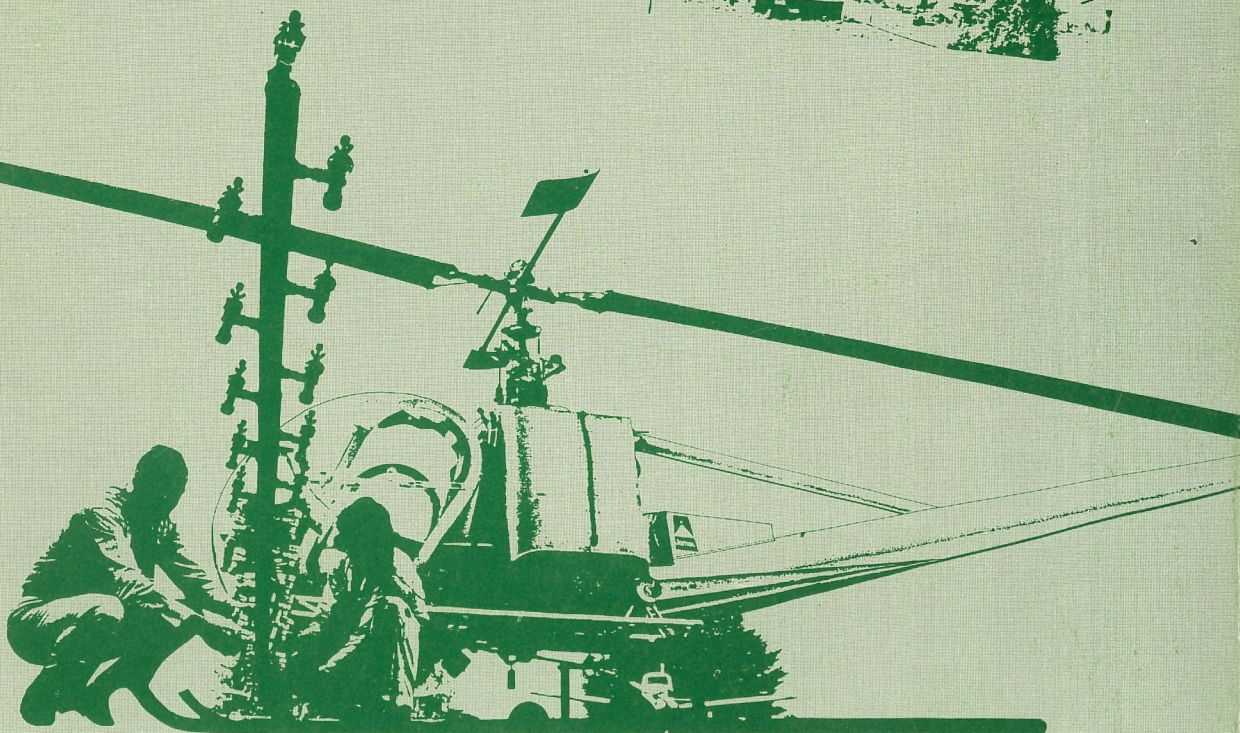


# rural change

Farming and the Rural Community in the 1970s



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New Zealand Planning Council/Centre for Agricultural Policy Studies, Massey University

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# RURAL CHANGE

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## Farming and the Rural Community in the 1970s

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## PREFACE

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This study was commissioned and funded by the New Zealand Planning Council, and prepared by the Centre for Agricultural Policy Studies at Massey University in co-operation with the Planning Council. It is number 21 in the NZPC series published by the Council, and the sixth in a series of Agricultural Policy Papers published by the Centre. The two organisations have prepared and published a joint paper previously (*The Future for New Zealand Agriculture: Economic Strategies for the 1980's*, I. McLean) and have appreciated the experience of collaborating again in the study of important policy issues.

The views expressed in all chapters of this study derive from a process of consultation between members and staff of the two institutions, assisted by staff of the Ministry of Agriculture and Fisheries, of the New Zealand Meat and Wool Boards' Economic Service, and of the Department of Agricultural Economics and Farm Management at Massey University.

However primary responsibility is distributed as follows:

Chapter 1 was written by the New Zealand Planning Council; chapters 2-5 and the appendices were researched and written by Mr C.W. Maughan, Senior Research Officer at the Centre for Agricultural Policy Studies. Chapter 6 was largely written by Mr Maughan, but draws heavily on information obtained on field trips by members and staff of the New Zealand Planning Council, and by staff of the Department of Agricultural Economics and Farm Management of Massey University.

The report as a whole was prepared under the general guidance of a Planning Council Task Force chaired by Mr R.D. Guthrie (Member of the Council) and comprising, Mrs Heather Little (Member of the Council), Mr G.K. Ansell, Director, Mrs P. Fischer, and Mr P.J. Rankin (executive officers of the Council); together with co-opted members—Dr R.W.M. Johnson (Ministry of Agriculture and Fisheries), Mr N. Taylor (New Zealand Meat and Wool Boards' Economic Service), and Dr E.M. Ojala and Mr C.W. Maughan (Centre for Agricultural Policy Studies). The Task Force was also supported by the three members of the staff of the Department of Agricultural Economics and Farm Management at Massey University who assisted the sub committee with the field work, (Evelyn M. Hurley, Mr A.N. McRae, and Mr J.W.M. Gardner).

Both the Planning Council and the Centre for Agricultural Policy Studies are grateful to the many people who gave of their time and expertise to assist in the compilation of this study. While it would be invidious to single out any individual or group for particular acknowledgement, we are indebted to the members of the Maori community who took part in round-table discussions at the Planning Council and assisted us in the field work; the numerous farmers, local authority staff and representatives, farm advisory officers, central government staff, community leaders, and individuals who welcomed the Task Force on their visits to the regions; the field officers of the New Zealand Meat and Wool Boards' Economic Service; the staff of many Government departments; and the staff of the Department of Agricultural Economics and Farm Management, at Massey University. Many other people assisted and helped us in ways which would be too numerous to list. We enjoyed meeting them all, and benefited from their expertise and knowledge. We hope we have managed, in this study, to capture some of the vitality and adaptability which so obviously characterise the farming and rural sectors.

Sir Frank Holmes (Chairman, New Zealand Planning Council)  
Dr E.M. Ojala (Director, Centre for Agricultural Policy Studies)

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## TERMS OF REFERENCE

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1. To review and quantify where possible, the significant changes that have taken place over the last decade in on-farm production in New Zealand; and
2. To relate these changes to the changes that have taken place in the rural sector and rural community—in particular, to the depopulation of many country areas and the observed decline in rural services.

It should be noted that the terms agricultural sector, farming sector, and rural sector, are not used interchangeably throughout this study. Each refers to an area of economic activity and to the people who take part in that activity. The *agricultural sector* includes farming, the farm input industries, and the processing, distribution, and marketing industries centred round farm production. The *farming sector* refers specifically to on-farm activities. The *rural sector* is assumed to be all the people who work in, and all the economic activities which take place in, non-urban areas—specifically in the counties as opposed to the cities and boroughs. The rural sector therefore contains the farming sector and much of the agricultural sector, but differs from either in encompassing many non-farm, non-agricultural activities. The term rural community is used to describe all the people who live in rural areas, whether or not they take part in any economic activity.

# 1. RURAL CHANGE—A PLANNING COUNCIL VIEWPOINT

There were two distinct, but connected, reasons for the Planning Council's undertaking this study of the rural sector. The first was the concern expressed by people living in rural areas about the declining size and strength of many rural communities; about conflicts resulting from changing patterns of rural activity; and about planning restrictions on the use of their resources. The second was a renewal of national concern about the continued profitability and growth prospects of agricultural production, especially in the traditional meat and wool industries.

About one in six New Zealanders lives in the country. Many more, living in towns and cities within or on the fringes of rural areas, depend for their livelihood on rural employment. Their economic welfare and quality of life are of significant interest to the nation, and that interest is heightened by the continuing dependence of all New Zealanders on production from the rural sector.

Although we are now seeing rapid growth in non-traditional foreign exchange earnings, many of them are based directly or indirectly on rural production. Imported resources for expansion in energy, manufacturing, forestry, tourism and other earners and savers of foreign exchange, will impose an added burden on the balance of payments before they begin to pay their way. In the meantime, that burden must be carried by increased earnings from traditional agricultural exports to provide the leeway for growth in the economy as a whole.

As far ahead as we can see, agricultural exports will continue to supply at least half our overseas earnings. And so the higher levels and greater diversification of our exports and the expansion of soundly-based import substitution projects—both of which are fundamental to New Zealand's future well-being—depend on the health of the traditional agricultural industries and of the rural sector.

Four broad themes have been identified, which dominated the literature and public debate on farming and the rural sector over the last decade:

## 1.1 Summary of the Study

- The *production theme*—a pre-occupation of the nation and central government with the need to increase farm production for export
- The *farm income theme*—the efforts by farmers to maintain or increase net incomes in a period of rapidly-rising costs
- The *rural depopulation and services theme*—reflecting the concerns of the rural community with depopulation and an apparent decline in services; and
- The *planning theme*—the broad interest of the whole rural sector in the institutions dealing with resource allocation and, in particular, in land use and in how decisions were made by these institutions.

Against the background of these themes, the study then examined change in the rural sector. It was soon evident that the aggregate figures gave a misleading impression, since they concealed a great many changes that took place in the farming and rural sectors throughout the 1970's.

The overall statistics show that during this period the rural population may have increased slightly—a significant departure from the historical trend. Whereas for agricultural production, the first part of the decade was a period of no growth. It was not until the end of the decade that stock numbers and total agricultural production began to rise above the levels of ten years earlier.

However, once the aggregate figures are broken down a much more varied pattern of change emerges in both the farming and rural sectors.

### 1.1.1 Changes in the Farming Sector

Farmers reacted in a number of ways to forces and developments from outside which affected their activities. Some of the more important changes were:

- Diverse changes in farm size, number of holdings, and number of farmers, as some pastoral farmers enlarged their farms and others, on the more fertile soils or close to cities, sub-divided their holdings into smaller flocks for full- or part-time horticultural or other uses
- Greater diversification of product and land use patterns
- Continuing interrelated changes in technology, management strategy, and farming efficiency
- Reduced use of labour on pastoral farms, but increased use of labour in horticultural units<sup>1</sup>
- A complex series of changes in inputs other than labour—in general there was a reduction in real investment in the mid 1970s; followed by an increase later in the decade
- A large growth in net *nominal* incomes, but no increase in net *real* income
- Changes in output resulting from the other changes—in particular, an increase in non-pastoral land-based production; and a stagnant period in pastoral production, which was followed by a period of rapid increase.

### 1.1.2 Major Factors Acting Upon the Farming and Rural Sectors

All these changes in the farming sector were in response to a number of other developments that affected not just farmers but the whole rural sector. Farmers, for their part, had been confronted by changes in the relative prices of different products; unstable and volatile markets for traditional products; difficulties in adapting marketing strategy to these changing conditions; rapid increases in costs on the farm and in processing and distribution charges; the growth of Government-financed incentives; increasing land values; expanding information on technology; and changing perceptions of equity as between rural and urban communities.

In the rural sector, as a whole, many other changes had taken place, particularly in the composition and location of the rural population. Changes in farming probably influenced movements in population in some areas, but elsewhere other influences were more important. While any generalisations can be offered only with great caution, it could be said that in counties where the principal economic activity was pastoral farming, the population tended to decrease—fewer farms, fewer farmers, and fewer farm employees. In counties with a growing number of small units (either full or part time) the population tended to increase. Other influences were also most significant in special areas. Changes in the number and variety of services available to rural people were believed to follow changes in population; but changes in the location and quality of services depended on a wider complex of factors, including economies of scale and the cost and technology of transport.

The changes that have taken place in the rural and farming sectors and the factors that prompted them can be related back to the four themes of this study, but there are considerable variations in the way they interact in different areas and types of farming.

### 1.1.3 Effects Upon Farming Production and Income

The study has identified distinctions among *products* (Dairying and some horticultural products are doing better than meat and wool production); among *areas* (more established farms in the South Island are better placed than their counterparts in the North, especially those which are more recently developed); and among individual *farmers* (those with more land or more equity are more resilient than those with less). Rising land prices have improved the asset wealth of established producers, but reduced the income of new entrants.



While agricultural production has recently been rising, trends in farm investment suggest several grounds for caution about the prospects for sustained growth. The cost/price squeeze is affecting the profitability of all parts of the rural sector, and costs are rising faster than prices. Supplementary Minimum Prices (presently running in all cases except dairy products well beyond market prices), export incentives and other subsidies from the national exchequer now form a significant part of the returns to agricultural producers as a group, although some classes of farming currently are doing comfortably without them. Since there is growing public resistance to such expenditures and incentives, and pressure from our trading partners for their elimination, some farmers may be questioning the wisdom of expanding production under these circumstances.

The cost/price squeeze has had direct and indirect effects on rural populations and services. While these cannot be quantified in detail from statistics collected on a county basis (as they were for this study), the directions of the major movements seem clear. The providers of services, whether public or commercial, have been led to seek economies, often by centralising their operations and so moving some of the costs of transport on to their customers. In many areas where opportunities for diversification and intensification of rural production have been taken up, population increases have offset the pressures for centralisation of services. In other areas, where the movement has been towards more extensive traditional production and populations have declined, these pressures have been reinforced.

Where a decline in local services puts rural communities at a disadvantage, it is obvious that for many of the people affected, the quality of life is eroded. What is less obvious and less quantifiable is the impact of this trend on the profitability of the agricultural industries, especially in the more remote hill country areas where the technological prospects for growth seem reasonably high.

While the servicing of agriculture may be made more efficient internally, and its costs at the point of sale may be reduced by centralisation, this may result in higher costs to those living and farming in the more remote areas—in time, transport, and loss of convenience. Also, if withdrawal of local services makes living in those areas more expensive and less attractive, agricultural production may not reach its technological potential and may well decline. The recent surge in production, especially in the hill country, may represent a short-term response to economic incentives which is not sustainable under longer-term economic and social constraints.

The linkages might appear to be plain; but they are probably extremely complex, and it has not proved possible within the scope of this project to quantify them. Closer study is warranted of the interrelationships between technological, economic and social factors, particularly in the critical hill-country areas.

#### 1.1.4 Effects Upon Rural Depopulation and Services

The planning theme identified in the study concerns the way in which our institutions for planning and decision-making respond to the developments in the rural sector. Population, economic and social changes have applied much pressure to the institutions which control the provision of local and national services. The widening range of land use options has intensified pressures on existing local body rules for the use of rural resources. Some who wished to try out new options have sought changes in the rules to recognise requirements for small holdings and forestry; others have sought to use the rules to prevent change to their accustomed way of life, for example, to restrict farm amalgamations or sub-divisions, or to prevent the establishment of forestry. Some Maori owners seeking new roles for their land resources have run up against institutional or legal barriers.

#### 1.1.5 Effects Upon Planning

The introduction of new regional planning processes, designed to help resolve many of these problems, has encountered inertia or active opposition from some existing local or central government bodies, which see this development as an inroad into their authority.

The extent of these changes has posed a challenge to people engaged in the planning and decision-making institutions. Many of the institutions, particularly in rural areas, have responded well to the challenge and have assisted and encouraged adaptation in a positive way. But others have found the adaptation more difficult. The field investigations confirmed the need for substantial improvement in planning processes at local, regional and national levels, and for better co-ordination between them.

## 1.2 Conclusions

A major conclusion of the study is that the complexity and diversity of the rural sector should be more widely recognised. There is no single national answer to the wide range of rural problems. Solutions must come from the judgements of those living in each rural area on the options available for meeting their perceived needs. The accuracy of those judgements will in turn depend on the quality of the information on which they are based: clear and reliable price signals from the market, and clear statements of Government policy.

### 1.2.1 Diversity of Production Important

The 1970's have seen a rapid increase in the range of options for the use of our land resources. In the '50s and '60s there were few areas where there was a choice beyond dairying, beef or sheep production. Now there are few areas which do not have the choice of other uses—forestry, deer, goats and many arable or horticultural crops. Accompanying this increase in production options is the expanded range of ways of living that are now possible in our rural areas. Both are welcome for the greater opportunities they provide for individuals. For the country as a whole increased diversity of production is of great importance, especially in spreading the risks and increasing the profitability of exporting.

### 1.2.2 Need for Greater Local Decision-Making

In the Council's view, greater variety in development options requires that more responsibility for decision-making be given to local areas to suit local circumstances and aspirations. There can, however, be conflicts between local, regional and national interests and the regional planning process provides a framework in which such conflicts may be defined and resolved. For the vitality of the rural areas, it is important that local and central government bodies show a real willingness to use and develop the potential of this new mechanism. In many cases that willingness is not yet evident, and in every case the new processes are hardly under way. It is therefore still too early to assess their costs and benefits in practice.

### 1.2.3 Greater Co-ordination Needed Between Government Agencies

Effective regional planning can bring greater cohesion to policy-making, informed understanding by those in local communities of central government objectives, and greater sensitivity within central government to rural concerns and aspirations. There is a common feeling of remoteness in many rural communities, which is only partly geographical. In the field trips the Council's Task Force noted a widespread perception that clear statements of Government policy are not always forthcoming; that co-ordination between departments of central government is often poor; and that different departments may pursue contradictory objectives in the same locality.

The Council sees a clear need for the agencies of central government to clarify their objectives and policies and to ensure better co-ordination both internally and with the regional planning process. The field investigation showed that many local communities are taking the initiative in revitalising their own areas. We believe that Government should actively encour-

age this process by ensuring that its own rules and regulations do not hamper the development of local solutions to local problems, and by stimulating the exchange of information between communities about the success (or limitations) of their initiatives. While we do not propose new avenues of public expenditure for the support of rural communities, we would hope to see greater flexibility in the procedures for the distribution of public funds. In particular, there should be an acceptance of greater local discretion in the adaptation of health, education, and welfare programmes to best meet local population or geographic requirements.

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There is a growing awareness amongst rural Maori people of the potential for using their land resources to support communities and the way of life they seek. In many cases development of this potential is hindered by inadequate access to information about development options or procedures, or by institutional blockages, such as the difficulties in using land in multiple ownership as security for development loans. There is scope for Government action to assist in overcoming these barriers, and national benefit from doing so. Again, the recommended approach is not additional subsidies but encouragement and help for local initiatives.

#### **1.2.4 Need to Support Maori Owners in the Development of Their Land**

The Council emphasises that the picture it has gained of the rural sector through this study is far from being one of gloom and pessimism. The initiative and enthusiasm shown by many local communities, and also by many owners of Maori land, provide evidence of the vitality and potential of rural areas. Communicating the lessons of their experience should help other groups. To assist this process, the Council favours the preparation and wide distribution of case studies on the successes and failures of local initiatives.

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If the continued vitality of rural communities depends on their exercise of initiative and responsibility in helping to determine their own future, a healthy rural sector is nevertheless impossible if the agricultural production on which it is based is depressed. The profitability of agriculture is in turn determined both by decisions made on the farm and by external factors; the two being intimately related. Production decisions by individual farmers are based on developments on the farm, in world markets and in the national economy.

#### **1.2.5 A Healthy Rural Sector Depends on Farming Remaining Profitable**

The study helps to confirm the growing importance of farm management skills in determining whether any farming operation succeeds or fails. This points to a need for continuing support from central government for education extension and training programmes for farmers, so that they have the background knowledge to assess new scientific and technological options and the skills necessary to apply them effectively.

#### **1.2.6 Need for Continued Support of Training, Research and Advisory Services**

Research and advisory services are vitally important in a time of change. Research priorities need to be reappraised vigorously as the range of problems facing agriculture broadens and becomes more complex. More attention also needs to be given to the application of technological developments already available, for example, in encouraging farmers to undertake controlled grazing systems and in providing more information about minimum effective rates of fertiliser application on different types of country.

There is a clear role for the Government here in concentrating on areas of investigation and advisory services where there is a public as well as an individual benefit to be gained.

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In the current cost/price squeeze it may be expected that farmers will minimise production costs where they can do so. One area in which the collective decisions of the farming community have made a major impact

#### **1.2.7 Need to Moderate Increases in Land Prices**

on farming costs has been the price of land, which, in many cases, has risen well beyond a farmer's ability to service the ensuing debt from annual production returns. There are, of course, reasons for this rise in land prices, including the tax structure, ready access to capital frequently at concessionary interest rates, expectations of inflation rates and capital gain, and the natural tendency to capitalise into land prices the value of subsidies and incentives to farmers. A moderation of the rate of increase in land prices in the more marginal areas (which has begun to occur as credit has tightened) would reduce the need of many farms for continuing financial support from the Government.

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**1.2.8 Need for More Information on the Profitability of Different Development Options**

The study has shown a variable pattern in farming, with some sectors buoyant, but others facing an uncertain future. Developments both outside and within the industry raise basic questions about the long-term sustainability of sheep and beef farming; about the way in which such farming should develop; and about the continuation of recent incentives necessary to ensure an adequate return from what has been invested. Would diversion to other uses such as forestry or deer farming produce greater returns? It seems to the Council that the results of a more detailed study examining such issues as remoteness, the cost/price structure of traditional production, and various production options, should provide informative guidance for Government, local communities and individual farmers. The Council will discuss with Government departments and other organisations the best way to gather and make available such information.

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**1.2.9 Need for a More Coherent and Long-Term Marketing Strategy**

While there appear to be reasonable long-term prospects in overseas markets for our traditional exports, there are many uncertainties overhanging the trade, as well as institutional obstacles to overcome. Political instability characterises some important developing markets; and there are few countries, developed or developing, which do not practice some measure of restriction on imports of livestock products. The Government attaches high priority in its diplomacy to the defence and expansion of market access. But farmers can help to reduce the uncertainties by supporting needed changes in the marketing of their products. There is still too pronounced a tendency to produce what is traditional or convenient and sell it on the usual market for the best price on the day. A faster shift is needed towards marketing strategies aimed at maximising returns in a longer perspective.

These strategies must be based on good research to determine what products are wanted and where they are wanted. We need to move faster to increase the depth of processing of the agricultural product, and to secure a wider and more profitable market. Such developments must be supported by active trade promotion, with co-operation between farmers, marketing organisations and the Government. Also, the products should be sold within a coherent strategy which maximises our market strength. Agricultural development is a medium-term business incurring short-term costs for longer-term gains; it cannot be soundly based on a short-term approach to sales.

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**1.2.10 Faster Progress Needed Toward a More Market-Oriented Economy**

Farmers must also look to the Government, and the community generally, for greater efficiency in the infrastructure beyond the farm gate. The excessive regulation and protection of wide areas of New Zealand industry—whether imposed by the Government or by private agreements—which pushes up the cost of agricultural inputs and servicing is incompatible with the need for the major export industries to remain internationally competitive. In the long run these export industries cannot remain profitable unless their costs, as well as their returns, are kept in line with those of our trading partners.

The Council has argued on many occasions for faster progress in moving towards a more market-oriented economy, through the reduction of unnecessary constraints on the flow of resources into areas of most profitable potential growth. It has also sought changes in exchange rate management which would, as part of a comprehensive range of corrective measures, provide a more realistic return to exporters from international markets. Nowhere is this restructuring more important, or more urgent, than in the agricultural industries, whose healthy development will for many years ahead be fundamental to our national growth prospects.

Two current Council projects have particular relevance here. Its study of inflation will assess the impact of inflation on the economy, identify areas in which inflation has been distorting the market signals to economic decision-makers, and discuss the policies necessary to reduce the rate of inflation in the first instance to the much lower average level of our principal trading partners. Secondly, the National Sectoral programme examines real resource allocation and the structural relationships between sectors. Its work has already emphasised the need for closer attention to the efficiency of the service sectors, such as transport, and the continuing importance of traditional agricultural exports. This work will underpin the Council's contribution in assisting the Government to formulate a comprehensive national development strategy, in which the main elements for promotion of growth are brought together, and medium-term priorities established.

The underlying structural problems in the economy must be tackled as a matter of urgency. Expedients such as fertiliser subsidies, supplementary minimum payments and export incentives are valid in an imperfect world, but only if the time they buy is used to remove the real problems. Otherwise, they rapidly begin to add another layer of distortions and inefficiencies. As the Council has noted in other analyses, the recent surge in the livestock base and agricultural output will not be maintained unless producers can receive a greater measure of reassurance about the longer-term prospects of expanded production: a relapse into the stagnation of the '70s would have profound consequences for the national economy.

Farming's longer-term profitability is affected by both external market trends, over which we can have little influence, and the efficiency of the domestic economy serving agriculture, which we can influence. Returns from world markets will fluctuate around a trend. Farmers need some insulation from the fluctuations, but must be exposed to the trend if they are to choose appropriate production responses. Within New Zealand they need to be assured that every effort is being made to reduce costs and improve efficiency in the domestic industries on which they rely. Given this assurance, the Council is convinced that they will respond; and respond quickly and effectively to market signals.

## 2. INTRODUCTION TO THE STUDY

### 2.1 Background

Four broad and interrelated themes dominate the literature and public debate<sup>1</sup> on farming and the rural sector in the 1970's.

They may be described as:

- The production theme
- The farm income theme
- The rural depopulation theme; and
- The land use and planning theme.

*The first* reflects a concern of central government, and stems from its preoccupation with trying to increase and diversify land based exports.

*The second* reflects a concern, principally of the traditional pastoral farmers, with rapidly rising costs, changing patterns in the use, value, and ownership of land, and a changing balance of power between the farmers, both as individuals and as a group, and the Government and other groups within society.

*The third* reflects a concern of many people in the more isolated rural communities with a continuing loss of population in remote rural areas and an apparent decline in social and commercial services.

*The fourth* reflects the concerns of central government, local government, and the rural sector as a whole, with a series of issues related to regional and district planning, in particular to land use planning, and to the rationalisation of the structure of local government.

The four themes are not separate, and they coalesce, particularly at the point of debate on land use and on incentives to farmers. Moreover, it should be stressed that neither individually nor together do they necessarily represent a complete and objective view of the changes that have taken place in the rural sector. But they are sufficiently distinct and prevalent in the literature to form a starting point for any discussion on the rural sector.

Accordingly, it is the purpose of this study to explore the four themes, to review and quantify where possible the significant changes that have taken place in on-farm production and the rural sector over the last ten years, and to analyse how and why the themes interact.

<sup>1</sup> The sources for the "debate" on policy issues in the farming and rural sector are many and varied. They range from reasonably objective analytical documents on such topics as farm costs and farm production, through sociological and economic research papers, tape recordings of farmer interviews, surveys of farmer opinion, and records of public seminars and meetings, to more subjective documents and public statements made by special interest groups. A bibliography of the more objective material is contained in Appendix 7.4.

### 2.2 General Overview of the Production and Farm Income Themes

New Zealand relies on land-based exports, particularly those produced by the pastoral farmers, for the bulk of its foreign exchange. Farmers, their families, and to a considerable extent the rural communities in which they live, rely on farm-based production for their income. They also rely on farming to produce the intangible benefits which are often included under the phrase "way of life". It is inevitable that the state of agriculture and farming should concern both the nation and the rural community.

Their concerns, however, are not necessarily similar. The nation (represented by the elected government of the day and by the appropriate executive departments) is preoccupied with the need to ensure that the volume and value of land-based exports increase so that there can be full employment and a rise in the standard of living of the country as a whole. It is interested in stability, increased production per hectare, and a product mix which returns the highest value for land-based, and indeed all exports.

The farming community, on the other hand, is not necessarily interested in stability; nor in increased production per hectare and different product mixes. It is interested in maintaining and increasing farm returns and in preserving and enhancing the way of life which best suits farmers and their families. If these goals can be achieved by subscribing to the national goals, then it will subscribe to them. If not, then it will subscribe to

something else and the objectives of the farming community and the nation will diverge.

Such a divergence occurred during the 1970's, and gave rise to the production and the farm income themes which form the starting point of this study.

The production theme took as its starting point the indices of stock numbers, and the production volume index of gross agricultural production. During much of the 1970's these indices appeared to be static. Changes that took place in the farming sector often appeared to be self-cancelling or in the wrong direction given the national objectives.

For instance, pastoral farmers switched first from sheep to beef, then from beef to sheep, but total stock numbers did not increase. They adopted new technologies, but often the new technologies increased production per person rather than production per hectare. They diversified into new products, as did the non-pastoral farmers, but many of the new products were inadequately marketed or destined for the domestic rather than the export market. Those new products which were successful formed only a small part of total agricultural exports.

Land prices rose steeply, for a variety of reasons, and investment in land appeared to many people to be an attractive proposition—more so than investment in increased production per hectare on land that had already been cleared. Farms were therefore sold for aggregation, and for division into small part-time holdings near the cities. There was considerable debate about the effect of these movements on export production.

Change in the processing, transport and marketing of agricultural commodities also seemed to be impeded, and the industry as a whole gave an appearance of lack of confidence, and lack of ability to compete with other sectors for resources. There were some obvious successes in export horticulture (the development of the kiwifruit industry) but much of agriculture—particularly the pastoral part of the industry—appeared to be stagnant, even declining. And yet the industry needed to expand and change, so that both it and the country could cope with the shocks occasioned by the oil price rise and the loss of the tied British market. Moreover it was noted that expansion was technologically possible and theoretically profitable.

For at least the first part of the 1970's this was the theme of almost all the production reports on agriculture whether they emanated from the Government or from independent commentators, and many analyses were made of the causes of the agricultural "stagnation". The general consensus was that lack of profitability and lack of farmer confidence in the pastoral industries were the primary causes of the overall stagnation. Unsuitable or inadequate technologies, lack of farmer motivation, and inclement weather were also mentioned as contributory causes. The lack of profitability and the lack of confidence were thought to stem from the increasing volatility of overseas markets caused by the loss of the British market and by the protectionist policies of the developed countries, and from the rapid rise in the price of farm inputs and in costs beyond the farm gate. These cost increases in turn were assumed to be caused by both the direct and the indirect effects of the oil price rises, and, more importantly by the lack of competitiveness, and the cost indexation and insulation of major components of the domestic economy.

Solutions to the problems in the second half of the decade included:

- Transfers of money to the farm/agriculture sector (by way of tied and untied grants, preferential loans)
- Re-establishment of long-term confidence through use of supplementary minimum forward prices (SMPs)
- Assistance with further product and market diversification (export incentives, incentives to horticulture)

## 2.3 The Production Theme

- Assistance with restructuring the agricultural service industries (hygiene conversion grants, delicensing of the meat industry)
- A floating exchange rate; and
- Gradual restructuring of the domestic economy to expose it to increased competition.

Following the application of these measures, but not necessarily resulting from them, the total indices of production started to increase rapidly and the problem of static production appeared to be resolved.

However, certain reservations have since been expressed about both the incentives and the durability of the solutions. Incentives are expensive to the taxpayer, and can distort production patterns. They can have different effects from those that the policymaker intends—for instance, part of the increase in land prices must result from the virtual guaranteeing of future incomes from the land, and from the taxation rules that allow the major portion of savings in farming to be deducted from gross income to determine assessable income. Moreover, incentives can lead to accusations of subsidisation and unfairness both from farming lobbies overseas and from less-favoured lobbies at home.

Even in the farming community in New Zealand the incentives are criticised. Some farmers simply resent the implication that they need to be “subsidised”, since they believe the incentives are compensation for inefficiencies and distortions elsewhere in the economy. Other farmers dislike the effect of high land prices (in part resulting from the capitalised incentives) either because they hinder the entry of young farmers into the industry, or because they lead to farming for capital gains rather than income and so make it progressively more difficult for new farmers to survive on income alone.

Costs to the farmer, both on and off farm, are still rising rapidly and policy changes so far seem to have had little immediate impact on inflation and the removal of inefficiencies in the rest of the economy. Restructuring has tended to meet with resistance from those most affected. And the agricultural sector, itself, is no exception.

There is also a realisation that some of the recently developed land may be so marginal that it may revert if farmers lack either the skill or the money to sustain production on the new land.

There is an increasing focus of research on farmer motivation, the suitability of various technologies, and the role of the advisory services. The relatively simple preoccupation with total on-farm production has given way to a much wider concern for improved technologies and management systems in the whole farmer-to-market chain. The production theme has become more complex.

Such, very briefly, is a summary of the production theme during the 1970's and early 1980's.

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## 2.4 The Farm Income Theme

A parallel and related theme to the production theme is the farm income theme. In effect, it derives from the farmers' perceptions of the same set of events which occasioned the production theme, and can be found in the writing on farming and in the public statements of farm leaders.

To the farmers, or at least to the pastoral farmers, the 1970's brought a brief period of prosperity as prices peaked, followed by a rapid decline in real net incomes as beef prices fell and costs rose. The farmers moved first into, then out of, beef, and reacted to the decline in real net incomes in a variety of ways. Some increased production *per hectare*, either by increasing the number of stock units they carried, or by improving the performance per animal, or by both. This increased their income. Others considered that the extra return from increasing production per hectare was not worth the effort involved. So they either cut inputs and retrenched, or increased production *per person* by buying more land and farming exten-



sively, in the belief that the increased production coupled with capital gains would provide a satisfactory return. Yet others diversified, if they could, into high value non-traditional products such as deer and kiwifruit.

The causes of the decline in real net incomes were readily apparent to farmers. They lay, so they said repeatedly, in the overseas markets, and in the cost indexation, protection, and consequent inefficiencies of the domestic economy. Taxation, lack of appropriate technologies, and the weather were added difficulties. Moreover, the problems were unlikely to be resolved since the farmers could do little to influence the overseas markets (apart from improving marketing and product presentation), and even less about the inflationary pressures. The farmers were, after all, a minority group—if an important minority group—in a country that was increasingly dominated by urban electorates.

There were other preoccupations voiced by farmers. Outside sectors (principally forestry) were encroaching on farming land. There was inter-sectoral competition within agriculture for land use between the traditional and non-traditional producers. A great deal of land seemed to be going into “unproductive” ten acre blocks or into urban development. There were many buyers of land, both from the cities and the farming community, and land prices were increasing so that the income from the land appeared to be inadequate as a return on money invested. There were frequent comments on the difficulties of young farmers getting their first farm, and some discussion of the causes and effects of land aggregation. Little was said of capital gain.

A great deal, however, was said in the first half of the decade about the frustrations caused by inefficiencies and disruptions in the processing industry, and about the growing power of urban/industrial lobbies. To the farmer, his power to influence events seemed to be declining, particularly in the face of large and organised urban lobbies.

A parallel concern was the farmers' mistrust of the amalgamations that took place in the allied farming industries—a reaction as much as anything to the sheer size of the firms that emerged, and to the difficulties of dealing with them on an equal footing.

Whether or not the farmers' power to influence events really did decline is a moot point. New Zealand is so dependent on land-based exports, and the farmer is so able to retrench and survive in difficult times, that his power is more real than he might at times imagine. Moreover, the legal dominance of the producer boards, and the significance of marginal electorates to the political system can, and often does, enhance this power.

Whatever the case, despite the feelings of loss of power, the introduction of the various measures to assist farmers in the late 1970's indicated that the farmer was still influencing the elected government, if not the large firms and the special interest groups in the allied industries.

To a certain extent the farmers recognised this and in the second half of the decade there was less emphasis in their public statements on the declining power of the farmer and more emphasis on trying to counter the bargaining power of other groups in the economy. Hence the renewed interest in farmer cooperatives, and the attempt to form a unified and coherent agricultural lobby in the AGROW campaign of the early 1980s.

The farmers were, however, still worried about the continual cost increases, and many were now troubled about the long-term implications of the incentives and assistance. Some simply resented the implication that “subsidies” were necessary. Others thought the incentives were inadequate or misplaced. Yet others could see adverse implications of increased government involvement in terms of their personal freedom and their control over farm and product.

Moreover many farmers noted that incentives did not necessarily solve a farmer's income problems. Often the incentives became capitalised into land values while costs continued to rise, so that the farmer became nomi-

nally wealthy and yet still short of cash for development. Meanwhile the incentives distorted the pricing mechanism so that the farmer no longer reacted to the signals from overseas markets.

The debate is still continuing in the face of large and obvious transfers of public funds to sheep/beef farmers under the Supplementary Minimum Price Scheme, continuing increases in farming costs of the order of 20 percent a year, and average increases in the farmland sales price index of a similar amount<sup>2</sup>.

This, very briefly, was the farm income theme during the last decade.

<sup>2</sup> This study was completed before the 1982 Budget was introduced. The Budget includes a series of provisions related to the tax deductibility of interest, which may slow down the rate of increase in the sales price index considerably.

## 2.5 The Rural Depopulation Theme

The rural community as a whole had wider preoccupations. The trend towards greater production per person and towards larger farms in the pastoral sector, meant that in many areas there were fewer farms, fewer farmers, fewer opportunities to be a farmer, and fewer jobs on farms.

Many rural services, both commercial and social, were also going through a similar process of rationalisation in response to changing economic forces and changing technologies. For instance, the need to reduce overheads resulted in the centralisation of many services. The improvement of roads, transport technology, and communications facilitated, and in some instances accelerated, this centralisation. Also, the cities, particularly those of the North Island, offered more attractive opportunities to people than did the rural areas.

Inevitably, people left the more remote areas and in leaving caused a further decline in the demand for services. To the people in the rural communities in which this depopulation occurred the results were obvious—empty houses, closed schools, abandoned railway stations and transport depots, and closed maternity hospitals. In other areas, however, particularly those where land could be sub-divided for part-time farming or horticulture, or where the climate and land prices favoured alternative life styles, the rural population expanded. Even in the more remote pastoral areas, non-farm activities such as forestry, the construction of hydro-electric dams, and tourism brought people back to the rural areas. By the end of the decade the majority of counties were recording increases in population after many years of decline.

Thus the depopulation theme which occurred so frequently in the public statements of the traditional farming community in the early 1970's has to be seen in the context of a change in the location and composition of rural communities which was viewed in many different ways by different groups in the community.

In those communities where there was a consistent net decline in the population, the sense of loss and isolation caused by the depopulation was very real. But in other communities where the decline in the population of the traditional rural communities was offset by an influx of new and apparently "different" people, there was a sense not so much of loss, as of an impending threat to traditional orders and values. This sense of embattlement can be found in any of the public statements of the traditional farming community when forestry, part-time farming, alternative life styles, and even "new" farming styles such as horticulture first entered their area.

In yet other areas the newer interests increased the population to such an extent that the word repopulation would be more appropriate than depopulation to describe the theme.

Reactions to the quality and adequacy of rural, social and commercial services were similarly varied, and involved a level of subjectivity on the part of the perceiver which prevents any easy analysis.

Perhaps the most that can be said as a general outline of the "rural services" theme was that many members of the rural community—particularly those who lived in areas with a consistent population loss—perceived

a deterioration in the quality and adequacy of social and commercial services, both in relation to the services that had previously existed, and in relation to the services they felt the rest of the community enjoyed.

The extent to which their perception accorded with an objective reality—if such a reality can be measured—is probably not as important as the fact that they *felt* the services had deteriorated, and linked this feeling with their perceived loss of political power and declining net real income. Accordingly, in the late 1970's a strong rural lobby, backed by the information from a number of sociological surveys, tried to halt the perceived decline in rural services and to encourage the Government to develop a *rural* as well as an agricultural policy.

Parallel to this process of lobbying, and linked to the fourth major theme of planning, a major effort was made by many local authorities and rural communities to improve the level of services through their own efforts. As part of this policy they began to encourage, rather than resist, the repopulation of rural areas so that there would be a sound population base to support services. Many local authorities therefore started to adopt more flexible land use and sub-division policies, and to implement policies which supported the retention of local services.

By the early 1980's a mood of cautious optimism about future growth patterns was beginning to prevail in some rural areas.

The fourth major theme that occupied the rural community (and central and local government) during the 1970's was local government reform, and regional and district planning.

## 2.6 The Land Use and Planning Theme

The literature and legislation related to these two interconnected themes is specialised and cannot be adequately discussed in a general study such as this. However, the themes are so prevalent in the literature that some explanation of their content needs to be included.

During the 1970's, for a variety of reasons, including the increasing conflicts created by changing land use patterns (mainly the sub-division of land for ten-acre blocks), and a political and economic awareness of the need for more rational regional administration and planning, two pieces of legislation were passed that affected all local authorities and the communities that they administered.

The first was the Local Government Act of 1974, and the Local Government Amendment Acts of 1976, 1978, 1979 and 1981. In effect, this legislation set out to rationalise and coordinate the activities of the existing territorial and ad hoc local authorities, and placed an emphasis on administration by broad regions while still retaining the small and often parochial local districts. The various amendments to the Local Government Act toned down some of its more radical proposals, and changed the emphasis away from regional government more towards united councils with a greater degree of local authority control. The various annual amendments have subsequently reconstituted certain regional powers.

The intention of the Act and its amendments was to create a united voice, to coordinate civil defence and regional planning and to adopt any other functions agreed to by the local authorities involved.

The second, and related piece of legislation, was the Town and Country Planning Act (1977) which replaced the 1953 Act. Together with the Town and Country Planning Regulations (1978) it made substantial changes to the law affecting regional and district planning and for the first time provided for maritime planning. The comprehensive approach of the 1977 Act encompassed social, economic and environmental planning and declared certain matters to be of national importance. The intention was to create an opportunity to use regional planning as the focus for a range of activities which had previously been separate.

In effect, the Act forced local authorities to develop a planning process, rather than concentrate, as they had tended to do previously, on setting down rules for physical development of the land.

Reaction to both acts was mixed. While some local authorities welcomed the Local Government Act of 1974, seeing it as a strengthening of their powers, vis-a-vis central government, others saw it as a threat to their autonomy and a move towards greater control by central government. Consequently, some authorities proceeded to combine and to coordinate their activities, while others did not. The amendments to the Act were, in fact, introduced because of these negative reactions.

Similarly, the Town and Country Planning Act (1977) met with widely differing responses, both from the local authorities and the rural and urban communities. Most people recognised the need for some sort of regional planning and for a framework in which to resolve conflicts about the use of resources, but many were opposed to detailed planning, particularly where the implementation of a plan restricted what they perceived as their rights. The strongest opposition came from land and property owners, since the land use planning requirements in the district schemes affected them personally.

So most of the debate on the Town and Country Planning Act tended to be concentrated on the theme of land use planning, despite the widening of the concept of regional and district planning.

The debate was, however, and still is, concerned not only with land use planning, but with the larger questions of the freedom of the individual, the relationship of the individual to society, and the efficacy or otherwise of planning.

Therefore, any attempt to summarise the content of the literature and public statements runs into the difficulty that many of the viewpoints advanced are subjective, or based on differing philosophical and political preconceptions.

In general terms it can be said that for a variety of reasons attempts were made in the 1970's to reform and co-ordinate the administrative and planning activities of local authorities. Some people welcomed the process. Others did not, and said so most vocally. The debate still continues, although there are signs that the more extreme viewpoints on both sides are being modified by an awareness that there must be a flexible framework in which to resolve conflict.

An important concern which relates to the land use and planning themes (and to the other themes) is the issue of Maori land or Maori-owned land.

Maori land differs from general land in two important ways. First, it is seen by its owners not only as a source of economic and social support and comfort, but also as an integral part of Maori culture. Its cultural importance is obvious in the value attached to marae, burial grounds and areas of historical and spiritual significance. This difference has often led to conflicts between Maori and Pakeha over the use of land and water. The complete duality which exists between Maori and Pakeha systems means that a sensitive approach is needed towards these conflicts.

The second difference relates to the conceptual differences which exist between Maori and Pakeha land tenure systems. Conflicts are created through institutional forces which compel Maori land owners to comply with European concepts. These conflicts have been compounded by anomalies in legalised purchase and leasehold procedures which enabled Maori land to be alienated—often under dubious arrangements. Another source of Maori discontent has been the alienation of land through confiscation and compulsory acquisition.

It has proved extremely difficult to reach an agreement on the most suitable strategy to reduce areas of conflict. Maori values associated with land were given consideration in the Town and Country Planning Act, 1977, as "Maori ancestral land". Acceptance and use of these provisions has, however, been slow.

Moreover, the imposition, after settlement, of a European system of individually-owned land titles resulted in a confused profusion of multiple and fragmented ownership of Maori land, which has increased with each successive generation. This multiple ownership has made the land difficult to develop in a way that is satisfactory to both Maori and Pakeha values, principally because of the difficulties of raising development finance without security of title. Even if the finance could be raised, there would still remain the problem of administering a coherent development programme on multiple-ownership land. As a consequence, multiple land in multiple ownership has often been leased, and the owners have moved away. The absence of the owners has then made communication between owner and prospective developer problematical.

To counteract these difficulties, several legislative measures were introduced under the provisions of the Maori Affairs Act, 1953, and its subsequent amendments. This legislation has provided for the establishment of trusts and incorporations to facilitate the occupation and use of Maori land through the setting up of trustees and committees of management.

This mechanism is capable of restricting, further, the alienation of Maori land but its major benefits lie in recognition of the owners (trusts) and shareholders (incorporations) as legal entities capable of securing development finance and/or negotiating leases to enable the development and productive use of Maori land. Several other development avenues are being used, including management by the Maori Land Board or development through the Crown (Department of Maori Affairs, Department of Lands and Survey). Along with the apparent increase in demands by Maori people to prevent further alienation of Maori land, has developed a more pronounced level of independent Maori activity in all facets of land development and production. All possible avenues are being continually tested in response to this trend and many accepted traditional Pakeha values are being questioned in the process. These conflicts are likely to continue to form an integral part of present and future debates on land use.

This has been a brief outline of the land use and planning theme during the 1970's. The next chapters discuss the statistical evidence that can be found to explain the dominance of this and the other three themes in the literature and public debate on rural change in the 1970's.

### 3. CHANGES IN FARM STRUCTURE AND LAND USE

#### 3.1 Introduction

The four themes outlined in Chapter 2 came to dominate the literature and public debates on the rural sector because of a number of interconnected changes that took place in the farming and rural sector during the 1970's. Chapters 3-5 discuss the changes that took place in the farming sector during the 1970's.

#### 3.2 The Causes of Change in the Farming Sector

Farmers are businessmen who use their management skills and a variety of technologies to combine the resources of land, labour and capital in order to produce an output. They sell this output<sup>1</sup> in order to obtain a gross income, from which they must deduct current costs to arrive at a farm surplus. From the surplus they must then find money for reinvestment and for taxation.<sup>2</sup> The remainder constitutes one of the returns to the farmer from his business. The other return is from capital gain.

These two returns must be sufficient over a period of time to reward the farmer or outside investor for risking capital in the business of farming (as opposed to any other business); and to provide the farmer with a standard of living which he feels is commensurate with the effort he puts into farming.

Although the definition of sufficiency will vary from farmer to farmer, and although the farmer may be influenced by his pursuit of objectives other than profit, no farmer can long continue in business if he ignores the need to generate a surplus. Moreover he must ensure that the balance between the current returns (from income) and the capital gains is such that he has sufficient liquidity in any given year.

Farmers are therefore watching for any signals which might come from the marketplace to suggest that their surpluses or liquidity positions might change.

The signals, which usually take the form of price changes or anticipated price changes, come from a variety of sources. They come, for instance, from the marketplaces in which farm produce is sold, either in New Zealand or overseas. They cover the entire range of inputs (both capital and current) that a farmer can buy. They refer to all the products that the agricultural and competing industries can produce, and to all the possible investment opportunities available to farmers. Moreover, the signals are complex in that many, if not all, are affected or distorted by political influences both in New Zealand and overseas.

Despite this complexity the farmer has to interpret the signals as best he can and decide what, if anything, he must change in his business enterprise to offset the effects of anticipated changes elsewhere. For instance, if the cost of inputs rises, he must decide how to generate more income to pay for the inputs, or how to do without the inputs.

In practice his effective range of choice is limited. He can:

- Alter the levels of the resources he employs *absolutely*, by using more or less of all resources, or *relatively*, by altering the mix of resources
- Change the technology he uses, which usually implies changing the mix of resources
- Alter his management strategy, which may or may not imply altering levels of resources
- Change the output mix; or
- Adopt some combination of these.

He has additional room for manoeuvre in that he can use any surplus of income over current expenditure in a variety of ways. He can, for instance,

<sup>1</sup> For the sake of simplicity on-farm consumption of output is omitted.

<sup>2</sup> Special taxation provisions allow farmers to deduct almost all development expenditures as a current cost in working out assessable income.

plan to use the surplus in such a way that his tax payments are minimised (by reinvesting in tax-deductible development), or he can aim to pay tax, and increase personal drawings or savings.

The signals are therefore translated into a series of individual actions which show up as changes in land use patterns, the structure of farming, the inputs and outputs of farming, the efficiency of farming,<sup>3</sup> and the returns from farming. It is these aggregate patterns which form the subject of this and the following section. The "signals" which promoted the changes are discussed in Chapter 5.

The statistics on land use are difficult to interpret because of changes in coverage and classification.<sup>4</sup> Table 1 below derives from the *Agriculture Statistics*.

### 3.3 Changes in Land Use

**Table 1:** LAND USE CHANGES: AGRICULTURAL, COMMERCIAL, HORTICULTURAL AND EXOTIC FORESTRY<sup>1</sup>

	Area thousands ha		% Change 1973-79
	1973	1979	
<b>Dairy</b>			
Grassland & lucerne.....	1213	1215	+0.2
Crops.....	15	18	+20.0
Unimproved grass.....	64	27	-57.8
Sub-Total.....	1292	1260	-2.5
<b>Sheep/Beef/Mixed</b>			
Grassland & lucerne.....	6975	7519	+7.8
Crops.....	226	237	+4.9
Unimproved grass.....	5162	4495	-12.9
Sub-Total.....	12280	12251	-0.2
<b>Exotic Trees</b> .....	558	806	+44.4
<b>Cropping</b> .....	119	167	+40.3
<b>All Other Farming<sup>1</sup></b>			
Incl. commercial horticultural & mixed farming.....	564	1036	+83.7
Total <sup>2</sup> .....	14813	15250	+3.0

1 Residual category which may be affected by differences in coverage and classification.

2 Excludes the category "other land on farm" which refers to idle land, etc. In 1973 this totalled 5.9 million ha, and in 1979 6.0 million ha.

Source: *Agriculture Statistics*

N.B.: Some of the tables may show minor rounding errors from time to time.

If we are to accept the data in Table 1 the major changes that have taken place in land use, in net terms, over the 1970's are: an increase of 3 percent (437,000 hectares) in the land used for agriculture, commercial horticulture, and exotic forestry; a decrease of 2.5 percent (32,000 hectares) in the land used for dairying; a slight decrease in the land used for sheep, beef, sheep/beef and mixed livestock; an upgrading of some of the unimproved grassland on sheep/beef holdings; a considerable increase (45 percent or 248,000 hectares) in exotic trees; and an increase in the land used for all other types of farming not mentioned above.

These figures are very crude net totals which conceal, for instance, a loss of prime land to one type of farming offset by a gain from more marginal land, and a change in ownership patterns around cities from full-time farming on "economic" farm units to part-time farming on subdivided land. Both of these changes will have affected stocking rates in the areas in which they have taken place. Moreover the figures are somewhat suspect owing to the changes in coverage and classification.

<sup>3</sup> The word efficiency is used somewhat loosely here to denote either an improvement in output per unit of land, labour or capital (including stock), or an improvement in profit which denotes increased financial efficiency.

<sup>4</sup> For a full discussion of the technical difficulties of interpreting land use and other agricultural statistics, see Appendices 7.1 and 7.2.

Nevertheless they conform generally to the observations of various field observers and to the trends implicit in other statistical series, for example, production statistics. These latter sources indicate that marginal land has been brought in, or improved, for both forestry and sheep/beef farming; that some good farm land on the flats has moved towards higher and higher value crops, for example, from pastoral to cropping, from cropping to export horticulture; that some sheep/beef hill country has moved into forestry; and that around the cities, 10-acre blocks have proliferated with varying effects on land use and land productivity.

Some of these changes will have accelerated since 1979—the full effect of the Land Development Encouragement Loans will have been felt on marginal land—but some may have slowed down. However, they can probably be described as continuing trends in the sense that they are still taking place. Hence the theme of conflicting land use that was discussed in Chapter 2.

But it must be remembered that the vehemence with which the theme was, and is, discussed, does not imply that the changes in land use are necessarily massive in relation to total land use. Table 2 shows that the land in horticulture and crops in 1979 was only some 450,000 hectares or 3 percent of the total land in agriculture, horticulture and exotic forestry.

Table 2: INTENSIFIED LAND USE 1979

	Area thousands ha	% of total intensi- fied	% of total arable	% of total agric./ hort.
<b>Horticulture</b>				
Market gardens.....	19.7	4.4	2.5	0.1
Orchards <sup>1</sup> .....	19.3	4.3	2.4	0.1
Tobacco.....	2.0	0.4	0.2	-
Nurseries.....	2.3	0.5	0.3	-
Other.....	0.4	0.1	0.1	-
Sub-Total Horticulture	43.7	9.8	5.5	0.3
<b>Primarily crops.....</b>	86.7	19.5	10.8	0.6
<b>Crops on pastoral.....</b>	255.6	57.4	32.0	1.7
<b>Crops on other (primarily mixed farming).....</b>	59.4	13.3	7.4	0.4
Total Intensified.....	445.5	100.0	55.7	3.0
Total Arable <sup>2</sup> .....	800.0	-	100.0	5.3
Total Agric. and Hort.	15200.0	-	-	100.0

1 Includes kiwi and berry fruit.

2 Page 106, *Land Alone Endures*. DSIR. The figure is for 1976 but *Agriculture Statistics* figures show very little variation in individual categories between 1976 and 1979.

Source: *Agriculture Statistics*. Land Use Tables: Land for Crops.

Similarly all exotic forestry, despite its spectacular growth as a land user, accounted for only 5 percent of the total land used in 1979. The dominance of the theme of changing land use may be attributable to the influence of major changes in a few regions, rather than change everywhere, and to the implications of these changes whether real or imagined—on land values and resource allocation by the Government.

### 3.4 Changes in Product Mix

Apart from the direct changes in land use, a further series of indirect changes took place on mainly sheep/beef farms in terms of the product mix. These changes can best be illustrated by considering production figures. In 1970 there were 11.4 sheep for every head of beef cattle on New Zealand sheep/beef farms. In 1975 there were only 8.7 sheep for every



head of beef cattle, but by 1980 there were 13.2 sheep per head of beef cattle.

These figures reflect the massive switches that took place, first from sheep to beef, and then back from beef to sheep in response to the actual and expected profitability of the two products, with the result that sheep numbers declined between 1972 and 1975, while beef cattle numbers rose, then rose rapidly again as the beef price fell and beef cattle were slaughtered.

Another change of product which took place on pastoral farms in the 1970's was the development of deer farming. The number of farmed deer rose from almost nothing at the beginning of the decade to well over 100,000 by the 1980's.

Whatever description one uses for the decade, it was certainly not a decade of no change in the product mix. Farmers and other land users were reacting to a variety of signals by changing the range and mix of farm output.

Farmers and other land users were also changing the pattern of land holdings in the 1970's. In 1979 there were 62,834<sup>5</sup> holdings of agricultural and commercial horticultural properties in New Zealand, compared with 61,495 in 1972 and 61,270 in 1973<sup>6</sup>. Table 3 shows the year-to-year movement in total holdings, and the way in which the figure for total holdings used in this report has been derived in order to ensure reasonable comparability of figures.

### 3.5 Changes in Land Holdings

Table 3: TOTAL NUMBER OF HOLDINGS IN NEW ZEALAND (NUMBER)

	1972	1973	1974	1975	1976	1977	1978	1979
Total as in <i>Agriculture Statistics</i> .....	62789	63196	63455	67063	67774	68571	69401	70452
Less								
Plantations <sup>1</sup> .....	Not Given	411	417	477	506	552	590	645
"Other farming" <sup>2</sup> (so defined in <i>Agriculture Statistics</i> —residual category).....	1294	1515	1837	466	522	626	833	981
Idle land.....	Not Given	Not Given	Not Given	3972	5058	5447	5711	5992
Total as Used in Text..	61495	61270	61201	62148	61688	61946	62267	62834

1 Coverage of Plantations extended over period.

2 After discussion with Statistics Department, it appears that any differences in coverage in the early years would almost certainly affect the "other farming" and idle land categories—hence their exclusion.

Source: *Agriculture Statistics*

From the total it would appear that the number of holdings has increased slightly over the period by 1339 holdings, or 2 percent, but the movement is so small relative to potential error that this change could signify very little. However, when the total number of holdings is broken down into size of holding and/or farm type, an interesting pattern of real change emerges. Table 4 (over) shows the 1972 and 1979 figures for numbers of holdings by size of holding.

The table shows how the small or insignificant change in the total number of holdings conceals three separate movements. First, the number of small-holdings—0-10 hectares—has increased substantially. Second, the number of large holdings (200 hectares or more) has increased slightly. And third, the number of holdings in the 20-199 hectare size group has declined—presumably to allow both subdivision into smaller blocks or aggregation to make larger farms.

5 Forestry, idle land and "other farming" are excluded from these figures.

6 In general, comparisons between 1972 and 1979 seem to be valid, in the sense that the 1972 figure does not seem inconsistent in total with those of the succeeding years. Some difficulties arise over comparing the number of holdings by farm type over the period, because of the classification system used. For this reason many of the separate pastoral categories have been amalgamated in this paper.

**Table 4: NUMBER OF HOLDINGS IN NEW ZEALAND  
BY SIZE OF HOLDINGS<sup>1</sup>**

	1972 Number	1979 Number	Difference Number	1972-79 % Change
Under 5.....	2578	4750	+2172	+84
5-9.....	2587	4250	+1663	+64
10-19.....	3148	3924	+776	+25
20-39.....	6390	5810	-580	-9
40-59.....	7885	6772	-1113	-14
60-99.....	10453	9679	-774	-7
100-199.....	12237	11336	-901	-7
200-399.....	9070	9099	+29	-
400-799.....	4172	4199	+27	+1
800-1199.....	1199	1223	+24	+2
1200-1999.....	856	876	+20	+1
2000-3999.....	509	532	+23	+5
4000+.....	411	384	-27	-6
Total.....	61495	62834	+1339	+2

<sup>1</sup> Excludes forestry, idle land, and residual "other farming" in *Agriculture Statistics*.  
Source: *Agriculture Statistics*.

The changes become even more interesting when one looks at them by broad farm types. Table 5 (opposite) gives the number of holdings by major farm groupings and farm size for 1972 and 1979. (The figures for horticulture could only be obtained for the period 1975 to 1979).

From the table it can be seen that the bulk of the new smallholdings run sheep, beef or mixed livestock, although some of them are in crops and horticulture. The land from which they have been sub-divided is presumably mainly dairy land, since the number of dairy holdings has declined in almost every farm size except the 100-199 hectare group.

If the smallholdings are disregarded, then the number of sheep, sheep/beef, and mixed livestock farms over 200 hectares has increased, with the exception of the very large farm group (4000 hectares or more), whose numbers have declined. The increased size of the farms presumably reflects amalgamations with farms in the 60-199 hectare size group, since these have declined in number.

In the dairy sector there is a decline in the number of holdings with the exception of the 100-199 hectare size group, which has increased. This confirms the trend evident in Dairy Board production statistics for fewer, larger farms supplying milk. 100-199 hectare farms are, in fact, *very* large dairy farms.

The number of horticultural holdings has increased over the last 4 years but the time period is so short that few conclusions can be drawn from these figures. The "other" category—a residual category—is a very mixed bag of farms which includes cropping, pigs, poultry and deer.

Year-to-year changes in the number of sheep, beef, and mixed livestock farms are given in Table 6 on page 22. They show more clearly the increase in smallholdings.

The statistics on land holdings therefore amplify the conclusions from the statistics on land use. They show that:

- The dairy industry, which appears to be contracting slightly in terms of total land usage, is moving towards fewer, larger, farms
- The sheep/beef industry, if smallholdings are excluded, is also moving to fewer, larger, farms
- The number of smallholdings, particularly those running a few sheep

Table 5: NUMBER OF HOLDINGS BY MAJOR FARM GROUPINGS AND FARM SIZE 1972-1979<sup>1</sup>

Size ha	Number 1972 (Except Hort.)				Number 1979				Differences 1972-1979							
	Sheep <sup>2</sup> Beef	Dairy <sup>3</sup>	Hort. <sup>4</sup> (1975)	Other <sup>5</sup> (non-pastoral non-hort.)	Sheep Beef	Dairy	Hort.	Other (non-pastoral non-hort.)	Sheep Beef	Dairy	Hort. (1975- 1979)	Other (non-pastoral non-hort.)	Number	Dairy	Hort. (1975- 1979)	% change Other (non-pastoral non-hort.)
Under 5 .....	808	106	1662	398	2184	121	1678	767	+1376	+15	+16	+369	+170	+14	+1	+93
5-9 .....	1149	219	974	441	2226	168	1151	705	+1077	-51	+177	+264	+94	-23	+18	+60
10-19 .....	1542	476	757	472	2166	274	856	628	+624	-202	+99	+156	+40	-42	+13	+33
20-39 .....	2298	3102	454	593	2916	1650	523	721	+618	-1452	+69	+128	+27	-47	+15	+22
40-59 .....	1924	5400	146	428	2100	4084	161	427	+176	-1316	+15	-1	+9	-24	+10	-
60-99 .....	3552	6110	138	678	3174	5781	130	594	-378	-329	-8	-84	-11	-5	-6	-12
100-199 .....	7858	3049	98	1269	7048	3232	85	970	-810	+183	-13	-299	-10	+6	-13	-24
200-399 .....	7637	688	37	713	7912	647	31	509	+275	-41	-6	-204	+4	-6	-16	-24
400-799 .....	3891	125	7	146	3956	107	9	127	+65	-18	+2	-19	+2	-14	+29	-13
800-1199 .....	1157	18	2	23	1194	13	3	13	+37	-5	+1	-10	+3	-28	+50	-43
1200-1999 .....	843	2	1	9	866	3	7	7	+23	+1	-1	-2	+3	+50	NA	-22
2000-3999 .....	501	1	-	6	523	2	2*	5	+22	+1	+2	-1	+4	+100	NA	-17
4000+ .....	406	-	-	4	380	-	-	4	-26	-	-	-	-6	-	-	-
TOTAL .....	33566	19296	4276	5180	36645	16082	4629	5477	+3079	-3214	+353	+297	+9	-17	+8	+6

1 Excludes forestry, idle land, and "other farming" as defined in *Agriculture Statistics*.

2 Includes all categories of Sheep, Beef, Sheep/Beef, Mixed Livestock etc.

3 Includes all primarily dairy categories.

4 Market gardens, Orchards (which include kiwi and berry fruit), Tobacco, Hops, and Nurseries (comparison only possible between 1975-79). Use of 1975 Hort. figures means that total does not add to 1972 total of holdings.

5 Cropping, Pigs, Poultry, Mixed farming, Deer. This category differs from "other farming" (the residual category used in the *Agriculture Statistics*) which had been excluded to allow comparability.

6 The two horticultural units of 2000 ha + are classified as market gardens. At the time of writing no explanation was available on whether these very large areas were utilised or were in fact partly "idle" land.

Source: *Agriculture Statistics*.

or livestock, has increased dramatically, indicating that there is a trend towards part-time farming

- The number of smallholdings in horticulture is increasing.

Table 6: NUMBER OF HOLDINGS: SHEEP, BEEF, SHEEP/BEEF, MIXED LIVESTOCK

	1972	1973	1974	1975	1976	1977	1978	1979
0-19 ha .....	3499	4080	4691	4960	5034	5462	5950	6576
20-39 ha .....	2298	2368	2616	2544	2521	2600	2758	2916
40-59 ha .....	1924	1936	2011	1979	1952	2004	2007	2100
60-99 ha .....	3552	3534	3402	3247	3283	3113	3154	3174
Total Small.....	11273	11918	12720	12730	12790	13179	13869	14766
100+ ha .....	22293	22721	22245	21912	21628	21770	21696	21879
Total Holdings.....	33566	34639	34965	34642	34418	34949	35565	36645

Source: *Agriculture Statistics*.

If these conclusions are valid, and most people's observations would suggest they are, it is possible to see that the reaction of the rural community to encroachment probably stems from two main sources. First, they see fewer "traditional" farmers, because the pastoral farms have increased in size. Second, they see a very large expansion in the number of small blocks.

The dairy industry in particular would notice the second trend, as well as a decline in the land used for dairying and a move towards sub-division or cropping. Comments on encroachment by forestry, which has been excluded from these figures, will stem mostly from the districts in which forestry has expanded.

### 3.6 Changes in the Number of Farmers

If farmers had been reacting to various price signals by changing the patterns of land use and the number of land holdings, then it would be expected that the number of farmers would alter.

Once again, confirmation of these hypotheses is not possible from the poor statistics.<sup>7</sup> However, there are indications from the available statistics that:

- The number of male full-time working owners, sharemilkers and leaseholders on dairy farms has decreased steadily for at least 3 decades, as would be expected from the figures on land holdings of dairy farms
- The number of male full-time working owners and leaseholders on sheep/beef farms has decreased over the whole of the 1970's, but the rate of decrease may be slowing down
- The number of part-time working owners on all types of farms has probably been increasing.

Apart from the figures for dairy farmers which can be cross-checked with statistics of suppliers to milk factories, the figures are so suspect that one hesitates to quote them<sup>8</sup> in the main body of the text. For instance, there is an inexplicable break in the series on full-time sheep beef farmers between 1975 and 1976. Moreover the figures for female full-time and part-time owners fluctuate so widely that influences such as taxation concessions<sup>9</sup> must be affecting the figures. It would appear, however, that at the beginning of the 1970's (1972) there were some 30,000 full-time male sheep/beef farmers, 21,000 male full-time dairy farmers (including sharemilkers), and about 7500 other male full-time farmers. By the end of the decade (1979) there were about 27,000 full-time male sheep/beef farmers, 17,000 full-time male dairy farmers, and 7,000 full-time male farmers on other types of farms. The number of full-time female working owners, sharemilkers and leaseholders on all types of farm was somewhere in the vicinity of 10,000 throughout the period.

Information on part-time farmers would be expected to show an increase in the number of part-time working owners, due to the increase in small-holdings, but figures have been collected since 1976 only, and no quantified verification of this change can be made.

<sup>7</sup> See Appendix 7.2 for a technical discussion of the statistics.

<sup>8</sup> The figures are included in Appendix 7.2.

<sup>9</sup> There are considerable tax or saving advantages in a husband/wife partnership of working owners or sharemilkers.

There would therefore appear to be some justification for assuming that one of the effects of change in land use and land holdings has been to reduce the number of full-time pastoral farmers so that there are fewer farmers on fewer, but larger, farms. Another effect has been to increase the number of full- and part-time farmers on small blocks of land,

Since the land that has gone to horticulture and the small blocks tends to be closer to population centres, and since the buyers of small blocks are not usually traditional pastoral farmers, these movements must have contributed to a change in the location and composition of the rural farming population.<sup>10</sup>

<sup>10</sup> According to rural valuation statistics from the Valuation Department, about one third of pastoral land sales were for farm enlargement during the 1970's. According to the same source about one quarter of the sales of horticultural land during the decade were to businessmen (so defined). These latter figures take no account of multiple ownership, or of people who changed their occupation from businessman.

Chapter 3 attempts to demonstrate that farmers and other land users react to price signals from a variety of sources:

- By altering the levels of, or relationship between, their resources
- By altering the product mix
- By changing technology; or
- By altering their management strategy.

These changes show up in the statistics as changes in land use patterns, in the structure of farming, the inputs and output of farming, the efficiency of farming, and the returns from farming.

In the 1970's farmers as a group reacted to various signals by diversifying, and to altering the patterns of land use and the product mix. A number of pastoral farmers moved towards farm enlargement, and full-time and part-time farmers took over an increasing number of small blocks

Chapter 4 considers the changes that took place in the levels of inputs and in the output of farming.

### 3.7 Summary—Changes in Farm Structure and Land Use

## 4. CHANGES IN THE LEVELS OF FARMING INPUTS AND PRODUCTION

### 4.1 Introduction

The changes in the product mix, land use patterns, and farm sizes, which are outlined in Chapter 3 are all aggregate changes. They conceal the immense variety of change and non change on individual farms during the 1970's. Nevertheless even the aggregate change demonstrates that some farmers were increasing the amount of land they farmed, while others were farming on smaller properties. Many were also changing the mix of their product—and altering the technologies they used—to suit new products and different sizes of landholdings.

In the same way, it can be deduced from other aggregate statistics—mainly those related to levels of inputs and output—that many farmers were reducing the amount of labour used on pastoral farms, cutting back where they could on current inputs, and varying (and often reducing) the levels of capital inputs. There are some indications in the statistics on capital inputs that farmers were more prepared to reduce expenditure on land development in the first half of the decade than reduce personal capital expenditure on, for instance, houses.

Individual farmers were also looking for new technologies and management strategies for a whole variety of purposes—raising output with or without raising the level of resources, raising output by changing the mix of resources, lowering output but lowering inputs, and so on.

The cumulative effect of all these changes, at least in the first half of the 1970's, was no change in overall farm output. This chapter discusses the evidence for these changes in the levels of inputs and output, and introduces some hypotheses on their effect on the productivity of farming.

### 4.2 Labour

<sup>1</sup> For the source of all figures in this section, and for a technical discussion of labour statistics, see Appendix 7.2.

<sup>2</sup> Sample figures from the 1981 Census which are quoted in Report No. 5 of the Economic Monitoring Group of the New Zealand Planning Council (p. 28), suggest that employment in agriculture, hunting, and fishing (including working owners) has increased by 10,000 people or 8.4 percent between the 1976 and 1981 census. The Monitoring Group attributes this increase to horticultural expansion. This apparent increase in the agricultural labour force should be viewed with some caution, since the sample is small, and the date at which the Census was taken (March) would have ensured that many part-time workers were included. While the intensive use of land through horticulture must result in an increase in labour per hectare, many of the new jobs in horticulture are seasonal or part-time. Thus, both the absolute number of people recorded in the Census as working in agriculture hunting and fishing, and the increase in people employed in the sector between each Census, are likely to be overstated in terms of full-time equivalents. Nevertheless, if the 1981 Census sample figures are correct, the expansion in horticulture may now be offsetting the decline in job opportunities in the pastoral industry.

In 1979 the on-farm workforce in New Zealand, including all the owner-operators and contractors, was about 120,000 people. Of these, some 20,000 were part-time or casual employees.<sup>1</sup> If these casual and part-time employees are converted to a full-time equivalent basis, then the total workforce in 1979 was about 108,000 paid full-time equivalents, with perhaps another 8-9000 unpaid family labour full-time equivalents. Table 7 (opposite) gives some idea of the distribution of this workforce among the main types of farming.

Of this total of 108,000 full-time equivalents, some 32,000 (30 percent) were paid employees as opposed to worker-owners or unpaid family, and another 10,000 full-time equivalents were contractors. The statistics on labour do not allow valid comparisons throughout the 1970's on a full-time equivalent basis, but they do show that the number of paid permanent full-time employees on pastoral farms declined during the 1970's. To some extent, however, this decline was offset by an increase in paid permanent full-time employees in horticulture. Table 8 (opposite) shows both of these movements.

In all, if the figures are to be believed, some 4000 permanent full-time employees left the industry between 1972 and 1979—a decline of about 15 percent in the paid permanent full-time workforce.

This decline would indicate either that pastoral farmers were dispensing with labour in the 1970's, or that the opportunities available for labour elsewhere were more attractive, or, more probably, that both these hypotheses were valid. The increase in full-time horticultural jobs was apparently insufficient to offset this decline, at least by 1979.<sup>2</sup>

The figures for part-time and casual labour (see Appendix 7.2) show little in the way of trends, but they draw attention to a major difficulty in

**Table 7: ESTIMATED FULL-TIME EQUIVALENT<sup>1</sup> WORKFORCE 1979 (MALE AND FEMALE IN THOUSANDS)**

	Sheep/Beef/ Mixed	Dairy	Hort.	Other	Total
<b>Paid or Working Owner</b>					
Full-time working owners, leaseholders, sharemilkers	29.8	22.1	4.4	4.4	60.7
Part-time working owners, converted to full-time equivalent.....	2.7	0.8	0.6	0.5	4.7
Permanent full-time employees.....	13.4	4.8	3.0	2.0	23.3
Permanent part-time employees converted to full-time equivalent.....	2.1	0.7	0.6	0.5	3.9
Casual employees converted to full-time equivalent.....	2.1	0.3	2.2	0.2	4.8
Sub-Total Above.....	50.1	28.7	10.8	7.6	97.3
"Other farming" and idle land excluded from above.....	-	-	-	1.3	1.3
Contractors from the Census <sup>2</sup>	6.0	2.0		1.8	9.8
Sub-Total Paid and Working Owners.....	56.1	30.7	11.7 <sup>3</sup>	9.9 <sup>3</sup>	108.4
<b>Unpaid Family</b>					
Unpaid family full time.....	4.3	2.6	0.5	0.6	8.0
Unpaid family part time converted to full-time equivalent.....	1.7	0.8	0.3	0.2	3.0
Total Paid and Unpaid.....	62.1	34.1	12.5	10.7	119.4

1 Conversions of part-time employees and casual employees based on ratios of part-time to full-time wages. Conversions of part-time owners, etc. based on part-time = 20 percent of full-time for all groups except Horticulture which was 30 percent.

2 Apportioned to categories by type of contractor where appropriate. Gussed, where contractors work on all farm types.

3 Contractors arbitrarily apportioned to these totals.

Source: Derived from *Agriculture Statistics*. See Appendix 7.2.

**Table 8: NUMBER OF PAID PERMANENT FULL-TIME EMPLOYEES<sup>1</sup>**  
**8 (a) Males**

As At June .....	1972	1973	1974	1975	1976	1977	1978	1979
Sheep/Beef/ Mixed livestock <sup>2</sup> .....	Figures probably not comparable		14406	13340	12657	13182	12928	12108
Dairy <sup>2</sup> .....	as questions changed.		5336	4998	4651	4746	4604	4039
Horticulture <sup>2</sup> .....			1750 <sup>3</sup>	1764	2190	2091	2235	2294
Other <sup>2</sup> .....			2090	1990	2156	2153	2092	1744
Total.....			23582 <sup>3</sup>	22292	21654	22172	21859	20185

**8 (b) Females**

Sheep/Beef/ Mixed livestock <sup>2</sup> .....	Not at all clear whether part-time employees are included.	1611	1413	1203	1336	1393	1312
Dairy <sup>2</sup> .....		1302	1135	926	949	873	747
Horticulture <sup>2</sup> .....		550 <sup>3</sup>	567	720	712	764	741
Other <sup>2</sup> .....		237	328	317	286	283	277
Total.....		3700 <sup>3</sup>	3443	3166	3283	3313	3077

1 Figures exclude plantations, idle land, "other farming" as defined in *Agriculture Statistics*.

2 As defined in Table 5.

3 Nurseries estimated.

Source: *Agriculture Statistics*.

assessing the job-creation potential of farming. The statistics suggest that some 10,000 part-time employees and a further 9-10,000 casual employees are employed in the farming sector at different times of the year. Moreover, with the increase in horticulture the absolute numbers of this type of employee are almost certainly increasing. However, in terms of the wages they receive, that is, if their wages are converted to full-time equivalents, they probably represent no more than 8-9,000 *full-time* equivalents in total.

One should, therefore, be cautious in implying that horticulture will necessarily produce many *full-time* equivalent incomes, even though it may produce a large number of casual jobs. The caution should be reinforced by the likelihood that labour-saving technological change will be introduced into the industry, as the scale of the operations increases. In future, much of the produce from New Zealand horticulture will be obliged to compete in overseas markets with produce from operations which are heavily capital-intensive. Consequently, our exporters will have no option but to pursue a similar strategy to minimise costs which will emphasise technology at the expense of conventional employment.

Perhaps the most that can be said about labour during the 1970's is that pastoral farmers were dispensing with or doing without some of the labour they had previously used. Horticulturalists were using more labour and the number of contractors stayed much the same. To the people in remote *pastoral* areas this would have been further evidence that an exodus from the land was taking place. However, in the areas closer to towns or where horticultural developments were taking place, an observer would have seen evidence of repopulation and increased job opportunities. Once again, the concept of a change in the location and composition of the rural population would appear to be valid.

### 4.3 Changes in the Levels of Inputs Other Than Labour

Wages account for about 15 percent of pastoral farmers' expenditure on *current* inputs.<sup>3</sup> The remaining 85 percent of their *current* inputs involves: fertiliser as a maintenance dressing (15 percent or more of the total), vehicle expenses (about 10 percent), interest (about 10 percent), repairs and maintenance (9 percent), depreciation (10 percent), and other expenses such as shearing, animal health and administration. Also, farmers use the farm surplus before tax to provide *capital* inputs for development expenditure, and they may borrow for this purpose as well.

Many of the current inputs are fixed expenses, in the sense that the farmer has to pay them each year no matter what level of output is achieved. However, some of the current inputs, such as repairs and maintenance, and all of the capital inputs may be manipulated in any one year to reduce or increase a farmer's expenditure *before* tax. A farmer may therefore tailor his expenditure to fluctuations in his gross income.

Since various taxation concessions allow the deduction from income *before* tax of capital expenditure on development, and since there is always a blurred area on farms between current and capital expenditure, information on the level of inputs farmers are using is frequently confusing.

However, a general guide to the way in which farmers changed input levels during the 1970's can be obtained from two statistical series—the indices of real expenditure per stock unit, and the capital expenditure statistics.<sup>4</sup> The first series gives an indication of fluctuations in the level of what are mainly current inputs, including labour, on *pastoral* farms. The second series shows farmers' expenditure on capital for the farm and for himself, and gives an indication of the way in which farmers are distributing the components of the pre- and post-tax farm surplus. This second series applies to *all* types of farms.

<sup>3</sup> Agdata: New Zealand Agricultural Statistics 1981 (Ministry of Agriculture and Fisheries).

<sup>4</sup> Sources of indices: New Zealand Meat and Wool Boards' Economic Service, and the New Zealand Dairy Board. Source for capital statistics: Agriculture Statistics.

#### 4.3.1 Real Expenditure per Stock Unit on Pastoral Farms

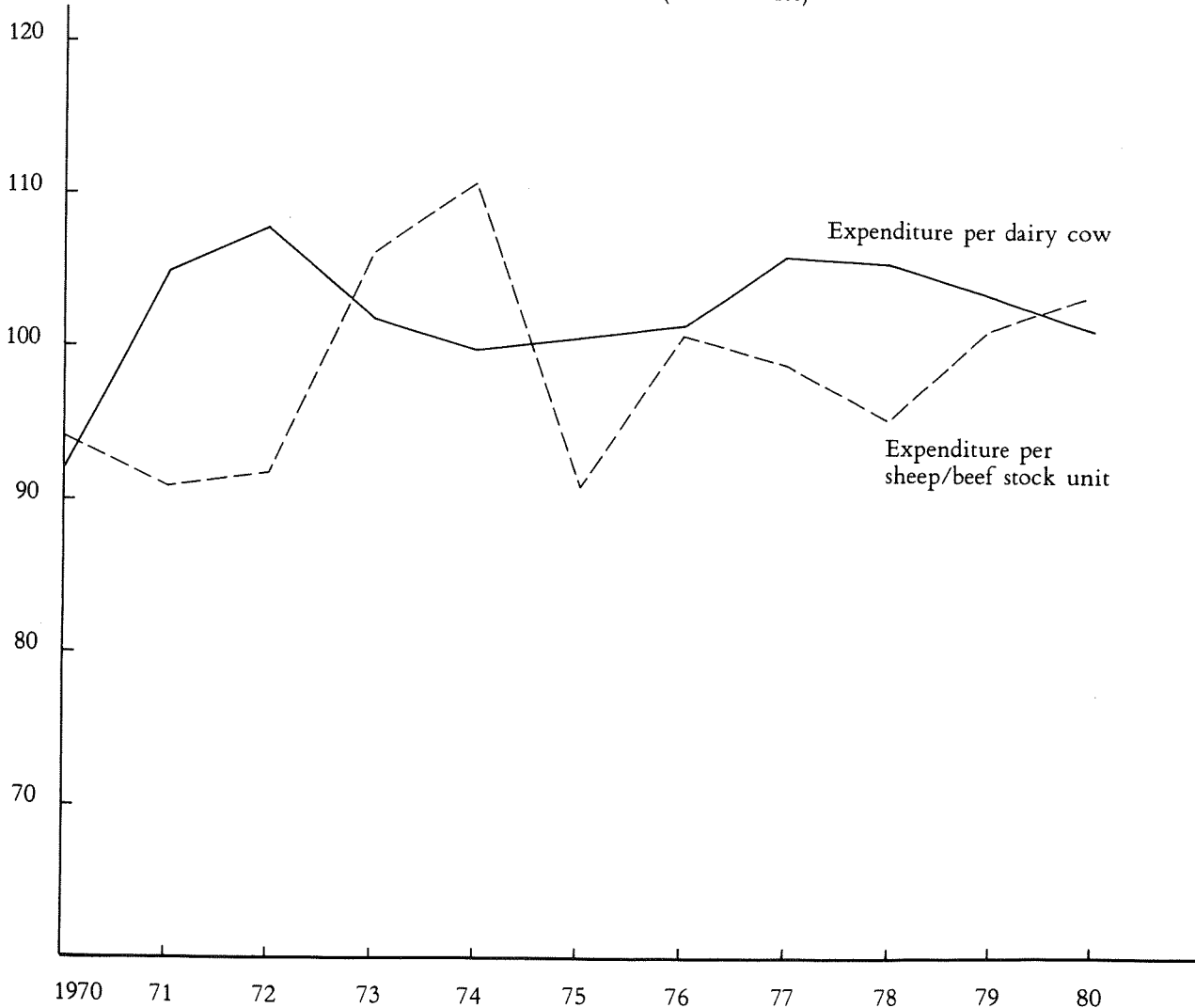
Figure 1 (opposite) shows the indices for real expenditure per stock unit on sheep/beef and dairy farms during the decade. The indices, which



include labour and some expenditure of a capital nature, show a series of fluctuations. These are more volatile on sheep than on dairy farms, with peak expenditures in the earlier part of the decade, a decline in the middle of the decade, and some signs of recovery, particularly on the sheep/beef farms, at the end of the decade. The changes almost certainly reflect changes in gross income (see Chapter 5) and indicate that one of the reactions of pastoral farmers as a group to a fluctuating income is to cut back expenditures per stock unit in poor years and increase expenditure in good years. Since we already know that there has been a tendency to shed labour on the pastoral farms, and that some expenditures cannot be reduced, for example, interest, we can surmise that the cuts in input levels in the mid 1970's were mainly made in the areas of fertiliser, repairs and maintenance—both of these expenditures may contain elements of capital as well as current expenditure. This surmise can be partially<sup>5</sup> confirmed by the 33 percent decline in sales of phosphatic fertiliser between 1972 and 1975, followed by a 5 percent increase in sales between 1976 and 1979.

<sup>5</sup> This can only be partially confirmed because the fertiliser will be used for both maintenance and development.

Figure 1: INDICES OF REAL EXPENDITURES PER STOCK UNIT (1975-76 = 100)



Similar patterns to the real expenditures per stock unit are seen in the figures on real capital expenditure, which is the net yearly addition to on-farm capital. These are set out in Figure 2 and Table 9 (over). There is, however, a decline in the real annual expenditure on capital on dairy farms throughout most of the decade and—apart from 1979—no sign of a recovery to match the recovery in real expenditure per stock unit on the sheep/beef farms. This decline may reflect the lesser significance of capital as opposed to current inputs on dairy farms, or it may reflect, since the totals are aggregates, the contraction of the dairy industry observed in previous chapters of this study.

#### 4.3.2 Capital Expenditure (Excluding Land Purchase and Stock)<sup>6</sup>

<sup>6</sup> Source of Capital Expenditure Statistics: Agriculture Statistics. The term capital expenditure refers to the net yearly additions to farm capital.

Figure 2: REAL CAPITAL EXPENDITURE (1971 PRICES) ON SHEEP AND DAIRY FARMS

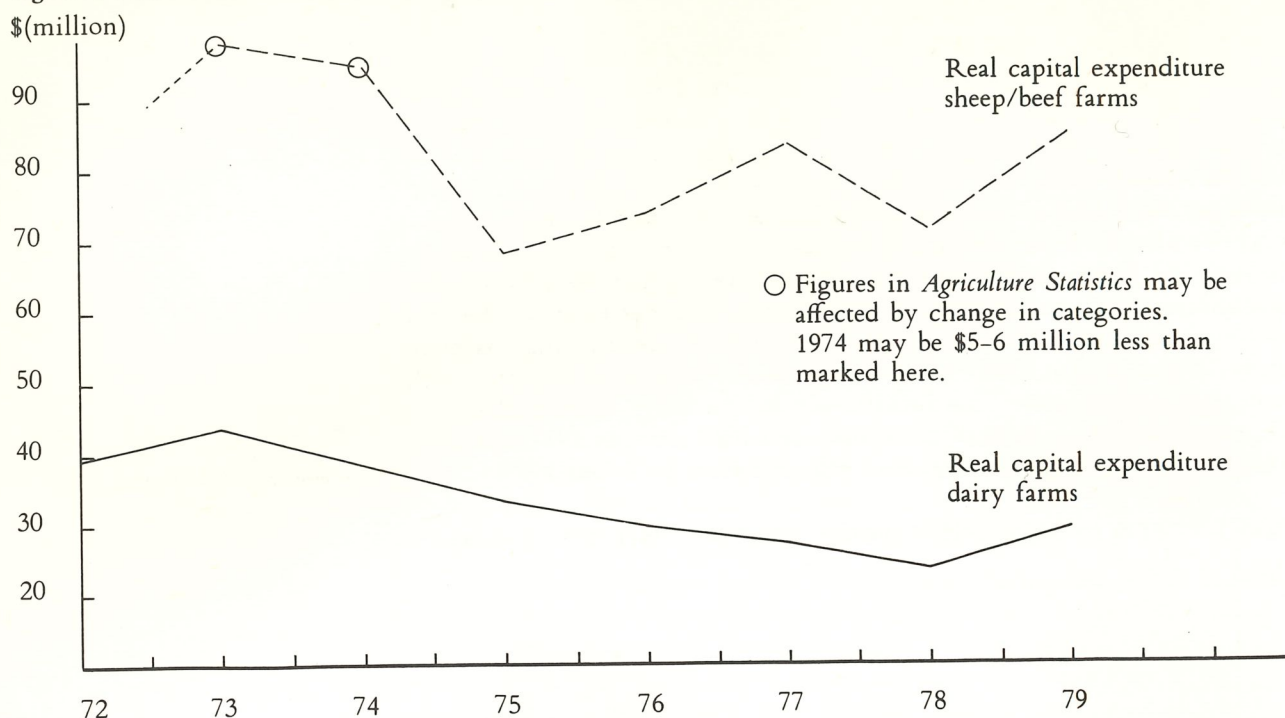


Table 9: TOTAL CAPITAL EXPENDITURE ON FARMS (NET OF SALES)

## 9 (a) Money Terms \$Millions

	1972	1973	1974	1975	1976	1977	1978	1979
Sheep/Beef/Mixed livestock <sup>1</sup> .....	Categories change: not comparable			102.9	135.0	185.6	179.2	238.2
Dairy <sup>1</sup> .....	42.6	50.3	49.4	49.7	53.3	61.1	61.6	79.0
Horticulture <sup>1</sup> .....	Categories change: not comparable			13.3	18.1	19.6	21.0	26.2
Other farming <sup>1</sup> .....	Categories change: not comparable			23.4	31.3	38.0	31.3	36.5
Total <sup>1</sup> .....	129.8 <sup>2</sup>	184.1 <sup>2</sup>	209.8 <sup>2</sup>	189.3	237.7	304.3	293.1	379.9

9 (b) Constant 1971 Prices<sup>3</sup>

Sheep/Beef/Mixed livestock <sup>1</sup> .....	Categories change: not comparable			68.4	74.4	83.9	70.9	84.8
Dairy <sup>1</sup> .....	39.4	43.7	39.0	33.1	29.4	27.6	24.4	28.1
Horticulture <sup>1</sup> .....	Categories change: not comparable			8.8	9.9	8.9	8.3	9.3
Other farming <sup>1</sup> .....	Categories change: not comparable			15.6	17.2	17.2	12.4	13.0
Total <sup>1</sup> .....	120.3 <sup>2</sup>	160.1 <sup>2</sup>	165.7 <sup>2</sup>	125.9	131.0	137.6	116.0	135.3

1 Defined as in Table 5. Total excludes plantations, idle land, and "other farming" as defined in *Agriculture Statistics*.

2 Estimate of "other farming" deducted.

3 Deflated by All Groups Farming Capital Expenditure Index.

On the sheep/beef farms the real annual expenditure on capital declined steeply from the peak years at the beginning of the decade and then fluctuated at a level some 10 to 20 percent below that of the peak years.

Surprisingly, there is no major increase in the real annual capital expenditure on horticultural holdings, which must call into question the accuracy of the statistics, given the tax concessions on horticultural investment. Again, the figures tend to show a pattern of fluctuating inputs of capital, with some tendency for the level of inputs to decline over the decade.

Table 10 (opposite) sets out monetary capital expenditure by size and type of farm for 1975 and 1979. One of the more striking points about the

table is that 10 percent to 13 percent of the capital expenditure on sheep farms is on the small blocks—0.19 hectares—which must be “unecomic” without a secondary source of income. In fact 4 percent to 6 percent of total capital expenditure on *all* farms is on these small sheep/beef farms.

**Table 10: (NET) CAPITAL EXPENDITURE BY FARM TYPE<sup>1,2</sup> AND FARM SIZE**

	1975			1979		
	Capital Expenditure Money Terms \$millions	As % of Farm Type	As % of Total Capital	Capital Expenditure Money Terms \$millions	As % of Farm Type	As % of Total Capital
<b>Sheep/Beef/Mixed</b> .....						
0-19 ha.....	11.1	10.8	5.9	12.8	5.4	3.4
20-59 ha.....	5.5	5.3	2.9	11.7	4.9	3.1
60-199 ha.....	21.1	20.5	11.1	47.4	19.9	12.5
200-1000 ha.....	43.8	42.6	23.1	117.8	49.5	31.0
1000+ ha.....	21.3	20.7	11.3	48.5	20.3	12.8
Sub-Total Sheep/Beef/Mixed.....	102.9	100.0	54.4	238.2	100.0	62.7
<b>Dairy</b> .....						
0-19 ha.....	0.9	1.8	0.5	1.2	1.5	0.3
20-59 ha.....	13.4	26.9	7.1	18.4	23.3	4.8
60-199 ha.....	30.7	61.8	16.2	51.4	65.1	13.5
200-1000 ha.....	4.7	9.5	2.5	7.8	9.9	2.1
1000+ ha.....	-	-	-	0.1	0.1	-
Sub-Total Dairy.....	49.7	100.0	26.3	79.0	100.0	20.8
<b>Horticulture</b> .....						
0-19 ha.....	7.3	54.8	3.9	16.6	63.3	4.4
20-59 ha.....	3.0	22.6	1.6	5.7	21.7	1.5
60-199 ha.....	1.9	14.3	1.0	3.0	11.4	0.8
200-1000 ha.....	0.9	6.8	0.5	0.9	3.4	0.2
1000+ ha.....	0.2	1.5	0.1	0.1	0.4	-
Sub-Total Horticulture.....	13.3	100.0	7.0	26.2	100.0	6.9
<b>Other Farming</b> .....						
0-19 ha.....	5.8	24.7	3.1	5.8	15.8	1.5
20-59 ha.....	3.4	14.4	1.8	5.0	13.7	1.3
60-199 ha.....	7.9	33.7	4.2	13.0	35.6	3.4
200-1000 ha.....	5.7	24.4	3.0	11.3	31.0	3.0
1000+ ha.....	0.7	2.9	0.4	1.5	4.1	0.4
Sub-Total Other.....	23.4	100.0	12.4	36.5	100.0	9.6
<b>All Farms Total</b> .....						
0-19 ha.....	25.0	13.2	13.2	36.5	9.6	9.6
20-59 ha.....	25.3	13.3	13.3	40.8	10.7	10.7
60-199 ha.....	61.6	32.6	32.6	114.8	30.2	30.2
200-1000 ha.....	55.1	29.1	29.1	137.7	36.2	36.2
1000+ ha.....	22.2	11.7	11.7	50.2	13.2	13.2
Total.....	189.3	100.0	100.0	379.9	100.0	100.0

1 Defined as in Table 5.

2 Idle land, plantations and “other farming” as defined in the statistics are excluded.

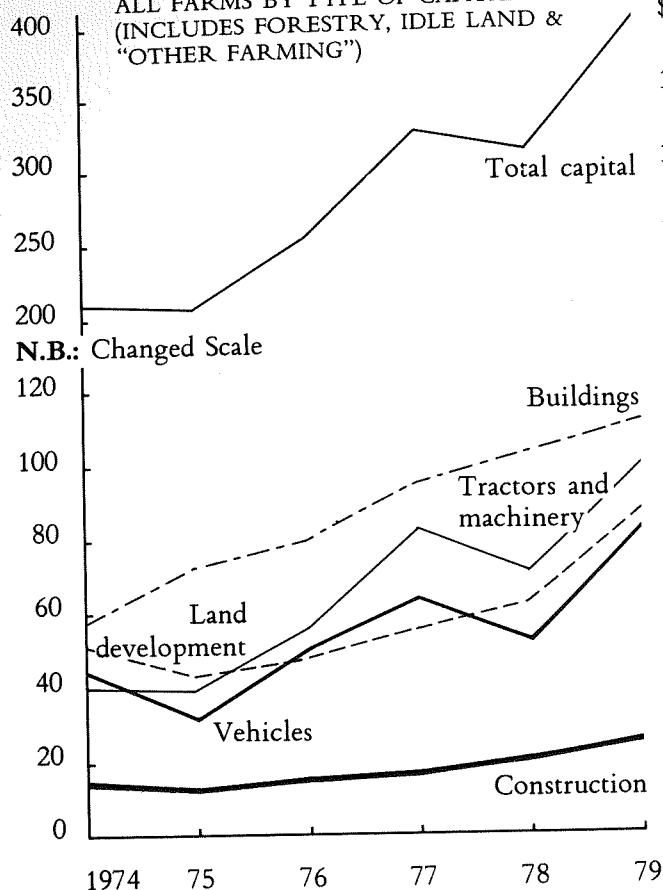
Source: *Agriculture Statistics*.

Other points of interest are that horticultural investment, as would be expected, is primarily on small farms; that the combined effects of horticulture, the small sheep/beef farms, and the small dairy farms result in between a fifth and one-quarter of total investment taking place on holdings in the 0-60 hectare group; and that there are signs, both in sheep/beef and dairy, of an increase in the proportion of total farm investment that takes place on the larger farms.

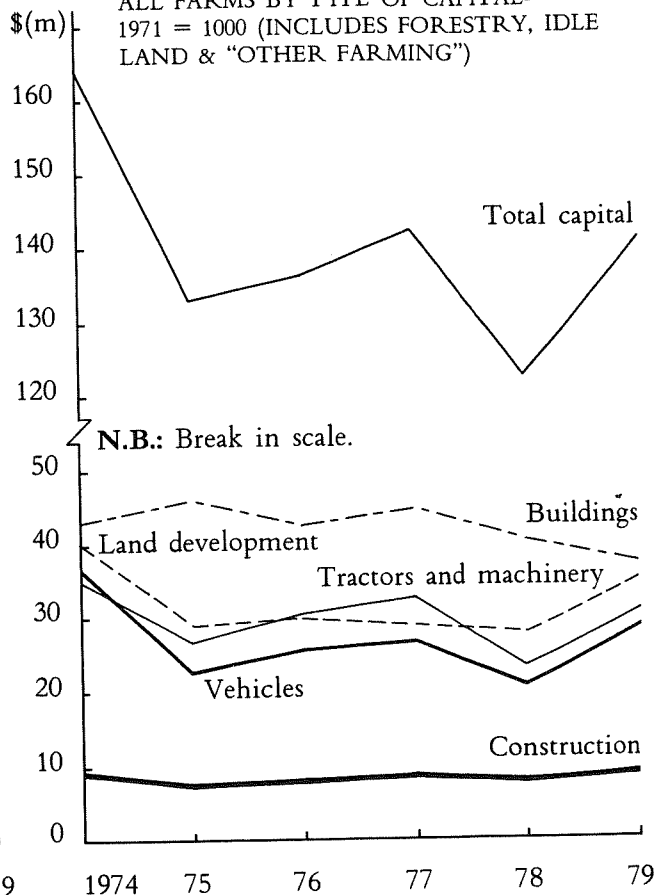
Surely this is a sign of an increasing division of agriculture—already apparent in the information on the number of holdings—into larger “economic” pastoral holdings, and small blocks which are either intensively farmed or supported with a second income.

Figures 3 and 4 and Tables 11 and 12 (over) give figures for real and monetary capital expenditure (net of capital sales) by type of capital. Table 13 gives net money capital by size of farm and type of capital.

**Figure 3: NET MONEY CAPITAL EXPENDITURE ON ALL FARMS BY TYPE OF CAPITAL (INCLUDES FORESTRY, IDLE LAND & "OTHER FARMING")**



**Figure 4: NET REAL CAPITAL EXPENDITURE ON ALL FARMS BY TYPE OF CAPITAL—1971 = 1000 (INCLUDES FORESTRY, IDLE LAND & "OTHER FARMING")**



**Table 11: (NET) CAPITAL EXPENDITURE BY TYPE OF CAPITAL \$MILLIONS<sup>1</sup>**

	1975		1976		1977		1978		1979	
	\$	% of Total Capital	\$	% of Total Capital	\$	% of Total Capital	\$	% of Total Capital	\$	% of Total Capital
<b>Building</b> .....										
Owners' houses.....	40.8	20.2	40.1	15.9	49.9	15.8	51.2	16.5	52.4	13.0
Employee houses.....	7.8	3.9	7.9	3.1	8.7	2.8	11.3	3.6	11.0	2.7
Other accommodation.....	1.3	0.6	1.6	0.6	2.1	0.7	2.4	0.8	2.1	0.5
Other buildings.....	22.6	11.2	28.3	11.2	35.5	11.2	38.5	12.4	44.9	11.1
Sub-Total Building.....	72.6	35.9	78.0	30.9	96.1	30.4	103.5	33.3	110.5	27.4
<b>Land Development &amp; Construction</b> .....										
Construction.....	11.8	5.8	15.3	6.1	17.3	5.5	20.5	6.6	24.8	6.1
Land clearing.....	16.0	7.9	17.1	6.8	18.7	5.9	20.1	6.5	32.4	8.0
Fencing.....	17.5	8.7	19.9	7.9	25.1	7.9	26.2	8.4	33.2	8.2
Drainage.....	3.4	1.7	4.1	1.6	5.4	1.7	6.3	2.0	7.7	1.9
Irrigation.....	3.6	1.8	2.8	1.1	3.1	1.0	3.3	1.1	4.4	1.1
Other land development.....	2.0	1.0	3.6	1.4	3.9	1.2	5.8	1.9	7.0	1.7
Sub-Total Land Development & Construction.....	54.4	26.9	62.8	25.0	73.5	23.2	82.1	26.4	109.6	27.1
<b>Working Animals</b> .....	1.0	0.5	1.4	0.5	1.6	0.5	1.7	0.5	1.9	0.5
<b>Transport Vehicles</b> .....										
Cars.....	19.4	9.6	26.7	10.6	27.3	8.6	22.0	7.1	34.8	8.6
Other farm vehicles.....	13.4	6.6	23.3	9.3	34.4	10.9	28.1	9.0	46.7	11.6
Forest vehicles.....	0.8	0.4	0.7	0.3	0.8	0.3	4.0	1.3	1.4	0.3
Sub-Total Transport Vehicles.....	33.6	16.6	50.7	20.1	62.5	19.8	54.1	17.4	82.8	20.5
<b>Machinery</b> .....										
Tractors.....	21.3	10.5	32.2	12.8	47.5	15.0	37.7	12.1	57.4	14.2
Logging equipment.....	2.4	1.2	1.0	0.4	0.9	0.3	0.4	0.1	0.8	0.2
Other machinery.....	16.8	8.3	25.6	10.2	34.1	10.8	31.2	10.0	40.8	10.1
Sub-Total Machinery.....	40.4	20.0	58.8	23.3	82.6	26.1	69.2	22.3	99.1	24.5
<b>Total Capital</b> .....	202.1	100.0	251.7	100.0	316.3	100.0	310.5	100.0	403.9	100.0

<sup>1</sup> Includes forestry, idle land and "other farming". Totals therefore differ from totals in Tables 9 and 10.

Unfortunately the figures in Tables 11-13 cannot be broken down by farm type from the published data. Nevertheless they show some interesting trends which tend to indicate that farmers as a group not only reduced real capital expenditure during much of the 1970's, but chose to redistribute the components of the pre- and post-tax farm surplus so that real capital expenditure on land development declined at a much faster rate than real capital expenditure on buildings.

Figure 4 shows that 15 percent or more of the net addition to capital on farms during the first half of the 1970's was in the form of expenditure on owner's houses. Another 8-10 percent was on cars. The annual real capital expenditure on land development fell substantially (by 30 percent) from the peaks in 1973 and 1974, and remained at a low level until 1978 from which it is now rising again. While it is inappropriate to draw too many conclusions from these aggregate figures, they do at least point to farmers being relatively unwilling to invest in land development.

**Table 12: NET REAL CAPITAL EXPENDITURE BY TYPE OF CAPITAL \$MILLIONS—1971 PRICES**

	1974	1975	1976	1977	1978	1979
Buildings <sup>1</sup> .....	43.6	46.3	42.6	44.8	40.9	37.9
Construction.....	9.0	7.5	7.7	8.1	8.1	8.5
Vehicles.....	36.7	22.3	25.6	26.5	20.9	28.1
Tractors & machinery.....	35.1	27.9	30.2	32.6	23.7	31.0
Land development & other	40.9	29.0	29.9	29.6	28.3	35.6
Total <sup>2</sup> .....	165.3	133.0	136.0	141.6	121.9	141.1
Total Capital (Deflated by <sup>2</sup> All Groups Capital Expenditure Index).....	166.9	134.5	138.7	143.0	122.9	143.9

1 Categories deflated by components of Farming Capital Expenditure Index (*Abstract of Statistics*).

2 Includes forestry, idle land and "other farming". Totals therefore differ from those in Table 9.

**Table 13: NET MONEY CAPITAL EXPENDITURE BY TYPE OF CAPITAL AND SIZE OF FARM (1979)<sup>1</sup>**

	Buildings		Construction		Land Development		Vehicles		Plant & Machinery		Total (including work animals)	
	\$(m)	% of Buildings	\$(m)	% of Construction	\$(m)	% of Development	\$(m)	% of Vehicles	\$(m)	% of Plant & Machinery	\$(m)	% of Total Capital
Under 5 ha.....	9.1	8.2	0.3	1.2	0.7	0.8	1.4	1.7	1.5	1.5	13.1	3.2
5-19 ha.....	14.3	12.9	0.7	2.8	3.2	3.8	3.5	4.2	5.4	5.4	27.0	6.7
20-59 ha.....	14.9	13.5	1.9	7.7	5.2	6.1	8.9	10.7	10.7	10.8	41.8	10.3
60-199 ha.....	30.2	27.3	5.9	23.8	16.8	19.8	26.6	32.1	36.2	36.5	116.1	28.7
200-1000 ha.....	30.3	27.4	7.3	29.4	33.1	39.0	32.1	38.7	35.4	35.6	139.1	34.4
1000+ ha.....	11.6	10.5	8.7	35.0	25.8	30.5	10.5	12.7	10.0	10.1	66.8	16.5
Total.....	110.5	100.0	24.8	100.0	84.7	100.0	82.9	100.0	99.1	100.0	403.9	100.0

<sup>1</sup> Includes forestry, idle land and "other farming" as defined in the statistics. Totals therefore differ from totals in Table 9.  
Source: *Agriculture Statistics*.

#### 4.4 Other Influences on Output—Management, Technology and the Weather

We can deduce from the statistical evidence in this and the previous section that farmers as a group were reacting to various signals in the following ways:

- Pastoral farmers were generally increasing the size of their holdings and altering the mix between sheep and beef
- On the dairy farms, and probably on the sheep farms, they had less land in total at the end of the 1970's than at the beginning
- Other farmers and land owners (including some pastoral farmers) were diversifying into non-pastoral farming and forestry; and
- Many smaller holdings were coming into existence.

In general, pastoral farmers were shedding labour, varying the level of real inputs, and cutting back, at least in the middle of the decade, on fertiliser applications and on land development expenditure. We also know that at the beginning and end of the decade farmers invested more in development than in the middle of the 1970's.

Given all these movements it would have been surprising to find any steady growth in total farm output. In fact, if the volume of production had increased at all it would have been due to one or more of the following reasons:

- There could have been a lagged response to previous investment
- There could have been a change in technology leading to increased production per person, per hectare, or per unit of capital
- There could have been a sufficient change in the product mix to increase output per hectare—in effect this implies a change in technology
- There could have been a change in management skills leading to better and more efficient use of existing resources—particularly feed for animals
- There could have been favourable outside influences, such as good weather.

We know that the response to investment in the pastoral industry is lagged. It is therefore probable that the investment in the boom years of 1973 and 1974, and in earlier years, would have resulted in some production increases later in the decade.<sup>7</sup> We also know that the recent increases in investment should continue to make themselves felt for the next few years, as long as newly developed land does not revert.

However, we also know that the low levels of investment in land development in the late 1960's and the middle 1970's would have had an opposite effect, as would the overall loss of land to pastoral farming, and the probable net loss of good quality land. We would therefore tend to look more towards changes in technology, management skills, or the weather for any increases in overall production.

This feeling would be reinforced by the way in which farmers were preferring to use the farm surplus for buildings—particularly their own houses—rather than for development, and by the knowledge that growth coming from increased inputs usually suffers from diminishing marginal returns.

In the dairy industry it is clear that technological change has taken place. Quite apart from the rationalisation and change that has taken place off farm, improvements in milk storing and milking machinery, herring bone and rotary cow sheds, and a wide range of improvements in farm management techniques have all resulted in an increase in the number of cows one person can handle. That is, there has been an increase in production per person. In 1970, 46 percent of the herds contained between 50-99 cows, 34 percent between 100-149 cows and 15 percent more than 149. By 1978 these figures were almost reversed with 32 percent of the herds in the 50-

<sup>7</sup> The whole post-“war” period has seen a continual upgrading of hill country pasture, so that, for instance, stock can be taken to prime condition on land which formerly only produced store stock.

99 cow group, 41 percent in the 100-149 size group, and 24 percent in the 149 and over cow group. Over the same period the number of cows in an average owner-operator herd rose from 108 to 118, an increase of 9 percent. The corresponding averages in the sharemilking herds increased even more rapidly.

It is also clear—as has been shown in earlier chapters—that there has been a change in the overall farm product mix, particularly in the move towards horticulture.

What is not clear is what has happened on the sheep/beef farms. We know, for instance, that two broad sets of technology exist for sheep farms of an “economic” size, that is, excluding part-time holdings. The first, an *extensive* technology, aims to maintain or increase farm income by increasing the area farmed by one person and may be associated with increased capital inputs that allow one person to farm more stock units, for example, laneways, tracks, sub-divisions, and so on. The second, an *intensive* technology, aims to maintain or increase farm incomes by using various technologies and management skills to effect an increase in production per hectare. In particular the management skills are used to promote the efficient use of grass through controlled grazing.

Both technologies are likely to increase production per person, but only the second technology is likely to increase production per hectare. What we do *not* know, is the extent to which the different technologies are applied; the reasons that they are applied; and the effect of each (as opposed to both) on total production. Nor do we know anything about the proportions of farms which are not changing at all, or which are producing less.

Moreover we do not really know very much about the productivity of smaller blocks in terms of land, labour and capital. Such surveys as have been conducted on the smaller blocks suggest that production per hectare in some instances may be quite high, but that this production may be achieved at the expense of under-used capital inputs.

We cannot therefore draw many conclusions about the effects of technological change in the sheep/beef sector on total production. We can only say that during the 1970's the technology for change in several different directions existed; that changes were, and still are, taking place; and that only some of these changes could be expected to lead to increased production per hectare.

Finally on the topic of the weather, it is worth noting that many of the observed changes in output levels can be correlated quite closely with changing weather conditions. Dry weather and drought can affect total output levels for many years due to the loss of condition in the breeding stock. The droughts of the mid 1970's must have had an adverse impact on the national flock which would have been felt well into the late 1970's, despite a return to more favourable weather conditions at the end of the decade.<sup>8</sup>

<sup>8</sup> This section was written before the full effects of the South Island drought in 1982 became apparent.

It is clear from the evidence in this and the previous chapter that farmers were making many changes to their farm systems over the 1970's. These changes—or rather the net effect of all these changes together with changes occasioned by the weather and other uncontrollable variables—were reflected in the output of farming as a whole. Tables 14 and 15 (over) show the number of stock units and the product volume indices of farming through the 1970's.

The figures in Table 14 demonstrate the basis for the dominance of the production theme during much of the 1970's, since they show that total stock units were more or less static from 1971 to 1979—a state of affairs which much concerned the Government. The figures also show clearly the switches between sheep and beef and the gradual decline of the dairy herd over most of the decade. More importantly, the figures show the

#### 4.5 Changes in Output Levels

Table 14: MAIN CLASSES OF STOCK (MILLIONS)

June Year .....	Sheep	Breeding Ewes	Dairy Cattle	Cows in Milk	Beef Cattle	Beef Breeding Cows	Total Cattle	Total Stock Units
1971.....	58.91	43.02	3.20	2.36	4.80	1.69	8.00	96.70
1972.....	60.88	44.15	3.29	2.15	5.34	1.91	8.63	100.86
1973.....	56.68	41.02	3.16	2.09	5.77	1.98	8.92	98.51
1974.....	55.88	40.37	3.07	2.04	6.24	2.06	9.31	99.57
1975.....	55.32	41.11	3.00	2.06	6.29	2.31	9.29	99.85
1976.....	56.40	41.20	2.93	2.04	6.09	2.23	9.02	99.17
1977.....	59.10	42.78	2.90	2.01	5.84	2.14	8.74	99.68
1978.....	62.16	44.51	2.91	2.02	5.51	1.92	8.42	100.46
1979.....	63.52	45.76	2.90	2.00	5.12	1.82	8.02	99.80
1980 <sup>1</sup> .....	68.77	47.91	2.94	1.99	5.23	1.89	8.17	104.52
1981 <sup>2</sup> .....	70.95	49.70	2.92	2.05	5.38	1.85	8.30	107.30

1 Provisional.

2 Estimate.

Source: *Agdata: New Zealand Agricultural Statistics* (Ministry of Agriculture and Fisheries).Table 15: INDICES OF GROSS AGRICULTURAL PRODUCTION (1972 = 1000)<sup>1</sup>

	1973	1974	1975	1976	1977	1978	1979	1980 <sup>2</sup>
Sheep & lamb.....	911	834	833	905	934	945	929	1073
Wool.....	962	896	947	1006	1005	963	1049	1165
Cattle.....	970	1002	909	973	949	925	889	883
Pigs.....	925	872	936	862	1012	977	875	840
Dairy products.....	972	924	986	1061	1076	982	1071	1114
Crops & seeds.....	907	938	976	1189	1248	1154	1128	1156
Fruit.....	1055	1199	1133	1083	1112	1184	1309	1359
Vegetables.....	894	858	1039	828	884	1064	1091	1161
Poultry & eggs.....	1050	1105	1107	1192	1208	1117	1101	1081
Other farm products.....	954	1270	1351	1377	1371	1312	1436	1578
All agriculture industry production.....	966	939	950	1015	1025	992	1023	1112

1 Indices of volume of commodities available for export or domestic consumption.

2 Provisional.

Source: Department of Statistics' *Year Books*.

reversal of the "static" stock numbers in the last two years and the very rapid growth in sheep numbers.

The indices of gross agricultural production in Table 15, which show not only the effects of changes in stock numbers but also the effects of changes in performance per animal, also demonstrate the planing off, or fall, in pastoral products production during much of the 1970's, and the switching between the various sheep/beef products. The indices, however, also show the steady increase in fruit production from new horticultural activities and a higher level of crop and seed production during the later half of the 1970's compared with the early 1970's.

In short, both series show that the net effect of the changes pastoral farmers made in the first half of the 1970's—coupled with the influences of the weather, mainly on performance per animal—were to keep total production static. Only in horticulture, and in cropping, was production increasing. Since 1979, however, there has been rapid growth in the sheep industry; and over the whole period, the product mix has changed quite considerably from year to year.

The extent to which these changes in gross output and stock numbers can be attributed to any one cause is almost impossible to state, even though the previous chapters listed the main factors involved. The weather certainly played its part, as did changes in land use and the area of land available for pastoral farming. It is, however, merely speculation to assess which proportion of farmers changed to more *intensive* technologies, which proportion to more *extensive* technologies, and which proportion made no change at all. The best guess from the available evidence—on total land area, total stock units, performance per animal, amount of labour used,



and stocking rates—is that in the early part of the decade production per *person* rose much faster than production per hectare in the pastoral industries. This was partly as a result of poor performance per stock unit, partly as a result of a low stocking rate on some farms, and partly as a result of inefficient use of available feed by some farmers. Later in the decade, with an improvement in the weather leading to improved performance per animal, and a higher proportion of farmers opting for increasing stocking rates and more efficient management systems, production per *hectare* must have risen quite considerably.

This chapter discussed the variables, other than land and the product mix, which farmers changed during the 1970's. It established that pastoral farmers as a group tended to dispense with labour where possible, while horticultural farmers overall tended to employ more labour in total as the horticultural industry expanded. Again, as a group, pastoral farmers tended to vary the levels of current and capital inputs and, at least during the mid 1970's, reduce land development inputs. They did not appear to reduce capital expenditure on personal assets during this period.

#### 4.6 Summary

The farmers could opt for two main technological streams—*intensive* or *extensive*—but it cannot be established from the aggregated statistics how many farmers opted for each stream, or how many farmers opted for no change at all. The net effect of the changes that pastoral farmers made in the first half of the 1970's, coupled with inclement weather and a lesser amount of land—particularly good quality land—was a static level of total output. This indicated that production per *person* was rising at a higher rate than production per *hectare*. In the 1980's, with favourable weather and changing price signals, the pastoral farmers as a group started to increase production per hectare at a more rapid rate. Hence total production, particularly of sheep products increased. Over most of the 1970's horticultural production increased, as did cropping.

The effect of these changes on the rural community would have been to increase its perception of changes in the location and composition of the rural population—mainly because of the loss of labour from pastoral agriculture and the increase in labour in horticulture. The effect of the static production of the early 1970's was to interest successive governments in trying to increase production—hence the importance of the production theme throughout this period.

Chapter 5 discusses the signals to which farmers were reacting when they made the changes outlined in Chapters 3 and 4. In particular, gross and net farm incomes are analysed, together with land values and Government incentives.

## 5. SIGNALS OF CHANGE TO FARMERS

### 5.1 Introduction

At any given time there are many signals coming to the farmer from the marketplace and from the society around him. Often these signals take the form of price changes or anticipated price changes that will affect the returns from farming. Changes in input costs, in the market or intervention price for farm products, in taxation or interest rates, in land values, are all examples of these "economic" price signals.

However, some signals will take other forms. Information on new farming practices, a rumour about a strike in the processing industry, knowledge of the relative rewards paid to others in the economy, and a whole range of non-economic signals (for instance, the approval or disapproval of family and friends) may also affect farmers' decisions.

These signals are not all of equal importance to a farmer, nor are they necessarily of the same importance to every farmer. One farmer, for instance, might react to information on prices much more than to information about new technologies. Another farmer might react to technological information more than to price signals. Yet another might be unable to perceive the signals at all. The possible combinations are considerable.

While it is neither possible nor practicable to discuss all the signals which influenced individual farmers in the 1970's, it is possible to generalise about a number of loud and obvious signals which most, if not all, farmers were receiving during this period. These are grouped, below, into direct and indirect signals affecting gross income; direct and indirect signals affecting net incomes; direct and indirect signals affecting capital gains; and other signals.

### 5.2 Direct and Indirect Signals Affecting Gross Farm Incomes

There are three interrelated elements in a farmer's gross income—the quantity he produces, the price at which he sells, and the product mix. Each of these elements can affect the other<sup>1</sup>, and each is affected by a number of influences which the farmer may or may not be able to control. The most important of these influences are:

#### *On the quantity of a given product mix*

- The resources of the farmer at any given time (land, labour, capital)
- The managerial ability of the farmer (the ability to make the best use of those resources)
- The technology available to, or perceived by, the farmer at any given time
- The weather
- The motivation of the farmer to produce (in this the farmer will be influenced by a whole host of factors, including present income, reward for effort and risk, perceptions of his income and non-economic factors such as family or the age of the farmer);

#### *On the price of a given product*

- Political forces operating in domestic and overseas markets
- Economic forces operating in domestic and overseas markets
- Marketing policies in the domestic and overseas markets
- Costs of processing, transporting and marketing farm products
- Movements in the exchange rates of overseas countries and of New Zealand—in particular, the exchange rate policy in New Zealand
- Direct income supplements to the farmer in New Zealand
- Price smoothing schemes in operation at the time;

<sup>1</sup> For most products in New Zealand price is more likely to affect the quantity produced rather than quantity affect the price. This simply reflects New Zealand's position as a small producer in absolute terms. The observation is likely to be even more valid in relation to the individual farmer, whose contribution to the total amount produced is tiny.

*On product mix*

- The relativity between products for price, ease of production, personal preference of the farmer and so on.

Each of the above influences will be the source of a set of signals to the farmer about what is likely to happen to his gross income. He will know, for instance, that with his current resources, technology and management skills, he can produce a given average level of output and a given product mix. He will know that the actual level of output may exceed, or fall short of, his expectations according to the vagaries of the weather and his performance. He will be able to look at some of the factors affecting prices and guess what he might receive for his output. And, if he dislikes the result of his guess in terms of his gross income, he will have to find some way of altering either the price or quantity of the products, or some way of changing the product mix.

In practice, the individual farmer is much more likely to alter the quantity of the existing product mix, or to change the product mix, than to try to change the prices he receives, if only because of his inability to alter the influences governing prices.

For instance, he cannot, as an individual, hope to alter government policies overseas, nor, unless he has an optimistic view of the significance of the individual, government policies within New Zealand. He could, theoretically, take over his own processing, transporting and marketing, and does in fact have a few opportunities to do so—for example, gate sales, and owner-account marketing are devices for allowing the individual to have more say in determining prices.

In the main, however, he would be unable to raise the capital or employ the management skills that such control would require. He would therefore, as an individual, have to rely on competition to provide any real opportunity for price differentials in the processing, transporting and marketing of a given product. Such competition does exist, despite the frequent over-regulation and restrictive practices which bedevil many New Zealand industries. And so a knowledgeable farmer, particularly if he is dealing in livestock or wool and lives in an area where many firms are operating, can increase the price he receives for a product by choosing the best time to sell and the best firm to sell to. However, his choice may be limited by prior commitments (relating to short-term debt), and by the type of product he is producing. For instance, the dairy producer and the apple producer have less opportunity than the sheep/beef producer to change processors and marketers.

The scope of the farmer to influence the price received for a product can be extended if the individual farmer is willing to act in concert with his fellow producers. A large co-operative can employ the management skills and raise the capital to process and market a product—the dairy industry is an example. A producers' organisation can lobby both the New Zealand Government and overseas governments. However, if these activities are to give the individual farmer a feeling of control over the price he receives they must be done efficiently and with a sense of responsibility to the individual farmer. Such efficiency and responsibility are not easy to achieve, and co-operative organisations may still leave the farmer with the feeling that he is in the hands of "some other person" who may or may not be looking after his interests. The debates over centralised milk testing, payouts from co-operatives,<sup>2</sup> and the role of the Meat and Wool Boards' Electoral College, all demonstrate this lack of confidence on the part of the individual in his ability to control the organisation that represents him.

All in all, the individual farmer, despite the fact that he *can* influence the prices he receives, must have the feeling that he is a price taker rather than a price maker unless he is prepared to enter the area of farm politics. Accordingly the first and most obvious reaction of many farmers to the signals that affect the price side of their gross income is simply "what

<sup>2</sup> There is often a conflict in co-operatives between the need to maintain a good payout to shareholders and yet retain profits for future development.

can I do about them?" This reaction might not matter, if the signals were good. For instance, if the real prices to the farmer for his product were rising. In practice many of the signals over the last decade have been at best marginally optimistic, at worst downright depressing.

Political forces in the developed overseas markets—in which much of New Zealand's farm produce is sold—have tended towards protectionism. Moreover those same forces, since they operate through artificially raising prices to promote self sufficiency in food and protect farm incomes, have depressed demand for many products, so that pressure has been exerted to reduce the quantity of imports.

In the developing countries, although rising per capita incomes and a high income elasticity of demand for food have promoted trade, political instability and inequitable income distribution have made this new trade volatile and insecure. This insecurity has been heightened by a tendency for many developing countries (and some developed and most centrally-planned economies) to purchase sporadically through state-controlled agencies.

Increased skill at marketing New Zealand products has had a beneficial effect on the price of some New Zealand products—kiwifruit, lamb in America, and dairy products are all examples—but much of New Zealand's produce is still sold as a bulk commodity for which the price has to be taken rather than made. Strangely, one of the success stories in terms of altering price, has been butter in the E.C. (European Community), where political access to a high-priced market rather than the use of marketing skills has returned a good price to the producer.

In general, however, the economic and political signals coming from overseas, both now and over much of the previous decade, have been depressing to the confidence of many New Zealand farmers—particularly those engaged in pastoral farming.

Partly because of the negative signals to the pastoral farmers, and partly because of rising costs in New Zealand (see 5.3), the New Zealand Government has had to send out its own more optimistic signals to the farmers. These signals, in the form of a range of incentives affecting both net and gross income, have encouraged product diversification and restored confidence to the pastoral farmers by maintaining their incomes and their ability to reinvest.

However, they have also had adverse effects. They have become capitalised into the value of the land, so that many farmers still perceive themselves as having an "income" problem, either, realistically, because they have recently purchased land and have to service a heavy debt on the inflated land price, or, more unrealistically, because the greater part of the return on their investment is in the form of capital gain rather than income. The incentives also have introduced considerable distortions into the price mechanism, and so divorced the producer from market signals. They have given many farmers the feeling that the Government, and not their own efforts, will determine future incomes, and the impression has been given to other sectors that farming needs to be subsidised, rather than compensated for an overvalued exchange rate and a badly structured economy.

Perhaps the most depressing signals have come to the pastoral farmers from the processing and transporting industries. Since 1976 the cost of transporting stock to the works has risen by 122 percent; the costs of processing and transporting to the ships have risen by 174 percent; and the cost from ship to Smithfield market by 94 percent<sup>3</sup>. Over the whole decade the total of all these costs has risen by more than 400 percent. While some of these increases can be attributed to the increased real price of fuel, and to the cost of upgrading freezing works, it is hard to escape the conclusion that part of the increases must represent a siphoning off of an increasing share of the product returns by owners and employees in the processing and transport industries.

It is true that the monetary prices received for *most* products, and the real prices for *some* farm products have increased over the last decade; just as

<sup>3</sup> Source: Agdata: 1981 New Zealand Agricultural Statistics (Ministry of Agriculture and Fisheries).

it is true that the gross incomes of most farmers have increased in monetary terms, but the overwhelming signals to farmers—particularly the pastoral farmers—on the price side of their gross income during the 1970's have been that:

- The prices of much of New Zealand's traditional farm produce were unlikely to rise at a faster rate than costs over the long term
- The prices received in any one year for the traditional pastoral products were likely to fluctuate widely
- An increasing share of the product returns in the pastoral industry was liable to be siphoned off by the farm servicing and marketing/processing sectors
- In the absence of an exchange rate policy which favoured, and could be made to favour consistently, the primary producer, farm incomes and farm development were likely to be dependent on Government incentive policies; and
- Finally, that the individual farmer could do little to influence the price side of his gross income.

Not surprisingly, therefore, most farmers tended to look to the production side of their gross incomes for any change in the level of their income. Since alterations to production patterns frequently affect the level of inputs, the production side of gross farm income is discussed under net rather than gross income.

Three major sets of signals reached or were available to farmers about their net incomes and their production systems during the 1970's. First, the costs of farm inputs were rising more rapidly than the prices received for output. Second, Government incentives were available for diversification, for development expenditure, and, more recently, for income maintenance. And third, various technologies were available for a wide variety of purposes, ranging from the production of new products, through low-input farming to high-input farming, and farming with a higher level of management skills. The three sets of signals are discussed below.

### 5.3 Direct and Indirect Signals Affecting Net Incomes

Table 16 (below) shows the indices for prices received and prices paid by sheep/beef and dairy farmers during the 1970's. Table 17 (over) shows the changes in the (all groups) farming cost price index which covers both pastoral and other farming.

#### 5.3.1 The Cost of Inputs

Table 16: INDICES OF PRICES RECEIVED AND PRICES PAID (1970/71 = 1000)

	Sheep				Dairy			
	1 Prices Received	2 Prices Paid	% Change in 1	% Change in 2	3 Prices Received	4 Prices Paid	% Change in 3	% Change in 4
1970/71 .....	1000	1000			1000	1000		
1971/72 .....	972	1064	-2.8	+6.4	1244	1047	+24.4	+4.7
1972/73 .....	1638	1118	+68.5	+5.1	1314	1133	+5.6	+8.2
1973/74 .....	1681	1275	+2.6	+14.0	1432	1312	+9.0	+15.8
1974/75 .....	1184	1446	-29.6	+13.4	1351	1494	-5.7	+13.9
1975/76 .....	1772	1622	+49.6	+12.2	1579	1701	+16.9	+13.9
1976/77 .....	2240	1924	+26.4	+18.6	1691	1979	+7.1	+16.3
1977/78 .....	2135	2224	-4.7	+15.6	1884	2211	+11.4	+11.7
1978/79 .....	2623	2426	+22.9	+9.1	2017	2486	+7.1	+12.4
1979/80 .....	3107	2970	+18.4	+22.4	2426	2965	+20.3	+19.3
1980/81 .....	3451	3681	+11.1	+23.9	2789	3527	+15.0	+19.0

Source: Linked indices from *Economic Review of Agriculture 1979* and *Agdata: 1981 New Zealand Agricultural Statistics* (Ministry of Agriculture and Fisheries).

It is readily apparent from the two tables that the main signals reaching farmers on costs, and therefore on net incomes, were that:

- Costs were rising every year at an increasing rate
- Prices received by pastoral farmers (particularly for sheep products) fluctuated widely from year to year and alternated between increases and decreases
- In general, the rate of increase in the prices received for traditional pastoral products tended to be below the rate of increase in prices paid for inputs.

The major cost increases (both in terms of the amount that was spent on each item, and the rate of increases in the cost of that item) were for wages, fertiliser, repairs and maintenance, and vehicle expenses (see Table 17 below).

**Table 17: FARMING COSTS PRICE INDEX**  
ALL-FARMING (YEAR ENDED JUNE 1971 = 1000)

	Expenses as % of Base (1970/71)	% Increase 1970/71-1979/80
Wages and rations.....	13.7	+223.8
Sharemilkers.....	5.4	+141.9
Animal health etc.....	3.2	+146.2
Electricity.....	1.3	+288.9
Feed.....	8.6	+166.8
Freight.....	2.9	+198.4
Fertiliser and lime.....	11.2	+224.8
Seeds.....	1.3	+182.2
Shearing expenses.....	3.6	+201.8
Weed and pest control.....	1.3	+199.5
Other farm working expenses..	2.8	+205.1
Repairs and maintenance.....	8.7	+222.6
Vehicle expenses.....	7.6	+240.9
Administration expenses.....	2.9	+201.7
Insurance.....	1.1	+16.0
Rates.....	3.1	+248.8
Interest.....	10.0	+53.6
Rent.....	1.7	+36.9
All groups (excluding depreciation).....	90.4	+185.2
Depreciation.....	9.6	-

Source: 1981 Year Book (Department of Statistics).

In the absence of any change, or assistance from the Government, all types of farmers could expect continued pressure on their net incomes from increasing costs; and pastoral farmers could expect widely fluctuating and probably declining farm surpluses,<sup>4</sup> which would force them into an erratic and declining pattern of reinvestment.

Such a pattern is implied by the gross and net income figures for pastoral farmers in Tables 18(a) and 18(b).

The gross and net income figures in Table 18 should be treated with considerable caution since they refer to average farms. Moreover, net income is the income after all tax-deductible expenditures have been claimed. The figures are therefore not a guide to a particular farm, nor an accurate guide to the true farm surplus available to a farmer. The figures do, however, show the general trends for the pastoral farmers; of fluctuating but increasing monetary gross incomes, and widely fluctuating and probably decreasing net real incomes.

These general trends would have been even more pronounced had it not

<sup>4</sup> The phrase farm surplus is used to denote gross income less expenses, including interest. The surplus is the amount left to the farmer for reinvestment, taxation payments, and his own purposes.

been for the other "signals" which were reaching farmers—those of the Government incentives, and changing technologies.

**Table 18: GROSS AND NET INCOMES—AVERAGE FARM**

**18 (a) Dairy (factory supply farms)**

	Gross Income	Total Expend- iture	Net Income	Net Real Income	Gross Income	Total Expend- iture	Net Income	Net Real Income
Base 1972/73.....	\$	\$	\$	\$	% change	% change	% change	% change
1972-73.....	20866	12480	8386	8386				
1973-74.....	21953	13704	8249	7512	+5.2	+9.8	-1.6	-10.4
1974-75.....	23492	14847	8645	6955	+7.0	+8.3	+4.8	-7.4
1975-76.....	25654	16058	9596	6645	+9.2	+8.2	+11.0	-4.5
1976-77.....	29986	19493	10493	6310	+16.9	+21.4	+9.3	-5.0
1977-78.....	30911	20756	10155	5350	+3.1	+6.5	-3.2	-15.2
1978-79.....	37384	24043	13341	6341	+20.9	+15.8	+31.4	+18.5
1979-80 <sup>1</sup> .....	44950	28500	16450	6679	+20.2	+18.5	+23.3	+5.3
1980-81 <sup>2</sup> .....	53720	34200	19520	6830	+19.5	+20.0	+18.7	+2.3

**18 (b) Sheep**

1972-73.....	39300	20500	18800	18800				
1973-74.....	38200	23900	14300	13024	-2.8	+16.6	-23.8	-30.7
1974-75.....	26700	21300	5400	4344	-30.1	-10.9	-62.2	-66.7
1975-76.....	40700	27100	13600	9416	+52.4	+27.2	+151.9	+116.8
1976-77.....	52025	31831	20194	12147	+27.8	+17.5	+48.5	+29.0
1977-78.....	50928	35943	14985	7902	-2.1	+12.9	-25.8	-34.9
1978-79.....	60916	41422	19494	9263	+19.6	+15.2	+30.1	+17.2
1979-80 <sup>1</sup> .....	77100	52100	25000	10145	+26.6	+25.8	+28.2	+9.5
1980-81 <sup>2</sup> .....	78000	57000	21000	7339	+1.2	+9.4	-16.0	-27.7

1 Provisional.

2 Estimated.

Source: Dairy Board and New Zealand Meat and Wool Boards, Economic Service (in *Economic Review 1979* and *Agdata* statistics for 1981—Ministry of Agriculture and Fisheries).

Since the early 1960's, and particularly since 1978, an increasing number of incentives have been available to farmers to counteract the negative signals that were reaching them from the market. These incentives have four basic objectives:<sup>5</sup> stabilising incomes, establishing long-term confidence, compensating farmers for distortions in the economy and the exchange rate, and promoting change. They work in a variety of ways, of which the most important are:

- Tax concessions which allow the farmer to deduct most development expenditures
- Input subsidies (now largely out of favour)
- Direct income supplements (Supplementary Minimum Prices)
- Contractual subsidies and loans (Livestock Incentive Scheme and Land Development Encouragement Loans)
- Preferential loans for development
- Direct provision of Government support services (for example, research and advisory services); and
- Various income-smoothing devices.

The incentives have been introduced in successive waves, partly in response to observed downturns in overall production, and partly in response to the need to promote change in the industry. And so the development taxation incentives and many of the preferential loans, together with the income-smoothing devices, date to the early 1960s and the Agricultural Development Conference, where a perceived need for increased agricultural exports led the Government to promote farm development. The input subsidies were introduced as a result of a fall in the terms of trade in 1967, while the contractual subsidies represented a conscious attempt to move away from input subsidies and link any payments to farmers more directly to increased production. Sustained cost increases have, how-

### 5.3.2 Government Incentives to Farmers

<sup>5</sup> See *Farm Production in New Zealand an Analysis of Incentives and Disincentives*. (Maughan, C.W., and Ward, A.B., Department of Agricultural Economics and Farm Management, Massey University, 1978).

ever, eroded many of the benefits from the earlier incentives, and necessitated ultimately the direct income deficiency payments which are implicit in the Supplementary Minimum Prices scheme when market prices fall below the minimum prices. In the latter half of the 1970's, incentives to promote horticultural development and the development of further processing of meat products were introduced, indicating that the Government was interested in prompting diversification and further processing.

The incentives are not cheap. This year SMPs alone could cost more than \$300 million, while other direct payments to the agricultural sector by the Government might cost the same again, to which must be added the cost of tax forgone and cheap credit for the producer boards at the Reserve Bank. Nevertheless they have been an essential instrument in the 1970's for informing the farmers that the Government had long-term confidence in the farming industry; wanted farmers to continue developing and to diversify; and was prepared, if necessary, to forgo taxation and underwrite farm incomes in the absence of both an exchange rate policy favourable to the primary producer and an internationally-competitive domestic economy.

### 5.3.3 Technologies Available to Farmers

It has already been noted that two broad sets of technologies were available to pastoral farmers during the 1970's. The first, an *extensive* technology, aimed to increase farm income by increasing the area farmed by one person. The second, an *intensive* technology aimed to maintain or improve farm incomes by using higher levels of managerial skill to increase production per hectare. Also, most farmers would have been aware of the potential of the new "non-traditional" products.

The extent to which the pastoral farmers perceived or used the two sets of technology cannot be quantified. Nor can it be said with certainty how many farmers diversified successfully into the new products. However, the very existence of the two types of technology and of the opportunities afforded by the new products formed yet another set of signals to farmers about their production patterns. In effect the signals on costs, prices and incentives informed them that there was a need for change, while the technologies and new products informed them of some of the possible avenues for change.

Some hypotheses on the ways in which they did change are introduced in section 5.6, but first it is necessary to consider two final sets of signals—those on land values and on "equity" in the economy.

### 5.4 Direct and Indirect Signals Affecting Capital Gains

An important set of price signals—arguably the most important set of price signals—which reached farmers in the 1970's was the steady and considerable increase in the sale price of farm land. Table 19 (below) shows the pertinent figures.

**Table 19: AVERAGE ANNUAL INCREASES: FARM LAND SALE PRICES INDICES (COMPOUND RATES—% PER ANNUM)**

Type of Farm	1970-1976 <sup>1</sup>	1976-1980 <sup>1</sup>
Dairy.....	17.4	11.0
Fattening.....	15.1	17.5
Grazing.....	16.8	19.5
Arable.....	16.0	10.0
Horticulture.....	20.5	18.0
All Farm Land.....	17.0	15.0

<sup>1</sup> Source: Valuation Department

For the period 1970-1976, the average annual compound increase in the sale price of all farm land was 17 percent, compared with 10 percent for



the Consumer Price Index. Since then the rate of increase in the C.P.I. has accelerated but is still below that of the farm land sales price index, and well below the sales price index for horticultural land, grazing land, and fattening land.

To anyone interested in a return from invested money the conclusion that could be drawn from these figures during the 1970's (and 1960's) was obvious. Land was a good investment. It was a particularly good investment if the land could be developed and the tax incentives used to ensure that the investment funds came from pre- rather than post-tax surpluses.

The investors were deterred neither by the risks attached to producing and marketing new products, nor by the apparently poor average income returns from pastoral farming. Finance was available at subsidised interest rates to purchase land; development expenditure was tax deductible; the returns from some of the new products were very high; the income from pastoral farming, at least during the latter part of the decade, was guaranteed by the supplementary minimum prices; and, as long as people wanted to buy land, the capital gains from investment in land were considerable.<sup>6</sup> For those who were prepared to anticipate that the process of underwriting and bidding up the value of the land would continue, the signals emanating from the land price increases were a powerful incentive to invest in land—particularly in land for development. Hence, of course, the increased expenditure on horticultural development, and, towards the latter half of the decade, on pastoral land development.

<sup>6</sup> There is some evidence to suggest that the rate of increase in the sale price of land is now falling. It should be noted that farm land prices in America and in Ireland have fallen.

One final set of indirect signals reached most farmers in the 1970's. Although their effect on the farmer can only be surmised, a number of signals about "equity"—about fairness in the economy—must have affected farmers' behaviour. These signals are extremely difficult to quantify. They related to indicators such as movements in salaries and wages in the rest of the economy, which always increased; observed patterns of expenditure of other people on luxuries such as boats, holidays, caravans, houses, cars and so on; and observed patterns of behaviour of other people in the economy—strikes and low productivity, for instance.

## 5.5 Signals on "Equity"

Their impact on farmer behaviour can be guessed at by considering the patterns of expenditure on personal and farm assets over the first half of the decade, and by referring to the frequency with which farmers nominated such topics of comparative equity as "affecting production patterns" in opinion surveys. As one participant at a policy seminar noted during the 1970's: "New Zealand is developing into a 'me too' economy—you have got that; I'll have some too thanks."

The influences of television, improved communications and highly organised lobbying should not be underestimated in spreading this message, and the message was certainly available to anyone who wanted to listen. However, its impact on farmer behaviour cannot be quantified, and it is mentioned here only as a possible influence on farmers' motivations to work and to save.

If one accepts that the signals mentioned in 5.2-5.5 were the major signals reaching farmers in the 1970's, the changes in resource and production patterns outlined in Chapters 3 and 4 become reasonably explicable.

## 5.6 The Signals and Farmers' Choices

Table 20 (over) attempts to set out the changes in resource patterns and production systems, the possible motives of people who made these changes, and the main causative agent for making the changes in terms of the signals discussed so far in this chapter.

The changes in total production and productivity would have resulted from some or all farmers making some or all of the above changes. It should be stressed, however, that the generalised hypotheses outlined in Table 20 are derived from aggregate figures and can not give a guide to

**Table 20: CHANGES IN RESOURCE USES AND PRODUCTION SYSTEMS (POSSIBLE MOTIVES FOR CHANGE AND CAUSATIVE AGENT OF CHANGE)**

Change in Resource Use	Possible Motive <sup>1</sup> of Farmers for Change	Main Causative <sup>2</sup> Agent in Terms of Signals
1. <i>Change</i> in land use pattern and product mix	<ul style="list-style-type: none"> <li>• <i>Increase</i> gross income.</li> <li>• <i>Avert</i> risk.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Relative</i> product prices.</li> <li>• <i>Unstable</i> and volatile markets for traditional products.</li> <li>• <i>Cost</i> increases reducing net income.</li> <li>• <i>Incentives</i> to diversify (particularly tax incentives).</li> </ul>
2. <i>Increase</i> in size of full-time pastoral farms	<ul style="list-style-type: none"> <li>• <i>Increase</i> gross and /or net income by increasing scale of farming, or by increasing the areas farmed by one person.</li> <li>• <i>Investment</i> opportunity.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Cost</i> increases reducing income per family.</li> <li>• <i>Land</i> values offering good opportunity for investment.</li> <li>• <i>Incentives</i> to increase production</li> </ul>
3. <i>Increase</i> in the number of small and part-time farms	<ul style="list-style-type: none"> <li>• <i>Income</i>.</li> <li>• <i>Investment</i> opportunity.</li> <li>• <i>Personal</i> motives.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Tax</i> incentives to horticulture.</li> <li>• <i>Increase</i> in land values.</li> </ul>
4. <i>Decrease</i> in number of full-time pastoral farms	<ul style="list-style-type: none"> <li>• <i>Increase</i> farm size in order to increase income per family.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Cost</i> increases reducing income per family. Therefore farms becoming larger.</li> <li>• <i>Land</i> values.</li> <li>• <i>Incentives</i> to increase production.</li> </ul>
5. <i>Decrease</i> in pastoral labour force	<ul style="list-style-type: none"> <li>• <i>Increase</i> net income of farm by reducing inputs.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Cost</i> increases.</li> </ul>
6. <i>Increased</i> levels of current and capital inputs	<ul style="list-style-type: none"> <li>• <i>Increase</i> gross income.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Cost</i> increases.</li> <li>• <i>Desire</i> for more profit.</li> <li>• <i>Incentives</i> to increase production.</li> </ul>
7. <i>Decreased</i> levels of current and capital inputs	<ul style="list-style-type: none"> <li>• <i>Increase</i> net income by reducing inputs.</li> <li>• <i>Increase</i> personal expenditure by altering components of pre- and post-tax surplus.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Cost</i> increases.</li> <li>• <i>Perception</i> of equity.</li> </ul>
8. <i>Varying</i> levels of current and capital inputs	<ul style="list-style-type: none"> <li>• <i>Maintain</i> and/or increase net income.</li> <li>• <i>Alter</i> components of pre- and post-tax surplus.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Cost</i> increases.</li> <li>• <i>Fluctuating</i> incomes.</li> <li>• <i>Perception</i> of equity.</li> <li>• <i>Incentives</i>.</li> </ul>
9. <i>Utilisation</i> of extensive technologies	<ul style="list-style-type: none"> <li>• <i>Increase</i> income per family by increasing area farmed.</li> <li>• <i>Investment</i> in land.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Cost</i> increases.</li> <li>• <i>Land</i> values.</li> <li>• <i>Information on technologies</i>.</li> </ul>
10. <i>Utilisation</i> of intensive technologies, including higher level of management skills	<ul style="list-style-type: none"> <li>• <i>Increase</i> gross income and/or net income with or without change in level of inputs.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Cost</i> increases.</li> <li>• <i>Desire</i> for more profit.</li> <li>• <i>Information on technologies</i>.</li> <li>• <i>Incentives</i> to increase production.</li> </ul>

1 An individual's motivation will be very complex. The items listed should always include "personal" motivations.

2 The existence of a suitable technology is presumed to be a pre-requisite of change.

the behaviour of any individual farmer. Nor can they tell us how many farmers fell into each category of change. Nevertheless, they do go some way to explaining the aggregate changes in resource use and production systems which took place in the 1970's.

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## 6. RURAL DEPOPULATION & SERVICES

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### 6.1 Introduction

The changes that took place in resource use and in the production patterns of farming during the 1970's gave rise to the "production" and "farm income" themes discussed in Chapter 2. They also contributed to the prevalence of the "land use and planning" theme, since changes in land use affected, and were affected by, the regional and district planning schemes.

To many people the production changes were also linked with the fourth theme—the depopulation of the more remote country areas and an observed decline in rural services. Hence the term of reference requiring the Task Force to "relate these on-farm changes to changes that have taken place in the rural sector and rural community ...".

In the event, despite a lengthy examination of the statistical evidence, the Task Force concluded that it could not significantly advance understanding of the linkage between on-farm changes and changes in population and services. The linkages were always complex, often tenuous and subjective, and affected by many more variables than changes in farm production. The statistical information was poor. The limited conclusions which could be drawn were either obvious, or too tentative to quote without substantial qualification. Instead, the Task Force decided it would be better to report the general conclusions from the statistical analysis (see section 6.2); to place any tentative conclusions, together with a description of the statistical work and its deficiencies, into Appendix 7.3; and to collect new, if subjective, data by seeking the opinions of rural people in four different regions of the country on the topics of depopulation and rural services. These opinions could also be used to check conclusions derived from the analysis of production trends, and amplify the theme of "land use and planning".

It must be stressed that the opinions collected and recorded below (Section 6.3 on) are personal and subjective. Moreover they are selective and do not derive from a scientific sample. Nevertheless they are a reasonably up to date expression of the opinions and feelings of a number of people who are confronted in their daily lives by discernible movements in population and by fluctuations in the availability of services. To that extent they are probably more to the point than judgements made by outsiders from historical data that is often inadequate and misleading.

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### 6.2 General Conclusions from the Statistical Analysis

The first and most important conclusion from the statistical analysis, and from the visits to the regions, is that the people and the economic activities in rural areas are as diverse as the countryside itself. They belie the easy homogeneity suggested by such titles as the Rural Sector or the Rural Community.

While farmers and those working in the agricultural industries may be a dominant and obvious presence, forestry workers, hunters, miners, tradesmen, shopkeepers, bankers, part-time farmers, and central and local government employees—to mention but a few—are also part of the rural workforce; just as forestry, hunting, mining, tourism, and the provision of social and commercial services are as much rural economic activities as full- and part-time farming.

Moreover this broad diversity of economic purpose is not the only diversity. At finer and different levels of classification—some connected with the rural sector and some with the rural community—the people in rural areas might divide themselves, or be perceived as dividing themselves, into a wide range of interest groups: traditional and non-traditional farmer; developed and developing farmer; dairy farmer and sheep farmer; hill country farmer and flat land farmer; owner and employee; worker in the private sector and worker in the public sector; male and female; old and young; those who take part in the income earning stream and those who do not; skilled and unskilled; salary and wage earner and self employed;

Maori and Pakeha; North Islander and South Islander; in fact into any of the thousand and one divisions, subjective and objective, distinctive and overlapping, that criss-cross any society.

To speak therefore of *the* Rural Sector or *the* Rural Community, and the "issues" which confront them, is to assume a simplicity and uniformity which can only exist at the most generalised level. At any more specific level there will be a complexity and diversity of resources, people, activities, and objectives; and a consequent complexity and diversity of "issues" and perceptions of "issues".

Similarly there will be a complexity and diversity of relationships between population levels, the different types of economic activity (of which agriculture is just one) and the levels of services in the various areas. These relationships cannot, and should not, be the subject of nation-wide generalisations.

Also, the word "depopulation" is a misnomer. In many counties the rural population (those living in concentrations of less than 1000 people) is increasing. Instead of depopulation there is probably a change in the location and composition of the rural population. Again, the change is extremely complex. Some of the more remote counties are still losing population—probably where the regional economy is solely dependent on pastoral farming. However, other remote counties have increasing populations—probably because of an increase in economic activity other than pastoral farming, for example, hydro-electric dams, forestry, tourism, or subsistence living. Counties near urban areas, where, either coincidentally or not, there are a large number of small holdings, tend to have increasing populations. Counties in which horticultural development is taking place have increasing populations, but not necessarily solely because of horticultural development. Counties with a good climate, or some attractive feature such as spectacular scenery, or with an economic advantage, for instance, cheap land, also have increasing populations. There are in fact many possible explanations for population movements. No single general explanation can explain them satisfactorily. Overall, the decline in the total rural population has slowed down—even ceased. There is, however, insufficient evidence to say whether the slow down is temporary or permanent.

There is also not enough evidence to identify a quantifiable link between changes in farm production, in levels of population, and in the availability and quality of services. Instinctively one feels that such a link exists—for instance, the technology used in farming must be one of the determinants of the numbers of farmers and farm workers, and so one of the determinants of population levels in regions dependent on farming. Similarly, the number of people involved in farming and the level of their incomes must be one of the determinants of the availability and quality of services. However, so many other influences make themselves felt—Government policy, the technology of transport, the economics of providing services, to name but a few—that one cannot quantify the links without detailed and costly research. The links between perceived adequacy of services and changes in the level of farm production (through farmer motivation) would be even less quantifiable, because of the difficulty of defining and measuring the influence of motivation on behaviour.

Finally, the concept of a change in the availability and adequacy of services is almost impossible to research objectively. One can record whether people perceive such a change, but such a record is subjective. One can measure some physical changes—for instance, a change in the location or availability of services, or in the cost of services—but one cannot really measure changes in quality. And even if one can overcome the difficulties of measuring quality, one is faced with the problem of deciding how to assess "adequacy". Against some national norm? Against some rural norm? And how does one begin to assess the impact of changing technologies?

Some attempt could no doubt be made to assess changes in the adequacy and availability of a limited number of services in a carefully defined area,

but any attempt to reach general conclusions for all services in all areas of New Zealand would require many years of work. Such an attempt could not be undertaken as part of this study.

These conclusions are somewhat negative, but they may serve to lay some ghosts which have haunted agriculture over the past decade. There is no unified and homogeneous rural community. There is no universal depopulation of the countryside. There are probably some links between changes in the level of farm production and the levels of population and services in rural areas, but the links are unlikely to be established quantitatively and objectively—particularly on a national basis—without detailed and expensive research.

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### 6.3 Visits to the Regions

The Task Force visited four regions which were chosen more or less subjectively, on the basis of their location (two in the North Island, two in the South Island); their long history of declining populations; and their continued reliance on pastoral farming. The areas chosen were: Waiapu County on the East Cape of the North Island; Taumarunui County in the King Country of the North Island; North Canterbury, with particular emphasis on the counties of Cheviot and Amuri; and Southland County. They were then visited by members and staff of the New Zealand Planning Council and staff of the Farm Management Department of Massey University.

Each visit was prearranged so that the maximum number of interviews could take place between the Task Force and the people within the area who might be expected to have a good working knowledge of the changes that had taken place locally over the last decade.

Effectively this meant that the Task Force contacted one or two key persons in an area—a local authority executive, an elected representative, a well-known community leader, the farm advisory officer—and arranged, after discussions with them, a series of meetings with both individuals and the representatives of the various regional institutions. In this way the Task Force was able to talk to most of the executives and members of the various local authorities in a region; to representatives of key regional departments of central government; to community leaders; and to a wide range of individuals—farmers, businessmen and women, employees in various industries, community workers, and members of the families of those whose homes they visited.

Each person was asked more or less the same checklist of questions (derived from the aggregate analysis) in order to start and guide conversation. After that, people were encouraged to discuss the area, its problems and opportunities in their own terms. In addition, some more open-ended consultations had been held with selected rural people the previous year.

The results of such a non-scientific survey must be treated with caution. The errors which are likely to have arisen from omission or biased selection may be considerable. Nevertheless the information has proved useful, and many of the comments have already been used to interpret conflicting evidence in the body of the text.

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#### 6.3.1 The Characteristics of the Regions

*Waiapu County:* The counties of the East Cape are isolated and dominated by a strong Maori presence. The land is mainly steep, and either of low fertility and stable, or of high fertility and very unstable. However, small pockets of good flat horticultural land exist along the coast and in the river valleys. About half the land area (including almost all of the stable and flat land) in Waiapu County is under Maori ownership, although much of it is leased, both to Pakeha and to Maori farmers.

Pastoral farming presently dominates on the hill country, but is under a variety of pressures. These include declining returns from pastoral farming, increasing erosion, changing central and local government policies,

the complications of the land tenure system, and the desire of the Maori community for more jobs based on Maori-owned land. Forestry is increasingly becoming a major land user. Some horticultural development is taking place on mainly Maori-owned land near the coast.

After many years of decline, Waiapu County's population is starting to increase. This has been attributed to a number of factors, including changes in the pastoral base, a conscious policy on the part of many members of the Maori community to encourage younger people to stay and work in the area, the growth of forestry, and the effect of high levels of unemployment in Auckland and Wellington, which has meant the rural/urban drift has been slowed and possibly reversed.

The overall feeling recorded by the Task Force was that the Maori community in particular was full of energy and a desire to see the East Cape develop, but that they were being frustrated by lack of knowledge, lack of political power (and hence resources), and an inability to use existing institutions or develop new institutions in ways which were suited to *their*, rather than to national policy, objectives. The Pakeha farmers were perhaps less enthusiastic about development. The long-term implications of rising costs, isolation, complicated land tenures, increased forestry plantings and the severe erosion, were of considerable concern.

*Taumarunui County* is somewhat less isolated than the East Cape, but is still isolated in comparison with other areas. The Maori presence is considerable, but less dominant than in the East Cape. About one-quarter of the county population is Maori, and about one-quarter of the land is Maori land.

The land is steep, of low fertility, and originally clad in bush. Some three-quarters of the county area has been developed for farming—mainly by Pakeha farmers and by the Departments of Maori Affairs and Lands and Survey. Superficially there appears less pressure from the Maori community than that noted in the East Coast to use Maori land for the creation of jobs for young Maoris. Some Maori land which has been leased for forestry has been leased on the condition that there will be preferential employment of owners. At the same time, however, doubt was expressed to the Task Force that the Maori pastoral farming operations, whether under trusts, incorporations, or Maori Affairs aegis, could provide greatly increased employment opportunities for the local Maori people.

The population has been declining for many years but the rate of decline is now tailing off. A new meat works has been recently established in Taumarunui Borough, and is a major employer there. The general impression obtained by the Task Force was that the economics of pastoral farming were a major concern of those they interviewed, but people were also concerned about the continued loss of population from the area. This concern had influenced the local authority in formulating the district scheme, and they had included policies designed to encourage population to remain in the area. The regional development council was also highlighting the land resource of the King Country as a base for future development through the creation of a "rural resource zone". Some people, however, saw the rising costs of fertiliser and transport as major threats to the economic prosperity of the region, and tended to be somewhat more pessimistic about the future than were people on the East Coast.

*Cheviot* and *Amuri* in the South Island have small but increasing populations. The economic base of the counties is pastoral farming, although there is some forestry in north-west Amuri. Pastoral farming is likely to remain as an economic base, at least in the short term, despite the introduction of an irrigation scheme in Amuri, though some farmers envisage some change, possibly to horticulture in the longer term. The land, though inherently fertile, has to be farmed with the constraint of frequent and severe droughts, but in general the farmers are less concerned about current trends in the industry than the farmers in the North Island regions. Part of the reason for this relative lack of concern relates to the fertility of the land (less fertiliser means less cost), but part also relates to the fact

that many of the farmers have been established for several generations and have substantial equity in their properties.

In general the Task Force gained the impression that the area was currently prosperous<sup>1</sup>, but that the farmers were worried about the long-term effects of continual cost increases and their declining political power relative to urban areas. The current increase in population seemed to be caused by a conscious and active policy on the part of the local authorities in the region to keep and develop small service industries—shops, local authority depots, and so on. Both these counties, and Hurunui to the south, have strongly supported local medical services, as well as using their district schemes and other means to encourage population to remain in the area. In general, however, there was a dislike of larger regional or united authorities in which local rural interests might become subservient to urban interests.

*Southland County*, the fourth area visited, is by any standards a very large county. It embraces a major and prosperous city in Invercargill, and five other substantial boroughs and cities. It has the largest stock concentrations in the country, and, for the most part, comprises good flat or rolling land which is eminently suited to pastoral farming and/or cropping. In Invercargill the existence nearby of an aluminium smelter is a major promoter of growth in the non-agricultural sector, and there is a large agricultural processing sector (mainly meat) which is also a major contributor to the regional economy.

The deer farming industry is highly developed in Southland, but is of relatively small significance in terms of total land use. The population of the county has been declining for many years, although it has started to increase marginally over the last few years.

Generally the feeling the Task Force had, was that Southland was a "law unto itself". There was a strong tradition of coherence and independence in the region, which set it apart from the rest of New Zealand. Its rural economy was powerful and resilient, and the fertile and mainly flat land, together with the established nature of the farming, had minimised the worst effects of the cost increases over the last few years.

There was still concern amongst farmers over the continued cost increases, and over the difficulties of financing short-term debt, but overall the farm sector was more prosperous and optimistic than the farm sector in the other regions visited. Perhaps the farmers' greatest concern was over the increasing "interference" by the Government in price setting in farming.

Outside the farming sector, the main concerns of county and regional administrators were declining population and the possible development of the Southland lignite fields. This latter development was viewed somewhat uneasily, since experience had taught them that they might be presented with a fait accompli in which a decision to develop the deposits was made "in Wellington" with no reference to the plans and requirements of the region. Nevertheless, there was an acknowledgement of the efforts made by the Joint Centre of Environmental Sciences in Canterbury, which carried out a study on planning issues involved in lignite development in conjunction with the Southland and Clutha-Central Otago United Councils, to encourage local participation in examining issues.

These brief sketches of the four regions can do no more than set the scene for the conclusions derived from the regional visits, but they serve to demonstrate a point which was brought home many times to the members of the Task Force. The regions are extremely diverse and no one "issue" exists that is common to all regions. Consequently, no one policy can exist which would be of equal benefit to all regions.

<sup>1</sup> The area has since been badly affected by drought.

#### 6.4 Conclusions from Fieldwork: Issues Raised in the Four Regions

A large number of issues were raised by those who were interviewed by the Task Force. For convenience, these issues have been grouped under three headings:



- Issues specific to farming
- Population and services
- Planning and institutions.

Of the issues specific to farming, four concerns were of major importance:

- The increasing cost of inputs
- Changes in the pattern of using labour
- The opportunities for diversification; and
- The rise in land values.

## 6.5 Issues Specific to Farming

The main concern of the farming community in every region was the continual increases in the cost of inputs, and in the costs of processing and transporting produce. This concern was more pronounced in the marginal regions of the North Island, than in the more fertile and accessible regions of the South Island. In particular, the cost of applying fertiliser on isolated marginal land was becoming prohibitive. (\$200 per tonne on the ground in the East Cape; about \$160-170 in Taumarunui). Farmers in the North Island were reacting to the increased costs of fertiliser by approaching the nearest Ministry of Agriculture and Fisheries (MAF) office asking for information on minimum levels of application. They could obtain insufficient information on minimum levels, and, consequently, were experimenting with different levels of topdressing and different stocking rates. Their experiments involved selective dressing of the farm; reducing overall levels of dressing; and/or reducing stocking rates. In the South Island the relative fertility of the soil, and, at least in Southland, the ease and relative cheapness of applying fertiliser meant that the farmers were less concerned with increases in fertiliser prices and more concerned with increases in processing charges. Nevertheless, the relative paucity of research into soil needs in North Canterbury was highlighted by several of those interviewed.

### 6.5.1 The Increasing Costs of Inputs

All farmers were concerned with the increases in processing charges—particularly meat processing charges. There was, however, some evidence that increased competition in the industry was resulting in benefits to the farmer. For instance, on the East Cape some farmers had negotiated bulk sales of stock on-farm with Hawke's Bay works. In other areas special deals could be arranged with the various works for large draughts of stock, and in both Taumarunui and Southland new processing works located in the rural areas were either operating (Taumarunui) or planned (Southland). In Southland one of the objectives of the proposed small works was to help encourage rural employment and population stability. In general, farmers appeared to be keeping stock longer in order to sell as prime rather than store in all areas, but there were some indications that stock (particularly beef cattle) were being slaughtered at an earlier age. The technological developments in pasture growth and pasture management that had occurred over the last 10 to 20 years appeared to be responsible for this move towards prime rather than store stock.

There was some indication that the move from store to prime stock had peaked, and that farmers were now beginning to reconsider the benefits of producing store stock—increased liquidity, lower costs, and less risk.

Sheep stock numbers were thought to have increased over the last few years in all the regions visited, mainly as a result of the Land Development Encouragement Loans (L.D.E.L.)—and the Livestock Incentive Scheme (L.I.S.). But the rate of increase in stock numbers was now tailing off; since farmers were consolidating or retrenching in the face of steeply rising costs.

Some doubts were expressed about the L.D.E.L. scheme, including the extent to which it had fuelled land value increases. Several farmers and

advisory officers questioned the wisdom of breaking in new or reverted scrubland in preference to using existing pasture more intensively. In Taumarunui, the farm advisers in particular emphasised that any big increases in output should come from what are low-input, and so low-cost, management strategies which aimed to increase stock performance through better breeding and better use of feed. Another comment made about the L.D.E.L. scheme was that it might be difficult for the small farmer to continue the development in the face of rising costs.

The farm management specialists on the Task Force felt that the scale and size of farming was becoming an increasingly important factor in determining the long-term feasibility of farming. The large Maori incorporations, the farms run by the Departments of Maori Affairs and Lands and Survey, and the large private farms, were less concerned about increases in input prices than the smaller family farms. This lack of concern might reflect lower stocking rates in the larger farms, or a difference in equity and hence in debt servicing costs between the farms, but the impression still remained that the large farms were more resilient than the smaller farms.

In both North Island regions, and to a lesser extent in North Canterbury, the S.M.P's were thought to be essential to the continuance of many farms. "Without them, we wouldn't be here" was a frequent comment. Farm advisers in Taumarunui felt that if pastoral farmers had had to live on market prices over the last two years many farmers would have been forced to sell up. In Southland the attitude to the S.M.P's appeared to be "We don't like them, but we will take them in the absence of any measures to control costs".

Southland farmers were in fact much more concerned with the difficulties of obtaining and servicing short-term loan money than with the general cost-price squeeze. The stock and station agents had moved out of the business of short-term lending, and were leaving it to the banks to provide overdraft facilities for farmers. Short-term lending by the banks was limited and expensive, and many farmers were finding it difficult to change traditional patterns of budgeting to meet the changed market. The farmers who were skilled at budgeting and financing were prospering, while the less skilled were finding it difficult even to maintain net incomes.

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#### 6.5.2 Changes in the Pattern of Using Labour

An impression was gained by some of the researchers that a change was beginning to take place in the use of labour on pastoral farms. For at least the last two decades pastoral farmers had been increasing output per person, partly by shedding labour. Several farmers were now recording a shortage of skilled labour—particularly of fencers and shepherds. They emphasised the fact that it was skilled, not unskilled, labour that they required. One person commented, for example, that the lack of skilled labour could hamper the adoption of new technology. The larger farms were also using more labour per stock unit than the smaller farms, and there were some signs (mainly in the statistics) of an increase in the number of joint working-owners. These impressions were fragmentary and would bear further study, but they might indicate that the relationship between the inputs of land and labour could be changing as the farms grow larger, or as farmers make other choices about their allocation of time.

The use of agricultural contractors differed markedly between the regions. In Southland, where there is a long history of cropping, and where most farms are developed, contractors are used very sparingly—mainly for shearing. Most farmers have their own machinery for making hay or silage, or for cropping. In North Canterbury, contractors are used both for current activities like shearing and for development—there is presently an irrigation scheme being completed in Amuri. At least one contracting business in North Canterbury provides a wide range of services from shearing, through scrub cutting, carpentry and plumbing.

In the North Island there is a clear distinction between development contractors (scrub clearance, and fencing etc.) and contractors for current

activities (shearing, fencing, maintenance, and hay making, etc.). Development contractors are usually based in the nearest large town, and have now largely completed work connected with the L.D.E.L. scheme. The current contractors may be locally based or based in the nearest town. There appears to be a cycle in which the current contractors operate on a larger and larger scale, and are then either undercut by small contractors, or replaced by the farmer's own labour or a co-operative. To reduce costs hay making has virtually been dispensed with, and there are a number of trucking and topdressing co-operative ventures by farmers, as well as some examples of machinery co-operatives. Again, these have been introduced to cut costs. Farmers who are not in these co-operatives are apprehensive about the effects of the co-operatives on the overheads, and therefore on the costs to the farmer, of the existing contractors.

There is obviously considerable interest in most areas in experimenting with alternative products, within the limitations of land, climate, and a lack of specialised knowledge.

Horticulture (citrus fruit, avocados, grapes, asparagus, kiwifruit, kumara, tamarillos) is being developed on small areas of mainly Maori land on the East Cape, partly with a view to developing Maori land and increasing gross income, partly with a view to providing more jobs for young Maoris on the land. The principal difficulties involved are lack of production knowledge, lack of marketing knowledge, and lack of capital, since unincorporated Maori land is usually not security for borrowing. However, joint ventures with other organisations (Waiapu Valley Estates is a joint venture with Penfolds Wines) provide opportunities for bringing in specialised marketing and technical know-how. Other alternatives such as trusts can be used to overcome the problem of borrowing.

Forestry is also becoming a major land-based crop on the East Cape. In part the forestry has been established on the basis that erodible land needs to be retired from pastoral farming. The policies of both state and private foresters are influential factors in the changing land use, and private companies have found Maori owners prepared to lease for forest planting in order to develop it in a productive and relatively labour-intensive manner.

There seems to be no reliable information on the extent to which forestry throughout the life of a forest, or through the entire industry from production to market, uses more or less labour than the pastoral industries. Nor does there seem to be any acceptable method of working out the relative profitability of the two crops, given the length of time over which price forecasts must be made for forest products. Consequently many people are uncertain as to the relative benefits from the two crops. Pastoral farmers see the forestry as a threat to pastoral farming, if it is established on land that is not eroding. They feel themselves hemmed in—"We don't want to be the last person farming on the Cape"—and threatened by their unequal power relative to the forestry companies. They see their way of life and their "kind of people" also threatened. Most people, however, see forestry as essential to the welfare of the district both in the short and long term. The debate is over "how much" and "on what land". Nevertheless on the East Coast, the lobbying by Federated Farmers has had an impact on local authorities, which are reluctant to encourage forestry too much in their district schemes.

There is also some disagreement on the East Cape over the relative merits of state and private forestry. In general the state forests are preferred since they use local rather than imported contractors.

In Taumarunui there are almost no opportunities for horticultural development on any scale, though there is some experimental planting of brambles. Forestry and deer are the main alternative crops, and there is a debate similar to that on the East Cape between the pastoral farmers and the foresters over the relative advantages and disadvantages of forestry and farming.

### 6.5.3 The Opportunities for Diversification

In North Canterbury the introduction of an irrigation scheme in Amuri has introduced the possibility of alternative production patterns. Crops such as wheat have been grown in the area in the past, but the area is currently almost exclusively in sheep with a small amount of beef. The irrigation scheme may make dairying more attractive, and it is envisaged that some dairying could eventuate, though most farmers believe that irrigation will lead to more intensive sheep systems. While at present there seems little potential for alternative products, some farmers raised the possibility of sub-dividing some of the land for horticulture in the future. There is some forestry in north-west Amuri, but the New Zealand Forest Service has no intention of expanding this planting. This is in line with the ranking of national forestry priorities.

In Southland there is a tradition of mixed pastoral and cropping farming, so that alternative products have always been available to pastoral farmers. The dairy industry has been declining in the area for some years but may now be on the point of increasing again. There have been some small developments into horticulture (blackcurrants) which have met with mixed success, but the major new product is deer. The deer industry does not as yet use large areas of land, but it operates on a large scale and uses highly developed technology derived from research at Invermay. Current constraints to further expansion are good breeding stock and the need for more extensive knowledge of deer genetics. Any diversification that is taking place appears to be aimed at spreading risks as much as increasing gross income. Production forestry is not widely developed in Southland, but commercial companies, as well as local authorities, are showing an increasing interest in participating in this.

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#### 6.5.4 The Rise in Land Values

In all areas the increases in land values were a talking point amongst farmers. On the one hand they welcomed them as an offsetting factor to relatively low net incomes. On the other hand they could see no way in which the capital gains would be of use to them, since most had no intention of selling their property. The pastoral farmers on the East Cape were worried that because of the influences of forestry and erosion they might not be able to sell their properties in the future. They were conscious of a much slower rate of increase in the price of pastoral land on the East Cape compared with other pastoral areas, and felt that they could not afford to shift elsewhere. The question of compensation to pastoral farmers who were forced to sell and move elsewhere was raised on several occasions.

In North Canterbury the point was made that the increase in land prices seemed to take place independently of any improvements to the land, such as the irrigation scheme.

In Taumarunui the researchers were told that no property in excess of 450 hectares had been sold over the last year to a single owner; all the new owners were syndicates which employed a manager, either on salary or as a partner. (The validity of this information was not cross-checked; it appeared, moreover, that such sales were relatively few).

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#### 6.5.5 Summary Conclusion on Specific Farming Issues

The overall impression the researchers gained from the farm sectors in the four regions was that one could not generalise about pastoral farming from a national viewpoint, and that there were growing differentials between the regions. The marginal areas in the North Island were increasingly under threat from rising costs (particularly of transport and fertiliser) while the more accessible and fertile areas in the South Island (where farmers tended to be established and have a high equity in their property) were more prosperous. In all regions, however, farmers were concerned about the continued cost increases—particularly in the meat processing industry—and about the uncertain outlook. Total production had increased mainly through the development and improvement of pasture under the L.D.E.L. and L.I.S. schemes, and through the technological improvements

in pasture and management practices over the last two decades. The rate of increase was now tapering off as farmers moved into a period of consolidation and even retrenchment. Any further increases in stock numbers would probably come from low input techniques such as improved management. As well, many farmers were looking at the possibilities for diversification.

In short, the Government theme of the "need to increase production" and the farmer theme of "not enough income" are likely to continue through the 1980s, if the limited evidence from these four regions is applicable to most other areas.

In all four regions, local authority representatives, whether elected or part of the executive, had been, or were still, concerned with the long-term decline in the population of rural areas. Others interviewed appeared to be similarly concerned, but at least one person liked the lack of pressure on amenities which resulted from a sparse population. The same person felt that the sense of community which existed in many rural areas would be destroyed by an influx of people from outside.

The rationale for the concern over depopulation varied considerably. Amongst the Maori people of the East Cape, a strong sense of place and culture meant that many people wanted to stay on or return to the land, and to encourage their children to live and work in the area. They saw the urbanisation of the Maori people—which had been partly the result of conscious Government policies—as part of a process of cultural deprivation which needed to be consciously reversed. They were aware of the difficulties of establishing an economic base in rural areas, but were experimenting with institutional structures and economic systems which were best suited to their objectives, and they were confident that they had started to reverse the flow of people to the cities. Certainly the numbers involved in the P.E.P. programme on the East Coast would support this—450 in December 1981; 800 in May 1982. These same totals, however, emphasise the need for the establishment of long-term and sustained employment growth.

Amongst the farmers in all regions, there was a similar sense of place and of the importance of the land in establishing identity: "We are committed to history in continuing to farm", was the comment of one South Island farmer hard pressed by rising costs and a falling net income. The farmers saw depopulation as "bad", not because of the problems it might engender for those who left the land, but because of the increasing loneliness and isolation of the remaining farmers. They did not care to see like people go from the area, even if new (but different) people came in to replace them. Many showed a wider concern for the rural community, for example, for the availability of jobs, and many actively supported local educational and health services.

The local authority representatives tended to see depopulation in itself as an undesirable trend. They equated an increasing population with growth, and with the general prosperity of the region. Many of them had been experimenting with various policies which would encourage people to stay in or come to the area.

In particular they had been trying to develop flexible land use policies and land tenure systems in the belief that availability of land was an important catalyst for population and growth. Funding of housing, and of medical services, as well as the establishment of "development levies" to subsidise small communities' facilities were other approaches taken by local authorities. They understood, however, that the reasons for depopulation were probably quite complex and might involve forces which were, at least for the present, irreversible.

In Southland, for instance, the example was given of Tokanui, where spatial economics, rather than any changes in the productive base of the county, had caused a major decline in the population. First, the local

## 6.6 Population and Services

carrier had been taken over by a larger firm and the carrying business became centralised. The same service was available but from a depot in the nearest town. Then the stock and station agency had been centralised, and another two or three families had left. Subsequently most of the other services—banks, police, stores—had left the immediate locality. Improvements in transport technology had made all the moves possible, and basic economics had decided that they should take place.

However, it was stressed that little was known about the true mechanics of depopulation and the Southland County Council had commissioned a study by the Otago Business Development Centre to try to elicit more information on the population movements and concerns of the people in the area.

The word "services" meant different things to different people. Farmers took the word "services" to mean "services to the farm" and were worried about the implications of rising transport and processing costs. In areas in which land use was changing, they were also worried about the effects of a declining demand for farm services on the economics of the remaining farm services in the region.

People other than farmers took the word services to mean "all services", and were concerned about the time taken to reach services which had become centralised. They were also concerned about the secondary effects of centralisation on small communities, for example, the location of a railway gang in one town rather than another. The time taken for secondary school children to reach school (or cost of a boarding school) was regarded as a major deterrent to living in remote areas. Nevertheless many farm owners sent their children to boarding school, and the Task Force was given a variety of conflicting opinions about the standard of local primary and secondary schools. In the four areas visited, however, there was universal and enthusiastic support for the standard and availability of the health services provided by local hospital boards in partnership with voluntary organisations.

In general, comments on population and services tended to be more limited and generalised than comments on other topics.

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## 6.7 Planning and Institutions

Two topics which were raised in almost every interview and in every region were "planning" and the "difficulty of dealing with institutions".

People were obviously unsure about the meaning of the word "planning". Most people's experience of planning was confined to their knowledge and experience of the Town and Country Planning Act, and to their perception of planning decisions made by Government departments. So they tended to confuse the concept of planning (looking ahead) with the instruments of a particular type of planning (land use controls) and the outcome of another type of planning (resource allocation by the Government). Consequently, they also tended to confuse the roles of the Planning Council, of the Planning Tribunal, and of the various central and local government agencies. They felt, for instance, that the Planning Council could help them over some specific problem with a district scheme or with a Government department; or that more planning by Government departments would necessarily result in more resources being channelled to a given region. There was little understanding of the process of regional planning as regional policy making, and a considerable degree of resistance in some areas to the united councils.

These confusions make the various comments on planning and institutions difficult to interpret. Nevertheless, they were so prevalent that they need to be mentioned. The general tenor of most of the comments is perhaps best summarised by the person who said, "Wellington has no monopoly of wisdom; yet it has a monopoly of power and resources". In other words, there was a feeling of "we" who were trying to do something, and "they" (in Government departments or in planning bodies) who controlled the resources and made it difficult to do anything.

The "we-they" feeling appeared to be present at every level, so that individuals felt beleaguered in their dealings with the local authority planner, or with the local office of a Government department, while the local authority planner and the local branch of the Government department felt as beleaguered in their dealings with the central authorities.

It would, however, be dangerous to assume that this "we-they" feeling was a simple manifestation of a single issue. In fact it probably represented people's preoccupations with a large number of complex issues which related to their perceptions of equity and control, and to the correct balance between the interests of the individual and the group. Thus an apparently simple comment on a specific deficiency in a specific district scheme, might conceal a complex set of feelings on the part of the individual about the rights and wrongs of land use control, about the relative power of a professional planner and an institution compared with the individual, and about the relative power of other groups who appear to be able to break the regulations. Similarly, another apparently simple statement by a local authority executive on the "lack of co-ordinated planning by Government departments" might conceal feelings about a perceived unfairness in the distribution of resources, and about lack of control by the local area in making decisions.

In theory it would have been appropriate to have noted these difficulties in interpretation, and then to have given specific examples from the regions of people's experiences with, and attitudes towards, planning and the various institutions involved in resource allocation. In practice this course of action could not be followed, since comments on specific cases might have been interpreted as an improper attempt to influence the outcome of those cases. Moreover, the law of defamation is such that repeating adverse hearsay comments on a specific issue might be regarded as defamatory by the parties involved. So the most that can be said is that in the regions visited, the following general comments and criticisms of planning and institutions were made.

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- There was a feeling amongst some planners and local authorities that the district schemes worked well, provided that they were flexible and drawn up after a long period of consultation with the people in the area. In particular, several local authorities felt that it was essential to have flexibility in sub-division controls if population growth was thought to be a desirable object.
  - Some of the smaller local authorities had difficulties in obtaining the resources and expertise to draw up or revise district schemes.
  - Individuals found it difficult to deal with specific problems under the Town and Country Planning Act. They felt that they had insufficient knowledge to challenge any decisions made, and were conscious of the costs that could be involved in a hearing, as were the smaller local authorities.
  - Individuals also criticised some district schemes for their inflexibility. They were particularly critical of schemes which had been drawn up by "city-based planners" without consultation with the people more affected. In the case of one scheme, however, there had been extensive consultation, but complaints were still forthcoming.
  - Local authorities and individuals were critical of the lack of co-ordination between Government departments. They cited instances of one Government department promoting economic growth in a region, while another, simultaneously, was closing services in the region.
  - Local authorities felt they were insufficiently consulted before Government departments made decisions which affected their areas.

#### 6.7.1 Comments on Planning

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- Most individuals found it difficult to deal with institutions, whether public or private. They did not know which institution to approach or

#### 6.7.2 Comments on Institutions

which person within the institution. People within institutions made the point that many individuals did not really know what they wanted when they approached an institution. For instance, many people inquired about the possibility of "going into horticulture" but had little or no real knowledge of what they wanted to do. They then became frustrated with their inability to formulate a proposal and transferred their frustration to the institution.

- Many individuals found it difficult to match the power and resources of large institutions. They felt that they could make no impact on an institution as an individual. Consequently they felt that they would lose, if they came into conflict with the institution. Against these comments, must be set the large number of people who approached institutions for advice and resources and were satisfied with the outcome of their transactions.
- Many people were critical of institutions whose guidelines were decided in a centralised office with no reference to specific problems in particular regions.
- The Maori people interviewed were experimenting with many different ways of administering and using Maori land. There was no agreement on the best administrative structure, and spokesmen for and against incorporations, Department of Maori Affairs control, trusts, or some other form of co-operative control, could be found in all areas.
- Some people were critical of the large number of local authority and planning structures which existed. They could see no point in having territorial local authorities, united or regional councils, and special planning bodies, all operating in the same region. This criticism came from local authority representatives, as well as individuals.

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### 6.8 Summary Conclusion on Planning and Institutions

There appeared to be an appreciation that "planning" and "institutions" were necessary, but that both needed to be more responsive to the particular needs of the region and of the individuals within the region.

The comments were often negative, and could perhaps obscure the positive changes which individuals, institutions and Government agencies (both local and central) were initiating in the regions visited. In North Canterbury, for example, the hospital board was providing support for a number of voluntary nursing and home-help services co-ordinated by local communities. The Cheviot Community Committee was acting in partnership with the local county council in many ways, such as co-ordinating local social and welfare needs (meals on wheels, Red Cross and so on), as well as acting as a voluntary community education forum and a social research organisation. A horticulture co-operative in Tikitiki had evolved to strengthen its members' access to technical, marketing and financial information. The Southland County Council, in a positive approach to depopulation, had established a system of special levies to strengthen both small- and medium-sized rural communities. The King Country Rural Education Activities Programme had trained unemployed people in wool handling and shearing, and then found them permanent employment. The Project Employment Programme on the East Coast was not only employing several hundred young people, but also teaching them supervisory and other skills.

The rural activist movement was also prominent in the regions visited. Initially founded by a few individuals (mostly women) in a small number of communities, it has expanded and gathered momentum by means of a series of consultations, seminars and publications. Its activities have been officially recognised by the establishment of a Government Caucus sub-committee to study the social aspects of rural areas, and by the support of Federated Farmers.

Generally, throughout all the regions visited, there was a feeling of energy, enthusiasm, and willingness to adapt to change, on the part of both individuals and institutions.



## 7. APPENDICES

In New Zealand the primary source for statistics on agricultural production is the annual publication *Agriculture Statistics*, published by the Department of Statistics. This publication contains statistics on land use, farm size, number of farmers, production, capital, employment, etc. for all agricultural, horticultural, and forestry holdings in New Zealand, irrespective of size.

At the time of writing the latest data were for 1979, and there were major problems in using it. In particular, there was a break in the coverage of the series between 1970 and 1971 when the series were extended to cover smallholdings. Other difficulties were that: the coverage of forestry has been extended since the mid-1970's; many of the detailed classifications that appear in the later reports are not available in the earlier reports; and coverage of employment has been extended and changed many times through the decade (see Appendix 7.2). These changes have prevented many potentially useful comparisons over the whole decade, and necessitated exclusion of certain information from some tables (noted in the text) to ensure comparability.

Supplementary material in this study is derived from two other major sources: the sample surveys and production statistics of the New Zealand Dairy Board; and the sample surveys of the New Zealand Meat and Wool Boards' economic service. Since much of this material has already been summarised and analysed elsewhere, its use has been kept to the minimum, but it has proved invaluable in cross checking tentative conclusions from the primary source used—*Agriculture Statistics*.

The data from *Agriculture Statistics* and the data from the producer boards are summarised each year in a Ministry of Agriculture and Fisheries booklet *Agdata : New Zealand Agricultural Statistics*. This publication, and its companion volume on horticultural statistics, contain other data on fertiliser, prices, costs, etc. which are used in the study.

### 7.1 Agricultural Statistics—Principal Sources

There are three main sets of statistics on labour in the agricultural sector. The first two—those in *Agriculture Statistics* and in the Census—are primary sources. The third: the statistics published by the Department of Labour in their estimates of the labour force are derived from the primary sources, and may be disregarded for detailed analysis. In addition, there are a variety of statistics available on the labour force in some segments of the agricultural sector, for example, the number of suppliers in the dairy industry from dairy board statistics, the number of flock owners from sheep returns compiled by the Department of Statistics, and so on.

The figures from the Census, from *Agriculture Statistics*, and from the other sources differ because of the confusions that arise in defining the agricultural labour force, for example, differences in the treatment of part-time farmers and workers, casual workers, seasonal workers, unpaid family etc. In fact, the various sources cannot be satisfactorily reconciled. Moreover, even individually, they can be extremely misleading because of frequent changes in coverage and classification—so much so that several published articles on employment in agriculture are either questionable (*Straight Furrow* Vol 42 No 32 contains an article that uses 1976 as a base year, and the statistics for 1976 are suspect—see Table 21 below) or wrong (*The Agricultural Economist* Vol 1 No 3 contains an article that compares full-time owner operators with full and part-time owner operators).

It has therefore proved difficult to derive acceptable conclusions on changes in the number of people involved in agriculture during the 1970's. The main text includes the conclusions—heavily qualified—which the Planning Council Task Force for this study found to be acceptable, given the statistics available to them at the time of writing. This Appendix contains the figures on which these conclusions were based, together with some

### 7.2 Statistics on Labour in Agriculture

notes which may explain variations in the figures. The figures used are taken from *Agriculture Statistics* and are reasonably consistent with Census data if it is remembered that Census data will differ in its treatment of part-time, casual and unpaid labour.

*Agriculture Statistics* divides labour into:

- *Working owners, leaseholders and sharemilkers.* This category is further subdivided in recent statistics into working owners etc. who spend more than 30 hours at work, and working owners who spend less than 30 hours—that is, it is sub-divided into full- and part-time working owners. The division into these two categories was first made in 1976 and the questionnaires from the early part of the period clearly state that part-timers are to be excluded. The only valid comparison between 1972 and 1979 for working owners must therefore be between the 1972 *total* figure and the 1979 *full-time* figure. No figure is available for part-timers in 1972.
- *Paid permanent employees.* A permanent employee is defined as someone the farmer proposes to employ indefinitely. This category is divided into full- and part-time paid permanent employees, that is, those who work over or under 30 hours. The division into these two categories was first made in 1974 and it is not at all clear from the questionnaires whether farmers would have included both full- and part-timers before 1974. It is assumed that they would have, but the figures show suspicious yearly variations. The question and coverage were continually changed in the early years of the decade. Figures in the text are compared between 1974 and 1979.
- *Casual employees.* These are given in *Agriculture Statistics* at June and October, and in later years in December. There appears no reason why the figures cannot be compared in total over the whole period of the 1970s.
- *Unpaid family.* *Agriculture Statistics* collects information on unpaid family working on the farm. This category does not appear in the Census data. It is difficult to know how much credence to give the figures in *Agriculture Statistics* on unpaid family labour. Most farm families perform various tasks around the farm and could (should) be included in any total labour statistics. Whether they are perceived as “labour”, and entered in the agricultural questionnaire as such, will depend very much on the attitude of the various respondents. For instance, the statistics apparently show an increase in full and part-time unpaid females of 35 percent (close to 3000) between 1972 and 1979. Does this mean that the family involved did not do the work in 1972; and that they have taken over the work since 1972? Or does it mean that women were more aware of the contribution they made at the end of the 1970's, and wanted that contribution recorded? The question is unanswerable without some check such as salary and wages.

Tentatively it can be said that the numbers of unpaid family recorded in *Agriculture Statistics* in 1979 suggest that there are some 20,000 family members (male or female) who consider themselves part of the agricultural workforce, even if they receive no salaries and wages for their work. Seven thousand of these work more than 30 hours per week; the remainder less than 30 hours.

The number of unpaid *male* family members (full- and part-time combined) has not changed much over the decade. The number of unpaid *female* family members has increased.

It can be seen from tables 21–25 that there are some year-to-year variations in the figures which are hard to explain if the series are, in fact, consistent. For instance, we know that the numbers of holdings for sheep, beef and mixed livestock farms have shown three trends:

- An increase in smallholdings which could not be expected to require or support a full-time working owner

- A decrease in medium-size holdings which would lead us to expect a decrease in full-time working owners
- An increase in larger holdings which would be consistent with a movement towards greater productivity per person—that is, the same number of working owners on fewer farms.

We would therefore expect the number of full-time working owners and leaseholders on sheep/beef farms to have declined. And so they have, see Table 21, by just under 3000 over the period. But the number of male working owners on sheep/beef farms has declined steeply between 1974 and 1976, and then built up again. This movement is not easy to explain. Also, the numbers of full-time female working owners, leaseholders and sharemilkers fluctuates considerably through the period, even though it increases from 1972-1979. Again this seems difficult to explain.

One can speculate that:

- The statistics may be wrong—the 1976 figures look suspiciously out of line
- There may be some long-term demographic influences at work, for example, a changeover of farms to younger people with the older person staying on as a second working owner
- There may be a move towards multiple working ownership for some reason on sheep/beef farms. In the case of female working owners, who include sharemilkers' wives, there may be effects resulting from taxation and other concessions
- There may be some unknown effect from smallholdings.

However, one cannot prefer any particular piece of speculation. Consequently, as in the main text, one can only say that over the whole decade the number of full-time sheep/beef operator owners has probably declined. Towards the end of the decade, for some reason, the rate of decline may have slowed down. Similarly, one can only say that the number of female owner-operators fluctuated widely. One of the reasons could be variations in the tax rules during the 1970's. This uncertainty in interpretation has meant that most of the data on labour has been restricted to this Appendix.

The figures in Table 7 of the main text (an estimate of the full-time equivalent workforce) were derived from the data in this appendix. Part-time workers and casual workers were converted to full-time equivalents on the basis of the ratio of the average salary and wages paid to part-timers and casuals to the average salary and wages paid to full-timers.

**Table 21: NUMBER OF FULL-TIME WORKING OWNERS, LEASEHOLDERS AND SHAREMILKERS IN AGRICULTURE (EXCLUDING FORESTRY, IDLE LAND AND 'OTHER FARMING')**

**21 (a) Males**

	1972	1973	1974	1975	1976	1977	1978	1979
Sheep/Beef/Mixed livestock <sup>1</sup> ....	29677	29129	28156	26229	23353	24681	25944	26851
Dairy <sup>1</sup> .....	20548	19141	18469	18755	17706	17569	17755	17235
Horticulture <sup>1,2</sup> .....	3399	3576	3339	3197	2926	3145	3430	3450
Other <sup>1</sup> .....	4397	3566	3978	4055	3812	3859	4014	3765
Total.....	58021	55412	53942	52236	47797	49254	51143	51301

**21 (b) Females**

Sheep/Beef/Mixed livestock <sup>1</sup> ....	2875	2969	3851	3422	2100	2504	2680	2904
Dairy <sup>1</sup> .....	4400	4216	5741	6014	4388	4956	4981	4845
Horticulture <sup>1,2</sup> .....	659	807	1055	1010	744	872	987	996
Other <sup>1</sup> .....	393	424	670	807	539	580	630	592
Total.....	8327	8416	11317	11253	7771	8912	9278	9337

<sup>1</sup> Defined as in Table 5 in main text.

<sup>2</sup> Nurseries estimated 1972-76.

Source: *Agriculture Statistics*.

N.B. Thick vertical rule between years 1975 and 1976 represents a possible break in the series due to changes in other questions on employment.

**Table 22: NUMBER OF PART-TIME WORKING OWNERS, LEASEHOLDERS AND SHAREMILKERS 1976-1979<sup>1</sup>****22 (a) Males**

	1976	1977	1978	1979
Sheep/Beef/ Mixed livestock <sup>2</sup> .....	9135	9711	10202	9926
Dairy <sup>2</sup> .....	1745	1729	1915	1749
Horticulture <sup>2</sup> .....	1189	1222	1249	1234
Other <sup>2</sup> .....	1787	2022	1878	1959
Total.....	13856	14684	15244	14868

**22 (b) Females**

Sheep/Beef/ Mixed livestock <sup>2</sup> .....	2511	3242	3694	3705
Dairy <sup>2</sup> .....	1892	2311	2574	2262
Horticulture <sup>2</sup> .....	529	647	854	821
Other <sup>2</sup> .....	536	632	646	722
Total.....	5468	6832	7768	7510

- 1 Excluding working owners in forestry, idle land and "other farming" as defined in *Agriculture Statistics*.
- 2 Defined as in Table 5.

**Table 23 NUMBER OF PAID PERMANENT FULL-TIME EMPLOYEES<sup>1</sup>****23 (a) Males**

As at June .....	1972	1973	1974	1975	1976	1977	1978	1979
Sheep/Beef/ Mixed livestock <sup>2</sup> ...	Figures probably not comparable. Questions changed.	14406	13340	12657	13182	12928	12108	
Dairy <sup>2</sup> .....		5336	4998	4651	4746	4604	4039	
Horticulture <sup>2</sup> .....		1750 <sup>3</sup>	1764	2190	2091	2235	2294	
Other <sup>2</sup> .....		2090	1990	2156	2153	2092	1744	
Total <sup>1</sup> .....		23582 <sup>3</sup>	22292	21654	22172	21859	20185	

**23 (b) Females**

Sheep/Beef/ Mixed livestock <sup>2</sup> ...	Not at all clear whether part-time employees are included.	1611	1413	1203	1336	1393	1312
Dairy <sup>2</sup> .....		1302	1135	926	949	873	747
Horticulture <sup>2</sup> .....		550 <sup>3</sup>	567	720	712	764	741
Other <sup>2</sup> .....		237	328	317	286	283	277
Total <sup>1</sup> .....		3700 <sup>3</sup>	3443	3166	3283	3313	3077

- 1 Figures exclude plantations, idle land, "other farming" as defined in *Agriculture Statistics*.
  - 2 As defined in Table 5.
  - 3 Nurseries estimated.
- Source: *Agriculture Statistics*.

**Table 24: PAID PERMANENT PART-TIME EMPLOYEES  
(AVERAGE NUMBER THROUGH THE YEAR)<sup>1</sup>**

**24 (a) Males**

	1972	1973	1974	1975	1976	1977	1978	1979
Sheep/Beef/ Mixed livestock <sup>2</sup> .....		Figures not	3145	2650	2607	2659	2648	2668
Dairy <sup>2</sup> .....		Comparable.	1224	1136	1130	1042	1015	915
Horticulture <sup>2,3</sup> .....		Questions	475	435	483	439	406	455
Other <sup>2</sup> .....		changed.	499	493	490	528	499	509
Total <sup>1</sup> .....			5343	4714	4710	4668	4568	4547

**24 (b) Females**

Sheep/Beef/ Mixed livestock <sup>2</sup> .....			2051	1803	2035	2235	2119	2490
Dairy <sup>2</sup> .....			1463	1398	1409	1403	1534	1206
Horticulture <sup>2,3</sup> .....			583	929	1022	972	1010	892
Other <sup>2</sup> .....			597	675	706	712	693	704
Total <sup>1,2</sup> .....			4694	4805	5172	5322	5356	5292

1 Figures exclude idle land, plantations and "other farming" as defined in *Agriculture Statistics*.

2 Defined as in Table 5.

3 Includes Mushroom growers.

Source: *Agriculture Statistics*

**Table 25: CASUAL EMPLOYEES (AVERAGE NUMBER<sup>1</sup>)**

**25 (a) Males**

	1972	1973	1974	1975	1976	1977	1978	1979
Sheep/Beef/ Mixed livestock <sup>2</sup> .....		Figures	6773	5744	4676	4420	4049	3478
Dairy <sup>2</sup> .....		probably	1075	669	624	607	662	652
Horticulture <sup>2,3</sup> .....		not	1327	1435	1219	1165	1568	1187
Other <sup>2</sup> .....		comparable.	883	736	634	506	437	384
Total <sup>2</sup> .....			10058	8584	7153	6698	6716	5701

**25 (b) Females**

Sheep/Beef/ Mixed livestock <sup>2</sup> .....			808	727	726	704	756	801
Dairy <sup>2</sup> .....			276	222	202	225	272	233
Horticulture <sup>2,3</sup> .....			2049	2318	2013	2095	1914	2023
Other <sup>2</sup> .....			478	296	300	246	219	189
Total <sup>2</sup> .....			3611	3563	3241	3270	3161	3246

1 Figures are given for two different months of the year. Average of the months used.

2 As in Table 5. Totals exclude forestry, idle land and "other farming" as defined in *Agriculture Statistics*.

3 Includes mushroom growing.

NB Possible breaks in series between '73 and '74 due to changes in other questions on employment.

Source: *Agriculture Statistics*.

In accordance with its terms of reference, the Planning Council Task Force analysed a large amount of information on population and services in rural areas. This information has not been included in the main text. However, an outline of the work undertaken may explain the reasons for this.

The Task Force first analysed total population changes in all rural areas in New Zealand between each census for the years—1971, 1976 and 1981. It became apparent that the definition of "rural" in the Census (residual population after deduction of all people living in concentrations of 1,000

### 7.3 Statistics on Population and Services—A Technical Discussion

or more) was too simplistic. Moreover, frequent boundary changes made for uncertain comparisons. Nevertheless, the Task Force felt the information did show that there was *both* depopulation and repopulation in rural areas (see the main text for a general discussion of this phenomenon).

Next, the Task Force set out to analyse the detailed statistics from the Census on population and services for 14 counties in New Zealand. The 14 counties were chosen more or less subjectively on the basis of consistently declining population (10 counties) or consistently increasing population (4 counties), and on the basis of their geographical spread throughout both islands. An analysis of the data for all counties would have been beyond the resources of the Task Force.

An attempt was made to take out information about the 14 counties from each census for the years 1966, 1971, 1976, and 1981, using both rural and separate urban areas within the counties, for:

- *Population* numbers, population by age, population by sex, by marital status, by age group and sex, by incomes (male and female), by education (male and female), by occupation (male and female), by internal migration
- *Dwelling* numbers, average number of people per dwelling, for tenure of dwellings, amenities in dwellings (refrigerator, washing machine, telephone, television, colour television, car, deep freeze, clothes dryer, garage, caravan), means of heating dwellings, and means of cooking and providing hot water.

Also, attempts were made to use local authority statistics, the Census of Distribution, hospital statistics, employment statistics, and works programme statistics to amplify information on services.

The results, to say the least, were disillusioning. Almost none of the detailed Census information was available for 1981. Moreover, the detail from any previous Census could not be rearranged to conform with local authority boundary changes, without time-consuming analysis on the part of the Department of Statistics. The local authority statistics contained a major break in the series which invalidated comparisons between the first and last parts of the decade. All other statistics were in territorial aggregates larger than the 14 counties.

Even if these problems could be overcome (and some could) it became increasingly apparent that the concept of a change in the level of services or amenities was meaningless unless that change could be compared with some norm. What should the norm be? The average of New Zealand? The average of rural areas? And how could a satisfactory analysis of changes in quality and technology be made? For instance, a figure for expenditure on roading in a county per head of the rural population in that county could be derived from local authority statistics. Within the limitations of the statistics, this figure could be compared between one year and another if it were deflated by a capital costs index. It could be compared with another county, or an urban area. But what did such comparisons mean? The different topography of each county necessitated a different expenditure per capita on roading. The technology of roading changed through time. The problems of constructing city roads and streets were quite different from those of constructing rural access roads.

Even the demographic data were hard to interpret. There were some general conclusions that might have been made—for example, that there were more young people and fewer older people in rural areas than in urban areas, or that there were more farmers in rural than urban areas, or that there were more unmarried men in rural areas. However, each county was different in some way from all the others—there might be an air force base in the county, or a town favoured by people who had retired, or a large hospital. The Task Force was therefore hesitant about applying the conclusions to all counties.

The only really valid conclusions the Task Force felt it could make from the statistical analysis were that:

- There was an immense variety in rural areas
- The concept of an improvement or decline in services was difficult to establish objectively.

The Task Force then turned to the various sociological surveys (see the Bibliography for details) which might be expected to provide more detailed knowledge of the people and of the services in some rural areas. Again, however, from the Task Force's viewpoint the surveys added little objective information that was relevant to its terms of reference. For instance, the Akitio Survey (see the Bibliography for details) established that there was a lagged correlation between a decline in population and a decline in the number and variety of services located locally, but it could shed no light on a causal connection between the two. Other surveys were interesting, but often subjective, and so of little assistance in establishing cause and effect relationships.

The Task Force was forced to conclude that it could not properly establish the relationships between changes in population and changes in services from the surveys.

It then turned to production data by county in order to see whether any changes in production patterns could be related to changes in population. Figures for changes in stock numbers, and changes in the areas in forestry, were obtained for all counties. Attempts were also made to obtain detailed information on horticulture by county. These changes were then compared with changes in rural population. No pattern emerged. There were counties with increasing populations and decreasing stock numbers, increasing populations and increasing stock numbers, decreasing populations and decreasing stock numbers, and so on. Although satisfactory explanations could be given for these movements in a particular county by people who knew the area well, there were few if any general conclusions which could be drawn from the data. At the most a tentative conclusion might have been drawn that in those counties where pastoral agriculture was predominant, and where there was no other economic activity of significance, population was declining. In areas where there were a large number of smallholdings, or a good climate, or an economic advantage such as cheap land, population was increasing. Again, the general conclusion had to be modified for each county by the particular circumstances of that county. This explains the emphasis in the main text on the variety found in the rural sector.

At this stage the Task Force felt that further work on the relationships between population, services and production could not be justified within its limitations on time and research resources. A theoretical model of the relationships suggested that they must exist—for instance, farm incomes and farm expenditure must be one of the factors affecting the economics of services, just as the perceived level of services must affect farmer motivation in some way. However, the Task Force could not establish the real nature of these relationships. Nor could it objectively measure them.

The decision was therefore taken to state the major conclusions drawn from this research in the main text, and to relegate these comments to an appendix. The statistics that were derived have been omitted from the study because of their volume, and because they do not answer the questions raised by the Task Force's terms of reference.

#### 7.4 Selected Bibliography

The text of the study is based on an analysis of the statistics referred to in appendices 7.1-7.3, and on information obtained on visits to the regions. This analysis could not have been made without extensive reading of the material related to agricultural production and to the farming and rural sectors. Such material ranges from reasonably objective analytical documents on such topics as farm production, farm costs, demand for and supply of farm products, through sociological, demographic and economic research papers, to tape recordings of farmer interviews, surveys of farmer opinion, and records of public seminars, and more subjective documented public statements made by special interest groups.

It would have been impracticable, and unhelpful to the reader, to list all this material. Much of it is now very dated; some is as yet unpublished. Moreover, many of the judgements and interpretations in the text were made as a result of several years of sequential research and reading, which included the reading of many of the research reports of the Ministry of Agriculture and Fisheries, and of the New Zealand Meat and Wool Boards' economic service; most proceedings of relevant conferences; the relevant papers published by the universities and research institutions; the papers published in *New Zealand Agricultural Science*; a considerable number of published and unpublished theses on agricultural production and agricultural extension; almost all recent issues of *The New Zealand Farmer* and *Straight Furrow*; and many more books, pamphlets, research reports on topics as varied as behavioural intention theory, market research, market prospects, agricultural policy, demography, land use, planning, production technology and so on.

Accordingly the researchers have presumed that the function of the bibliography in this study should be to point the reader and prospective researcher in the direction of the most useful general literature on the various topics—useful in the sense of up-to-date, comprehensive, or containing bibliographies which could guide further research.



*Published Materials*

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