

SUPPORTING THE AGRICULTURAL SECTOR:

RATIONALE AND POLICY

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THE AGRICULTURAL ECONOMICS RESEARCH UNIT
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The Agricultural Economics Research Unit (AERU) was established in 1962 at Lincoln College, University of Canterbury. The aims of the Unit are to assist by way of economic research those groups involved in the many aspects of New Zealand primary production and product processing, distribution and marketing.

Major sources of funding have been annual grants from the Department of Scientific and Industrial Research and the College. However, a substantial proportion of the Unit's budget is derived from specific project research under contract to government departments, producer boards, farmer organisations and to commercial and industrial groups.

The Unit is involved in a wide spectrum of agricultural economics and management research, with some concentration on production economics, natural resource economics, marketing, processing and transportation. The results of research projects are published as Research Reports or Discussion Papers. (For further information regarding the Unit's publications see the inside back cover). The Unit also sponsors periodic conferences and seminars on topics of regional and national interest, often in conjunction with other organisations.

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PREFACE

Over the past few years prices received by New Zealand for traditional pastoral exports have been low. Whether the apparent recovery in the U.S. economy in 1983 will lift prices for most N.Z. export products remains uncertain. Some lift in the wool and beef markets has been experienced so far but the outlook for sheepmeats and dairy products is far less positive.

The recent protracted fall in the agricultural sector's terms of trade has been accompanied by increasing government financial support for the sector. The objective of this paper is to present a framework within which financial assistance to the sector may be discussed. The authors approach this task from the viewpoint of efficient resource allocation.

The following paper was presented by the authors to the New Zealand Branch Conference of the Australian Agricultural Economics Society held at Wellington in August 1983.

Other papers concerned with support for the agricultural sector published recently by the A.E.R.U. include Discussion Papers No. 63 ("Supplementary Minimum Prices : a production incentive?") and No. 70 ("The Pastoral Livestock Sector and The Supplementary Minimum Price Policy").

P.D. Chudleigh
Director

1. INTRODUCTION

This paper provides a framework within which financial assistance to New Zealand agriculture may be discussed. It reiterates a number of principles that can be found in what may be termed a 'State of the Art' paper given by Bushnell, Durbin and Johnson to the Conference of the New Zealand Association of Economists 12 months ago.

Assistance to the agricultural sector involves the Ministry of Agriculture and Fisheries, Department of Scientific and Industrial Research, Ministry of Works and Development, Department of Lands and Survey, Rural Banking and Finance Corporation, Maori Affairs Department and the Forest Service. The assistance provided covers a wide range of areas within the sector, mainly related to subsidies of various forms. (A full breakdown of assistance categories and levels for 1979/80, 1980/81 and 1981/82 is given in the Appendix).

For the 1981/82 year, total gross direct assistance was \$347 million, of which the Ministry of Agriculture and Fisheries was responsible for \$340 million. However, total gross indirect assistance for 1981/82 was \$472 million which comprised \$203 million of expenditure and \$269 million of revenue foregone as a result of interest subsidies. Total gross assistance to the agricultural sector was therefore \$819 million in 1981/82. After providing for tax payments on income supplements, the net assistance was \$693 million.

Such assistance levels must be viewed in the context of the size of the sector and the level of activity of the Government in the total economy. Total net Government expenditure in 1981/82 was \$11,197 million. Gross assistance to the agricultural sector consisted of 7.3% of whole Government expenditure and 17.3% of agricultural export earnings. Perhaps a more significant comparison is the relationship between gross Government assistance to agriculture and agricultural proprietors' surplus; in 1981/82, the ratio was 66.6% (see Appendix).

It is therefore apparent that Government assistance to the agricultural sector constitutes a substantial part of total Government expenditure and represents a major part of the agricultural proprietors' surplus. The identification of an appropriate framework within which such assistance can be evaluated is therefore important.

This task has been approached from an efficiency viewpoint, whereby government assistance can only be justified in terms of improving the environment in which the market model operates. No attempt has been made to explain the reasons for existing government assistance to the New Zealand agricultural sector as there may well be considerations other than efficiency which have led to the introduction of various assistance measures.

2.

Five possible justifications for financial assistance, including compensation for trade protection, exchange rate overvaluation, internal protectionism, economic instability, and market failure are reviewed, thereby providing a framework for further analysis of the subject. This is followed by an assessment of the appropriate economic policies for the economy, an assessment of the level of present agricultural assistance that could be justified and some views on future assistance policies.

2. RATIONALE FOR ASSISTANCE

2.1 Compensation for Trade Protection

Assistance to the export sector has been justified (Muldoon 1982, 1983) on the grounds of compensation for higher input prices paid by farmers (and subsequently lowered incomes and output) as a consequence of trade protection afforded to the manufacturing sector. This 'tariff compensation' argument has stimulated considerable debate, particularly in Australia, over the past decade.

The argument for tariff compensation appears to have two distinct facets. One has been concerned with the country's efficient allocation of resources and the other concerned with income distribution.

2.1.1 Efficient allocation of resources.

Most economists agree that the best method of removing inefficiency in resource use stemming from trade protection is to gradually eliminate the protection. Even though this method has had a large measure of support from economists, it has not been pursued very actively by New Zealand politicians. This is due, at least in part, to the problems of adjustment. Politicians have paid some lip service to the ideal, but have made only a few positive moves (such as tendering for import licences) combined with a 'now is not the time' excuse for inaction.

Because of the political difficulty involved in dismantling current trade protection measures, another method of removing resource-use distortions between productive sectors, caused by trade protection, would be to give all industries equivalent assistance. For example, with no changes in trade protection, each New Zealand industry adversely affected would be given an appropriate amount of assistance so that all industries could compete for resources on an equal basis. Application of this full compensation method is constrained by a number of factors:

(i) Information

An enormous amount of information would be required to determine the appropriate levels of compensation. Even the experienced Australian Industries Assistance Commission (IAC) has not been able to include all relevant distortions in its effective rate measure nor does it cover all industries in the Australian economy (Crowley, pers. comm. 1983). The resources needed to carry out the appropriate calculations would be large and may significantly reduce any real income increments gained by compensating.

(ii) Costs

Apart from the costs associated with the acquisition of information, the budgetary costs of complete compensatory assistance are likely to be very high and therefore prohibitive.

In addition to these constraints, resources would be required for administration and others would be transferred between taxpayers and producers.

The principal form of trade protection compensation that has been argued may be termed 'partial' compensation, rather than the 'perfect' compensation discussed above. The partial compensation argument is that until trade protection is removed some assistance to disadvantaged industries such as agriculture will at least move resources in the right direction and will lead to a higher level of real national income. This is clearly a 'second-best' argument and has been hotly debated in the Australian literature over the past decade. In the authors' opinion the outcome has been inconclusive. It appears to be uncertain whether there will be an improvement in resource allocation under a partial compensation policy, largely because of a lack of knowledge of the complementarity and substitutability of resources between industries. In other words, it is not certain that resources will flow from trade-protected industries to less protected industries. For example, in the New Zealand situation, compensatory assistance to the pastoral sector might see resources flowing from the arable sector of agriculture rather than from the manufacturing sector. Compensatory assistance to all of New Zealand agriculture might see resources flowing from an efficient manufacturing sub-sector or pastoral sector to the highly protected viticulture sector. Recently, the Australian Balderstone Report (1982) concluded 'The outcome of such compensation on resource allocation between industries and sectors is unclear'. Consequently, the group concluded that there was insufficient evidence to justify tariff compensation to agriculture on the grounds of improving resource allocation.

In summary, a policy of perfect compensation to all industries/sectors appears impracticable because of the information required and the budgetary costs. Partial compensation to the disadvantaged industries could be achieved in practice but the outcome in efficiency terms is unclear. Only the dismantling of trade protection mechanisms will allow the maximum efficiency of resource use to be attained.

2.1.2 Income distribution.

It has been argued in Australia that compensation to agriculture for trade protection can be justified on the grounds of lowered farm incomes (Balderstone et al., 1982). Previously, in the Australian Green Paper (Harris et al., 1974), it had been contended that a countercyclical policy of compensatory assistance, that is, assistance which is reduced when farm incomes are high, would contribute both to economic efficiency and welfare.

These arguments suggest that farm incomes should be supported, not on resource allocation grounds, but on distributive grounds as part of social policy. In New Zealand it has never been part of social policy to subsidise the incomes of those disadvantaged by economic policy, except to maintain a basic standard of living. A skilled tradesman, unemployed as a result of structural adjustment, receives the same benefits from Government as

an unskilled labourer. To suggest that a particular group of individuals should be favoured over others more financially disadvantaged can hardly be acceptable on equity grounds.

If income subsidisation cannot be justified on equity grounds then it is not possible to divorce the issue of farm incomes from that of resource allocation, since incomes are simply the returns to the resources employed in the production process. If tariff compensation cannot be justified on resource allocation grounds, it cannot, for similar reasons, be justified in terms of income distribution.

However, if Government desires to assist a particular sector on income distribution grounds, either countercyclically or continuously, it should at least be aware of the uncertain efficiency considerations. In addition, Government would have a responsibility to ensure the reasons for such assistance were made known. Any assistance given on income distribution grounds should be a direct supplement to income and be in the form of a lump sum payment in order to minimize distortions to resource allocation.

2.2 Compensation for an Over-valued Exchange Rate

Assistance to New Zealand exporters (and thus to New Zealand agriculture) has been defended on the basis of compensating for a largely fixed and over-valued exchange rate. The orthodox policy of devaluation has been used sparingly in past New Zealand economic policy largely because of fears concerning possible inflationary effects.

Given that the exchange rate has been over-valued (at least since the mid seventies), assistance to agriculture could be seen to be a means of enticing those resources into the agricultural sector which would be directed there naturally if the balance-of-payments were in equilibrium.

Even if the extent of exchange rate over-valuation could be accurately calculated, compensation would involve costs associated with information collection and administration and may induce distortions between sectors in the economy. It could not therefore be regarded as a 'first-best' solution.

As with trade protection compensation the effect of assistance given to industries or sectors on partial exchange rate compensation grounds is uncertain. Even if resources do move into the assisted sectors, there is no guarantee that these resources come from those sectors which benefit from exchange rate over-valuation.

2.3 Compensation for Internal Protectionism

This argument is that protection of other sectors of the economy via policies such as licensing and real wage maintenance warrants compensation of disadvantaged sectors by the taxpayer. Because of this internal protection, a disproportionate share of the effects of a downturn in the terms

of trade is borne by the producing sector. Removal of internal protection through policies such as delicensing of the freezing and road transport industries is being pursued as a 'first-best' policy in this regard. However, other rigidities such as those inherent in the wage bargaining process are still to be resolved. Farmers see 'improvements' in New Zealand's terms of trade reflected in the wages received by workers in the processing sector but deterioration in the terms of trade does not lead to wage reductions. Wage increases in the processing and servicing sectors are not related to productivity. Federated Farmers (1982, 1983) have attempted to justify Supplementary Minimum Prices (SMPs) on the grounds of compensation for inflation; inflation compensation is directly related to the foregoing argument.

Compensation for internal protection is also an argument of the 'second-best' in terms of efficiency. As with trade-protection compensation the implications of such compensation are far from clear. Since the political barriers to 'first-best' solutions appear to be surmountable (given New Zealand's experience in the past few years during which some progress has been made) such compensation seems to lack a valid rationale on efficiency grounds.

2.4 Stabilisation

Farmers face a particularly high degree of income instability compared with other economic sectors. This stems from the variability of the economic and physical environments in which farming is undertaken. Government assistance has been provided to the farming sector in times of low world prices for agricultural commodities, and in times of adverse climatic conditions because it has been feared that in the absence of stability, farm investment levels would fall. In addition, concern not only about the level of farm investment, but also about monetary stability in the economy as a whole has resulted in the introduction of self-funding price stabilisation schemes administered by Producer Boards, and the Farm Income Equalisation Scheme.

There is some doubt as to whether income stability does in fact lead to higher levels of investment. The 'permanent-income' hypothesis suggests that there are two components to income - permanent (i.e. assured) income and transitory income. Consumption decisions are based on permanent income while savings and therefore investment are undertaken largely out of transitory income. Income stabilisation may, therefore, lead to reduced investment. On the other hand it may be argued that security of income provides the incentive to undertake continuing investment programmes and the knowledge that inputs required for such programmes will be available.

Even if income stability is important for the maintenance of farm investment, it may be argued that farmers should be prepared to act together in order to stabilise their own incomes and provide for future profitability. The issues of price stability and environmental stability should be considered separately.

Stability in times of low prices could be achieved if the farming industry itself were to tighten the trigger and minimum price mechanisms already in existence.

One reason why the industry itself may be reluctant to introduce trigger and minimum prices which permit only a little deviation in the price received by the farmer, is the volume of resources required to support the scheme.

It may be that in the interests of monetary stability in the economy as a whole, and particularly of inflation control (Zanetti et al., 1975), the Government believes that part of the benefit of farm price stability is external to the agricultural sector, and that intervention is justified. In this case, the appropriate Government measure would be the provision of the necessary resources provided the price boundaries are sufficiently tightened. The resources required in years of low prices could be provided at very low interest rates, and the surpluses produced in times of high prices held by Government at the same rate. Such a scheme should be self-funding in the long-run provided the price range does in fact encompass the long-term average price. The introduction of policies such as SMPs to maintain investment in times of low prices does not appear justified on stabilization grounds.

Where instability of farm incomes stems from climatic or other physical causes the same degree of externality does not exist since droughts, floods etc. tend to be localised rather than nationwide. Since adverse physical and climatic events are usually experienced regionally rather than nationally the overall effects of such events on total agricultural production are unlikely to be very great. The benefits of income stability under such circumstances accrue to the farmer to a greater extent than to the nation. Although the individual farmer may be unable to sustain a total loss in any one year even with the assistance of such schemes as the Farm Income Equalisation Scheme, the industry as a whole can spread risk over a large number of enterprises. Thus, the implementation of insurance schemes by the industry itself appears the most appropriate mechanism for attaining stability of income in the face of environmental variability.

In summary, Government assistance on stability grounds does not appear justified although intervention to ensure that an industry administered price smoothing scheme is implemented is acceptable because of the external benefits associated with such a scheme. In other words, the stability argument, although often advanced as a separate issue, is really only justifiable on the grounds of market failure.

2.5 Market Failure

Market failure is said to exist where there are deviations from the assumptions necessary for the functioning of the perfectly competitive market. Such effects as externalities, imperfect information and public goods are examples of factors which can lead to market failure in the agricultural sector. External effects (externalities) generally arise from the inability of agricultural sector participants to internalise

the benefits of investments. This means that an inadequate level of investment can occur. The perfect availability of information to sector participants is an important assumption that is often violated. This is especially so with regard to market information and information on development in management/production techniques. When the marginal cost of providing a good or service to an additional consumer is zero that good is known as a public good. It is often impossible to provide such goods to an individual without making the benefits available to other members of society. Market forces are, therefore, unlikely to result in the optimal level of provision of public goods.

Where such deviations from the model exist there is an argument for Government intervention in the market system. This intervention should act to neutralise the effects of these deviations on the price setting mechanism.

2.5.1 Research.

Agricultural research may be divided into two categories; basic and applied. Basic research involves the scientific investigation of aspects which need have no immediate application but which often provide the basis for subsequent applied research. Applied research is directed towards solving practical problems and it is reasonable to believe that industry participants would have an economic interest in supporting applied research. However, since the provision of the results of such research to an additional consumer involves no additional cost, applied research complies with the definition of a public good. In order to determine the optimal level of research investment, individual valuations of research results must be accumulated and the marginal cost of research effort equated with the accumulated marginal valuation. Individuals within the same industry group would benefit from similar applied production research. It would therefore be appropriate for those groups to express their valuation of this research by levying members to fund applied research.

In the case of basic research, however, industry and social valuations may differ. The applicability of basic research to the activities in which the industry is presently engaged may be limited and present participants are likely to have less concern for the future than Government whose responsibilities are broader. Thus underinvestment in basic research, from a social viewpoint may occur if this is left to the private sector. Government involvement may therefore be justified.

Where the costs and benefits of research cannot be fully internalised by the investor, there may also be an argument for Government intervention. This can take the form of legislative activity to ensure benefits (and costs) can be internalised, either through providing protection for the research investor (e.g. patent rights, market protection) (Blyth and Beck, 1983) or legislating to impose costs on the investor to ensure the private recognition of social costs or benefits such as pollution or natural scenery.

The Government support of research into social areas such as pollution, conservation and environmental impacts (e.g. of private developments) would be justified as Government (society's representatives) should be in the best position to value such public amenities. In addition, where social objectives such as employment are considered desirable, Government may wish to engage in research into technologies which are relatively more labour-intensive than those favoured by the private sector.

Externalities can arise in the areas of market research and new product development. Where these exist the level of private investment in market research is likely to be below the most efficient level. While product branding and product loyalty allow exporters to internalise some of the benefits of their research it is possible that not all benefits will be captured by the initiating firm.

In summary, there appear to be strong grounds for believing that market failure occurs in the agricultural research fields.

2.5.2 Information.

Where price signals do not convey appropriate information to producers market failure can be said to have occurred. There is considerable variability in the world prices facing New Zealand farmers and the signals received from them are appropriate only in the short term. Rapid change in the level of investment is not practicable in farming enterprises, and expected medium to long-term prices should therefore be an important determinant in farm investment decisions.

Whether it may be conceded that the Government, rather than the producer, is best equipped to forecast long-term price trends is certainly debatable. However, even if one accepts some role for Government, it does not provide justification for support policies such as SMPs to maintain farmer confidence in times of low prices. Rather, an appropriate measure would be the provision of outlook services and the constant evaluation of their performance, in order that farmers may have access to this information and be able to assess its reliability. While it is probable that farmers as a group would be reluctant to pay for such a service until the value of the source is proven, in time their willingness-to-pay would increase, provided of course that the information is reliable. It would then be possible to levy the industry to help fund the service.

2.5.3 Extension.

It could be argued that farm advisory services should be provided to the agricultural sector on a user-pays basis since the benefits accrue directly to the farmer. However, there are at least two reasons why underinvestment in extension, from the national point of view, could occur if all extension were privately funded.

The most effective advice is that which convinces the farmer that decisions made are entirely his own, and which better equips him for future decision-making. Consequently, the value of such advice is not likely to be fully perceived and the sector is likely to undervalue the benefits from extension effort of this type.

Many of the benefits derived from extension programmes, particularly at the group or regional level, are realised over a relatively long period. If this period exceeds his planning horizon, the farmer may be reluctant to pay to participate, although the longer time preference of the nation may mean that the investment is justified on the national basis.

In addition, the provision to Government of a large amount of information on changes in the farming environment is facilitated by the operation of a publicly-funded and therefore impartial extension service.

In summary, there do appear to be grounds for suspecting that market failure occurs in the extension area. However, it may be very difficult to measure the social rate of return to investment in extension as a first step in justifying assistance in this area.

2.5.4 Capital

The present financial market may not provide for the recognition of entrepreneurship as adequate security for loan finance. This represents an undervaluation of an important factor of production. This means that only substantial organisations are able to undertake market research and product development as they must have adequate resources to cover high potential risks (and losses). There is therefore a need for a financial institution with the ability to make funds available to enable entrepreneurs to carry out market research and product development, where the loan security is based upon an assessment of the likely success of the project rather than the assets held by the borrower. Expansion of the role of the Development Finance Corporation could be a suitable way in which to meet this need.

2.6 Conclusion

If the economy is to undergo sustainable economic growth, efficiency in resource allocation is an important prerequisite. In this part of the paper the rationale for Government assistance to agriculture has been examined primarily with reference to allocative efficiency.

It has been concluded that compensation for trade protectionism, exchange rate overvaluation and internal protectionism cannot be justified. These measures simply introduce new distortions to the economy to counteract existing policy-induced distortions and are therefore 'second-best' solutions whose efficiency implications are unclear.

Government assistance to counteract instability in farm incomes also appears unwarranted. Self-funding measures, including price smoothing and insurance schemes are the appropriate measures to be taken by the sector.

Theoretically acceptable grounds for Government intervention and assistance in a market economy are those associated with market failure. Probable areas for market failure in the agricultural sector are those of research, information, extension and capital.

3. ALTERNATIVE POLICY MECHANISMS

3.1 'First-Best' or 'Second-Best'

It has been established that the appropriate criterion for the introduction of agricultural policies should be the necessity to ensure that such policies do not worsen the efficiency of the utilisation of resources. In order for the total economy to undergo sustainable economic growth, it is important that resources be allocated in the most efficient manner possible.

A number of policies have been introduced by Governments over the past fifty years, which, by altering the return to resources used in the production process, have created the potential for distortion. Where that potential exists it has been concluded that it is inappropriate to correct the distortion by compensating the disadvantaged sector except where the distortion is a consequence of the failure of the market itself.

'First-best' policies include those which remove distortions caused by market intervention, and those which compensate for distortions caused by the market itself. 'Second-best' policies seek to compensate for induced distortions. The measurement of the level of compensation required to adequately redress the effect of the distortion is considered to be exceedingly difficult and such measures are likely to be inaccurate. Where measurement procedures do not result in an accurate assessment, the placement of compensation measures within the economy could very easily contribute to a worsening of the distortion already evident. Given this situation, it would therefore be appropriate to consider policy measures which act to remove the distortion that has been created rather than to introduce exactly compensating distortions.

Although the 'first-best' solution may be contrary to political objectives, acceptance of 'second-best' policies may only delay or preclude the introduction of the 'first-best' policies necessary to improve the efficiency of resource allocation in the New Zealand economy.

3.2 Policies for the Economy

It is apparent that to a large extent, the policies of successive New Zealand Governments have had a significant influence on the ability of the agricultural sector to use resources in the most efficient manner. These influences have affected both the costs of production and the returns available from agricultural production. Such policies include protection of import-replacement industries, the maintenance of a controlled exchange rate, the provision of licencing and regulation requirements with respect to internal production and distribution systems and the diversity of arrangements relating to New Zealand wage levels.

It is therefore suggested that the Government should introduce (continue) policies which involve the removal of import licences, other methods of providing protection to the import replacement sector and export incentives. Such steps are required under the General Agreement on Tariffs and Trade (GATT) and the provisions of the Closer Economic Relations agreement with Australia (CER). In conjunction with the removal of trade protection measures, removal of controls on the exchange rate could result in a reduction of the balance-of-payments constraint. However, such a policy, unless combined with other 'first-best' solutions and a positive incomes policy would almost certainly lead to higher inflation, at least in the short-term, as higher export returns, import costs and subsequent second-order effects were built into the costs of production in New Zealand.

Policies which have an impact on local manufacturing and distribution systems are also important. Where there is a degree of regulation in the internal economy, there is a tendency for costs and prices to reflect the value of the regulation as well as the value of the goods or services involved. The removal of the regulation and its apparent value, can therefore contribute to a reduction in the cost of various products and services.

A further area of undesirable influence upon the New Zealand economy is the existence of an imbalance of power between the labour organisations and the employers. It is apparent that where wage rates are negotiated, the negotiation takes place between a monopoly supplier of labour, i.e. the industry union, and a non-monopoly provider of employment i.e. the various firms involved in the industry. This imbalance of power results in the union movement's being able to extract, from the employers, wage increases which exceed the movement in productivity. An incomes policy which relates the level of increase in employee remuneration to a target increase in productivity is essential in order to avoid inflationary pressures.

The implementation of policies mentioned in this section has the potential for more impact on the total economy and the agricultural sector than do policies which attempt to compensate any particular sector for the advantages enjoyed by other sectors. The removal of such advantages is considered to be more appropriate action to undertake than the compensation of disadvantaged sectors. Within each sector of the economy, however, there may be circumstances where Government activity would be appropriate to ensure that market forces are reflected in the valuation of the products of the sector and that the resources employed in the sector are appropriate.

3.3 Agricultural Sector Policies Today

It has been estimated that in the year ended 30 June 1982, the gross value of Government assistance to the agricultural sector was of the order of \$819 million (see Appendix). In fact, this is almost certainly an underestimate because it is almost impossible to estimate the total value of taxation concessions to the sector. Approximately \$482 million of the \$819 million spent can be broadly classified as

assistance to reduce the production costs of the industry. This includes input subsidies, credit subsidies and suspensory loans, tax incentives and quality control subsidies. An additional \$26 million which is spent on maintaining the Animal Health Division of the Ministry of Agriculture and Fisheries might also be classified as quality control. However, the control of animal diseases such as tuberculosis and brucellosis directly benefits society as a whole and the funding of this Division may be justified, at least in part, on externality or public goods grounds. Price subsidisation through the SMP scheme cost the taxpayer almost \$220 million while Government funded research and extension activities cost \$92 million. Only \$67,000 was spent on emergency relief. See Table 1.

TABLE 1

Categories of Assistance
(Year ending March 1982)

	\$000
Input Subsidies (including taxation concessions)	222,571
Credit Subsidies	213,063
Price Subsidies	219,000
Quality Control (Including Animal Health)	72,189
Research	74,398
Extension	17,850
Emergency Expenditure	67
Other	146
	<hr/>
	\$819,284
	<hr/> <hr/>

On the basis of the arguments developed earlier, only that part of total expenditure directed to research, extension and animal health (i.e. directed towards the correction of market failure) could be considered justified. In the year ending March 1982 expenditure on these areas represented only 14 per cent of the total assistance provided by Government to the agricultural sector.

The remaining 86 per cent has been aimed at cost reduction in areas where market failure is not inherent, or at price stabilisation. This expenditure cannot be justified without accepting the 'second-best' arguments discussed earlier. It is unlikely that even the 14 per cent of expenditure devoted to research, extension etc. can be wholly justified

on market failure grounds. It is not clear at present therefore, what proportion of total agricultural assistance can be justified on 'first-best' grounds.

3.4 Future Assistance Policies

Provided that other distortions in the economy are to be removed gradually, agricultural assistance (compensation) should be removed at a similar rate. However, it is still necessary to determine the appropriate level and type of assistance which should be available to compensate for market failure. At present there is insufficient information available on the economic value of research, information dissemination and extension to answer this question with any certainty.

This leads to another very important question for agricultural economists - whether it is of value to research the costs of market failure in these areas? Clearly this is a difficult field to research but we believe that more effort should be devoted to social-cost-benefit studies in these areas. Only when the results of such studies are available will the distribution of Government assistance to the agricultural sector be possible on an efficient basis.

Earlier in this paper the areas in which the market model may not work adequately were listed, together with reasons why market failure may occur in these areas. However, there are likely to be other areas where market failure could be identified and intervention and assistance argued to be appropriate.

Are economists likely to agree on the areas and reasons for market failure? Some economists may argue that identifying potential market failures is fruitless since evidence to substantiate claims that Government action is required to increase overall economic welfare is too sparse and difficult to gather. Others may argue that many social and institutional factors are behind the market failure and that these factors should be taken as given. If resources flow out of a particular sector for such reasons, it has to be accepted. This is the perfectly free-market philosophy. Those who accept the free-market philosophy do so because they believe that the market is the most efficient means of resource allocation. However, reliance on market forces when there are elements of market failure present can only lead to less than optimal resource allocation. Where social and institutional factors influence the operation of the market, the costs in terms of resource misallocation must be recognised when determining the value of those factors to society.

However, if protection of other economic sectors is not removed and agricultural assistance continues, in other words, if 'first-best' solutions are not politically acceptable, should agricultural economists be attempting to determine the most satisfactory of what can only be considered 'second-best' solutions?

It is the authors' opinion that agricultural economists have a responsibility to continue advocating 'first-best' policies to politicians. Where political objectives can be met only by the implementation of

'second-best' policies, it is the professional responsibility of agricultural economists to evaluate all such policies in terms of their implications for resource allocation and their effectiveness in achieving the stated objectives. Continual evaluation of Government policy by economists is essential, and the results of such evaluation must be publicly discussed in order that, as the costs of 'second-best' policy measures are more widely understood, the political acceptance of 'first-best' measures is facilitated.

Where Government has objectives which relate to matters of equity and distribution rather than efficiency, the costs of measures taken to achieve these objectives must be identified as far as possible. Government has a clear responsibility to ensure that such goals are explicitly stated.

In conclusion, there should be a movement away from Government policy measures which compensate for distortions in the economy. The only economically rational policies are those which attempt to correct market failure. Only if such an approach is adopted can the most efficient allocation of resources be achieved.

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APPENDIX

Government Financial Involvement With New Zealand Agriculture

by J.G. Pryde and G. Greer

A. INTRODUCTION

The total value of Government involvement in New Zealand agriculture cannot be calculated with complete accuracy. Revenue foregone as a consequence of taxation concessions offered to farmers is particularly difficult to estimate since much farm development expenditure is included in taxation accounts as working expenditure. Differences of opinion may exist concerning the proportion of total assistance which represents an income supplement and is therefore liable to tax, and it is difficult to decide exactly which Government services should be included as indirect forms of farmer assistance. The methods by which interest concessions should be calculated may also be subject to debate. However, although it is true that, for the purposes of this calculation, some arbitrary decisions have been made, they have in most cases been made only after communication with the appropriate Government Departments, or discussion with other economic researchers. Most of the information included has been obtained from published annual reports etc, or from the answers provided in response to questions asked in the House of Representatives. The sources of both published and unpublished data, as well as the methods of calculation used are documented in Section F.

The following exercise attempts to present in summary form estimates of the New Zealand Government's general and financial involvement in the agricultural industry in the years ended March 1979-82. Estimates have been prepared both of gross involvement and of involvement net of taxation due on the income supplement component. Each page must be read in conjunction with the above paragraph and the details of sources and methods of calculation as described in Part F of this Appendix.

B. SERVICES PROVIDED TO THE RURAL SECTOR BY GOVERNMENT

Ministry of Agriculture and Fisheries:

1. Farm advisory service
2. Meat inspection
3. Dairy product grading
4. Farm dairy instruction
5. Seed certification
6. Seed testing
7. Game inspection
8. Livestock inspection
9. New Zealand grown fruit and vegetable inspection
10. Inspection of plant material for export
11. Honey inspection
12. Agricultural research

Department of Scientific and Industrial Research:

13. Agricultural research and educational services

Ministry of Works and Development:

14. Investigation and design of irrigation and rural water supply schemes
15. Planning and technical services in the field of soil and water conservation

Department of Lands and Survey:

16. Budgetary advice to mortgagors
17. Land Utilisation advice

Rural Banking and Finance Corporation:

18. Administration of loans and mortgages

Maori Affairs Department:

19. Budgetary advice to mortgagors
20. Supervision of development schemes on behalf of Maori owners (at no charge until they return a profit)
21. Land utilisation advice

Forest Service

- 22 Administration of Forestry Encouragement Grants

The cost to the Government of these services is included among the costs of indirect assistance.

Source: Hansard No. 8, P. 895, 1980.

C. PRINCIPAL FORMS OF DIRECT GOVERNMENT ASSISTANCE TO FARMERS AND THE RURAL SECTOR SHOWN BY VOTE

1) <u>Vote: Agriculture & Fisheries¹</u>	1979 - 80 (\$000)	1980 - 81 (\$000)	1981 - 82 (\$000)
* Special Agricultural Assistance	-	-	-
* Fertiliser & Lime Transport Subsidy	28,771	25,306	24,101
* Fertiliser Price Subsidy	40,550	30,835	28,211
* Fertiliser & Lime Bounty	2,371	1,965	1,672
* Sharemilkers Suspensory Loan Scheme	400	366	407
* Pipfruit Pesticides Rebate	-	-	-
* Contribution to Meat Income Stabilisation Acc.	-	-	-
* Contribution to Wool Income Stabilisation Acc.	-	-	-
* Emergency Expenditure	341	689	67
* Lime Transport Assistance	-	-	-
Special Payment to Freezing Industry	-	-	-
* Dairy Beef Scheme	676	-	-
Meat Industry Hygiene Grant	1,402	2,313	1,752
Grant to New Zealand Wool Board	2,000	-	-
* Land Development Encouragement Loans			
- Interest Subsidy	1,024	3,424	6,595
* Rural Export Suspensory Loans	31	288	579
* Special Payment for Sheep and Cattle	49	13	-
* Livestock Incentive Scheme	7,009	11,513	19,127
Interest on Loans	-	-	-
* Feed Storage Construction Subsidy	-	-	-
* Artificial Breeding Incentive	735	55	-
* Lucerne Establishment Grant	40	-	-
Agricultural Pests Control	6,867	7,413	7,003

CARRIED FORWARD

* See Note 17.

B. CONT.

	<u>1979 - 80</u> (\\$000)	<u>1980 - 81</u> (\\$000)	<u>1981 - 82</u> (\\$000)
Assistance to Hydatids Authority Control & Eradication of Animal Diseases	-	-	970
Compensation	2,737	4,540	6,938
Grants & Miscellaneous Payments to Agricultural & Allied Organisations	17	93	146
Noxious Weeds Eradication	2,430	3,218	3,813
* Cartage Grants	10,739	9,002	9,259
* Supplementary Minimum Prices Scheme ²	-	-	-
Wool	-	-	148,000
Dairy	1,896	-	-
Meat	-	-	71,000
Subsidy on Sheep Measles Control	-	520	-
Sulphuric Acid Transport Subsidy	381	610	610
* Assistance to the Tobacco Industry	-	-	9,575
Local Market Butter Termination Payment	-	7,000	-
Subsidy for Control of Potato Cyst Nematode	-	-	5
SUB TOTAL	110,466	109,163	339,830
2) <u>Vote: Lands and Survey</u>³	<u>1979 - 80</u> (\\$000)	<u>1980 - 81</u> (\\$000)	<u>1981 - 82</u> (\\$000)
Grants to Lincoln College	31	38	45
Grant to Tussock Grasslands & Mountain Lands Institute	274	364	423
SUB TOTAL	305	402	468
3) <u>Vote: Scientific and Industrial Research</u>⁴			
Grant to Massey University	158	209	238
Grant to Lincoln College	85	78	20
Grants to Research Associations			
Dairy	1,055	1,193	1,505
Fertiliser	195	288	285
Meat ⁵	720	1,148	1,091
Wool ⁵	658	816	893
Grant to Commonwealth Agricultural Bureaux	94	115	147
Grant to Cawthron Institute	366	410	477
Trials of new Horticultural Crops			19
SUB TOTAL	3,331	4,257	4,675

C. CONT.

	<u>1979 - 80</u> (\$000)	<u>1980 - 81</u> (\$000)	<u>1981 - 82</u> (\$000)
* Forestry Encouragement Grants ⁶	1,429	1,461	2,004
TOTAL GROSS DIRECT ASSISTANCE:	115,531	115,283	346,977

D. PRINCIPAL FORMS OF INDIRECT ASSISTANCE PROVIDED BY GOVERNMENT TO THE AGRICULTURAL SECTOR

a) <u>Expenditure</u>	<u>1979 - 80</u> (\$000)	<u>1980 - 81</u> (\$000)	<u>1981 - 82</u> (\$000)
1) <u>Vote: Agriculture & Fisheries⁷</u>			
* Animal Health	15,277	19,822	25,729
* Meat Inspection	25,333	31,093	38,280
* Dairy Inspection and Grading	5,912	7,090	8,180
* Advisory Services	11,973	14,701	17,850
Agricultural Research	24,019	30,049	35,786
SUB TOTAL	82,514	102,755	125,825
2) <u>Vote: Works and Development⁸</u>			
* Investigation and Construction of irrigation schemes (net expenditure after recoveries) ⁹	6,700	13,945	20,868
* Maintenance and operation of irrigation schemes (net, after revenue from sale of water)	768	1,025	1,274
Catchment, river control, soil conservation and drainage works	19,691	23,977	25,922
SUB TOTAL	27,159	38,947	48,064
3) <u>Vote: Scientific and Industrial Research¹⁰</u>			
Agriculture Production	15,362	19,040	23,402
Agriculture Processing Research	1,579	1,803	6,254
SUB TOTAL	16,941	20,843	29,656
<u>TOTAL EXPENDITURE</u>	126,614	162,545	203,545

b) Estimates of Revenue Foregone

1) <u>Rural Banking & Finance Corporation</u>	<u>1979 - 80</u> (\\$000)	<u>1980 - 81</u> (\\$000)	<u>1981 - 82</u> (\\$000)
* Estimate of Interest Concessions ¹¹	75,263	87,281	88,116
* Voted Interest Concessions ¹²	5,667	8,750	7,190
SUB TOTAL	80,930	96,031	95,306

2) Taxation

Estimated Total Cost of Taxation Concessions - at least ¹³	50,000	82,000	82,000
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Note:

These include deductions for development expenditure, income equalisation, standard values, farm ownership and vendor mortgage schemes; investment allowances on machinery; first year depreciation allowances; and the taxation option of the livestock incentive scheme. However it is almost certain that deductions for development expenditure are underestimated since a large proportion of development expenditure is included as working expenses in farm accounts.

3) Reserve Bank Overdraft Facility¹⁴

Estimated total cost of low interest rate Overdraft Facility	43,000	64,000	74,850
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Assistance is provided to the Apple and Pear Marketing Board, the Dairy Board, the Citrus Marketing Authority, and the Honey Marketing Authority.

4) Lands and Survey - Loans to Settlers¹⁵

* Estimate of Interest Concessions	10,240	10,659	11,924
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5) Maori Affairs - Loans to Settlers¹⁶

* Estimate of Interest Concessions	3,206	3,421	3,986
* Government Grant Towards Deficit	599	791	696

SUB TOTAL	3,805	4,212	4,682
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TOTAL REVENUE FOREGONE	187,975	256,902	268,762
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TOTAL GROSS INDIRECT ASSISTANCE	314,589	419,447	472,307
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E. SUMMARY : GOVERNMENT ASSISTANCE TO NEW ZEALAND AGRICULTURE

	1979 - 80 (\$000)	1980 - 81 (\$000)	1981 - 82 (\$000)
Gross Direct Assistance	115,531	115,283	346,977
Gross Indirect Assistance	314,589	419,447	472,307
TOTAL GROSS ASSISTANCE	430,120	534,730	819,284
Income Supplement component	180,297	186,817	422,549
Tax assessed on income supplement component (at .30) ¹⁷	54,089	56,045	126,765
TOTAL NET ASSISTANCE	376,031	478,685	692,519
Total Net Government Expenditure ¹⁸	7,586,700	9,133,400	11,196,500
Gross Government Assistance to Agriculture as a percentage of total net Government expenditure	5.67	5.85	7.32
Net Government Assistance to Agriculture as a percentage of total net Government expenditure	4.96	5.24	6.19
Agricultural Proprietors' Surplus	1,442,000	1,244,000	1,230,000
Gross Government Assistance to Agriculture as a percentage of the agricultural proprietors' surplus	29.83	42.98	66.61
Export earnings from Agricultural Production ²⁰	3,571,702	4,139,669	4,738,600
Gross Government Assistance to Agriculture as a percentage of Agricultural export earnings	12.04	12.92	17.29
Net Government Assistance to Agriculture as a percentage of Agricultural export earnings	10.53	11.56	14.61

F. SOURCES AND METHODS OF CALCULATION

1. All data except those on S.M.P.s have been obtained from the 'Estimates' 1980, 1981, 1982 - Ministry of Agriculture and Fisheries: Expenditure Items.
2. Supplementary Minimum Price payments made to farmers are financed temporarily by Reserve Bank overdraft and are not necessarily charged against Vote Agriculture during the year in which the payments are made. Thus the figures presented in this table, which are M.A.F. Economics Division estimates of the payments actually made to farmers, differ from those presented in the 'Estimates'. S.M.P. payments have been calculated for the years ending March 30.
3. 'Estimates' 1980, 1981, 1982 - Department of Lands and Survey: Expenditure Items.

4. 'Estimates' 1980, 1981, 1982 - Department of Scientific and Industrial Research: Program I Science: Program II Government Grants
5. Building grants to research organisations have been added to the grants made towards annual operating costs.
6. New Zealand Forest Service: Annual Reports, 1980, 1981, 1982. Total value of grants made during the year.
7. 'Estimates' 1980, 1981, 1982 - Ministry of Agriculture and Fisheries: Programs IV, V, VI, VII, VIII, X.
Included in these amounts is the cost to the Government of providing the following services which have not been charged for since 1978: meat inspection, dairy produce grading, farm dairy instruction, seed certification, seed testing, game inspection, livestock inspection, New Zealand grown fruit and vegetable inspection, export plant material inspection, and honey inspection.
8. 'Estimates' 1980, 1981, 1982 - Ministry of Works and Development Program VIII National Water and Soil Conservation.
9. This figure includes the cost of irrigation suspensory loans in the year the loans are made, not the year in which they are waived.
10. 'Estimates' 1980, 1981, 1982 - Department of Scientific and Industrial Research. Notes to the Estimates: Programs I and II.
11. Rural Banking and Finance Corporation: Annual Reports 1980, 1981, 1982. Calculated by multiplying the average value of mortgage assets for the year under review and the preceding year by the market rate of interest and subtracting the interest earned on Loans on Mortgage. From this should be subtracted the value of subsidies which represent that part of the interest concession for which the R.B.F.C. is reimbursed via the Public Account. The value of subsidies is calculated as total interest recovered from the public account less provision for tax less surplus for the year. These values can be obtained from the Notes to the Balance Sheet and Revenue Account. Market rate of interest has been assumed to be 15% which is the rate assumed by Treasury to be appropriate for these calculations.
12. The voted interest concession is the value of subsidies as calculated in note 11.
13. Sources of these data are: i) Hansard No. 8, 1980: P. 896
ii) Parliamentary Order Paper (22 April 1982): P. 181.
14. Reserve Bank of New Zealand (pers. comm.). This subsidy is calculated from the average week-day balances and yields in the following accounts compared with typical market interest rates for similar accounts: Dairy industry account - 1 per cent compared with assumed market rate of 12 per cent; Apple and pear industry account - 1 per cent compared with assumed market rate of 13 per cent; Honey industry account - 1 per cent compared with assumed market rate of 13 per cent.

15. Department of Lands and Survey: Annual Reports 1980, 1981, 1982. Total value of Marginal Lands Board loans, Mortgages Pt IV of the Land Act and advances associated with sales of land and improvements was determined from the Balance Sheet for Crown Lands. The opening and closing values were averaged and multiplied by the market rate of interest. The interest foregone has been estimated as the difference between interest payable at market rates and the interest actually paid on each of the asset categories as presented in the Crown Lands Profit and Loss Account.

16. Department of Maori Affairs: Annual Reports 1980, 1981, 1982. The same method of calculating interest foregone as described in note 15 was used. For 1979-80 and 1980-81 the relevant asset values (derived from the Maori Land Development and Settlement Account Balance Sheet) were the sums of Advances to stations, advances to settlers, advances under Section 460 of the Maori Affairs Act and Rehabilitation Advances to settlers. Interest earned on advances was derived from the Revenue Accounts. The Government grant towards the deficit has been subtracted from the gross interest concession and is entered separately.

In 1981/82 the value of the interest concession presented has actually been calculated for the June year since the balance date for the relevant accounts has been changed. The account format has also been altered and mortgage assets have been derived from both the Maori Lands Development and Settlement Account and the Rural Lending Account Balance Sheets and the interest paid is presented in the revenue statements for these accounts.

17. Subsidies on inputs, outputs, interest etc. which are paid by Government to farmers may be paid directly as in the case of S.M.P.'s, or indirectly as in the case of fertiliser subsidies which are paid to the manufacturer. If such subsidies increase farmers' 'net-before-tax' income, either by reducing operating costs, or by increasing gross income, then Government receives a proportion of the subsidy back as income tax.

In this calculation, the decision as to which measures of Government expenditure represent an income supplement has been made arbitrarily on the basis of whether the expenses presently met by Government would otherwise be borne by the individual farmer or by the farming or agricultural sector as a whole. Items regarded as income supplements are marked with an asterisk.

Although tax payable should be calculated according to the marginal tax rates paid by farmers, these cannot be calculated and the average tax rate has been employed instead.

The Department of Inland Revenue cannot provide statistics on farm taxation for the latest two years included in this calculation. However, the average tax rates of farmers (calculated as Assessable Tax ÷ Total Assessable income) for the years ending 31 March 1979 and 1980 were .291 and .301 respectively. Therefore, for the purpose of this exercise it has been assumed that tax has been paid on the income supplement of direct assistance at the average rate of 30%.

18. New Zealand Treasury 'The Budget': Table 1.

19. The most comprehensive measure of the proprietors' surplus (before taxation) is the estimate of operating surplus less interest paid, which is prepared by the Department of Statistics for the national accounts. The statistics shown in the table below record the total value of the farming industry's

output less all production related expenditure and interest payments. No deduction has been made for income tax. The farming industry is defined to cover agricultural and agricultural contracting activities of persons, partnerships, trusts and companies.

Year Ended 31 March	Operating Surplus Less Interest Payments (\$million)
1976	571
1977	835
1978	714
1979	969
1980	1,442
1981	1,244
1982	1,230*

* - N.Z.I.E.R. Quarterly Predictions September 1982 Forecast minus interest at same proportion as 1980/81

10. Reserve Bank of New Zealand Bulletin 45(5) June 1982: Overseas Exchange Transactions Calculated as Total Exports less miscellaneous, manufactured exports and forest products. The value of fish (fresh and chilled) and rock lobster exports, derived from the Monthly Abstract of Statistics Table 11.03 'Value of Principal Exports' has also been subtracted.

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