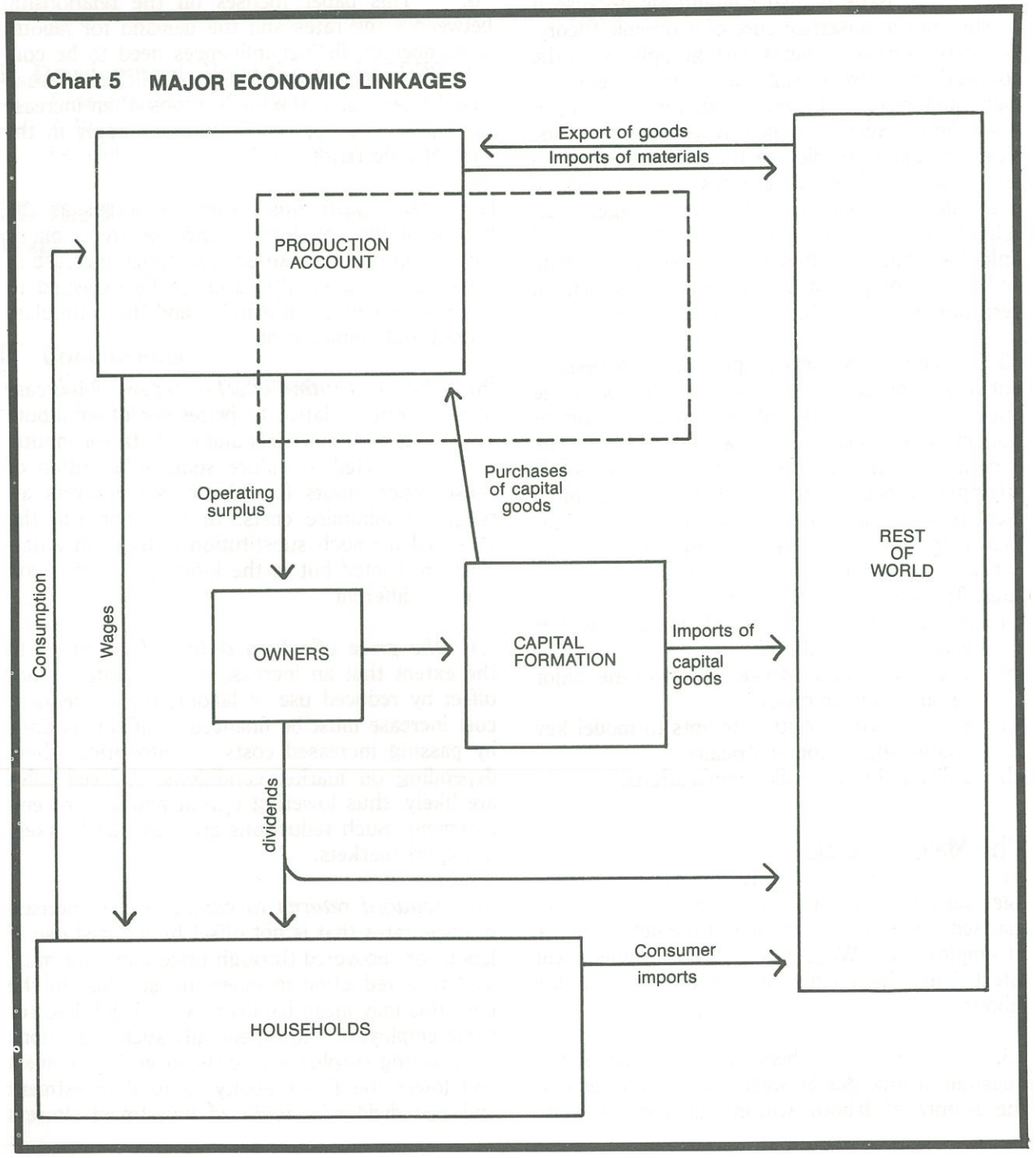
(d) *reduced returns to capital* — an increase in wage rates that is not offset by reduced use of labour or recovered through price increases must lead to a reduction in operating surplus. In the limit this may mean bankruptcy, with job loss for some employees. More generally such reductions in operating surplus reduce the incentive to invest and lower the firm's ability to fund investment and pay dividends. Reduced investment lowers

employment in capital goods producing industries and lowers prospects for output and employment growth in the future. Reduced dividends to households can also be expected to reduce consumption.

7. These four principal linkages between wage rates and the demand for labour are of fundamentally different type. The wage-income effect on employment will generally be positive and depends upon the flow-back of wage incomes through consumption. The other three linkages are all likely to be negative in their impact upon employment. The substitution effect works within the process of production with its influence being felt both in the shorter and, more importantly, in the longer run through investment decisions. The price effect on output demand relates to decisions on whether to purchase current production. Finally the effect of reduced returns to capital upon decisions to invest impacts upon short-term demand for labour in capital goods producing industries and upon long-term demand for labour as a consequence of changes in the productive capacity of the industry itself.

8. The relationships can usefully be expressed in terms of Chart 5 which presents an abbreviated flow chart for the economy[1]. The diagram contains four main blocks which are connected by arrows relating to the various cash

Chart 5 MAJOR ECONOMIC LINKAGES



flows in the economy. In each case there is a counterpart flow of goods or services in the opposite direction.

9. *The wage income effect* is captured by the two arrows between production account and households on the left hand extreme of the diagram. The increase in wage rates augments household income, thus stimulating consumption demand which leads to an increased demand for output and thus demand for labour. The sequence involves several linkages and clearly much can happen along the way. Increased wage rates may affect the firm's immediate employment decisions. Increased household incomes will not flow in full to consumption demand for local products, but will in part be vented on demand for imports of consumer goods. Probably more importantly, but not shown in our diagram, the government will claim some part of the increase in taxes and some part of the increase in incomes may be saved.

10. *The substitution effect* occurs within the production unit and directly affects employment. To the extent that employers do shed labour in the short run in response to increased wage rates, there will also be a consequent reduction in wage payments to households which will have to be accounted as a negative part of the wage income effect.

11. In our diagram *the price effect on output demand* affects most of the flows between the production account and the rest of the system. We assume that part of the increased wage bill is passed on into the prices at which producers are prepared to supply output. This can be expected to reduce the volume of sales both because it reduces the real purchasing power of incomes (and of wealth) and because purchasers may choose to buy overseas instead. In the first case it acts as at least a partial offset to the wage income effect. The real income and wealth effects impact upon the vertical arrows representing the money value of consumption and the local purchases of capital goods. The substitution effects will be reflected in diversion of money flows between:

— consumption and consumer imports in the case of households
— local purchase and import of capital goods from the capital formation block.

It will also affect flows between the production account and the rest of the world. Some export sales may be lost. Similarly New Zealand producers faced with higher prices for locally produced material may increase imports of materials.

12. *Returns to capital* — are represented in the diagram as the flow of operating surplus from the production account to owners. A lowering in operating surplus is likely to reduce the incentive to invest in local productive facilities. Faced with the prospect of a lower future return owners may decide to finance increased consumption through higher dividends or to invest in foreign assets (the last option is not captured in the diagram). Reduced operating surplus also entails reduced capacity to fund investment although this effect will be softened by reductions in tax liability (again this latter effect escapes the diagram). Finally if dividend payments to households are reduced there may on this account be a reduction in consumption demand.

13. The four types of effect which we have been discussing are likely to be felt within a reasonably short time of the original wage change although there are likely to be some significant differences. An increase in wage incomes can be expected to flow through to consumption in the weeks and months following the change. The timing of price increases will depend on costing practices within firms but most will follow fairly swiftly and may trigger a search for alternative sources of supply at any time thereafter. A rise in wage rates without a compensating rise in prices will cause an immediate shift in factor shares. Financing and accounting practice may disguise this for some time and consequential changes in investment decision-making are likely to follow only after a considerable lag.

14. The investment changes if and when they come will have a significantly different time frame. Investment in new productive assets is frequently, perhaps typically, associated with changes in productive technique. The introduction of new processes usually implies some shift in the mix of labour and capital embodied in the production process and thereby in the final product. To the extent that a change in wage rates induces such a fundamental shift, we are in effect witnessing a shift in the underlying technical conditions of production in a way which tends to impact on all the short-term effects which we have been discussing so far. I have tried to suggest something of the nature of this shift in the diagram by sketching a physically displaced (and dotted) box to represent the future production account.

15. Having drawn the distinction it is necessary to caution against making too much of it or of associating it exclusively with physical investment. Adoption of a new technology does not mean that one is locked into that — as is evidenced for example by switching between hydro and thermal energy. Equally fundamental changes in the balance of labour and capital inputs may occur without any change in the nature of the capital assets employed — as for example in a decision to rationalise work flows within an exist-

ing plant. Nevertheless the distinction remains important.

From Nominal to Real Wages

16. We have been discussing wage rates as the product of a unit of labour supplied at a particular price. It is necessary to recognise that changes in wage rates potentially include two elements. Consider for example the contrasting implications of situations where:

(a) all prices including wage rates are rising at 10 percent per annum, and
(b) wages are rising by 10 percent per annum but all other prices are stable.

In the first case the movement in wages parallels that in all other prices and there is no shift in real wage rates. In the second case, real wage rates are rising by 10 percent per annum. The real incomes of those in employment rise and employers see the cost of labour rise relative to all other prices.

17. In the real world all prices are not changing at the same rate. In particular there is nothing to ensure that the sets of prices relevant to employees and employers move identically. This means that there is room for more than one concept of real wage rates. For employees a comparison of changes in hourly earnings and changes in consumer prices can provide a measure of changes in the real income wage rate. An important subsidiary problem arises because the purchasing power of wage incomes is affected by taxation. For the employer changes in the real cost of labour depend upon relative movements in wage rates (and other costs of employing labour) and in prices affecting the production account, including, particularly, prices received for output. Deflation of wage rates by an index of output prices yields the *real product wage rate* which provides a measure of changes in the real wage cost of producing a unit of gross output in situations where there is no change in gross output per person.

18. Enough has been said to suggest something of the indeterminacy of measurement of real wage changes. For most analytic purposes, the words "real wages" are not sufficiently precise and from now on we shall need to make clear in context the particular definition of the term being used.

Real Wages, Economic Objectives and Economic Structure

19. Before turning to our review of New Zealand experience it will be useful to discuss two substantive underlying issues.

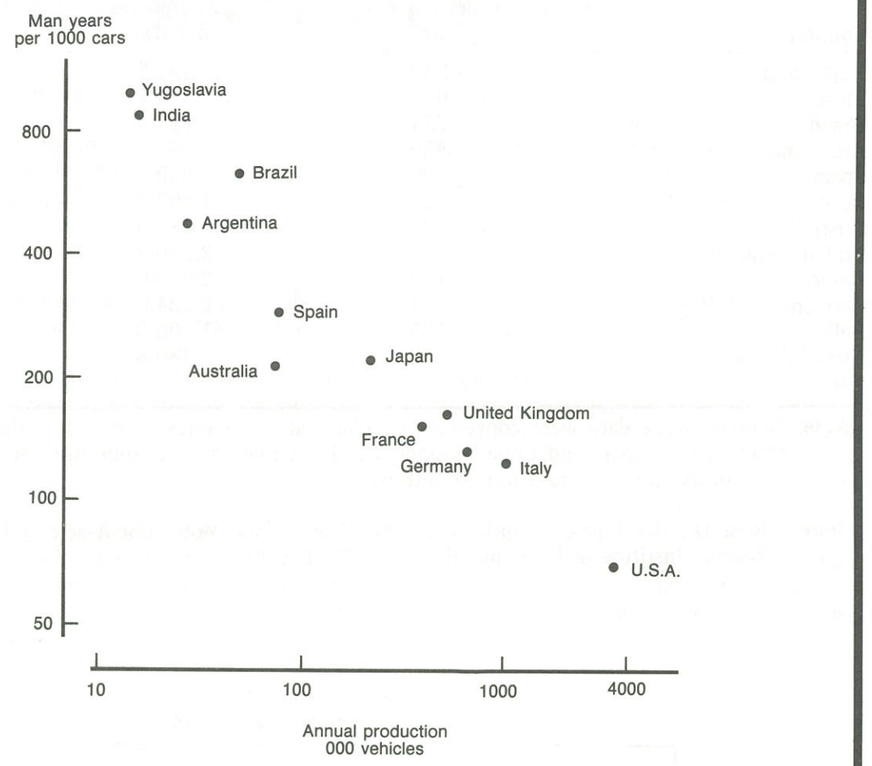
20. The first relates to economic objectives. It is common ground to most schools of thought that individuals will generally prefer to have the option of higher rather than lower real standards of consumption. For the population as a whole that implies a preference for higher rather than lower levels of real income and for wage earners, a higher rather than a lower level of real wage rates. It follows that the rates of increase in real incomes and real wages over time provide basic yardsticks for measuring the success of economic policy as a whole. In general we prefer higher rather than lower real wages. Two important qualifications do have to be made, however. First, incomes cannot be assumed to be the only variable featuring in individual, or community, preference functions. There are also objectives such as leisure and equity and of particular importance in this context there are societal objectives such as the provision of adequate employment opportunities. In large part the current debate relates to the possibility and extent of conflict between two closely related policy objectives. Secondly, our preference for higher rather than lower real wages has a time dimension. We have a preference for higher wages now and in the future. If it proves that higher wages now mean lower wages in future then we have a problem. The balancing of inter-temporal preferences is often difficult. In this case the conflict runs much deeper because the presumed intermediate linkage between wages foregone now and higher wages in the future depends upon the investment and consumption decisions of employers. Lower wages now may fund a new lathe and higher wages for the worker in the future or they may buy the employer a new yacht.

21. Secondly, before focusing on New Zealand experience, it is useful to step back briefly and take a wider international perspective. Leaving aside short-term variations we can observe that the real income and real wage levels of different countries are essentially determined by:

— the real productive structure of the countries; and
— the terms on which they trade with the rest of the world.

22. The first phenomenon can be illustrated with reference to data for the automotive industry. Chart 6 portrays the relationship between the average scale of production and output per person. As scale increases, specialisation and increased use of capital equipment enables a steady decline in labour input. Declining labour input per car implies higher output per person and, with that, an ability to pay higher wages per person. For example the data quoted in Table 1 suggest that in 1965 the number of man-years required to produce 1,000 cars was 1,061 in India compared with only 72 in the United States of America. Differences in average annual wages per

Chart 6 LABOUR INPUT AND SCALE OF OUTPUT 1965



employed person, $462 in India as compared with $7,181 in the United States, meant, however, that the total wage cost per vehicle was almost identical.

23. The general point being emphasised here is that the real productive structure of an economy is the fundamental determinant of the level of real incomes that can be sustained in the economy. Similarly the sustainable rate of increase in real incomes depends upon the rate of change in productive structure as a result of innovation, investment and improvement in working methods.

24. Because part of the nation's output is traded internationally, changes in a country's terms of trade will influence the level of income that can be sustained on the basis of a particular productive structure. The mid-seventies increase in incomes to oil producers provides the most obvious example of what is a general phenomenon. An example which had, of course, a contrary impact for countries dependent upon imported oil. The impact of the mid-70s terms of trade shock upon the New Zealand economy is discussed later in the volume in the paper, "Rates of Growth".

25. Clearly the sustainable level of real incomes in a country changes through time. In the debate about real wages and employment the focus is upon the implications of divergences between the actual and sustainable levels of real income. What are the consequence of real wage paths higher, or lower, than those justified in terms of changes in the productive base and in the terms on which we trade with the rest of the world?

26. Our mapping to this point has demonstrated the complexity of the issue. It is now necessary to flesh this out by reviewing the pattern of movements in some of the main variables of interest as a prelude to examining the various econometric attempts to model some of the major linkages algebraically.

Table 1

LABOUR INPUT AND WAGE COSTS IN THE MOTOR CAR INDUSTRY

Country	Labour required (man-years per 000 cars)	Annual wages per employee (dollars)	Wage cost per vehicle produced (dollars)
Yugoslavia	1,230	491.5	604.5
India	1,061	462.1	490.3
Brazil	754	793.9	598.6
Argentina	489	—	—
Spain	329	949.3	312.3
Japan	227	1,455.7	330.4
Australia	221	3.012.0	665.7
United Kingdom	172	2,586.0	444.8
France	164	2,019.6	331.2
Germany, Fed. Republic	141	2,334.0	329.1
Italy	135	1,506.0	203.3
United States	72	7,180.8	517.0

Note: National wage data were converted to dollars at 1965 rates. Subsequent devaluations in Brazil, India, Spain and United Kingdom suggest that the exchange rates embodied above were overvalued for those four countries.

Source: Rose, D., Development Options in the New Zealand Motor Car Assembly Industry, New Zealand Institute of Economic Research, 1971, p.145

II DEVELOPMENTS SINCE THE EARLY 1970S

27. To date, the major analyses of New Zealand trends in wage rates, prices, output and employment have focused on movements in national aggregates. In contrast I approach the question from a sectoral perspective. Although this requires us to review a considerable body of data it helps highlight inter-sectoral differences which are important for the issues under discussion. I have chosen to start the analysis with the manufacturing sector, then to contrast the measures for this sector with the economy wide aggregates used by the Reserve Bank, before returning to a briefer review of developments in agriculture, transport, trade and finance. The review depends upon a number of data sets which are not fully compatible.

28. The major data sets used are:

(a) national accounting statistics for 1971/72 to 1982/83. These are available in dollar of the day terms for the major categories of income classified by sector. This set also includes estimates of the volume of sectoral contributions to GDP but the available sectoral range is narrower for years before 1977/78, and for those years more closely approximates to a measure of sectoral gross output.

(b) employment and wage data drawn from Labour Department surveys. The surveys were half-yearly during the 1970s and quarterly since then, each survey relating to a single week. The survey does not cover agriculture.

(c) input and output price data from the Wholesale Price Index, to December 1977, and the Producers' Price Index thereafter. Whereas the sectoral classification in the latter index corresponds to the national accounts that for the Wholesale Price Index is more broadly grouped. In consequence the quality of the linked indices reported below varies considerably.

Chart 7 **MANUFACTURING**
Elements of gross output

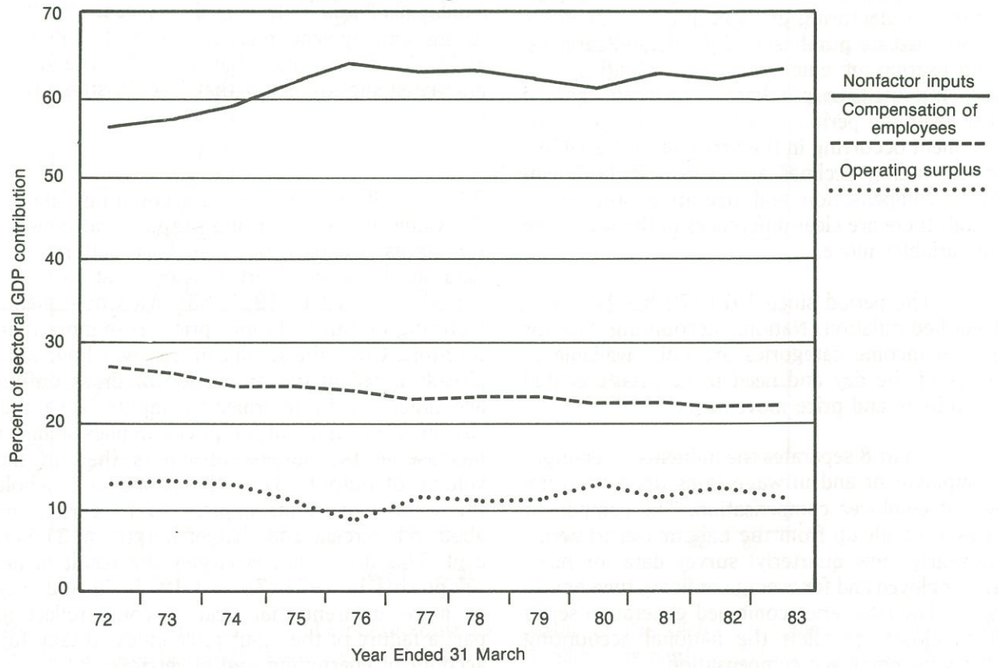
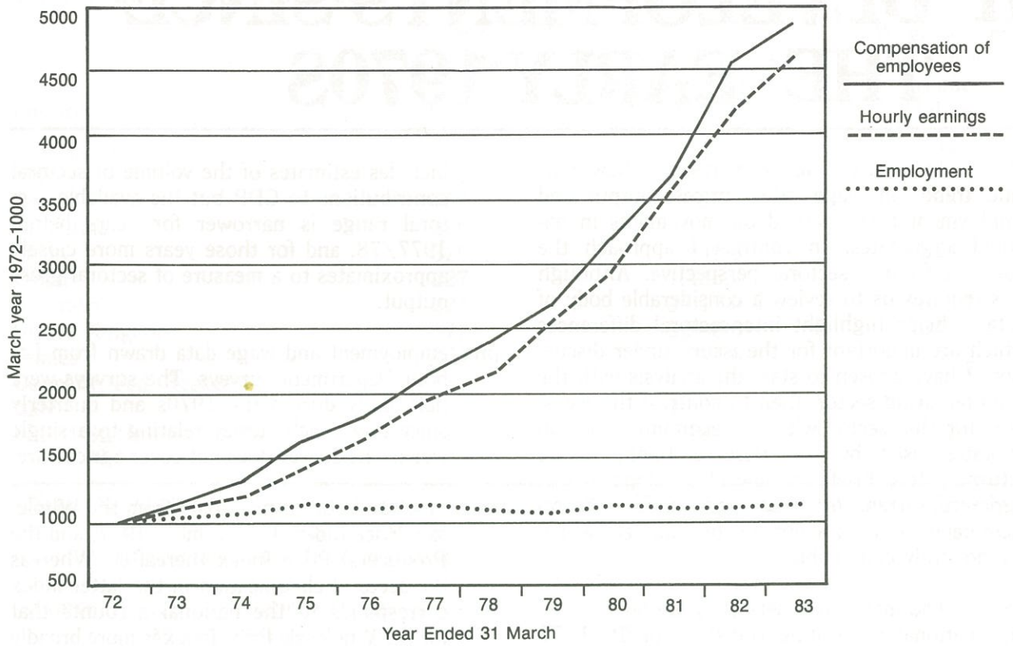


Chart 8
MANUFACTURING
Earnings employment and wage rates



Developments in the Manufacturing Sector

29. Chart 7 traces movements in the proportion of manufacturing gross output accounted for by intermediate purchases of goods and services, compensation of employees and operating surplus. Intermediate purchases show an upward trend over the period as a whole with the major movement occurring in the first half of the 1970s. Corresponding declines are evident in both employee compensation and operating surplus although there are clear differences in the way these two variables move.

30. The period since 1971/72 has been one of marked inflation. National accounting data for sectoral income categories are only available in dollars of the day and need to be disaggregated into volume and price movements.

31. Chart 8 separates the influence of changes in employment and in wage rates upon the total level of employee compensation. The component series are built up from the Labour Department's half-yearly (now quarterly) survey data for numbers employed and for average ordinary time hourly wages. The two series combined generate a series which closely parallels the national accounting figures for employee compensation.

32. Chart 8 shows that hourly wages increased more than fourfold in the period from 1971/72 to 1982/83, by a factor of 4.690 whilst employment rose only slightly. Indeed, manufacturing employment reached its peak value in 1974/75 (1.120 times that of 1971-72) and has fluctuated slightly below that level in subsequent years.

33. Deflation of national accounting data for the value of manufacturing outputs and non-factor inputs reveals a not dissimilar pattern. The data displayed in Chart 9 show that over the period 1971/72 to 1981/83 as a whole manufacturing output and input prices rose more than four-fold. Given the significant rise which we have already noted in the proportion of gross output accounted for by intermediate inputs, a parallel rise in input and output prices implies a faster increase in the volume of inputs than in the volume of outputs. Over the period as a whole the volume of inputs appears to have risen by about 41 percent and that of output by 31 percent. This divergence is largely the result of developments in 1974/75 and 1975/76 and may be more apparent than real. It could reflect in part a failure of the input price index to take full account of energy induced price rises.

Chart 9
MANUFACTURING
Input and output price indices

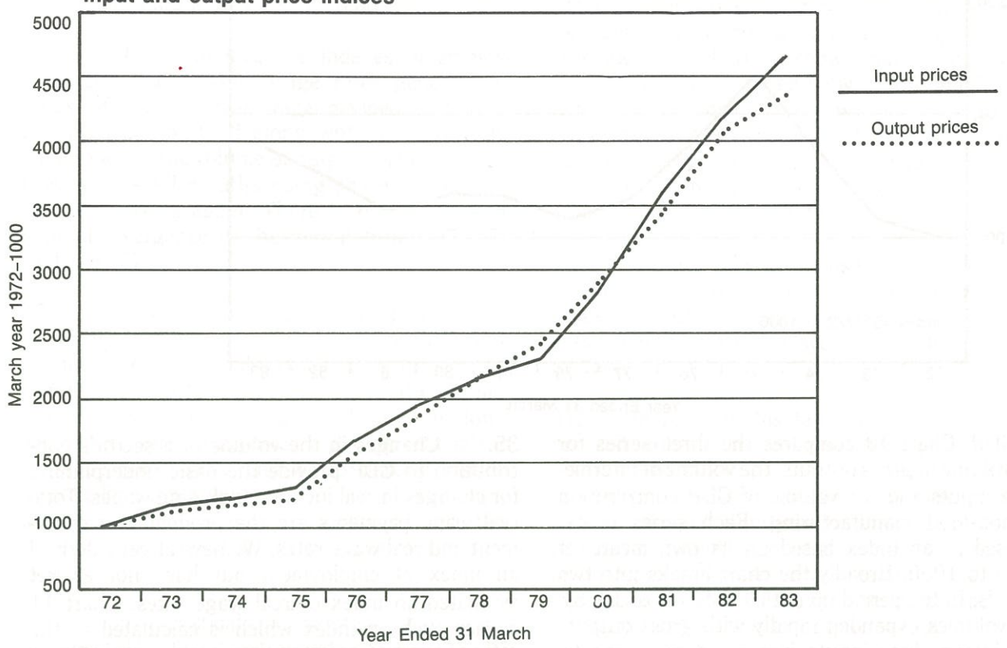
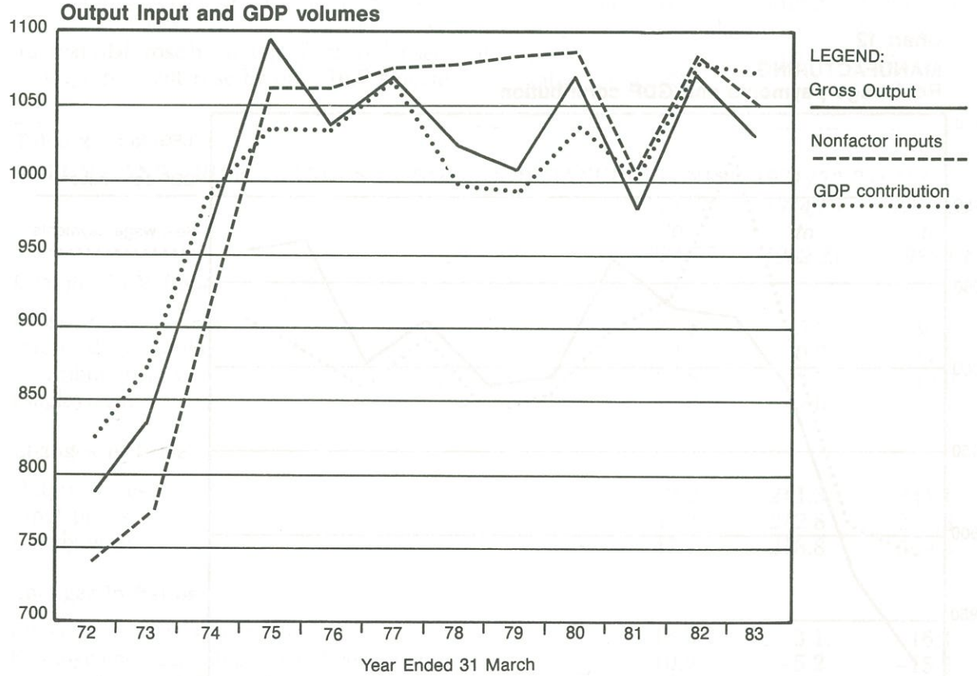


Chart 10
MANUFACTURING
Output Input and GDP volumes

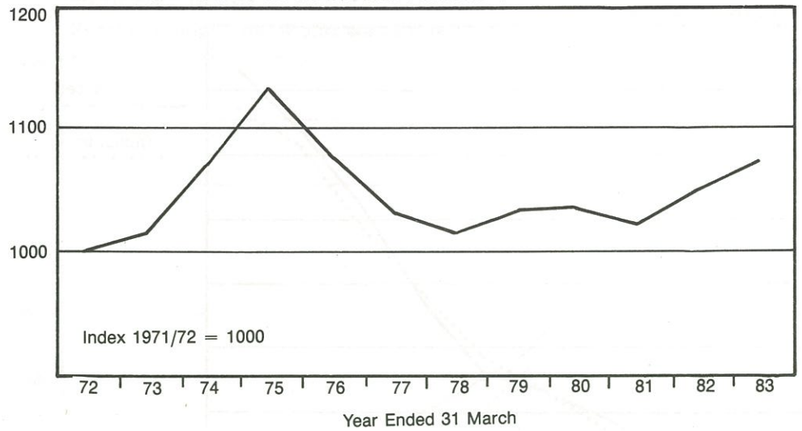


34. A rise in the ratio of real inputs to outputs implies a correspondingly lower rate of growth in the volume of factor inputs, that is, in the real value of the sector's contribution to GDP. This tendency is confirmed, to a degree, by the official indices for the volume of sectoral contributions

Inset 5

Chart 11

REAL WAGE RATES IN MANUFACTURING

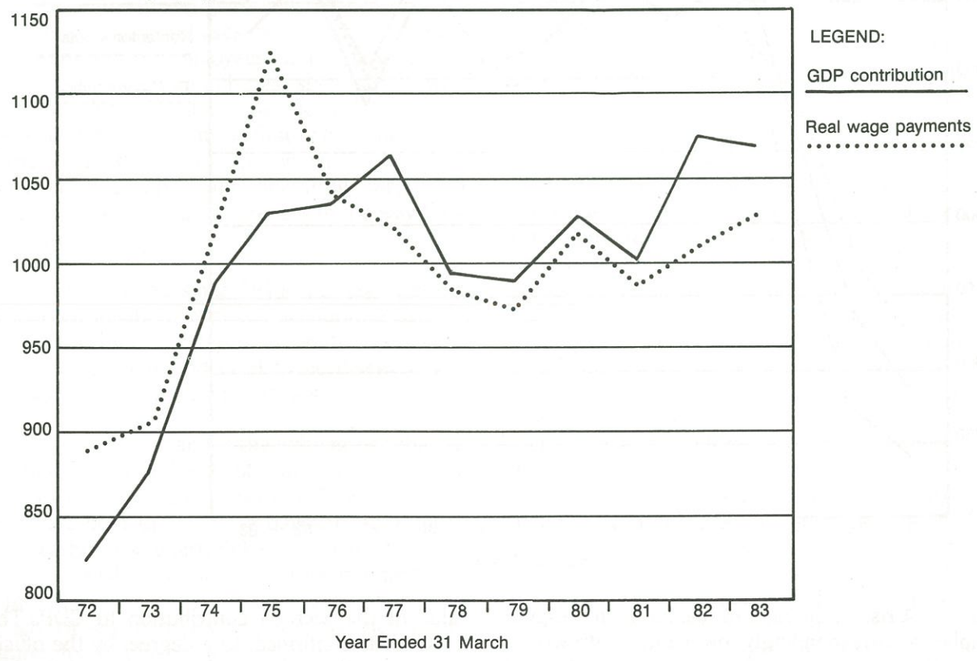


to GDP. Chart 10 compares the three series for the volume of gross outputs, the volume of intermediate inputs and the volume of GDP contribution in non-food manufacturing. Each series is expressed as an index based on its own mean set equal to 1000. Broadly the chart breaks into two periods. In the period up until 1974/75, or 1975/76, volumes expanded rapidly with gross outputs and intermediate inputs increasing more rapidly than factor inputs. In the period since the mid-seventies all three series show minor fluctuations around a static trend.

35. Changes in the volume of a sector's contribution to GDP provide the basic underpinning for changes in real incomes including wages. Total real wage payments are the product of employment and real wage rates. We have already derived an index of employment but have not as yet estimated an index of real wage rates. Chart 11 carries such an index which is calculated as the ratio of average ordinary time hourly earnings (for males and females combined) to the index of manufacturing output prices. On this measure real product wage rates rose sharply to a peak value

Chart 12

MANUFACTURING
Real wage payments and GDP contribution



in 1974/75, then fell back equally sharply to a trough in 1977/78 since when they have fluctuated around a slowly rising trend.

36. When combined the indexes of employment and real product wage rates generate an index of sectoral real wage payments. This is displayed in Chart 12 along with the earlier derived index of the volume of output. In broad terms they trace similar paths rising sharply, then falling, then rising again. There is however a substantial divergence in the period from 1974/75 to 1976/77.

37. During this period, real wage payments fell by 9.5 percent, whilst real GDP contribution, as measured by the old official index, rose by 2.7 percent. This latter result may be a little anomalous inasmuch as our earlier deflated national accounting series suggested a 2.7 percent fall in gross output volume and a 1.6 percent rise in intermediate input volumes. Together these imply a 9.5 percent decrease in GDP contribution which parallels the estimated shift in real wage payments.

38. This statistical uncertainty is of some importance. The divergent movement in 1975/77 was substantial and, if real, was clearly an important event. It also has a significant impact on the overall trend of the two series and is sufficient to account for such divergence as there was between 1971/72 and 1982/83. Over the full period sectoral real GDP rose by 30.0 percent whilst sectoral real wage payment rose by only 16.7 percent.

39. The preceding figures suggest that there was some tendency for a fall in the share of real wage payments over the period reviewed. National accounting data provide another perspective on this question. Chart 13 shows that compensation of employees has ranged between 64 and 73 percent of the sum of compensation of employees plus operating surpluses in the manufacturing sector. The figures contain some suggestion of a falling trend in this ratio, but the overall impression is one of relative stability.

40. We are now in a position to take stock of the data surveyed and to relate them to the types of effect discussed in the first part of this essay. The data are displayed in the three blocks of Table 2.

41. In reading this table it is convenient to proceed column by column. The period from 1971/72 to 1974/75 was one of strong growth in all output measures. Employment increased less rapidly but still significantly. The faster rate of growth in output than in employment permitted an increase in real incomes including real wage incomes and this is reflected in the faster increase in hourly wages than in output or input prices.

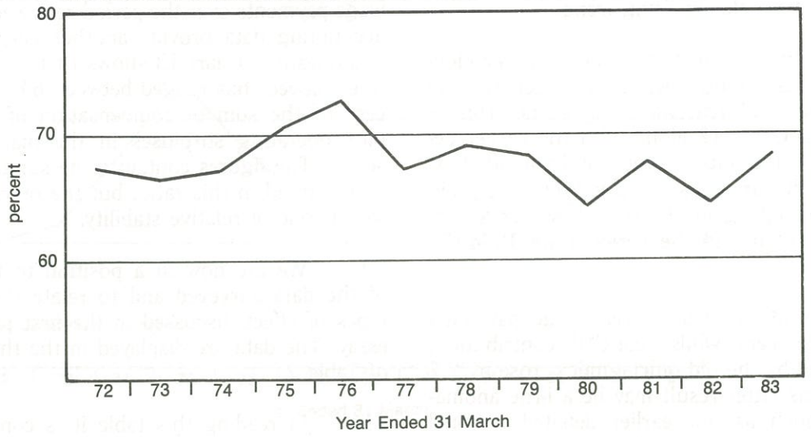
42. The period from 1974/75 to 1982/83 was markedly different. Gross output, intermediate inputs and GDP contributions changed little. Employment fell slightly. GDP contribution per person employed rose slightly whilst real wage rates fell slightly.

Table 2
VOLUME AND PRICE CHANGES IN NON-FOOD MANUFACTURING 1971/72 TO 1981/82

	1971/72 to 1974/75	*1974/75 to 1982/83*	*1971/72 to 1982/83*
Changes in Volume			
Gross output	37.8	−5.0	30.8
Intermediate inputs	42.1	−0.8	41.1
Contribution to GDP	25.8	3.3	30.0
Employment	12.0	−2.0	9.8
Changes in Price			
Output prices	29.2	241.3	341.1
Input prices	35.2	242.8	363.3
Hourly wages	47.1	218.8	369.0
Changes in Ratios			
Employment/gross output	−18.7	3.1	−16.1
Employment/real value of GDP contribution	−10.9	−5.2	−15.5
Gross output/employment	23.0	−3.1	19.2
Real value of GDP contribution/employment	12.3	5.4	18.4
Hourly wages/output prices	13.8	−6.6	6.3

Chart 13

EMPLOYEE SHARE IN MANUFACTURING



43. The relationship between real GDP contribution per unit of employment and real wage rates deserves closer attention because it brings us close to the heart of the controversy about the role of real wages. Table 3 below repeats some of the data from Table 2 and breaks this out into a three period analysis. Focus first on the first and last columns of the last two rows of data.
In each case we have very similar rates of change in real wage rates and in output per person employed. The rise in real value of GDP contribution per unit of employment justifies and funds the rise in real wage rates. However such a rise also implies, arithmetically, a fall in the level of employment per unit of GDP contribution and comparison of this measure, as presented in the first row of the table, invites the inference that increases in real wages are negatively associated with changes in employment per unit of output. Finally we need to note that the data for 1974/75 to 1976/77 does not fit this pattern. A significant fall in real wages seems to have been associated with a fall in employment per unit of GDP contribution. As already noted, however (paragraph 37), the GDP measure for this period may be anomalous.

44. Leaving aside the central column, the first two rows of data clearly suggest a negative relationship between real wages and employment (as would flow from capital labour substitution). On the other hand, the last two lines suggest that the changes which have occurred in real wages are very much in line with changes in sectoral output per person employed and of themselves don't appear to say anything about capital labour substitution. Which view is the more correct? The short answer is that we can't tell on the basis of this information alone. It will nevertheless be useful to explore the issue a little more deeply because, as we shall see, econometric testing of relationships in this area has been focused almost entirely on these few variables.

45. The seeming contradiction revolves around the causes of the observed changes in the volume of sectoral GDP contribution per person employed. Over the years economists have characterised long-term changes in the relationship between output and employment as technical change and have used this measure as a key indicator of economic progress. This focus on a single measure may seem to invite the inference that we are looking at some relatively simple relationship. In fact, we are looking at a very complex relationship with multiple causation.

Table 3

REAL WAGES, GDP CONTRIBUTION AND EMPLOYMENT

	% Changes		
	1971/72 to 1974/75	*1974/75 to 1976/77*	*1976/77 to 1982/83*
Changes in ratio of:			
Employment/real value of GDP contribution	-10.9	-2.9	-2.3
Hourly wages/output prices	13.8	-9.2	2.8
Real value of GDP contribution/employment	12.3	3.0	2.4

46. Changes in the relationship between output volume and employment can, for example, be expected to arise from variation in any of the following factors:
(a) cyclical changes
  — increased use of existing capacity
  — changes in average hours worked (including overtime)
(b) efficiency changes
  — improved work effort and practice by employees
  — improved machine and process operation
  — improvements in work flow and scheduling
  — other improvements in management
(c) structural changes in factor use
  — adoption of more capital intensive techniques
  — reduced number of work stations on existing lines
  — installation of new lines with fewer work stations.

47. Variations in the relationship between output volume and employment will normally reflect some combination of such influences. They may result purely from cyclical and efficiency changes which permit an increase in real wages but carry no implication of capital-labour substitution. Alternatively, they may result purely from capital-labour substitution and carry no implications about sustainable changes in real wages. In either case however the indices will change in the direction indicated.

48. On these data we cannot statistically establish to what extent these different forces have been operating. Impressionistically one could argue on the basis of the data reviewed that all elements are likely to be present to some degree but that variations in demand levels are probably sufficient to explain most of the changes in the period under review. The strong expansion of output in the early period of high demand is sufficient to have created pressure on existing capacity, to have stimulated the search for improved efficiency and to have induced investment to support higher production levels — such investment may well have embodied more capital intensive techniques. It seems however unlikely that during that period of pressure one would have seen capital labour substitution in the sense of reduced manning of existing production lines.

49. In contrast in the ensuing seven slack years employment fell slightly, GDP contribution rose slightly and real wages fell. Gross output also fell and of itself this provides a close if not a sufficient explanation of the slight reduction in employment which occurred over this period.

50. On my reading the data which we have reviewed suggests:
(a) that observed changes in output are sufficient to explain most of the observed changes in employment;
(b) that there has been little change in factor shares in the sector;
(c) that over the period as a whole real wage rates have risen very slightly — the increase which did occur was concentrated in the years 1974/75 and real wage rates have followed a falling trend since then;
(d) that the overall increase in real wage rates has been less than that in sectoral output per person.

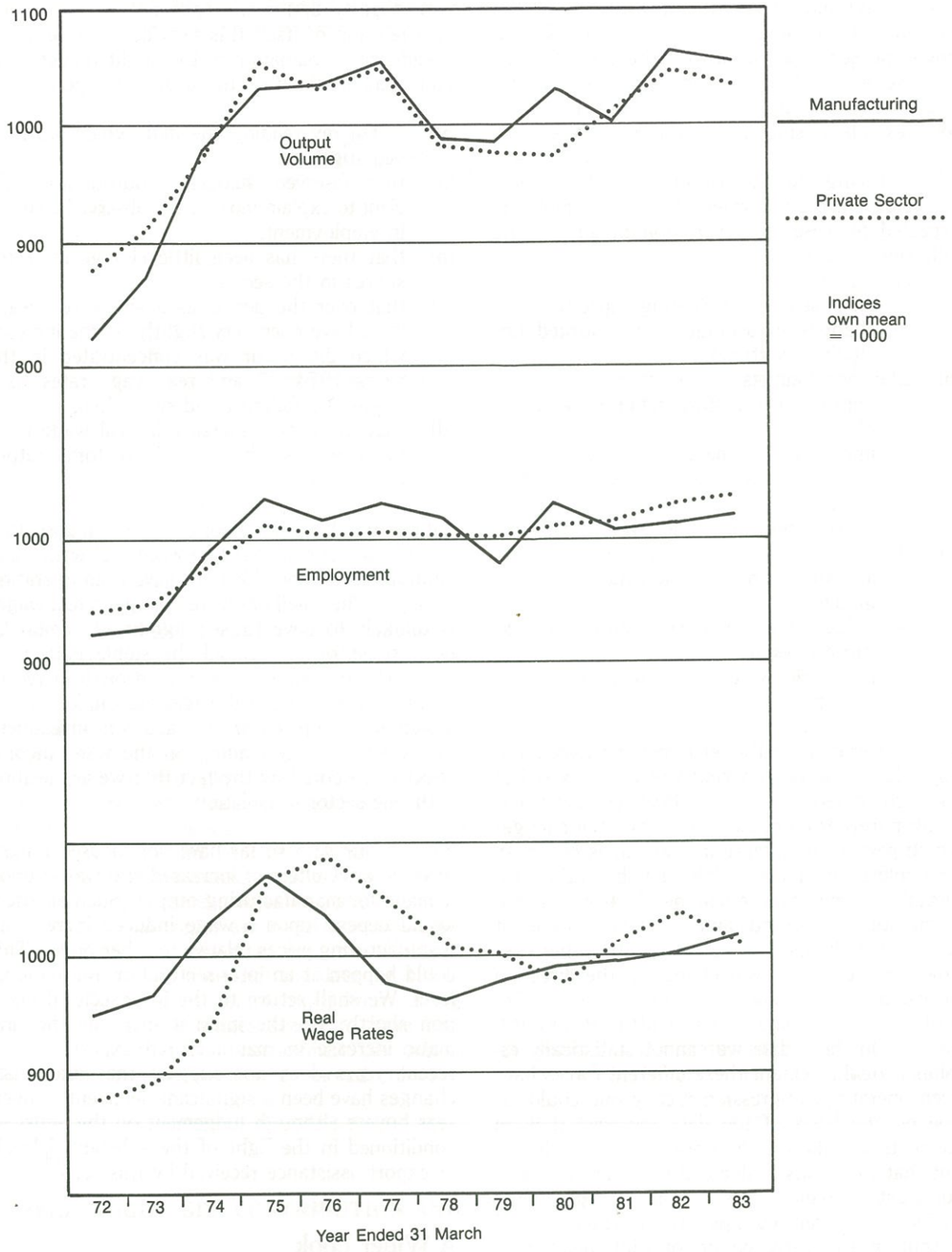
Taken together these conclusions suggest that two of our four linkages between real wages and employment are not likely to have been operating strongly. The small observed change in real wages is unlikely to have caused significant capital labour substitution. Second the stable pattern of factor shares plus static output growth in recent years suggests that real wages are unlikely to be a significant explanator of changes in investment in the sector. Any reading on the wage income effect is obscured by the fact that we are dealing with one sector in isolation.

51. Our data so far have not focused on the possible price effect of increased real wages upon demand for manufacturing output. Such an effect would depend upon a wage induced increase in manufacturing prices relative to other prices. This could happen at an inter-sectoral or international level. We shall return to the inter-sectoral question shortly. On the international side the dramatic increase in manufactured exports during recent years does not suggest that real wage changes have been a significant deterrent to overseas buyers although judgement on this must be conditioned in the light of the substantial levels of export assistance received by this sector.

A Wider Look

52. The central fact that emerges from our review of the manufacturing sector is that real product wage rates have in fact increased only slightly and thus appear as an unlikely explanation of employment related changes in the sector. At the economy wide level such explanations have been strongly argued. It is therefore necessary to extend our view to see whether the trends we have reviewed in manufacturing are repeated at

Chart 14
COMPARISON OF TRENDS



national level. For this purpose it is convenient to adopt the quarterly data base developed by the Reserve Bank and used by it in econometric work which we shall subsequently review. The data which relates to the private sector as a whole has been aggregated to March years. The three central indices — those for output, employment and real wage rates are displayed in Chart 14. (The Reserve Bank measures the real wage rate as the ratio of wage payments per private sector employee to the implicit GDP price deflator.)

53. The data for the private sector show:

For output a similar pattern to that in manufacturing but a slower increase over the period as a whole.

For employment a slower initial rise followed by a slightly rising trend at a time when employment in manufacturing was tending to fall.

Table 4

ANNUAL WAGE AND PRICE CHANGES % PER ANNUM

	Wages		*Prices*	
	Manufacturing	*Private Sector*	*Manufacturing*	*Private Sector*
1972/73	9.2	10.7	7.7	9.7
1973/74	14.7	14.4	8.3	8.8
1974/75	17.5	17.1	10.8	2.2
1975/76	14.7	14.0	20.9	12.9
1976/77	15.1	11.9	20.3	18.7
1977/78	13.8	13.1	16.5	16.5
1978/79	14.6	14.7	11.8	14.7
1979/80	16.9	15.7	16.3	19.0
1980/81	19.7	18.6	21.7	12.7
1981/82	18.7	20.8	15.9	15.0

For real wage rates a marked divergence in overall trend and sharp divergences in several years, particularly 1974/75 and 1975/76.

54. It is clear from Chart 14 that the most significant difference between the two data sets relates to the real wage. In turn it transpires that within this index the significant differences arise between the two output price indexes used for deflating earnings. The relevant series are summarised in Table 4 in which I have highlighted the major divergences.

55. The major differences revealed by this table relate to output prices in 1974/75 and 1975/76. In these two consecutive years prices received by the manufacturing sector rose, each year, some 8 percentage points faster than did the GDP deflator. Over the two years manufacturing output prices rose by 33.9 percent while the GDP deflator rose by 15.4 percent. Over this same period wage rates rose, depending on measure, by some 33 to 35 percent. Implicitly real wage rates rose by 0.6 percent in manufacturing but by 15.7 percent in the private sector as a whole between the two years 1974/75 to 1975/76.

Table 5

PRICE MOVEMENTS 1973/74 — 1975/76 % CHANGE

Manufacturing (excluding primary produce processing)		**Sector Outputs**	
Outputs	33.9	Farming	-15.6
Inputs		Other primary	30.3
Imported	51.8	Primary produce processing	0.9
Other manufacturing	35.1	Other manufacturing	33.9
Other industries	-5.5	Public utilities	8.7
All inputs	32.0	All domestic industry	10.0
Economy			
GDP deflator	15.4		
All sector inputs			
Imported	53.6		
Home produced	10.0		
Total	20.1		
All sector outputs	10.0		

56. The divergent movements in manufacturing and private sector real wage rates from the early 1970s thus turn out to depend largely on movements in output prices during the two years to 1975/76. The period was one of considerable strain with significant lifts in import prices and volatile movements in export prices which peaked in the March quarter of 1974 and then fell dramatically. These changes caused significant variation in sectoral price movements which go a long way to explaining the observed differences between manufacturing and GDP price indices. These sectoral price movements deserve a closer look and are summarised in Table 5.

57. A number of points stand out fairly clearly from this table:

(a) For the economy as a whole, the price of "imported" inputs rose more rapidly than that of other inputs.

(b) In the manufacturing sector output prices kept pace with input prices.

(c) For the economy as a whole, there was close correspondence between movements in home-produced input prices, and all sector output prices. The GDP deflator moved similarly.

(d) For the economy as a whole output prices rose significantly more slowly than did input prices.

(e) The rate of increase in manufacturing output prices was noticeably higher than that in other sectors apart from other primary industries.

58. In terms of our central concern these factors suggest two main inferences. First, the manufacturing sector can be seen as operating a cost-plus pricing mode during this period. Of itself this is not surprising and is consistent with the results of many surveys of manufacturing pricing policy. Seen from within this frame and in the light of the earlier noted nil output growth the pattern of wage payments by the sector does not seem particularly noteworthy.

59. Clearly however this cannot be the end of the story. Our second inference has to be that the divergent movements between manufacturing and other sectors' output prices which occurred during this period and in broad terms persisted through the remainder of our review period are likely to have had some important effects. The higher relative prices for manufactured products may well have impacted upon demand for manufacturing output. As noted earlier (paragraph 13), such price effects on output demand may be expected because of consequential reductions in real purchasing power and because of the possibility of some product substitution.

60. More generally the pattern of developments which we have been reviewing places a warning against denominating any policy discussion solely in terms of wage rates. What we have been looking at is the interaction of a whole range of variables in a period which saw dramatic changes in our terms of trade. The review suggests that during this period manufacturing wage rates moved very much in line with rates sustainable in terms of price and output changes in the sector. These movements were consistent with a fairly stable wage share in the sector. At the same time divergent sectoral price movements implied a relative increase in manufacturing prices which is likely to have reinforced the economy-wide tendency to stagnation as it impacted upon manufacturing.

Developments in Agriculture, Transport, Trade and Finance

61. Similar analyses to that for the manufacturing sector have been completed for agriculture, transport, trade and finance. These reveal some distinctive patterns. The following summary is kept brief with attention being focussed on major points of interest. The usual caveat on data is in order — the major shortcomings being in the area of input and output price indices for transport, trade and finance in years to 1978; the absence of annual employment data for agriculture; the importance of self-employment in a number of sectors (particularly agriculture but also trade); and some reservations about the accuracy of national accounting data for sectoral output in real terms.

Agriculture

62. The agricultural sector has been subject to major strain during the period under review. The period opened with buoyant output prices followed by the terms of trade collapse in 1974/75. The sector's contribution to GDP has shown strong cyclical movement around an underlying trend rate of growth in volume of 2.1 percent per annum. Like other sectors agriculture has had to cope with massive general inflation, but in this sector the pattern of change was quite uneven as can be seen from Table 6.

63. Over the period as a whole agricultural output prices rose by 291 percent. Input prices rose even faster by 367 percent, whilst wage rates rose by some 483 percent (significantly faster than in any other sector). The increase in input prices was of greater relative importance than the rise in wage rates. At the beginning of our review period intermediate inputs accounted for 50.3 per-

Table 6

PRICE CHANGES IN AGRICULTURE AND MANUFACTURING
(Percentage Change from 1971/72 to 1981/83)

	Agriculture	*Manufacturing*
Output prices	291	341
Input prices	367	363
Wage rates	483	369

cent of gross output but by 1983 this figure had increased to 59.8. Employee compensation also increased as a percentage of gross output but the rise was less dramatic. The percentage share lifted from 8.0 percent in 1971/72 to a peak of 10.8 in 1974/75 and then fell back to 9.4 percent of gross output in 1983. The sharp rise in the early period probably reflects a lagged adjustment of wage rates in response to the rapid increase in output prices in earlier years.

64. Over the review period operating surplus fluctuated around a slowly falling trend. The fall would have been markedly sharper had it not been for substantial output price subsidies in the early 1980s.

65. The rapid rise in wage rates relative to agricultural output prices implied a sharp rise in real product wage rates in agriculture, at rates noticeably faster than in manufacturing or in the private sector as a whole (as measured by the Reserve Bank). As Table 7 shows, real wages in agriculture rose by 48.9 percent between 1971/72 and 1982/83 as compared with a 6.3 percent increase in agriculture and a 13.6 percent increase in the private sector.

67. An increase in real wage rates of 48.9 percent provides a strong incentive to economise on the use of labour. Although we do not have annual labour force estimates for the agricultural sector the Census enables some assessment of changes in employment. Table 8 records data for self-employed persons and wage and salary earners in the three census years 1971, 1976 and 1981. The figures relate to agriculture, agricultural services and hunting.

67. The figures show there was a drop in the number of employees between 1971 and 1976 and that this contrasted with a small rise in the number of self-employed persons. This movement is certainly consistent with real wage induced labour shedding although the implicit elasticity is low. Subsequently however the number of employees in the sector moved up quite sharply despite the continued upward trend in real wage rates. Taking the decade as a whole the number of employees increased at about the same rate as did the number of self-employed persons. Overall, there is little here to suggest any significant employment response to changes in real wage rates or indeed to the adverse developments in the sectors terms of trade. Over the period as a whole agricultural output increased and diversified (particularly into horticulture). Together these changes were sufficient to require some increase in sectoral employment.

Table 7

CHANGES IN REAL PRODUCT WAGE RATES
(Percentage changes)

March Years	*Agriculture*	*Manufacturing*	*Private Sector*
1971/72–1974/75	36.3	13.8	22.6
1974/75–1982/83	9.3	–6.6	–7.4
1971/72–1982/83	48.9	6.3	13.6

Table 8

AGRICULTURAL EMPLOYMENT

	1971	*% Change*	*1976*	*% Change*	*1981*
Self-employed persons	65,104	2.0	66,379	1.6	67,443
Wage & salary earners	53,041	–8.2	48,673	13.8	55,395
Total	118,145	–2.6	115,052	6.8	122,838

Transport

68. As a major energy user the transport sector was particularly affected by the two oil shocks of the 1970s. Intermediate inputs rose from 40.3 percent of gross output in 1971/72 to around 49 percent in the latter years of the decade and then lifted again to just on 56 percent by 1982/83. The impact of the first oil shock was compounded by a policy decision to freeze output prices for state-owned enterprises. Air transport rates remained unchanged from the June quarter of 1971 to the June quarter of 1974 whilst those for rail rested on a plateau from the beginning of 1972 to the end of 1975. Demand for transport services rose strongly in the boom years at the beginning of our review period, then fell back for some years, before resuming moderate growth.

69. The price experience of the transport sector can usefully be compared with those already noted for agriculture and manufacturing, as in Table 9. Two features stand out. First, the adverse movement in input prices relative to output prices, was much more severe in transport than in agriculture. Second, the increase in nominal wage rates in transport was similar to that in manufacturing.

70. Over the period as a whole the real wage rate increase in transport was 14.1 percent as compared with only 6.3 percent in manufacturing and 13.6 percent in the private sector (Reserve Bank data). The rate rose sharply by 21.1 percent in 1971/72-1974/75 but fell by 5.8 percent in 1974/75-1982/83.

71. Alone amongst the sectors reviewed here transport recorded falling employment over the period as a whole. Employment rose by 4.5 percent in the years to 1974/75 but then fell back by 9.8 percent in the remaining years to 1982/83. The period as a whole saw significant increases in output per person employed which rose at an average annual compound rate of 2.4 percent between 1971/72 and 1982/83. There is clearly a *prima facie* case for suggesting that in this sector some degree of capital labour substitution did occur during the period under review. This change may also reflect new investments designed to achieve fuel economy and arising from inter-modal change.

Trade and Finance

72. Data for the trade and finance sectors can usefully be considered together. As can be seen from Table 10 real wage movements in trade and finance were intermediate between those for manufacturing and the private sector as a whole. They showed the now familiar pattern of a fairly sharp rise in the years to 1974/75 and a fall thereafter.

73. The more surprising developments are reported in the bottom part of the table. Employment in both trade and finance increased over the period but the increase in the finance sector was dramatic.

74. By combining estimated increases in real wage rates and in employment we can derive estimates of total real wage payments in the two sectors. These are recorded in the second to last line of Table 10. Now compare them with changes in the real value of sectoral contributions to GDP as recorded in the following line. On the face of it aggregate real wage payments increased about twice as fast as sectoral GDP contributions. Taken at face value the figures in the last three rows are certainly not suggestive of any significant substitution of capital for labour and indeed those for finance suggest, if anything, an increased labour intensity. In this connection it is interesting to note that in finance the employee share of factor income rose from 38.7 percent in 1972 to 48 percent in 1982/83.

75. However, one should not place much weight on conclusions suggested by these data. Frankly the figures do not gel, particularly those relating to employment and GDP contributions. The figures for the trade sector suggest parallel movements whilst those for finance suggest a significantly faster increase in employment than in real output. Remembering that both sectors have been the centre of major technical and institutional innovation during the period under review, it seems *prima facie* unlikely that output per person has been static or declining. More probably the GDP figures tend to understate the growth which has occurred. However that may be, we can draw one fairly clear conclusion. This is that the finance sector recorded a very substantial increase in employment over a period in which real wage rates rose significantly and in which rapid technical change of an ostensibly labour substituting kind was occurring.

Table 9

PRICE CHANGES IN THREE SECTORS
(Percentage Change from 1971/72 to 1982/83)

	Agriculture	*Manufacturing*	*Transport*
Output prices	291	341	301
Input prices	367	363	530
Wage rates	483	369	358

Table 10

TRADE AND FINANCE
(Percentage Changes)

March Years	*Manufacturing*	*Trade*	*Finance*	*Private Sector*
Real wage rates				
1971/72–1974/75	13.8	18.7	17.9	22.6
1974/75–1982/83	-6.6	-4.6	-7.1	-7.4
1971/72–1982/83	6.3	13.3	9.5	13.6
Employment				
1971/72–1982/83	9.8	10.9	47.5	9.7
Real wage payments				
1971/72–1982/83	16.7	25.6	61.5	24.6
Real value of GDP contribution				
1971/72–1982/83	30.0	10.8	33.2	19.9

III THE RESERVE BANK AND THE REAL WAGE

76. At this stage we need to take account of the work undertaken by the Reserve Bank on the link between real wages and employment. In a review article on this work, the Bank argued that, "Overall the body of work suggests that overvalued real wage rates are a major cause of New Zealand's current unemployment", and went on to assert that "The solution to New Zealand's unemployment problem therefore appears largely to depend on achieving some reduction in real wages so as to induce an increase in employment both directly owing to the decreased price of labour relative to capital and output prices, and indirectly, by encouraging higher profits and output growth[2]".

77. This identification of overvalued real wage rates as a major cause of unemployment and the prescription of a reduction in the prices of labour relative to capital has provoked strong debate within the economics profession. At the professional level the immediate cause is analytic. Are overvalued real wages "a major cause" of current unemployment? The heat in the debate arises partly because of differing theoretical viewpoints. The Reserve Bank's results are consistent with neoclassical perceptions of relatively easy substitution of labour for capital along a production function in response to price changes. In contrast, Keynesians, while not disputing the long-run relevance of real wage levels, tend to see the technical possibilities of capital labour substitution as much more restricted in the short run and are thus sceptical of claims which seem to imply rapid volume responses to price changes in the labour market.

78. In reviewing this debate I begin by focusing on four Reserve Bank documents. These are the *Bulletin* article already quoted, Arthur Grimes' July 1981 paper, *A Model of the New Zealand Labour Market*[3], the same author's June 1981 discussion paper, *Employment and Other Private Investment*[4], and the January 1983 research paper, edited by Grimes and titled *A Revised Reserve Bank Core Model with SNA Data*[5]. The immediately relevant parts of these publications are reviewed sequentially in the following paragraphs.

Reserve Bank Results

79. In *A Model of the New Zealand Labour Market*, Grimes developed a nine equation quarterly econometric model of the labour market involving equations for migration flows, the demand for and supply of labour, and private sector wage rates. The model was then linked to the Reserve Bank's 27 equation core model and used to simulate the effect of various policy packages upon employment and unemployment. As Grimes noted, "Without the use of an economy-wide model we may be led to misunderstand the ultimate effects of policy changes on the labour market. For instance, the labour demand equation suggests that a wage increase will, *ceteris paribus*, decrease employment but it is possible, once the feedback effect on the stocks to sales ratio is taken into account within the full model, that employment may actually increase. Hence we now have a tool that describes the demand and supply sides of the labour market together with a description of their interrelationships with the remaining sectors of the economy."

80. In one of the experiments using this model Grimes explored the consequences of a reduction in nominal wages throughout the experimental period to 98 percent of their historical level.

81. The model run suggested that over a five-year period a two percent reduction in nominal wages would be associated with a decrease in real wages of approximately 1.6 percent and would lead to an increase both in employment and in the number of people seeking work. The former effect would predominate thus leading to a fall in unemployment. The magnitude of the suggested changes was:

	Number	*% of average control labour force*
Increase in employment	2,579	0.30
Increase in labour supply	1,643	0.19
Change in unemployment	–936	–0.11
Change in nominal wages		–2.0
Change in real wages		–1.6

82. On the basis of these results Grimes concluded *"The principal cause of the increased employment is the reduction in wages which leads to a more intensive production process and to an increase in private sector output. As the employment differential reaches a trough in the fourth year, however, unemployment in the experiment is only barely lower than control levels owing to the increased labour force consequent on the decline in real take home wages. Except in the short term, therefore, it would seem that a wage reduction may not be an entirely suitable policy for controlling umemployment, even though it may be suitable as a measure to boost employment."*
(Grimes, July 1981, p.18).

83. Grimes' *Employment and Other Private Investment* is essentially an internal working paper reporting the derivation of revised employment and private investment equations for incorporation in the Reserve Bank's Core Model. The paper is brief and technical.

84. The regression equation for employment is estimated in log form from quarterly data for the period from 1962 to 1979 and can be expressed as:

EMPLOYMENT = 0.81 OUTPUT — 0.61 REAL WAGES
+ 0.17 REAL ENTREPRENEURIAL INCOMES + 3.54
(all variables in log form)

It is characteristic of equations expressed in log form that the estimated coefficients provide an approximate measure of the elasticity implicit in the relationships between the dependent variable (in our case EMPLOYMENT) and the various independent variables on the right-hand side of the equation. The above equation thus suggests that a one percent increase in OUTPUT will lead to a 0.81 percent increase in employment. Similarly a one percent increase in REAL WAGES can be expected to lead to a 0.61 percent fall in employment.

85. In passing we should note that the relationship between real wages and employment suggested by the equation is very much stronger than suggested in *A Model of the New Zealand Labour Market*. This reflects the fundamentally different specification of the employment equation from that used in the version of the core model. In addition, we are now dealing with a single equation rather than with a simulated run of the augmented core model.

86. The elasticity estimates reported above underlie the major quantitative judgements made in the *Bulletin* article "Unemployment: Causes and Policy Options" from which the following rather lengthy quotation is drawn:

"Increased real wages are likely to have contributed . . . to the decreased output via two mechanisms. The first of these is the effect that increased real wages have in increasing the wage share . . . and thus reducing the profit share, which in turn induces an employment and output decline. The second, more direct, effect is due to the wage rate being the price of labour which is compared by the firm to the cost of alternative inputs (e.g. capital) and to the price received for output. If the wage rate rises relative to these other prices, firms will substitute capital for labour, or if the level of production is no longer economically viable . . . employment and production will decrease to the level where production is again profitable.

"Real wages as a cost to the employer . . . increased by 30 percent between 1969 and 1974. The level has decreased thereafter, but the 1980 real wage level remained 24 percent higher than in 1969. Productivity, meanwhile, had grown by only 10 percent in the intervening period.

"The effect of this growth in real wages has been to reduce the demand for labour. The econometric evidence suggests that if 1980 real wages were only 10 percent higher than their 1969 level (i.e. if real wage growth had just kept pace with productivity growth throughout the 1970s) then employment would have been 8.5 percent higher in 1980 than was in fact the case so that 54,000 more people would have been employed. This total exceeds the registered unemployed total for 1980 by 7,400 and demonstrates the vital role that real wage changes have probably played in determining recent levels of unemployment".

(*Reserve Bank Bulletin*, June 1982, p.200)

87. The Bank's suggestion that 54,000 more people would have been employed had wage growth kept pace with productivity growth during the 1970s appears to have been based on the following series of calculations.

Estimated real wage growth from 1969 to 1980	24 percent
Less growth in productivity	10 percent
Equals growth in wages beyond productivity justified rate	14 percent
Multiplied by employment elasticity of real wage (as in paragraph 86 above)	0.61

Equals percentage effect on employment of reducing real wage by 14 percent	8.54 percent
Multiplied by actual private sector employment in 1980 of	630,000
Equals estimated extra number of people that would have been employed	54,000

The econometric evidence upon which the Bank builds its estimate of 54,000 extra employment is thus confined to the elasticity estimate derived from the employment equation noted in paragraph 186 and is not based on any comprehensive model simulation.

88. The title of the third base document *A Revised Reserve Bank Core Model with SNA Data* is sufficiently self-explanatory. From our perspective the most important change is that the re-estimated Core Model includes the Grimes' employment equation discussed in the preceding paragraphs. Because of the estimated substantial negative elasticity between real wages and employment, inclusion of the new equation in the re-estimated model can be expected to have a marked effect upon employment simulations generated with the model.

89. The newly re-estimated model has been used to simulate a number of policy issues, including the responsiveness of other economic variables to an exogenously imposed increase in private sector wage rates. This experiment suggested that employment could, over a ten-year period, be expected to fall by up to a maximum of 0.24 percent with an average response of about -0.138 percent to a one percent increase in private sector wage payments. In the first five years of the simulation the average response was -0.196. In this experiment the wage variable is expressed in nominal rather than real terms and is thus not comparable with the quoted results from earlier papers. Data subsequently supplied by Arthur Grimes shows that for the ten year period the real wage elasticity of employment averaged -0.44; for the first five years the value was -0.55.

90. We can now compare the results presented in the three Reserve Bank papers. These are as follows:

Employment changes as estimated in:	*Initiating Change in Nominal Wages*	*Real Wages*
Model of NZ Labour Market*	-0.15	-0.19
Employment and Investment	n.a.	-0.61
Revised Core Model**	-0.14	-0.44

Notes: * Estimated from data in paragraph 81.
** Ten-year data from paragraph 81.

91. As can be seen the estimated elasticities vary markedly although all formulations do suggest a negative relationship between wage increases and employment. The differences are, however, substantial and sufficient to warn against the dangers of placing undue emphasis on any single result. The differences can be highlighted with reference to two somewhat different conclusions drawn by the Reserve Bank.

"Except in the short term therefore, it would seem that a wage reduction may not be an entirely suitable policy for controlling unemployment even though it may be suitable as a measure to boost employment ... Certainly a wage reduction alone cannot be seen as the sinecure it is so often made out to be ..." (Model of New Zealand Labour Market, July 1981, p.18)

"Overall this body of research suggests that overvalued real wage rates are a major cause of New Zealand's current unemployment ... The solution to New Zealand's unemployment problem therefore appears largely to depend on achieving some reduction in real wages so as to induce an increase in employment ..." (Reserve Bank Bulletin, June 1982, p.203)

Reactions to the Reserve Bank

92. The Reserve Bank Bulletin article has provoked a significant response. Four articles in particular deserve noting. These are the papers by Peter Harris and by Geoff Bertram and Graeme Wells to seminars organised by the Industrial Relations Centre and the Centre for Continuing Education at Victoria University and Eric Haywood and Chris Moore's paper in New Zealand Economic Papers[6,7,8], along with a reply from Arthur Grimes[9].

93. The Harris paper mounts a fairly full-blooded attack from which perhaps three points deserve to be highlighted. First Harris argues that the Reserve Bank's conclusions flow inevitably from its own theoretical presumptions rather than the data. On this point we need to distinguish between theoretical consistency and econometric testing. It is true that the theoretical structure underpinning Grimes' central equation suggests that other things being equal, a negative relationship exists between wage rates and employment. The immediate issues are however whether econometric testing tends to support that presumption and if so whether the inferences drawn are strong enough to be used in a policy frame where manifestly everything else is not equal.

94. Secondly, Harris highlights the interesting fact that the data underlying the Grimes' equation can be broken into two time periods 1969-1976 and 1976-1979. During the first real wages and employment rose, during the latter both fell. Clearly this seems to contradict the suggestion of a negative connection between real wages and employment. As we shall see shortly this point is taken up by Bertram and Wells.

95. Finally, and centrally, Harris argues that an incomes policy cannot be built around the simple presumption of a negative linkage between real wages and employment but must be seen as contingent upon wider policies which address three fundamental questions:

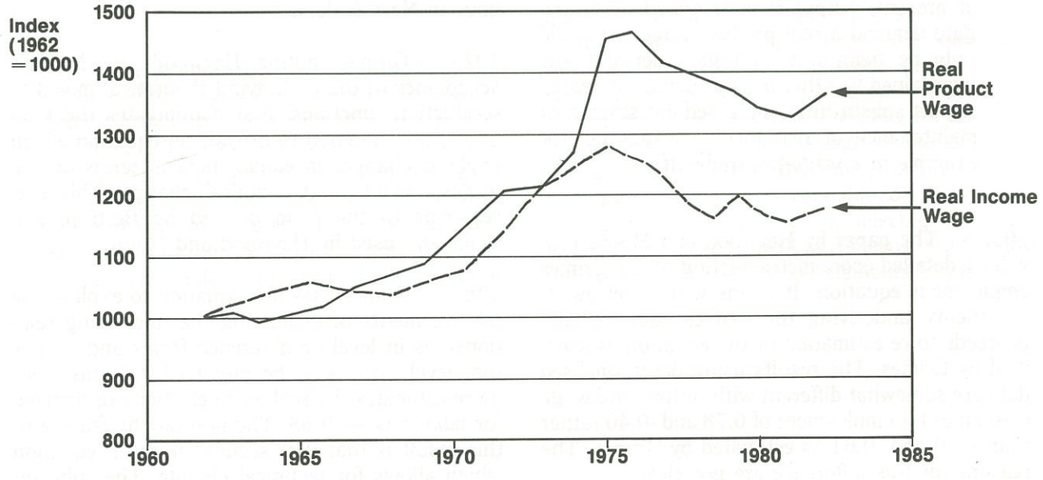
1. *"How can the economy be protected from the worst aspects of instability and decline in the international economy?*
2. *What sorts of investments are required in specific productive projects in order to achieve the necessary degree of protection from the worst effects of the developing international slump?*
3. *How are we going to make sure that these investments do take place against a correct time scale, in the right places, using the right technology and capable of being varied in a flexible way in the light of the emerging economic conditions?"*

96. The Bertram and Wells paper provides the most comprehensive review of the issue to date and repays several readings. Some of the more noteworthy points are highlighted below.

97. Bertram and Wells spend some time developing the point (which we have noted earlier) that there is more than one measure of the real wage, depending on the price deflator used. In particular in discussing the textbook model of intersecting supply and demand schedules they contrast the "real product wage" (hourly earnings deflated by the GDP deflator, i.e. approximately the Reserve Bank measure) with the "real income wage" (hourly earnings less taxes deflated by the Consumer Price Index). Their mapping of these two variables is reproduced in Chart 15. The highlight of this is the dramatic divergence about 1975, arising from the terms of trade shock and changes in personal income tax, a divergence which goes a long way to explain difficulties of communication on this issue experienced by government spokesmen and trade union leaders.

98. Bertram and Wells spend some time exploring the production function underlying Grimes' estimate of a -0.61 wage elasticity of demand for labour. Three points deserve comment. *First*, they show that whereas Grimes' equation explains changes in the demand for labour as a function of output, real wages and entrepreneurial incomes, the standard theory of production functions suggests that the relevant triad of explanators is output, real wages, and the rate of technical progress. This point is relevant to the Haywood and Moore paper discussed below. *Second*, they deal with Harris's two sub-period problem and show that there is not necessarily any conflict between assuming a negative wage elasticity of demand and the fact that employment increased during a period of rising real wages. The extra element is what happened to output and thus in the period 1969 to 1976 the positive influence of output on employment outweighs the negative impact of rising real wages[10]. *Third*, the authors note that calculating the effect of wages on employment simply with reference to

Chart 15
REAL PRODUCT WAGE AND REAL INCOME WAGE
(March years 1962–1982)



the wage elasticity of demand is an inadequate approach and suggest the need for economy-wide modelling to test for the empirical importance of these relationships. Referring to Australian research they suggest that there is something of a consensus that "real wages impacted on employment by inducing shifts of the labour demand function rather than by movements along a given labour demand function" (p.82). Implicit here is a judgement that in the short run, and given existing production facilities, factor substitution has not been important.

99. At this point Bertram and Wells turn to a consideration of other linkages between wage rates and employment. They adopt a theoretical focus which they characterise as Kaleckian in which the level of employment is determined by firms' estimates of the quantity of output which can be sold at administered prices. Failure to achieve expected sales will entail falls in profits which may lead to reductions in investment and employment. The money wage is determined by the relative bargaining strength of firms and unions rather than by a neo-classical invisible hand.

100. The authors successively review trends during the 1960s and 1970s in wage and profit shares, the rate of profit, the relative price of capital and labour and relative competitiveness. Bertram and Wells conclude:

(a) that a lower real wage path during the period from 1975 could have resulted in a somewhat higher level of employment than we presently have; and

(b) that a reduction in real product wages might well contribute to the recovery process if this fed through to a rise in the rate of profit or to an improvement in relative competitiveness. However, in a situation where, as at present, output is constrained by aggregate demand a real product wage cut could only be helpful if aggregate demand was maintained by other means such as increased import substitution, increased investment, or maintenance of real income wages (as for example in a wage-tax trade-off).

101. The paper by Haywood and Moore provides a detailed econometric testing of the Grimes employment equation. It opens with a review of the theory underlying the Grimes equation and proceeds to re-estimation of the equation as specified by Grimes. The results using deseasonalised data are somewhat different with output and wage elasticities for employment of 0.78 and -0.40 rather than 0.80 and -0.61 as estimated by Grimes. The reasons for this difference are not clear.

102. Haywood and Moore then proceed to test their re-estimated equation by first differencing and introduction of a time trend.

103. The logic of first differencing (focusing on annual changes in the variables rather than absolute levels) is that in theory the same coefficients should emerge provided the relationship is correctly specified. At the same time differencing is more statistically demanding. In difference form the elasticities for output and employment fall to 0.30 and -0.10 respectively.

104. In line with the point earlier noted by Bertram and Wells, Haywood and Moore next introduce a time trend variable intended to capture the effect of technical change. Estimation of the equation in this more theoretically attractive form yields elasticity estimates similar to those in the preceding paragraph, although the output elasticity estimates are even lower. The authors find these output elasticity figures are unbelievably low and suggest that they may result from data deficiencies in the Reserve Bank's data base.

105. Finally, Haywood and Moore re-estimate their equations making use of the quarterly manufacturing data for hours worked rather than the Reserve Bank's employment series. This leads to output elasticity estimates in the range of 0.55 to 0.70. Estimated elasticities for wages are all small, usually positive, and are all statistically insignificant.

106. Arthur Grimes has responded to the Haywood and Moore criticism with "A Comment and Some Further Results on the Real Wage-Employment Relationship" also published in *New Zealand Economic Papers*. Grimes criticises several aspects of Haywood and Moore's work and reports some new econometric tests in support of the view that there is a sizeable and significant elasticity of substitution between capital and labour in New Zealand.

107. Grimes, noting Haywood and Moore's acceptance of the underlying theoretical model of production functions, first manipulates the CES production function to provide an equation which explains changes in employment in terms of real wages, output, and technical change. This corresponds to the form derived by Bertram and Wells and used by Haywood and Moore.

108. Grimes uses this equation to explore the relative merits of estimating the underlying relationships in level or difference forms and argues that level form is to be preferred. On this basis he re-estimates the real wage elasticity of demand for labour as — 0.58. The noteworthy feature of this result is that it is secured from an equation which allows for technical change. The substantial difference in results between Haywood and Moore and Grimes on this point flow primarily from their different specification of technical change (as quadratic and linear trends respectively). This point deserves further econometric examination. The underlying problem is that the economists measure of technical change is calculated as a residual and is usually reported as an average rate of change over a period. This convention is mirrored by the use of a linear trend. Two problems arise. We know that the rate of technical change is volatile at the micro level, whilst our residual macro measure is flawed inasmuch as that residual will also include error elements in our overall system of measurement and estimation. In the current instance we can do no more than note that the rising then falling or static tendency in output per person during the period under review is (for whatever reason) possibly more consistent with a quadratic than with a linear trend.

109. The next question is that of data limitations. A number of points are touched on but the most important relates to the real wage variable. Here Grimes notes that Haywood and Moore have deflated wages by the Consumer Price Index. Noting that this is more appropriate to a labour supply rather than a labour demand equation he suggests that the low coefficients estimated by Haywood and Moore are not surprising inasmuch as other studies have found a low elasticity of labour supply.

110. Finally, Grimes extends the analysis beyond estimation of a single employment equation to simultaneous estimation of employment capital and production functions embodying linear trends in technical change. In this wider frame Grimes estimates various values for the real wage elasticity of labour demand in the range –0.40 to –0.50. In conclusion he notes that these values are not dissimilar to those estimated in some overseas studies.

111. The econometric debate will doubtless continue and in view of the significant differences of opinion reviewed in this section it is important that it should. The real wage elasticity of demand for labour is clearly an important parameter in policy analysis and it would be useful if we could secure a reasonable degree of professional consensus as to its probable short and long-run magnitudes in New Zealand. In concluding this section it seems sensible to offer a few suggestions as to possible lines of inquiry.

112. *First*, in view of the variety of linkages which theory suggests are in play between real wages and employment, it would seem useful to isolate some of these by estimating linkages between more narrowly defined sets of variables. For example on the question of the linkage between output volume and employment it would be sensible, referring back to the list of variables identified in paragraph 46 to test for the influence of factors such as the degree of capacity utilisation, perhaps by using the NZIER index derived from the Quarterly Survey of Business opinion. Similarly it would be useful to test the implications of changing the numerator in the real wage variable from wage payments per private sector employee (which will be affected by changes in hours worked) to average hourly ordinary time earnings.

113. *Second*, the conflicting results of the Haywood and Moore and Grimes experiments relating to technical change suggest a need for further discussion on the most appropriate means of specifying technical change in the estimating equations.

114. *Third*, it is questionable whether a simple deflation of nominal wages by output prices provides an adequate measure of the relative level of wage rates as perceived by employers. As is clear from our earlier discussion other price relativities are likely to prove important. Ideally we would like to be able to relate wage rate changes to movements in the prices of intermediate and capital inputs as well as to movements in output prices. Hazeldine for example reports that estimated elasticities of employment with respect to the ratio of nominal wages to the price of capital goods tend to be small and sometimes positive[11].

115. *Fourth*, and finally, the somewhat inconclusive outcome of attempts to measure the real wage elasticity of employment econometrically raises a question about the possible utility of other research approaches. Searching for the influence of wages upon employment entails focusing on the confluence of a wide range of forces. Separating these, one from the other, on the basis of aggregate elasticities is very difficult and it may well be that field research in selected industries might prove more fruitful as a means of assessing the strength of the various elements in play.

CONCLUSIONS

What has been Happening

116. Despite the somewhat indeterminate nature of the material that we have been reviewing, a number of points emerge reasonably clearly. First, recall the inferences drawn in paragraph 50 from our review of developments in the manufacturing sector. These were:

(a) that observed changes in manufacturing output appeared sufficient to explain most of the observed changes in employment;
(b) that there has been little change in factor shares in the sector;
(c) that over the period as a whole real wage rates have risen very slightly — the increase which did occur was concentrated in the years 1974/75 and real wage rates have followed a falling trend since then;
(d) that the overall increase in real wage rates has been less than that in sectoral output per person.

In turn these inferences suggested that two of our four basic linkages between real wage rates and employment are not likely to have been operating strongly in the manufacturing sector. The small observed change in real wage rates is unlikely to have caused significant capital labour substitution. Second, the stable pattern of factor shares plus static output growth in recent years suggests that real wage rates are unlikely to be a significant explanator of changes in investment in the sector.

117. Second, when we extended our view to the private sector as a whole we found, taking the period as a whole, broadly similar movements in the volume of output, employment and nominal wages. There was, however, a dramatic divergence in the movement in output prices between the manufacturing sector and the economy as a whole. Over the two years 1974/75 and 1975/76 manufacturing output prices rose by 33.9 percent whilst the GDP deflator rose by 15.4. Use of these two series as the denominator in deflating nominal wage rate changes implies that real wages during this period rose by 0.6 percent in manufacturing but by 15.7 percent in the private sector as a whole.

118. This divergence in prices persisted in broad terms through the remainder of our review period and will have acted to reduce real purchasing power in other sectors and encouraged searches for alternative sources of supply. It is thus likely to have reinforced the economy-wide tendency to stagnation as it impacted upon manufacturing.

119. This broadening in perspective highlights the importance of inter sectoral differences (which were further emphasised by our review of the agricultural, transport, trade and finance sectors) and places a warning against denominating policy discussion solely in terms of wage rates. In an important sense the disjunction of the mid-seventies could as easily be characterised as a problem of sectoral adjustment to radically changed external circumstances. Of course, in such a context the role of price and wage rigidities would still remain an important issue.

120. Our review of the debate triggered by the *Reserve Bank Bulletin* article reveals continuing argument as to the probable size of the real wage elasticity of demand for labour. The divergence of opinion is such as to preclude any summary judgement on this point at this time. However, to the extent that the real wage path can be cited as an independent cause of stagnation, this seems likely to have been felt through reduced investment as a result of falling profitability in the economy as a whole, and reduced competitiveness as a result of higher costs, rather than through significant factor substitution.

121. Finally, for policy purposes it seems sensible to view wages as but one, important, element in the overall pattern of income and price adjustments to the terms of trade shock of the mid 1970s. The generally slow and dampened response to that shock might well have been appropriate had the shock proved short lived and cyclical in the pattern of previous post-war experience. The persistence of the shock increasingly asserts its structural nature. In this situation our inheritance of wage, other income and price patterns appropriate to earlier times must be seen as inhibiting economic adjustment. In particular we know that running our existing productive structure at a pitch which would satisfy the aspirations of a fully employed labour market at current levels of real income is unsustainable because of its balance of payments implications.

Policy Implications

122. In policy terms the problem that we face is that of moving to new patterns of real productive structure and of incomes. Policy dilemmas arise largely because in this process real incomes enter as both cause and effect. For example, in a fully employed and perfectly functioning economy, we can look upon the prevailing wage rate as a fundamental yardstick in project appraisal, rather like a rate of return. Projects which can meet the going wage should proceed, those which cannot should not. Equally, the real wage is itself determined by that productive structure.

123. The situation is very different where we have persistent unemployment, a persistent balance of payments deficit and sectoral pricing regimes which are significantly affected by public policies. In this situation decisions which may be read as entirely appropriate within the information frame of the immediate market participants may seem otherwise from a wider perspective.

124. In considering ways of moving forward the policy dilemma re-asserts itself in familiar terms. In finding our way to an appropriate wage path how much can we rely on the market and to what extent do we need to rely on direct public decision-making?

125. As a first step let us project ourselves into the position of a union official interested in securing higher real incomes for his members, committed to the principle of full employment and aware of the issues and relationships which we have been reviewing. Perhaps the first things that he would notice are the differences between the real product wage and the real income wage and the fact that the real product wage is the quotient of prevailing wage rates and output prices. As such negotiating power as he has is limited to influencing nominal rates of pay it will be clear that movements in both product and income wages flow in considerable part from influences over which he has no control.

126. Secondly he will probably be struck by the degree of intersectoral variation in real product wages. In particular it is clear that sectoral output and input prices can move in quite diverse ways. In contrast there is a tendency for ordinary time hourly rates to follow a rather more uniform path. Thus over the period from 1975-83 as a whole the standard deviation of sectoral movement in hourly rates was equivalent to 2.6 percent of the average movement in the five sectors discussed above. For output prices the comparable figure was 8.6 percent. Note however, that in the period 1973-75 the very rapid upward movement in agricultural wage rates meant that in that period wage movements were actually more diverse than output price changes[12].

127. The reasons for a rather more stable movement in wage rates than other prices are not hard to find. Changes in output and input prices flow from a variety of causes and while most may be fairly uniform in their impact, some such as a sharp fall in a commodity market, an oil price rise, or a radical change in technology are likely to affect some sectors more than others.

128. Changes in ordinary time rates on the other hand tend to flow across all industries. Although this uniformity will, to some extent, reflect institutional modes of wage fixing the underlying reason is that labour is potentially mobile. This creates a persistent pressure towards equalisation of rates for particular skills across industries. Any industry which tries to set its rates of pay at levels significantly below the going rate for the skills in question is likely to find it hard to attract staff. A union official in an industry faced with a severe structural problem may be in a position to accommodate to some extent and by so doing may be able to protect some jobs. This possibility will however be conditioned by the knowledge that people will be prepared to move in search of better paying opportunities.

129. Looked at from a wider perspective we can note that intersectoral divergences in real product wage rates arise to an important extent from divergent movements in output prices. To the extent that this is so the shift in real product wages are in effect the obverse of output price induced changes in sectoral profitability. The sector whose profitability increases because of favourable shifts in output prices relative to the prevailing wage rate (or for that matter because of favourable shifts in input prices or technology) is an industry which should probably be expanded. Contrariwise the industry whose profitability falls, at the going wage rate, is one which we would expect to decline. In general, we want to see movement of labour, and resources in general, from industries with low to those with high profitability. The clear implication is that an attempt to protect profitability in a declining industry by holding down nominal wage rates and thus the real product wage can be no more than a temporary expedient. In a longer run perspective such a move is in some ways analogous to ongoing subsidisation or protection of a declining industry with the difference that the cost is carried by the workforce rather than transferred to the taxpayer or the consumer. The difference is of course important inasmuch as the decision is struck and the burden borne between the directly affected parties. If they indeed have no better options then the course is appropriate enough but it is unlikely to stand as a long-term solution.

130. The preceding discussion suggests that while there is clearly great advantage at sectoral level in labour negotiators having as clear a picture as possible of the factors bearing on the

overall economic performance of their industry, it would be inappropriate for them to conclude that the real product wage in their industry provides some kind of an automatic lever for employment adjustment.

131. Returning to the national or macro level it remains evident that we do encounter situations in which real wages and other incomes move out of line from levels inconsistent with the nation's real productive structure and trading opportunities. Such divergences, in both upward and downward directions are likely to prejudice goals such as full employment. Even though there may be little scope for intersectoral variations in nominal wages through time the overall rates of change in nominal and real wage rates (and these are but the sum of sectoral movements) are clearly elements in the set of major macro variables bearing on the overall level of employment. What is their relevance to policy?

132. In the long run the sustainable level of real wages is determined by the productive structure and trading opportunities and the prime ongoing concern should be to ensure that micro policy interventions promote rather than inhibit adjustments towards sustainable structures and income levels. The more difficult questions are whether and if so, to what extent and in what way, policy makers should in addition attempt to promote such change at the macro level. This immediately takes us into the whole area of macro policy formation. It is probably sufficient to make three points.

133. First the array of policy instruments available to government in influencing real income levels, is not limited to such control as it might have over the level of nominal wage rates. Other instruments such as the exchange rate are much more powerful and pervasive. If they are out-of-line it is most unlikely that attempts to correct overall imbalances by acting on nominal wage rates will be efficient or effective.

134. Secondly, and as something of a qualification, we can note that in situations where fundamental imbalance can be demonstrated there is potential for building an explicit incomes policy as part of the adjustment process. It can however be no more than a part and is no substitute for appropriate macro policies.

135. Finally, it is important to emphasise one implication of the fact that on the basis of all the estimates that we have reviewed the real wage elasticity of demand for labour is significantly less than unity and on some interpretations very much less. This implies that viewed from the perspective of the labour movement as a whole proposals to reduce real wage rates as a means of increasing employment are likely to be seen as negative sum games. On all the elasticity estimates that we have recorded the increase in aggregate employee incomes as a result of having more people employed would be more than offset by the income loss resulting from the reduction in real wage incomes of those currently employed. Life does of course frequently present us with negative sum situations. Their resolution is usually assisted by clearer understanding of the facts of the situation in circumstances where the major participants are persuaded that the burden of adjustment is being borne equitably.

FOOTNOTES

1. All summary diagrams do violence to reality. In context three of the more serious limiting assumptions made here are:
   (a) All goods markets are assumed to clear in the current period, i.e. there are no inventories
   (b) Capital formation is assumed totally funded from profits. Households are assumed not to invest in productive assets.
   (c) There is no government sector.
2. "Unemployment: Causes and Policy Options", *Reserve Bank Bulletin*, p. 203, June 1982
3. Grimes, A., *A Model of the New Zealand Labour Market*, Reserve Bank of New Zealand, Research Paper No. 33, July 1981
4. Grimes, A., *Employment and Other Private Investment, SNA Core Model*, Reserve Bank of New Zealand, Discussion Paper G8114 (mimeo), June 1981
5. Grimes, A. (Ed.) by Spencer, H., Duggan, K.G., Dick, R.R., *A Revised Reserve Bank Core Model with SNA Data*, Reserve Bank of New Zealand, Research Paper No. 37, January 1983
6. Harris, P., "Future Options", paper presented to Nationai Incomes Policy Seminar, 1982
7. Bertram, G. and Wells, G., "The Real Wage Controversy", paper presented to seminar on "Inflation and Economic Adjustment", 1983
8. Haywood, E. and Moore, C., "An Examination of the Reserve Bank Real Wage-Employment Relationship", *New Zealand Economic Papers*, 1983
9. Grimes, A., "A Comment and Some Further Results on the Real Wage-Employment Relationship", *NZ Economic Papers*, 1983
10. The logic of this point can be illustrated as follows with reference to the data in the first column of the table on page 80 of Bertram and Wells and the two elasticities reported in paragraph 84.

	% change 1969–76	*elasticity*	*approximate employment effect*
Output	28.2	0.81	22.8
Real Wage	21.3	−0.61	−13.0
Employment (actual)	12.3	(estimated) 6.8	

11. Hazeldine, T., "Employment Functions and the Demand for Labour in the Short Run" in *The Economics of the Labour Market*, p. 155, HMSO, London, 1981
12. The relative variability of wage rates, output and input prices is discussed in the paper "Inter-Sectoral Variations in Real Wage Rates".

INTER-SECTORAL VARIATIONS IN REAL WAGE RATES

Introduction

1. An earlier paper "Wage Rates and the Demand for Labour" discusses sectoral trends in real wages and relates them to changes in employment. A central feature of the discussion is the divergent nature of trends in real product wage rates between sectors. This note examines the relative contribution of variations in prevailing wage rates and output prices to sectoral changes in real product wage rates. The note also examines the pattern of changes in input prices and in sectoral terms of trade, and explores the relative variability of inter-occupational and inter-sectoral wage changes.

2. The investigation is limited to the period from 1978/79 to 1983/84 for which we have sectorally compatible indices for output prices, input prices and prevailing wage rates. The indices used are:
Producers Price Index Inputs (Dec 1982 = 1000)
Producers Price Index Outputs (Dec 1982 = 1000)
Index Numbers of Prevailing Weekly Wage Rates

Adult Employees — All Determining Authorities (Dec 1977 = 1000)

Coverage is extended to all industries except central and local government, private non-profit services and owner-occupied housing.

The Results

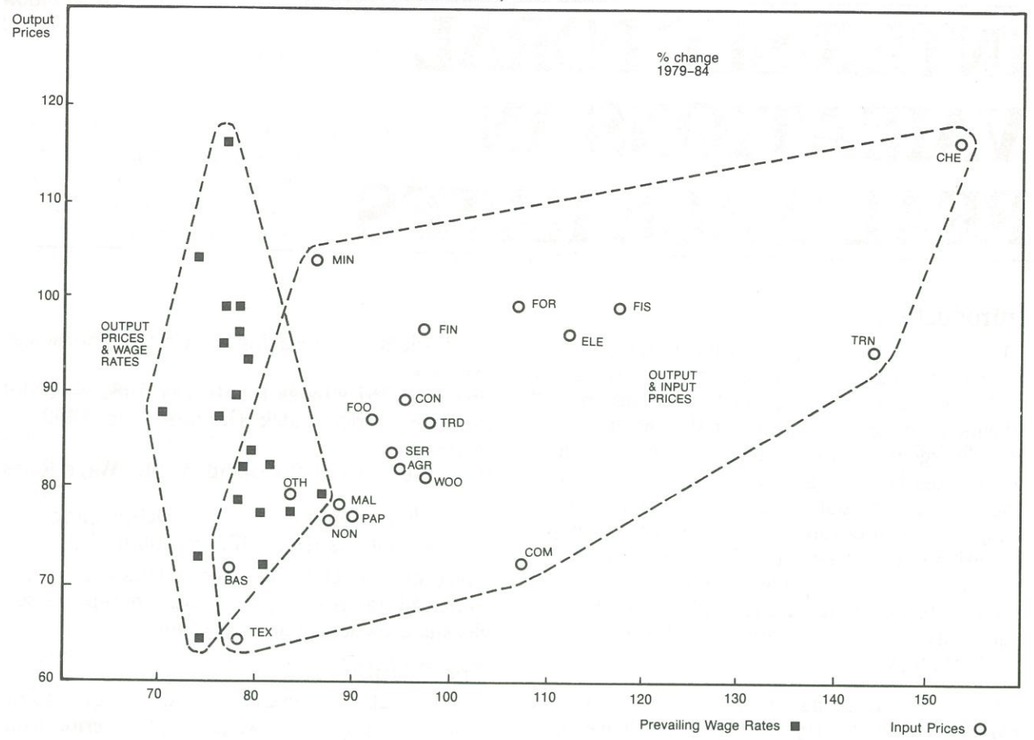
3. Table 1 presents an overview of sectoral changes in prices and wages for the period from 1978/79 to 1983/84 as a whole.

Table 1

PERCENTAGE CHANGES IN PRICE AND WAGES RATES 1978/79 TO 1983/84

	Output Prices	*Input Prices*	*Prevailing Wage Rates*	*Real Product Wage Rates*	*Terms of Trade*
Agriculture	82.1	95.2	81.3	−0.4	−6.7
Fishing	99.7	117.2	78.4	−10.7	−8.1
Forestry	99.7	107.2	77.7	−11.0	−3.6
Mining	103.7	86.6	75.1	−14.1	9.2
Food	88.2	92.4	70.3	−9.5	−2.2
Textiles	65.6	78.0	74.0	5.0	−7.0
Wood	82.1	97.5	79.4	−1.5	−7.8
Paper	77.2	90.1	83.5	3.5	−6.8
Chemicals	116.8	153.0	77.2	−18.3	−14.3
Non-metallic	77.6	87.6	80.4	1.6	−5.3
Basic metals	72.0	77.1	79.8	4.5	−2.9
Machinery	78.8	88.6	78.7	−0.1	−5.2
Other Manuf.	79.6	83.2	86.0	3.6	−2.0
Electricity	96.6	111.1	77.0	−10.0	−6.9
Construction	89.8	95.3	78.2	−6.1	−2.8
Trade	88.0	98.3	76.1	−6.3	−5.2
Transport	94.5	143.6	79.3	7.9	−20.1
Communication	72.1	107.5	73.8	1.0	−17.1
Finance	97.0	98.1	77.8	−9.7	−0.6
Services	84.0	94.9	79.5	−2.4	−5.6
Mean	85.6	100.7	77.1	−4.3	−7.2
Standard Deviation	9.9	16.4	3.1	5.1	5.8

Chart 16
PERCENTAGE CHANGE IN PRICE AND WAGE RATES, 1979–1984



4. It is clear from visual inspection that there is considerably more inter-sectoral variation in output and input prices than in prevailing wage rates. The bottom two lines of the table record the means and standard deviations for each variable weighted according to 1981 census data for the number of full-time wage and salary earners. The standard deviations for the price variables are several times greater than that for prevailing wage rates both absolutely and relative to their means. The coefficients of variation are as follows and show that the relative variability of input prices is four times, and of output prices three times, that of prevailing wage rates.

	Mean	*Standard Deviation*	*Coefficient of Variation*
Output prices	85.6	9.9	11.5
Input prices	100.7	16.4	16.3
Prevailing Wage Rate	77.1	3.1	4.0

5. The relationship between sectoral changes in input and output prices and wage rates is further illustrated in Chart 16 which shows the scatter of shifts in output prices relative to input prices and to wage rates. The chart further emphasises the narrow banding of sectoral wage rate changes and the much more dispersed pattern of shifts in sectoral output and, more particularly, input prices. It is also evident that there is, as is to be expected, something of a positive statistical relationship between input and output prices[1]. Finally it is also evident that variation in output prices explains very little of observed changes in prevailing wage rates[2].

6. In reading Chart 16 it may be helpful to view the matter sequentially. The pattern of input price variations is, by and large, exogenous and impacts upon sectors which must adjust through some mix of volume and price responses. The possible volume responses (which are not covered in our data) include variations in input mix, changes in output per unit of input and changes in the volume of output. Price changes include varying the rates of factor return and adjusting output prices. It is clear from the chart that a large part of the initial price impact flows through to output prices and that little is reflected in prevailing wage rate changes. Our data do not tell us anything about inter-sectoral differences in technical change, volume of output or rate of profits.

7. The data quoted so far relate to the 1979/84 period as a whole. Table 2 summarises data for intermediate time periods.

Table 2

DATA FOR INTERMEDIATE TIME PERIODS

	Standard Deviations			*Ratios*	
	Input Prices	*Output Prices*	*Prevailing Wage Rates*	*Wage/ Output*	*Input/ Output*
Average:					
Annual change (5)	3.62	4.51	0.96	.21	.80
Two-yearly change (4)	6.76	6.55	1.84	.28	1.03
Three-yearly change (3)	10.24	8.74	2.56	.29	1.17
Four-yearly change (2)	14.19	9.86	2.72	.28	1.44
Five-yearly change (1)	16.43	9.87	3.09	.31	1.66

As an aid to interpretation the figure of 3.62 in the top left corner is the average value of the five annual measures of the standard deviation of inter-sectoral percentage changes in input prices. The figure of 6.76 in the second row is the analogous average of the four possible two year comparisons. The ratio .21 in row one is the ratio of the averaged standard deviations for prevailing wage rates and output prices.

8. It is clear from Table 2 that the relative dispersion of movements in wage rates and output prices is fairly stable. The ratio of standard deviations ranges from 0.21 to 0.31 and for all but the annual change data is close to 0.3 The higher value for the longer than annual changes is possibly indicative of a partial lagged adjustment. The ratio of changes in input and output prices is noticeably more variable as the time period of the comparison is changed. This reflects a significant narrowing of the sectoral dispersion of annual input price changes in the last three years as is evident in Table 3.

Table 3
STANDARD DEVIATION OF ANNUAL PERCENTAGE CHANGES IN SECTORAL PRICES AND WAGE RATES

March Years	*Input Prices*	*Output Prices*	*Prevailing Wage Rates*
1979/80	6.25	5.62	0.93
1980/81	6.50	5.82	0.87
1981/82	2.16	3.82	1.55
1982/83	1.39	4.54	1.26
1983/84	1.79	2.77	0.21

Implications

9. The above results show that inter-sectoral variations in output prices are several times larger than variations in prevailing wage rates and thus are the more important source of variation in real product wages. Of itself this is not particularly surprising inasmuch as there are strong reasons for sectoral wage rate changes to be dispersed over a fairly narrow band. First, in a perfectly functioning market we expect the price for particular categories of labour to be the same across all sectors — if they are not labour can be expected to move from lower to higher paid positions. In such a situation inter-sectoral deviations in nominal wage rates will be limited to those arising from inter-occupational divergences. Aggregation to sectoral terms will tend to moderate such divergences and in the limiting case, where the occupational distribution is the same in all sectors, would neutralise them completely.

10. Secondly in an imperfect market we expect suppliers of labour to devote much of their energies to the maintenance of relativities. Their ultimate objective is to secure higher aggregate incomes for their members than would otherwise result but strict attention to relativities arises around two nodes:

— the union is a collective negotiating public awards (unity is strength and must be seen to be so). This promotes a tendency towards intra-award uniformity of movement.

— for the union members the most obvious test of union effectiveness is a comparison of their own rates with those secured by others. This promotes inter-award uniformity.

11. In summary, in any labour market there are strong pressures for uniformity of nominal wage movements within occupational classes.

Table 4

A DOUBLING OF MARGINS FOR SKILL

Occupational Category	*Average Annual Wage Rates ($)*			
	Base Case 1975/76	*Margins Doubled*	*Percent Increase*	*Employment Weights*
Professional White Collar	7,377	10,464	42	54,155
Skilled White Collar	8,751	13,213	51	76,130
Semi and unskilled White Collar	4,837	5,384	11	293,081
Skilled Blue Collar (Metal)	5,373	6,456	20	100,230
Skilled Blue Collar (Building)	5,863	7,436	27	43,261
Skilled Blue Collar (Other)	4,769	5,248	10	64,424
Semi and unskilled Blue Collar	4,632	4,975	7	243,428
Rural workers	5,620	6,951	35	69,748
Other (n.o.c.)	4,289	4,289	nil	4,965
TOTAL	5,392	6,496	20.5	954,423

Notes: Column 1 from Stroombergen Table 3
Column 2 from column 1 on formula $X_2 = 2X_1 - 4289$
Column 3 1982 census employment by sectors applied through Stroombergen sector — occupational matrix, Table 6, exclusive of government services.

Translation of inter-occupational differences in wage movements through the matrix of industrial and occupational employment will create room for inter-sectoral variation in wage rate movements but this is probably limited.

12. It is possible to gain some idea of the relative variability of inter-occupational and inter-sectoral wage changes from data prepared by Adolf Stroombergen[3] for use within the P.E.P. modelling systems. Stroombergen has estimated average wage rates for ten occupational categories and a matrix showing the occupational composition of the labour force in each of 25 sectors (Tables 3 and 6 of P.E.P. 142).

13. The occupational rates are reproduced in the first column of Table 4 alongside a derived set of data which show the effect of doubling the absolute margin between the highest and lowest income categories and adjusting all intermediate rates on a proportional basis. Effectively this mirrors a doubling in margins for skill.

14. As can be seen from Table 4, a doubling of margins for skill would imply a 20.5 percent increase in average wage rates. The weighted standard deviation of the percentage changes in occupational rates is 13.5.

15. In contrast the standard deviation of the corresponding percentage changes in sectoral wage rates is only 3.3 as can be seen from the data presented in Table 5. In brief the relative variability of inter-sectoral variations in wage rates is, in this example, only one quarter of that in occupational rates.

16. Viewed in the light of market and institutional pressures to uniformity of wage rates within occupations and given the low gearing of occupational to sectoral wage variations the earlier reported narrow banding of sectoral wage rate movements should not be cause for surprise.

17. What is perhaps more surprising is the relative variability of output prices and the implication that inter-sectoral variation in output prices is the major cause of inter-sectoral variation in real product wages.

18. The policy implications of this are far-reaching. As is argued in the earlier paper on "Wage Rates and the Demand for Labour":
"To the extent that this (relationship between output prices and wage rates) is so, the shifts in real product wages are in effect the obverse of output price-induced changes in sectoral profitability. The sector whose profitability increases because of favourable shifts in output prices relative to the prevailing wage rate (or for that matter because of favourable shifts in input prices or technology) is an industry which should probably be expanded. Contrariwise, the industry whose profitability falls, at the going wage rate, is one which we would expect to decline. In general, we want to see movement of labour, and resources in general, from industries with low to those with high profitability. The clear implication is that the attempt to protect profitability in a declining industry by holding down nominal wage rates and thus the real product wage can be no more than a temporary expedient. In a longer-run perspective, such a move is in some ways analogous to ongoing subsidisation or protection of a declining industry with the difference that the cost is

Table 5

SECTORAL IMPLICATIONS OF A DOUBLING OF MARGINS FOR SKILL

	Average Annual Wage Rates ($)			
	Base Case 1975/76	*Margins Doubled*	*Percent Increase*	*Employment Weights*
Agriculture	5626	6963	23.8	55,395
Fishing	5632	6974	23.8	1,101
Forestry	5588	6887	23.2	9,039
Mining	5281	6272	18.8	4,359
Food	4993	5696	14.1	73,455
Textiles	5012	5734	14.4	41,979
Wood	5097	5906	15.9	20,128
Paper	5423	6556	20.9	32,724
Chemicals	5397	6505	20.5	26,175
Non-metallic	5505	6722	22.1	9,753
Basic metals	5334	6378	19.6	6,885
Machinery	5417	6543	20.8	76,353
Other manuf.	5289	6288	18.9	3,693
Electricity	5541	6793	22.6	14,892
Construction	5631	6973	23.8	61,368
Trade	5405	6250	20.6	182,835
Transport	5125	5960	16.3	66,183
Communication	5286	6283	18.9	100,860
Finance	5569	6848	23.0	78,705
Services	5720	7151	25.0	88,521
TOTAL	5392	6496	20.5	954,423

Source: Columns 1 and 2 were derived by applying the corresponding occupational vectors in Table 4 above through the Stroombergen occupation-sector labour force matrix (Table 6 in P.E.P. Internal Paper 142). Column 4 — 1981 Census full-time wage and salary earners.

carried by the workforce rather than transferred to the taxpayer or the consumer. The difference is of course important inasmuch as the decision is struck and the burden borne between the directly affected parties. If they indeed have no better options then the course is appropriate enough but it is unlikely to stand as a long-term solution.
"The preceding discussion suggests that while there is clearly great advantage at sectoral level in labour negotiators having as clear a picture as possible of the factors bearing on the overall economic performance of their industry, it would be inappropriate for them to conclude that the real product wage in their sector provides some kind of an automatic lever for employment adjustment." (Paragraphs 129-130)

To which I would now add the observation that the low gearing from occupational to sectoral wage rate changes and the greater relative variability of output prices caution against any suggestion that the promotion of more flexible labour markets is a sufficient response to the problem of unemployment. Flexible labour markets are clearly desirable, indeed necessary, but the leverage which any wage negotiator is able to exercise on sectoral real product wage rates and thereby on employment may be very low. Clearly an effective employment policy must contain other elements. It follows that the existence of unemployment does not of itself establish that existing labour markets are insufficiently flexible. They may be, but the relative importance of any such inflexibility as an explanation of unemployment is a matter for empirical research.

19. Finally it is appropriate to note five areas which deserve further investigation:
First, the above analysis is limited to price variables. There is a clear case for extending the analysis to test for relationships between the observed inter-sectoral patterns of price changes and volume changes in sectoral output and employment terms. I propose further work in this area.

Second, the above analysis emphasises the limited meaning of a real product wage measure which takes account of output prices but ignores variations in input prices and for that matter variations in productivity.

Third, analysis in sectoral terms, as above, should not be allowed to obscure the point that the natural organisational unit for economic analysis is the enterprise or decision making unit. Lacking an appropriate statistical base we can do little more than log a query as to whether analysis at

the enterprise level would lead to significantly different results.

Fourth, the work to this point emphasises the importance of seeking the solution to our employment problems at the growing rather than the declining edge of our economy. For the employee one of the tests that he is moving in the right direction should be that he is moving towards an employer who can afford to pay higher rather than lower wage rates. At which point we return to the familiar problem of getting our investment climate right; that is getting our market signals right and promoting an appropriate balance between market and planning mechanisms.

Fifth, and following from the previous point, we need to acknowledge and explore the implications of the fact that in some circumstances (as for example in the period following a major terms of trade shock) there may be a need for an across-the-board downward adjustment in real wage rates. In the absence of such a downward adjustment, it is possible that a significant discrepancy could emerge with the actual rates being paid to those in employment remaining at levels above those payable at the growing edge of the economy. Clearly such a difference would inhibit labour mobility. In such circumstances it is probable that the major part of the adjustments to prevailing wage rates would have to be sought through the use of macro policy instruments (including centralised wage adjustment procedures). Clearly it would be useful to explore in more detail the boundaries of the circumstances which determine the relative effectiveness of adjustment in macro or micro labour market policies.

Footnotes

1. An unweighted linear regression yields
   $Y = 42.4 + 0.448X \quad R^2 = 0.73$
   where Y = percentage change in output prices
   X = percentage change in input prices

2. An unweighted linear regression yields
   $Y = 82.0 - 0.044X \quad R^2 = 0.29$
   where Y = percentage change in prevailing wages
   X = percentage change in output prices

3. "Data for Cresh Production Functions", Internal Paper No. 142. Research Project on Economic Planning, Victoria University of Wellington, April 1983

RATES OF GROWTH

1. It is widely agreed that the emergence of substantial unemployment in New Zealand is associated with the very poor growth performance of the economy since the mid-1970s. There is however considerable argument about the extent to which poor economic growth itself reflects adverse external circumstances or, alternatively, stems from economic rigidities consequent upon an ill-judged pattern of government interventions. This note relates one piece of evidence, drawn from the Planning Council's National Sectoral Programme, to that debate

2. In *Towards 1990*[1] we reported a set of economic model runs reaching out to 1990 which, on the basis of an assumed export volume growth rate of 4 percent per annum and stable terms of trade, forecast an underlying trend rate of growth in GDP of about 2¾ percent per annum. The MACRO model which generated these forecasts sees the rate of growth in the economy very much as a function of the sustainable rate of growth in imports which, in turn, depends upon the projected rate of growth in exports and changes in the terms of trade. This being so, the immediate question is why does Macro see strong growth in the period ahead when in recent years a strong expansion in exports and stable (though depressed) terms of trade have been associated with near stagnation in GDP. The following figures highlight the question

(Percent Per Annum Compound)

March Years	Export growth rate	Terms of Trade change	GDP growth rate
1976-83	5.1	0.8	0.6
1983-90	4.0	0.0	3.5

3. The equation structure of Macro permits derivation of an approximate measure of the linkage (in model terms) between projected export growth and the sustainable rate of growth in GDP. Following Wells et al,[2] but using re-estimated Macro equations from *Towards 1990* and data from the model run of 3 June 1983, we combine two of the basic triad of Macro equations. These are the equations for change in real consumer plus intermediate imports as a function of GDP

$$CIM = -2.433 + 2.445\ GDP$$

and change in real gross capital formation as a function of GDP

$$GCE = 10.586 + 4.501\ GDP.$$

To combine these we have to provide appropriate weights and convert the second equation so that it refers to the import content of capital formation. For the latter we use the cumulated import coefficient of capital formation from the 1976/77 Inter-Industry study. This was 0.321. From the June 1983 Macro runs mean values for imports and capital formation were $4,875m and $3,840m respectively in the period 1980-1990. These figures imply a weighting for capital imports of (0.321 x 3840)/4875 = 0.253. The combined equation then becomes

$$IM = -4.282 + 2.965\ GDP$$

which implies

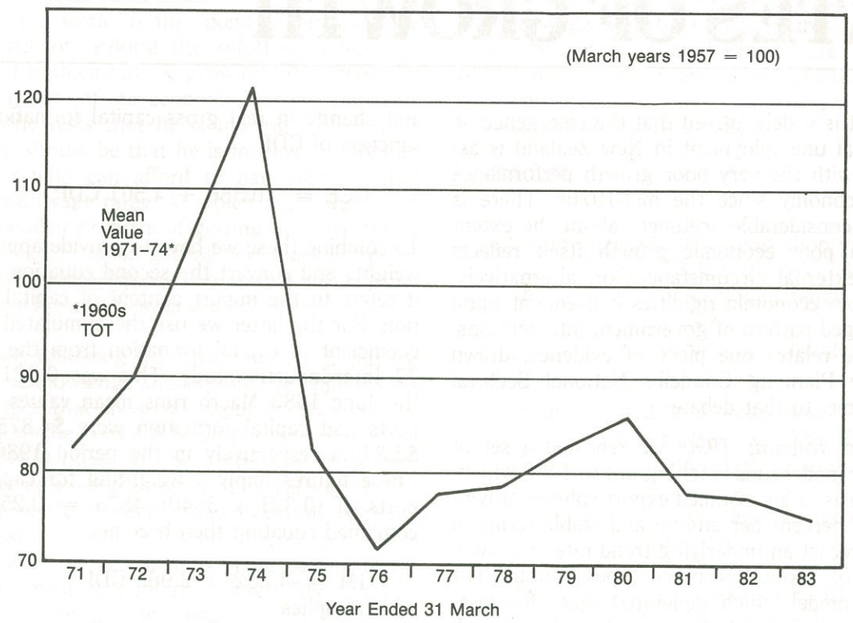
$$GDP = 1.44 + 0.373\ IM$$

4. If we assume that the sustainable rate of growth in imports is the same as the projected rate of growth in exports, we can use the above equation to estimate sustainable GDP growth rates for any given rate of increase in exports, as follows

Rate of Growth in exports	Sustainable GDP growth rate %
2	2.2
3	2.6
4	2.9
5	3.3
6	3.7

5. The above figures suggest that an export growth rate of 4 percent, as built in to our NSP runs will lead to GDP growth of about 2.9 percent. The figure is much the same as the 2.75 percent rate which the full macro model settles back to once it has digested the major projects. It is also not dissimilar to that explored by the Economic Monitoring Group who noted[3] that in the period 1960/61 to 1977/78 New Zealand's export growth rate of 3.93 percent was associated with an average GDP growth rate of 3.2 percent.

Chart 17
TERMS OF TRADE
NEW ZEALAND



6. If, as the preceding figures suggest, the NSP trend forecasts of export and GDP growth are reasonably compatible, then the contrast between past and future highlighted in paragraph 2 may well arise from features peculiar to the immediate past rather than reflect upon our forecasting methods.

7. The obvious candidate for such an explanation is the terms of trade shock of the mid-70s. Although our terms of trade changed little over the 1976-83 period they were very much lower than in the 1960s and early 1970s. This fall reduced the volume of imports that could be financed and thus the sustainable level of economic activity. It is possible to use our abbreviated Macro relationship between imports and GDP to trace the course the economy would have taken from the early 1970s had policy been framed to match GDP growth to the level of imports that could have been sustained in terms of actual increases in export volumes and changes in the terms of trade. In making such a linkage some period has to be taken as base, with an inevitable risk of bias. I have taken as a starting point mean values for the period 1971-74. This has the effect of smoothing short-term fluctuations.

8. The story starts with the terms of trade as recorded in Chart 17 (supporting series appear in an appendix). From 1975 to 1983 the terms of trade index ranged between 71 and 86 with a mean value of 79. In contrast, mean values for terms of trade were 97.5 in the 1960s and 100 in the four years 1971-74.

9. Chart 18 records, in its lower part, the export volume index along with the terms of trade. In both cases annual data for 1971-4 are replaced by mean values for the period. As can be seen, the volume of exports fell from the 1971-74 mean value to a trough in 1975, since when it has risen strongly. The combined effect of changes in terms of trade and in the volume of exports (plus an adjustment to take account of the changing relative importance of the value of imports and net invisibles) are captured in the series for the sustainable volume of imports, as recorded in the upper part of Chart 18. This series shows a substantial drop from the 1971-74 mean value of 1604 to a trough of 478 in 1976 since when the series has fluctuated around a rising trend, which by the end of the period had returned the sustainable volume of imports to the level of the early 1970s.

10. This series for sustainable import volumes can now be used to drive the equation

$$GDP = 1.44 + 0.373\ IM$$

over the same period. The resulting series is graphed in Chart 19 and compared with the series

Chart 18
SUSTAINABLE IMPORTS

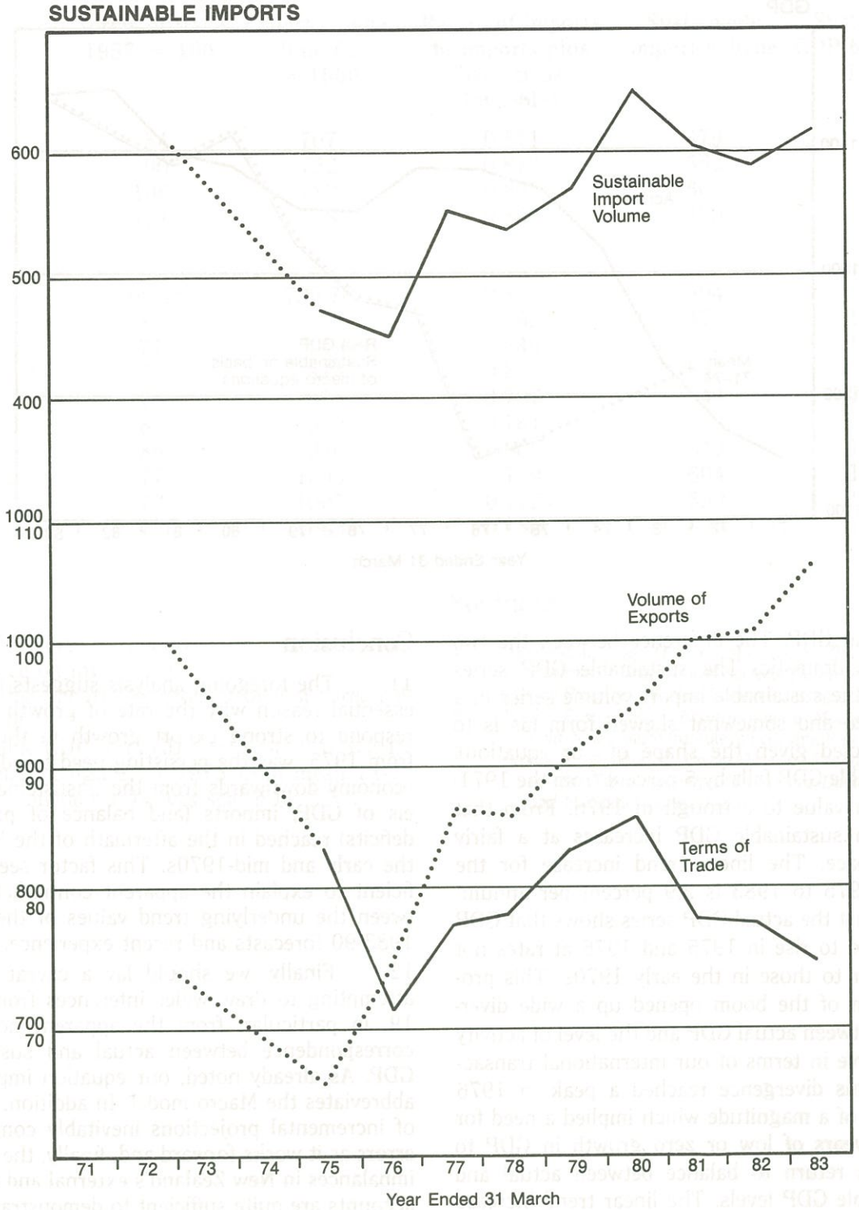
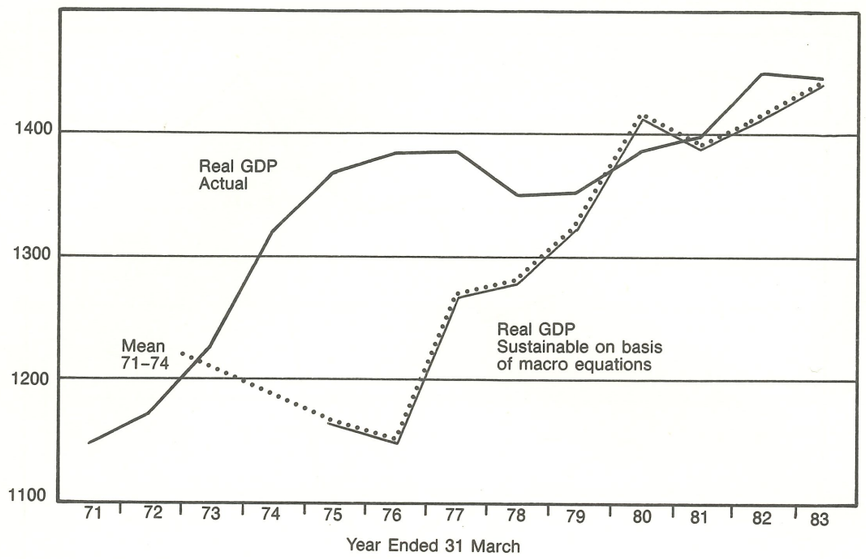


Chart 19
GDP



for actual GDP. The difference between the two series is dramatic. The sustainable GDP series mirrors the sustainable import volume series in a dampened and somewhat skewed form (as is to be expected given the shape of our equation). Sustainable GDP falls by 5 percent from the 1971-74 mean value to a trough in 1976. From that point on sustainable GDP increases at a fairly steady pace. The linear trend increase for the period 1975 to 1983 is 2.9 percent per annum. In contrast the actual GDP series shows that GDP continued to rise in 1975 and 1976 at rates not dissimilar to those in the early 1970s. This prolongation of the boom opened up a wide divergence between actual GDP and the level of activity sustainable in terms of our international transactions. This divergence reached a peak in 1976 and was of a magnitude which implied a need for several years of low or zero growth in GDP to permit a return to balance between actual and sustainable GDP levels. The linear trend increase in actual GDP over the period 1975 to 1983 was 0.7%.

Conclusion

11. The foregoing analysis suggests that the essential reason why the rate of growth did not respond to strong export growth in the period from 1975, was the persisting need to adjust the economy downwards from the unsustainable levels of GDP, imports (and balance of payments deficits) reached in the aftermath of the boom in the early and mid-1970s. This factor seems sufficient to explain the apparent contradiction between the underlying trend values of the Macro 1983-90 forecasts and recent experience.

12. Finally, we should lay a caveat against attempting to draw wider inferences from Chart 19, in particular, from the apparent now near correspondence between actual and sustainable GDP. As already noted, our equation imperfectly abbreviates the Macro model. In addition, any set of incremental projections inevitably compounds errors as it works forward and, finally, the current imbalances in New Zealand's external and internal accounts are quite sufficient to demonstrate some imbalance between current and sustainable levels of activity.

Appendix

	Terms of trade 1957 = 100	Export volume June 82 = 1000	Ratio of imports to imports plus balance as invisibles	Sustainable import volume	Sustainable GDP 65/66 = 1000
1971	84	707	0.811	479	
1972	90	752	0.817	552	
1973	106	782	0.807	667	
1974	121	718	0.809	700	
Mean					
71-74	100.25	739.75	0.810	604	1215
1975	84	658	0.862	478	1164
1976	71	749	0.846	449	1154
1977	77	874	0.825	555	1273
1978	78	872	0.797	544	1281
1979	83	909	0.761	573	1326
1980	86	946	0.802	649	1410
1981	77	1000	0.789	604	1394
1982	77	1007	0.772	599	1410
1983	75	1063	0.780	620	1449

Notes:

Ratio of imports = (imports f.o.b./(imports f.o.b. + balance on invisibles)).
Sustainable imports = product of first three columns/100
Sustainable GDP from GDP = 1.44 + 0.373 IM in calculating figure for 1975 from mean 71-74 base the constant 1.44 was scaled by 2.5.

Footnotes

1. Haywood, E., Rose, D., Stroombergen, A., *Towards 1990: Patterns of National and Sectoral Development*, Planning Paper No. 18, New Zealand Planning Council, 1983
2. Wells, Easton, Kay, *Economy-wide Models of New land*, New Zealand Institute of Economic Research, 1983
3. Economic Monitoring Group, *Foreign Exchange Constraint, Export Growth and Overseas Debt*, New Zealand Planning Council, 1983

TECHNICAL CHANGE AND EMPLOYMENT

Introduction

1. The impact of technical change upon employment is a controversial question. There is a large literature on the subject in the form both of general reviews and examinations of particular aspects. Coming to grips with this literature is a major exercise whilst selective dipping clearly risks biased exposure. The note which follows was prepared as an introductory guide for the Planning Council in deciding upon future work.

Defining Technical Change

2. In the popular mind technical change is probably most commonly associated with revolutionary technological changes such as electronics and the micro chip or the industrial revolution that was built on the harnessing of steam power. The common element in all such revolutions is the putting in place of major changes in productive relationships — typically including significant extensions to the range of products and major changes in the modes of production.

3. For the economist, technical change is commonly expressed as an element in an overall production function. Output is seen as the fruit of the joint application of labour and capital to purchases of raw materials and other inputs all modified through time by technical change. More formally

Q = f (K L I t)
Q = output
K = capital
L = employment
I = inputs of goods and services
and t = technical progress which is usually estimated as a residual and expressed as an average annual growth rate over the period of observation.

4. It will be obvious that in such a scheme technical change is a fairly broadly defined term. Indeed it effectively picks up any changes in the quantitative relationship between particular inputs and output other than those arising from simple substitution of one input for another. It will thus include, for example, the introduction of a new bottle capping machine which enables an operator to cap a greater number of bottles per hour — in this case the technical progress is embodied in the machine. It will also include changes such as an improved work practice which reduces the level of material wastage in a process such as the blanking of shapes from sheet steel. It also includes product innovations from improved mousetraps to personal computers.

5. The pervasive and all embracing nature of technical change makes it very difficult to measure. Measurement at the level of the national economy is inevitably imprecise. Whilst more exact measurement may be possible at the micro level, such studies are not available in anything like sufficient number to provide a sure base for assessment of overall trends.

6. Difficulties of measurement inhibit analysis and encourage somewhat opinionated writing, much with evident bias, either towards a Panglossian perspective that all is for the best, or towards warnings of an apocalyptic future as one or other exponential trend takes over. I leave these large judgements aside and focus in on some key relationships.

Major Relationships

7. It will be convenient to group our discussion around a number of themes:

- the drive to economise
- product innovation
- competitive pressures
- technical dynamism
- societal response

The drive to economise

8. Commercial life is characterised by persistent drives towards cost minimisation and profit, or revenue maximisation. If we can see quicker, cheaper, or more effortless ways of doing things we will normally test them out and, if they prove effective, stay with them. This innovative seeking for ways of economising on inputs acts of itself to reduce the demand for labour. This is obvious where labour is directly displaced but is also the likely consequence of reductions in demand for intermediate or capital inputs, because these are again in turn ultimately the product of labour.

9. The immediate consequence of this drive to economise is pressure on workplaces built around existing technologies. In such cases the linkage between technical change and displacement of labour is usually obvious and if the impact is extensive or severe it may impose significant hardship on those directly affected and lead to political reactions. However that may be in any particular case the evolving historic record funds the perception that technical change displaces labour.

Product innovation

10. Technical progress includes not only changes in the productive process; it also includes the production of new products. Here the employment impact is more complex. The new product will require labour to produce it and in this way creates demand for new employment. The product is however almost certain to deflect demand from existing products. It may be directly competitive with and destined to supplant some pre-existing product in which case the offsetting loss in employment may be obvious. However, even if the new product appears to have created a world of its own it still has to compete for a share of the users dollar and so deflects spending from other uses with consequent impacts upon employment.

11. Many products are of course inputs to other productive processes either as improved materials or better types of machine. In such cases they will have impacts such as discussed in the preceding section. It is also important to acknowledge at this point that new machines and new materials frequently establish a demand for new types of labour to service and manage them. The computer provides the obvious example with ever ramifying eddies. A recent report on training needs in the engineering industry notes, for example, a shortage of persons for operating numerically controlled machine tools.

12. Enough has been said to show that product innovation will have both positive and negative direct effects upon employment. Given the wide ranging application of many innovations it is difficult to establish the net employment impact of important innovations even on a case by case basis. The problem compounds as our view expands to cover major innovative waves.

Competitive pressures

13. Innovation is an on-going process and it is not possible to assess its employment impact simply by looking at the direct consequences of changes in processes and products. In a world where one's competitors are innovating a failure to keep up with the general pace of innovation implies rising relative costs and a reduced ability to compete. The consequence is likely to be either reduced sales, output and employment, or acceptance of lower levels of real income.

14. Competitive pressures from those who have innovated can thus threaten employment and real income standards for those who have not. In the shorter run these two outcomes of a failure to keep up seem closely linked. In the longer run it is not necessarily so. Thus from an international perspective we can find examples of countries whose widely differing income standards clearly stem primarily from differences in the general level of productive technique but which do not have significantly different rates of unemployment (take for example Japan and China).

15. In this longer run perspective the major consequence of differential rates of innovation can be seen to be differences in standards of living rather than in levels of unemployment. In the short to medium run the effect of differential movement is likely to be quite different. Innovation elsewhere undermines existing productive structures and can threaten both employment and living standards. There is thus something of a technological imperative in a need to at least keep pace with what others are doing.

Technological dynamism

16. The counterpart of falling behind is of course getting ahead. Major innovative waves usually arise around particular industries and locations. Buoyant growth in these areas is usually associated with high demand for labour to service the demands of the new growth industries. Japan provides a recent example of this phenomenon at the national level. Over the period from 1960-80 GDP per head was rising at a compound rate of 6.5 percent per annum as compared with an OECD average of 3.1 percent. This prolonged period of rapid innovation was associated with an average unemployment rate of 1.5 percent as compared with a 4 percent rate for the OECD as a whole.

17. It follows that the employment implications of technical change will differ according to whether one is part of the innovative process, whether one follows along sooner rather than later, or whether one is in an area placed under competitive pressure by the innovation.

Societal response

18. The general tendency of innovations is to reduce the level of inputs required to produce particular levels of output. Equally this means an ability to produce more output from particular levels of inputs. In the long run society has a choice as to how much of the fruits of technical change should be taken in terms of increased output and how much should be taken in terms of reduced labour inputs. Over time society in a complex and sometimes bloody process trades off the choices that have to be made about output levels, overall labour force participation rates and hours of work. Recent European experience re-

minds us just how slow, uneven and fractious that process can be. A longer-term perpsective suggests structural unemployment is, despite its pain, essentially transient. In time, people and society adjust to the shocks brought about by innovative waves. The challenge to policy is to assist that adjustment and alleviate its pain.

Areas for Further Work

19. In a subject area as large as this, selection of research priorities is difficult, but the three following possibilities all seem important.

(a) promote work designed to gain a clearer understanding of the likely quantitative impact of micro-electronic change in some key sectors — including telecommunications, financial services, retailing. The employment implications of the quite dramatic changes which are occurring could be considerable and policy making would be assisted by clearer understanding.

(b) recognising that one of the major brakes upon adoption of new technologies is fear of job loss and its consequences, focus work on policies aimed at assisting those displaced from the work force. A first step in this direction could be a review of field work on redundancies in New Zealand and of the evolution of thinking on redundancy agreements.

(c) recognising that a continual stream of innovation and change is the mainspring of growth, focus work on policies designed to assist and promote innovation and change. This could be a fairly wide ranging exercise but would include as key elements the creation of market environments which reward innovation, and the role of government in helping promote innovation and change.

EMPLOYMENT — THE LIMITS OF MARKETS AND PLANNING MECHANISMS

Introduction

1. New Zealand is making a significant transition towards a more international and market-oriented economy. This shift is seen by most economists as imperative in the search for a more efficient and adaptive economy. It also enjoys substantial bi-partisan support. In this paper I suggest that there is in addition a need to think about the role of planning mechanisms in assisting us to secure our medium-term objectives.

2. The post-war experience of most of the major OECD economies shows that their generally more open economies typically operate with levels of unemployment which we, in the light of our post-war decades of literal full employment, regard as unacceptable and indicative of policy failure. In addition to this potential for steady state unemployment of several percentage points New Zealand has in prospect the transitional job loss associated with the rationalisation of existing policies.

3. One other prior issue needs to be acknowledged. Given its historical connotations planning is frequently taken to imply, necessarily, control over the allocation of resources. That is not my usage. Rather I use planning to refer to an on-going interactive process between medium-term decision-makers, be they policy formers in public and private sectors or private or public investment decision-makers.

4. This paper is built upon the bones of two earlier papers prepared for discussion with the Planning Council. The first of these "Employment — Sectoral Policy Formation" (June 1983) developed in some detail the interactive planning mechanism outlined in the initial overview paper presented in this volume. Council rejected the central thrust of that proposal but agreed to further discussion on the underlying issues during 1984. That discussion which was based on a paper with the same title as this (October 1984), led to a substantial measure of agreement. I should however emphasise that the views expressed in this revised paper are mine rather than those of the Council.

Balancing the Visible and Invisible Hands

5. The international market place provides the reference ground against which all major investment decisions must be tested. Externally and internally markets are the primary transmitters of information on trading and production opportunities.

6. These considerations underpin an ideal public policy hierarchy within which government:

(a) does not intervene in markets which can be expected to perform effectively

(b) gives priority to economy-wide, macro, rather than sector specific policies

(c) stands prepared to act sectorally only if, but whenever,positive net national benefits can be secured. Such actions including both state activity (in education, research and public enterprise) and interventions in the private (or more broadly the market) sector

(d) in cases where a need for market intervention has been established acts in ways which minimise price distortions.

7. Accepting this, or some similar policy hierarchy, is there a role for planning at the national level and if so what is its proper extent.

8. There is of course a clear need for planning within national organisations — corporate planning over various time horizons is an accepted part of the activity of large commercial organisations in both public and private sectors and of government agencies in education and research. The more controversial and in this context the more relevant questions relate to the case for planning in an inter- or supra-organisational sense at the national level.

9. As to need, I suggest there are three mainlines of argument that should be weighed:

(a) improving the collective information base for autonomous decision-makers

(b) articulating the linkages between development objectives and policy options

(c) assisting in the formation of policies in areas which require elements of common purpose.

Each is elaborated briefly below as a prelude to a more extensive discussion.

10. *Improving the collective information base*
Responses within the Planning Council's National Sectoral Programme[1] demonstrate that there is a high and continuing interest in medium-term assessments at economy-wide and sectoral levels. This interest is also evident in corporate responses to the NZ Institute of Economic Research's annual *Medium Term Review*. It is clear that a wide range of private and public sector bodies, whilst recognising the inevitable limitations of all such assessments, see merit in working together to improve the information base.

11. For our current round we have defined our objectives as being to:
(a) provide a reasonably transparent central forecast of a few major economic variables
(b) provide a detailed sectoral breakdown of this for a nominated future year
(c) provide the user with some feel for the sensitivity of both macro and sectoral forecasts to changes in exogenous variables, including policy assumptions.

It is worth emphasising that the main value of this exercise lies less in the central forecasts it produces, although these are clearly always of interest, than in the process of communication and understanding it builds. The on-going technical interaction enables planners and decision-makers in public and private sectors to develop a better understanding of the forward environment for which they are making their investment decisions. They also show a clear interest in defining the range of uncertainty in the forecasts and exploring their sensitivity to variations in assumptions. The emphasis is on building knowledge.

12. *Linkages between development objectives and policy options*
By common consent New Zealand's current mix of macro and sectoral policies is something of a mess, and a standing indictment of existing systems of policy control. The challenge is to provide a framework which enables a more systematic and continuing review of public policies (in both the production and social economy) in the light of policy objectives. Clearly the major responsibility for reform and operation of the system lies with policy-makers working through the control departments but there is in addition a need for a more public and on-going reporting on the linkages between objectives and policies. This to me is a national planning function and our current deficiencies are highlighted by other work being undertaken within the Planning Council. The Economic Monitoring Group of the Council is reviewing the economic implications of regulations; a very wide field and one in which there is little in the way of extant research. Secondly the Council's Chairman has been exploring the need for a public agency which would review particular economic and regulatory policies in terms of the public interest and economic efficiency.

14. Implicit in all these approaches is a recognition that a full examination of the costs and effectiveness of particular sectoral policies can only be carried out within a structured view of the economy as a whole.

15. *The formation of policies in areas of common purpose*
This is the most controversial and fundamental area. It is also clearly one where the argument is essentially one of degree inasmuch as any level of government activity in a field implies some level of common purpose.

16. Essentially the dispute is about the extent to which we can promote our basic economic objectives by moving beyond a purely market moderated framework. To what extent is it sensible to try and build stable coalitions of diverse groups in pursuit of common goals. No simple answer is possible but two examples will help illustrate what I believe is a serious deficiency in New Zealand's strategy forming capacity.

17. First a quote relating to Japanese planning procedures which we will review in more detail later in this paper. This quote is from a study prepared as background for the World Bank's 1983 Development Report:

"Role of consensus formation in planning
36. *Another distinctive feature of Japan's system of planning is the "consensusmaking" that takes place at various levels; that is, macroplanning involves consultation among government ministries and between the government and the private sector. This means that many individuals having diverse interests and opinions are directly involved in the planning process. Although a consensus may often be reached by way of ambiguous and noncommittal expressions, the interaction among the parties concerned helps to delineate the macroecnomic challenges the nation is facing and places industry-specific issues within a macroeconomic perspective. As noted earlier, macroeconomic planning in Japan does not proceed through the formal coordination of competing or conflicting demands for resources. The allocation of funds is part of the annual budgeting activities"*[2].

18. Second, an international example of immediate relevance. For at least 20 years New Zealand experienced great difficulty in defining a

policy for its automotive assembly industry. Arguably the fundamental cause was that we did not have a framework within which we could mediate the, to some extent, conflicting interests of the range of parties which are inevitably present. These included as a minimum the New Zealand and Australian governments, the Japanese industry, Ford and General Motors. We could not easily define an optimum policy because we did not have a framework within which the interested parties could marry their legitimate vested interests. The reasons for this difficulty are obvious enough in the international context. In my view we are unnecessarily passing up analogous opportunities for joint strategy formation at the national level.

Possible Directions for Development

19. In large part the argument about interactive planning is one of degree rather than kind. In what follows I explore the possible case for further development of interactive planning in terms of the three categories outlined above. It needs to be recognised however that these are not watertight compartments but rather are intimately related. Also implicit in the exploration is an assumed preparedness to develop an appropriate institutional framework which would include a planning agency[3].

It is assumed that this agency would have responsibilities such as
(a) to maintain a forward, medium-term, view of likely economic developments
(b) to develop and encourage quantitative modelling and qualitative analysis of development options
(c) to undertake and encourage analysis of linkages between economic objectives, policy instruments and development options
(d) to work with private and public sector organisations in pursuit of the above objectives
(e) to advise government within its field of competence.

Improving the Collective Information Base

20. In earlier paragraphs we noted the Planning Council's on-going National Sectoral Programme. Although the scale of this programme is fairly limited the Council has been able to marshall a reasonable grouping of resources between interested agencies and from within its own secretariat. The programme is receiving good support from private and public sector organisations and intellectual pressure is being maintained on the development of the economic modelling systems used within it.

21. The question of how far such a programme should be developed is very much open and will inevitably be decided on a pragmatic basis through time. We can form some judgement on the utility of such programmes from a brief consideration of practice in a number of other countries.

Overseas Examples

Japan

22. The Japanese government has presented nine economic plans since the end of World War II. The main emphasis of these has changed from recovery, to higher economic growth (mid 1950s to late 1960s), the balancing of economic and social development, and most recently the defining of growth paths compatible with resource limitations. The Economic Planning Agency sees the role of the plan in a free market economy as having four main tasks:
(a) to show the general direction of government economic policy from the longer-term viewpoint
(b) to analyse long-term problems of the economy and formulate strategies to overcome them
(c) to present a guide-post for the private sector, entrepreneurs, and consumers, by showing the development process of the economy
(d) the coordination of interests among various social groups.

23. Japanese plans are frequently overtaken by events and substituted by a new plan. Planning is seen as an integral part of adaptation to change. During the 24 years from 1955 to 1979, nine plans, having a total plan period of 52 years, were prepared.

24. All plans since the Medium Term Economic Plan of 1965 have used an econometric model for projection purposes. The model used for the 1979 New Economic and Social Seven-Year Plan is a dynamic general equilibrium model with employment disaggregated to 16 sectors.

25. The Economic Planning Agency's model is used for modelling possible outcomes or key variables over the plan period. Thus the 1979 report on planning included forecasts, for 1985, of; employment by broad industrial groupings, "tentative" forecasts of sectoral output at a ten sector level, and physical demand and supply estimates for types of energy.

26. The planning process has no official machinery for coordination with the private sector and for most of the post-war period annual reviews were not deeply concerned with private sector development. Private sector developments

usually exceeded forecast paths and this was generally welcomed. Recognition of resource constraints, social costs and the problem of inflation have led to a change.

"From now on it is assumed that the feasible growth path lies within a narrow band, and the room for choice between alternative paths is small. The actual growth path cannot surpass the projected because it caused inflation. It cannot be lower than the projected because it will cause unemployment or create difficulty in the management of private enterprises. Efforts to make the economy follow the planned path have become more necessary than before. With the fluid domestic and international situations, it is anticipated that cases may arise in which currently existing policy means are inadequate to ensuring the effectiveness of the plan. As a result, work must be done on developing new policy means."[4]

27. The Japanese Ministry of International Trade and Industry also prepares quantitative forward views of industrial structure and employment implications. Their 1981 study *The Industrial Structure of Japan in the 1980s* contains projections to 1985 and 1990 of employment by broad industrial sectors and occupational groupings.

Germany

28. The German Federal Employment Institute, a tripartite organisation, publishes periodic forward assessments of labour market prospects. The most recent document cited is the 1978 report *Employment Policy in Germany — Challenges and Concepts for the 1980s.* This presents detailed quantitative and qualitative assessments of prospects for labour demand and supply for the period up to 1990. These are built upon projections prepared by various other agencies and authors. On the demand side four alternative projections for 1990 are presented at the 11-sector level and one of these is broken down further to provide data for nine manufacturing groupings.

29. The report analyses the full array of policy responses from estimation of national economic growth requirements to consideration of employment promotion possibilities under conditions of insufficient growth, training measures, and changes in participation rates. At all stages there is heavy emphasis on quantification of the effects that might flow from various policy measures. For example, the 28 page section on problems of transition from school to work identifies a "training gap", recommends policies to close this over the period 1977-87, and specifies the number of training places needed in universities, company training systems, full-time vocational schools and elsewhere.

30. The Institute argues that a high level of employment with productive work in fully utilised jobs can only be achieved for the unemployed, and maintained for the workforce, if this is recognised and pursued as the major socio-political aim.

Sweden

31. Economic development and the related problems in the medium (5-6 years) and long term (10-20 years) are analysed on a continuous basis by the Swedish Ministry of Economic Affairs. The assessments are intended to provide benchmarks for the composition of economic policy.

32. As part of this activity, a medium-term survey is compiled every two or three years. This gauges both the future supply of resources and the demands upon them from the various sectors of the economy. Material for the surveys is obtained in the form of plans and expectations from enterprises, central and local government authorities, private research institutions and other bodies. Use is made of a suite of real-sector, price, and financial analysis models. Projections of labour demand are presented at the 23- sector level (including 14 manufacturing sectors), whilst labour supply projections include assessments of the likely impact of changes in working hours, part-time working and so on.

33. The surveys also discuss conflicts that are likely to arise between the various goals for economic policy, and alternative ways of resolving these conflicts are analysed. The solutions have to comply with the constraints imposed by the central goals for economic policy. The perspectives which these surveys provide for development in the next five years serve as background for the choice of more immediate measures of economic policy.

34. The most recent medium-term survey was presented in December 1980 and covers the period up to 1985. It indicates two main alternatives for development in the period 1979-1985. One analyses what would be required of the economy and of economic policy by a path of development that lead to macroeconomic balance at the end of the eighties. The other alternative maps the consequences of continuing present trends and failing to bring about any adjustments; this markedly aggravates the imbalances and it becomes difficult to maintain full employment.

Relevance of Overseas Experience

35. It is clear that public agencies in these three countries have well-developed analytic frameworks for assessing medium-term development issues. In particular they are all:

(a) regularly modelling possible development paths at both national and sectoral levels and the implicit demand for labour
(b) regularly quantifying likely changes in labour supply
(c) assessing the policy implications of these possible developments and, in each of the three countries, there is increased emphasis on this linkage.

In only one of the three countries however, Sweden, is there evidence of a reasonably comprehensive linkage between the planning agency and the private sector in formulating the projection base.

Linkages between Development Objectives and Policy Options

36. As earlier argued there is a need for development of the means for reviewing linkages between policy instruments and objectives. There is in effect an institutional gap here almost regardless of the position taken on regulation and intervention as a whole. Those who think we are drastically over-regulated see a need for a more coherent review framework whilst those who take a more positive view of "intervention for a purpose" also concede the need for open testing both of objectives and of the effectiveness of proposed means to those objectives.

37. The discussion needs to proceed within the policy hierarchy sketched at the beginning of this paper where it was argued that government should:

(a) not intervene in markets which can be expected to perform effectively
(b) give priority to economy-wide, macro, rather than sector specific policies
(c) stand prepared to act sectorally only if, but whenever, positive net national benefits can be secured. Such actions should include both state activity (in education, research and public enterprise) and interventions in the private (or more broadly the market) sector
(d) in cases where a need for market intervention has been established, act in ways which minimise price distortions.

One possible and more detailed form of this hierarchy is sketched in Table 1.

38. Of course in practice governments intervene at sectoral level in a great variety of ways. Table 2 illustrates this. In all countries there is continuing debate as governments, pressure groups and the electorate test the case for increasing or reducing the levels of sectoral interventions. The practical policy problem is to devise means of assisting governments as they pursue particular objectives and strive for economic rationality in the overall pattern of interventions.

Table 1

TYPES OF POLICY INTERVENTION

Types of Intervention	*Characteristic Examples*	
Zero	Perfectly competitive markets	
Sectorally Neutral	Exchange rates Monetary policy Basic tax scales Factor taxes	
Sectorally Related	Direct government participation	Public investment in productive capacity Government research agencies Sectoral advisory services
	Price related rules affecting private sector	Resource rents (conditions of access to natural resources)
		Charges for government provided services Tariffs Tax Incentives
	Regulatory mode	Tariff quotas Import controls Transport licensing Bank licensing, etc.

Table 2

SECTORAL EXAMPLES OF DIFFERENT TYPES OF POLICY INTERVENTION

	Direct Government Participation	*Conditions of Access to Natural Resources*	*Charges for Government provided services*	*Price Related Protection*	*Tax Incentives*	*Regulatory Protection*
FARMING	Land Development Agricultural Advisory Services	Land Tenure Land Tax Rates			Export Incentives Investment Allce Farm Development	
FORESTRY	Forest Service	Land Tenure Land Tax Rates	Stumpage Rates		Export Incentives	
FISHING		Licence Fees			Export Incentives Development Allce.	Quotas
MINING	State Mines	Royalties				
MANUFACTURE	Petrolgas		Electricity Price Gas Price	Tariffs	Export Incentives Depreciation	Import Controls Quotas
ENERGY	Electric Power Natural Gas	Water Rights Royalties	Gas Price			
CONSTRUCTION	M.O.W.D.			Foreign Exchange Shadow Price		
TRADE	Trade Promotion Services					
TRANSPORT	Air New Zealand Railway Corp. NZ Shipping Corp					Transport Licensing
FINANCE	BNZ State Insurance DFC				Life Office Tax Super Fund Tax	Banking Act
SERVICES	Tourist Hotels Scientific and Industrial Research				Export Incentives	

Table 3

FULL-TIME EMPLOYMENT ('000)

	1971	Change	1976	Change	1981
Agriculture, forestry, fishing, mining	133		133	12	145
Manufacturing	279	24	303	-1	302
Utilities, construction, trade, transport, finance and services	691	119	810	14	824
Total in employment	1,103	143	1,245	27	1,272
Unemployed	16	10	26	34	60
Total Labour force	1,119	153	1,272	60	1,332

39. The case for an on-going consultative process can be illustrated with reference to the manufacturing sector where all the major policy instruments listed in Table 2 are currently under active consideration. Long-standing policy preferences for movement from import controls to tariffs and from higher to lower tariffs are being implemented and export incentives phased out.

40. Fears that these policies will lead to lower levels of manufacturing output and further falls in economy-wide demand for labour are met by counter assertions that protection is not positively correlated with employment and that losses resulting from protection in one area will be offset by gains elsewhere.

41. The debate appeals to both principle and theory. In addition there is a need to introduce numbers to the system. In feeling for the pace at which to change sectoral regimes the relevant community of interest groups and the politicians are feeling for the weight of the factors entering the relevant trade-offs. Argument on the desirable direction of policy will be much more easily secured if the major interest groups have jointly explored the likely implications of alternative policy regimes, quantified these to the extent possible, formed an impression of the degree of uncertainty, and identified the major turning points on which interpretations differ.

42. More generally no sectoral policy should be determined in isolation. On issues such as employment and growth we are interested in performance over all sectors.

43. Take for example employment. The Labour Department's labour force projections, on the assumptions of zero net migration and plausible continuing changes in participation rates, suggest that the total labour force will increase as follows:

	'000	Change
1981 Census	1,332	
1986 Census	1,451	119
1991 Census	1,562	111

These prospective intercensal increases can be compared with the sectoral employment changes which occurred during the 1970s, as shown in Table 3.

44. The inferences which can be drawn from this broad data are fairly limited. We can note, however, that a combination of zero net migration and a target census unemployment rate of 2 percent in 1991 would require the creation of 259,000 jobs during the decade — as compared with full-time employment growth of only 27,000 in the last inter-censal period. Given renewed growth in the economy the major part of the required jobs would be provided by the service sector and one can make various assumptions about how large that contribution might be. Assume, however, that the proportion of service sector jobs rises to 67 percent (1971, 62.7; 1976, 65.0; 1981, 64.8). This would imply services employment of 1,026,000 and require primary and secondary industries combined to provide employment for 505,000 persons (a decade increase of 57,000).

45. Clearly many alternative assumptions could be made but there is a clear inference that we will probably need to secure a moderate increase in manufacturing employment during the next decade. In turn this means that we need to test any proposed policy package for the manufacturing sector against this requirement. If it falls short or tends to overshoot there is a need to consider modification of that package.

46. The case for changing policies affecting any particular sector must, of course, be moderated by the need to maintain a general equivalence of support measures to all sectors. There is no

point in using a strong incentive in one sector to secure a given increase in employment if a lesser incentive could secure that same increase elsewhere. This does not remove the need to continue testing whether the overall package of policies and incentives is likely to secure the major policy objectives.

47. In addition to assisting achievement of overall balance, a more formalised on-going sectoral consultative process can be expected to lead to a significant qualitative improvement in sectoral policy formation. Observers of the Japanese scene have commented on the great strength which their economy derives from the extensive consultative process by which their major corporations form new policies. The extensive canvassing of policy options within organisations means that when a decision is finally taken, all those who must act on it are aware of its implications in their area of responsibility and are thus well placed to implement it rapidly and effectively. Similar benefits could be expected to flow from a more articulate and deliberate process of sectoral policy formation in New Zealand. In developing this we need to avoid the pitfall encountered in the National Development Conference in the late 1960s. What we do not need at this stage is a set of extrapolated targets as background for a major conference — that invites false expectations and subsequent disillusion. What is needed is the steady development of the processes by which industry and government explore, on a continuing basis, the connections between policy options and possible development paths.

The Formation of Policies in Areas of Common Purpose

48. The most difficult planning issues clearly arise around the utility of, and possible mechanisms for, strategy formation in particular areas. Questions of ends and means both arise. The secondary question of means need not detain us, except to note that the frequent perception that strategy-forming bodies should be tripartite or broadly representative (as are for example the nine industry councils formed in Australia in March of this year), to a degree prejudges the more difficult issues relating to function. Experience has shown that it is as easy to create ineffective or purposeless organisations as it is for advocates to suggest unrealistic functions for them. Clearly we do not want tripartite industry councils which take over the investment allocation functions of firms; equally we do not need vague sector councils which talk to no purpose.

49. There is therefore a need to focus on the more difficult question of ends. It will probably be necessary to engage in some learning-by-doing, probably with a narrower focus on one or two sectors. Having selected these, the objective would be to promote a joint exploration of major development options and articulation of the associated policy frameworks. Take for example the ten-year strategy plan presented to the Timber Industry Conference in September 1984. This is said to have major implications for "domestic and export marketing, working and fixed capital, transport, manpower training, energy and technology". Clearly in this industry major choices will have to be made, on the future balance of production between raw logs and wood products. There is a need to develop some common understanding of the underlying issues on which that and other choices should turn. How do we articulate the linkages between this, or any other, sector and national policy objectives.

50. At this point we come up against a gap in the existing policy-making framework. This gap inhibits the formation of policy and thus weakens our ability to secure key economic objectives including faster growth and full employment. There is a need for on-going debate on the proper balance of market and planning mechanisms and for practical exploration of appropriate means for strategy formation and policy review.

FOOTNOTES

1. The most recent major publication in this programme is Haywood, E., Rose, D., Stroombergen, A., *Towards 1990: Patterns of National and Sectoral Development*, Planning Paper 18, New Zealand Planning Council, 1983. The next major publication, which will be based on a round of sectoral consultations beginning in March 1985, is planned for the last quarter of the same year.
2. Shinohara, M. and Yanagihora, T., *Japan's Experience in Managing Development*, World Bank Staff Working Paper Number 574, 1983, p.21
3. This could be based on the New Zealand Planning Council. Alternatively the function could be fulfilled by a section of an established department or by the creation of a new agency.
4. *Economic Planning in Japan*, Planning Bureau, Economic Planning Agency, 1979

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