Agricultural Sector Adjustment Following Removal of Government Subsidies in New Zealand

Daniel–M. Gouin

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Foreword

This report is based on Daniel-M. Gouin's work in 1994 when he was a visiting research officer at Lincoln University in New Zealand. This report represents a summary of this work and updates the data reference.

Summary

This research analyses the effects on the farm sector of the New Zealand agricultural policy reform undertaken in 1985. The analysis is placed within a discussion of the larger issue of the specificity of the farm sector and whether this specificity requires special support from the state which often occur in most developed countries. This study describes the crisis of the New Zealand economy at the beginning of the deregulation process and explains why the farm sector was at the centre of the reform. The removal of state support to agriculture and the transition measures set in place are documented. The research analyses the effects of the dairy reform on farms both at the structural level and in terms of farm incomes. The sheep and dairy sectors are also analysed in detail. The analysis concludes that the farm sector has maintained its level of economic activity despite significant reductions in state support. Finally, this study discusses some lessons that can be learnt from the New Zealand experience, notably in relation with the specificity of the farm sector.

Chapter 1
Introduction

The intervention of the state in the farm sector is currently being questioned in many developed countries. The problems associated with balancing the public budget and the persistent crisis of low price of commodity products on the international markets has led to questions about the wisdom of subsidising the farm sector. Until now, agricultural policies have justified the intervention of the state by emphasising the specificity, or distinctiveness, of the farm sector in comparison to the other economic sectors.

The farm sector is unique in the sense that it has some characteristics which lead to chronically low returns to the resources invested. It is generally accepted that the demand for most agricultural products is price inelastic in developed countries. Also, the income elasticity of demand is low for agricultural products. This means that an increase in the level of production results in a decrease in gross income.

The supply of agricultural products fluctuates in the short term but is generally maintained in the long term. In the short term, the supply is often cyclic and this can be explained by the "cobweb theorem". This theorem is based on three conditions: "that price in the market is determined by the supply available; that producers' output in the next production period is solely determined by price in the current period; and that production conditions are such that there is a time period between current prices and output response" Hathaway (1963). These three conditions explain the continual fluctuations in agricultural product prices that affect the returns. Also in the short term, production variations caused by climatic events adds to the sector's instability.

In contrast, in the long term, supply is generally maintained. Technological progress facilitates reduced cost and increases supply at the individual level. As technological progress spreads, prices will decrease with the increase in supply, and the returns will go back at their initial level. This is the model of the Agricultural Treadmill elaborated by Cochrane (1958). Technological progress is a continuous process, so a temporary disequilibrium caused by technological progress in the farm sector can become a permanent state. This situation is accentuated by the fact that in the farm sector there is often lack of asset mobility, and change of production is costly and takes a long time. When considering leaving farming, the rural unemployment rate, the qualifications of labour and attachment to the profession are factors that reduce mobility. As a consequence, farmers would accept a drop in their standard of living in order to stay in farming even if the economic terms deteriorate. Their own assets, capital and labour often do not need to be remunerated at the market rate. Thus, farmers have some capacity to resist lower levels of price and returns.

In addition to these economic explanations, the traditional intervention of the state in the farm sector arises from historical conditions. The importance of farming for employment, territorial occupation, and food security are elements that have justified the elaboration of agricultural policy in many developed countries. Thus, in most developed countries there are a set of policies with the objective of stabilising and supporting prices and incomes in the farm sector.

However, the view that the specificity of the farm sector justifies special intervention by the state is increasingly questioned. The inclusion of the farm sector in the last GATT negotiation, the Uruguay Round, shows already a certain will from member countries to reduce support to the farm sector and to expose it more to market forces. The results of this round of negotiations do not mean a dismantling of either agricultural policies and programs

or of all trade barriers, but it is a first step in this direction. Nevertheless, the principle that the farm sector should be treated like other commodities or industrial goods sectors in the multilateral negotiations is now accepted. There is no doubt that the next round of GATT negotiations will include a reduction in state intervention in this sector.

The specificity of the farm sector is also questioned by the New Zealand case with its significant reduction of state support. Prior to the conclusion of the Uruguay Round this country had undertaken and nearly completed the reform of its agricultural programs and policies. From a level of public expenses of more than one billion $NZ in 1984/85, the amount of the New Zealand budget assigned to the agricultural sector dropped to less then $NZ200 million in 1992/93. The New Zealand case is the "model" that could prove that the farm sector is not perhaps so specific or, at the very least, that its specificity does not justify a special intervention from state.

But what about the outcomes of the New Zealand agricultural policy reform? The main objective of this research is to examine the effects of the abolition of agricultural subsidies on the New Zealand farm sector.

Chapter 2 presents macro-economic data on the New Zealand economy in order to show the crisis of this economy at the beginning of the deregulation process. It is useful to place the reform of agricultural policy in perspective by explaining the global economic context in which it took place.

Chapter 3 concerns the reform of the agricultural policy. Key questions are: which programs have been reformed and at what rate, and what types of production have been affected? It is also necessary to document the transition measures that were used to allow the farm sector to adapt to the new economic environment.

The results of this reform of agricultural policy are analysed in Chapters 4 and 5. It is relevant to investigate first at an aggregate level how the production sector was affected. Three major elements are involved: the level of production, the level of exports (essential to the New Zealand economy as we will see), and the structural changes to the farm sector. In Chapter 5, at a more micro-economic level, the change in farm incomes following the abolition of subsidies is analysed. This analysis considers the relative effects of the abolition of support on farm incomes and other variables such as export prices, exchange rate and production costs.

Finally, in Chapter 6, it is considered what can be learnt from the agricultural policy reform in New Zealand. In particular, the question of the specificity of the farm sector and the necessity of special intervention by the state in this sector is discussed in the light of the results from the analysis in the preceding chapters.

Chapter 2
The Crisis of Regulation in the New Zealand Economy

2.1 Introduction

It is thought that the agricultural reforms in New Zealand did not result from a singularly dogmatic stand on the non-specificity of the farm sector. Although the reforms question this specificity, it was mainly for other reasons that they were undertaken. In fact, it was more a crisis of regulation in the New Zealand economy as a whole that led to the removal of most of the subsidies to the farm sector. It was by necessity, that the agricultural sector was so severely affected by the New Zealand economic reforms. Obviously, we could question the necessity of applying such drastic cuts to agricultural subsidies, or the degree of state intervention which was or could have been maintained, but this is not our main objective. The aim of the present chapter is to document the crisis situation causing regulation in the New Zealand economy and explain why the farm sector was at the front line of the decrease in public expenditure.

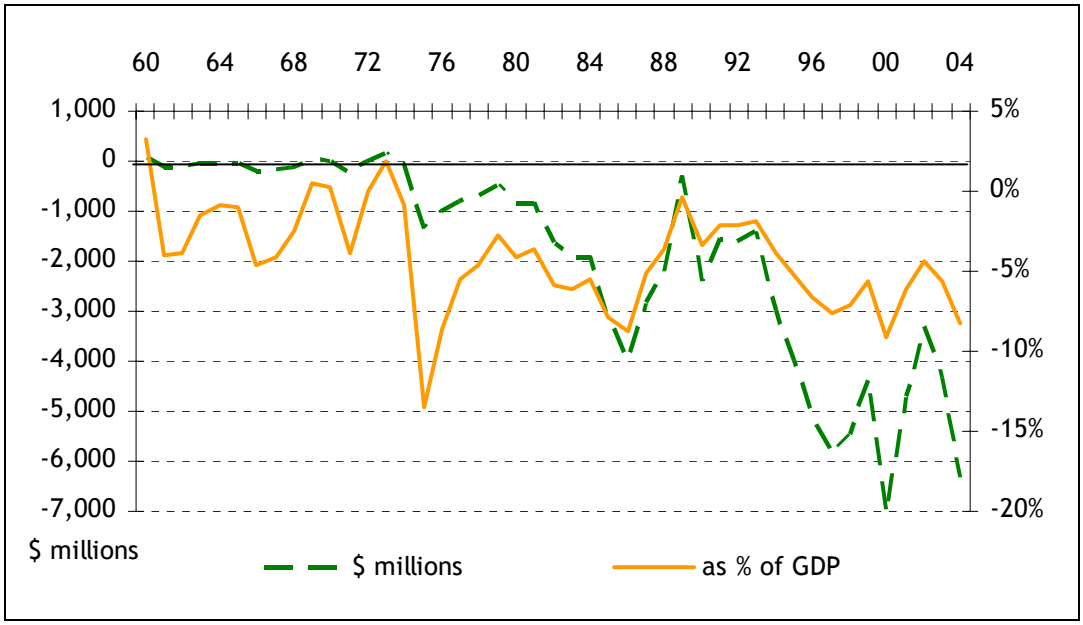
2.2 The origin of the crisis

The balance of payments represents a primary indicator of the health of the New Zealand economy. New Zealand has a small population of about 4 million people today, and has at all times based its economic development on exports to other countries. Thus exports were a key element of economic national development. At the same time, a population relatively low in numbers does not provide a domestic consumption basis on which national industry can sustain development. However, an equilibrium was maintained between the value of exports and imports during the 1960s and the beginning of the 1970s. Thus, from 1960 to 1974 the balance of payments was relatively stable, in absolute value as well as in percentage of gross domestic product (see Figure 2.1).

The 1970s were characterised by three major shocks from international markets. In the first case, the entry of the United Kingdom into the EEC in 1973 partially closed access to traditional markets for New Zealand agricultural products. Exports to the United Kingdom were 31 per cent of total New Zealand exports in 1972, but five years later they were 20 per cent of the total[1]. Secondly, there were relative shortages on the international cereal markets which temporarily carried the prices of agricultural products to historic highs. This provided New Zealand with a positive balance of payments from 1972 to 1974. Thirdly, the petrol shocks had important repercussions on the New Zealand economy, which was entirely dependent on importation of fuel. With the fall in farm prices and the increase in the cost of petrol imports, the balance of payments deteriorated seriously. From a historic low of 13.5 per cent of GDP in 1975, it gradually recovered by 1979. But the second petrol shock, followed by the economic recession at the beginning of the 1980s, provoked a new drop in the balance of payments as a percentage of GDP.

[1] New Zealand has had no other choice than to continue to diversify its export destinations. As of 1991, United Kingdom markets took no more than 6.5 per cent of New Zealand exports. In terms of farm products, the United Kingdom imported 73 per cent of the butter output and 80 per cent of lamb output in 1972. In 1991, these figures had decreased by 40 per cent for butter and 31 per cent for lamb meat (taken from the Department of Statistics, Overseas Trade).

Figure 2.1 Current account balance of payments, New Zealand, 1960-2004

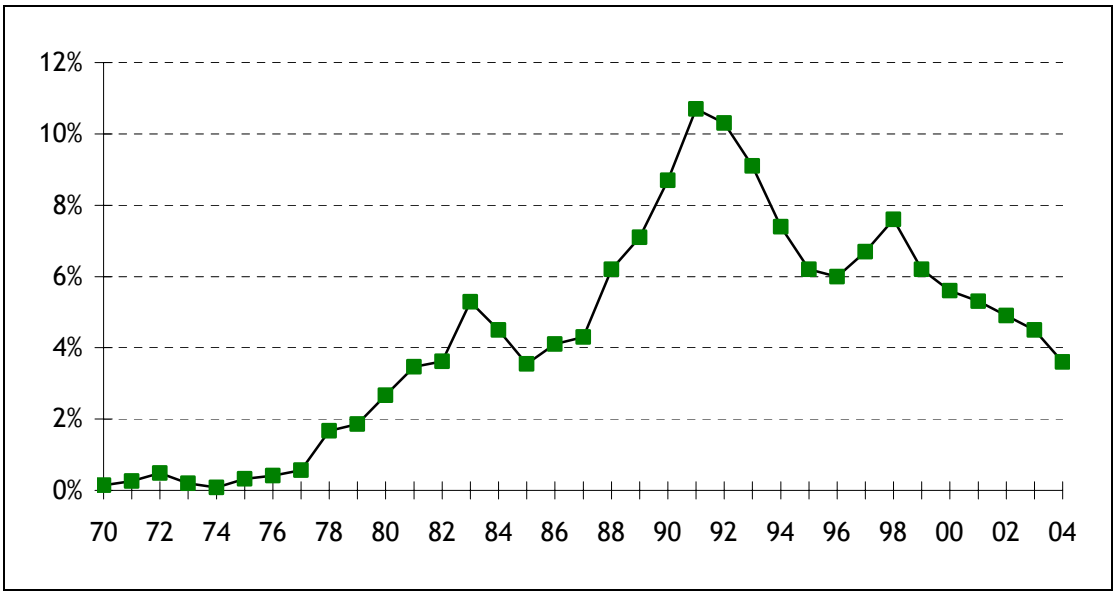


Sources: Our calculations and Balance of payment: until 1965: Department of Statistics, Overseas Balance of Payment. From 1966 to 2004: Department of Statistics, PCInfos ECON-1.01, BOPQ.STOT168., BOPA.S5AC3.

In current dollars, the balance of payments has had an average deficit in the order of $800 million in 1980 and 1981 and of two $billion each year in 1983 and 1984, the year in which economic reforms began.

Parallel to the deterioration in the balance of payments, the unemployment rate began to increase (see Figure 2.2). It stayed at under one per cent until the end of the 1970s and it was only after 1974 that it began to increase to exceed two per cent in 1980. Although relatively weak, a two per cent unemployment rate was considered abnormal in a country used to full employment.

Figure 2.2 Unemployment rate, New Zealand, 1970-2004



Sources: Department of Statistics, PCInfos OECD-C5-NZL-Y.NZL.UNR.(1970-1985) and LFQ.S1F3S (December 1986-2004)

2.3 A keynesian reaction to the economic crisis

To counteract the deficit in external trade and to try to maintain a level of full employment, the government chose to end the 1970s, in the Keynesian tradition, with a marked expansion of public investment in large-scale industrial projects (the 'Think Big' projects). These projects included among others "the electrification of the North Island railway line, the establishment of a synthetic fuel plant, construction of a nitrogen fertiliser plant, expansion of the oil refinery, etc." (Sheppard and Lattimore 1993). These were seen as "being 'too large' for conventional private investment and this was therefore replaced by direct government investment" (Sheppard and Lattimore 1993).

Simultaneously, the government made the decision to encourage the development of agricultural production through specific programmes in order to increase the level of agricultural exports and improve the balance of payments (Griffith and Martin 1988). The first part of these government programmes consisted of direct contribution of public funds to stimulate productive investment in the farm sector. The second part of the programmes complemented the first, providing stabilisation of farm incomes in order to secure farmers' expectations regarding their investment in the sector[2]. The main aim of the New Zealand policy was to increase production to provide a bigger exportable surplus (Ross and Sheppard 1990).

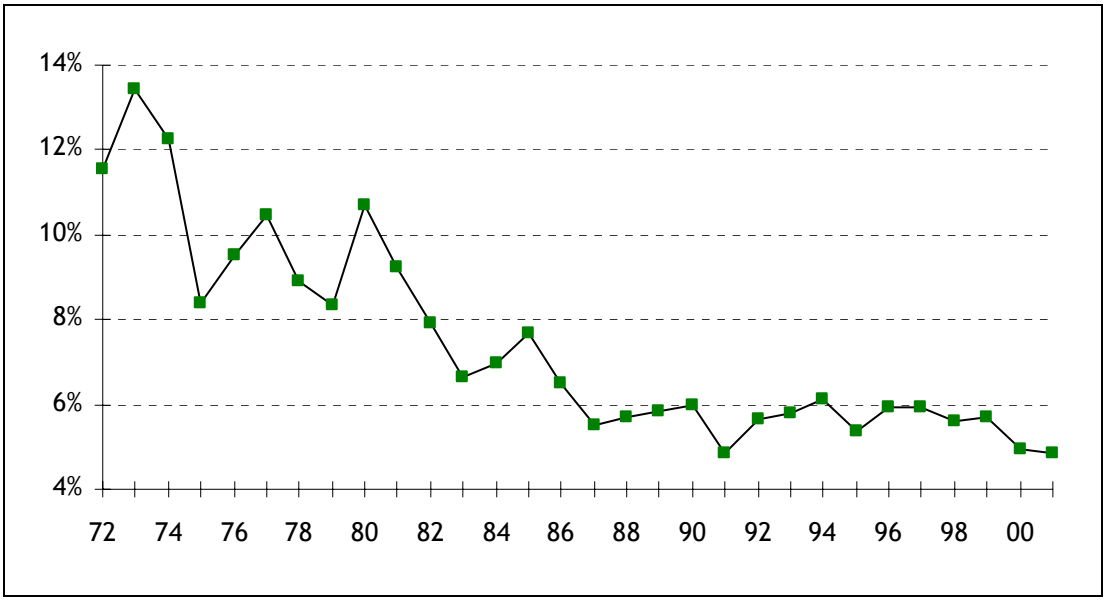
For the New Zealand government, the improvement of the balance of payments was to be derived from the agricultural sector. This is explained by the historical importance of the agricultural sector in the New Zealand economy. On average, the agricultural sector counted for more than 10 per cent of the gross domestic product (GDP) of the country[3] in the 1970s. Although decreasing over the years (see Figure 2.3), the contribution to GDP from agriculture stays at a generally higher level compared to that in other developed countries[4].

[2] These programmes are explained in detail in Chapter 3.

[3] If the total farm production sector is taken and not only the agricultural sector, the contribution to GDP was 16.9 per cent in 1982 and 12.2 per cent in 1991 (MAF 1992).

[4] In OECD countries, the contribution of agriculture to GDP is generally less than four per cent (taken from OECD, Economic Surveys, diverse countries and years).

Figure 2.3 Contribution of farm sector to GDP, New Zealand, 1972-2002



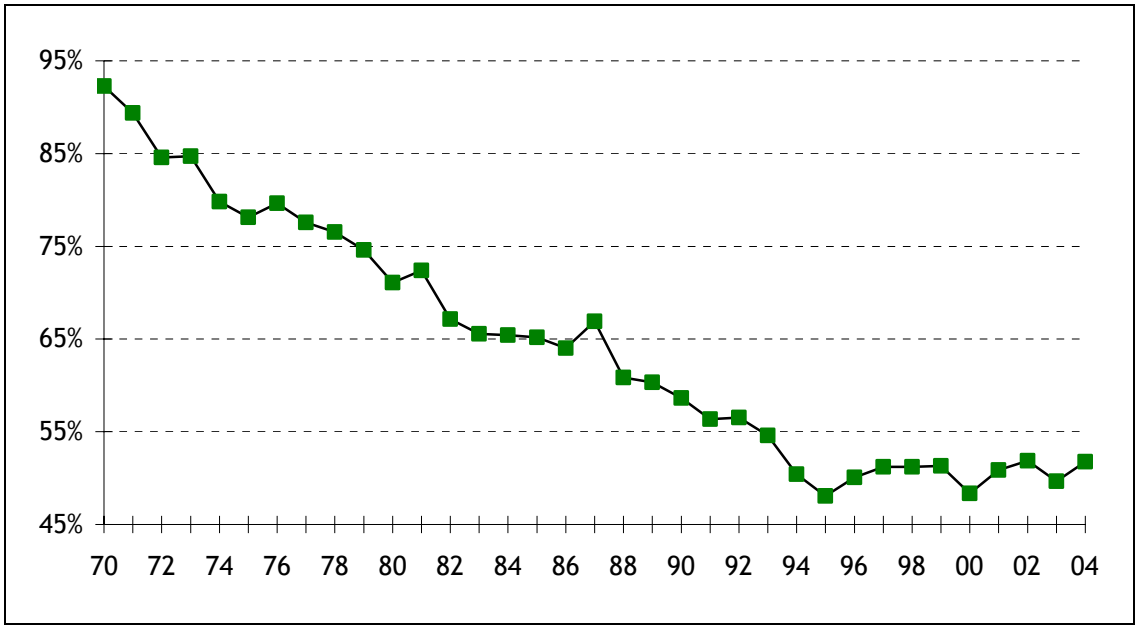
Sources: agricultural GDP from 1972 to 1977, New Zealand Official Yearbook, various years; total GDP and Agricultural GDP, PCInfos, ECON-1.11, SNBA.SF9AA; Situation and Outlook for New Zealand Agriculture and Forestry 2004, p.127 and MAF website, Table 8, Contribution to GDP by selected Industry and Production Group (1994/1995). Agricultural GDP, The Economist Intelligence Unit Limited 2001/2005 (1996 to 2004 in 95-96 constant $). GDP (in constant price): 96 to 2004 - The Economist Intelligence Unit 2001 and 2005 and our calculations.

The importance of the agrifood[5] sector to total exports explains the emphasis put on the development of agricultural production to improve the country's balance of payments. Exports from the agrifood sector accounted for more than 90 per cent of the total value of the country's exports from the beginnings of the l970s (see Figure 2.4). From the time of starting the agricultural development programmes to the end of the 1970s, three quarters of total exports were from the agrifood sector. Despite a continuing decline in the agrifood share of sector exports, these represent more than 50 per cent of total exports[6] today.

[5] We define the agrifood sector to include farming and all the farm product processing sectors.

[6] This relative decline of agrifood exports, even if they have increased by 170 per cent from 1980 to 1993, is explained by a bigger growth of total exports, at around 250 per cent for the same period, all in current dollars (source: data of the Figure 2.4 in current dollar).

Figure 2.4 Agrifood sector as a percentage of total exports, New Zealand, 1970-2004



Source: Total exports, Department of Statistics, Overseas Trade 1992, cat. 010170092; Food exports, MAF, New Zealand Agricultural Statistics until 1981 and MAF, Situation and Outlook for New Zealand Agriculture; and our calculations.

In fact, historically the economic development of New Zealand has been based on agricultural revenues and exports, as explained by Ross and Sheppard (1990):

> Since the early 1870s, as gold production declined, the agricultural sector has been the main contributor to the country's export income… The external account has always played a dominant role in the New Zealand economy, with strong growth and high levels of activity being experienced during periods when receipts were high, and recession or stagnation resulting from low receipts ... Sustainable receipts are based on exports, and since the 1870s these have been dominated by payments for agricultural commodities. The agricultural industry has therefore played a key role in the development of the New Zealand economy.

Until relatively recently, the industrial sector has focused on supplying internal markets and was protected by import controls. This protection policy was put in place in the 1930s and was based on the "infant industry" argument that had been in vogue for 50 years until the 1980s (Lattimore 1985). Lattimore explains this argument:

> This school of thought argued, and still argues, that balanced economic development requires initial import protection. In New Zealand's case, balanced development was taken to mean expanding the manufacturing sector principally by drawing capital and labour resources out of agriculture. Tariffs and other import restrictions achieved this by providing a subsidy to the import substitute segment of manufacturing and other sectors (in the form of the tariff) and an implicit tax on the whole export sector in the form of higher cost inputs purchased from the rest of the economy.

But for Lattimore and many other analysts, this argument does not hold and the objective of allowing the development of a national industrial capacity has not been attained in New Zealand. Lattimore continues:

> While it has yet to be proven, there is growing evidence in New Zealand that the import substitution bias which has existed since the 1930s has hindered industrial development, stimulated foreign ownership, reduced employment growth and reduced real income. These results would be expected if New Zealand's trading environment were that of a small country and the domestic market alone offers few (if any) opportunities to exploit economies of size… It appears as if the manufacturing sector completely missed the opportunity to participate in the world trade growth in manufacturers of the 1950s and 1960s, in part because of the high disincentive to produce for export (Lattimore 1987).

In any case, the presence of such political control of imports, whether adequate or not, represented a supplementary justification for the implementation of specific programmes to subsidise the agricultural sector. The agricultural sector then faced increased costs from the input industries and the different programmes of support compensated for this rise in production costs (Rayner 1980).

The New Zealand government then engaged in large-scale measures to resolve the deficit of the balance of payment and tried to maintain full employment with large-scale industrial projects and development programmes for agriculture. The results for the overall economic situation were not what was expected: "the outcome included a major growth in overseas debt as the government borrowed to finance the 'Think Big' projects and it included a continuing deficit in the balance of payments as demand for raw materials imports coupled with continued consumer demand for imported finished goods … was not matched by increased demand and return for export products" (Sheppard and Lattimore 1993). From 1978 to 1984, the balance of payments continued to decline, as is shown in Figure 2.1. At the same time the unemployment rate which did not reach two per cent in 1978, progressively increased to exceed five per cent in 1983, as shown in Figure 2.2.

2.4 Public debt out of control

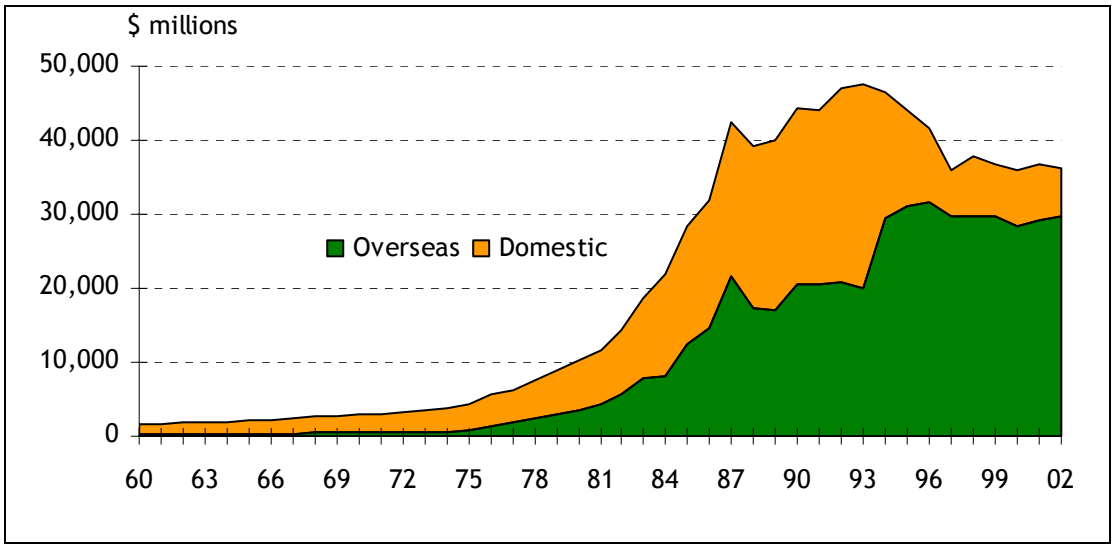
An unfavourable current account balance and an increase in public debt led to a permanent and increasing deficit in the government budget. As a percentage of GDP, the budget deficit had been maintained at a relatively stable level between two per cent and four per cent from 1960 to 1975. From 1976 the situation deteriorated; the deficit was very variable but there was an overall gradual increase to more than six per cent of GDP in 1982 and to nine per cent in 1984[7].

In these conditions, the total New Zealand debt could only grow in absolute value and as a percentage of GDP (see Figures 2.5 and 2.6). In the mid-1970s, at the time of the petroleum crisis, the New Zealand public debt was around 40 per cent of GDP. Since that time, the level of public debt in current dollars increased rapidly and increased by nearly six times between 1974 and 1984. The increased indebtedness was more rapid than the overall growth in the economy with public debt surpassing 63 per cent of GDP in 1984. This level was no higher than in the beginning of the 1960s but the structure of the New Zealand debt changed drastically. From 1960 to 1974, New Zealanders borrowed more than 80 per cent of their debt from the domestic market but in 1984 around 40 per cent of the debt was financed by international markets. Thus, at the beginning of reforms in 1984, the overseas public debt reached 24 per cent of GDP[8] and was likely to increase further.

[7] Dalziel and Lattimore, 1991 and Appendix to the Journal of the House of Representatives Document B6, Tables 2 and 2A.

[8] The total overseas debt, including the private sector, reached 48 per cent of GDP in 1984 Wallace (1990).

Figure 2.5 Total public debt in current dollars, New Zealand, 1960-2002

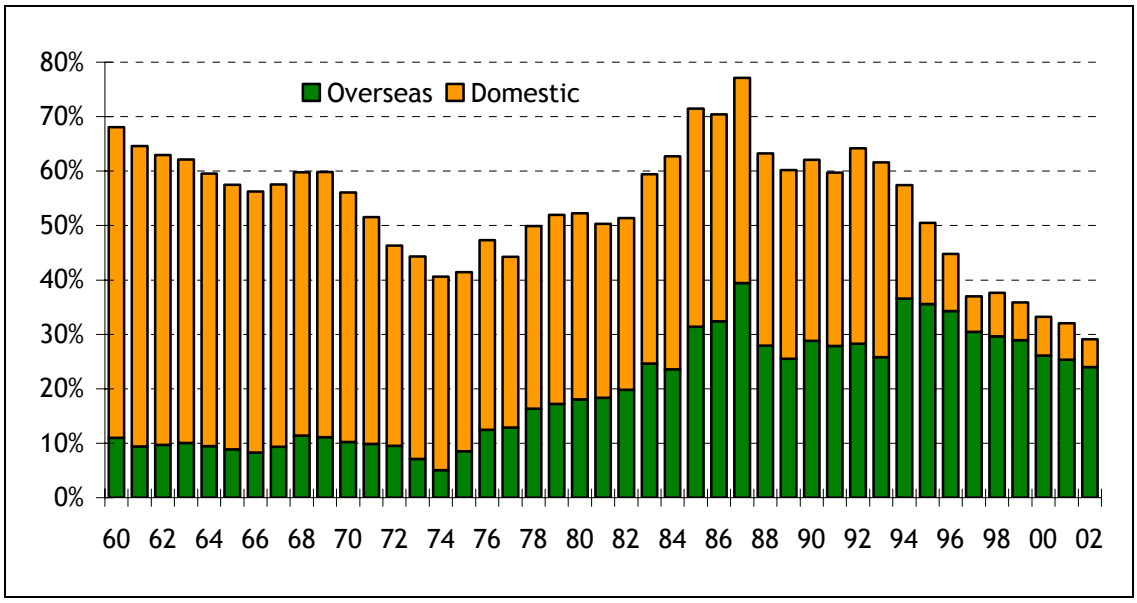


Source: New Zealand Official Yearbook, various years; NZ Pocket Digest of Statistics, cat. 01.101.0091; Department of Statistics, PCInfos: ECON-6.03-CGSA.SS and ECON-6.03A-CGSA.SJR; Public Debt History of New Zealand, New Zealand Debt Management Office (total debt, 1994 to 2004); The Economist Intelligence Unit Limited (various years) and our calculations.

The New Zealand economic situation became unsustainable and inflation increased rapidly (see Figure 2.7). From 1974 to 1984, the Consumer Price Index increased 250 per cent with an annual inflation of between 11 and 17 per cent. It was only with a freeze on prices and wages that the inflation rate was artificially maintained at the level of 7.4 per cent and 6.1 per cent respectively for 1983 and 1984.

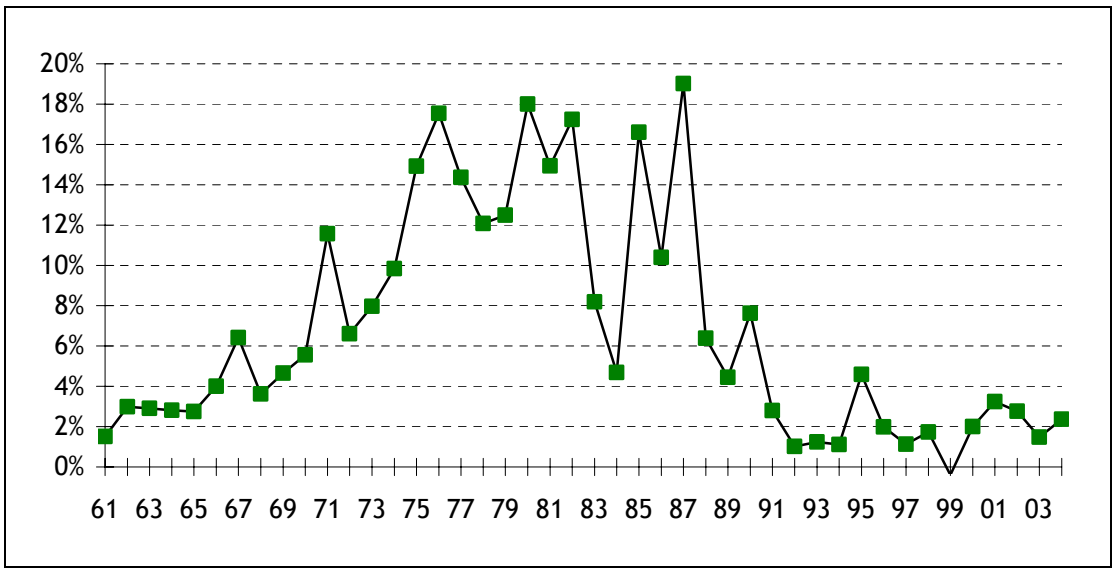
The New Zealand economy was performing poorly as was demonstrated in the change in GDP which showed only a very weak increase in real terms (see Figure 2.8). From 1975 to 1984, the GDP was almost stagnant with a slight increase of 8.5 per cent for the whole period. In comparison to other industrialised countries, the economic performance of New Zealand was lagging behind. Thus, for the 1975 to 1984 period, the average rate of annual increase of GDP in constant US dollars was only 0.6 per cent in New Zealand compared to 2 per cent in small OECD countries and 2.7 per cent for all OECD countries (calculations taken from OECD 1990).

Figure 2.6 Total public debt as percentage of GDP, New Zealand, 1960-2002



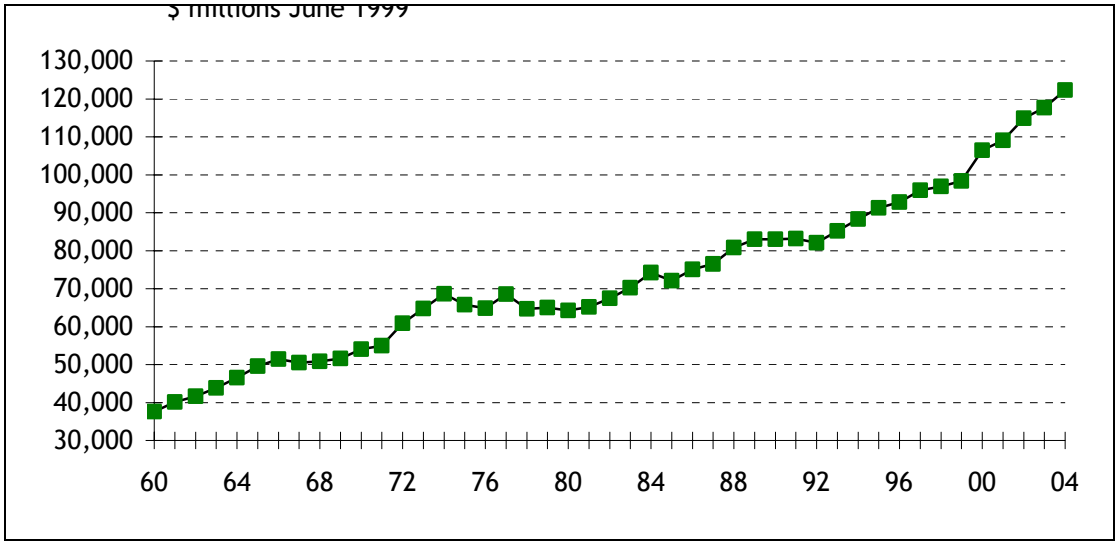
Source: New Zealand Official Yearbook, various years; NZ Pocket Digest of Statistics, cat. 01.101.0091; Department of Statistics, PCInfos: ECON-6.03-CGSA.SS and ECON-6.03A-CGSA.SJR; Public Debt History of New Zealand, New Zealand Debt Management Office (total debt, 1994 to 2004); The Economist Intelligence Unit Limited (various years) and our calculations.

Figure 2.7 Annual percentage change in CPI, New Zealand, 1961-2004



Source: Department of Statistics, PCInfos : CPIQ.SE9A.

Figure 2.8 GDP in real terms, New Zealand, 1960-2004



Source: GDP, New Zealand Official Yearbook and PCInfos: ECON-1.11, SNBA.SF9AA; IPC, Department of Statistics, PCInfos: ECON-3.02, CPIQ.SE9A; and our calculations.

The economic indicators all converge to show the significance of the economic crisis which hit the New Zealand economy. Rayner reviewed the state of the economy in 1984:

> The state of the economy itself was such that action had to be taken. Ongoing inefficiencies were still largely present and, in addition, a number of acute problems had to be addressed. Overseas debt was extremely large, and the fiscal debt had reached proportions that were imposing ever larger servicing burdens on taxpayers. Inflation was under control, but only through the expedient of a price freeze… Unemployment continued to grow and the economy to stagnate, apart from the temporary improvements to both resulting from massive expenditure on the 'Think Big' projects (Rayner 1990).

For Rayner, this decline in the total economic situation required a major reform of government intervention in the economy, a reform which has been in effect since 1984:

> It was apparent to many economists and voters alike that there would have to be a major policy change. The alternative of further interventions as a solution to the problems of the economy had been tried to an extreme and had demonstrably failed. The costs of these policies were becoming clear and there were few who could believe that the solution was simply more of the same (Rayner 1990).

The analysis of Sheppard and Lattimore is no different to that of Rayner: "The government deficit rose steeply at this time to a peak of 9.1 per cent of GDP in the 1983/84 year and it became obvious that fundamental changes were required in total government policy" (Sheppard and Lattimore 1993). The regulation of the New Zealand economy was in crisis.

2.5 The farm sector at the front line of economic reform

The important historical role of the farm sector in the economic development of New Zealand led the government to prioritise the revision of its intervention in that sector. If we add the

adverse budgetary conditions to this historic perspective, it is obvious that the farm sector could not have escaped economic reforms.

In fact, it is necessary to note that "in the early 1980s the fiscal costs of assistance to agriculture rose very sharply as a result of a widening gap between market prices for some agricultural commodities and the prices guaranteed" by stabilisation programmes (Sheppard and Lattimore 1993). This increase in subsidies to agriculture was so large and reached close to 40 per cent of the budget deficit in 1985.

Equally, the increase in subsidies to the farm sector made them vulnerable to retaliation measures from importing countries. This risk could not be taken lightly by the New Zealand farm sector because it was very dependent on external markets to sell its production. Nothing indicated that the situation would improve and as a consequence, drastically reducing agricultural subsidies was a means to rapidly improve the overall budget balance.

In any case, did New Zealand have any other choice considering the increase in subsidies to the farm sector in all other industrialised countries? According to Gibson et al. (1992), it became obvious that the government could not compete with the American, European and Japanese treasuries: "Its treasury could not continue to cope in the mid-1980s" (Gibson et al. 1992). Gibson et al. (1992) argued that there was no other choice than to submit the agri food sector to the law of the market even though the market was distorted by agricultural subsidies in other countries and despite the risks that this put on the long-term competitiveness of the farm sector. In this way they affirmed that "the meagre nature of a small country's treasury forced it to bite the bullet and liberalise, regardless of the actions of other countries" (Gibson et al. 1992).

Some political factors also caused the reforms to be put in place. The Labour Party was brought to power in 1984 and did not depend on rural votes to gain its power: "The Labour Party, given its urban base of support both ideologically and pragmatically, was also less likely to be interested in farmer concerns" (Roche et al. 1992). Walker and Bell emphasised that "farmers initially acted with disbelief. They could not believe that government would not support them as it had done in the past. Then they became very angry and, in 1986, nearly one-third of the farming population (sic) marched in protest to Parliament" (Walker and Bell 1994). The government did not change its policy.

Cloke mentions that "the farming lobby in New Zealand was divided in its response to policy change… The farmers' interest group, Federated Farmers, was therefore subject to internal divisions over its response to policy change, and as a result its opposition was less effective than its previous history of influence and power might suggest" (Cloke 1989). Sheppard and Lattimore (1993) have a point of view somewhat different than that of Cloke, but they arrive nevertheless at a similar conclusion:

> The New Zealand farmers union (Federated Farmers) strongly supported the overall liberalisation programme (including that for agriculture) but not the particular sequence and timing of policies chosen. However, once the particular sequence was chosen by Government it developed a momentum of its own which gave farmers little influence over the detail of the policy programme (Sheppard and Lattimore 1993).

The traditionally powerful farmers' union was not really consulted or listened to at the time of the implementation of the economic reforms. It seemed evident that as well as the political

conditions there were economic conditions which favoured a fundamental calling into question of governmental intervention in the New Zealand farm sector.

Chapter 3
The Dismantling of Agricultural Policies

3.1 Introduction

As we have seen, the economic and budgetary crises which hit New Zealand at the beginning of the 1980s led to a total reform in government intervention in all economic activities. But the farm sector was not affected by government political and economic reforms only for external reasons such as balance of payments, the budget deficit, etc. The calling into question of agricultural policies and programmes was also justified by considerations more strictly agricultural.

The level of subsidies was increasing, as we have already seen, but some production levels were also increasing, notably for sheep, even as the markets deteriorated. Also, as was mentioned in 1986 in a ministerial declaration signed by both the Minister of Agriculture and the Minister of Finance of the New Zealand government, "the farm sector was encouraged to believe that increased production would result in increased returns, ignoring the fact that farm incomes did not reflect overseas returns for farm products" (Moyle and Douglas 1985).

Thus, all the support measures to the sector that was in place, and the apparent absence of response to the negative signals from the market, led the minister to say that the farm sector had evolved in a:

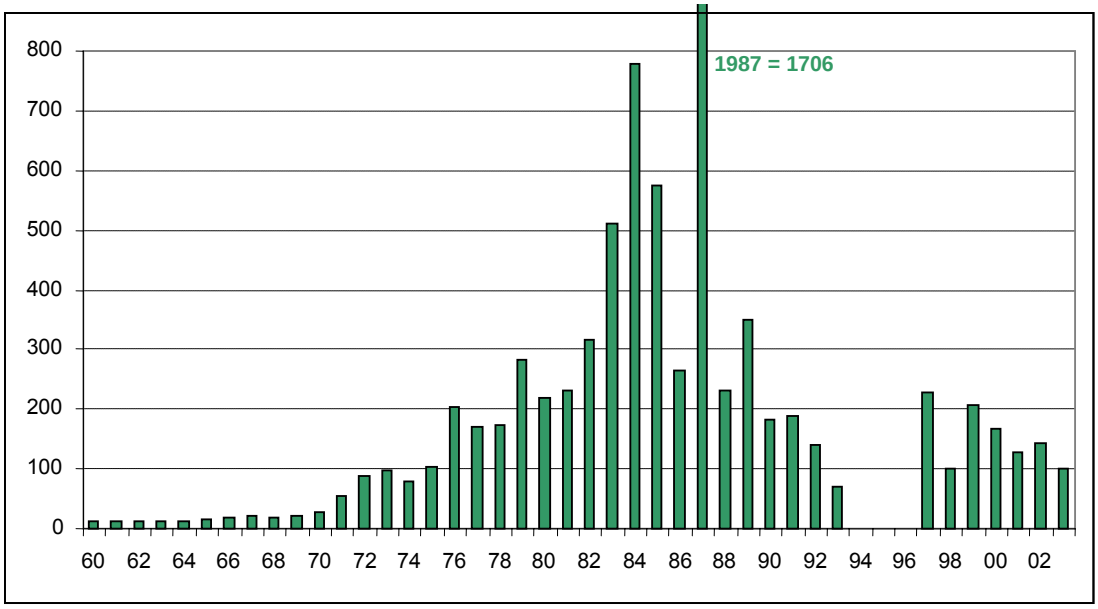
> …highly protected environment which insulated farmers from the changes taking place in the international markets. The government had effectively become the risk-taker in farming. That form of support meant there was less incentive to look for greater efficiency in the farming sector. This put off necessary change in such areas as the processing sector which is now costing the farmer dearly (Moyle and Douglas 1986).

Faced with such arguments that were put forward by ministers with joint responsibilities for the agricultural and finance portfolios, it is not surprising that support to the farm sector was questioned. In fact, the wider economic reforms of politics and agricultural programmes were undertaken before this ministerial declaration. We will examine what the agricultural policy consisted of, explain the transition programmes which were considered necessary to help the farm sector adapt to the new economic environment and become more oriented to the markets, and analyse what remains of the agricultural programmes after ten years of economic reform.

3.2 The cost of agricultural policy

As in most of the developed countries, the agricultural policy of New Zealand was a vast panoply of programmes. This panoply included input subsidies, some measures to support prices and incomes, technical support for the productive sector, programmes concerning the quality of agricultural products and some regulatory measures permitting the organisation of markets. Figure 3.1 shows the change in of the total expenditure of MAF.

Figure 3.1 MAF expenditure in millions of current dollars, New Zealand, 1960-1992



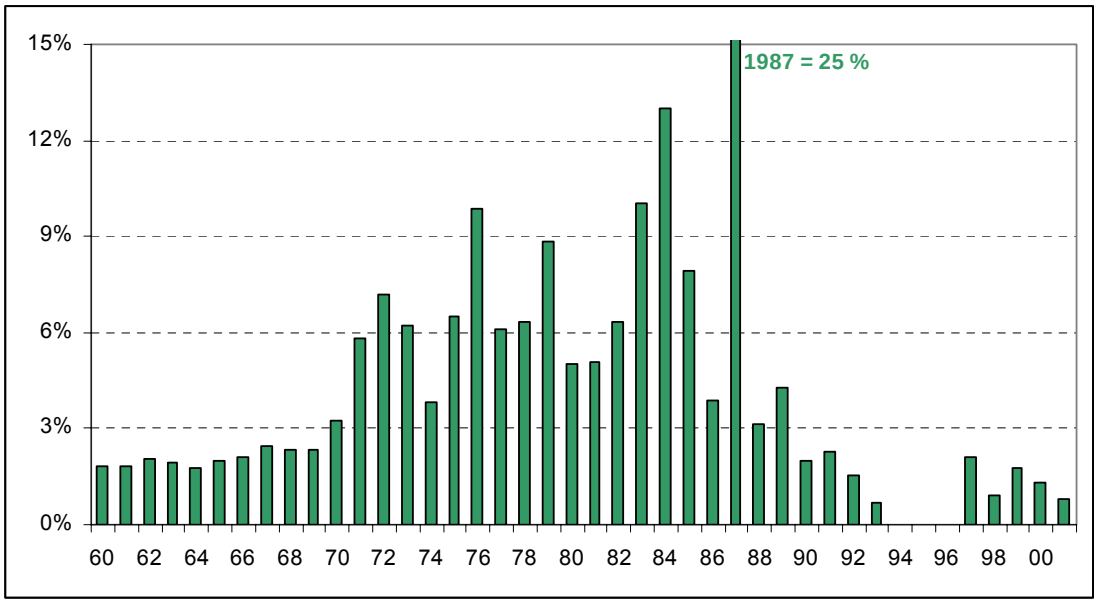
NB: From 1998, MAF contains also the forestry sector; missing data 1994 to 1996.

Source: Appendix to the journals of the House of Representatives, Appendix B.7 Pt. 1, various years; http://www.treasury.govt.nz/notIndexed/expense02.xls and 04

For all of the 1960s, MAF expenditure was less than $20 million. In contrast, from the beginning of the 1970s, total expenditure increased rapidly to culminate in 1984 at close to $800 million and in 1987 at more than $1,700 million. This increase in expenditure was wholly derived from an increase in transfer payments which from 1971 to 1985 oscillated between 50 per cent and 75 per cent of total expenditure. In 1987, the transfer payments reached close to 90 per cent of the total MAF expenditure and the deficits accumulated by the Meat Industry Stabilisation Account and the Dairy Board working capital debt were written off by the government.

However, it is since 1985 that the political reforms of agriculture began to have an effect. MAF expenditure has decreased since that year, with the exception of 1987. Since 1990 total MAF expenditure has been maintained at under $200 million per year, a level around four times less than in 1984, the year preceding the beginning of the reform of agricultural policy.

Figure 3.2 Breakdown of MAF expenditure as percentage of the GDP, New Zealand, 1960-2001



Source: Appendix to the journals of the House of Representatives, Appendix B.7 Pt. 1, various years; http://www.treasury.govt.nz/notIndexed/expense02.xls and 04; missing data from 1994 to 1996.

Another way of understanding the changes in the support to the agricultural sector is to examine measures that relate to the value of production; and these are shown in Figure 3.2. This graph shows the same patterns as the preceding analysis but it accentuates the effects of income support payments for the downturn years, which were 1976, 1979 and 1984. It should be noted that for all of the 1960s, MAF expenditure was maintained at around two per cent of the value of agricultural output. In the 1970s, MAF expenditure as a percentage of agricultural output was variable, at 6.4 per cent on average for the decade. After a relative pause in 1980 and 1981, the increase in MAF expenditure was almost exponential until 1984, when it reached nearly 13 per cent of gross agricultural output. Finally, after a few years of reform, the level of MAF agricultural expenditure in the 1990s returned to that of the beginning of the 1960s, at less than two per cent of value of agricultural output.

This simple observation puts the agricultural policy reform in perspective. In effect, it seems that it was not the drastic decrease in subsidies from 1985 which was exceptional, rather it was the rapid increase in MAF expenditure between 1970 to 1984 that caused the increase in transfer payments[9]. These years corresponded with the period where the New Zealand government was engaged in a phase of public investment in order to improve the balance of payments. In providing programmes of support for the level of agricultural income, the New Zealand government counted on increasing production and export receipts.

3.3 Agricultural policy at the beginning of the reforms

Historically, the research, advisory, and animal health and inspection services have been the base of agricultural policies in the developed countries. New Zealand was no exception and as in other countries these programmes were universally provided by the government at no

[9] An analysis of a longer period, since 1935, confirms that "with the exception of the immediate post World War II period, assistance to farming and export agriculture was negligible from the Depression until 197" (Lattimore 1985).

cost to users. Given the relative stability of these programmes during these times, we have not considered it useful to analyse them in any more detail. Of more interest are the programmes that were put in place to encourage the development of production in the 1970s and which were dismantled after 1985.

These production development programmes involved direct transfer payments to the farm sector. They were of three types: investment development, income support and stabilisation, and input subsidies.

3.3.1 Programmes to develop investment

In order to increase investment in the farm sector, the Livestock Incentive Scheme (LIS) and the Land Development and Encouragement Loans (LDEL) were introduced in 1976 and 1978 respectively. These programmes were mainly concerned with the pastoral sector, the traditional export sector. The LIS scheme which was in force from 1978 to 1982 was a direct intervention programme to increase the number of stock units[10] retained for production. A loan of $12 was given for each supplementary stock unit, or a tax deduction of $24 was available, in order to encourage permanent investment to increase the number of stock units retained for production. If the increase in stock units was above two per cent and maintained for more than two years, the loan was simply written off. Thus the loan was changed to a direct subsidy[11]. In total, around $145 million was given to the pastoral sector by this programme (Griffith and Martin 1988).

The LDEL scheme was in force from 1978 to 1981 and had the objective of encouraging the development of unimproved land into permanent pasture. Preferential loans were available for a term of 15 years for a maximum of $250 per hectare for all development projects of no less than 10 hectares carrying no less than 100 stock units. If the increase was maintained to the satisfaction of the authorities, the interest accumulated was written off periodically and only half of the capital had to be repaid (Griffith and Martin 1988). As a consequence, these concessions were a direct subsidy to the development of pastoral production. In total, nearly $150 million of loans were granted (Johnson 1985).

Other investment incentives were available. For example, a depreciation rate much higher than normal was allowed for the first year for buying new equipment and machinery, and the construction of farm buildings and housing for employees. Also, the possibility existed of deducting all development expenses, with the exception of machinery, from revenue in the year it was realised (Johnson 1986). The calculations of Tyler and Lattimore show the value of all the fiscal measures for the pastoral sector was between $67 and $79 million per year from 1980 to 1983, and was more than $100 million in 1984 (Tyler and Lattimore 1990).

Recall that at the end of 1970s, the policy to encourage investment was not directed only to the farm sector. The industrial sector benefited from large investment programmes, the ‘Think Big’ projects, in a similar way. The main objective of New Zealand economic policy was, as we have already mentioned, to increase exports and to reduce imports in order to improve the balance of payments.

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[10] The stock unit is based on sheep and one beef animal equals six stock units.

[11] The minimum increase in stock units was different from year to year, but the basic principle of the programme stayed the same.

3.3.2 Income support and stabilisation programmes

With a view to support productive investments in the farm sector, these programmes had the aim of providing income security to investors in farming. The Boards had historically administered the income support and stabilisation programmes[12]. The Dairy Board had a long history of experience administering stabilisation funds and worked on a self financing basis, from 1938 (Johnson 1986). The Meat Board received governmental funds when required to support the price of production. Occasionally, the Wool Board intervened directly in the markets and acquired the volumes required to maintain the price, ultimately for reselling, thus playing a role in stabilising the markets. Following the large fluctuations in market prices during the 1970s the principle of funds being theoretically self-financing was extended to the activities of the Meat Board and the Wool Board in 1975.

These programmes financed themselves by deductions imposed on the total market income during years of good prices. The reserves obtained in this way were to be used in years when price conditions deteriorated in order to provide a certain stabilisation of annual income. When the market price decreased under the trigger price, the Boards could either pay price supplements or buy the quantities required for the floor price to be reached. If the stabilisation account was in deficit the Boards could obtain finance from the Reserve Bank at a preferential interest rate of one per cent (Sheppard and Biggs 1982).

The stabilisation funds were not greatly used between 1976 and 1978, except in the dairy sector during only one production year. Despite this, the Government decided to create a new stabilisation fund for pastoral agriculture, the Supplementary Minimum Price (SMP) scheme in 1978 (Sheppard and Biggs 1982). The SMP scheme was a subsidy programme entirely financed by public funds. If the market price was less than the programme target price, a direct income subsidy was paid by the government. The SMPs were an official programme that replaced the ad hoc payments which had been used during the preceding market crises in 1972/73 and 1975/76.

The target price for SMPs was not fixed according to a precise basis and seemed to have varied from one year to another. In 1978, at the time of its implementation, the target price had been established on the basis of an adequate income level for farmers (Sheppard and Biggs 1982). In contrast, the ministerial declaration of 1978 and 1979 announced a more market driven target price level for farmers. Sheppard and Biggs (1982) concluded that "The emphasis had moved from the original idea of providing income adequacy for farmers and been replaced by a slightly more market orientation designed to protect the farmer from short term price recession". However, the target price for 1981/82 and 1982/83 had been fixed at a level above the market price, showing "a government return towards the income adequacy orientation of the SMP scheme"[13] (Sheppard and Biggs 1982).

Until 1981/82, no major government contribution to income support had been necessary (Johnson 1986)[14]. In contrast, from 1981/82, the situation changed drastically for the stabilisation funds as well as for SMPs.

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[12] For a history of the origins and activity of the different boards see Martin 1986.

[13] These authors emphasised that "It may not be inappropriate to suggest that the relatively high price levels announced… in the 1981 budget, may have been related to the political situation at that time in that 1981 was an election year" (Sheppard and Biggs 1982).

[14] Only the beef stabilisation funds had been used to pay stabilisation payments of $33 million in 1980 and 1981. These payments came from deductions levied from a total of nearly $40 million obtained in 1978/79 when the market price was above the predetermined level.

A drop in price on the international markets combined with an increase in the SMP target price led to massive intervention in the sheepmeat market sector in 1981/82. The inability of the market to reach the floor price of the Meat Board stabilisation programme had led the Meat Board to acquire the sheep production. The policy was pursued in two subsequent periods (1982/83 and 1983/84) when the Meat Board acquired the total production, and traditional exporters were then used by the Board as commission agents. The Meat Board intervention was based on the SMP target price, and the difference between the target price and the intervention floor price in the stabilisation funds was covered by a direct government payment[15]. The losses on these operations of selling the products on the markets were covered by the Board's stabilisation funds, which led to a large operational deficit (Griffith and Martin 1988).

SMP income subsidies were also paid in the beef sector in 1981/82 and 1982/83. The market situation was relatively better than that for the sheep sector, and the intervention of the Meat Board and the use of stabilisation funds were only minor (Griffith and Martin 1988).

Wool production had also benefited from SMP income support payments during 1981/82 and 1983/84. Moreover, the Wool Board stabilisation funds had been used to maintain incomes in 1981/82 and 1982/83 (Griffith and Grundy 1988). However, this intervention was financed by the reserves accumulated from 1976/77 to 1980/81.

SMPs had little effect in the dairy sector with price supports only required in the year 1978/79 (Griffith and Grundy 1988). From 1979/80 to 1982/83, the Dairy Board stabilisation funds had accumulated a reserve of more than $150 million and only starting to use them a little in 1983/84 (NZDB 1985). In contrast, the Dairy Board working capital funds were financed by a loan of about $750 million from the Reserve Bank at a preferential interest rate of one per cent (Tyler and Lattimore 1990).

Income support payments were also paid for adverse climatic conditions. Notably, these ad hoc payments were made in 1978/79 following a drought which affected the East coast of the country (Johnson 1986). It was an important period from the government's point of view because the government had "to provide some compensation for the resulting loss of income and also to encourage farmers to continue development programmes" (Budget 1978, cited by Johnson 1986). The logic was that if farm income needed to be stabilised and subsidised because of lowered market prices, it was also necessary to help in the case of climatic hazards.

The production of fluid milk, eggs and wheat was oriented towards providing the internal market, and all these benefited from policies of fixing and supporting prices carried out by the boards. Milk and eggs were under production quotas and fixed prices applied from farm level to consumer. Wheat imports were controlled and the price fixed for both farms and milling. These three commodities evolved in a strongly regulated environment. However, in value, these were relatively minor with respect to the total New Zealand agricultural production.

[15] In this way, the SMP was used more as a way to sustain the market price of sheep production than a programme of income support which was originally the aim.

3.3.3 Programmes for input subsidies

Input subsidy programmes had been used for a long time in the New Zealand farm sector. These programmes can be interpreted as compensation paid to the sector in the face of supplementary costs derived from the control of industrial imports. In particular, transport and application of fertiliser had already been subsidised in the 1930s and this subsidy increased in the 1970s (Lattimore 1985). At the beginning of the 1980s the subsidies on fertilisers totalled more than $50 million annually (Tyler and Lattimore 1990).

Capital inputs were also subsidised by means of a reduced interest rate from the Rural Bank, a government credit organisation. These subsidies on interest can also be interpreted as investment and development support (see above).

3.4 Agricultural policies in revision

At the beginning of the reforms, the New Zealand agricultural policies can be seen as a set of measures, more or less coherent, to achieve the objective of increasing exports. However, the effects of all these programmes on development of agricultural production has been discussed and not always agreed upon. For Johnson, "the national goal of increased livestock exports was achieved". He explained his comment by mentioning that "it does appear that the agricultural investment boom from 1978 to 1982 was sustained by satisfactory incomes in the 1979-80 season and partly by policy measures introduced by Government at the time" (Johnson 1985).

Regarding the specific effect of SMPs, Johnson adds that "the deficiency payments scheme did prevent sheep farmers' incomes from declining over the years 1982-85, with a consequent maintenance of investment levels" (Johnson 1986). In contrast, other authors affirmed that "the use of Supplementary Minimum Prices seems to be an inefficient way of achieving the desired objective of increases in agricultural production" (Sheppard and Biggs 1982). However, these authors note that the investment development programmes had the expected effect: "it is clear that the LIS and LDEL programmes have contributed to the recent upsurge in production by assisting farmers to increase stocking capacity by upgrading low producing unimproved or reverted land" (Sheppard and Biggs 1982).

It is not our purpose here to end with a debate on the respective effects of different programmes aimed at increasing agricultural exports. What is of interest for us now is that the different authors agreed on the fundamental point that these programmes appear to have led to poor resource allocation in the agricultural sector in relation to the market returns. As previously mentioned, a ministerial declaration indicated concerns about the gap between the level of agricultural income maintained by the subsidy programmes and the returns obtained from the export markets. Johnson affirms that "in the period since 1981, New Zealand had probably produced higher levels of sheepmeat and wool output than were justified by world markets prices" (Johnson 1986). Sheppard and Lattimore agree with this statement and mention that of all the agricultural products "sheepmeat was the most significantly assisted… A result of this was excess supply of sheepmeat for export markets and lower market returns" (Sheppard and Lattimore 1993). Tyler and Lattimore confirm this view when presenting the level of support to pastoral agriculture by type of production. They show that sheep production increasingly benefited, reaching a maximum of 77 per cent of the total support in 1984.

The reform of New Zealand agricultural policy, which we have covered in Chapter 2, must be seen more broadly than a distortion in favour of the sheep production sector created by these agricultural programmes. Gibson et al. have noted that the "New Zealand policy reform in the mid-1980s was in part a realisation that the expense of maintaining farm prices for products with declining (or fluctuating) export prospects was becoming too great for macro-economy stability" (Gibson et al. 1992). It was from the end of 1984/85 that New Zealand agricultural policy, as we have described, began to be dismantled, and very quickly.

With the change in course of the overall New Zealand government economic policy, the agricultural sector had to become more responsive to market signals to secure returns to its resources invested. To achieve this, a large and rapid cut in most of the support programmes in place was undertaken as shown in Table 3.1. Johnson described the new agricultural policy:

> In general, the new thrust of agricultural policy in New Zealand since 1984 has been to abolish input subsidies, phase out farm credit concessions, increase charges for government services, reduce distortions in taxation provisions, and to charge more realistic interest rates on marketing board trading and reserve stabilisation accounts. In line with this philosophy, the various marketing Boards have been required to modify their operations where these have been seen to contain high regulatory content (Johnson 1986).

Table 3.1 Change to agricultural programmes since 1984

	When introduced	Year of change	Change made	From
Programmes to develop investment				
Livestock Incentive schemes (LIS)	1976	1985	Target considered met	1985
Land Development Encouragement (LDES)	1978	1985	Target considered met	1985
Fiscal Measures		1986	Mostly abolished	1986
Income Support and Stabilisation Programmes				
Stabilisation by the Wool Board	1976	1985	Increased interest on deficits	1985
Stabilisation by the Meat Board	1976	1985		1985
Stabilisation by the Dairy Board	1938	1985		1985
Supplementary Minimum Prices (SMP)	1978	1984	Abolished	1984
Wheat Board	1965	1983	Deregulation	1983
Milk Board	1967	1986	Deregulation	1986
Egg Board	1980	1986	Deregulation	1986
Programmes for Input subsidies				
Fertiliser		1986	Abolished	1980
Interest on Loans		1984	Market rate	1984
Rural Bank		1987	Privatised	1987
Services				
Research		1982	Policy of recovering costs	1982
Advisory Services		1985		1985
Inspection		1984		1984

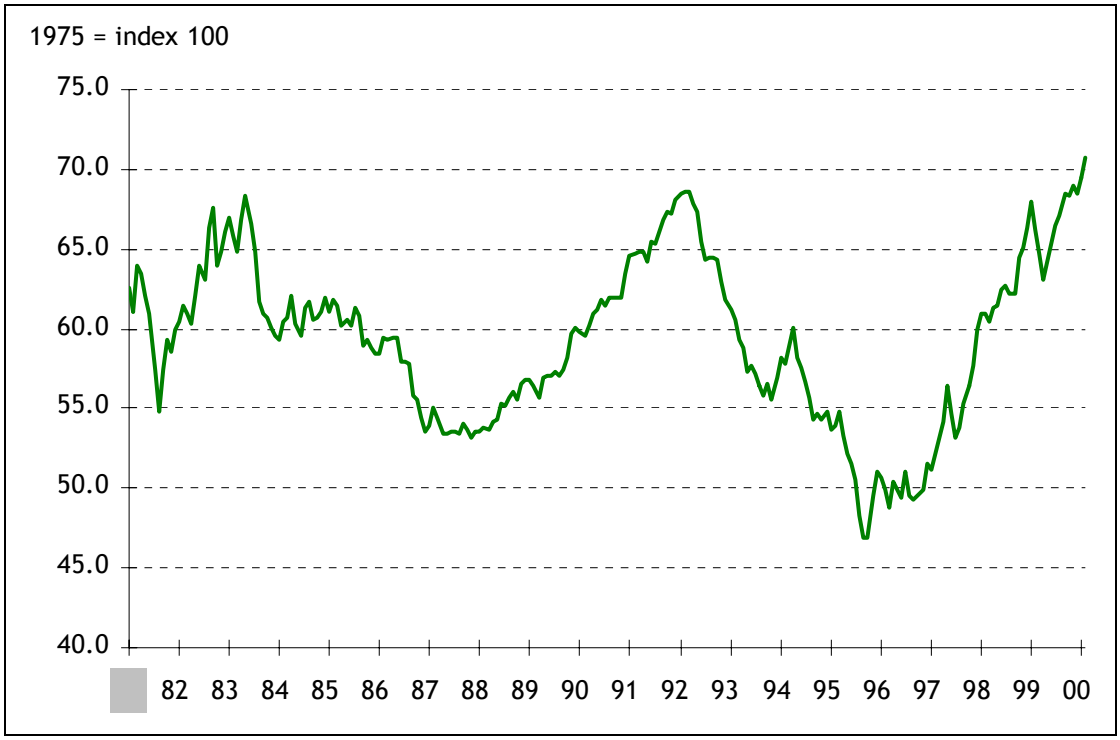
Source: Adapted from Johnson 1986.

3.4.1 The new macro-economic context

The reform of public intervention in the New Zealand economy gave priority to the agricultural sector but not uniquely so. A number of macro-economic measures were also rapidly put in place by the new government after its accession to power in 1984.

In July 1984, the New Zealand dollar was devalued 20 per cent, which favoured exporters and farmers in particular. Then by March 1985, the exchange control was abolished and the dollar was floated. Contrary to predictions, the dollar then increased in value (Sheppard and Lattimore 1993). This was so significant that by October 1985 the dollar had regained two thirds of the value lost during the devaluation in 1984 (see Figure 3.3). The revaluation severely affected farmer incomes, already decreased by the removal of many programmes and the fall of agricultural product prices on international markets.

Figure 3.3 Trade weighted exchange rate index, New Zealand, January 1982 – December 2000



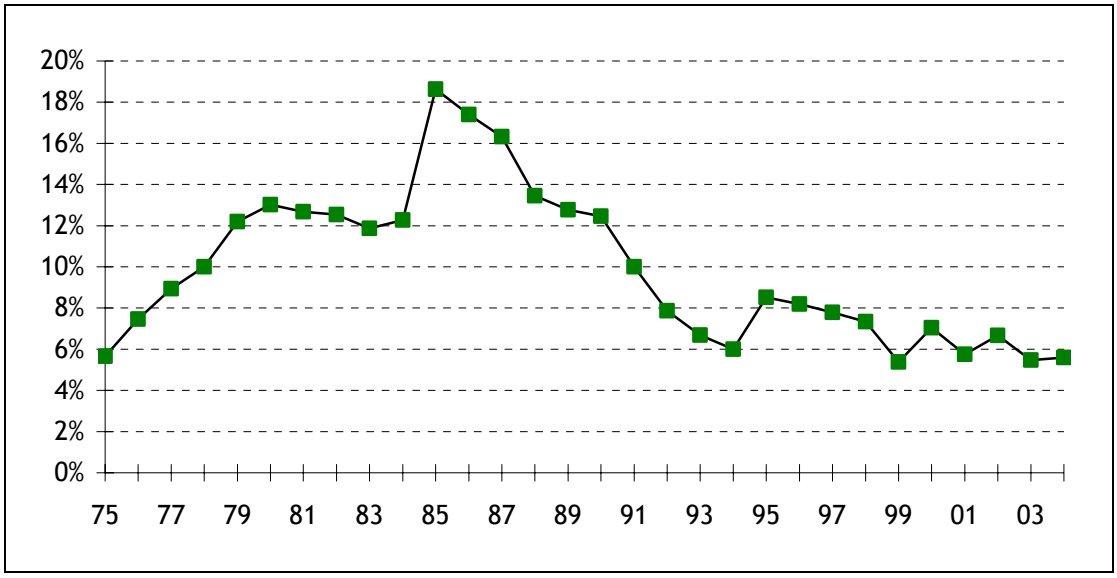
Source: Reserve Bank of New Zealand, Trade weighted exchange rate index, March 2005.

This appreciation of the New Zealand dollar is explained in part by the liberalisation of financial markets and notably by the deregulation of interest rates in July 1984. This liberalisation, combined with the government decision to borrow only from the New Zealand finance market, caused a net increase in interest rates (see Figure 3.4) which were previously kept at a low level (Sheppard and Lattimore 1993).

The increase in interest rates, and the obligation given to the boards to finance their deficit at market rates, put an end to their stabilisation programmes. Thus, with the simultaneous abolition of SMPs, the farmers found themselves with no income stabilisation programmes. They were also hit by progressive increases in Rural Bank loan rates to the current market level.

During the same period, abolition of price and salary controls resulted in inflationary pressures. The annual rate of increase of CPI reached nearly 16 per cent in 1985 (see Figure 2.7 above), a level higher than New Zealand's trading partners. This inflation rate added to the problems encountered by farmers. The value of agricultural products sold decreased because of the appreciation of the dollar, the decrease of prices on international markets and the end of subsidies. At the same time, a high level of inflation in the rest of the economy contributed to a further increase in the cost of inputs and in the cost of living.

Figure 3.4 Interest rates on medium term government bonds, New Zealand, 1975-2004



NB: * Government Securities Yields. From 1975 to 1977, 3 to 10 years; from 1978 to 1985, 2 to 5 years; since 1986, 5 years.

Source: Reserve Bank New Zealand Bulletin, various years; PCInfos: 6.05, FINA.SKF - Key Market rates, Government Stock Yields, 5 years (from 1986); and our calculations.

In total, the whole macro-economic situation which prevailed in 1985/86 can be summarised as follows:

> The high value of the dollar reduced farm product prices and their effect was compounded by weak international markets. Taking these factors together farmers were hit by lower prices for their products, together with high costs of servicing debt, over a period in which the Government's measures to reduce inflation were seen to have been taking a long time to act. The net result is that farm incomes were reduced to their lowest level in real terms for many years (Sheppard and Lattimore 1993).

Johnson (1986), who noted a similar effect on farm income from the macro-economic policies and from the significant impact of dismantling the agricultural policies, mentioned that:

> There is clearly a need to focus on the changed income position of export producers in general and that of sheep-farmers in particular. Adjustments will be needed in the land market, the agricultural finance market and in farm ownership. Transition arrangements are needed to change to the total market environment that has been introduced by the government (Johnson 1986).

We believe that the government authorities had arrived at the same conclusion because the transition programmes became effective at the end of 1986/87.

3.4.2 The transition programmes

The New Zealand government put in place a number of transition programmes in order to facilitate the agricultural sector to move to a new economic environment orientated to the market. Essentially, these transition programmes had the objective of lightening the burden of farmer's debt, at the level of their collective organisation as well as at the individual level.

At the collective level, the Dairy Board had purchased for $150 million nearly $750 million of the debt it had with the Reserve Bank. Similarly, the debt of the Meat Board stabilisation funds had also in large part been written off by government contributions of $930 million (Tyler and Lattimore 1990). With financial viability re-established, the boards could continue to play a role in organising the markets, especially the Dairy Board, which had become the export firm for New Zealand dairy products.

At the individual level, the Minister of Finance and Agriculture announced the establishment of special programmes relating to farmers' debt in 1986. The "Rural Bank Discount Scheme" had a double objective: "It will encourage farmers to get on with debt restructuring and, at the same time, help place the Rural Bank portfolio on a more commercial basis" (Moyle and Douglas 1986). This policy made the Rural Bank financially more attractive for eventual investors and prepared it for subsequent privatisation. This programme was available to producers who were not in a position to meet their financial obligations. A part of their debt was written off by the Rural Bank but in response the interest rate on the loan was immediately raised to current market rates. A deal also had to be made with other creditors which involved restructuring the farmer's debt. Finally, budgets had to be produced[16] which demonstrated that, following the restructuring of debt, the farm returned to viability (Moyle and Douglas 1986).

This programme was complemented by the "Conditional Seasonal Finance Guarantee Scheme" for farmers for whom the Rural Bank was not the principal creditor. In this case, the Rural Bank agreed to finance up to 50 per cent of the amount required to assure the operating expenses of the farm. The same conditions as above applied, as well as the assurance that other creditors accepted the debt arrangements of the farmer.

There were 8,100 farms involved in the Rural Bank Discount Scheme, around 10 per cent of the total of New Zealand farms (Johnson 1989). The requests from 4,700 farmers had been accepted by the Rural Bank while 700 other farmers restructured their debt by other means. Among the 2,700 farmers who were declined, some were judged to be in a "too good" financial situation to be eligible for the programme and others could not demonstrate their future viability (Johnson and Sandrey 1990). In total, $228 million of debt was written off, with an average of $50,000 per farmer representing 33 per cent of the initial level of indebtedness of these farmers (Johnson 1989a).

The ministerial declaration in 1986 also provided better access for social payments to farm families. Notably, there was financial assistance to look for work provided by the Social Welfare Department which was also authorised to pay special payments covering the minimum cost of living of families (Moyle and Douglas 1986).

[16] It was explicitly mentioned in the Ministerial Directive that these budgets could not anticipate an increase in farm prices and had to be based on the performance of the existing management.

Another transition programme, the "New Start Grant", had been put in place in 1988 to encourage those whose farm was no longer viable to leave agriculture. In fact, this programme had been created following a severe drought which had affected mainly the East Coast of both the South and the North Islands. It is not necessary to discuss here whether this was more of an insurance programme or a transition programme. Whatever the case, drought added to the financial problems already experienced by many farmers as a result of the process of change in agricultural policies (Sheppard and Lattimore 1993). In the context of this programme, the farmers were offered a free evaluation of their financial situation. Those who had irremediably jeopardised finances could receive a subsidy of $45,000 to leave their farm with all their personal possessions and a car. In the region most affected by the drought, seven per cent of farmers took advantage of the programme (Taylor 1990). It must be noted, however, that 20 per cent of these farmers stayed on their farm but in a new form of ownership (Fairweather 1992). In total for all of New Zealand, around 350 families left farming (Morris 1991).

These transition programmes put in place by the government led to a smaller decrease[17] in the number of farmers than first expected. Referring to the total economic situation, the change in agricultural policies and the base price of agricultural products, Gibson et al. confirm that:

> In such a situation it might be expected that there would be a massive exit from farming. Even official thinking seemed to accept this view, with Prime Minister Lange suggesting that 5,000 farmers (approximately seven per cent of the total) would have to leave the land… The fragments of evidence suggest a much less costly adjustment… Adjustment costs were lower ex post than expected ex ante. This was partly due to debt restructuring initiated by the government-owned Rural Bank (Gibson et al. 1992).

3.5 Agricultural policies in the 1990s

The revision of the agricultural policies in 1984 led to a real dismantling of the majority of programmes (see Table 3.1). The investment development programmes, income stabilisation and support measures, and input subsidies had initially been abolished. As for research, advisory, and animal health and inspection, these were relatively little affected by the reform of agricultural policies. However, they were subject to a policy of recovering costs at the end of 1990 because of the reform of national accounting. In particular, advisory and inspection have been financially supported in part by the users of these services. In fact, up to 1992 only the research sector could count on relatively constant level of subsidies.

In relation to income support, there remained only occasional programmes for natural catastrophes. The New Zealand government had sought to better define the limits of this intervention since 1986 in order to determine the precise scale of compensation in this domain, rather than using ad hoc interventions as in the past. Morris mentioned that:

> During the early 1980s adverse events continued to be considered on an ad hoc basis. Successive events received greater and greater levels of assistance. In addition, inadequate specification of criteria which defined whether an adverse event should or should not be declared resulted in a situation where large parts of New Zealand were continually under adverse event declaration for drought (Morris 1991).

[17] The structural issue is discussed in the next chapter.

However, the exercise did not seem to have been very conclusive. In effect, the criteria of a natural catastrophe in the case of drought, excessive rain and flooding had been elaborated. In these cases, the official means of intervention was a refund of interest for the two first years of the duration of the loans considered necessary to face the damage caused by the climatic event.

Having said this, it is not correct to conclude that the natural catastrophes were an occasion for the government to reinstate a high level of support to the farm sector. The total level of support to the sector had been drastically cut and the compensation given in the case of natural catastrophe was for significant damages truly suffered by farmers. Current policy emphasises that farmers are responsible for the costs of natural disasters and recent experience indicates that the government will provide co-ordination and some minor assistance to farmers, but not direct payments.

3.6 Conclusion

Examination of current agricultural policies should not lead us to conclude that the New Zealand farm sector has been entirely deregulated. It is more correct to note that the subsidies to the sector have been drastically reduced. As to the deregulation, it was mainly applied to the marketing boards which were oriented towards supplying the internal market, namely the New Zealand Poultry Board in the egg sector, the New Zealand Milk Board in the fluid milk sector and the New Zealand Wheat Board in the milling industry.

In contrast, the marketing Boards concerned with exports have been maintained. In fact, the Kiwifruit Board was created in 1988, in the thick of the deregulation of the whole economy. This Board had the control of all exports and it was the major exporter of New Zealand kiwifruit on the international markets. The Board was privatised in 2000 and is now called Zespri Group International. The kiwi farmers are the shareholders[18]. Zespri International remains the single New Zealand kiwifruit exporter on the world market, except for exports to the Australian market.

In regard to the milk industry, the New Zealand Dairy Board had the main role as single exporter of dairy products on the international market. It had managed to survive the deregulation wave of the New Zealand economy. New Zealand farmers had kept the power to organize themselves collectively to maximize the exports incomes, but this power had always been discussed. (Zwart and Moore 1990).

But with the beginning of a new cycle of WTO negotiation, the structure of the dairy industry did not seem matched with New Zealand's long view interests. Indeed, the Dairy Board was considered to be a state business company because it was based on a restrictive legislative frame that ensured a daily export monopoly on dairy products. This weakened the New Zealand position in the trade negotiations because New Zealand advocates total openness on the agricultural markets without governmental support. After several years of discussion, the New Zealand dairy industry chose a new strategy in 2000: the creation of a single big company controlling the collection, transformation and exportation of milk in order to furnish a strong financial base allowing it to keep investments abroad (MAF, 2001). A proposal was put forward for a fusion between the two bigger companies of dairy transformation: the New Zealand Dairy Group of Companies (NZDG) and the Kiwi Co-operative Dairies Ltd (Kiwi). However, the idea was not shared by everybody and they did not succeed in establishing a

[18] See http://www.fruitgrowers.org.nz/industry/

merger agreement. The consequence was several small unions and acquisitions in the industry. Kiwi bought Tasman Milk Products Ltd and Kaikoura Co-op Dairy Co Ltd in September 2000 and merged with the Marlborough Cheese Co-op Dairy Co Ltd in November of the same year. About the end of 2000, four independent companies of dairy product transformation remained in New Zealand.

Finally, on 21 December 2000, Kiwi and NZDG announced they had merged their production in a new company which would also integrate the businesses of the Dairy Board. The new entity became Fonterra Co-operative Group Ltd. The official merger happened in September 2001 in the Dairy Industry Restructuring Act frame. After the merger, Fonterra was obliged to buy the shares of the two other transformation companies, which belonged to the Dairy Board. The Dairy Industry Act decided that these two companies, Tatua and Westland, could remain independent cooperatives. But the Fonterra shareholders represent 95 per cent of the New Zealand dairy farmers (Fonterra, 2004), which leaves little room for the other companies.

In order to control Fonterra's significant market power during the first years of activities, the government introduced a set of measures favouring the competition in the industry sector. Thus Fonterra must observe some rules such as the free entry. The farmers who are Fonterra members can also sell up to 20 per cent of their milk to other factories. Moreover, the New Zealand government obliges Fonterra to provide raw milk to independent factories at competitive prices (MAF).

In order to keep a level of competition on the national market, the government decided the merger was contingent on the disinvestment of 50 per cent of the Fonterra shares in New Zealand Dairy Foods, owned by NZDG before the merger. The activities of this company are focused on the local New Zealand fresh and transformed dairy product market.

It must be noted that the New Zealand government worked efficiently with the industry to facilitate this merger and to regulate it. Actually, the objective is reached because even if Fonterra has no more legislative power than the Dairy Board, it keeps the trade power de facto and remains the single, almost exclusive exporter of New Zealand dairy products on the international market. The situation would have been different if the Dairy Board had been abolished from 1984 when the dairy transformation industry in New Zealand still constituted of more than 30 companies (Cocombe et al., 1991). The New Zealand government waited until the reorganisation of the dairy transformation industry was such that the abolition of the Dairy Board had a neutral effect on the exporting organisations. In this sense, the market power of Fonterra is not less than that of the Dairy Board, but it is no longer a state company. For this reason, New Zealand has a stronger position in WTO negotiations. Today, Fonterra is the biggest dairy product exporter in the world and has a membership of 13,000 New Zealand dairy farmers. Fonterra counts for 20 percent of the total export values of New Zealand and produces 7 percent of its GDP (Fonterra 2004).

Having said this, there is no doubt that farm incomes are now dependent on the remuneration obtained from the market and, for a large part, on the international market. Direct transfers to the farm sector from public funds are almost non-existent, and saved only for the case of natural catastrophes. However, this occasional aid is much lower than the record levels attained in the 1980s.

It is necessary to note from the above analysis of the change in state intervention in the farm sector in New Zealand, that the massive aid, in particular the transfer payments, only represented a relatively short period in the history of agricultural development of the country.

Income support had been increasing from the end of the 1970s and raised to exceptional levels for four years (1983 to 1985 and 1987) when the expenditure of the Ministry of Agriculture and Fisheries (MAF) surpassed $400 million (see Figure 3.1). Thus, it was not so much the abolition of subsidies to the farm sector from 1985 that was exceptional but the relatively short period of high levels of support. From this point of view, the specificity of the farm sector justifying particular intervention from the state seems questioned by the experience of New Zealand, not only by the revision of agricultural policies since 1985, but by the longer history of relatively low levels of government support.

Chapter 4
Structural Changes

4.1 Introduction

If any sector was subjected to rapid policy reforms at the same time as a market crisis for its products, we would expect it to experience rapid structural changes. The specificity of the farm sector, however, would be expected to lead to a certain delay in structural adjustment. Many authors have already emphasised the ability of family farmers to stay in business with weak price levels and lowered profitability of production. Thus, in the developed countries, the maintenance of the number of farm families in conditions of low remuneration from their own resources is already proven. This situation is explained by the status of family organisation in agriculture, as emphasised by Morisset and Réveret:

> In almost all farming, … the predominant form of production consist of farms of a pre-capitalist type, that are not completely integrated into the market. There does not exist a separation between capital and labour. And these two "factors of production" do not always require the market level of remuneration (Morisset and Réveret 1985).

Servolin argues in the same way when he talks of small-scale production in French agriculture: "The goal of production is not to put a value on capital and obtaining a profit, but the subsistence of the farmer and his family, and the reproduction of the means of production necessary to assure this" (Servolin 1972).

Thus, in terms of the process of structural adjustment in this context, the decrease in the profitability of agricultural production can have only small structural effects in the short term. Family farm organisation, largely dominant in New Zealand (Fairweather 1992), has been able to resist the effects of lowered incomes in the short term by reducing its standard of living[19]. The family assets (labour and capital) do not necessarily need to be remunerated at the market rate. Moreover, in the short term, farmers could respond to decreasing income by increasing their labour effort and increasing production. But in the case of a severe decrease in profitability for a long period, the capacity to keep in business can rapidly reach its limits. This is more true for heavily indebted farmers who are obliged to find a return at market rates for a large part of the capital engaged in production. And even for the others, the pressure for returns from their own resources, and the limit to the decline in their standard of living, can show up as structural change in the medium term as our analysis can show.

The remainder of this chapter will describe each of the elements in the structural change of agricultural policies in New Zealand.

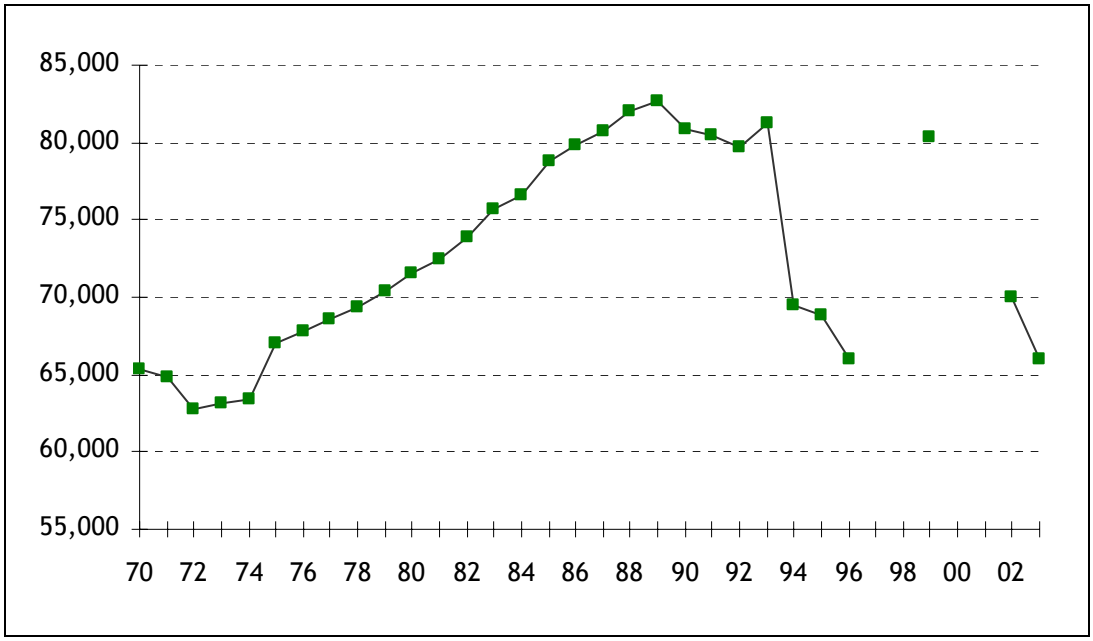
[19] The issue of the change in the level of farm and family income is analysed in the next chapter.

4.2 Concentration in the production sector

4.2.1 The number of farms

Following the revision of New Zealand agricultural policy and the abolition of transfer payments to the farm sector, which we have outlined in the preceding chapter, the drop in the number of farms was less than previously expected by the government. On the contrary, the number of farms rose until 1989 (see Figure 4.1), which is quite exceptional for a developed country. However, this increase in farms had already begun before the revision of agricultural policy in 1985. In 1989, a delay of four years, there was a reversal of the trend and the number of farms began to fall.

Figure 4.1 Number of farms, New Zealand, 1970-2003



NB: from 1994, pieces of data can not be compared with the previous years and between them because of methodological changes

Source : MAF (2004).

This delay could be considered normal, especially since we have already mentioned the resistance capacity of farm families in conditions of economic difficulty.

However, the major increase in the total number of farms between 1986 and 1988 was the result of the increase in the number of small farms (Fairweather, 1992). Thereafter, the decrease in the total number of farms seems radical. However, successive changes in data gathering from 1994 make comparison of the data of the change in the farm number impossible between the different years. Moreover, the survey that identified the number of farms in New Zealand was not completed in 1997, 1998, 2000 and 2001.

The delay in family farm adjustment to changes in economic conditions is reflected in changes of type of production (see Figure 4.2). The case of sheep production is particularly interesting since, as the preceding chapter shows, this sector was most supported and therefore the most affected by the removal of agricultural subsidies. Thus, the number of sheep farms had been increasing in the 1970s reaching its peak in 1982. Following this, the decline which began before 1985 continued until 1989 at an annual rate of 1.1 per cent to 3.5

per cent. It then accelerated to 10.7 per cent, 6.6 per cent and 8.4 per cent respectively in 1990, 1991 and 1992. This sector was already in decline before the revision of agricultural policy, but the decline increased considerably five years after the reforms.

Given the increase in the total number of farms, at least to 1989, the decrease in the number of sheep farms was compensated for by an increase in other types, especially beef. The combination of resources required for sheep and beef production is similar and these two types of production are easily interchanged. The number of beef farms, which were relatively stable since 1978, followed a reverse pattern compared to the number of sheep farms since 1982. The number of beef farms therefore increased considerably by 76 per cent between 1982 and 1992.

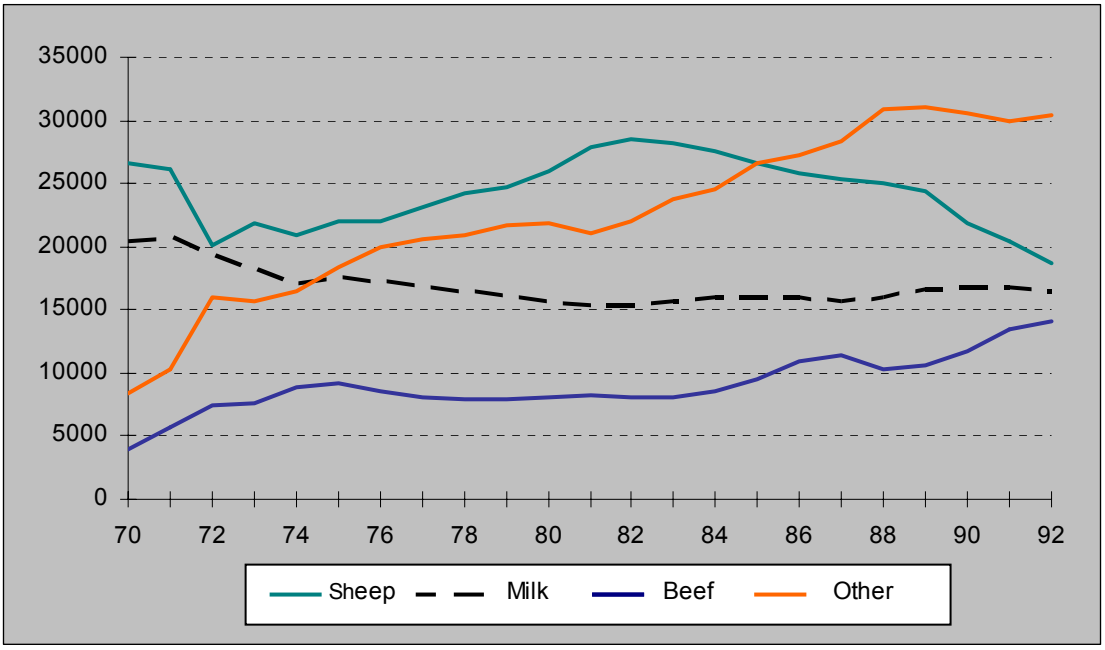
The number of dairy farms, which declined throughout the 1970s, also began to increase in 1982. However, the total increase from 1982 to 1992 was only seven per cent and varied from one year to another. As for sheep and beef production, dairy production is based on the use of pasture and competes with these other sectors for the use of land. Nevertheless, some more important investments are necessary for dairy production, notably the cost of milking equipment. Thus the increase in the number of beef farms and dairy farms confirms that the high levels of subsidies benefited the sheep sector relatively more. The number of sheep farms is now decreasing and part of the resources engaged in sheep production seem to have been moved towards the other sectors of pastoral agriculture.

The category of other types of farms is a quite disparate group including horticulture and "other" animals such as deer, goats, horses and pigs. The number of farms in this category has been increasing dramatically since the beginning of the 1970s until 1979 when there only was a modest increase until 1982. Subsequently, the increase persisted with some acceleration until 1988 and then levelled off. However, as for the total number of farms, their number began to decline in 1990.

For these other farms many phenomena seem relevant in explaining their increase until 1989. First, there has been subdivision of larger farms and new land has primarily been used for horticulture. One of the major horticultural activities was the production of kiwifruit[20] on small units of intensive land use. Second, the important increase in new animal production, in particular deer and goats (see below), has contributed to an increase in the number of farms in this category. Finally, the increase of the number of lifestyle blocks is notable in this category of farms. The number of small farms increased from 8,074 to 11,168, or from 29.7 per cent to 36.5 per cent of the total in this category, between 1986 and 1990 (Fairweather, 1992).

[20] It is necessary to note however that the total area in kiwifruit production levelled at around 18,000 hectares in 1985, but that there were only 720 hectares in 1972.

Figure 4.2 Number of farms by type of production, New Zealand, 1970-1992



Source: Department of Statistics, Agricultural Statistics; and our calculations.

The recent decrease in the number of "other" farms appears to have resulted more from the conditions of the market than from the process of revision of agricultural policy. For example, kiwifruit production was going through an important market crisis because the arrival of new producing countries had created instability in the export markets. Similarly, Angora goats were rapidly decreasing in numbers as we will see later, because the expected market opportunities were not realised. Finally, the stock market "crash" of 1987 reduced the demand for lifestyle blocks (Fairweather 1992).

In total, it seems that the decrease in the number of sheep farms since 1982 has been associated with an increase in the number of farms in other traditional pastoral sectors. Equally, there has been some diversification towards non-traditional sectors (goats, deer and horticulture), which began in the 1970s and has continued. Following the revision of agricultural policies, there do not seem to have been marked changes from the tendencies already occurring. Only the decrease in the number of sheep farms has accelerated, after a lag of four years.

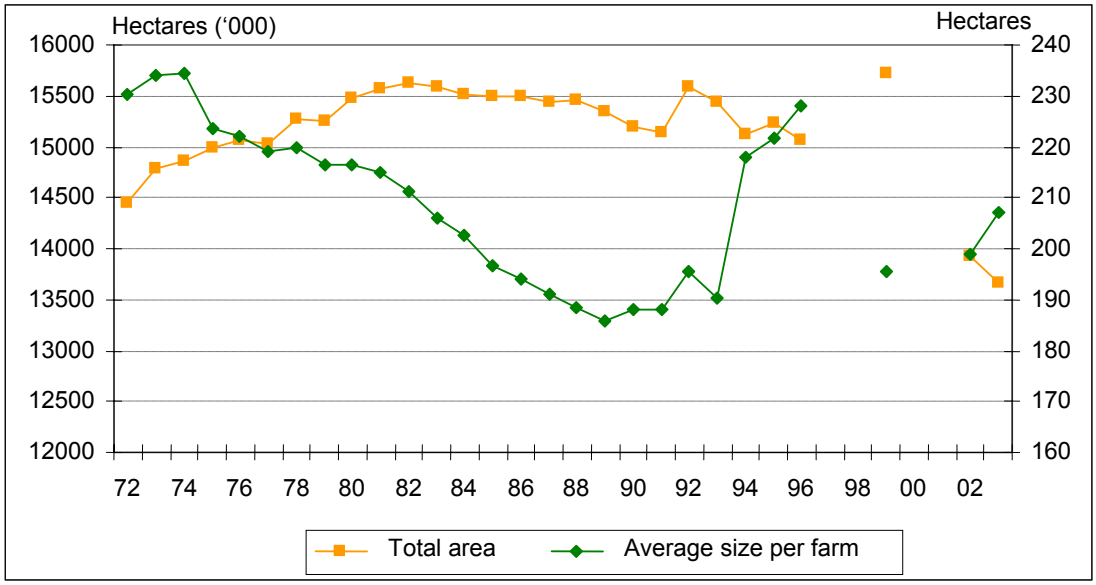
The overall change in the number of farms is, however, only one facet of the process of structural change. The utilisation of agricultural land is another which we will consider now.

4.2.2 The utilisation of agricultural land

In general in developed countries, the process of concentration of production operates by decreasing the number of farms on a relatively fixed area of land. This occurs as population increases and other pressures like urbanisation, industrial and recreation uses take land out of production. New Zealand has been in a peculiar position of agricultural land usage. In regards to the total agricultural land area, there was an increase of eight per cent between 1972 to 1983 followed by a slight decrease of three per cent between 1983 and 1991. During this time, the number of farms had been increasing quite rapidly as we have seen previously, and consequently the average area of farms declined (see Figure 4.3). From this perspective, there has therefore not been a concentration of the land resource. The methodological

changes in the data gathering limit the possibility of analysis of changes in the agricultural area after 1991.

Figure 4.3 Total agricultural area* and average size of farm, New Zealand, 1972-2003**



Notes: * It deals with the sum of the areas in pasture, cereal, horticulture and tree planting.
** From 1994, pieces of data cannot be compared with the previous years and between them because of methodological changes

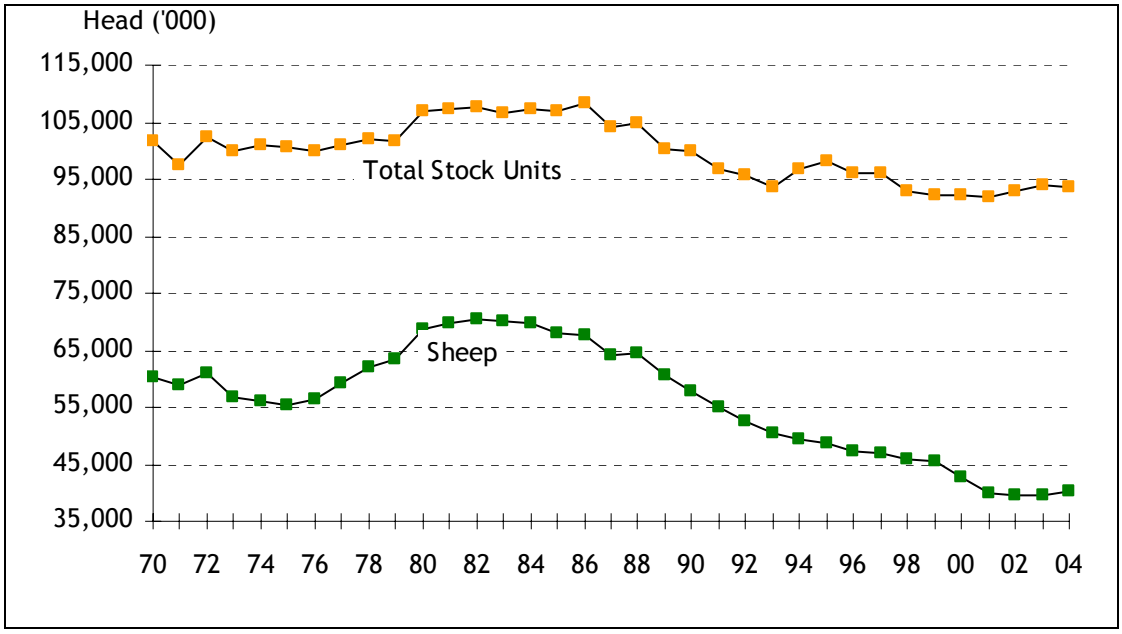
Source: MAF 1993, p. 110; MAF 2004 and our calculations.

In total, despite the decline in the area of pasture since 1982, pastoral production remains by far the main user of the land resource in New Zealand, with more than 85 per cent of the total agricultural area. But during the period between 1972 and 2003, tree plantations increased the most by more than three times[21]. Having said this, pastoral production remains the main user of the land resource in New Zealand. Therefore, the change in the different livestock "carried" by this land resource should be also analysed.

Figure 4.4 shows that the total number of stock units had increased until 1980, but it was stable from 1980 to 1986 and then began to decrease. This decline occurred because the decrease in the number of sheep was not compensated for by the increase in other pastoral activities. This decrease plateaued in 1993 and the total number of stock units has remained more or less stable from this period. As for the number of sheep, they increased from 1975 to 1982, probably supported by, among others things, the development programmes for agriculture then in force. They began to decrease rapidly in 1986, and continued falling until 2001.

[21] The tree plantations passed from an area of 519,000 ha in 1972 to 1,840,000 ha in 2003 (MAF, 2004, p.120)

Figure 4.4 Number of stock units and number of sheep, New Zealand, 1970-2004

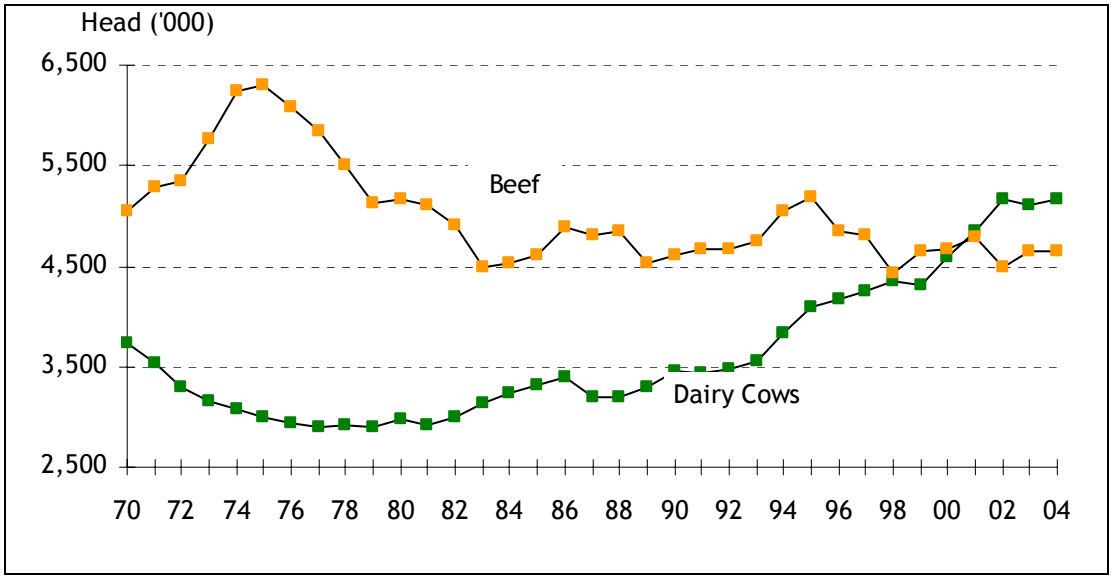


Source: Department of Statistics, Agricultural Statistics, cat. 14.101 and 01.018.0091 Annual Review of the New Zealand Sheep and Beef Industry.

The change in beef cattle numbers (see Figure 4.5) is the reverse of the changes in number of sheep. They steadily decreased from 1975 to 1983 and then increased until 1995. After a fall until 1998, beef livestock numbers then stabilised. This confirms that these two types of production are substitutable in the short-term. However, in the medium and long-term it was dairy production which was the main pastoral production. Dairy had been decreasing for all of the 1970s, and have increased regularly since then. Only a brief pause in 1986 and 1987 broke this increase, these two years being characterised by low dairy product prices on international markets. By contrast, between 1999 and 2002, the dairy cattle increase was particularly rapid.

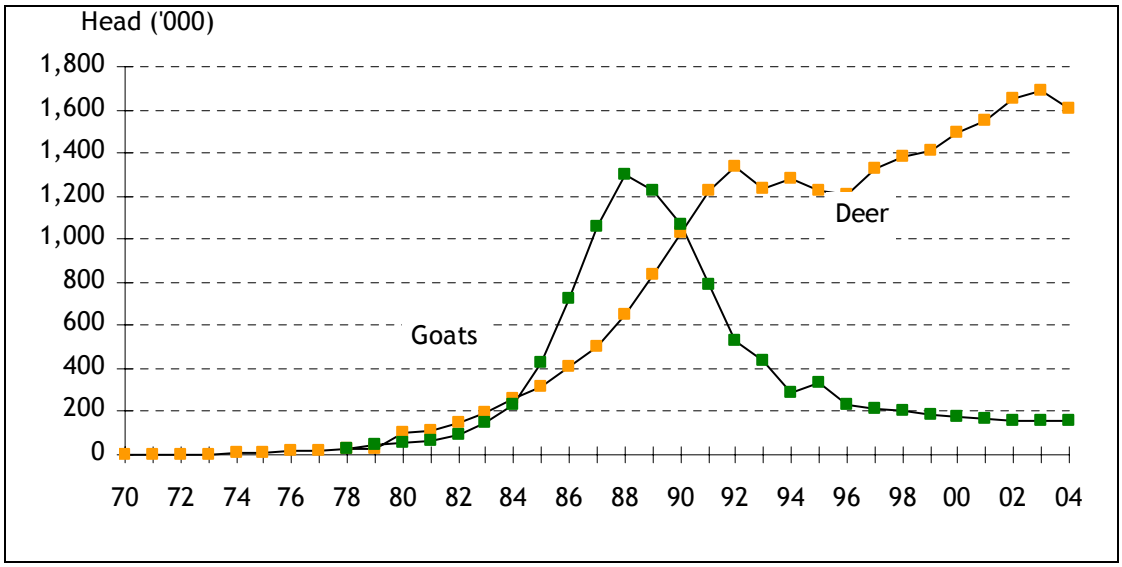
Finally, deer and goat numbers increased significantly from the beginning of the 1980s (see Figure 4.6). The increase in deer has been maintained for all of the period of observation, only slowing down between 1992 and 1996. In contrast, the number of goats after having shown one of the most rapid increases, decreased just as rapidly to finally plateau in 1996. The profitability of this production did not meet initial expectations and this could explain the decrease in numbers.

Figure 4.5 Number of beef cattle and dairy cattle, New Zealand, 1970-2004



Source: Department of Statistics, Agricultural Statistics, cat. 14.101 and 01.018.0091 and Annual Review of the New Zealand Sheep and Beef Industry.

Figure 4.6 Number of deer and goats, New Zealand, 1979-2004



Source: Department of Statistics, Agricultural Statistics, cat. 14.101 and 01.018.0091 and Annual Review of the New Zealand Sheep and Beef Industry.

The essential element which derives from this analysis is that overall the number of stock units carried on the agricultural area began to decrease in a significant way in 1987. It is likely that this results from the abolition of subsidies to the pastoral sector and, in particular, the sheep sector. But once again, the effects of the revision to agricultural policy do not seem to have led to major changes in the tendencies already at work: trends in beef and dairy cow numbers were relatively unaffected by the policy changes and trends in sheep number were accelerated.

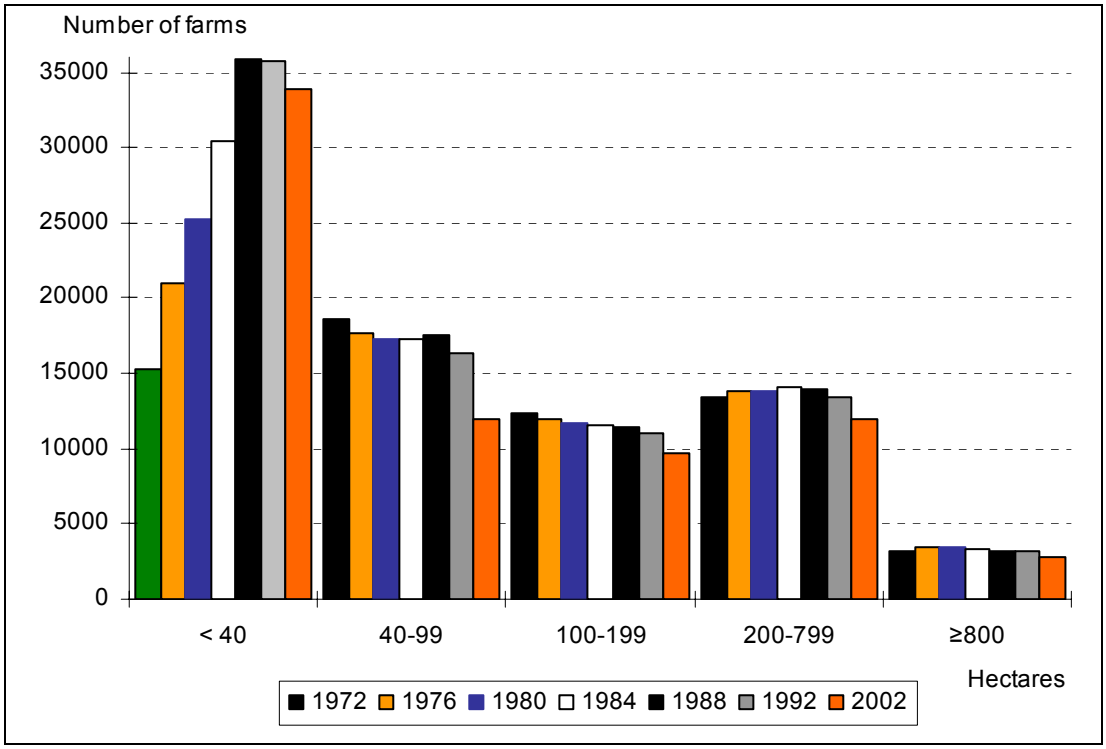
In total, the overall data do not seem to show that political and economic decisions affected the level of concentration in the farm sector. In fact, structural changes are the result of many factors. Of course, the abolition of subsidies can have an effect but one which is only a part

of the more global question of the relative returns to different types of production. Another factor is the increase in lifestyle blocks, allowing initially non-farming people to experience rural living, and this is not directly related to the intrinsic profitability of the farm sector. Based on the analysis of the aggregated data for New Zealand, there has not been a concentration of land in farming, but there may have been concentration of production in some sub-sectors of production. An analysis of land areas and of the number of farms by size is necessary to address the complexity of all the factors at work.

4.2.3 An analysis of the farming area and of livestock by size of farm

Figure 4.7 shows that the increase in the total number of farms for most of the period of observation mainly came from the increase in small farms, those with less than 40 hectares. Once again, the double phenomenon of increasing numbers of horticultural farms and lifestyle blocks seem to be significant causes. In contrast, for the other size farm groups, the changes are minimal and the variations from one year to another are only marginal.

Figure 4.7 Number of farms by size of farm, New Zealand, 1972-1992



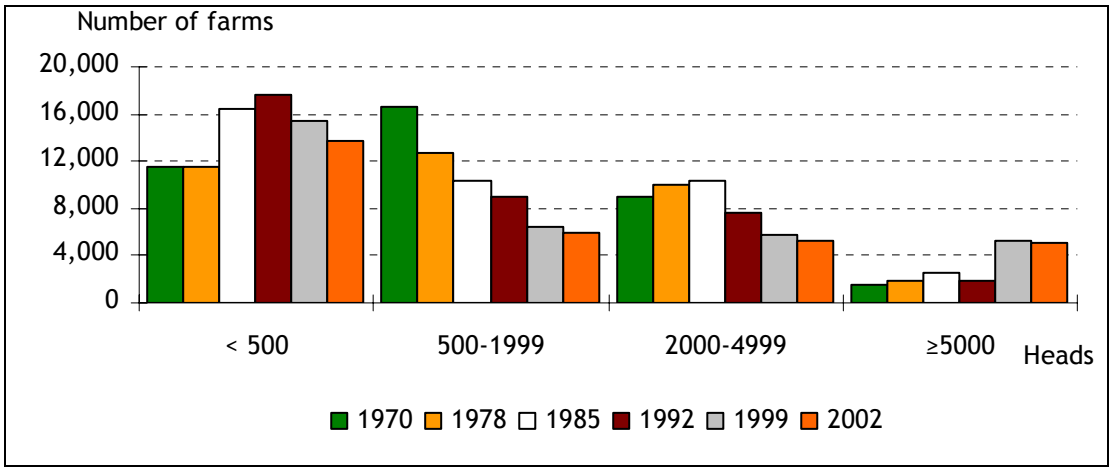
Source: Department of Statistics, Agricultural Statistics and Agricultural Production Survey for the year ended 30 June 2002; Fairweather 1992; MAF, special results; and our calculations.

Finally, we can conclude that the drop in the total number of farms since 1990 does not seem to be linked to size because all of the farm size groups have decreased in number of farms. Thus, any concentration that is occurring is slight and is not a characteristic of any particular farm size. It is more a feature of the general process of adjustment to all categories of size.

In order to observe contradictory concentration phenomena (increase then decrease of the number of large farms) which happened both before and after 1988, it is useful to look in detail at structural changes in the sheep and dairy sectors, these being the two most important pastoral land uses. In the sheep sector, we note an increase in the small farms (less than 500 sheep) until 1990 (see Figure 4.8). The small farms accounted in 1992 for nearly 50 per cent

of all sheep farms, compared to only 30 per cent in 1970. Some authors argue that the lifestyle blocks are one of the causes: "Also of significance was a growth in small sheep and beef farms (especially during the late 1970s) as lifestyle blocks" (Sheppard and Lattimore 1993). In contrast, from 1992 the number of small sheep farms began decreasing, but their proportion in the total of farms remained fairly constant, changing from 49 per cent to 46 per cent of the sheep farm total.

Figure 4.8 Number of sheep farms by size of flock, New Zealand, 1970-2002



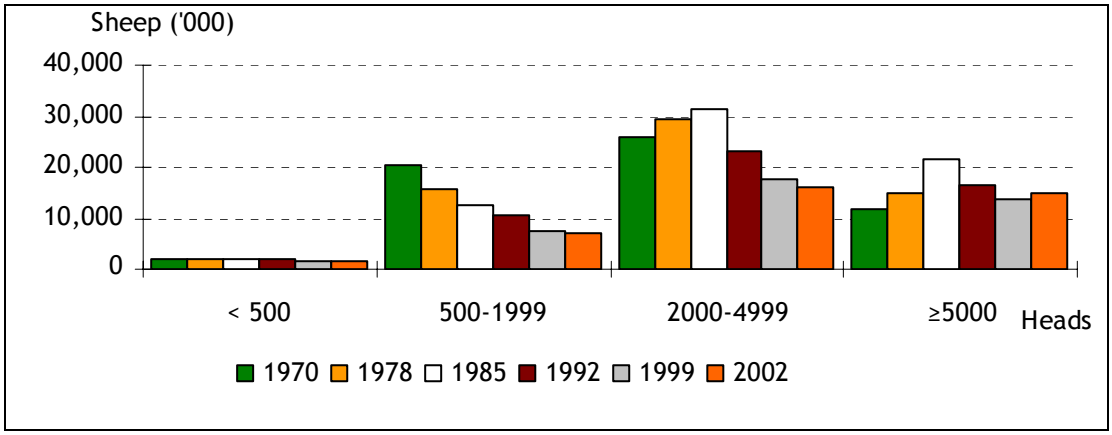
Source: Department of Statistics, Agricultural Statistics; Fairweather 1992; MAF, special results; and our calculations.

In contrast, the number of mid-sized farms (500 to 1,999 sheep) has been in constant decline, changing from 43 per cent to 22 per cent of the total number of sheep farms. For the large farms, those with flocks of between 2000 and 5000 sheep, the change in their number has followed that of livestock: an increase in 1978 and 1985, then a decrease following the abolition of support to that sector. It seems then that these are the farms most affected by the reforms in agricultural policy. The very large farms, with more than 5000 heads showed no increase in number after the reform of the agricultural policy, then increased again to reach a new peak in 1999. After this time, their number reached a plateau.

Figure 4.9 confirms that the fall in sheep numbers observed since 1985 came mainly from farms with large flocks of over 2000 sheep. While the number of animals on farms with between 2000 and 5000 sheep continued decreasing, farms with large flocks of over 5000 sheep reached a plateau and even increased slightly in 2002. The farms with small flocks seem little affected by economic conditions since the stock number has remained constant since 1985 and changed little over the whole period up to 2002.[22].

[22] We have to note that the number of sheep farms with less than 500 sheep increased significantly from 1970 to 1992 although this category of size has a constant number of sheep. It probably means that more smallholdings could be lifestyle blocks with fewer sheep.

Figure 4.9 Number of sheep by size of flock, New Zealand, 1970-2002



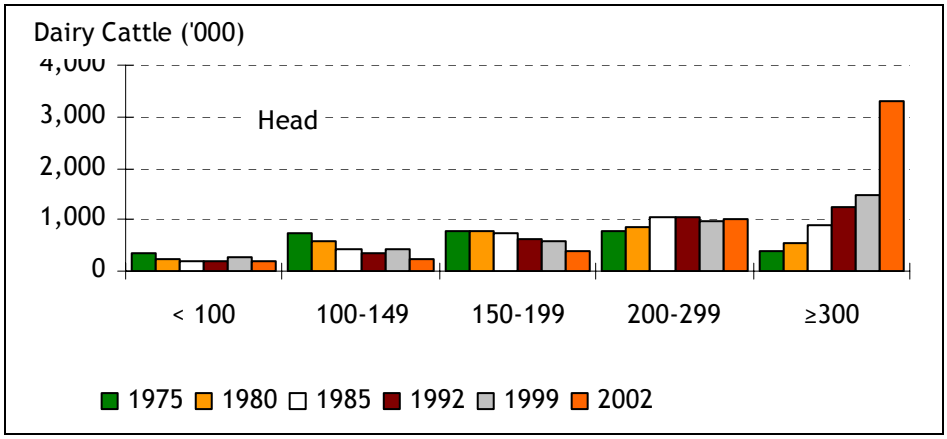
Source: Department of Statistics, Agricultural Statistics; MAF, special results; and our calculations.

The dairy sector has increased in importance since the beginning of the 1980s with overall gains in number between 1981 and 1992. Unlike the sheep farms, dairy farms with large herds of more than 300 cows have been steadily increasing (see Figure 4.10). In this sector too, the total number of dairy cattle in medium-sized herds (100 to 199 cows) has been declining. For dairying, small production units do not seem possible. The milking equipment that has to be purchased is clearly more expensive than the capital expenses in the sheep sector, and it is likely that the dairy herds on lifestyle blocks are very small in number. In this sector, the tendencies at work seem to have been constant since 1975. The changes in the agricultural policies after 1985 do not seem to have had major structural effects, unlike in the sheep sector.

In conclusion, we can note that the growth until 1990 in the number of farms in New Zealand largely came from the contribution of "small" farms. The phenomenon of lifestyle blocks seems to be the primary reason. The revision of agricultural policies since 1985 does not seem to have led to the process of concentration in the farm sector. Conversely, since 1985 the number of large sheep farms which was increasing earlier has been decreasing. Farms with more than 5,000 sheep owned 37 per cent of the livestock in 2002 compared to 31.9 per cent in 1985. The phenomenon only reversed itself from 1999. This sector is relatively concentrated since these large farms accounted for only 5.4 per cent of the total of sheep farms in 2002. Small farms on the other hand, the farms with less than 500 sheep, are high in numbers. Forty two per cent of the sheep farms in 2002 were small in size, but owned only 3.5 per cent of the livestock.

The dairy cattle numbers are generally increasing. In terms of concentration, the dairy cattle owned by the farms with large herds, more than 300 cows, have multiplied by four since 1985. This is a long term tendency with an increase since 1999.

Figure 4.10 Number of dairy cattle by size of herd, New Zealand, 1970-2002



Source: Department of Statistics, Agricultural Statistics; MAF, special results; and our calculations.

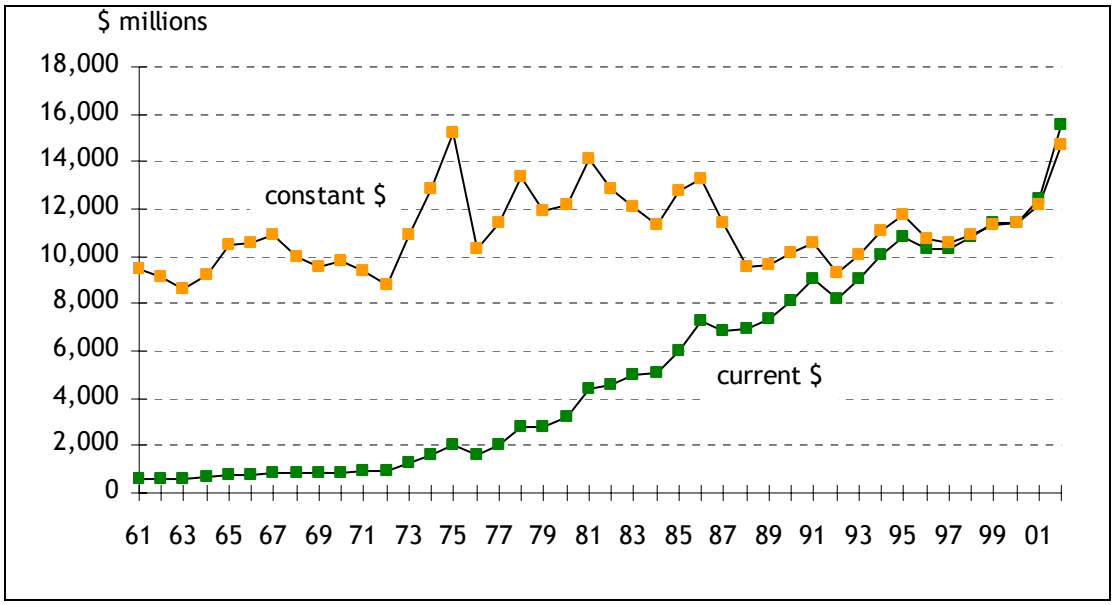
4.3 Change in the levels of production and agricultural exports

We have seen that during the period preceding the revision of agricultural policy in New Zealand, a certain number of programmes were put in place to encourage production. The objective was to improve the balance of payments by increasing agricultural exports. In consequence, we can examine if the removal of different programmes and the changes that we have analysed caused a fall in agricultural production and exports.

4.3.1 The increase in production

An overall measure of agricultural production is represented by the value of agricultural production shown in Figure 4.11. In current dollars, the tendency for the increase in the value of production was broken by a fall in 1986 and 1987 compared to the level attained in 1985. In constant dollars, the value of production was above the level attained during the 1960s for all of the 1970s and until 1985. It declined drastically in 1986 and 1987 and returned approximately to the same level as in the 1960s. A decrease of this magnitude (-27 per cent between 1985 and 1987) had already been observed in 1975 (-32 per cent), but with the difference that since 1985 the drop occurred for a much longer period. It was only from 1993 that a new significant increase of the value in the New Zealand farm production happened and again from 1998, with a bigger increase.

Figure 4.11 Agricultural output in current and constant (June 1999 = 1000) dollars, New Zealand, 1961-2002



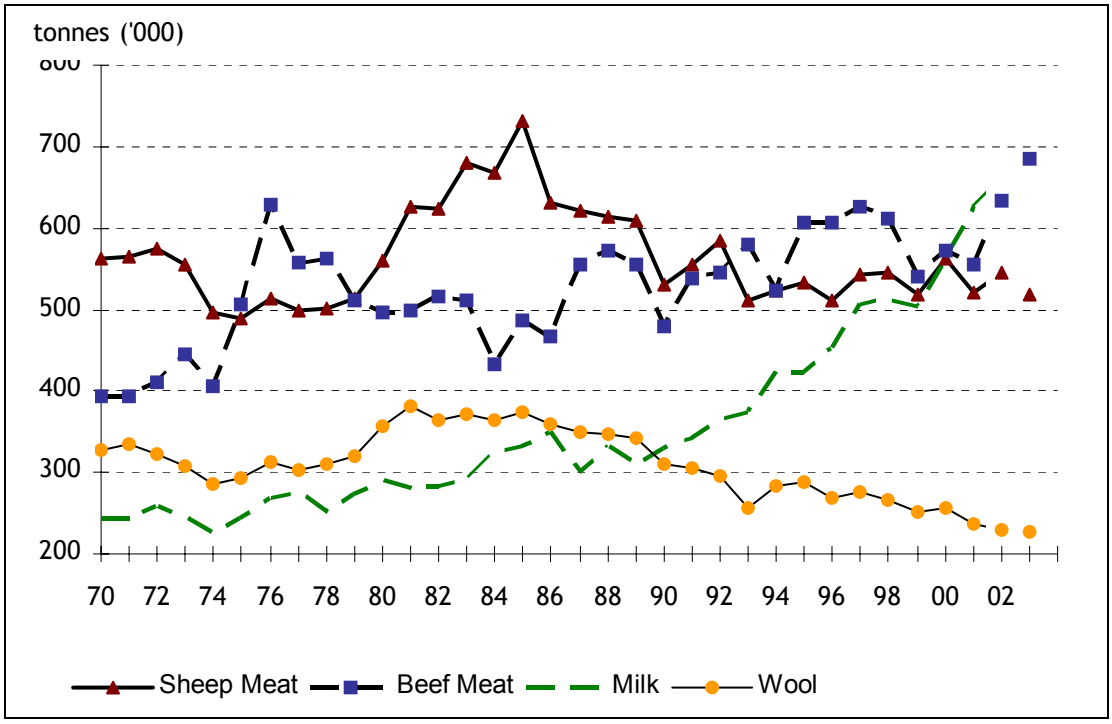
Source: New Zealand Official Yearbook, various years; MAF 1994; and our calculations.

However, this total measure of the value of agricultural production combines production volumes and income obtained from the market. A rise or fall in value of production can be due to variation in the market price and not reflect change in the volume of production. Figure 4.12 shows the change in the volume of agricultural production.

From the end of 1976 and again in 1978, we can see a decrease in beef production and an increase in sheep meat production. In 1984, the production of beef attained a low which seems to correspond to the period of rebuilding breeding herds. It is at that time that the beef herds began to increase (see Figure 4.5). Conversely, 1985 showed a peak of sheep meat production that could correspond with the beginning of the period of decrease in breeding herds. Equally, it was from the end of 1985 that production of wool began to decline. During all these years, sheep and beef production seemed to be in direct competition in the utilisation of resource. Sheep production appeared more attractive, possibly because of the high level of government support.

From 1987 to 1992, these two sectors of production had evolved approximately in the same way. The drop in production from 1990 followed a period of drought which hit the main production areas and since then a certain increase in production can be seen. However, it is necessary to note that Figures 4.4 and 4.5 show that sheep flocks decreased while the beef herds increased in the same years. Maintaining the volume of sheep meat production has in part been due to the selling of breeding herds, which led to a drop in production in 1993 and the stabilisation of this production since that time. In contrast, the increase in beef production turned out to be more durable and after a fall at the end of the 1990s, it reclaimed a rapid increase at the beginning of the 2000s.

Figure 4.12 Volume of pastoral production*, New Zealand, 1970-2003



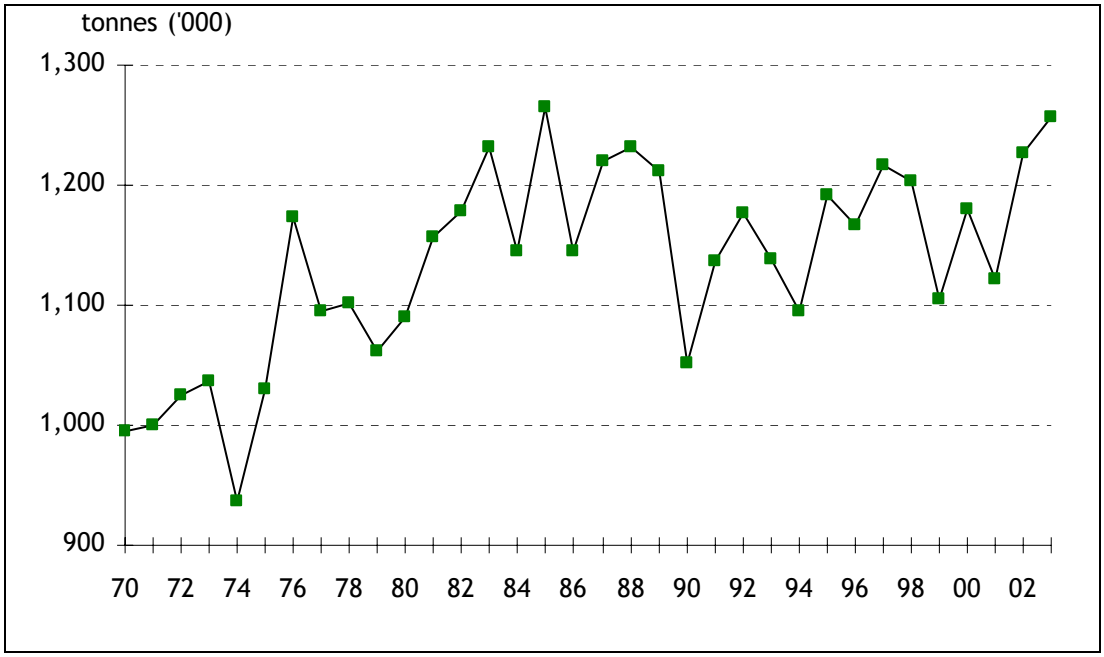
Note: * Sheep meat (mutton and lamb) and beef meat (beef and veal) based on bone-in weight, wool based on greasy and dairy based on milk fat.

Source: Situation and Outlook for New Zealand Agriculture, MAF, various years; Department of Statistics, Agricultural Statistics, cat. 14.101 and 01.018.0091; New Zealand Dairy Board, Annual Report, various years; New Zealand Meat and Wool Boards' Economic Service, Annual Review of the Sheep and Beef Industry; and our calculations.

The change in dairy production displays lesser annual variability than for the two other types of production. After having decreased at the beginning of the 1970s, dairy production has regularly increased since then, rising by 36 per cent between 1978 and 1985, the year of the agricultural policy reform. Since 1987, the increase in this production was continual and quick with a production 2.2 times higher in 2003 compared with its 1987 level.

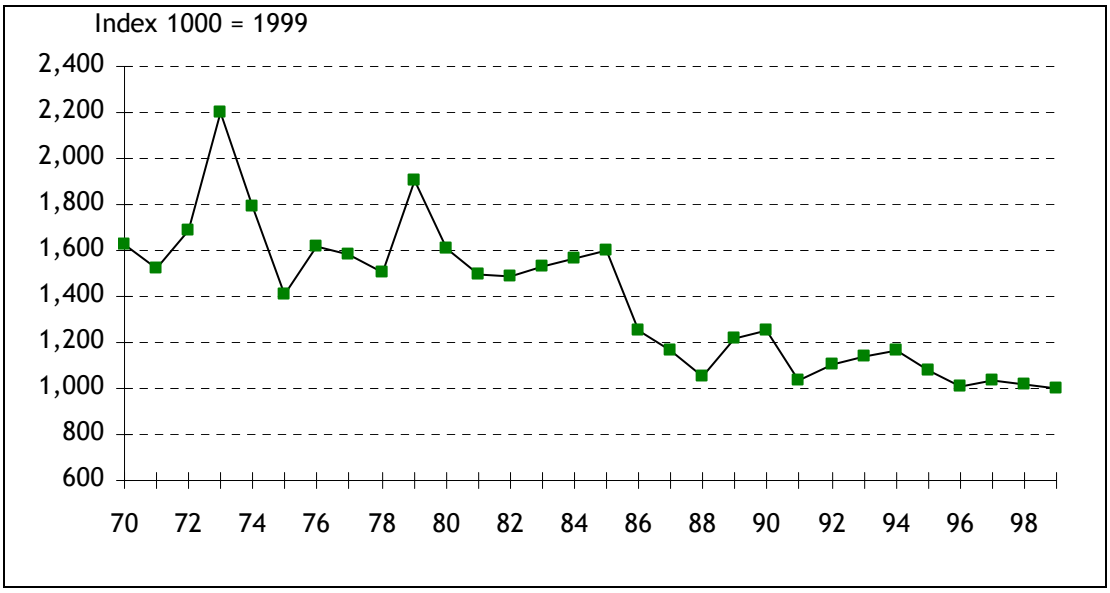
In total, following the revision of agricultural policy, the value of New Zealand agricultural production, in real terms, declined and returned to the level of the 1960s. However, there has been an increase in the last five years (see Figure 4.11). In contrast, in volume, the pastoral sector does not display a marked tendency to decline although it has declined slightly. Dairy production has carried on with an increase which began in the middle of the 1970s. Sheep production dropped strongly at first but this drop was compensated in large part by an increase in beef production. Moreover, total meat production (see Figure 4.13), although considerably lower than the peak of 1985 and variable from one year to another, seems to have been maintained at a level higher than in the 1970s. Growth at the beginning of the 2000s allowed the farming sector in 2003 to be close to the record result of meat production in 1985.

Figure 4.13 Total meat production, New Zealand, 1970-2003



Source: Situation and Outlook for New Zealand Agriculture, MAF, various years; Department of Statistics, Agricultural Statistics, cat. 14.101 and 01.018.0091; New Zealand Dairy Board, Annual Report, various years; New Zealand Meat and Wool Boards' Economic Service, Annual Review of the Sheep and Beef Industry; and our calculations.

Figure 4.14 Deflated production price index*, New Zealand, 1970-1999



Note: * Production Price Index deflated by the Consumer Price Index June 1999 = 1000.
Source: Department of Statistics, PCInfos: PPIQ.SOA; and our calculations.

In consequence, as the value of production has decreased relatively more than the decrease in the volume of production, farm prices must also have altered. In this way, according to Figure 4.14, the change in the deflated production price index indicates a sharp drop of nearly 20 per cent in 1986. Since a large part of the government payments to the agricultural sector was to support the price of sheep meat, the removal of subsidies could only lead to a lower market price. Without price support the drop in real prices from 1986 continued on the international market until 1999 because of the decrease in the prices of the raw farm products.

4.3.2 The lowered value of food exports

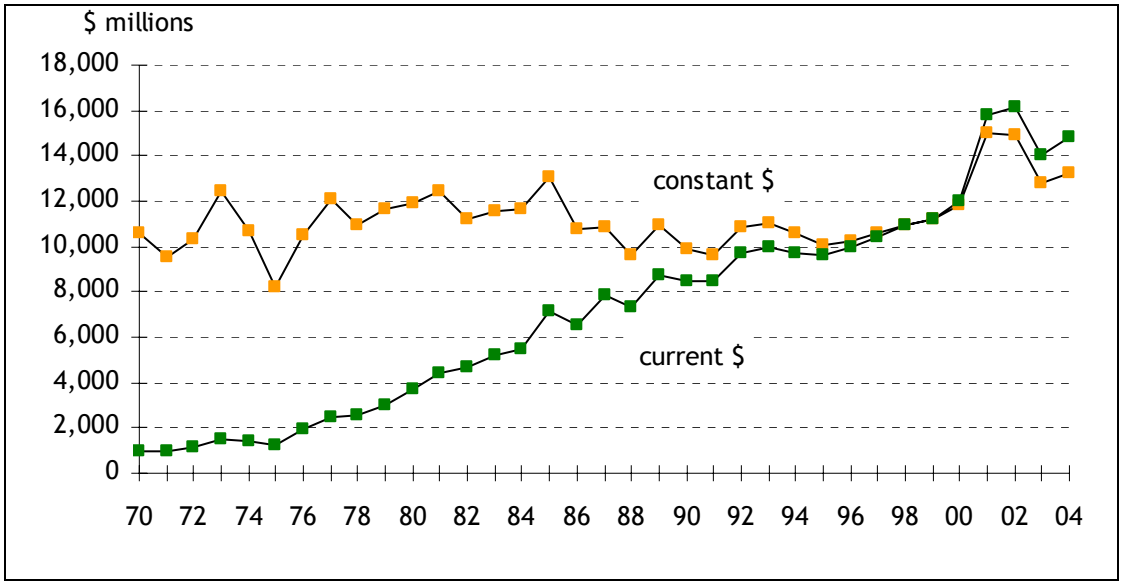
For New Zealand, having only a small internal market, the value of agrifood exports is closely linked with the value of agricultural production, which is shown in Figure 4.15. In the ten years which preceded the reform in agricultural policy, that is from 1976 to 1985, agrifood exports had been, on average and in real terms (June 1999 $), close to 11.7 billion dollars per year. For the following 15 years, this figure hovered around 10.6 billion per year. Recovery began in 2001 and the real value of the exports was about 14 billion dollars per year.

As the value of production, the value of export is reliant on the change in the international market price and export volumes. These elements are shown in Figures 4.16 and 4.17 for the two main groups of products which constitute most of New Zealand agrifood exports, namely fruits and vegetables and pastoral products.

Regarding fruits and vegetables, export volumes have been increasing for the whole period although it has stabilised since 1990. Conversely, the export price in real terms, which was relatively stable until 1978, fell continually until the mid 1990s then began stabilising during the following years.

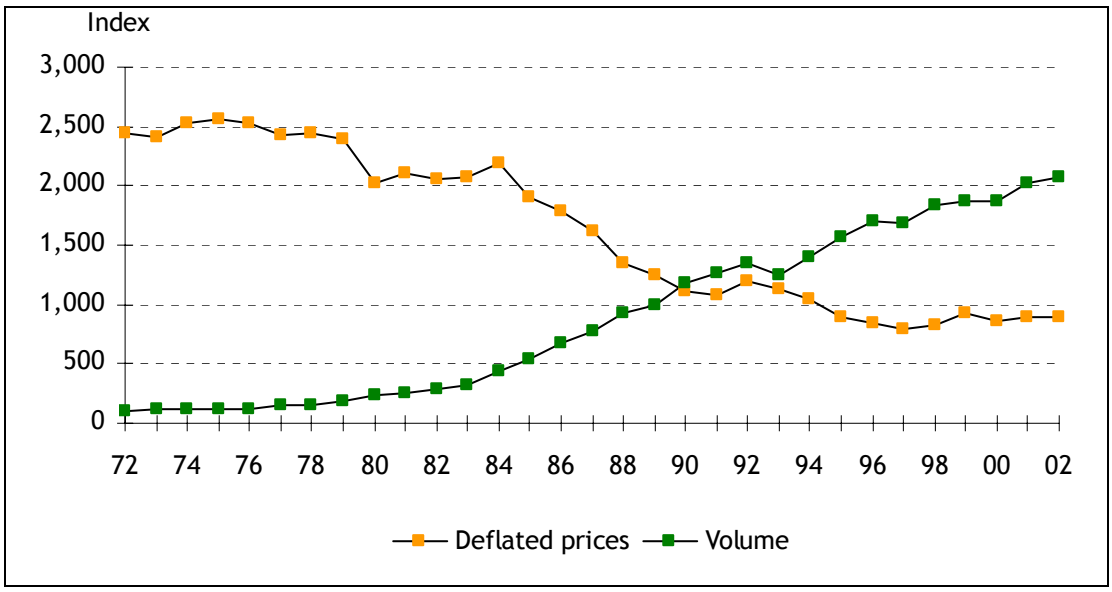
Pastoral agricultural products have also been less remunerated in real terms on the international market. This did not prevent a moderate increase in export volumes until 1985. Despite the sharp drop in export prices since that date, the volume of exports has been maintained. The prices in real terms remained quite stable, with a new fall in the mid 1990s, which paradoxically coincided with an increase in export volumes.

Figure 4.15 Value of agrifood exports in current and constant (June 1999 = 1000) dollars, New Zealand, 1970-2004



Source: Situation and Outlook for New Zealand Agriculture, MAF, various years; Department of Statistics, Agricultural Statistics, cat. 14.101 and 01.018.0091; and our calculations.

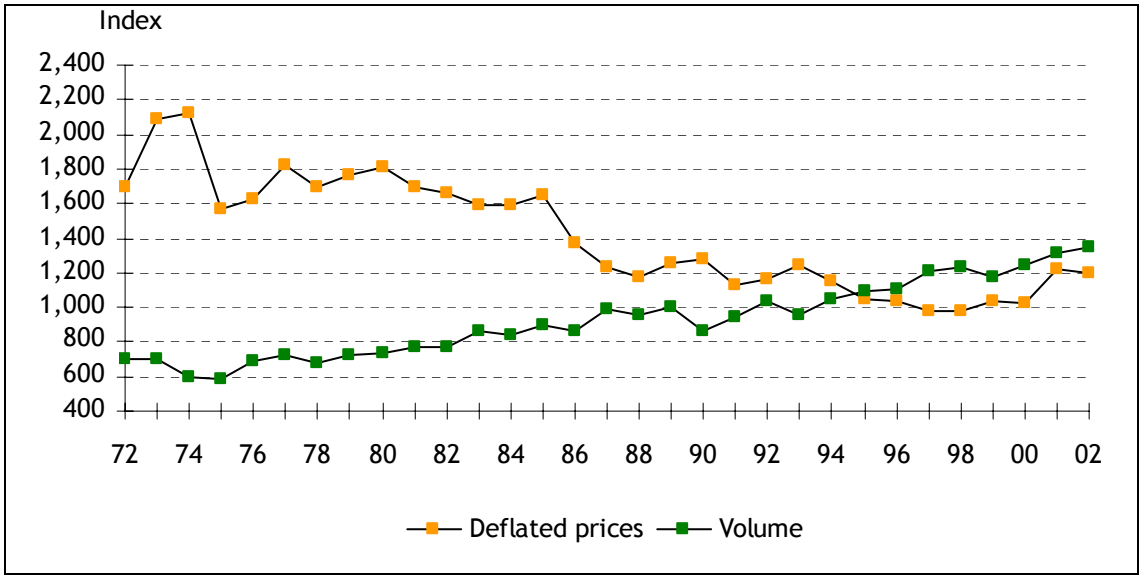
Figure 4.16 Index of volumes and deflated* price index for exports of fruits and vegetables, New Zealand, 1972-2002



Note: * Export Price Index deflated by the Consumers Price Index, June 1999 = 1000.

Source: Department of Statistics, PCInfos: OTIA.SE2AV2, .SE2BS2, .SE1AV2, SE1BS2; and our calculations.

Figure 4.17 Index of volumes and deflated* price index for pastoral exports, New Zealand, 1972-2002



Note: * Export Price Index deflated by the Consumers Price Index, June 1999 = 1000.

Source: Department of Statistics, PCInfos: OTIA.SE2AV2, .SE2BS2, .SE1AV2, SE1BS2; and our calculations.

In conclusion, it seems that the drop in the value of New Zealand agrifood exports which lasted for about 15 years after the reform of the agricultural policy was due, more to the deterioration in the international market price than to the total drop in export volumes. The decline of the sheep sector, as indicated by livestock and meat production, was certainly accentuated by the removal of subsidies. Beef and dairy sectors have increased their exports at a level sufficient to compensate the drop in sheep sectors.

4.4 Conclusion

Structural tendencies have always affected New Zealand agriculture even before the removal of agricultural subsidies. The sheep sector, the most affected, had begun its decline in 1982, in response to a drop in the profitability of exports. The effect of policy revision, since 1985, seems to have accelerated the decline in this sector, but with a certain gap due to the delay in modifying the use of existing resources. This gap could also be due to the resistance capacity in the family farm organisation to lowered returns for their resources.

The fact that the main structural changes started before 1985 could indicate that the farm sector was not completely isolated from the effects of the market. Some agricultural producers seem to have been aware of the fact that the high levels of agricultural subsidies to the pastoral sector would one day end. They had therefore already begun to change the use of resources in those sectors of production that were more dependent on income obtained from the market. This confirms that the high level of support to the pastoral sector had only existed for a relatively short interlude in the economic history of New Zealand. Further, it is likely that a number of farmers who benefited from the supports realised that these could only be expected for a short period of time, and this partially explains the relative inertia of the farm lobby during the revision of agricultural policy.

Chapter 5
The Change in Farm Income

5.1 Introduction

In the previous chapter, we assumed that the change in agricultural policy and the change in international market prices have contributed to lowering farm sector incomes. It is on this basis that we discussed the question of structural change, taking into consideration the possible delay of adjustment caused by the resistance capacity characteristic of the family organisation of production. It is now relevant to discuss the issue of change in farm income.

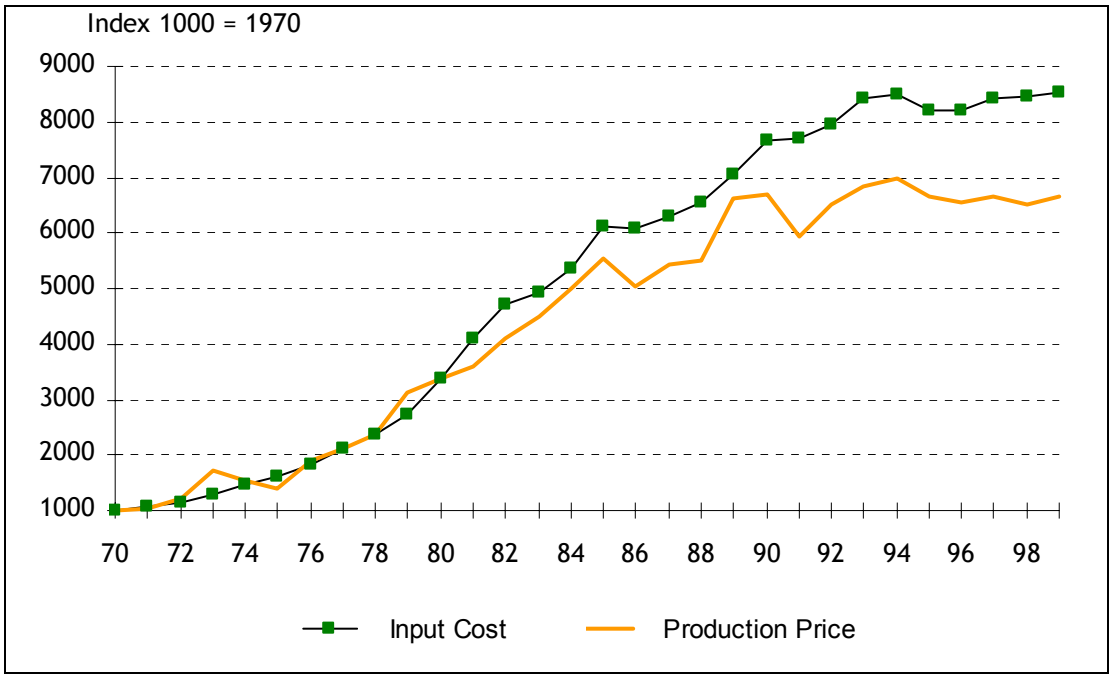
We will analyse the terms of exchange for the New Zealand farm sector at an overall level. At a micro-economic level we have a long period of annual surveys of a sample of pastoral farms, so we can therefore analyse the results of these surveys to understand the change in sheep and dairy farm incomes. There is no distinct survey for beef farms. Nevertheless, beef and sheep products are substitutable and often produced concurrently, therefore the sheep farm survey includes results which reflect the profitability of these two types of production.

5.2 The terms of exchange for the farm sector

A direct total measure of net income is not published in the New Zealand official statistics (Attwood 1984, p. 10). Nevertheless, the production price index and the input cost index are available for a long period and their ratio, being the terms of exchange represent an indirect evaluation of net incomes for the New Zealand farm sector. However, such a measure does not consider productivity gains and must be analysed with caution.

Figure 5.1 shows that until the beginning of the 1980s, the input cost index and the production price index remained closely related. With the exception of the years 1973 and 1979, when agricultural commodity prices were especially high, the terms of exchange in the farm sector stayed constant. On the other hand, since 1981 the terms of exchange worsened, with input costs rising more quickly than production prices. When support price and income programmes were abolished in 1986, the difference between prices and costs increased even more. The deterioration in terms of exchange, although variable from year to year, seems to have been ongoing since 1986. Consequently, if New Zealand farmers had not changed their use of resources, they would have faced a decrease in their net farm income from 1981, and even more so since 1986.

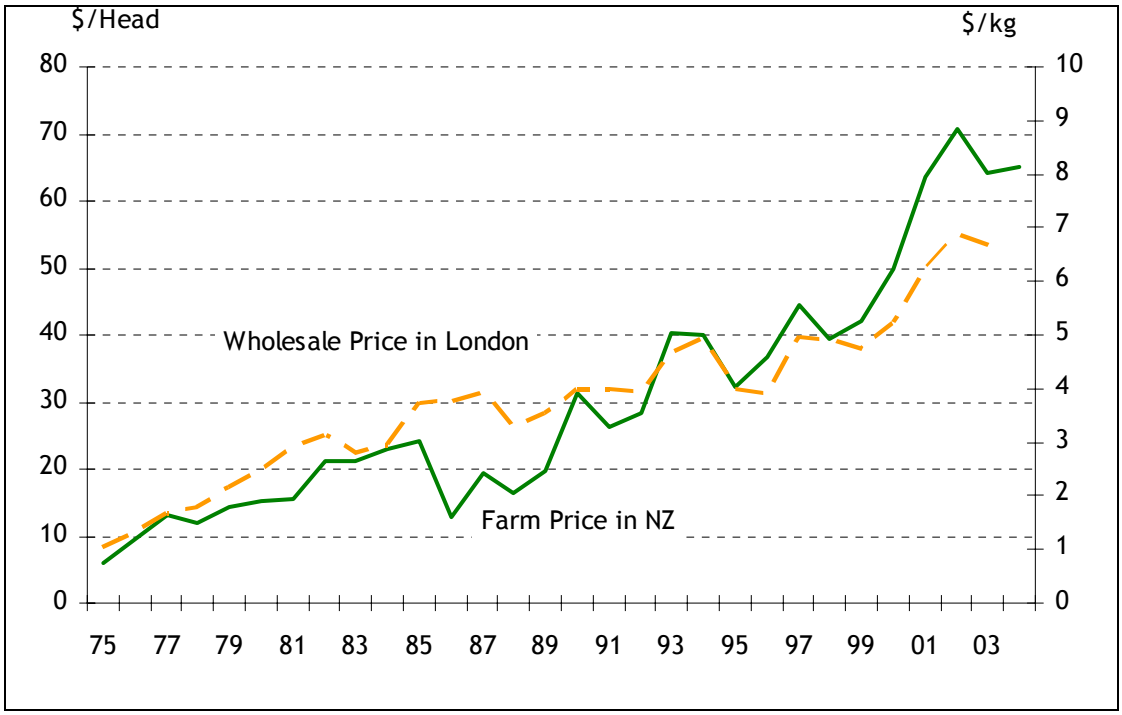
Figure 5.1 Input cost index and production price index for farming, New Zealand, 1970-1999



Source: Department of Statistics, PCInfos: PPIQ.SOA and PPIQ.SIAF; Department of Statistics, Monthly Abstract of Statistics; and our calculations.

The production price index is an aggregate index of prices for different commodities. However, the prices for different commodities do not all move in the same way at the same time, as shown in the next three Figures. In regards to sheep production, 1986 seemed to be important in the price formation process for lamb. In that year, the farm price for lamb dropped by around half for the New Zealand market (see Figure 5.2). Because the wholesale price for lamb on the principal export market, United Kingdom, did not show a decrease in the same year, this drop in domestic farm price must be related to the abolition of price support and income programmes that began in 1986. On the other hand, the variations in farm prices since 1990 seem to result from the export market behaviour.

Figure 5.2 Farm lamb price in New Zealand ($/head) and wholesale price for New Zealand lamb on the London market ($NZ/kg), 1975-2004

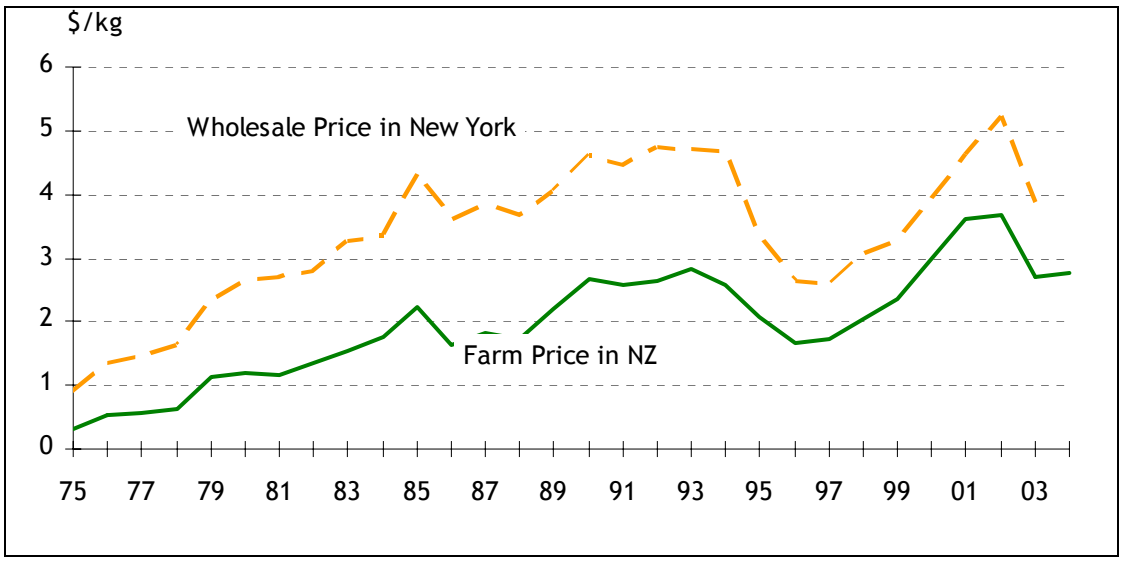


Source: Situation and Outlook for New Zealand Agriculture, MAF, various years; Department of Statistics, Agricultural Statistics, cat. 14.101 and 01.018.0091; NZMWB Economic Service, Annual Review of NZ Sheep and Beef Industry; and our calculations.

The analysis of the decrease of farm prices for beef and milk is entirely different from that of the lamb market. In the case of beef, the decrease in farm price corresponds to a decrease in the wholesale price in New York for New Zealand beef (see Figure 5.3). For the dairy sector, the decrease in farm prices in 1986, 1987 and 1991 corresponds to a decrease in the selling price of dairy products on the world market[23] (see Figure 5.4). Farm prices in New Zealand for beef and dairy products are closely linked to export prices for the observed period. The abolition of state support programmes to the farm sector does not seem to have affected this relationship.

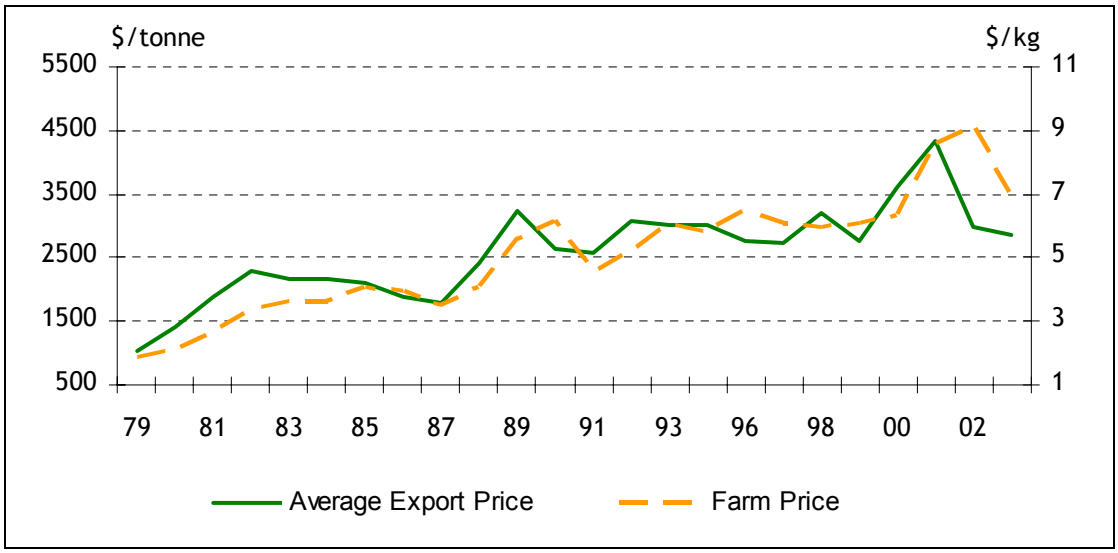
[23] To allow a better view of the change in the world price, a simple average of prices for the three main export dairy products (butter, cheddar cheese and skim milk powder) was calculated.

Figure 5.3 Farm beef price in New Zealand and wholesale price for New Zealand beef on the New York Market ($NZ/kg), 1975-2004



Source: Situation and Outlook for New Zealand Agriculture, MAF, various years; Department of Statistics, Agricultural Statistics, cat. 14.101 and 01.018.0091; NZMWB Economic Service, Annual Review of NZ Sheep and Beef Industry; and our calculations.

Figure 5.4 Farm dairy price in New Zealand ($NZ/kg) and average price of butter, cheddar and skim milk powder on the world market ($NZ/tonne), 1979-2004



Source: Situation and Outlook for New Zealand Agriculture, MAF, various years; Department of Statistics, Agricultural Statistics, cat. 14.101 and 01.018.0091; MAF, non-published data; PCInfos, OCDE data; FAOSTAT and our calculations.

All things considered, this brief analysis of the change in the major farm product prices confirms once more that the sheep sector was the principal victim of the New Zealand agricultural reform policy. In other respects, the structural analysis conducted in the previous chapter shows that New Zealand farmers have reacted to the changing economic conditions by altering the types of production and the output levels. To have a better assessment of the adaptation strategies implemented at the farm level, a more detailed analysis of the change in incomes must be conducted for the major products of the pastoral sector.

5.3 The economic results for sheep farms

The New Zealand Meat & Wool Boards' Economic Service (NZMWB) has carried out an annual survey for more than 40 years based on a sample of sheep farms. This survey provides physical data on production and a financial description of the farms investigated. To qualify for inclusion in the sample, a farm has to winter at least 750 sheep[24]. Likewise, at least 70 per cent of gross revenue must be derived from beef and sheep cattle. The sample is stratified on a geographical basis and by sheep flock size into eight farming subgroups (South Island High Country farms, North Island intensive finishing farms, etc.). The results for all the farms of the sample are presented on a weighted average basis reflecting the importance of each subgroup in the total population *(NZMWB 1993)*.

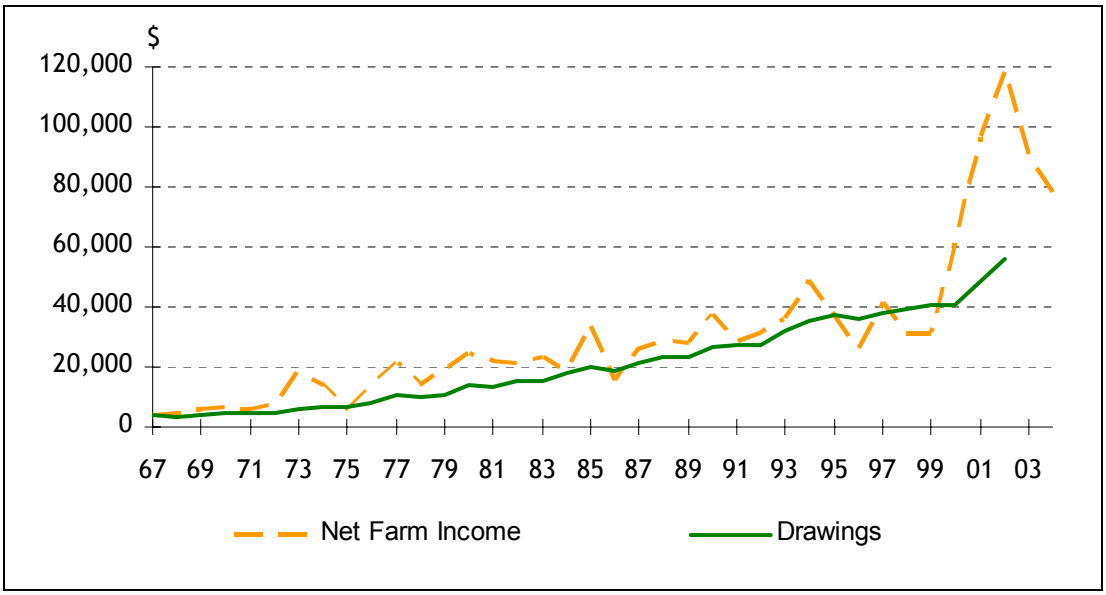
The sampling constitutes in itself a limit to the relevance of the data to assessing farmers' adjustment to the new policy. In fact, some farms that have largely modified the use of their resources are now excluded from the sample. For example, a farmer could have reduced sheep numbers to less than the minimum of 750 sheep wintered in order to keep other livestock or for increasing the commercial crop area where the climate allows it. Thus, the results of the survey can, in fact, minimise the effect of adjustment that farmers could have made because it includes only farmers for whom sheep production remains the most important activity. However, the survey does provide an economic and financial picture of specialised sheep farms and analysis of survey data remains relevant to our purpose.

5.3.1 The long-term change in incomes

The change of net income and drawings by the owners for all the farms in the sample for the last 35 years is shown in Figure 5.5. The net income is the amount available to the farmer and their family to remunerate the owner's equity and non-paid labour, and to reduce the principal on borrowing. All the operational expenses have been accounted for, including depreciation and interest costs. The drawings by the owner include the amount withdrawn from the farm business during the year to provide for living costs.

[24] Prior to 1974, the minimum was 500 sheep.

Figure 5.5 Net farm income and drawings in current $ on sheep farms, New Zealand, 1967-2004.



Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

For the entire survey period, net income and drawings have been rising. However, we observe a large variability in the net income from year to year whereas the drawings are relatively less variable. Indeed, even if the net income varies a lot, New Zealand farmers tried to maintain their standard of living. Apart from the decrease in the net income in 1986 due to the abolition of the government's policy of price support, the positive or negative deviations correspond generally to the price variations of mutton products and beef meat on the international market. Thus, the exceptional increase in the net income from 2000 corresponds to a similar rise in the beef and lamb prices on the reference markets for the export (see Figures 5.2 and 5.3).

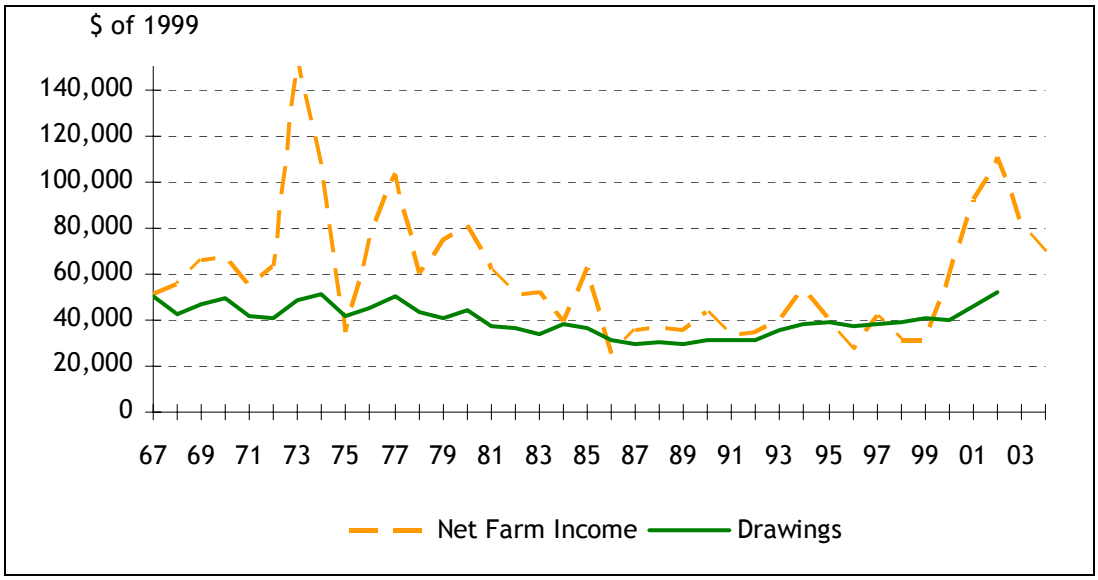
In real terms, net income as well as drawings, have tended to decrease until the mid 1980s until a peak was reached in 1973 (see Figure 5.6). The beginning of the liquidation of the sheep flock in 1982, which we observed in the previous chapter (see Figure 4.4), coincided with net income falling below $40,000, in constant 1999 dollars. The significant drop in net income noted in 1986, although important, is part of a long-term trend that began in the early 1970s. This trend occurred in spite of the increase in government support to the farm sector from the beginning of the 1970s, even with the exceptionally high levels of support from 1982 to 1985 (see Figure 3.1). The drastic drop in support and the end of the stabilisation programmes, which caused an additional decrease in income level in 1986, do not seem to have had long-term effects since then. Paradoxically, since 1987 without any stabilisation policy net income has been more stable from year to year than in the remainder of the observation period. In addition, the tendency for long-term decrease in net income appears to break down. Finally, it was only due to the simultaneous increase in beef and lamb prices from the year 2000 that the net income in real terms reached the threshold of $40,000 per farm again.

The change in drawings in real terms shows a less significant annual variation than for net income (see Figure 5.6). Since 1987, a plateau seems to have been reached but at a level around 40 per cent less than the peak reached in 1974. Consequently, the standard of living allowed by farming activity for the families involved in sheep farming decreased for most of the period under review. The end of state support programmes to this sector probably

contributed to the last significant drop in the standard of living in 1986, but since it seems to have stabilised and from the beginning of the 1990s progressively reached its previous level.

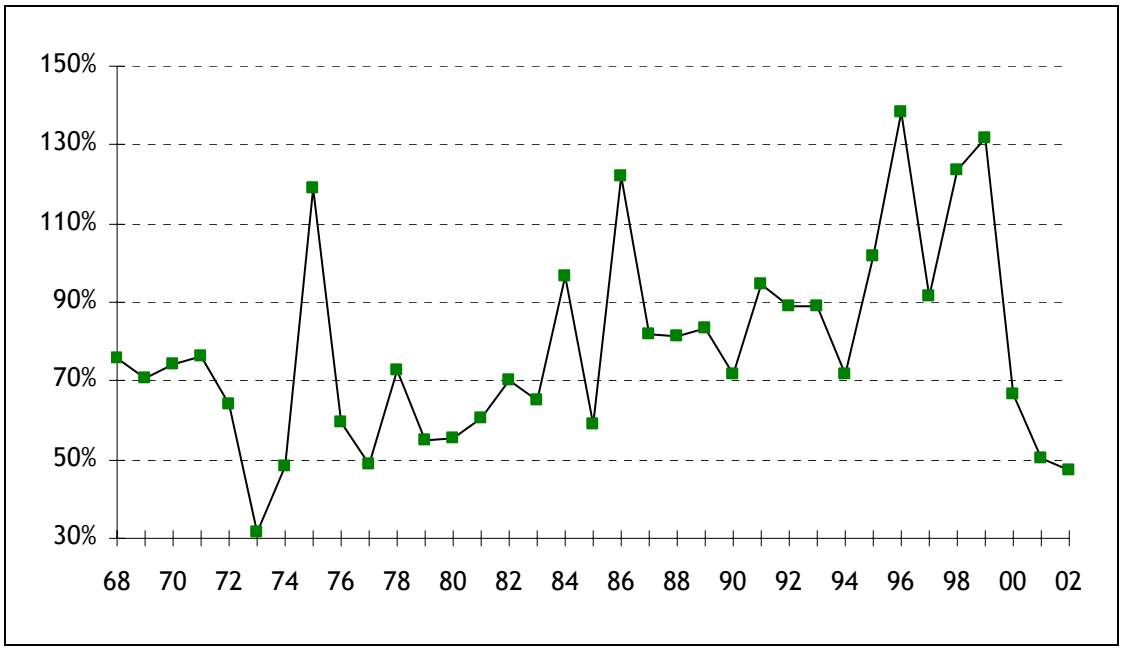
On the other hand, despite this stabilisation of the standard of living, the drawings as a percentage of net income were relatively high from the mid 1970s and until 2000 (see Figure 5.7). Since 1987, the drawings remain steady typically at more than 80 per cent of net income, a level above the range of 50 per cent to 75 per cent observed for most of the years since 1968. In addition, the farmers tried to keep the drawings in absolute value relatively constant. It is normal that the share of these drawings in the net income is higher when the net income is decreasing, and vice versa. Moreover, a heavy drop in the net income could drive drawings higher than the level of the net income. Such results weaken the economic situation of the sheep farms. This could not have been maintained in the medium term, unless a recourse to non-farm funds was available to at least maintain their standard of living.

Figure 5.6 Net farm income and drawings in real terms on sheep farms, New Zealand, 1967-2004



Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

Figure 5.7 Drawings as percentage of net farm income on sheep farms, New Zealand, 1968-2002



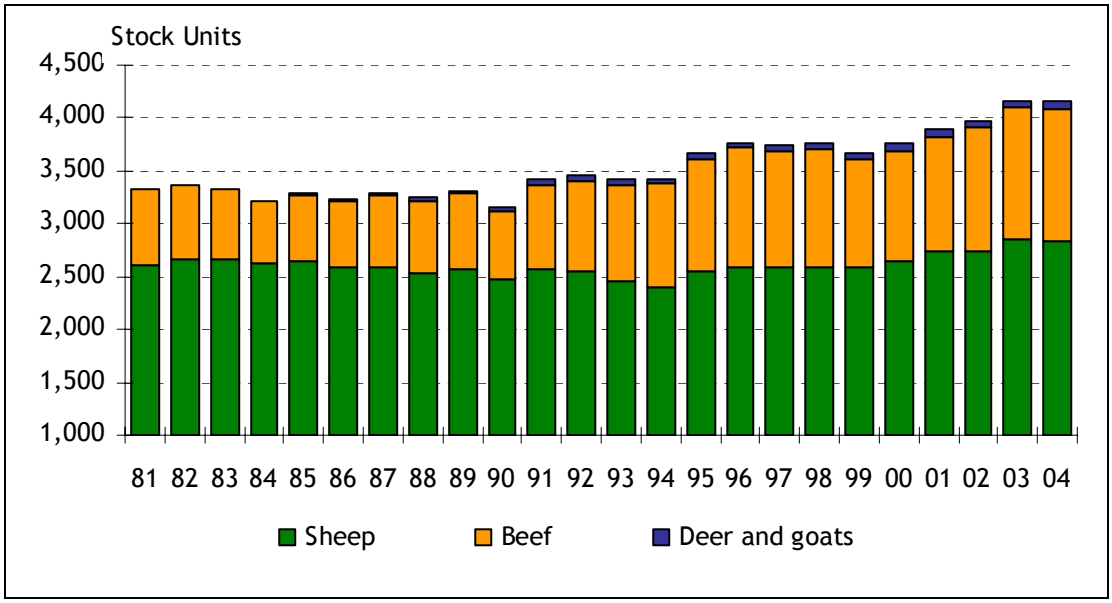
Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

5.3.2 An increase in productivity

As we have seen in Chapter 1 when we discussed adoption of new technologies, an increase in productivity, to produce more with less resource, is a first possible reaction to a drop in incomes. The results of the New Zealand Meat and Wool Boards' survey provide some physical data that allows us to assess the change in farm productivity. The total livestock carried, by farm and by hectare, provide a first measure of total productivity. In regards to the utilisation of inputs, it is interesting to look at the use of fertilisers, which represent a major farm expense. Finally, we have already discussed the possibility of under-remunerating family labour and it is therefore necessary to scrutinise this issue in regards to the productivity of labour.

First, at the level of the total productivity of sheep farms, the total number of stock units was relatively constant between 1981 and 1994 (see Figure 5.8). However, the relative importance of the various types of livestock changed at the expense of the sheep which were decreasing in number between 1982 and 1994, although they remained the most important livestock. Other livestock grew and more than counterbalanced the drop in stock units caused by the reduction in sheep. For example, beef stock grew significantly in 1993 and 1994. Since then, all the livestock have increased moderately during the rest of the observed period.

Figure 5.8 Total stock units and by type of livestock on sheep farms, New Zealand, 1981-2004

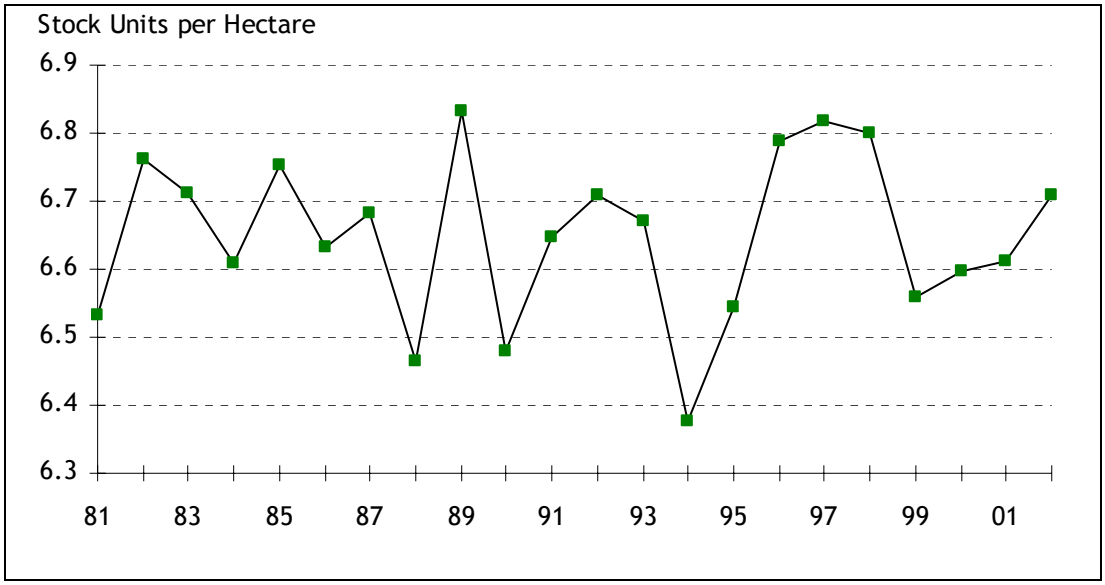


Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

The results for sheep farms are not entirely consistent with those observed for the livestock data for all of New Zealand (see Figures 4.4 to 4.5). Here, the decrease in the number of sheep is less significant than previously observed and the total number of stock units in New Zealand is decreasing, not growing. This divergence in the results can be explained by the sampling method that allows only the specialised sheep farms to be surveyed. Having said this, the tendency of the last ten years to substitute sheep for beef is well illustrated by the results of the survey.

In terms of productivity, the change in the average livestock units per farm must be examined in relation to the area owned for estimating the carrying capacity per hectare, and this data are shown in Figure 5.9. The stock units per hectare fluctuate from year to year. For the whole period of observation, the number of stock units per hectare has been on average 6.6 stock units. As a consequence, on the basis of this criteria the policy change does not seem to have led to an increase in productivity.

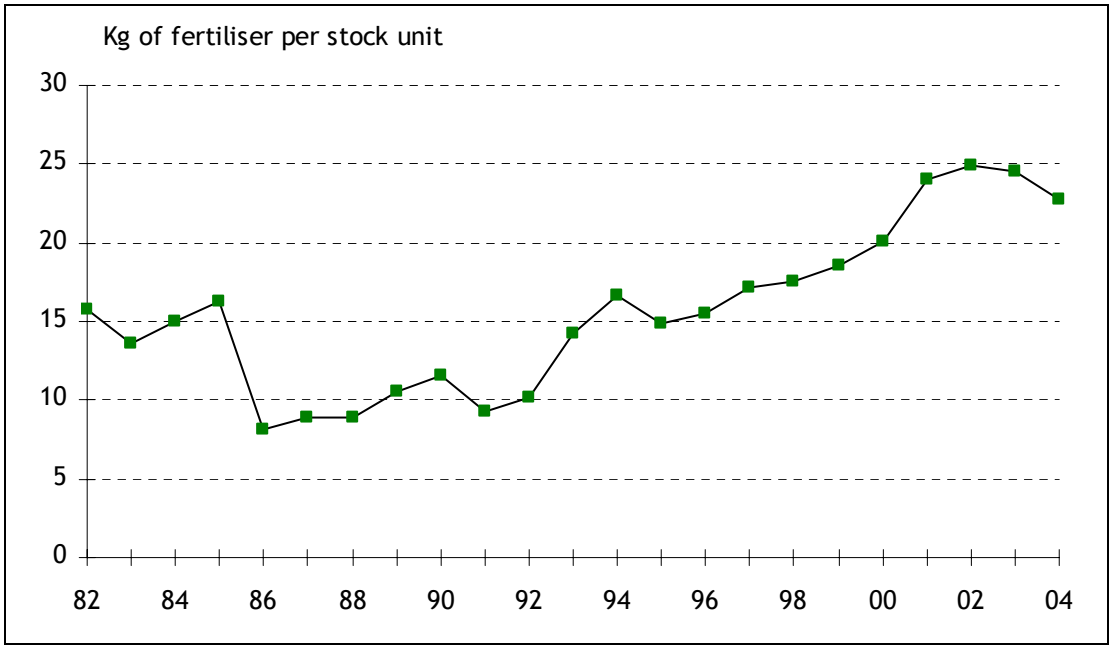
Figure 5.9 Units per hectare on sheep farms, New Zealand, 1981-2002



Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

However, although the average stock units per hectare did not change after 1985, Figure 5.10 shows that the stock units per tonne of fertiliser decreased almost by a half in 1986. First, the farmers chose to drastically cut the purchase of fertilisers. For the subsequent years, this ratio increased to some extent but until the beginning of the 1990s, it maintained a level much lower than the one during 1981 and 1985. The interpretation of this result can pose some difficulties: is it an improvement in productivity, or a potential deterioration in the long term fertility of land? In fact, the results show it was a deterioration of the productive capacity of the soil as the sheep breeders increased the use of fertiliser per stock unit levels to a higher level than before the agricultural policy reform which ended the support for this kind of input.

Figure 5.10 Kilograms of fertiliser used per stock units on sheep farms, New Zealand, 1982-2004

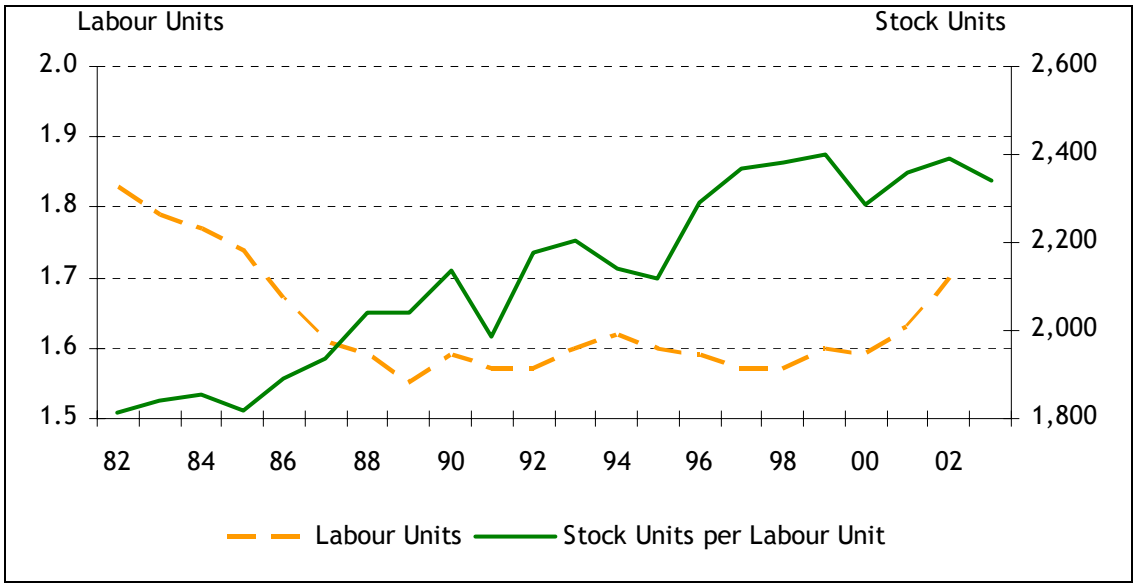


Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

Concerning the availability of labour, the number of labour units per farm[25] has decreased since 1982 (see Figure 5.11). However, this decrease was pronounced from 1985, resulting in a clear increase in productivity per labour unit, calculated by the number of stock units per labour unit. This increase was maintained until the end of the 1990s, when a plateau was reached. Thus, the number of stock units per labour unit in 2002 is 27 per cent higher than the average for the years 1981 to 1985, and that means an important gain in labour productivity.

In short, the productivity of land calculated by the number of stock units per hectare did not fluctuate in spite of a significant drop in the use of fertiliser. Likewise, the per labour unit productivity increased considerably in recent years. Consequently, productivity in the sense of less inputs used for slightly increasing livestock numbers has risen since 1986.

Figure 5.11 Total labour units per farm and stock units per labour unit on sheep farms, New Zealand, 1981-2002



Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

5.3.3 Income and expenditure

An analysis of income and expenditure allows us to understand the internal strategies used by sheep farmers to face the decrease in market prices. Firstly, the physical data on livestock and wool sales show a decline in sheep production (see Figure 5.12). Lamb and wool sales decreased from 1985 until the mid 1990s, even though sheep livestock in the sheep farms increased (see Figure 5.8).

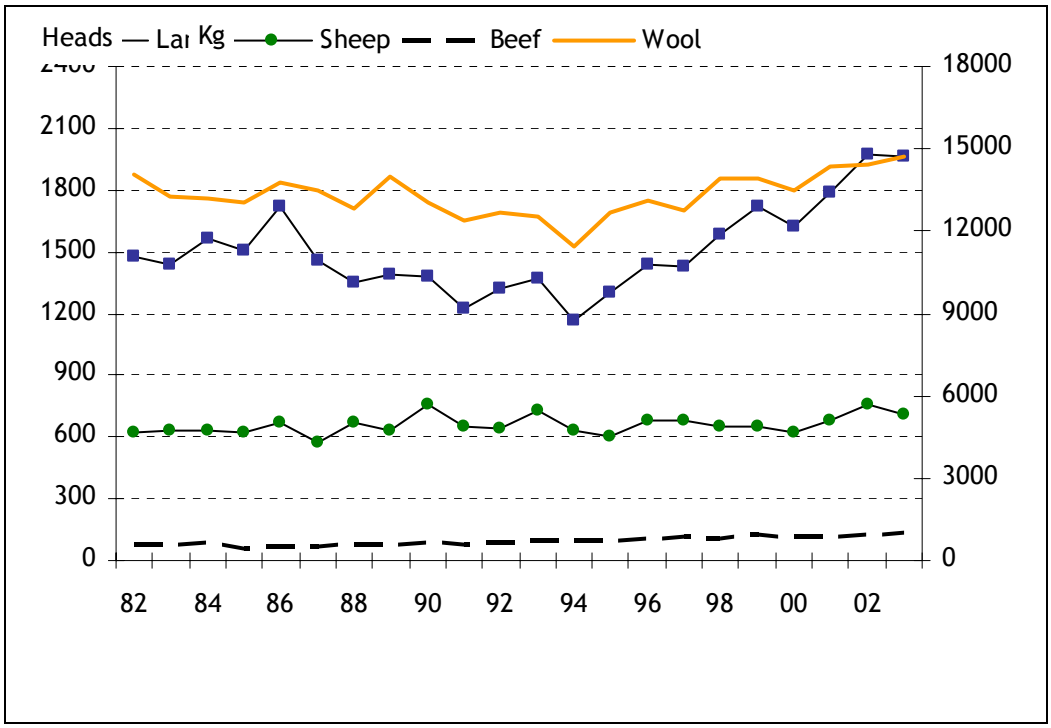
These fluctuations in stock sales partially affected the level of gross income (see Figure 5.13). Indeed, the respective contribution of wool and lamb sales has varied significantly during the observation period, because of the fluctuations in market prices. Despite a decrease of the part of gross income which came from sheep production (wool and sheep and lamb meat) from a maximum of 74.4 per cent in 1982 to a minimum of 58.6 per cent in 1992, this sector remains the main one contributing to gross income. In 2004, the gross income from the sheep production was 70 per cent of the total income. This result is not surprising since the sample

[25] *"This includes the owner's labour and all permanent and casual labour, but excludes all contract labour such as shearing, fencing and scrub cutting" (NZMWB 1993, p. 13).*

includes only sheep farms. However, whereas the gross income from the sale of wool represented on average 40 per cent of the total in the 1980s, they were no more than 18 per cent of the total gross income of the sheep farms in 2004. Sheep and lamb production for meat became larger, changing from 34 per cent of the gross income in 1981 to a drop of 21 per cent in 1989, finally increasing gradually to 52 per cent in 2004.

Despite this, gross income from beef production, which was around 16 per cent of the total from 1981 to 1985, reached a peak (32 per cent) in 1993, then fell to 24 per cent on average for the last ten years. Income from other products principally generated by commercial crops, have decreased constantly over the whole period to represent only 7 per cent of the total incomes in 2004.

Figure 5.12 Sales of lamb, sheep and beef (number of head) and wool (in kg) on sheep farms, New Zealand, 1982-2002

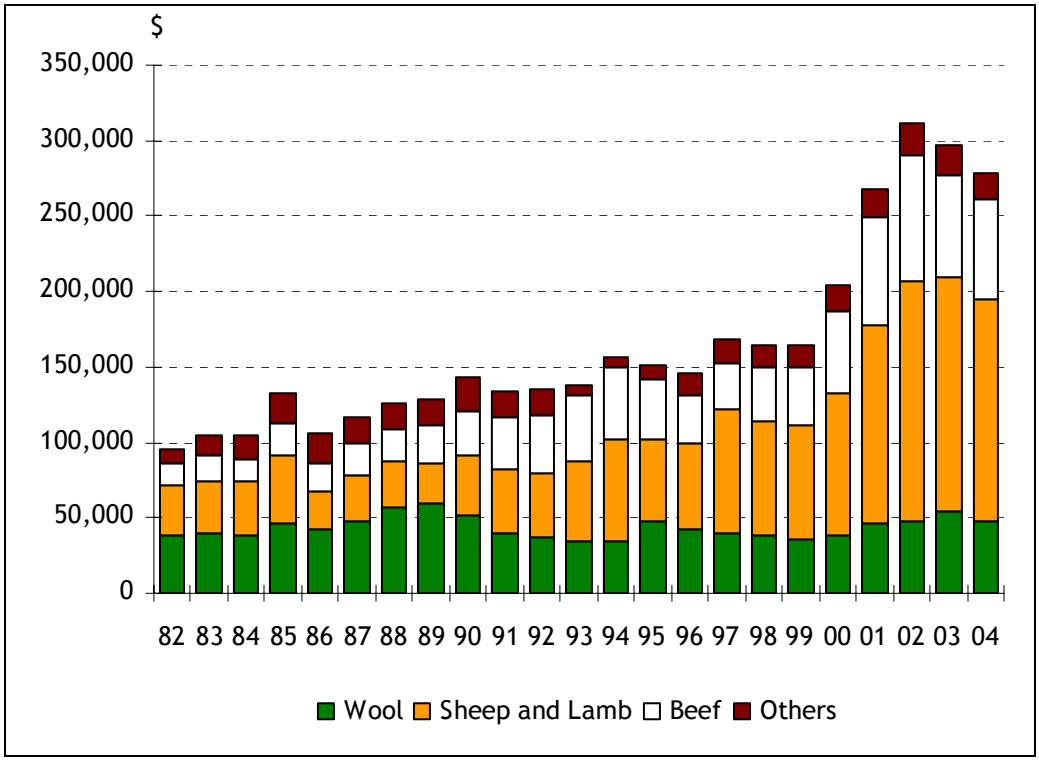


Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

Therefore, sheep farmers' medium-term adaptation strategy with regard to their income has been to partially replace sheep production with beef production. In terms of expenditure, their reactions were faster with a sudden change in 1986. For the first time, total expenditure in current dollars decreased (see Figure 5.14). In fact, all types of expenditure that could be decreased appear to have decreased. As we have already seen, fertiliser expenditure was drastically cut, as were the expenditure for repairs and maintenance. The recovery of this expenditure was very slow and only reached the 1985 level in current dollars in 1993. After this time, the growth was slow until 2000 when the improvement of incomes (see Figure 5.5) seemed to support a new increase in expenditure.

The charges for labour, animal health (including weed and pest control), and for contract work also decreased in 1986 (see Figure 5.15). After this time, they follow the same behaviour as the other expenditure: moderate increase until 2000 then a strong rise.

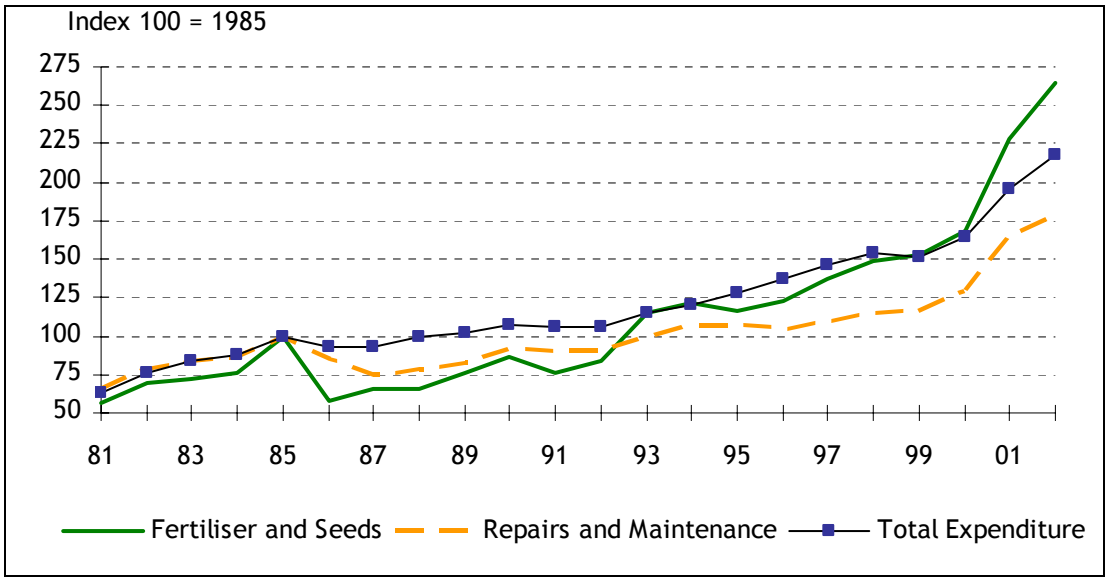
Figure 5.13 Gross income by product on sheep farms, New Zealand, 1982-2004



Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

Finally, standing charges and interest charges seemed to be, in the short-term, out of the farmer's immediate control. Both these charges are the only ones that grew rapidly after 1985 (see Figure 5.16). The initial increase in the interest charges resulted from the removal of subsidised interest rates and the general increase in interest rates. In 1988 the sheep breeders seemed to have gained control of the changes in both these expenditures. Similarly, the decrease in interest charges from 1988 must be attributed to the general decrease in interest rates. Despite the general rise in the expenditure from 2000, interest charges have not followed the same progression, enjoying the low general level of the interest rates (see Figure 3.4).

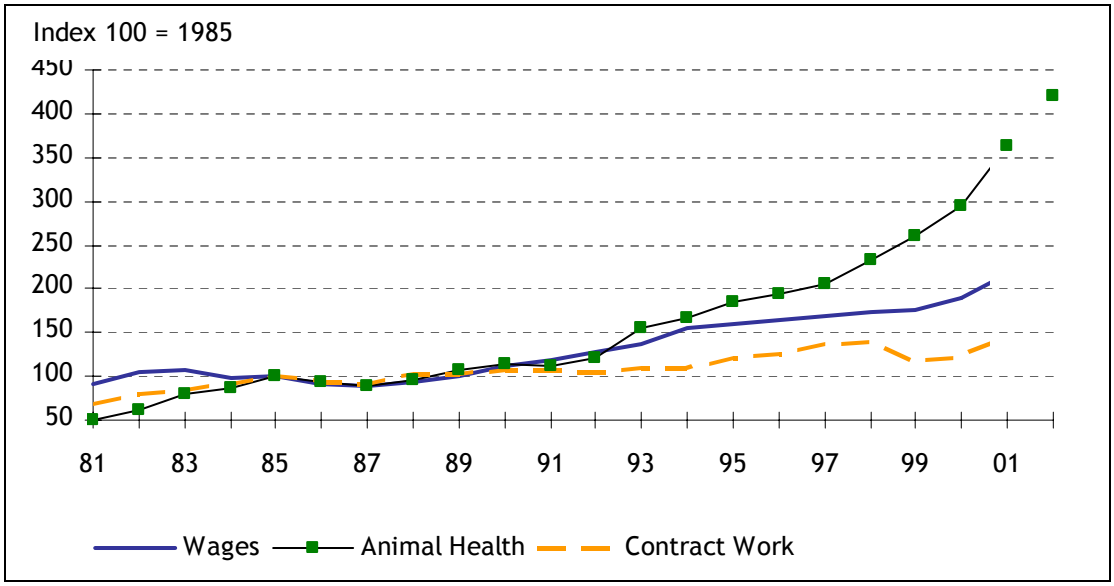
Figure 5.14 Change in expenditure in fertiliser and seeds, repairs and maintenance*, and total (in current $) on Sheep Farms, New Zealand, 1981-2002.



Note: *Includes vehicles, fuel and electricity.

Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

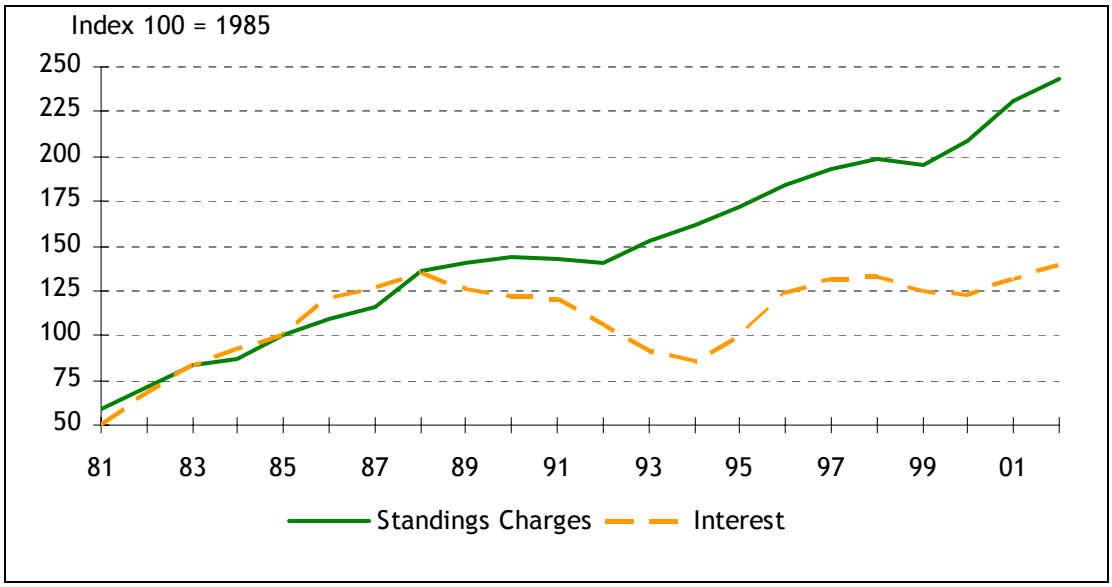
Figure 5.15 Change in expenditure in wages, animal health* and contract work (in current $) on sheep farms, New Zealand, 1981-2002**



Note: *Includes feed and grazing expenses and weed and pest control.
** Includes shearing expenses.

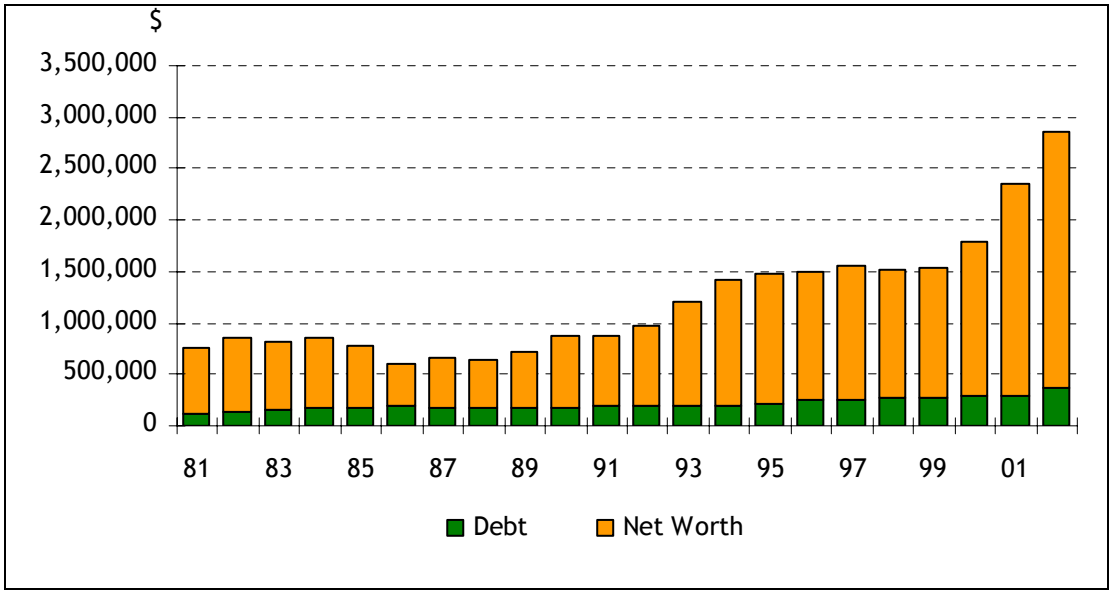
Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

Figure 5.16 Change in standing and interest charges (in current $) on sheep farms, New Zealand, 1981-2002



Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

Figure 5.17 Debt and net worth in current $ on sheep farms, New Zealand, 1981-2002



Source: NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; and our calculations.

It is important to note that the control of expenditure was also extended to control of debt. In fact, the debt progression has followed the same changes as total expenditure. Nevertheless, the economic fluctuations suffered by the sheep farmers have an amplified effect on their net worth (see Figure 5.17). From 1985, the drop in their net worth was particularly large and its increase has been quasi exponential from 2000. The total asset has also been increasing since then.

In total, it appears that farmers' adaptation strategy has allowed them to control the change in total expenditure. In current dollars, expenditure only increased by six per cent between 1985

and 1992[26] even though from 1981 to 1985 it increased by nearly 60 per cent. This control of expenditure has broadly contributed to stopping the drop in net farm income in real terms (see Figure 5.6). After 1992, total expenditure remained under control with an increase of 32 per cent between 1993 and 1999, but from 2000 they exploded, increasing by 32 per cent in only three years. Since 2000, total expenditure has increased, as has the total debt per farm. This recent change could have been due to a potential drop in the prices on the world market or an increase in the interest rates.

To face the crisis caused by the abolition of governmental support in 1986, the sheep farmers also had to establish a strategy to diversify their incomes. Thus, whereas from 1981 to 1985 the cash incomes from non-farming activities counted for 18 per cent of the available funds, this proportion increased to reach an average of 22 per cent between 1986 and 1999. Only from 2000 has the share of non-farm funds decreased on average to reach 22 per cent during the last three years of our period of observation[27]. Thus, the maintenance of the level of drawings after the abolition of the support for the sheep sector in 1986 (see Figure 5.5), in spite of the marked decrease in net farm income, was sustained by increased use of off-farm funds. It is therefore obvious that sheep farmers have been more dependent on off-farm funds since 1986.

5.3.4 A general strategy of adaptation

We have seen that net farm income in real terms was clearly falling for a long period beginning in 1973 and ending in 1986. This drop was to some extent accentuated in 1986 with the end of government price and income support. Faced with this declining income, sheep farmers implemented a general strategy of adjusting to changing economic realities. In general terms this strategy can be seen as having two components: those that concern on-farm adjustments and those that concern off-farm adjustments. Regarding on-farm adjustments we have noted first an increase in the productivity of fertiliser and of labour. At the level of the choice of type of production, beef production has been expanded at the expense of sheep production. And finally, there was close control of costs. Despite these important adjustments at the production level, an external strategy had to be used, namely growing reliance on off-farm funds. Thus since 1987, partially due to this general strategy of adaptation, net farm income as well as drawings have been maintained in real terms and the net farm income has increased from 2000 thanks to the enhancement of the sale price on the international markets.

5.4 The economic results of dairy farms

From 1964 to 1985/86, the New Zealand Dairy Board (NZDB) conducted an economic survey using an annual sample of factory supply dairy farms. This survey was interrupted for two years and then resumed in 1988/89 by the Livestock Improvement Corporation Limited (LICL). Despite this gap of two years in the data during an important time in the elaboration of New Zealand agricultural programmes, the survey provides relevant data for analysing the change in the economic results of dairy farms.

[26] In real terms, the total expenditures were clearly decreasing as the index of the input cost increased in 30 per cent between 1985 and 1992.

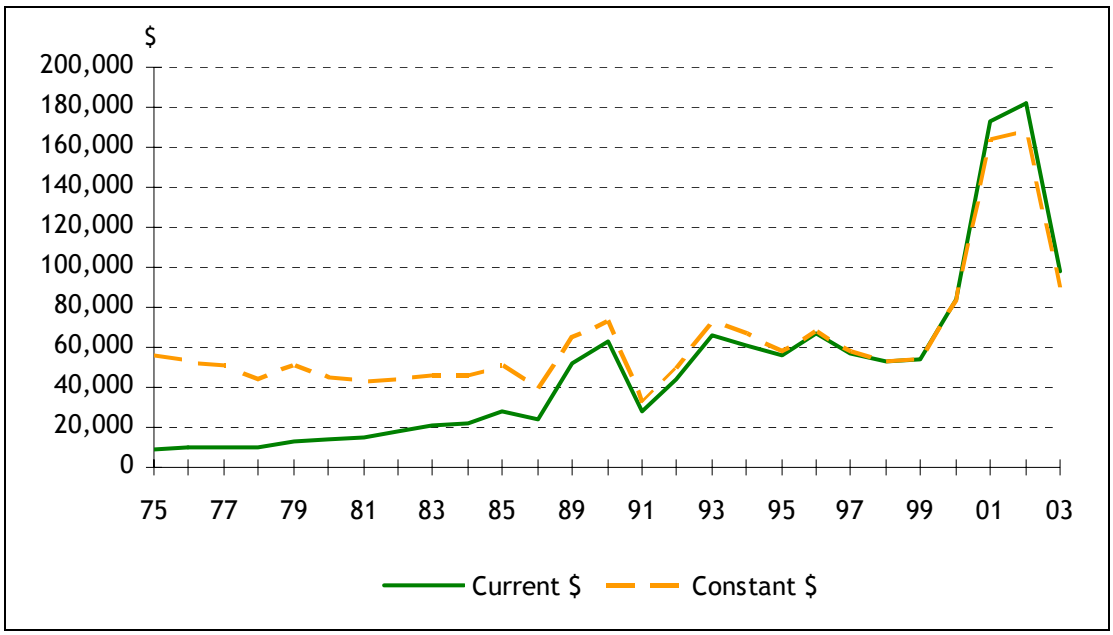
[27] NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years: Fairweather 1992; and our calculations.

This survey is based on a random sample of factory supply dairy farmers. The data used here include only the farms operated by their owners and excludes sharemilkers. To be included in the survey, until 1985/86 the farm must have had more than 30 cows and more than 75 per cent of its income must have come from dairy production; since 1988/89 the percentage of income must have been 50 per cent *(LICL 1993 and NZDB 1987)*.

As we saw in the beginning of this chapter, the milk price at the farm gate during the observation period moved closely to the world market price for dairy products (see Figure 5.4). Thus, the decrease in agricultural subsidies did not seem to have affected the farm price, contrary to the situation observed in the sheep sector. The data regarding the change in net income for the dairy farms confirms this first observation (see Figure 5.18). On the whole, net farm income changes closely with the annual price for production. In the light of these results, the increase in the volume of dairy output observed since 1978 (see Figure 4.12) seems to be explained by the improvement of the absolute and relative profitability of dairy production, especially if it is compared with sheep production.

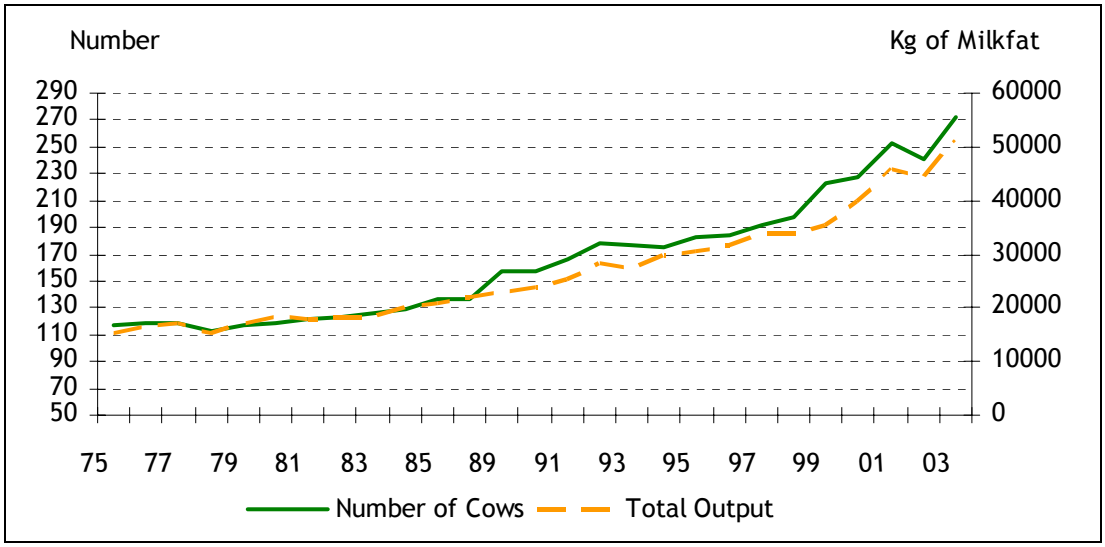
This increased profitability has encouraged an expansion of average dairy production per farm (see Figure 5.19). The average number of cows per farm is increasing in a similar way to total milkfat output. However, the increase in total output does not result from an improvement of yield per cow, this growing relatively slowly since the beginning of the 1980s (see Figure 5.20). There are nevertheless apparent gains of productivity in the use of land because the output of milkfat per hectare grew more than 65 per cent between 1975 and 1989. This criteria plateaued at the beginning of the 1990s but shows a 40 per cent improvement between 1993 and 2003.

Figure 5.18 Dairy farm net income in current and constant $ (1999 $), New Zealand, 1975-2003



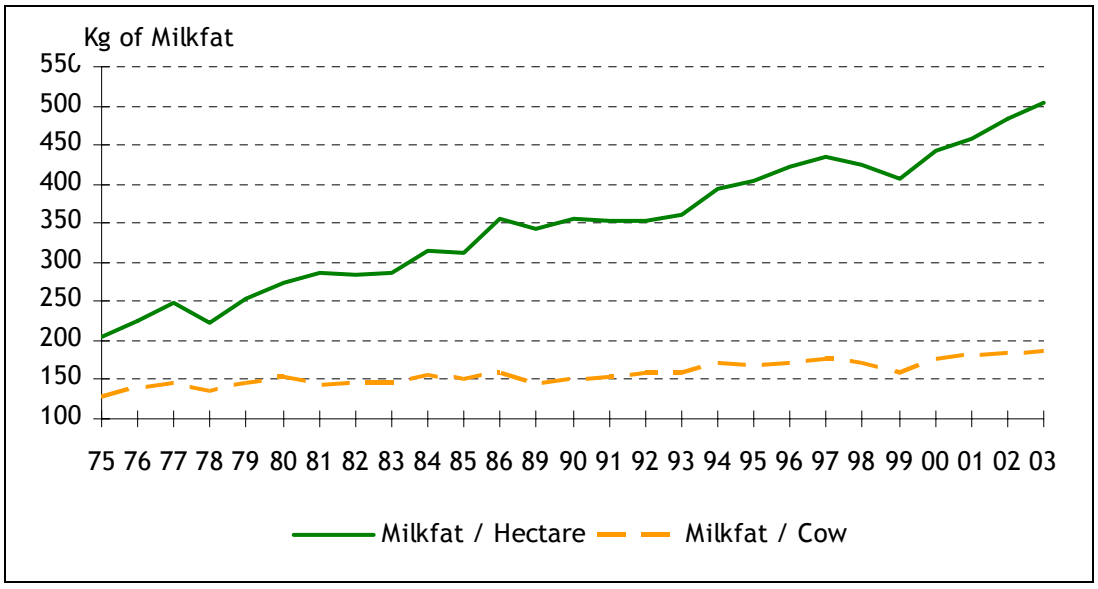
Source: Livestock Improvement Corporation Limited, 1993 Economic Survey of Factory Supply Dairy Farmers; New Zealand Dairy Board, Dexcel, An Economic Survey of Factory Supply Dairy Farms in New Zealand, various years; and our calculations.

Figure 5.19 Average number of cows and total output by dairy farms, New Zealand, 1975-2003



Source: Livestock Improvement Corporation Limited, 1993 Economic Survey of Factory Supply Dairy Farmers; New Zealand Dairy Board, Dexcel, An Economic Survey of Factory Supply Dairy Farms in New Zealand, various years; and our calculations.

Figure 5.20 Average output per cow and per hectare on dairy farms, New Zealand, 1975-2003



Source: Livestock Improvement Corporation Limited, 1993 Economic Survey of Factory Supply Dairy Farmers; New Zealand Dairy Board, Dexcel, An Economic Survey of Factory Supply Dairy Farms in New Zealand, various years; and our calculations.

To sum up, dairy production has been encouraged by a general increase in farm gate prices during recent years, which has also lead to an increase in net farm income. Consequently, the changes in agricultural policy seem to have had little effect in this sector. No specific adaptation strategy seems to have been implemented by dairy farmers apart from a steady increase in output and a relative intensification of land use. A brief analysis of the change in dairy farm expenditures does not show any major adjustments in the relative emphasis given to different types of expenditure.

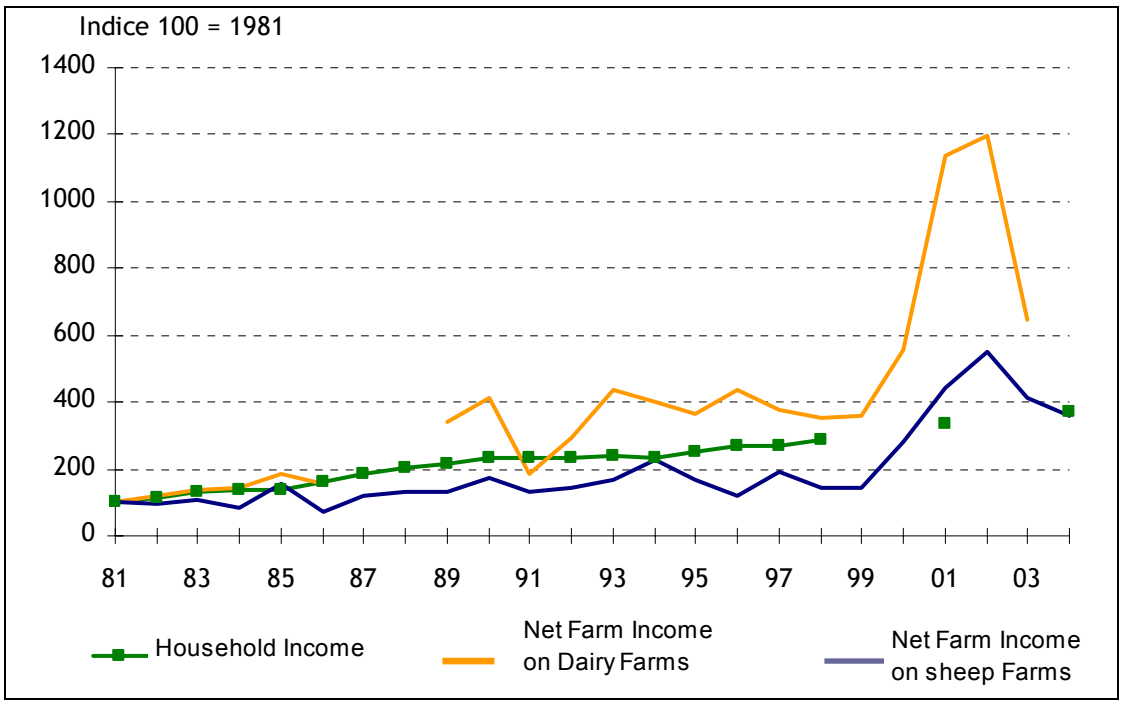
5.5 The change in farm incomes in relation to average income in the New Zealand economy

An analysis of the change in farm income in the sheep and dairy sectors shows two different realities. It is obvious that the dairy sector has benefited from a relatively good situation allowing an increase in net farm income in real terms since 1981 (see Figure 5.18). Conversely, net farm income and drawings decreased for a long period in the sheep sector before showing a clear improvement since 2000 (see Figure 5.6).

To conclude this analysis of the change in incomes, it is relevant to consider the change in household income for the New Zealand economy as a whole. Indeed, it is not only the farm sector that has been affected by the reform of New Zealand economic policy and by the economic crisis at the beginning of the 1980s and the 1990s. Therefore, despite some deterioration, the change in farm incomes could be relatively favourable when compared with the rest of the economy. However, this is not the case for the sheep sector since net income has been declining significantly since 1981 in comparison with the average household income (see Figure 5.21).

The dairy sector shows better performance than the whole economy. Since 1981, net farm income shows a relatively favourable change compared to average household income. The increase noted for dairy production during the whole period of observation is likely to be one of the reasons for that result.

Figure 5.21 Change in New Zealand average household income, net farm income on dairy farms and net farm income on sheep farms, in real terms, 1981-2004

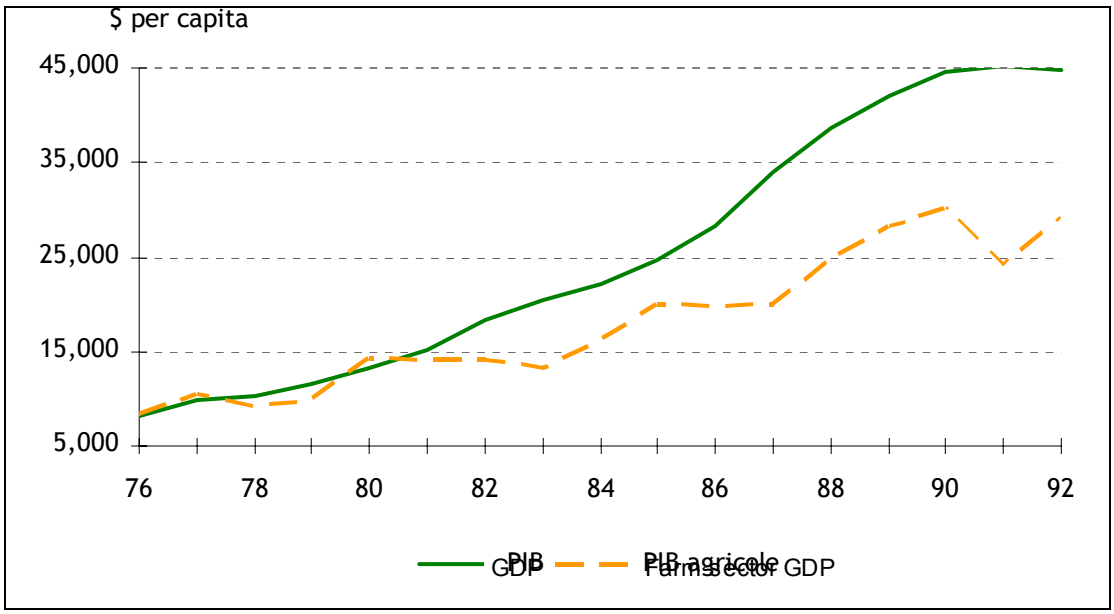


Source: Department of Statistics, Cat 04.001; NZ Meat and Wool Boards' Economic Service, Sheep and Beef Farm Survey, various years; Livestock Improvement Corporation Limited, 1993 Economic Survey of Factory Supply Dairy Farmers; New Zealand Dairy Board, Dexcel, An Economic Survey of Factory Supply Dairy Farms in New Zealand; and our calculations.

While we do not have data from surveys on the change in income for the other types of agricultural production, we know that for the farm sector as a whole in terms of exchange have deteriorated since 1981. However, this measurement does not allow a comparison

between the change in agricultural income and income in the rest of the economy. Figure 5.22 addresses this question by comparing GDP per person in labour force with farm sector GDP per person involved in farming. It is an indirect and incomplete measurement of the change in farm income, but it gives some information about the direction of this change.

Figure 5.22 Change in the GDP per person in labour force and the farm sector GDP per person involved in farming, New Zealand, 1976-1992



Source: Department of Statistics, PCInfos; Fairweather 1992, non-published data; and our calculations.

We note that the farm sector GDP per capita in 1976 was at the same level as the total GDP per person in labour force. It is only from 1981, with the beginning of the deterioration in the terms of exchange for the farm sector, that farm sector GDP has shown an unfavourable change relative to total GDP, always on a per capita basis. The gap between these two data sets widened from 1985 to 1987, at the height of the reform of general economic policy and agricultural policy. On this basis, the economic situation of the farm sector seems to have deteriorated relative to the total.

5.6 Conclusion

The analysis in this Chapter shows a deterioration of incomes in the farm sector compared with the rest of the economy. The sheep sector was particularly affected by the abolition of price support in 1986 and by the decrease of farm gate prices that resulted from it. However, this sector had falling relative farm incomes since the beginning of the 1970s, and the year 1986 emphasised this tendency. On the other hand, the dairy sector has benefited from some recovery in prices on the international market. For this sector, incomes in real terms have been on average higher since 1989 than those obtained during the period 1981-1986.

For the sheep sector, the most affected by the reform of agricultural policy, the detailed results from the surveys show that the farmers implemented an overall strategy to counter the decrease in their income. First, on the farm, they undertook actions to increase their productivity, to diversify towards beef production and to control expenditure. Resorting to off-farm funds was also important for allowing farmers to maintain their standard of living. This adaptation strategy combined with an amelioration of export prices allowed sheep

farmers to stabilise their income since 1987, despite the abolition of all kinds of support price and income programmes.

For the dairy sector, the analysis of the survey results does not allow us to detect a particular strategy of response, apart from a constant increase in the number of cows and in the level of production per farm. This increase resulted from the relatively favourable change in dairy product prices and farm income.

Chapter 6
General Conclusion

6.1 Introduction

The objective of this research was to analyse the effects on the farm sector of the 1985 reform of New Zealand agricultural policy. We have framed this analysis at a more general level as an issue relating to the specificity of the farm sector and in the context of agricultural policy in developed countries. Before presenting the summary of our research and a discussion of the results regarding this issue, we note some limitations to our analysis.

6.2 The limitations of this research

The first limitation of this research is that the methods applied do not allow us to formally reach a conclusion on the effects of the change of agricultural policy. We have favoured an approach that has combined many long-term indicators and only examined these if the tendencies observed were either modified or not following the change of agricultural policy. But too many factors are involved in the case of the New Zealand farm sector to establish a formal link of cause and effect between the reform of agricultural policy, the structural and the economic changes in this sector. Notably the general internal and external economic conditions in New Zealand have a major impact on the farm sector, including: the exchange rate, interest rates, the level of inflation and international market prices. Having said this, the summation of partial indicators that we have collected shows the nature and the extent of effects, or the lack of effects in some cases, of the reform of the agricultural policy.

In addition, we have to note that our analysis emphasises the measurement of easily quantifiable structural and income data. However, in doing this, our research neglects the effects that could occur at the level of the farmers' families who have suffered a period of heavy stress. Also, we have not quantified the social and economic consequences suffered by the rural communities following the reform of agricultural policy. Notably, Walker and Bell emphasise that the service industry was heavily affected by the farmers' decrease in input expenditure, and this factor led to a major restructuring of this industry. This process has contributed significantly to reducing the economic activity of rural communities (Walker and Bell 1994). Despite these considerations, our research has identified important lessons about the structural and economic changes that have taken place in recent years in the New Zealand farm sector. But this research does not intend to go beyond this level.

Finally, it is relevant to ask what can be learnt for other developed countries from this analysis of the New Zealand case. On that subject, Cloke emphasised that:

> Information here might be relevant when comparing the New Zealand case with the political economy arena of agriculture elsewhere in the developed world. Certainly various specificities of the New Zealand example make such comparisons very difficult. For example, the state in New Zealand is extremely centralized and the political class is very small, in line with the scale of society… Nevertheless a study of the New Zealand example does at least illustrate the types of policy-making conditions under which agricultural deregulation has been embraced (Cloke 1989).

But it was in the limited context of the process of formulation of economic policies that Cloke made his comment. Regarding the effects in the farm sector following the reform of agricultural policy in New Zealand, it is not appropriate to think that they are entirely reproducible in another national context. The economic and political environment in New Zealand is specific enough to invalidate generalisation. In addition, the farm sector in New Zealand has some distinctive characteristics, as we will see later. However, this limitation does not mean that there are no lessons for other countries to be learnt from research on the New Zealand case. We note here that such extrapolation must be cautiously made.

6.3 Summary

In New Zealand, the economic crisis led to a reform of government intervention in the whole economy. At the end of the 1970s and at the beginning of the 1980s, all macro-economic indicators converged to show the mediocre performance of the economy. Annual deficits and public debts were increasing and the balance of payments deteriorated quickly. Full employment was no longer guaranteed and unemployment became a significant problem. Finally, inflation was high. Major economic reforms were implemented from 1984. The New Zealand farm sector was at the centre of the reform because of its historical importance in economic development in the country, and more importantly, the government's rapid increase in financial support to the sector.

The farm sector, and in particular the heavily subsidised sheep sector, was hit strongly by general economic policy changes and by the reform of agricultural policy. Programmes to develop investment, income support and stabilisation policies, and input subsidies were all quickly dismantled. The expenditure of the Ministry of Agriculture and Fisheries (MAF), which had been maintained at more than six percent of the value of agricultural output between 1972 and 1985, was drastically reduced. From 1990, the level of expenditure returned at a level equivalent to that of the 1960s, at two percent of the value of agricultural output.

In order to help farmers through the unfavourable economic conditions and to adapt to the new economic environment of agricultural policy, the government put in place some transitional programmes. These programmes had the objective of lightening the burden of farmers' debt and a part of this debt was written off. It seems that such transitional programmes were effective and fewer than expected farmers left the farm sector.

The agricultural policy remaining in the 1990s consisted of programmes of research, advisory service, animal health and inspection. Most of these programmes were subjected to a policy of recovering costs from the users. Also maintained was the power of the marketing boards to intervene on the export markets with a central role for exporting some agricultural products. This power of intervention by the marketing boards has been maintained despite the significant deregulation undertaken in the whole economy. Thus the New Zealand farm sector was not entirely deregulated initially. The substitution of the Marketing Board by private companies occurred later at the end of the 1990s, 15 years after the reform. In fact, the governmental authorities seem to have let the concentration be effective in order to maintain the market power of a single private company on the international market.

It is important to note that the period when the transfer payments to the farm sector were high was relatively short in the history of agricultural development in New Zealand. It started in the middle of the 1970s and lasted for about 10 years. This makes the New Zealand experience in state intervention in the farm sector unique among the developed countries.

At the structural level, the reform of agricultural policy did not lead to major disruption. The abolition of transfer payments did not seem to noticeably modify the structural trends which were already occurring. The total number of farms had been increasing during the period 1970-1990. It was only from 1990 that the number of farms began to decrease, but as new methods for data gathering were used from 1993, this prevents us from drawing a conclusion on this point. The increase in the number of farms over such a long period may have been the effect of two main causes. First, the growing focus of horticultural production rather than traditional pastoral production on smaller farm units is certainly a cause. Second, the increasing number of small farms classed as lifestyle blocks is also an important factor.

However, the sheep sector has decreased in importance since 1982. The number of sheep farms and the sheep flock later reached a peak then decreased until 2001. This decline was accelerated at the end of the 1980s, with a delay of some years after the drastic cut of transfer payments to the sheep sector. This situation seems to have lead to growth of other sectors of traditional pastoral production, namely beef and dairy. Also, the diversification of the New Zealand farm sector already undertaken in the 1970s was pursued in the horticultural sector and in deer production.

During the years following the reform of agricultural policy, the value of agricultural output in real terms declined to the level of the 1960s. On the other hand, this decrease of the value of output is mostly related to the change in farm prices rather than a drop in volume of production. Indeed, sheep production was decreasing but this decrease was compensated in part by the growth of the beef and dairy sectors. Concerning the price of farm products, it is obvious that the end of the support price programmes led to a drop of sheepmeat farm prices, since these were the most subsidised. The decrease in price that occurred in 1986 was recovered on the international markets after about five years.

As for exports, they decreased in real terms in 1986 and kept the same level during the following 15 years. This decrease was more related to a deterioration of export prices than a marked decrease of export volumes. Regarding export volumes, whereas they had been increasing for a long period, they levelled off in the years following the reform of the agricultural policy. The increase in volumes of dairy and beef products has compensated the decline of sheep production but not at a level allowing a resumption in the growth of exports. However, the recovery of an increase in exports occurred from the beginning of the 1990s.

It is necessary to emphasise yet again the essential element of the analysis of structural change of the New Zealand farm sector. Following the reform of agricultural policy in 1985, the structural trends observed at the end of the 1970s and the beginning of the 1980s were not significantly modified. Only the decline of the sheep sector which accelerated with a delay of some years shows an unusual structural trend. The decline was linked to growth in the beef sector.

With regard to the change in farm incomes, once again the analysis over a long period shows that the main trends were at work before the reform of agricultural policy. The terms of exchange for the farm sector as a whole began to deteriorate at the beginning of the 1980s. However the production price index showed a significant drop in 1986, which accentuated the deterioration of the terms of exchange. It is necessary to note that for the beef, dairy and fruit sectors, the change in farm prices in New Zealand followed closely the fluctuations of prices on international markets. On the other hand, in the sheep sector the abolition of support price programmes produced a considerable effect in 1986. The farm price then greatly decreased even when the price on the principal export market was increasing. Since then, the international market became, as for other sectors, the principal factor affecting farm prices.

The analysis of economic and financial results of sheep farms shows that net farm income decreased strongly in 1986. However this decrease in net income in real terms is part of a long-term trend which began in the middle of the 1970s even when the transfer payments to the sector were increasing. Thus, considering this perspective, the year 1986 only intensified the decrease in net income already experienced over the long term.

After this time, sheep farmers adopted an overall strategy for facing the changing economic environment, and the strategy contributed to reducing the decline in their incomes. Farm productivity increased in the sense that output per unit of fertiliser and labour increased. The proportion of income coming from beef production increased to the detriment of sheep production. It seems that all that could be done to reduce expenditure was done. In particular, expenditure for fertiliser and for repairs and maintenance has decreased permanently. In fact, only the standing and interest charges have increased and these were out of farmers' control in the short term. Finally, to maintain the level of drawings by the farm owner which clearly fluctuated less than net farm income, other sources of funds external to farming have been used.

In the dairy sector, the analysis economic results of farms show that the reform of agricultural policy seems to have had little effect. Indeed, during recent years, milk prices at the farm gate have generally increased which has led to an increase of net farm income as well.

Finally, in comparison with the changes in income in the rest of the economy, given by the change in average household income, net farm income obtained on dairy farms has changed favourably since 1984. In contrast, the situation is the reverse for sheep farms which suffered a deterioration of their income relative to the rest of the economy from 1986 and it was only from 2000 that the situation was restored.

6.4 The specificity of the farm sector questioned

The analysis of the effects of the revision of agricultural policy in New Zealand shows that the farm sector could maintain its level of economic activities despite a significant reduction in state support. Does this analysis indicate that the specificity of the farm sector in New Zealand is similar to other developed countries as we discussed in Chapter 1? It is important to highlight each of the issues of specificity and discuss them in the light of the New Zealand case and the results we have obtained in the present research. There are four elements to the specificity of agriculture that we discuss here: the nature of demand, cyclical supply, asset mobility and climate.

First, it is generally admitted that demand is inelastic to price in developed countries. This is certainly true within the context of domestic demand in New Zealand. But it is not necessarily the case with regard to the demand for the whole New Zealand farm output which have a large proportion of products exported to international markets. Therefore, the individual farmers who face a perfect inelastic demand for their products[28] sold on the domestic market may not face conditions of inelastic demand on the international markets.
he organisations that sell farm products on international markets, previously public Marketing Boards and now private companies, have power and the will to counter the characteristics of demand. Fonterra, the organisation that operates as the exporter of New Zealand dairy

[28] In the context of competition where there is a large number of small farmers in comparison with the size of the market, it is really the aggregate supply of all farmers that faces an inelastic demand, and not the individual supply of one farmer.

products on the international market, can thus practice control of supply and price discrimination according to the capacity of each market. These are definitely some of the practices used to maximise the receipts obtained from the markets where demand is inelastic. Zespri Group International uses the same instruments to maximise its export receipts, just as in the sheep meat sector where there is a consortium of companies sharing the different markets and co-ordinating their actions.

Thus, despite a context of generalised deregulation of the New Zealand economy, Marketing Boards maintain their power of exclusive or major seller on the international markets. In that sense, the state regulation framework is still in force in New Zealand for the Marketing Boards and this is always justified on the basis of the characteristic of inelastic demand. However, this inelastic demand does not refer to the global international market but rather to each national sub-market that constitutes it.

The second characteristic of the farm sector is that supply is generally cyclical in the short term but maintained in the long term. New Zealand farm products are selling on a number of distinct markets which do not behave in the same way or in the same timeframe, and this reduces the cyclical effect of prices. For example, in the sheep sector, New Zealand paid dearly for its large subordination to the United Kingdom market when that country joined the EC[29]. But now, New Zealand has diversified its export markets, so that the diversity balances adverse prices on any one particular market. In the dairy sector, the change in prices on the world market is not strongly characterised by cyclical behaviour because it is dependent on the national dairy policies of the large producer countries such as the EC and the USA, and above all their level of export subsidies.

With regard to maintaining supply in the long term, even in periods of economic difficulties, the analysis indicates that it has been maintained during recent years. Nevertheless, this assertion is not true for each type of production but rather for the farm sector as a whole. In fact, sheep production has been decreasing but other production sectors, including dairy, beef, and fruits and vegetables have been increasing. Thus since 1986, despite the abolition of the transfer payments and the difficult economic conditions, the volume of agricultural exports has not decreased.

A lack of mobility of assets involved in farming is the third characteristic of the farm sector. It is this characteristic that seems to be the most useful in our analysis. The mobility of assets towards the off-farm sector was relatively little. As we have seen, despite the particularly difficult economic conditions in the sheep sector, the exit from farming was less than expected. Having said that, many sheep farms (the only ones for which we have relevant data) have resorted to external sources of funds. In particular, off-farm incomes have increased appreciably and this implies a relative mobility of a part of the human resources involved in farming families. However, this process is quite different from the exodus of this resource from the farm sector.

On the other hand, the farm sector has demonstrated considerable capacity for internal adjustment. There has been a considerable movement of resources from one production sector to another. This movement of resources could be easily facilitated by the fact that sheep and beef production uses approximately the same set of resources. The change from one to the other does not require significant investments, other than changing the type of livestock. For example, pastoral agriculture turned towards dairy production. But this does not explain all of the adjustments: there has also been diversification towards non-traditional

[29] Now European Union.

production of deer, angora goats (without any success in this case) and horticulture. Thus, the production process has moved towards increasing productivity, and to control and reduce production costs. In this way, the family organisation of production has shown its capacity of resistance to declining prices and above all its adaptation to lower returns from its resources.

The exposure of the farm sector to climatic conditions is the fourth important characteristic of the nature of farming. The New Zealand farm sector is no exception in this matter. It is relevant to note however that in this matter, the government intervened by ad hoc programmes but with very small budgets.

The combination of the four characteristics of the farm sector that we have just discussed is used to justify the institution and the maintenance of agricultural policies of stabilisation and support of prices and incomes. Although these policies have been abolished in New Zealand, the effects on the farm sector in the medium-term do not seem to have been catastrophic. Nevertheless, the New Zealand farm sector is also affected, as in other countries, by the destabilisation effect of these characteristics, even if they do not impact with the same intensity as in other developed countries. In this case, is there anything specific in New Zealand which is not present in other developed countries which might explain the lack of need for state intervention?

First, the historical conditions are different from elsewhere. In a country where the farm sector has until recently been the mainspring of the economy and of exports, the issues of land occupation and food security have less importance. An island country located at more than 2,000 kilometres from its nearest neighbour does not have any significant threat to its territory that needs to be resolved by means of land occupation. Also, a country that exports about 85 per cent of its dairy products, 95 per cent of its sheepmeat and 80 per cent of its kiwifruit does not have to consider the question of its food security. Just as in other developed countries, the importance of farm employment and the essential part of the farm sector in the balance of payments of the country have played a role in the growth of support expenditure to this sector which began in the middle of the 1970s. But the economic and political environment in 1984 and 1985 led to the removal of support expenditure which had only been manifested by significant intervention for a relatively short period of New Zealand's history. Thus the first specificity of New Zealand in comparison to other developed countries is the historical conditions that led other countries to permanent government intervention in the farm sector, but did not lead to pronounced financial intervention in the New Zealand case.

What more fundamentally explains the specificity of New Zealand is the capacity of the production process in pastoral agriculture to be based solely on the world price for its products while ensuring that the farming population receives an appropriate standard of living. In the dairy sector, for example, the farm gate price in New Zealand is just more than half that of the Northern Hemisphere countries. At this price, New Zealand dairy farmers have been encouraged to increase their production during recent years. In the sheep sector, the withdrawal of transfer payments led to a significant liquidation of livestock and a major reallocation of resources. But the farmers remaining in sheep production succeeded in stabilising the level of their income in real terms from 1987. We did not make an international comparative analysis of production costs which included New Zealand. It is very probable that such a study would illustrate the competitive capacity of the New Zealand farm sector and would explain its marked presence on the international markets despite its distance from these markets.

Finally, do the characteristics of the farm sector in New Zealand justify specific intervention by the state? It seems that the answer is no, but as the case of New Zealand is itself specific,

the results obtained in the present research should not be directly generalised to other developed countries. However, the large capacity of the family organisation of farming to adapt to changing economic conditions has been clearly demonstrated by the analysis of the New Zealand case. It is probably at this level that some analogies can be established with the farm sector situation in other developed countries. Thus, three elements of the present research merit attention. First, the mobility of resources away from the farm sector was relatively unimportant in the New Zealand case. Second, farmers adapted rapidly and efficiently to the new economic environment by modifying the use of their resources in order to mitigate the decrease in their incomes and to maintain their standard of living. Third, the long-term trends that were already apparent before the implementation of the new policies, including structures of production and farm incomes, were not dramatically modified by the reform of policies and the economic crisis suffered by the farm sector. Are these results only relevant to the New Zealand farm sector, with its unique specificity, or are they related to some characteristics of family organisation of farming that are not specific to New Zealand? If the latter is the case then the implications of the results from the present research would have some relevance outside New Zealand.

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