FINANCIAL VARIABILITY OF SOUTH CANTERBURY DRYLAND SHEEP FARMS:

A Case Study Analysis through Time

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EXECUTIVE SUMMARY

Between 1978179 and 1989/90, incomes on South Canterbury farms were significantly affected by circumstances outside the control of farmers.

These were:

1. Changes to market prices for outputs.
2. Adverse climatic events.
3. Increased debt servicing costs.

This study of 10 South Canterbury farms examines the variation which occurred to gross incomes, farm expenditure, cash farm surplus, disposable profit and net cash result (surplus/deficit) for each farm over the time series.

The way farmers managed this change and the varying outcomes was influenced by their own personal and family objectives and life situation in addition to their farm management, business objectives and situation.

This paper examines the 10 case study farms to determine how the personal and family objectives and situation influenced the farm and business management decisions made by the farmers.

Each farmer was interviewed and a physical time line of events was drawn up. Next to this was put a financial analysis of farm accounts for the 12 years.

Each individual property showed unique results.

Combined, the results of the 12 properties showed some strong trends.

The outstanding result of the study is the high variation that occurred in income levels between years over the 12 year series, the large downward trend in income, and the inability of farmers to manage these changes adequately by changing farm management practices. Although farmers reduced farm expenditure in an attempt to counter income falls they were severely limited by non-discretionary and fixed expenses.

Performance levels also varied considerably between years, but to a much lesser extent than did income levels.

These variations in income and performance levels were generally caused by influences beyond the farmers' control.

For the 10 properties over the 12-year series, gross farm income variation was high. The major impact came from product price changes and not the droughts of the period.

The effect of the above external influences on individual properties varied considerably depending on the individual situation, particularly the physical and financial structure of the farm at the time. The physical and financial structure of farms depended on personal goals and motivations as well as the historical decisions made on the farm and in some cases the career cycle of the farmers.

Generally speaking, those properties affected to a lesser degree by the external influences were the more established, more financially sound, higher performing and more conservatively farmed properties.

To some extent, the degree of hardship and suffering of farming families in the mid- and late 1980's was a function of luck dependent on their stage of farming and the decisions they made in the early 1980's when the change that occurred in the farming environment was completely unforeseen.

Over the period of change, many farmers became very bitter toward the government. They felt betrayed because of the dramatic, unforeseen and unannounced change in their circumstances over which they had no control. To farmers, farming had been a family lifestyle, often hard, but good. Now they saw its traditional position of importance to New Zealand being devalued. The business environment in which they had operated was suddenly and dramatically altered by changes in Government Policy.

Looking back over the period of the 1970's and 1980's, the farmers identified that many government interventions and supports had been detrimental by providing false signals and encouraging farmers to make decisions for the wrong reasons. However, they felt that the process of deregulation had been badly managed by Government and that the Government had been particularly ruthless and insensitive to the circumstances of farmers and their families.

A very apparent result of the study was how little a sheep farmer could do in the short term to counter a sudden drop in product price.

All farmers reduced farm expenditure in an attempt to counter the income falls from 1985/86 onward. The results clearly show the limited degree to which this was possible and the large impact that reducing incomes had on cash farm surplus and disposable profit levels.

The study results indicate that annual physical and financial indices and ratios (e.g. farm expenses as % gross farm income) must be used with caution when comparing one farm with another or to compare the same farm in different years. These comparative criteria are very dynamic which emphasises the importance of evaluating the performance of a farm over time, both historically and in the future. The criteria do have merit, but they have limitations and must be interpreted in light of the climatic and economic conditions and the physical and management resources of the farm business.

CHAPTER 1- Introduction

Between 1978/79 and 1989/90, incomes on South Canterbury farms were significantly affected by circumstances outside the control of farmers.

These were:

- Changes to market prices for outputs.
- Adverse climatic events.
- Increased debt servicing costs.

This study of 10 South Canterbury farms examines the variation which occurred to gross income and expenditure streams over the 12 year time series.

The objectives of the study are to:-

1. Develop a family and farm physical time line for each of the 10 properties.
2. Summarise the financial, economic policy and climatic developments which occurred over *the same period.*
3. Compare the financial and physical time lines; comment on the physical factors which impacted on the variance in the financial results. These physical factors to include and be distinguished as either:

    3.1 Things within the farmer's control, ie decisions made and directions chosen;
    3.2 Things beyond the farmer's control.

4. Examine the impacts that the external physical and financial variation had on the 10 properties with respect to the farm management and personal decisions that the farmers made over the period.
5. Prepare a detailed report which examines the 10 case study farms individually and which

summarises the results and conclusions which may be collectively drawn from these individual studies.

6. Prepare a brief summary report suitable for public release which outlines the work undertaken and the results and conclusion of the study.

7. Present the results and conclusions to the 10 participating farmers and their accountant with the aim of discussing and gaining feedback, and of obtaining the farmers' perception of "viability" and "risk". The results of this meeting may clarify the need and objectives for a continued study on farm viability and risk management at the farm level.

CHAPTER 2 - Socio-Economic and Climatic Overview

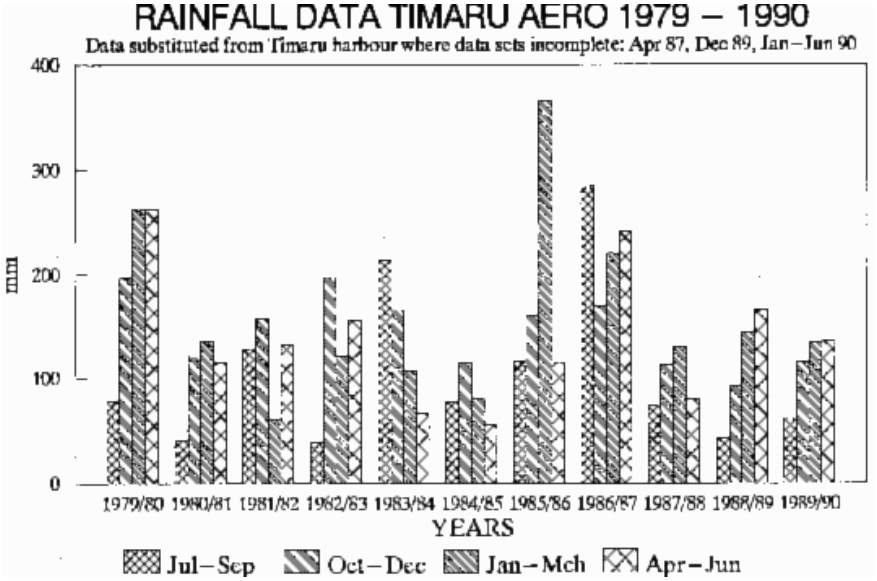
Between 1978 and 1990, the time series for which the data in this report is presented, South Canterbury farmers were operating in an environment of considerable change.

- There were three major drought events (1981/82, 1984/85 and 1988).

- The New Zealand economy was restructured after the Labour Government was elected in 1984. Over the period 1984 - 1990 this restructuring impacted on the farming sector particularly severely.

- As a result of major economic restructuring farmers were faced with significant changes to prices received for outputs (1amb in particular) and to interest rates on historical debt Rural Bank loans) and current account debt.

This chapter presents an overview of the socio-economic and climatic environment in which South Canterbury farmers had to operate.



Climate

Figure 2.1 shows the quarterly rainfall data recorded at Timaru airport for the period. For some of the data set observations were not available from Timaru airport and for these periods Timaru harbour observations have been substituted in the series.

The graph shows the low rainfall periods in 1980-82, 1984/85 and 1987/88.

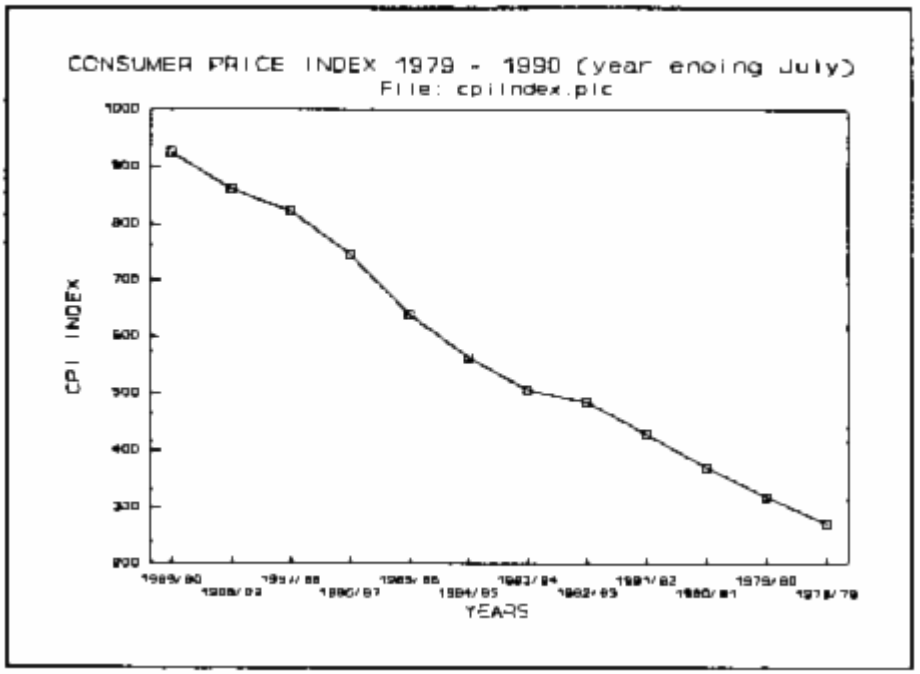
The following table shows the rainfall (annually and quarterly) for the two latter dry periods

compared to the average rainfall over the same periods for the data series.

	Mean for period (79-90) millimetres	1984/85		1987/88		1988	
Period		Actual mm	Actual as % of Mean	Actual mm	Actual as % of Mean	Actual mm	Actual as % of Mean
Annual	550.5	329.0	59.8%	396.0	71.9%		
July - September	1052	78.0	74.1%	73.0	69.4%	43 0	40.9%
October-December	1461	115.0	78.7%	113.0	77.3%	920	63.0%
January-March	1601	80.0	50.0%	130.0	81.2%		
April-June	139.1	56.0	40.3%	80.0	57.55%		

In addition, both the years 1988/89 and 1989/90 were dry with 444.6 mm and 447.4 mm annual rainfall (80% of the mean for the series). The combination of these four years of very low rainfall reduced the mean for the series; consequently the droughts were more severe than is indicted by the results for the series. The long term (30 years) average for Timaru airport is 575 mm.

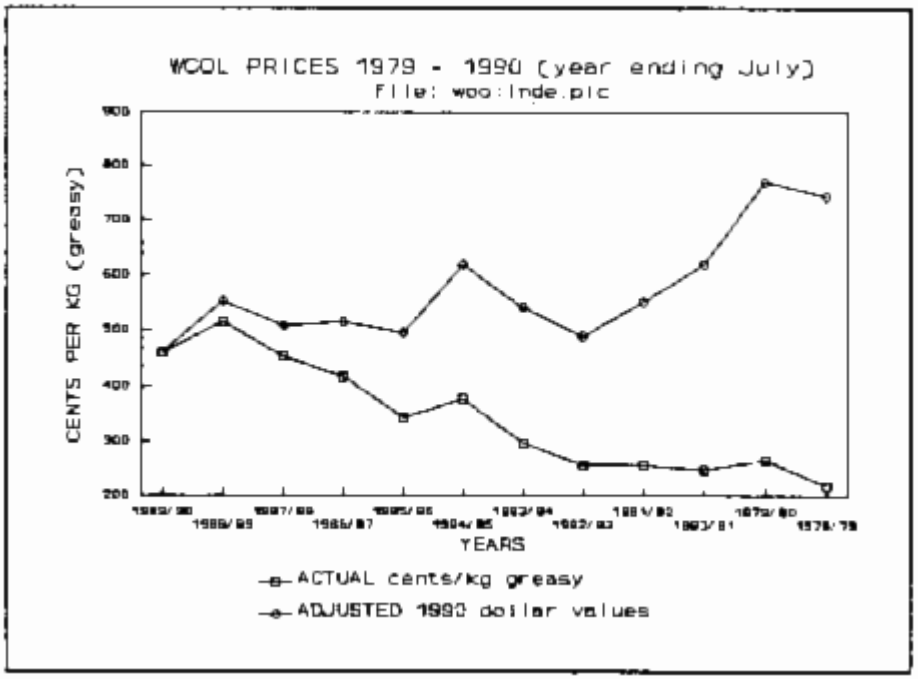
Figure 2.2



Prices

Consumer Price Index (CPI): *Figure 2.2* shows the large change in CPI from 1979 - 1990. This simply shows that in 1990 it took approximately 900 c to buy what cost approximately 300c in 1979.

Figure 2.3



Wool:

Figure 2.3 (Click box at bottom right) shows price for wool (1979 - 1990) in cents per kilogram greasy. Prices are expressed in 1990 dollar values as well as in nominal terms.

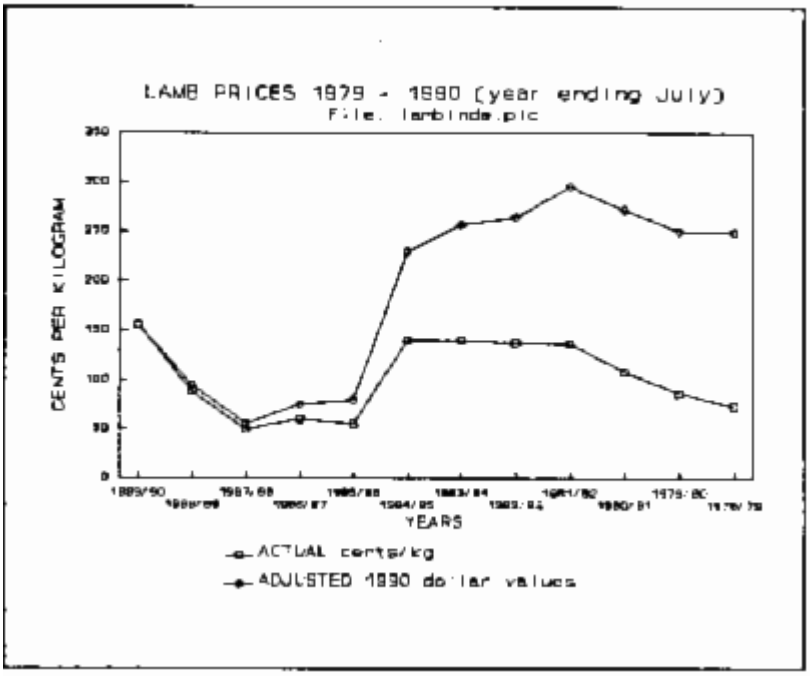
Apart from the 1984/85 year (which was also a drought year for South Canterbury farmers) wool prices have steadily declined in real terms between 1979 and 1990. However, the most significant decline occurred between 1979 and 1982, prices rose again in real terms in 1983 and 1984 but remained depressed but stable between 1985 to 1990.

In 1990 terms prices were as follows:-

Wool Price (c/kg greasy) (1990 dollars)

Time Period	Mean	CV
Pre 1984	634.7	18%
1984 - 1987	543.7	9%
Post 1987	507.4	8%
Overall	572.5	18%

Figure 2.4



Lamb: Figure 2.4 shows price for lamb (1979 - 1990) in cents per kilogram exclusive of wool pull and pelt payments. Prices are expressed in 1990 dollar values as well as in nominal terms. The series shows that in 1990 lamb had recovered to 62.4% of its average value in 1990 dollar terms between 1979 - 1981 and that the lowest prices were received between 1986 - 1988.

In real terms prices were as follows (1990 dollars):

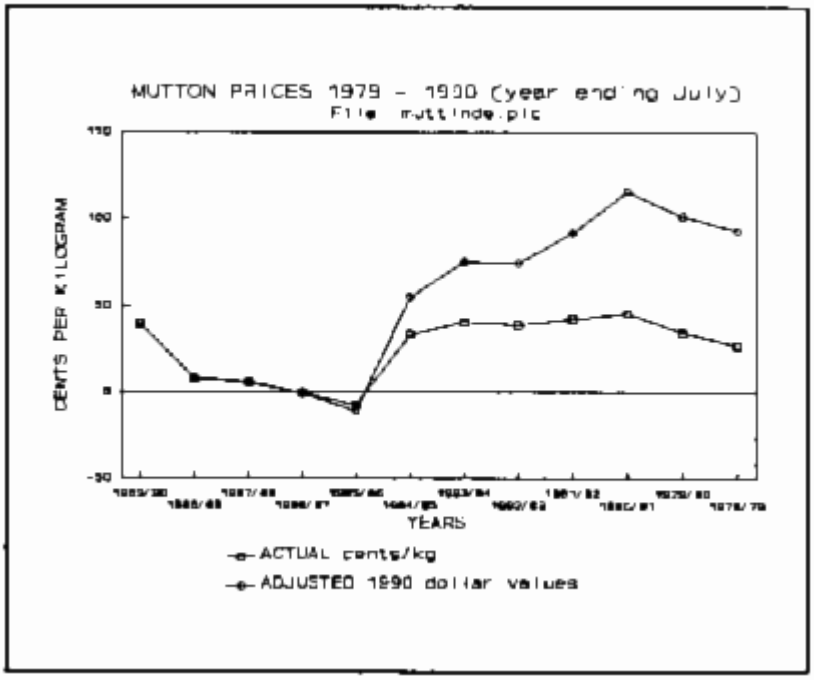
1979-81	256.4 c/kg
1986-88	69.9 c/kg
1990	155.8 c/kg

Between 1986 -1988, lamb meat prices were 27.3% of the value of lamb from 1979 - 1981 in real terms. To correspond to tables presented later in this report the following were the lamb prices (mean and coefficient of variation for the period) for three other periods of the series (1990 dollars).

Lamb Price (c/kg exclusive of wool and pelts) 1990 dollars

Time Period	Mean	CV
Pre 1984	265.5	7%
1984 - 1987		57%
Post 1987	102.01	44%
Overall	189.5	50%

Figure 2.5



Mutton: *Figure 2.5* shows prices for mutton (1979 -exclusive of wool and pelt payments. Prices are expressed in 1990 dollar values as well as in nominal terms.

The series shows that prices in nominal terms (actual cents/kg) remained constant between 1979 and 1985 at around 38 c/kg. In real terms this price was 87 c/kg (1990 dollars).

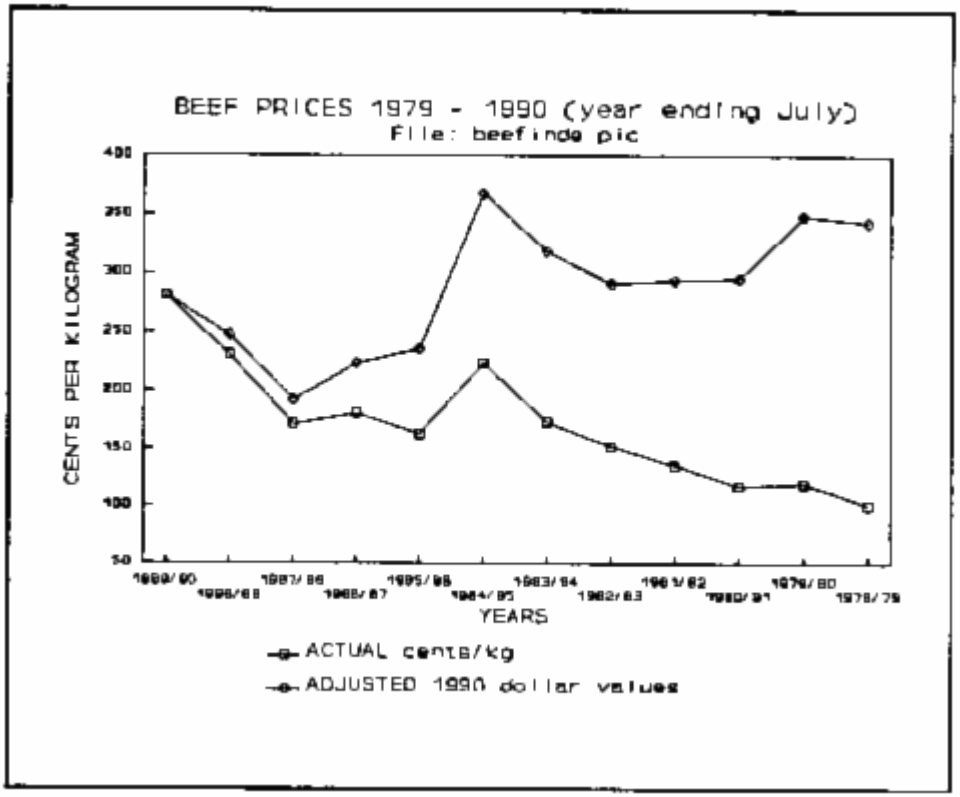
Prices in nominal and in real terms then dropped markedly and were negative; during this period many farmers killed ewes and wethers on-farm because they were not worth the freight to the works. This situation continued until 1990 when prices lifted to 40 c/kg.

Consistent with later sections of the report the prices for mutton are presented for the following periods.

Mutton Price (c/kg) (1990 dollars)

Time Period	Mean	CV
Pre 1984	95.4	15%
1984 - 1987	29.9	133%
Post 1987	18.2	92%
Overall	54.3	85%

Figure 2.6



Beef: Figure 2.6 shows prices for all beef (1979 - 1990) in cents per kilogram. Prices are expressed in 1990 dollar values as well as in nominal terms.

The series shows that beef prices have varied, in real terms, quite significantly. The mean price over the 12 year period has been 286.6 c/kg with a range between 192.8 c/kg and 367.3 c/kg (1990 dollar values). The coefficient of variation over the period was 20% which is about the same as for wool (18%) but significantly less than for lamb (CV = 50%) and mutton (CV = 85%).

Prices in nominal (actual) terms have increased over the period. Prices peaked in real terms in 1984/85 at 367.8 c/kg; this was also a drought year in South Canterbury.

In 1990 beef price was 280.9 c/kg compared to the high of 367.8 c/kg in 1984/85 and 343.1 c/kg in 1978/79.

The following table shows beef prices for the periods referred to in later sections of this report.

All Beef Price (c/kg) (1990 dollars)

Time Period	Mean	CV
Pre 1984	314.3	9%
1984 - 1987	286.5	23%
Post 1987	240.4	16%
Overall	286.6	20%

Government Policy

Table 2.1

Key Stabilisation and Liberalisation Measures which affected the Domestic and Export Market for Sheep and Beef Farmers (1978 - 1990):

Year	Measure Introduced/Announced (by Category)
1978	***Exchange Rate Policy*** - Announcement of intention to manage an overvalued exchange rate to provide incentives to exporting industries.
	Domestic Product Markets - Introduction of "Supplementary Minimum Price" (SMP) schemes for wool, meat and dairy.
	Agricultural Finance Market - Introduction of the rural "land development encouragement" scheme (LDEL, 7% interest rates).
1979	***Exchange Rate Policy*** (June) - Relaxation of controls on purchase of exchange and introduction of "crawling peg" exchange rate.
	Agricultural Finance Market - Introduction of vendor finance scheme.
1981	***Domestic Product Markets*** - legislation establishing trading accounts for meat to join the already established accounts for dairy (1954) and wool (1976). (Meat Industry Stabilisation Account).
1982	***Excnange Rate Policy*** (June) - Fixed exchange rate reintroduced (requiring further subsidising of lamb and wool prices).
	Monetary Policy (June) - Introduction of a freeze en wages and prices, and controls on interest rates limiting government stock rates to 8% and first mortgage rates to 11 %.
1983	***Commercial Policy*** (January) - Announcement of Closer Economic Relations (CER) agreement with Australia, with commitment to freer trade and financial integration.

1984 ***Monetary Policy*** **-** Price freeze partially lifted early in 1984, then, in last half of year, gradual reduction for other commodities.

Domestic Product Markets (June) - Announcement of intention to end SMP scheme in 1984.

Commercial Policy (June) - Producer Board reserve accounts at Reserve Bank to be charged commercial interest rates.

Exchange Rate Policy (July) - Following a major capital outflow, the **newly** elected government undertook a devaluation of 20% against a basket of currencies of major trading partners.

Financial Markets (July/August) - Market deregulated. Credit growth guidelines abolished and control of interest rates removed.

Commercial Policy (October) - Announcement of abolition of Wheat Board.

Labour Policy (November) - Wage freeze lifted.

Fiscal Policy (November) - Announcement in Budget of phasing out of fertiliser and noxious weeds subsidies, lowering of irrigation and water supply subsidies, partial cost recovery on product inspection reintroduced December 1985), and Rural Bank and Finance Corporation (RBFC) interest rates raised progressively by 1% annually) to market rates. Investment taxation allowance allowed to expire and farm vendor finance scheme ended.

1985 ***Exchange Rate Policy*** (March) - New Zealand dollar floated on 4th and Reserve Bank role ***shifts to*** control of monetary policy.

Fiscal Policy (June) - Ten-year clawback and loss limitation taxation provisions repealed, land development concessions phased out and livestock standard value

system modified.

Commercial Policy (June) - Commitment made to phasing out assistance to land based and manufacturing industry.

Domestic Product Markets (November) - Termination of Meat Board Sheep Pool and trade returned to the private sector.

1986 ***Fiscal Policy*** (May) - Introduction of cost recovery of advisory, research, animal health and quarantine services, while MAF budget to be progressively reduced.

(July) - First year depreciation allowance withdrawn.

(October) Goods and Services Tax (GST) commenced at 10%.

Agricultural Finance Markets **(July) -** Announcement of RBFC discounting loans scheme (applications closed July 1987).

1987 ***Fiscal Policy*** (December) - Announcement of major tax and tariff reforms including raising GST to 12.5% and reduced personal and company tax rates (from 1 October 1988).

Commercial Policy (December) - A four year programme of tariff reductions, and a two-step reduction in duty on motor vehicles announced.

1988 ***Fiscal Policy*** (July) - Review of state sector to promote efficiency and productivity announced. Tax cuts and maintenance of reduced budget surplus announced and also intended reduction in overseas debt.

1989 ***Fiscal Policy*** - Announcement that inspection services by MAF Quality Management would move to full cost recovery by July 1990.

Monetary Policy (May) - A new Reserve Bank Bill introduced to Parliament which sets the achievement and maintenance of price stability as Reserve Bank's

primary objective.

(July) - Budget includes the restatement of 0-2 % inflation targets for 1992

Agricultural Finance Market (August) - Rural Bank (RBFC) sold to private interests.

1990 ***Monetary Policy*** (February) - Reserve Bank Act 1989 came into force.

(July) - Budget measures included abolition of excise duties on diesel and motor vehicles; tax simplification measures to reduce avoidance.

(December) - Commodities levies Act provides for compulsory levies on commodities to fund general development of specific industries.

1991 ***Labour Policy*** (May) - Employment Contracts Act took effect.

Note: Assistance to Agriculture: By 1992/93 the effective rate of assistance to agriculture has fallen to -3% compared to ***52%*** a decade earlier.

Source: A B Walker, "New Zealand as a Case Study for Understanding Agricultural Economics and the Process of Restructuring in the Agricultural Sector", MAF Policy, August 1993.

Table 2.1 highlights the major Government policy initiatives which affected the farming economy through changing prices for outputs and inputs, including the interest rates charged to the farming sector.

The effect that these measures had on the farming sector (at the farm level) is discussed briefly below:

Commodity Prices

The managed exchange rate policy which prevailed from 1978 to 1984, which had the effect of keeping the value of the New Zealand dollar at artificially high levels, reduced the dollar value of exports. To compensate farmers for the effect of this overvalued exchange rate the Government adopted two measures in particular.

- 1978- The introduction of supplementary minimum prices for meat, wool, and dairy products.

- 1981 - Meat Industry Stabilisation Account (MISA); meat was included in this scheme in 1981, the scheme was already in effect for wool and dairy produce.

'The MISA accounts were meant to buffer farmers from fluctuations in market prices by supporting prices when they were low and making payments into the account, by way of levy, when prices were high. Lower and upper trigger price levels were set and prices were allowed to fluctuate between these trigger points before payments were made or levies drawn.

Since sheepmeat prices were falling on the export market, this sub-sector required the major level o~ price support and a deficit of $930 million had accumulated in the MISA account when it was eventually terminated and debts written off in 1987. In contrast the wool account remained in credit.

Supplementary Minimum Prices (SMP) were introduced in 1978 with the intention of supporting prices and export revenue expansion.

When the MISA scheme came into effect in 1981 (for meat) the SMP price was generally above the minimum trigger price under the MISA scheme. Consequently the Government paid the difference between the lower trigger price under the MISA scheme and the SMP price but the Producer Board met any shortfall up to the minimum trigger price level, drawing on Reserve Bank 1 % credit facilities until 1984 when market interest rates were charged.

The SMP scheme was terminated in 1984 but a lump sum payment, made as part of the transitional arrangements, meant that support was continued for sheepmeat until September 1985.

As an approximation, SMP payments were worth about $4.50 per head in 1984 and support from the stabilisation account was about $6~00 per head in the same year.

Figure 2.4, 2.5 and 2.6 show clearly the drop in meat prices that occurred in the 1985/86 season, most particularly for lamb.

In 1985/86 actual (nominal) lamb prices dropped by 84.6 c/kg or by about $10 per lamb; when combined with reduced wool and pelt payments this resulted in a reduction of around $12.00 per head for lambs on many farms (about a 50% reduction).

The Government devalued the currency by 20% in July 1984. Whilst this resulted in slight increases in wool and beef prices it had little impact on sheepmeat due to the over supply of product and the high costs in the processing sector at that time which negated any benefits which may have otherwise occurred to farmers.

Interest Rates

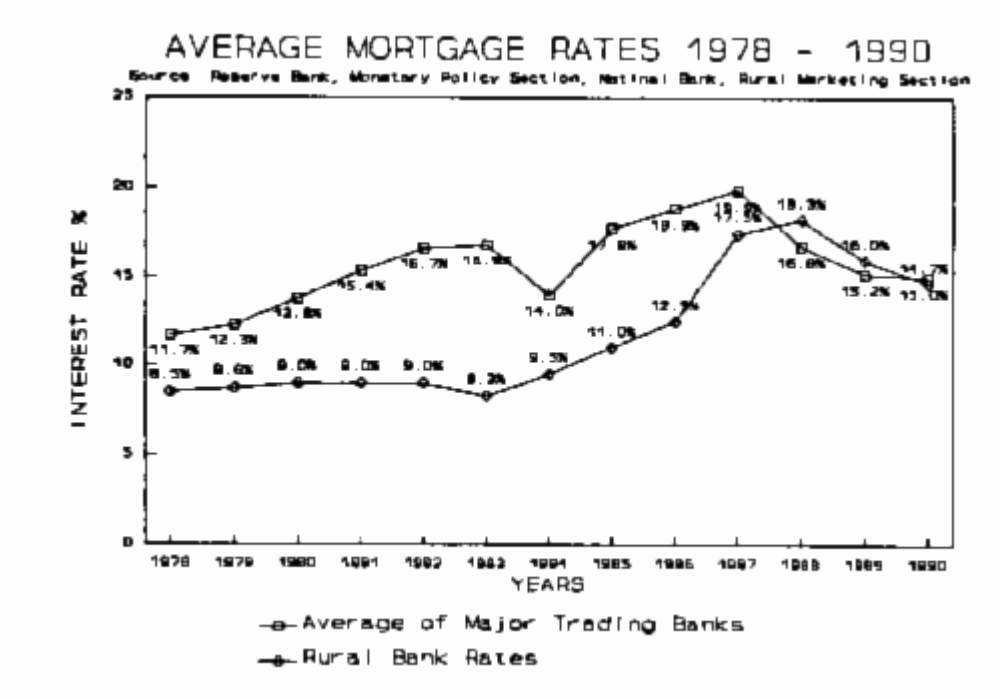


Figure 2.7 shows the average mortgage rates from the four major trading banks and the Rural Bank between 1978 and 1990. The graph shows that Rural Bank interest rates were significantly lower than commercial lending rates from 1978 to 1987. In 1988 commercial rates applied to Rural Bank loans and in the last few years of the series rates to the farm sector rose above the rates for other sectors.

The rates charged to farmers for overdraft facilities varied greatly between lending institutions and between farms, depending on the perceived risk to the lender. In some instance overdraft rates exceeded 30% if clients exceeded a predetermined overdraft limit set by the lender.

In 1978 the Land Development Encouragement Loan (LDEL) was introduced and managed by the
Rural Bank for qualifying land development. In most cases the rate of interest for these loans was
7%, some 4-5 percentage points below commercial lending rates.

The Rural Bank was the major lender to the rural sector over the period. Prior to the sale of the Bank to the private sector in August 1989, the Rural Bank advanced loans for subsidised development, farm mortgages and for capital works and plant and equipment purchases (term - debt); it was not, however, a source of seasonal finance.

Rural Bank first mortgage rates were of the order of 9% in the early 80's with subsidised development loans and livestock incentive scheme finance at around 7%, both rates were significantly below rates for other sectors.

In November 1984 the Government increased RBFC interest rates progressively to market rates.

However, due to the decline in the rural sector during the latter half of the 80's (after 1985) and the inability of many farmers to repay debt and with negative (or very low) equity which was the result of a decline in land prices, the Government announced the RBFC mortgage discounting scheme in July 1986 with application closing in July 1987.

This scheme kept repayments for most RBFC clients similar since interest rates were increased to 17.5% but the principal amount owing was discounted. The objective of this scheme was to encourage other lenders to carry farmers through this period and avoid large numbers of mortgagee sales by increasing the farmers' equity and giving other financiers greater security over the farm assets (land, buildings, plant and livestock).

In addition to these measures, farmers were entitled to free consultancy services (through the Rural Trust) in order to review their financial situation, farming objectives and management.

A special exit scheme was introduced to enable farmers on non-viable farms to leave faring and Social Welfare provisions were made more accessible to farmers who were unable to meet living expenses from their farm incomes.

Other Measures

Whilst of less significance, a number of other measures were introduced with the objective of eliminating subsidies to the farming sector. Other economic liberalisation measures affected sectors servicing the rural community and, over time, resulted in lower cost services to farmers. The measures included the reduction of significant tax incentives for farming.

The other measures of significance were:

- November 1984: Phase out of fertiliser and noxious weed subsidies, lowering of irrigation and water supply subsidies, partial cost recovery of product inspection (meat).
- June 1985: Ten year clawback and loss limitation taxation provisions repealed, land development concessions phased out, livestock standard value system modified
- July 1986: First year depreciation allowance withdrawn.
- July 1990: Abolition of excise duties on diesel and motor vehicles.

Farm Values

Between 1982 and 1988 the value of grazing farms fell by 32% compared to an increase in values of 540% - 803% in the decade 1972 - 1982, when subsidies were predominant.

Summary

The combination of these measures reduced the effective rate of assistance to the agricultural sector by 1992/93 to -3% compared to 52% a decade earlier.

CHAPTER 3 - Method

On 10 farms time series financial and physical data was collected from current and historical accounts for the period July 1978 to June 1990; this data represents the farm accounting years 1978/79 through 1989/90 (a 12 year series).

The farms were selected from South Canterbury (summer dry) sheep and beef farms such that there was a variety of farms and farmers in the sample. Farms were chosen from a sample of farm owners all using the same accountant; this assisted in ensuring standardisation of historical data across farms. The sample was not a random sample of farms. The sample was chosen by the accountant to represent a range of farmer ages, stages in farming and decision making styles.

The financial data was compared using graphs and tables by expressing all the financial data in 1990-dollar values.

The Statistics New Zealand consumer price index (CPI) was used to convert historical dollars (nominal of actual data) into real terms (1990-dollar values).

Whilst a number of indices are available to measure price and cost changes over time, the CPI was chosen because it may be used as a deflator (or inflator) to convert other statistical series into constant dollar terms in order to facilitate comparisons over time[1]. The change in the CPI is also the official measure of inflation. To maintain the relativities of individual revenue and expenditure items in the historical data when converted to 1990 dollars it is necessary to multiply each revenue and expenditure item by the same index. The adjusted 1990 dollar values described in the graphs show the relative spending on each item shown; the adjusted figures do not necessarily represent the same relative changes to the *volume* of inputs since each item of expenditure may be associated with a different relative price change per unit of input; in other words, the changes to the price per unit of each individual expenditure item may not be the same as the aggregated consumer price index.

Carrying capacity in terms of livestock units for the different stock types and classes of livestock was available for most farms; however, this data was not available for some of the earlier years in the series for some farms.

The following time periods were analysed and are commented on in the results and conclusions and for each case study farm:

- Whole series 1978/79 to 1989/90
- Pre 1984
- 1985 to 1987
- Post 1987

The variability in the data was expressed using the standard deviation and the coefficient of variation (standard deviation divided by the mean) as well as mean or average result for each period in the series.

The coefficient of variation gives a measure of the variation of the data in relation to the mean value by expressing the ratio (SD/mean) as a decimal or percentage figure (eg 0.31 = 31 percent). The *larger the coefficient of variation the greater the variation in the data relative to the mean value for the data*.

The agreed approach was to complete 10 case studies representing the spectrum of farming performance from a specific farm type as assessed by a private sector accountant. The data set includes physical and financial data; the financial data set is established on both a real and nominal basis.

The selected properties were visited and managers were interviewed to ascertain the developments that have occurred while the existing operators have been involved in the business. Often this involvement was over two generations. In addition, a number of specific factors were also explored including Information on physical changes to the property, the farmer's goals/motivation, perceptions or risk and risk trade-off, expenditure priorities under separate income scenarios, technological and external changes, and farm management impacts.

The outcome from the interviews was the preparation of a property time-line outlining the sequence of events and factors influencing decision making.

The interviews for the 10 case study properties are written up in Part II of this report. The

descriptions in each case study are the interviewer's interpretation of the situation on each property gained during the interview.

See Appendix 1 for the detailed interview outline. Appendix 2 contains the summary of farmer observations made during the interviews.

Annual farm accounts were collected and were then used to develop physical and financial performance profiles of each property over the time series.

NOTE: Tables and Figures - Most tables and figures in this report read chronologically from right to left. The two exceptions are:

- Figure 2.1, Rainfall Data,
- Average Mortgage Rates.

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1 - New Zealand official Yearbook 1993, 96th Edition" Department of Statistics

CHAPTER 4 - Results and Conclusions

In this chapter the combined results of the ten case study properties are presented in figures and tables, and discussed.

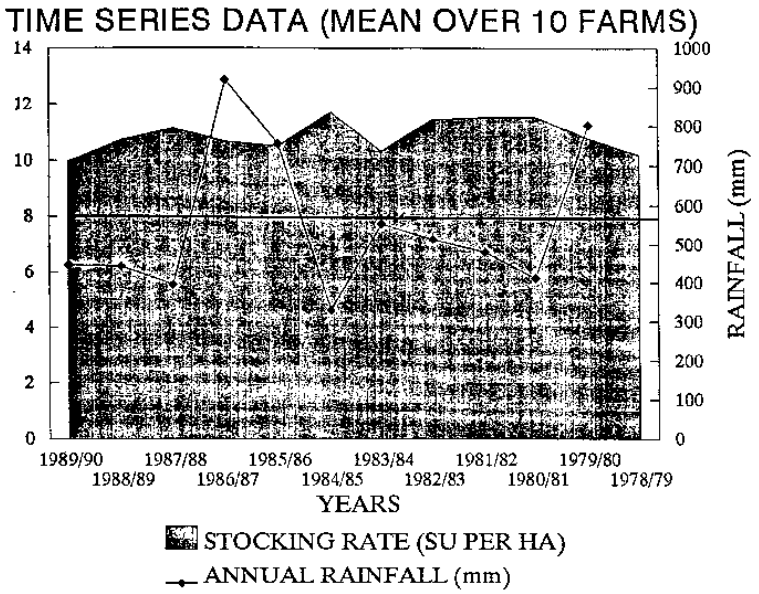


Figure 4.1 shows the very high variability in rainfall over the time series. The dry nature of the period is also evident with eight years of the 11 being below the 30 year average of 575 mm.

The average stocking rate over all farms is far less variable and shows no strong relationship to the rainfall trends. Only slight drops in stocking rate are observed after the 1980/82, 1984/85 and 1987/88 droughts.

Table 4.1 shows the relatively low variability (measured by coefficient of variation) in stocking rate on most farms over the period.

It is important to note also that the stocking rate for a property taken at the standard time of 30 June is not always a good indication of the stocking rate changes which occur throughout the year. For example in a year of feed shortage at lambing time, various strategies are used to

reduce the stocking rate below the 30 June level. These include selling in-lamb ewes, selling ewes and lambs all counted, and early weaning and sale of flying flock of ewes.

Table 4.1 Stocking Rate (SU/ha)

Property	Overall mean	C.V.	Post '87 Mean	C.V.	1984-87 Mean	C.V.	Pre '84 Mean	C.V.
1	12.7	0.08	13.4	0.04	13.1	0.03	12.0	0.09
2	10.3	0.05	10.4	0.06	10.3	0.06	10.3	0.06
3	14.1	0.16	12.3	0.01	12.8	0.06	16.2	0.13
4	8.9	0.11	8.3	0.08	9.1	0.15	9.1	0.11
5	10.9	0.16	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA
7	9.0	0.13	8.0	0.12	8.6	0.09	10.2	0.05
8	7.2	0.11	7.7	0.09	7.0	0.07	5.9	NA
9	10.5	0.18	10.9	0.12	12.0	0.21	9.0	0.05
10	10.5	0.12	10.4	0.21	10.0	0.11	10.9	0.10

Table 4.2 Lambing Percentage

	Overall		Post 1987		1984-87		Pre 1984	
Property	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	c.v.
1	136.3	0.31	132.6	0.03	125.5	0.11	149.8	0.55
2	111.3	0.14	120.3	0.09	103.0	0.22	110.7	0.17
3	84.9	0.20	84.8	0.14	85.2	0.25	84.9	0.26
4	127.1	0.11	135.3	0.09	120.4	0.20	127.6	0.07
5	119.0	0.33	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA
7	110.9	0.19	115.5	0.30	111.6	0.19	105.2	0.23
8	106.3	0.19	107.9	0.34	105.3	0.23	106.6	NA
9	86.6	0.14	85.8	0.22	78.2	0.16	93.8	0.03
10	120.3	0.17	111.3	0.28	117.1	0.19	128.3	0.15

In contrast, lambing percentage shows a much stronger relationship to rainfall. A fall in lambing percentage occurs 12 months after all three dry spells.

The variation in lambing % over a farm over 12 years is greater than for stocking rate. This illustrates the farm management option for climatic change of allowing stock condition and

therefore per head production, to fluctuate widely while adjusting stocking rate of capital stock to a lesser extent.

Table 4.3 Total Lambs Sold

	Overall		Post 1987		1984-87		Pre1984	
Property	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
1	1,470	0.33	1,755	0.08	1,675	0.22	1,051	0.53
2	1,812	0.26	2,016	0.09	1,537	0.51	1,854	0.26
3	1,036	0.47	1,020	0.54	985	0.35	1,086	0.68
4	2,254	0.25	2,502	0.10	2,246	0.41	2,112	0.24
5	1,557	NA	2,256	NA	857	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA
7	1,086	0.25	1,303	0.12	1,061	0.30	900	0.27
8	1,327	0.27	1,457	NA	1,237	0.34	1,428	NA
9	1,303	0.17	1,191	0.13	1,305	0.23	1,370	0.18
10	1,221	0.29	1,247	0.06	1,127	0.55	1,281	0.26

The variability of total lambs sold (CV for 8 properties = 29%) is much greater than for lambing % (CV for 9 properties 17%). This observation was consistent for all properties in the sample (Table 4.3 and 4.2). This shows the combined influence of lambing % and stocking rate changes on total lambs sold. Stock selling strategies are also important. For example either selling lambs in the year they were born or carrying them through to more attractive markets in the following year. The sale or retention of female stock to alter the farm stocking rate also has an effect.

Table 4.4 Total Wool Sold (Kg)

	Overall		Post 1987		1984-87		Pre 1984	
Property	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
1	10,715	0.23	11,916	0.09	11,678	0.18	8,853	0.35
2	11,717	0.11	12,393	0.09	10,133	NA	11,270	NA
3	10,371	0.34	7,704	0.10	9,321	0.48	12,810	0.21
4	12,846	0.12	14,326	0.16	12,450	0.14	12,274	0.07
5	9,459	NA	9,574	NA	9,343	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA
7	6,058	0.19	6,249	0.30	5,695	0.23	6,315	NA

8	12,633	0.13	13,866	NA	12,175	0.10	12,001	NA
9	12,315	0.17	11,405	0.10	14,460	0.14	11,144	0.09
10	6,541	0.15	6,723	0.19	6,286	0.27	6,636	0.07

The variation in total wool sold per year (CV over 8 properties = 18%) is less than that for total lambs sold. This is consistent over all farms. Generally on individual case study properties wool production per head varied less than lambing %. The wool selling policy is also less likely to vary between years.

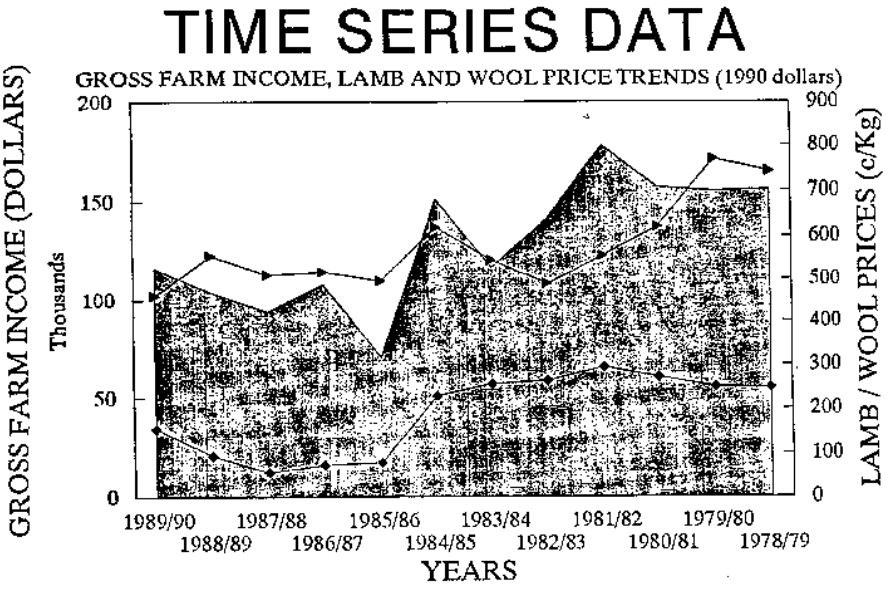


Figure 4.3 shows the decreasing trend in lamb price, wool price and gross farm income, expressed in 1990 dollars, over the time series. Of major significance is the large drop in wool price in the early 1980's and the sudden drop in lamb price in the mid 1980's when SMP payments were removed. Also important during this period was the withdrawal of support for the Meat Industry Stabilisation Account.

In 1985/86 lamb prices were halved and wool prices declined.

The effect on gross farm income was also accentuated significantly by the droughts which occurred over the period. In 1984/85 farms de-stocked (increasing income from the sale of capital livestock) and in 1985/86 retained or purchased livestock to rebuild stock numbers (this had the effect of further reducing incomes after the drought year).

This one figure demonstrates the significant impact market prices had on gross farm incomes. The effect on farm incomes of product price changes were more significant over the 12 year time series than the droughts were.

Generally, farmers managed their properties knowing that dry years were part of the risks involved in farming. However, in contrast, the sudden impact on prices resulting from Government policy changes were completely unexpected by the farming community and were therefore not planned for.

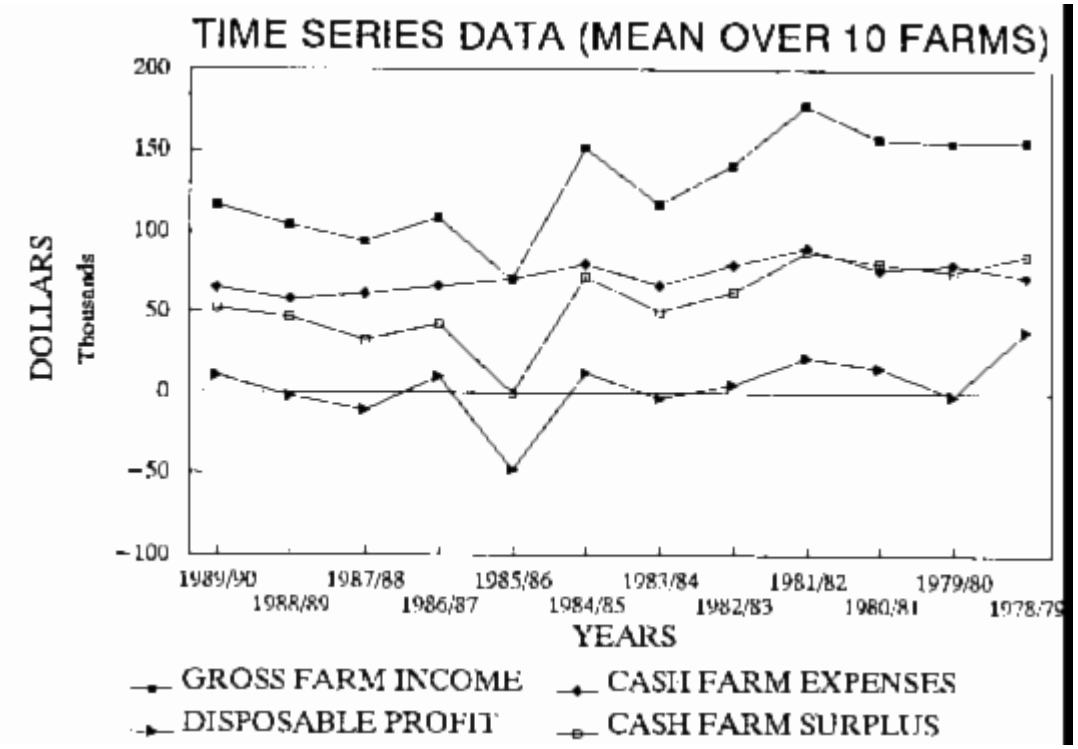
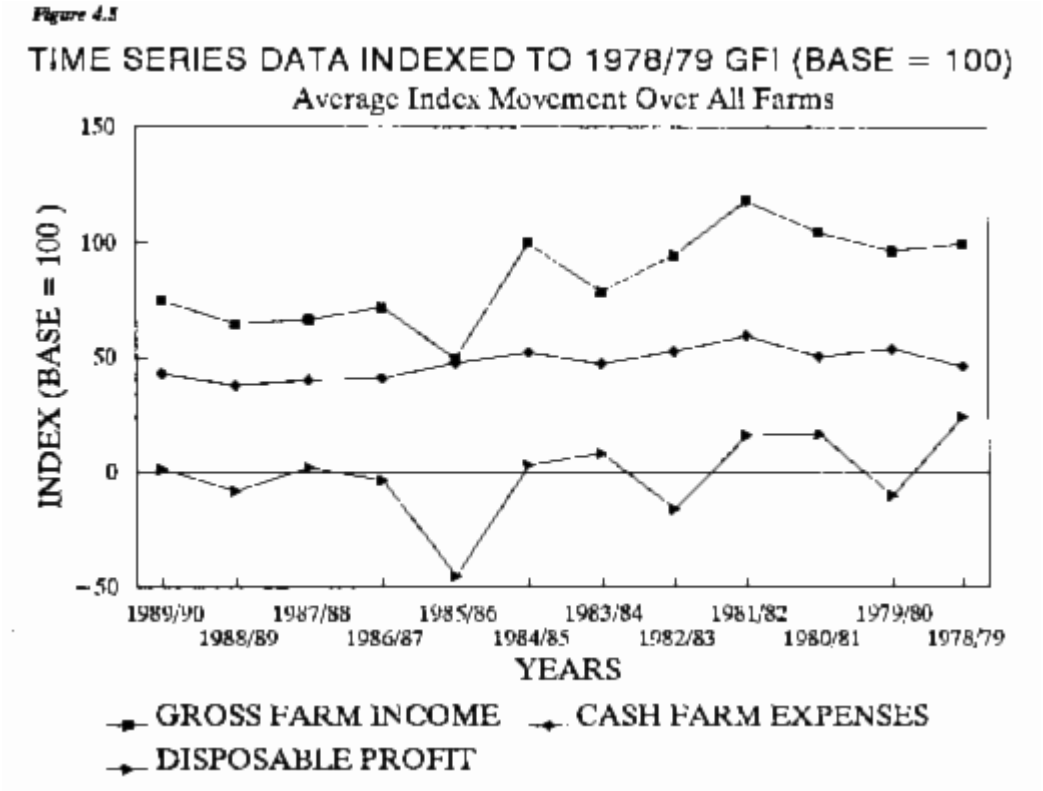


Figure 4.5



The data in the Figures 4.4 and 4.5 is presented firstly as the average across all 10 farms and secondly as an index against gross farm income (index = 100 in 1978/79). The indexed figures remove any major influences that the larger properties may have in calculating the mean for the 10 farms studied over the 12 year series. Notable results are:-

1 Cash Farm Expenses: Variation around the slight downward trend over the 12-year time series is low case studies show that although most properties reduced expenses significantly in the late 1980's as in levels dropped they were severely limited by non-discretionary and fixed expenses.

2. Gross Farm Income: Variation is very high between years around a large downward trend.

3. Cash Farm Surplus: This line closely follows the trend in gross farm income showing that there is, in reality, very little Opportunity to compensate for reduced income by reducing cash farm expenditure. Much of this expenditure appears to be non-discretionary.

Regression analysis of gross farm income against cash farm expenditure and cash farm surplus support points (1) and (3) above. R squared values were 0.6 for the cash farm expenditure relationship and 0.9 for the cash farm surplus relationship. This confirms that cash farm expenditure was not able to be varied significantly with the trend in gross farm income and that cash farm surplus closely followed the trend in gross farm income for the average of the farms over the 12 year time series.

4. Disposable Profit: Like cash farm surplus this line closely follows the trend in gross farm income. Again the inflexibility to reduce expenses is apparent. Also of importance is the fact that an average positive disposable profit was achieved in the first six year, but the final six year average result was negative. Disposable profit is calculated before any capital or development expenditure, showing that over the last six years of the series there was generally no money available for reinvestment in the farm (asset replacement or farm development).

The above comments are also illustrated in Tables 4.5, 4.6, 4.7, and 4.8.

The average coefficient of variation figures across all farms for the series are:-

- Gross Farm Income CV = 35%
- Cash Farm Expenses CV = 22%
- Cash Farm Surplus CV = 80%
- Disposable Profit CV = 1676%

It should be noted that the high variation in disposable profit is a result of both the inability to reduce expenses to compensate for lower incomes as well as the fact that, relatively, the disposable profit figure is smaller in absolute dollar terms. Consequently, where changes to gross farm incomes cannot be absorbed by reduced expenditure, the relative effect on disposable profit is very large.

Table 4.5 Gross Farm Income (1990 Dollars)

Property	Overall		Post 1987		1984-87		Pre 1984	
	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
1	110,063	0.37	95,101	0.27	117,106	0.22	113,406	0.57
2	126,627	0.43	72,845	0.71	123,425	0.46	160,818	0.25
3	88,394	0.34	59,274	0.25	75,102	0.29	116,500	0.12
4	188,371	0.23	172,972	0.29	175,385	0.35	207,998	0.15

5	131,781	0.27	NA	NA	110,092	0.35	158,917	0.09
6	212,298	0.37	173,995	0.57	165,162	0.50	272,990	0.06
7	77,581	0.24	62,621	0.33	71,194	0.28	91,667	0.11
8	115,335	0.42	NA	NA	93,216	0.61	NA	NA
9	148,199	0.40	121,472	0.15	117,437	0.75	188,844	0.17
10	86,790	0.45	65,906	0.10	74,452	0.84	109,191	0.24

Table 4.6 Cash Farm Expenses (1990 Dollars)

Property	Overall		Post 1987		1984-87		Pre 1984	
	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
1	54,370	0.17	48,489	0.16	53,051	0.20	58,953	0.17
2	57,194	0.27	42,414	0.15	71,725	0.10	57,342	0.25
3	51,927	0.24	40,285	0.19	49,046	0.28	61,217	0.11
4	76,292	0.18	82,896	0.35	75,644	0.15	72,847	0.14
5	79,119	0.15	NA	NA	73,374	0.21	83,485	0.12
6	127,897	0.28	114,922	0.16	103,258	0.46	155,393	0.11
7	48,716	0.22	38,156	0.18	48,734	0.06	55,038	0.23
8	89,248	0.21	NA	NA	88,402	0.18	NA	NA
9	95,254	0.18	73,447	0.09	104,868	0.14	100,647	0.14
10	46,626	0.31	32,647	0.18	40,653	0.15	59,791	0.18

Table 4.7 Cash Farm Surplus (1990 Dollars)

Property	Overall		Post 1987		1984-87		Pre 1984	
	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
1	55,693	0.75	46,612	0.63	64,056	0.25	54,452	1.28
2	69,434	0.77	30,431	1.63	51,700	1.14	103,475	0.44
3	36,467	0.57	18,989	0.42	26,056	0.45	55,283	0.28
4	112,079	0.39	90,076	0.24	99,742	0.69	135,151	0.22
5	52,661	0.58	NA	NA	36,718	0.83	75,432	0.23
6	84,401	0.70	59,073	1.57	61,904	1.20	117,596	0.20
7	28,865	0.49	24,466	0.60	22,459	0.91	36,629	0.24
8	26,088	1.90	NA	NA	4,814	13.99	NA	NA

9	52,945	1.05	48,025	0.42	12,569	6.31	88,197	0.39
10	40,165	0.83	33,259	0.25	33,799	1.78	49,400	0.55

Table 4.8 Disposable Profit (1990 Dollars)

Property	Overall		Post 1987		1984-87		Pre1984	
	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
1	(627)	55.72	(8,365)	4.96	(1,229)	7.27	4,497	12.14
2	3,332	9.48	(8,055)	5.09	2,353	22.88	10,751	2.49
3	17,779	1.08	3,722	2.13	6,669	0.82	35,102	0.49
4	13,360	1.69	19,600	1.89	16,813	1.50	6,853	3.19
5	6,182	3.30	NA	NA	13,358	1.68	(372)	68.07
6	(289)	236.62	(37,933)	2.52	(11,713)	6.78	31,437	1.85
7	(2,064)	7.41	(141)	82.54	(9,286)	1.87	2,559	7.49
8	972	55.41	NA	NA	(22,157)	2.96	NA	NA
9	(17,141)	4.23	1,537	11.62	(69,522)	1.75	13,556	1.98
10	5,893	5.60	4,302	4.06	426	139.48	11,222	2.42

In figure 4.6 both the lines of Cash Farm Expenses and Debt Servicing as a % of Gross Farm Income show the same general trend. There is an inverse relationship between both measures and gross farm income.

For example, in a year of high income the expense will be a lesser % of that income and in a year of lower income the expense will be a higher %. This occurs simply because the variation in gross farm income is much greater than that of any expenditure. This suggests limitations of using such a ratio to assess the performance for one year in isolation, as discussed below.

Examples of high between year variation in these % 's are illustrated in Case Study 1, when the purchase of livestock to stock a new property distorted gross farm income. In Case Study 2 a similar situation arose. In Case Study 2 a second example occurred when income was low in 1985/86 following the drought and removal of SMP payments.

Performance Indices and Ratios

Farmers, consultants and financiers frequently compare annual physical and financial performance indices for a farm (calculated from the farm budget and cash flow) to compare with other farms or for different years on the same farm. This comparison gives an *indication* of how a farm compares to others in the district.

Such comparative criteria may be:

Physical: eg, lambing percentage, wool weight ~g/ssu), stocking rate (su/ha), etc.

Financial:	Gross income/su, lamb price (s/head), debt servicing ($/su), etc.
Ratios:	Generally expressed as a percentage of gross farm income net of livestock purchases.

Rule of thumb criteria often stated are:-

10-25%	Debt servicing (as % of gross farm income)
45-60%	Cash working expenses
25%	Personal drawings, tax, capital/development, profit
100%	

Table 4.9 shows cash farm expenses as a percentage of gross farm income for the 10 farms over the whole series (12 years) and for the three periods within the series.

This table shows the degree of variation in each period (as measured by the coefficient of variation) and the different mean figures in each period.

Whilst physical and financial performance criteria tend to be farm type and location specific, the ratios tend to apply more generally over all farm types (with the exception of intensive cropping farms).

There is some merit in being able to use these criteria to compare the performance of farms. In general terms, the ratio criteria give financiers, farmers and consultants an indication of the viability of a business. Equity also determines the financier's exposure to "risk".

This study highlights a number of things:-

- Physical and financial indices will vary significantly between years depending on climatic conditions and market prices. In this respect they require revising regularly and used to assess the performance of a property need to be taken over several years to smooth the large annual variability.
- When farms are exposed to large decreases in incomes they are forced to reduce expenses in order to balance budgets. In periods of low prices, if these criteria are to be maintained, farm expenditure may fall below desirable medium4erm maintenance levels. Our results show that, in reality, this does not occur to a large degree because farmers do not reduce their expenses to the same extent as income varies.
- Whilst ratios of expenditure to gross farm income are a useful guide, these ratios will cease to be applicable in years of low incomes when farm management becomes "crisis management". This may occur because expenses rise (debt servicing, feed) or because the denominator gross farm income) falls substantially.

In addition, gross farm income *net* of livestock purchases may be extraordinarily high (or low) because of extraordinarily low (or high) levels of livestock purchases due to adverse climatic events or due to a change in livestock policy.

Most financiers and consultants are aware of these factors and consider them when making

comparisons for a farm or between farms.

Whilst the ratio indices (eg, debt servicing as percentage of gross farm income) may vary substantially between farms and between years they do define in broad terms what is sustainable or viable in the medium to long term. If prices, or performance are likely to remain depressed in the medium term or. if expenditure levels are likely to remain excessive despite improved prices and livestock performance, this is an indication that reorganising of the farm may be required with regard to farm size, levels of debt or other costs and farming policies.

This emphasises the dynamic nature of these comparative criteria (in particular the ratios of costs to gross farm income) and the need to evaluate the performance of a farm over time, both historically and into the future. Taken in isolation for an individual year and out of context of the physical and financial situation for that particular year (when compared to other years) or without due regard to the personal circumstances of the farm owner (eg ability to draw on off-farm resources, individual goals, development status for the property) simple comparison may result in inappropriate conclusions.

This does not mean that such criteria are without merit, simply that they need to be taken in context and that the whole farm situation needs to be taken into account including the human goals and resources.

It is important that farmers, financiers and consultants are aware of the limitations of these criteria and do interpret them in the light of climatic and economic conditions and the physical and management resources of the farm business.

Table 4.9 Cash Farm Expenses as Percent of Gross Farm Income

Property	Overall		Post 1987		1984-87		Pre 1984	
	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
1	65.7%	1.06	53.4%	0.39	45.5%	0.10	89.3%	1.30
2	58.4%	0.75	84.8%	1.02	65.5%	0.59	38.3%	0.50
3	61.2%	0.17	68.6%	0.11	65.8%	0.14	53.0%	0.15
4	42.6%	0.34	47.6%	0.08	47.8%	0.54	35.4%	0.16
5	62.8%	0.23	NA	NA	69.3%	0.22	52.8%	0.15
6	68.2%	0.51	79.8%	0.69	73.3%	0.76	57.1%	0.12
7	64.7%	0.24	62.4%	0.18	72.4%	0.36	59.8%	0.17
8	100.9%	0.89	NA	NA	135.8%	0.98	NA	NA
9	78.4%	0.72	61.2%	0.19	121.4%	0.78	54.4%	0.23
10	60.8%	0.44	49.7%	0.18	74.6%	0.65	56.5%	0.26

Table 4.10 Debt Servicing as % of G.F.Income (net of Livestock purchase)

Property	Overall	Post 1987	1984-87	Pre 1984

	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
1	18.3%	0.50	18.1%	0.31	23.0%	0.12	14.6%	0.97
2	31.2%	0.79	48.0%	1.16	24.6%	0.39	25.1%	0.23
3	9.0%	0.42	8.1%	0.27	12.4%	0.38	6.9%	0.32
4	20.5%	0.27	24.2%	0.42	18.7%	0.35	19.8%	0.14
5	11.9%	0.33	NA	NA	11.9%	0.50	13.1%	0.11
6	13.5%	0.58	17.5%	0.43	15.4%	0.87	9.7%	0.15
7	13.7%	0.31	16.7%	0.21	15.3%	0.33	10.6%	0.27
8	4.4%	1.49	NA	NA	8.4%	0.93	NA	NA
9	25.7%	1.07	20.4%	0.13	47.1%	0.96	11.8%	0.35
10	14.4%	0.58	12.0%	0.56	20.7%	0.64	10.9%	0.20

Figure 4.7 shows mean personal drawings and debt servicing for the 10 farms over the 12 year time series compared to the underlying trend in gross farm income.

In real terms mean debt servicing has remained fairly constant over time with a slight decline in 1986/87 and 1987/88. This decline in debt servicing reflects the debt restructuring which occurred over this period, coinciding with the high interest rate levels.

In contrast, mean personal drawings have fluctuated widely and have declined over the 12 year time series. This decline is a combination of deliberate personal expense reductions as income levels fell and ownership restructuring on several properties which resulted in reduced personal drawing levels. There was considerable variation between levels of personal drawings on individual properties (refer Table 4.11).

It is noticeable that personal drawings declined markedly following the dramatic fall in farm incomes resulting from the withdrawal of subsidies.

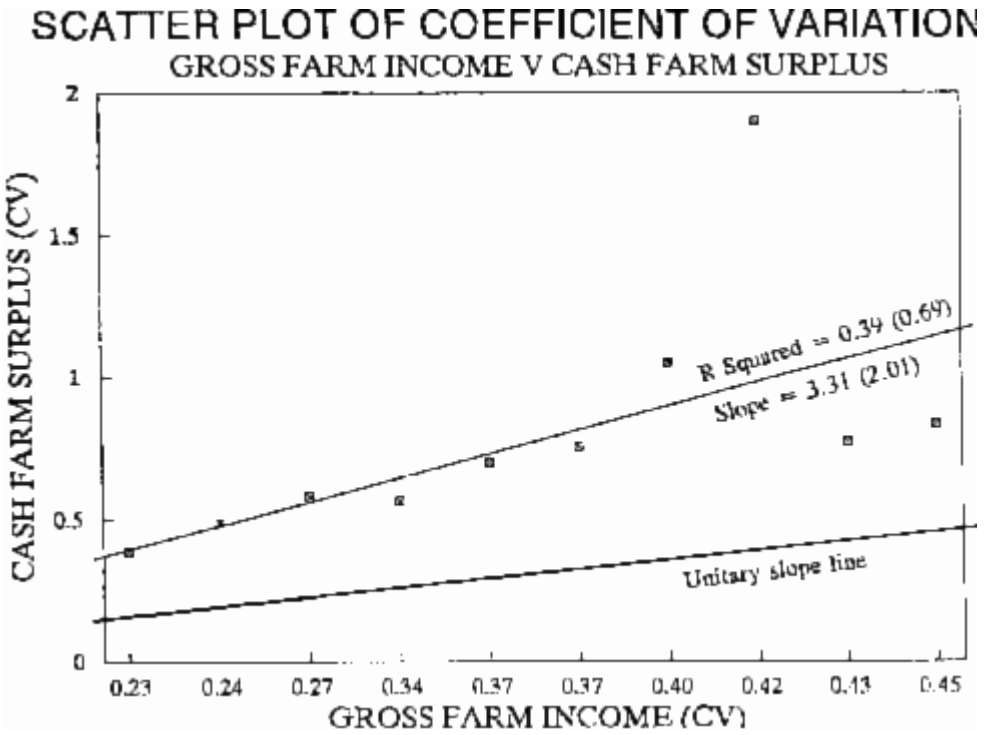
Whilst personal drawings have been significantly reduced over time, much of the between year variation is a result of the lumpy nature of personal drawings on individual properties over the period.

With the decrease in personal drawings an increase in off-farm income was significant on some propertie

Table 4.11 Personal Drawings (1990 Dollars)

	Overall		Post 1987		1984-87		Pre 1984	
Property	Mean	C.V	Mean	C.V	Mean	C.V	Mean	C.V
1	34,428	0.29	38,389	0.33	38,619	0.19	28,699	0.39
2	34,088	0.60	16,255	0.82	21,426	0.12	52,386	0.22
3	11,024	0.23	10,564	0.07	9,906	0.31	12,196	0.26

4	60,821	0.69	28,253	1.42	52,069	0.82	87,363	0.43
5	31,046	0.85	NA	NA	11,334	1.47	55,066	0.18
6	60,039	0.55	69,801	0.35	53,177	0.86	59,672	0.67
7	20,920	0.53	14,469	0.16	21,335	0.31	24,458	0.71
8	22,026	0.65	NA	NA	21,460	0.61	NA	NA
9	42,450	0.65	21,583	0.43	45,223	1.04	52,751	0.27
10	23,773	0.22	21,203	0.34	22,166	0.13	26,600	0.23



This scatterplot illustrates well the results of previous pages.

A close relationship exists between the level of variation in gross farm income and the level of variation in cash farm surplus.

For the 10 farms the R squared is 0.39; however, if one outlier is removed, the R squared increases to 0.69.

An R^2 value of 1.0 indicates a perfect fit, a value of 0.69 indicates that 69% of the variation in cash farm surplus is explained by the variation in gross farm income (for the 10 properties over the 12 year time series).

The fact that all points on the scatterplot fall above the unitary slope line shows that the variation in cash farm surplus is greater that the variation in gross farm income. This again illustrates the farmer's lack of ability to deal with low income by reducing expenditure proportionately. The level of discretionary expenditure is limited.

Similar scatterplots and regressions were calculated for coefficient of variation total lambs sold

(CV) against gross farm income (CV) and total wool sold (CV) against gross farm income (CV). In both cases the results showed no relationship between volumes sold and gross farm income. This confirms that the dominant effect on farm incomes was the external product price variation over the time series.

Summary of Results and Conclusions

The outstanding result of the study is the high variation that occurred in income levels between years over the 12 year series, the large downward trend in income, and the lack of ability farmers had to counter this trend and the troughs.

Performance levels also varied considerably between years, but to a much lesser extent than did income levels.

These variations in income and performance levels were generally caused by influences beyond the farmers' control.

The influences beyond the farmers' control causing performance level variation were predominantly climatic (droughts, flood and exceptionally good growing seasons). Farmers showed that although undesirable climatic events did affect stock performance levels, they could minimise the effect of this on income levels.

For the 10 properties over the 12 year series, no relationship occurred between volumes of product sold and gross farm income. The dominant influence on farm incomes was the external product price variation over the time series.

This major influence on variation in income levels was beyond the farmers' control. The external product price variation was caused by change in government policy (including removal of SMP payments in 1984/85 and the withdrawal of support for the Meat Industry Stabilisation Account) combined with changing (generally lowering) produce prices on the international markets.

For the 10 properties over the 12-year series, gross farm income variation was high. The major impact came from product price changes and not the droughts of the period.

The effect of the above external influences on individual properties varied considerably dependent on the individual situation, particularly the physical and financial structure at the time. These were a result of the personal goals and motivations in farming and in several cases the stage in farming.

Generally speaking, those properties affected to a lesser degree by the external influences were the more established, more financially sound, higher performing and more conservatively farmed properties. That is to say, those being farmed in a stable environment were better able to deal with unexpected and sudden changes, especially large reductions in product price, whereas those who had recently made major changes in their system or who were in an establishment phase, were far more vulnerable to unexpected changes.

The latter could generally be said to have made well-informed decisions within the physical and financial environment existing at the time. These decisions were made in the late 1970's and early 1980's in a climate of government regulation and incentives with absolutely no indication that this environment would change and certainly not to the dramatic degree it did.

To some extent, the degree of hardship and suffering of farming families in the mid- and late 1980's was a function of luck dependent on their stage of farming and the decisions they made in the early 1980's when the change in farming environment was completely unforeseen.

Over the period of change, many farmers became very bitter toward the government. They felt betrayed because of the dramatic, unforeseen and unannounced change in their circumstances over which they had no control. To farmers, farming had been a family lifestyle, often hard, but good. Now they saw its traditional position of importance to New Zealand being devalued. The business environment in which they had operated was suddenly and dramatically altered by changes in Government Policy.

Again, farmers' reaction to this situation differed depending on their circumstances. On properties where a younger generation was just entering the farm, their energy and enthusiasm tended to drive the property to progress as it could in the new environment. In such a case, the support in knowledge and finance of the experienced older generation was essential. On properties without this energy injection, the feelings of bitterness and betrayal often dominated so that farmers felt no inclination or incentive to push their systems. An example of the attitude was why produce more just to pay it in taxes to a government who has treated us so badly.

Looking back over the period of the 1970's and 1980's, the farmers identified that many government interventions and supports had been detrimental by providing false signals and encouraging farmers to make decisions for the wrong reasons. Low interest rate loans in many shapes and forms were often taken up to provide a much needed cash injection, rather than as a deliberate decision to take on new debt for a specific purpose. In this way, government assistance often resulted in an undesirable outcome for farmers. The change in the livestock tax system was another example which had a major effect on two properties in the study which had invested in deer.

Despite identifying most government regulations as undesirable, the farmers felt that the process of deregulation had been badly managed by Government and that the Government had been particularly ruthless and insensitive to the circumstances of farmers and their families.

A very apparent result of the study was how little a sheep farmer could do in the short term to counter a sudden drop in product price.

All farmers reduced farm expenditure in an attempt to counter the income falls from 1985186 onward. The results clearly show the limited degree to which this was possible and the large impact that reducing incomes had on cash farm surplus and disposable profit levels.

It is interesting to compare the effect of the rural downturn on other businesses in South Canterbury at the time and their ability to change. One small business, a welder building steel gates, went out of business due to a massive reduction in orders, whereas a Timaru shoe shop proprietor, previously servicing the family shoe market, was able to change his buying pattern within a season to begin selling to the more lucrative women's fashion and sports markets.

In contrast to the shoe shop proprietor, sheep farmers are limited in the selling strategies they can alter on a seasonal basis and require several years to implement most product changes through breeding, management or sale and repurchase avenues.

'The study highlighted the large variation in motivation behind farming. The farmers were certainly not all striving to maximise cash farm surplus and purchase larger properties as may be assumed by some to be the ultimate goal. Several farmed small properties and low stock numbers with the aim of maintaining a modest lifestyle from these properties while intensifying production and drawing income from off the farm if necessary.

Many properties saw setting the farm up for the children to have the opportunity to farm as a priority, whereas others were prepared to help children if and when the children first showed interest, and others expected the children to leave farming and take up another trade or

profession before returning to farming if they then wished.

A final result of note is the caution which must be taken by farmers, consultants and financiers when using annual physical and financial performance indices and ratios for a farm to compare with other farms or for different years on the same farm. These comparative criteria are shown to be very dynamic which emphasises the importance of evaluating the performance of a farm over time, both historically and in the future. The criteria do have merit, but users must be aware of the limitations and interpret them in light of the climatic and economic conditions and the physical and management resources of the farm business.

Appendix 1: Interview Outline

Interview one - outline

1 Present Situation Questionnaire

2 What's Happened

In the last 20 years with special attention to the changes or the impact of changes which have lead you to your present situation.

3 why have these things happened.
4 ***Perceptions of risk***

i) Please explain what you understand risk to be (variability, uncertainty, positive, negative).
ii) In respect to this.

a. how important have these sources of risk been to you (list)

b. what have you done to manage changes and impact of changes:

climate

market

physical/production

technology

management input

financial.

c. risk in coming season - impact on management changes to management as result of risk.

5 i) Expenditure priorities - what are they? (drawings, discretionary inputs).

ii) How does this change with a change of income?

$10,000, $20,000, $30,000 + $10,000 etc.

iii) How does cashflow influence this?

iv) How do you decide?

(discretionary expenditure = productive inputs (fert/Lime)/repairs and main/capital purchases/drawings (essential/non-essential)/investment/debt repayment.

6 Opportunities - changes in the future to achieve your goals.

Interview one (check list)

Perceptions of what's happened and why?
(changes in inputs and outputs and why)

1 Farm ownership history

2 Farm Size

Changes in total effective area

3 Personal

Age/qualifications/family/years. Fanning years. Ownership/management responsibilities.

4 Farm labour

Self/family/employed.

5 Development capital

land/subdivision/stock/buildings/machinery.

6 ***Farm enterprises***

Sheep breeding/finishing/cattle.
Breeding/finishing/cropping/small.
Seeds/goats/deer/forestry.

Performance levels

Lamb/wool/cattle/crop.

7 Climate
Rainfall/drought/flood/snow/pasture growth.

8 Technologies and external changes

Stock breeds/pasture species/weed and pest markets/political.

9 ***Financial***

Income levels
Expenditure

- farm work/fert/W& P/wages
- development and capital. changes in cost structure.

10 Farm management
Grazing systems/breeding emphasis/production targets/animal health.

Appendix 2: Summary of Farmer Observations made during the Interviews

Summary of Farmer Observations, Opinions and Concerns Voiced in Relation to Rural Families and Communities.

Farm size and scale:

- Small farms are now overcapitalised
- an increase in subdivision of farms into 'lifestyle' holdings
- neighbouring properties have become too highly priced to buy for sheep farming. This includes bare land after house and improvements have been subdivided off into smaller title.

Land purchase by foreign investors

- Undesirable to have absentee foreign owners purchasing land
- the land price can be inflated above productive value to other farmers in the district preventing them from purchasing - expanding.

Succession

- Impossible for parents to gift farm on as in past as they now rely on full property value for own retirement, ie their superannuation fund
- planning required for younger generation to enter farming
- how can they purchase a sheep farm?

Young farmers - farm labour

- Few are training
- a real shortage of single workers and married couples
- how can they realistically expect to purchase a farm?
- average age of farmers is getting too high.

Dangerous chemicals amnesty

- Many farm sheds contain now banned chemicals (eg DDT)
- how can these chemicals be disposed of? An amnesty scheme is suggested.

Taxation Systems

- The present terminal and provisional system does not suit farming businesses.
- major problems with the livestock tax scheme - especially concerning increasing stock numbers.

Women in Agriculture (WAG)

- Funding cuts are proving detrimental to WAG group activities.

Government Intervention

- Although sought and appreciated at the time, in the long term only cash handouts are of real advantage, ie low interest loans only give false sense of security and in the end result in increased debt (eg SMP, low interest loans, US etc.).

- The less intervention the better so farmers make own decisions to Suit individual situations.

How can we farm without subsidies... when the rest of the world, our trading partners, are not totally free markets?

Field days

- Field days have played an important role to introduce new technology.