
ECONOMICS OF LAND DEVELOPMENT IN OTAGO

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I feel that I must make it quite clear right from the start that I am neither an economist nor a scientist. The only aspect of economics that I understand is that of profit or loss; and of science, its practical application to meet the present needs of the individual farmer.

I have spent the past 20 years as a representative of financial institutions whose main concern has been the success of the individual farmer, so my remarks will naturally have that basis and underlying theme.

The development of land is not a job for the inexperienced; nor is it a task for those with limited capital. The growing of two blades of grass where one formerly grew is fascinating in itself, but very often little thought is given to the chain reaction of economic results and consequences that can affect the whole population.

In this paper I will try to analyse some of these economic consequences as they affect the whole population, but with particular reference to the individual farmers, and I will try to demonstrate why it is that so many people run into financial difficulties in developing land. I hope others may thus be guided against the pitfalls.

The material I have used could, and would, to some extent be applicable to any land development scheme in the country. It has been found difficult to obtain much accurate data on existing and projected land development schemes in Otago.

What has Otago to Offer?

Let us take a look at Otago to see what it can offer in the way of available land. The province contains approximately 8,500,000 acres, or 14,000 square miles of land, and is divided into three main districts, each with totally different climatic conditions and, consequently, with different farming practices.

The Waitaki River, about 90 miles north of Dunedin, is the province's northern boundary, and the boundary with Southland is a line between Waipahi and Gore, about 100 miles south of Dunedin. The western boundary is 200 miles distant in the Lakes District.

Yet of this vast area, only about 1,500,000 acres is **developed** and farmed intensively. There is still about 500,000 acres of rolling arable land capable of fairly rapid development and increased production.

Of the total area of Otago, more than half, or 4,400,000 acres, is unsuitable for pastoral farming because of low fertility or liability to serious erosion under grazing.

The three main districts the province is divided into are:

North Otago: This district, with Oamaru as *its* main centre, has a rainfall averaging between 20 and 25 in, but it is not well distributed. The district is subject to periodic and prolonged droughts. The land is used for the raising of sheep, fat lambs, and mixed crops, with a relatively small area under irrigation. Farms in this region average between 300 and 350 acres, carrying two ewes to the acre, together with mixed cropping-wheat and small seeds mainly.

South Otago: South Otago, of which Balclutha is the main centre, has a fairly evenly distributed rainfall averaging from 30 to 40 in. Here the farming is mainly sheep, with supplementary winter and fattening crops.

A typical South Otago farm comprises about 500 acres of easy rolling to ridgy clay downs, about 80 per cent of this down country being arable with wheeled tractors. The balance consists of gullies and swampy areas.

Before 1945 ryegrass and clover pastures reverted to **browntop** and sweet vernal in 8 to 10 years. The land then carried 800 Romney cross ewes and 270 ewe **hoggets**, or 1.7 ewes to the acre, all the ewes being put to Romney rams. The average lambing then (before 1945) was 95 to 100 per cent, with approximately 10 per cent sold fat off the mothers. The wool clip averaged $9\frac{1}{2}$ lb. About 60 tons of lime and 5 tons of phosphate was applied as topdressing each year on the average farm, 35 to 40 acres going into roots each year for winter feeding. Before 1945 £10 an acre was the average sale value, this representing £5 15s. per ewe equivalent.

Today the average South Otago property of 500 acres carries 1,400 ewes and 400 dry sheep, or about 3 ewes to the acre with 100 to 105 per cent lambing. The wool yield averages 103 lb and 20 per cent of the lambs are sold fat off the mothers.

The topdressing now averages 100 tons of lime and 25 to 30 tons of phosphate, but the average farm still grows only 35 to 40 acres in roots or even less. The sale value today is now about £35 to £40 an acre, or £15 per ewe equivalent.

Central Otago: Alexandra is the main centre of this district,

which 'has arid, barren regions and a rainfall ranging from 10 to 18 in.' The 'rainfall is poorly distributed, and the climate, which gives extremes of summer and winter weather, -dictates a special type of farming, with extensive dry-land farming or intensive irrigation, or a combination of both. Here, in Central Otago, we have the famous stone and pip fruit orchards. About three-quarters of Central Otago is held on Crown leasehold tenure, the average size of farms on the plain being 1,300 acres carrying the equivalent of one ewe to the acre. Grazing runs average about 15,000 acres and carry about 1,500 Corriedale ewes, 1,000 wethers, and 900 hoggets.

What Has Taken Place Over The Past Ten Years?

Let us first look at a few facts and figures covering that period:

	1947-48	1957-58
Total Population ----		172,090
Sheep owners ----	4,000	4,426
But only 2,800 have more than 500 sheep.		
Total sheep numbers ----	3,872,564	5,157,436
Breeding ewes being ----	2,366,932	3,362,189
Total ' sheep shorn ----	3,470,943	4,617,565
Wool production (greasy)	45,000,000 lb	60,000,000 lb
or	102,811 bales	148,279 bales
Total cattle numbers . ---	126,147	150,163
Dairy cows in milk	34,847	30,320

There are approximately 470 herds of 20 cows or more.

1956-57

C r o p s	Acres	Production
Wheat ----	10,669	554,911 bush.
O a t s ----	8,121	410,098 ,,
Barley ---	3,930	195,495 ,,
P e a s ----	1,415	59,184 ,,
Potatoes ----	1,690	12,268 tons

Fertiliser and Lime Applied	1947-48	1957-58
Total area topdressed ----	175,281 ac.	500,655 ac.
Fertiliser applied ----	?	88,877 tons

The main features have been an increase of 1,284,872 sheep, or 33 per cent over the past 10 years, or an average increase of 3.3 per cent each year.

Total cattle numbers increased approximately 27 per cent, but dairying decreased by approximately 13 per cent.

Visiting, agriculturists have at times taken us to task for apparent lack of progress, as by driving through the area one has been

unable to observe spectacular development schemes such as in the North Island. There are no major development projects operating in Otago.

How Has This Been Achieved?

This has been brought about by the following factors:

1. **Control of Rabbit Pest.** It is doubtful whether there is any other land district in New Zealand where the removal of rabbits has resulted in such a rapid increase in farm production. In Otago there are approximately 60 Rabbit Boards in operation, covering all but 1,000,000 acres, which is high country with little or no infestation.
2. Good prices over the past 10 years have provided the necessary surplus capital which has enabled **existing farm&s** to improve their properties by:
 - (a) Establishing better pastures, including drainage and top-dressing.
 - (b) Better subdivision fencing.
 - (c) Better housing, etc:
3. **Mechanisation** of farming-tractors, land rovers, aeroplanes, etc.
4. Control of grass grub by D.D.T.
5. Farmers or businessmen purchasing neighbouring undeveloped or semi-developed land and rapidly improving it in conjunction with their own property or business. This has been aided by tax concessions.
6. Trace elements such as molybdenum, which has saved liming and shortened the time factor.
7. Gradual change from cropping to stock farming.

What Has This Increased Production Cost?

The cost of this additional production has been: £

Stock:	Extra 1,285,000 sheep at £3 _____	3,855,000
	Extra 24,000 cattle at £10 _____	240,000

Land Development: Housing, etc.

	Say at least £10 per sheep _____	13,000,000
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Total	say: _____	£17,090,000
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Town and City Development (consequential)

i.e.	Additional freezing works, fertiliser works, wool stores, transport, schools, roading, power and local body works, etc., say at least another £10 per sheep or _____	13,000,000
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	Making a total of _____	£30,000,000
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The result has been, on present prices, an annual increase in revenue of some **£4,000,000**.

To achieve all this someone must pay in money, sweat, toil, or health. Too often the one who develops does not reap the reward. We all pay either directly or indirectly by taxation. The big problem is to be able to plan and control this developmental capital expenditure which becomes double-barrelled when an increase of stock is required. It is just as important to plan and budget local body expenditure and keep it in balance with increased farm production. The main risk to guard against is that we do not get over-committed in relation to the additional revenue produced.

Limiting Factors in Development

The three most important limiting factors in development are:

1. The ability to rear stock quickly enough to cope with the extra feed grown; that is, the ability to use the feed efficiently. Everyone cannot buy stock, as only a certain number of animals are born each year in New Zealand.
2. Capital is not always readily available, so that a programme of development, whether large or small, must be planned to the finance available and finance arranged.
3. Any development must be regulated to the times. In other words too much development at high cost would not be warranted or wise during a recession in revenue prices.

Major Problems

Serious trouble begins when things get out of balance, like a wobbly wheel, and we do not take kindly to any reduction in our living standards. The drop of £50,000,000 in one season's overseas credit has been really nasty medicine to take.

Otago's share in that drop would be about £4,000,000, which is quite sufficient for the province's population of 172,000 to realise that the usual amount of money is not in circulation, even if most of it did end up in taxation. It is obvious that this is a time for consolidation to hold what we have.

It is hard to stop a development programme overnight. It is easy to develop oneself into bankruptcy and off the farm.

It is important to see that local body and town development keep pace with land development, but it is even more important to see that we do not overload ourselves with too many unnecessary and over-expensive transport and port facilities, freezing works, fertiliser works, and so on.

These facilities are also concerned with economic operating costs, and we all know the consequences of over-development in that sphere. Overseas visitors sometimes chide us for being too

parochial rather than developing to the maximum advantage of the whole country.

Stock Diseases: Ill-thrift in sheep presents a red light today, and until this disease is mastered we should think hard before forging ahead too quickly with pasture development, as there is nothing so useless as surplus grass. A few years ago the red light was grass grub, but fortunately this was mastered quickly. Ill-thrift and facial eczema are New Zealand's No. 1 production problems today, but it now appears that progress is being made with the conquest of facial eczema.

Marketing: It should always be remembered that we are dependent on masses of relatively poor people for our markets, most of whom live a long way away. We have one of the best climates in the world, and one of the best food-producing soils, so we have no one to blame but ourselves if we run into trouble in this respect.

Major Advances in Keeping Costs Down

Major advances in keeping costs down have been:

1. Pre-lamb shearing, which spreads labour, saves bottlenecks in shearing, wool storage, and transport, thus saving capital that would otherwise have been needed in enlarging wool stores, providing more transport, and so on.
2. Breeding from ewe hoggets where possible.
3. Aerial sowing, topdressing, and subdivisional fencing on high country.
4. Establishing pastures in the first furrow. This saves one year but is limited to certain soil types.
5. The use of molybdenum, which saves some liming.
6. The surface introduction of clover by sod seed drills.
7. The bulk handling of manure and lime.
8. Reduced seeding rates-25 lb instead of 40 lb.
9. Improved methods of handling light land in low rainfall areas by such means as sowing lucerne.
- IO. The organised control of rabbits.
11. The more efficient use of irrigation.

Factors to Rectify

Aspects that could be rectified without much, or any, capital expenditure are:

1. Reduce Waste: The stock death rate is far too high. Increase the lambing percentage. Too much stock is rejected because of disease, bruises, etc. A higher proportion of stock could

-
- be fattened off the mothers. Use earlier maturing stock. Conserve surplus feed-hay and silage-and cover it so the weather does not spoil it. Obtain a high average wool clip with better flocks. Footrot should be controlled more efficiently. Tractors and plant should be cared for better.
2. Do first things first; that is, develop the easy land first and leave the awkward corners. Do not overload the property with buildings until production warrants it and they can be afforded.
 3. Undertake a certain amount of cropping and other sidelines.
 4. Do not go too fast. It is better to go slower and make a real job of it as you go.
 5. Improve your over-all management.

Economics of Success or Failure

From an individual's point of view, the answer to success or failure depends on whether he has gone into bankruptcy or whether he has accumulated any assets. Fortunately, over the past 10 years inflation has covered up many a mistake, but the opposite is likely to apply in the near future. In the long run, success or failure depends on final debt structure; that is, there is a fairly well defined pattern in what is regarded as the maximum debt structure. Let us give these examples.

City Houses: A borrower should not commit himself to a debt greater than two and three-quarter times his annual income; or his outgoings by way of interest, rates, insurances, and maintenance (one per cent of value) should not exceed one fifth of this annual income.

Commercial: The liabilities of a company should not exceed the total shareholders' funds, while the interest commitment is limited by the average net profit.

Farming: Total liabilities should not exceed twice the gross profit-that is, total revenue less the cost of stock replacements. For example:

One-ewe country producing £3 per ewe revenue: Total debt should not exceed £6 an acre.

Two-ewe country producing £3/10/- per ewe revenue: Total debt should not exceed £14 an acre.

Three-ewe country producing £4 per ewe revenue: Total debt should not exceed £24 an acre.

Four-ewe country producing £5 per ewe revenue: Total debt should not exceed £40 an acre,

Total debt includes debt on stock and property, Crown's interest

on leasehold, etc. When revenue drops, liabilities should also drop or production should be increased.

What is Land Worth?

The value of land varies for individuals according to their ability to farm it. I can talk here only in averages, taking a long-term view of the situation; **that** is, with wool, say, at 2/9 a pound net and fat lambs at 18d a pound.

Allowing for a 5½ per cent return on land, stock, and plant and a management and labour reward of £950 for a 1,200 ewe proposition, budgets would suggest figures as follows, assuming that the property is equipped with all the necessary buildings and other improvements are in good average order—

- £8 per ewe for one-ewe country, or £8 per acre
- £10 per ewe for two-ewe country, or £20 an acre
- £11 per ewe for three-ewe country, or £33 an acre
- £12 per ewe for four-ewe country, or £48 an acre

Prices paid over recent years, however, are at least 60 per cent higher.

The Return to the Farmer

The New Zealand Meat and Wool Boards Economic Service, in a survey over the period 1951-52 to 1955-56, showed that farmers were showing only a 5 per cent return on capital at Government valuation and 4 per cent return on capital at full market value of land, stock, and plant after allowing £1,250 as an average reward for management and labour for a 1,200 ewe proposition.

The Cost of Maintaining Fertility

With original poor country, the first seven to ten years are the expensive ones as far as topdressing is concerned. Once carrying capacity has built up to the three-ewe stage the cycle starts to maintain itself, together with a reduced topdressing programme. Too often farmers tend to neglect the first field developed in favour of bringing in new land, and this is often the start of their financial difficulties.

Size of Farming Units

The heavier the debt on the land, stock, and plant, the more scope is needed. It is important for minimum cost structure that the labour unit should be fully employed. Mechanisation has enabled one man to cope with a great deal more work.

Before the Second World War, 30 dairy cows producing 7,200 lb of butterfat was considered a one-man unit. Today one man can handle 50 dairy cows producing 15,000 lb with no greater effort. Today he can handle 1,000 ewes with no more effort than was re-

quired for 700 ewes in 1946, while the land rover and the aeroplane have enabled back-country properties to be run even more efficiently with one to two shepherds fewer.

Too often, however, machinery has added to the cost structure through too many farmers purchasing expensive equipment that is hardly ever used. Uneconomic units with resultant high costs of production are not in the best interests of the community, as in hard times peasant farming or abandonment follows.

It is important to see that some measure of restraint is exercised and to ensure that people with surplus money do not aggregate large areas of land to use to half capacity, but it is equally important to ensure that land is not cut up into uneconomic areas; uneconomic, that is, for the type of farming to which it is best suited.

Taxation

Death duties are today a very real cost in farming and should not be forgotten. Assets worth £1 0,000 pay £1,000 duty, but £30,000 pays £9,000 duty, so that a lifetime's work in development can be greatly reduced by an untimely death causing hardship to the family that has to carry on.

The time has arrived when provision should be made for death duty to be paid while one lives. This should be done like PAYE so that substantial additional capital is not required on death.

Unless something is done of this nature, almost every farm property of any consequence will be faced with almost impossible financial problems on the death of the owner, with the consequent deterioration of property and a slowing down in development and production. This affects the whole country in the long run.

The problem could be overcome easily by allowing farmers—or any other business projects for that matter—to form death duty trusts where regular sums could be paid in by way of cash, stock, shares, or premiums on life insurance policies. These payments should be subject to gift duty and not treated as an income tax exemption. The assets of the trust, however, should be exempt from estate duty, but made immediately payable to the Crown, which would in no way be the loser as far as income tax is concerned.

Such a scheme would encourage thrift, by which the Crown would indirectly benefit through the additional savings available for investment.

The farmer would not be faced with heavy borrowing of money, which at times could be almost impossible to obtain. This is often an embarrassment to the commercial world, as it ties up large sums of money that could be used for more useful purposes.

Some Important Points to Remember When Developing Land

1. Make sure your project is sound; otherwise don't start. Plan and budget according to the financial resources available.
2. Don't go too fast with land development. The necessary stocking, utilisation, and maintenance of the grass grown are even more important **than** growing it.
3. Adequate subdivision is essential for efficient utilisation of feed grown and general maintenance of a high-producing pasture.
4. Don't be too ambitious, as it is difficult to curtail a development programme halfway through.
5. Don't rely on ability to purchase suitable stock at economic prices. Stock tends to have a false value today because of shortage.
6. Tax (income, social security, and death duty) has to be paid sooner or later and is part of our cost structure today. You can't sell **stock** as well as save them and one often has to pay tax in what is a cash deficiency year.
7. It is not the interest rate that kills but the high debt structure and inability to reduce it or arrange long-term credit. Cheap money isn't the answer to your financial troubles.
8. Remember it is much sounder to work on a 10-year plan and finish up with a moderate debt than to complete the work in 5 years with a high debt. It will take you much more than the next 5 years reducing the debt and you face the added worry of getting caught in a credit squeeze due to a sudden fall in overseas prices.
9. Don't neglect quality for the sake of quantity.
10. Keep the cost factor to a minimum and reduce waste.

Conclusion

Developing land is not for the inexperienced and those with limited capital,

Every encouragement should be given to successful farmers to take up undeveloped land so long as it is immediately developed.

The present problem is not so much how to grow grass but how to utilise it efficiently.

It is our duty to see that we develop the easy country first and adopt methods that shorten the time factor and keep costs as low as possible.

Tomorrow you will be able to see for yourselves an area of quarter of a million acres within 30 to 40 miles of **Dunedin** which is worthy of development into highly productive land. .)

While, as already mentioned, present times call for consolidation of the 'position, it would appear that we have the capacity to increase stock numbers at the rate of approximately 100,000 sheep a year, so that in another ten years the sheep population of Otago could be at the 6,000,000 figure.

Increase managerial efficiency to give the maximum physical production with, the given resources of land, labour, and capital.

For a healthy economy death duties should be on a pay-as-you-live basis.

The great need today is for independent research into the economics of land development so as to be able to provide guiding factors as to what is sound finance in regard to debt structure on farms as well as local body borrowings in relation to the overall production derived from the Land District,

DISCUSSION

- Q. How many farmers start farming with unlimited capital?
- A. Many start farming by inheritance or being financed into farming by relations, etc. There is little chance of getting started without outside assistance.
- Q. (C. E. Iversen): If £1,000 is obtained by some means or another, what percentage should I spend on topdressing and seeding and what percentage on other items such as stock and fencing, etc.
- A. You should ensure that adequate capital is available to invest in stock and fencing.
- Q. (H. A. Duff): A great deal has been heard at this conference about greater efficiency and cutting our costs. In the speaker's view what items could be cut down on?
- A. The topdressing programme should be maintained at all costs. As times become harder maintain existing capital items and do not purchase new ones.
- Q. (F. S. Beachman): Mr Peryman said that it would be better to spread expenditure for development over 10 years. Would it not be better to develop over five years and then start paying off the debt?
- A. No. Taxation is the main problem. Take the development slowly and watch carefully the debt that occurs.
- Q. (—, Woods): In view of present price reductions how far can we proceed with future development before it ceases to be economic?
- A. At present we are increasing in Otago by about 100,000 sheep per year. This would appear to be the maximum, limited by sheep in our own land district, and also dependent on how hard we are prepared to work.
- Q. (Farmer, Kelso): Should we discard our Romney sheep of low fertility and encourage the introduction of hybrid vigour at the possible expense of wool production?
- A. Yes, hybrid vigour should be encouraged. A crossbred Romney ewe has a place in the future, particularly in our marginal country. Lincoln College has verified these results.