LAND TENURE IN THE CYPRESS PINE AREAS OF NORTH-WESTERN NEW SOUTH WALES

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In New South Wales there are one million acres of land bearing cypress pine and held under lease from the government. This land is suitable for the joint production of timber and livestock or for timber production alone. Alternatively, the timber can be harvested to provide capital for property development. Farm management plans have, however, been constrained by the land tenure policy which aims to promote both closer settlement and timber production. In this paper the opportunity costs of the current tenure system are evaluated against the freehold situation. The conditions which favour either specialized timber production or the joint production of timber and livestock are examined. Finally, the cost of achieving a timber production target is examined in terms of loss of income to the individual grazier and the nation.

Conflicts in Land Use

Government leases in New South Wales are administered directly by the Department of Lands under the provisions of the Crown Lands Consolidation Act (1913 as amended). Superimposed on this statute is the Forestry Act (1913 to 1957) which, *inter alia*, gives the Forestry Commission of New South Wales control over timber on certain of these leases.

There are some five million acres of commercial or potentially commercial cypress pine forest west of the Great Dividing Range in Queensland and New South Wales. Of the 2·5 million acres in New South Wales, 1·5 million acres are dedicated as state forests and almost all of the remaining one million acres are held under lease from the government. The Inverell Forestry Sub-district in New South Wales, contains 810,000 acres of leases over which the Forestry Commission can exercise control of the timber. The present study, which concentrates on the 424,000 acres of this total carrying commercial or potentially commercial stands of cypress pine, concerns the government policy applying to these leases. A further half million acres of such pine leases lie to the southwest of the Inverell Forestry Sub-district.

The areas bearing commercial or potentially commercial cypress pine can be managed in three ways. Firstly, since many leases carry timber currently worth at least $20,000, the trees could be harvested immediately to provide development capital for the lessee. Secondly, the land could be managed exclusively for timber production, in which case,

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management of the land remains with the Forestry Commission. In the Inverell Forestry Sub-district, 224,000 acres are suitable for sustained yield management by the Forestry Commission. Thirdly, management policies could be devised for the joint production of livestock and timber. Some 396,000 acres are technically suited to this multiple use.

The leasing of publicly owned forest land for grazing purposes causes special problems. Rational decisions on the private grazing of public lands require that the controls on use be consistent with public policy and that the economic consequences of private use be recognized. They also require that any opportunity costs which arise from constraints by the Forestry Commission to promote timber production, or by the Department of Lands to promote closer settlement, be valued and recognized. In the cypress pine country, timber production constraints involve restrictions on land clearing and development by the lessee. Closer settlement constraints involve restrictions on land trading, which limit property size and so distribute the available land amongst a large number of family farms.

The use of the cypress pine land resource is directly controlled by legislation. For certain leases a permit must be obtained from the Forestry Commission before the lessee can clear the timber and develop the land. This applies to Special, Crown, Conditional, Closer Settlement and Prickly Pear leases which are the main types in the cypress pine country of the Inverell area. In the past, permits have rarely been granted where the timber has been of any value to the Forestry Commission. However, in some cases, lessees have been allowed to thin out the cypress pine and so encourage the growth of both pasture and timber.[1]

The distribution of revenue from the sale of timber is also controlled by legislation. Regulation 46(e) of the Forestry Act provides for a payment to lessees, except those with Prickly Pear leases, for any damage to the property during logging. Until 1957, one third of the timber income, or royalty, was paid. With the advent of modern logging techniques, this has been reduced to five per cent which, it is often argued by both lessees and Forestry Commission personnel, is far too low to encourage any form of timber management by the farmer.

In addition to control over land use and timber revenue, the Forestry Commission is also empowered to dedicate and control Crown Lands for forestry purposes. Thus the conversion of leases to freehold tenure can be vetoed if there is commercial timber present. Where the timber is of high commercial value, the lease may be dedicated as a state forest and the grazing rights leased out to any farmer through what is called a Forest Lease. The lease rent is then determined by the Forestry Commission rather than the Department of Lands and rentals are generally higher than those of other leases.

In 1970, the Crown Lands and Other Acts (Amendment) Act was passed by the New South Wales Parliament. The Act reduces the complexity of the leasing system, with its 36 lease types, and enables lessees to obtain unrestricted freehold title to the land. The choice between freehold and leasehold tenure involves important economic questions for the grazier. For example, retention of leasehold tenure avoids an outlay

[1] More detailed interpretations of the legislation are provided by McLean [3] and Sinden and Kingma [5].

for land purchase but leaves the state with various controls over land trading and land use. These controls can discourage property development and can encourage exploitation if the tenure is short.

In this paper three aspects of the interaction between land policy and land use are examined. Firstly, the opportunity costs associated with the closer settlement constraint on land trading and the constraints imposed by forestry legislation, are calculated. Returns from leasehold and freehold tenure are compared. Secondly, the integration of timber management and multiple use activities into farm plans, is analysed. The periodicity of timber incomes and royalty payments to lessees are examined in addition to the possibility that timber revenue might be used for property development. The third problem centres on the role of the cypress pine forests in contributing to some timber production target. The Forestry Commission may decide, in its capacity as a state forest authority, that some leasehold land should stay in timber production. The Forest Lease, which is one institutional means of achieving this goal is considered in terms of its opportunity cost to the individual and the nation.

Following Moncrieff and Mauldon's [4] development study in Western Australia, the problems outlined were investigated by generating a series of optimal farm plans using linear programming for a case study property in the Inverell Forestry Sub-district.

Data and Method

Data were obtained from a sample of 40 properties in the Inverell area. The survey covered 135,000 acres and 85 per cent of this land, or 115,000 acres, was leasehold land. The leasehold acreage represents 10 per cent of the total area of leases bearing cypress pine in New South Wales. The mean property size was 3,300 acres. The land use characteristics of the case study farm corresponded closely to the mean and the acreage was subdivided as follows: 200 acres of arable land (freehold), 200 acres of improved pasture (freehold), 1,500 acres of natural pasture (leasehold), 900 acres of multiple use land (leasehold) and 500 acres of timber (leasehold).

The case study property had a net farm income[2] in 1968-69 of $2.74 per acre. The mean net farm income was $2.85 per acre while for 68 per cent of farmers net farm income was less than $2.00 per acre. Ninety per cent of farmers had net farm incomes of less than $4.00 per acre. Revenue on the survey properties is derived mainly from beef, wool and, to a lesser extent, cash crops. Mean livestock numbers were 1,600 sheep and 120 cattle per property.

To accommodate both long-term and short-term investments and to set the linear programming analysis in efficiency terms, the objective function was defined as the annuity equivalent of a perpetual series of gross margins. The gross margins of long-term investments such as pasture improvement and timber management were expressed as annuities. No off-farm investments were considered.

The matrix comprised 84 activities and 40 constraints and all technical coefficients were derived from the farm survey data. In all, there were

[2] Defined as gross revenue less cash expenditure and depreciation which is available to meet manager's salary and a reward to capital.

12 cattle activities including purchased and home-bred weaners, and the sale of animals at various ages. The 10 sheep activities were handled in a similar way. Feed buying, grain feeding and haymaking activities were included. Some further details of important activities are given in the Appendix.

The alternative uses of forest land included clearing multiple use land for natural pasture, conversion of timber to multiple use, management of timber for sustained timber production and four multiple use activities. The latter were identified on the basis of actual practice. At one end of the range was a combination of a low timber stocking, defined as an annual growth of 48 super feet, with relatively good pasture growth carrying an average of 0·9 dry sheep throughout the year. At the other end of the range a timber growth rate of 68 super feet per year was combined with an average of 0·4 dry sheep per acre. As with timber management, these activities were based on thinning out the cypress pine, fencing, and providing water points where applicable. The production relationships between livestock and timber have been analysed quantitatively in Kingma and Sinden [2].

Development capital, to which the term 'capital' subsequently refers, was assumed to be available at six per cent interest and was expressed throughout the analysis as a present value. Capital for projects with long term benefits, such as land clearance, purchase of freehold rights, timber management, pasture improvements and increases in livestock numbers, was assumed to be available by mortgaging the land. It was assumed that the 400 acres of freehold land with a market value of about $6,000 could be mortgaged to obtain $3,600 (a 40 per cent security margin on the valuation of the asset). An additional $1,400 could be obtained from the 2,900 acre leasehold block (a 60 per cent security margin) to give a total of $5,000 available development capital. The effects of varying amounts of development capital on optimal plans and opportunity costs were analysed within the range of $500 to $15,000.

The generalized lease structure which was analysed, refers to Settlement, Special, Conditional, Crown and Prickly Pear leases. On the latter lease type, however, no royalty payment is made by the Forestry Commission to the lessee. The restrictions on the management of the timber were handled by varying the royalty payment to the lessee and by removing two activities, namely development from multiple use to natural pasture and from timber to multiple use. Closer settlement policies which involve restrictions on land aggregation, were analysed by removing all land trading activities.

Prices prevailing in the area in 1968-69, were used in the initial programming. These included $2.40 per hundred super feet for timber, a greasy wool price of 44 cents per pound and $29.00 per hundred pounds for beef. To examine the sensitivity of optimal solutions to price changes, timber prices were varied from $2.40 to $1.00 per hundred super feet and the wool prices used ranged from 32 to 44 cents per pound. The selection of the range of wool prices is important in the light of the recent slump in the wool market but, in the context of the present analysis, incorporation of sheep or cattle into an optimal solution is not of major importance, provided consistent results are obtained. The internal enterprise organization of the farm is not under review in this paper. Cattle and crops did, in fact, substitute for sheep in

optimal plans, as wool prices changed, but in no cases did this alter the ranking of alternatives or relative size of the opportunity costs in the analysis.

Before discussing any policy issues, two points relating to the analytical framework must be stressed. Firstly, results obtained refer specifically to the resource structure, management and environment of the case study farm and as such, overall policy recommendations cannot be made. However, the essential tenure characteristics and production activities existing in the study area were included in the analysis. The parameters of the case study farm correspond closely to the calculated parameters from the farm survey and the survey area is representative of a large proportion of cypress pine leases in New South Wales. Therefore, the results could be applicable to other cypress pine areas in the 25-30 inch rainfall districts of the state. Secondly, optimal farm plans represent the course a farmer would follow subject to the conditions imposed in the study. The course is affected by assumptions of complete and certain knowledge and the objective of profit maximization. The normative nature of the linear programming analysis may introduce some bias, as in practice, the optimum farm plan may not be reached due to the inability or unwillingness of the farmer to alter his production plans. While this is of importance where specific development strategies are recommended, it is of lesser importance where, as in this paper, the aim is to examine the comparative economic costs resulting from present tenure systems. Survey properties operating under the lease system had an average gross margin of $11,400 whereas the optimal farm plan provides a gross margin of $15,000 ($21,600-$6,600 in Table 1). The $3,600 difference is due to the marginal changes in land mix in optimal solutions, the inclusion of revenue from long term investments in the programming solution and the fact that one set of technical coefficients were incorporated in the matrix. The small deviation of the normative from the actual farm gross margin in no way affects the conclusions from the analysis and this suggests that the results may have positive value.

Results and Discussion

Results of the programming analysis are expressed as returns to the nation as well as returns to the individual farmer. National values included the costs and returns of timber management when these were incurred by the Forestry Commission. No adjustments were made for fertilizer bounties and the effects of taxation were ignored.

The cost of certain policy objectives

The effects of the timber constraints and the closer settlement restrictions were examined by calculating a series of optimal farm plans and comparing farm incomes. With initial development capital of $5,000, conversion to freehold was accompanied by an annual income, as an annuity, of $22,100. In contrast, if the lessee chose to continue under the present lease system, his annual income was $18,600 while the return to the nation was $19,600. For an optimal allocation of resources the advantage to the nation of freehold tenure was, therefore, $2,500. This was the total opportunity cost of continuation of the present lease

system and, given the assumptions of the model, was a result of both the timber and closer settlement constraints.

The opportunity cost of the timber constraint itself was determined by comparing the income from the present lease system and that from a partially constrained lease. In this latter hypothetical lease all constraints on timber clearing were removed and the lessee received 100 per cent of the timber royalty, but he was still unable to buy and sell land. The opportunity cost of the timber constraint was $200, and can be attributed to Forestry Commission policies. By difference, the closer settlement constraint accounted for $2,300 ($2,500—$200) of the opportunity cost to the nation. This farmer could earn another $2,300 if he were able to buy and sell land.

The effect of the policy constraints is reflected in the structure of optimal plans under freehold tenure and under the present lease type. Under freehold tenure and with initial development capital of $5,000, 1,136 acres were sold. The sales were almost all forest land, namely, 500 acres of timber, 536 acres of multiple use land and 100 acres of improved pasture. The extra capital from these sales was used to develop 364 acres of multiple use land for the joint production of timber (17,500 super feet) and livestock. An additional 1,124 acres of natural pasture were purchased to augment the feed supply and 100 acres of improved pasture were converted to arable land.

Opportunity costs are presented for a range of development capital levels, in Table 1. The timber constraint imposes no opportunity costs at the lowest capital levels, but it reduces both farm incomes and incomes to the nation to an increasing extent as development capital rises. At the extreme of $15,000 capital, the timber constraint reduces annual income by $1,900, representing two-thirds of the total opportunity cost. The timber constraint imposes proportionately greater costs on the wealthy farmers as the available capital cannot be used to develop the timber stands. At the lowest capital level, the closer settlement constraint imposes a $6,600 opportunity cost which is approximately one-third of the freehold income. The closer settlement constraint has a greater

TABLE 1

The costs of some policy objectives

Development Capital $	Annual income with freehold tenure $ gross margin	Opportunity Costs[a] Total	Due to timber constraint	Due to closer settlement constraint
			$ gross margin	
500	21,600	6,600	0	6,600
1,000	21,600	5,900	0	5,900
2,500	21,800	4,400	0	4,400
5,000	22,100	2,500	200	2,300
7,500	22,300	2,100	500	1,600
10,000	22,600	2,200	1,200	1,000
12,500	22,900	2,400	1,800	600
15,000	23,100	2,700	1,900	800

(a) The opportunity cost is the freehold income less income to the nation for each lease system.

effect on the poorest farmers who, in practice, are unable to obtain capital for property development.

The relative importance of the land and capital constraints can be readily ascertained by an examination of shadow prices. An increase in the availability of development capital with a decline in the marginal cost of additional land, means that land transactions are made for the sole purpose of generating capital for property development. Alternatively, if the marginal cost of additional land remains high as development capital increases, then the restraint on the internal farm organization, or the 'land mix' problem, is more important than any credit imperfections which may exist in the capital market. Over the range of capital availability, the marginal cost of additional land decreased by only 6 per cent from $2.27 to $2.14 per acre, while the marginal cost of capital declined by 38 per cent from 10.5 to 6.5 cents per additional dollar. It could, therefore, be concluded that the opportunity costs in Table 1 stem not merely from the limited supply of capital but mainly from an inefficient allocation of farm resources due to policy constraints. This result has serious implications at the regional level, in terms of both the additional capital required to develop properties, and the changes in land use which could be expected to take place given a change in the land tenure system.[3]

The opportunity costs of Table 1 show that economic efficiency under leasehold tenure was not achieved because the lease system prevented the most profitable combination of enterprises. Returns to the land, or the economic rent, should be based on the marginal value product of the land. Defined more precisely, the economic rent is the return to the land, over and above that necessary to keep the 'mobile factors' in production. The return to mobile factors is the opportunity cost of capital and labour. The economic rent was determined by programming the farm with and without the leasehold acreage. For example, with $5,000 development capital and with the total lease area included, the return to the nation was $19,600. Without the leasehold land, the return was $8,400. The additional income of $11,200 was the total product of the lease. From this were deducted the opportunity costs of the investment in plant, buildings and livestock on the lease (12 per cent on $21,700 or $2,600) and of the labour required to run the lease (1,670 hours at a total cost of $6,000). The difference of $2,600 is the economic rent of the land, and should accrue to the crown under an efficient division of the product.[4] Over the range of development capital considered, the rent varied from $2,500 to $3,000 for a 2,900 acre lease.

The actual policy of rent determination may be termed administrative pricing because the rental is a percentage of an unimproved capital value of the land. The rate is usually less than 4 per cent. With an unimproved value of $2.50 per acre, the rental on a 2,900 acre lease is

[3] While the regional adjustments are important, a discussion of such changes is beyond the scope of this paper which seeks to find whether or not land policies do, in fact, lead to inefficiencies in land use.

[4] The rents are sensitive to the opportunity cost rates which were adopted for land and capital. High rates were selected because they resulted in conservative rent values. The rate for labour, $3.60 per hour or $6,000 per year if 1,670 hours are worked, was believed to be high enough to cover a return to labour and management. The interest rate of 12 per cent is a generous estimate of the earning capacity of farm capital in off-farm investment.

$290 per year. Gardner [1] suggests that, since this type of price policy usually results in a payment less than the economic rent of the lease, it results in a transfer payment to the lessee. Despite the subjective elements in the rent calculations, the difference between $290 and the lowest economic rent estimate, namely $2,500, is large and indicates a considerable transfer payment.

From the standpoint of national efficiency, the actual rentals set by the Department of Lands, can encourage misallocation of resources because the difference between economic rents and actual rents becomes capitalized into the freehold portion of the property and/or into an exchange payment for the lease itself. The market value of the freehold portion of the property rises and property amalgamation is hindered. Also, if the lease rent had approximated the economic rent, the conflict between grazing and forestry would not have arisen because the demand by graziers for cypress pine leases would have been reduced.

The role of the forest land

Should the farmer manage his forest land or clear it and sell the timber to provide capital for property development? Under freehold tenure and with $5,000 of development capital, the optimal land use policy involved the sale of 1,036 acres of forest land and the development of 364 acres of multiple use land. Under certain conditions, therefore, integration of forest land is a profitable system of land management. A more general examination is now made of the conditions which favour integration under freehold tenure.

Optimal management activities for multiple use land changed markedly with different levels of capital. With $500 of development capital, no forest land was thinned for multiple use. Both land and timber were sold. At $15,000, 1,100 acres were managed including the purchase of 200 acres of multiple use land. The timbered country, which proved too expensive to convert to multiple use, was sold. Results clearly depend on the land prices used. These prices are detailed in the Appendix.

The Forestry Commission has, on occasions, informally mentioned the desirability of giving the lessee an 'interest' in the timber to encourage his management. In practice, the 'interest' is the level of royalty payment. Increases in the royalty payment from the present 5 per cent to 100 per cent, did not change the optimal farm plans. Similarly, optimal plans proved remarkably insensitive to the timber price levels used. Optimal plans did, however, change as the forage yield of the multiple use activities changed. For example a 20 per cent reduction in livestock carrying capacity was sufficient to remove multiple use activities from the optimal plans. Possibilities for integration of multiple use activities therefore lie in the pasture yield under the cypress pine.

A timber production target

The Forestry Commission is legally empowered and may well choose to incorporate the best pine leases into some plan to meet a timber production target. What should such a target be and is it socially desirable? In the absence of any official policy statement for cypress pine, a timber production target must be determined subjectively. Several factors suggest a level of approximately 34 super feet per lease acre per year.

Firstly, in the last 18 years, regulated fellings yielded 29 million super feet from the survey leases, or an average of 34 super feet per acre per year. Secondly, the productive capacity of the land, in technical terms, is at least twice this figure so that this yield can readily be achieved in future. Thirdly, a yield of 34 super feet could be regarded as a maximum for the target because state forests adjacent to the leases could have provided a greater yield with more intensive management. This management involves only a simple thinning treatment and is quite profitable in itself with an internal rate of return of 11 to 15 per cent. But this treatment was not undertaken. It could, therefore, be inferred that the yields from the area have been adequate to meet the objectives of forest policy. A yield of 34 super feet per acre is 47,600 super feet for the case study farm, which has 1,400 acres of cypress pine.

Under freehold tenure, optimal plans include a timber output of 47,600 super feet only when more than $12,500 of development capital is available. The majority of survey farmers are unable to raise this amount of capital so that a tenure system other than freehold may be necessary to achieve the target. In terms of national efficiency, a target of 34 super feet per acre per year is not optimal at capital levels lower than $12,500 because the freehold plans do not include this level of timber output.

One institutional means of achieving a timber production target is the Forest Lease. This form of tenure has been in use for many years in various parts of the state. If the forest country, which is now leased, is converted to a state forest, the grazing rights can be leased back in the form of a Forest Lease. The basic grazing fee has not changed since the 1950's and is $3.20 per steer or beef cow per year. At one beast to four acres, the fee is $0.80 per acre and can be reduced if improvements for fences and water are necessary. Actual fees in the survey area are approximately $0.50 per acre per year. The lessee is encouraged to thin the timber to certain specifications and this increases the growth of both pasture and cypress pine. Any areas which are not treated in this way and are required to meet the timber production target, can be managed by the Forestry Commission.

When compared with the freehold model, the Forest Lease always imposes a loss of income on the nation and on the lessee. The programming analysis showed that opportunity costs increase as the availability of development capital is reduced. For example, with $15,000 development capital, the loss of income to the lessee is $1,900 or eight per cent of the freehold income, and the opportunity cost to the nation is $300. At development capital levels below $5,000, however, the opportunity cost to the lessee exceeds $5,600 (more than 25 per cent of the freehold income), while the opportunity cost to the nation exceeds $3,000. Opportunity costs arise because the lease is incorporated into a state forest and hence, cannot be fully developed by the lessee. The difference between opportunity costs to the nation and to the lessee is due to the fact that total timber revenue accrues to the Forestry Commission.

Summary and Conclusions

The economic costs associated with New South Wales closer settlement policies and forestry legislation have been examined using linear

programming applied to a case study farm in the Inverell area. Given the prices, technical coefficients and assumptions of the study, the constraints which the Forestry Act imposes, cause very low, if any, opportunity costs for the amounts of development capital which most survey properties are able to borrow. In contrast, the closer settlement constraints of the Crown Lands Consolidation Act impose opportunity costs up to one third of the income under freehold tenure. Changes in shadow prices at varying levels of available development capital showed that these opportunity costs did not arise merely because capital was limiting, but were mainly due to a misallocation of farm resources resulting from policy constraints.

The trading of multiple use land and timber country was an integral part of the optimal land use plans under the freehold model. There may, therefore, be a case for the government to allow farmers to sell some of their leased cypress pine and retain the capital for development. Any tenure other than freehold can be expected to impose some opportunity cost on the nation due to restrictions on timber trading.

Management of the timber itself, without pasture, was never included in optimal plans. But there were a wide range of conditions under which a freehold farmer should manage the forest land for the joint production of timber and livestock. Indeed, these conditions appeared to be sufficiently broad to indicate certain policy directions to promote integration. As long as multiple use land is thinned every ten years or so to maintain pasture yields, the periodicity and level of royalty payments seem immaterial. Rather than providing an 'interest' for the farmer as a percentage of the royalty, a management system could well be devised, at least for the leases in the survey area, where the royalty is used by the Forestry Commission to thin out the cypress pine.

The high opportunity costs of the Forest Lease indicate that the conversion of existing leases to state forests is socially sub-optimal. State forests and government leases are often retained as a means of meeting timber production targets, but such targets can be sub-optimal in a national sense. There is an urgent need, therefore, for the Forestry Commission to specify a production target for cypress pine. An evaluation of the use of any remaining forest country can then be made to ensure that large areas of lease land are not left to stagnate unthinned and unused as at present.

APPENDIX

Details of the more important activities of the analysis

1. Crossbred ewes

Merino cross ewes are purchased and have a 90 per cent lambing rate. The total wool cut per ewe is eight pounds. The variable costs of shearing, dipping, selling, ram and ewe replacement, total $4.31 per ewe. Revenue, excluding wool but including culled-for-age ewes, totals $7.13 to give a gross margin of $2.82 per ewe.

2. Ten-month vealers

The purchase of six month old weaners and the breeding of cattle, permitted a choice of vealer supplies. The purchase price of weaners net of cartage was $60.50 per head. The animals were fattened to ten

months of age and sold in the winter for $103 at a carcase weight of 356 pounds. Variable costs of drenching, dipping, transport and marketing came to $7.24 per animal.

3. Crop A—Wheat

Crop rotation A consisted of three years of wheat followed by a fallow year and a fourth year of wheat. Variable costs of seed, freight and cultivation were $16.73 per acre. Wheat yields were assumed to be 25 bushels per acre at a net price of $1.04.

4. Crop F—Oats

The three-year rotation included two years of grazing oats and one year of seed oats. The data were averaged to an annual basis. The feed supplies totalled 6 dry sheep equivalents in spring, 2 in summer, 10 in autumn and 11 in winter. The total variable costs of establishing the oats were $6.60 per acre.

5. Land Management Activities

The cost of various land management activities, as annuities per acre were 21 cents for multiple use and for timber management, 48 cents for the transfer from improved pasture to arable, 69 cents for natural to improved pasture, $2.53 for multiple use to natural pasture, and 37 cents for timber to multiple use. An interest rate of six per cent was used and these costs were included as negative gross margins.

6. The purchase of freehold rights

The purchase of freehold rights on land with an unimproved capital value of $2.50 per acre can be obtained by repaying six per cent of this value annually for 33 years.

7. Land Trading Activities

Prices were based on data held at the Inverell Office of the Valuer General's Department. The following land prices which applied in the area at the time of the analysis, were used: $21 per acre for improved pasture, $7 per acre for natural pasture and $15 per acre for multiple use land. The price for multiple use land includes a small proportion of the timber value.

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