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OWNERSHIP OR LEASING OF AGRICULTURAL LAND: PRODUCTION ECONOMIC ASPECTS

by

H.S. HATTINGH

and

A. HERZBERG

Division of Agricultural Production Economics
Department of Agriculture and Fisheries

THE PROBLEM

Improved technology and inflation means that obtaining funds for entry to, expansion in and often mere survival in the industry makes great demands on the financial expertise of modern farmers and they are obliged to pay more and more attention to this facet of their enterprises. The Government has a real interest in this matter, in order to promote an economically sound agricultural industry in the RSA.

Aspects creating the greatest problems and causing real concern are the following:

- Rapidly rising land prices which have already reached unrealistically high levels in many farming areas.
- The replacement of durable assets in times of high inflation.
- The relatively rapid rise in the prices of short-term farming requisites.

High land prices, and especially the unrealistically high land prices in some farming areas, are a serious problem facing the South African agricultural sector. The result of these high prices is that the return on capital invested in farms is usually lower and frequently much lower than interest and redemption rates on mortgages and medium-term loans. In addition the amount in capital needed nowadays to enter the farming sector on a sufficiently large scale also makes virtually impossible demands of prospective farmers who have not yet made their fortunes elsewhere.

HYPOTHESIS

If the upward trend in land prices, without a corresponding rise in profitability, cannot be controlled, the result must of necessity be that:

- Only persons who already own a great deal of land will be able to purchase more land.
- Farming will become a closed occupation which can only be practiced by persons who inherit sufficient land or by persons who have made or are still making money outside the agricultural sector.

- There will be an ever-widening gap between persons who wish to use land for investment purposes and those who wish to exploit the present agricultural potential of the land - i.e. leasing as an alternative form of land tenure will increase in importance.

The hypothesis that the leasing of land as an alternative method of obtaining a right to use the land will have to increase in importance, is not unique to White agriculture in the RSA. Various overseas writers have come to the same conclusion regarding their own local conditions.

Margaret Capstick had the following to say concerning the situation in England (THE ECONOMICS OF AGRICULTURE):

"The economics of the purchase for owner-occupation of a mediocre farm at £750 per hectare are beyond reasonable explanation at interest rates in 1968-69." "How the gap between this net income and interest charges on land is bridged is a mystery; it must be assumed that the owner-occupier farms and lives at a very low standard, hoping that when he retires capital appreciation will repay his mortgage" ... "The 1960's may, unless there is a general fall in interest rates, unaccompanied by a fall in the profitability of farming, prove to have been the heyday of the owner-occupier."

M.J. Smith had the following to say in respect of the USA (ADJUSTMENTS IN AGRICULTURE - TRENDS AND NEEDED ADJUSTMENTS):

"Present returns to land on average are below the mortgage interest rates. Increasing amounts of external capital are likely to be needed in farming. There will be more and more a separation between the people who own the farm resources and those who use them."

In an O.E.C.D. Report (CAPITAL AND FINANCE IN AGRICULTURE) the following is stated:

"The progress of structural reform, however, will not fundamentally alter the fact that in most regions real estate will remain a very large part of

the total value of the farm. In some countries this does not at present constitute a widespread problem and owner-occupancy will remain the main form of land tenure in the foreseeable future. In many countries and regions, however, the financing of real estate does constitute a problem, and farm enlargement is unlikely to take place exclusively through land purchase. In such cases solutions based on a separation between the ownership and the use of land are likely to develop."

IMPORTANT QUESTIONS REGARDING THE LEASING OF AGRICULTURAL LAND

Important questions regarding the leasing of agricultural land which come to the fore are the following:

- (1) Is the hypothesis that the leasing of agricultural land will have to increase in importance if land prices were to rise further valid, because of:
 - (a) the larger amount of capital needed to obtain a unit of satisfactory size?
 - (b) the fact that profitability does not increase at the same rate in terms of net farming income?
- (2) To what may it be ascribed if the hypothesis appears to be valid or invalid:
 - (a) Government policy?
 - (b) Rent?
 - (c) Unsatisfactory contracts of lease?

1. Is the hypothesis correct that leasing will increase in importance?

(a) Capital requirements

In Table 1 the average capital investment and net farming income obtained from studies undertaken during the past few years by the Division of Agricultural Production Economics are shown.

If it is borne in mind that net farming income has to compensate the undertaker both for his entrepreneurship and managerial functions and for the total capital, i.e. both own and borrowed funds, invested in the undertaking, it is clear that nowadays any prospective farmer must have a large amount of own capital available to buy a farm, purchase livestock and implements and still have sufficient funds to finance operating inputs for a year or two. As a matter of fact for this reason nowadays farming is totally closed to many competent people who are eager to enter the industry.

The poor financial position of many farmers can also without doubt be ascribed to the fact that they had to invest too much of their available capital in land and therefore have too little capital at their disposal for movables and operating costs to be able to farm at an optimum level of efficiency. Leasing, as an alternative method of obtaining land tenure could solve this problem to a considerable extent.

(b) The relative increase in land prices and net farming income

According to information from the Division of Agricultural Marketing Research land prices in the RSA increased at an annual rate of 7,15 per cent during the past 20 years, i.e. from 1959/60 to 1978/79. In contrast the net income of farmers in the RSA increased at an annual rate of 11,42 per cent. From this information it is clear that the net farming income of farmers in the RSA seen overall increased at a more rapid rate than land prices during the past 20 years.

However, the position during the past six years shows the opposite trend. During the period 1973/74 to 1978/79 the net income of farmers in the RSA increased on average by 7,94 per cent per annum as against an average annual increase in land prices of 11,34 per cent.

There are, however, great differences between various regions. The position in the North-Western Transvaal Bushveld is particularly disturbing. A study undertaken by the Division of Agricultural Production Economics in 1955 and 1956 in the North-Western Transvaal Bushveld and repeated in 1979 gave results as shown in Table 2.

The average net farming income per R100 of capital investment of North-Western Transvaal Bushveld farmers, who are members of the Division of Agricultural Production Economics' mail-in records scheme, for the past six years, i.e. from 1973/74 to 1978/79 is given in Table 3.

Land prices in the extensive cattle farming areas of the RSA rose at an average annual rate of 9,41 per cent during the past 20 years (1959/60 to 1978/79), whereas the average annual increase during the past six years (1973/74 to 1978/79) was 11,98 per cent.

The statement that land prices are rising more rapidly than the net income of farmers is therefore incorrect for the country as a whole and in the long-term. Regional differences do, however, occur and in certain areas land prices, even in the long-term, have in fact risen more rapidly than the net farming income of farmers. During the past six years, i.e. from 1973/74 to 1978/79, land prices, even as regards the country as a whole, have risen more rapidly than the net income of farmers.

(c) The relative importance of the leasing of agricultural land

Leasing as a method of obtaining land tenure has remained relatively unimportant in the RSA, as is the case in many other countries.

According to an O.E.C.D. Report, "CAPITAL AND FINANCE IN AGRICULTURE, VOLUME II, 1970", the area of land leased as a percentage of the total area of agricultural land varies from 70 per cent in Belgium and 50 per cent in the UK to less than 10 per cent in Finland, Denmark, Ireland, Austria and Japan.

In his thesis "EKONOMIESE IMPLIKASIES VAN VERSKILLENDSE GRONDBESITTINGSPATRONE IN DIE LANDBOU, 1973",

TABLE 1 - Capital investment, operating expenditure and net farming income according to types of farming in certain areas

Area	Year	Total capital investment	Operating expenditure	Net farming income	N.F.I./R100 capital investment
R					
<i>Summer Rainfall Area</i>					
N.W. O.F.S.	1976/77	464 803	75 038	60 461	13,01
Tvl. Highveld	1977/78	512 330	109 168	37 408	7,30
Western Transvaal	1978/79	488 889	83 279	40 905	8,37
Eastern OFS	1976/77	452 536	73 804	37 130	8,20
<i>Winter Rainfall Area</i>					
Swartland	1977/78	332 513	54 384	6 120	1,84
Rûens	1978/79	458 500	65 755	46 755	10,08
Canning fruit	1977/78	392 583	95 199 42 992		10,95
Wine grapes	1977/78	297 265	56 765	19 065	6,41
Table grapes	1977/78	312 551	105 301	86 656	27,72
<i>Dairy products</i>					
Industrial milk	1975/76	423 065	43 901	19 409	4,58
Fresh milk (Western Cape)	1975/76	618 864	117 056	44 068	7,12
<i>Sheep</i>					
Eastern Cape	1977/78	377 738	36 354	30 515	8,08
Karoo	1977/78	264 037	22 576	20 018	7,59
Southern OFS	1977/78	264 618	27 746	17 487	6,61
<i>Beef cattle</i>					
N.W. Tvl. Bushveld	1978/79	271 498	32 749	3 941	1,45

TABLE 2 - Capital investment and financial results, North-Western Transvaal Bushveld, 1955/56 and 1978/79

Item	1955/56	1978/79
R		
<i>Capital investment</i>		
Land and improvements	24 900	194 385
Implements and livestock	12 970	77 113
Total	37 870	271 498
Gross farming income	4 443	36 690
Total expenditure (excluding interest)	1 977	32 749
Net farming income	2 466	3 941
Capital investment per hectare (total)	21,40	135,77
Gross income per hectare	2,51	18,35
Net income per hectare	1,39	1,97
Net income per R100 of capital investment	6,51	1,45

TABLE 3 - Net farming income per R100 capital investment of mail-in records collaborators in the North-Western Transvaal Bushveld, 1973/74-1978/79

1973/74	1974/75	1975/76	1976/77	1977/78	1978/79
R					
5,24	7,27	6,27	6,10	3,93	2,09

Joubert came to the conclusion that:

"Met die uitsondering van Denemarke en Japan, speel die huur van landbougrond 'n redelike belangrike rol in die bespreke lande" "Die algemene tendens egter, is 'n afname in die hoeveelheid grond wat deur ten-volle-huurders bewerk word met 'n toename in die aantal en oppervlakte plase wat onder gemengde stelsels bewerk word."

The position in respect of the area of land leased in the White agricultural sector in the RSA is shown in Table 4.

TABLE 4 - Leased land as a percentage of the total agricultural area occupied by Whites in the RSA

1937	1946	1950	1955	1960	1964	1965
%						
22	20	15	14	15	13	17
1971	1972	1973	1974	1975	1976	1977
%						
17	18	18	18	18	18	17

It is clear that the leasing of agricultural land, although important, is certainly not the predominant form of land tenure in the RSA. The owner-occupier type of farming is still the most important form of land tenure. It is also striking that the importance of leasing tended to decrease from about 22 per cent in 1937 to only about 13 per cent in 1964 after which it rose again slightly to stabilise at about 18 per cent for the past 14 years.

This observation is definitely contrary to the hypothesis that as the gap between the market value and the productive value of agricultural land widens and the amount of capital needed to start an enterprise of a satisfactory size also increases, leasing as a method of obtaining tenure of agricultural land will increase in importance.

Also contrary to the implication of this hypothesis is that it is mainly farmers who already own land who lease extra land and not, as might be expected, that leasing serves as the first step towards full ownership. An investigation in respect of the leasing of agricultural land undertaken by the Division of Agricultural Production Economics in 1979 shows that out of a sample of 522 farmers leasing private land only 78 had no land of their own.

2. To what can the invalidity of the hypothesis be ascribed?

(a) Government policy

Joubert mentions in his thesis that "dit interessant is om daarop te let, dat wetgewing aangaande huur baie omvattend is in die lande waar huur baie belangrik is soos byvoorbeeld België, die Verenigde Koninkryk en Nederland. Wetgewing word hoofsaaklik daarop toegespits om die huurder groter sekuriteit te verskaf." Similar legislation does not exist in South Africa.

In the Third (Final) Report of the Commission of Enquiry into Agriculture, the Commission made the following recommendations regarding the leasing of agricultural land in para. 4.6.2.1.11.2:

"The Commission recommends that the system of hiring and leasing agricultural land be encouraged and that serious consideration be given to methods of promoting this system."

"Since this matter calls for a high degree of expertise and study, the Commission wishes to recommend further that a study group of experts be appointed as soon as possible by the Minister of Agriculture to make recommendations on the steps to be taken to encourage the leasing of agricultural land and on the statutory provisions considered necessary to protect the interests of both lessees and lessors and to place the leasehold system on a sound and well-ordered basis."

In Part II of the "Verslag van die Komitee van Onderzoek na Landelike Hervorming" the Committee mentioned in para. 16.6.5:

"Huur as 'n metode om die gebruiksreg van grond te bekom het hier in Suid-Afrika, net soos in baie oorsese lande, relatief onbelangrik gebly en, teen verwagting in, geneig om in belangrikheid af te neem.

Hierdie verskynsel van swak ondersteuning aan huur as stelsel word toegeskrywe aan verskeie swakhede wat die huidige huurpraktyke kenmerk. As gevolg hiervan bly sowel moontlike huurders as verhuurders ongeneë om in 'n ruimer mate hiervan gebruik te maak."

"Die jongste inligting wat die komitee bereik het, benadruk weer eens die noodsaaklikheid dat daar so gou moontlik 'n diepte ondersoek ingestel word na die huurstelsels van landbougrond in Suid-Afrika en na metodes om die stelsels hier te verbeter en uit te brei." (para. 16.6.6)

"Die Komitee het derhalwe besluit om die aanbeveling van die Kommissie van Onderzoek na die Landbou te herhaal en aan te beveel dat hieroor" (dit is 'n studiekomitee van deskundiges) "weer eens ernstig besin word en dat so spoedig moontlik hieraan uitvoering gegee word."

The impression is gained that the Government has thusfar not seen its way clear to introduce special legislation purposefully to promote the leasing of agricultural land. For this reason the proposed study committee has not yet been appointed. Meanwhile the Division of Agricultural Production Economics is expected in the normal

course of events to undertake research on the subject and to make the results known to interested parties.

This corresponds to the policy followed by the USA and is set out as follows by Joubert:

"Behalwe sekere algemene regsbeginsels betreffende die aangaan van huur- en verhuurooreenkomste bestaan daar nie spesifieke wetgewing in Amerika oor die huur van landbougrond nie. In verskeie bulletins wat deur die Departement van Landbou uitgegee is, word daar egter voorbeelde van standaard huurooreenkomste aangegee. In hierdie departementele publikasies word daar ook vir die boere gewys op die verskillende aspekte wat deur so 'n ooreenkoms gedek behoort te word."

In our opinion this is the correct approach. It should also be noted that the policy is followed in various countries to encourage the owner-occupancy form of land tenure. Two examples may be quoted from the book "TOWARDS MODERN LAND POLICIES" in this connection:

"Land policy in Ireland

The Government's agricultural policy is based firmly on the family farm. It is intended to maintain and strengthen the family farm system, and, to this end do anything possible to enable the competent and hard-working farmer to achieve the fullest development of his resources."

"Land policy in Italy

The attachment of Italians to property and family has been reflected, as will be seen, in two basic postulates of land policy; respect for property and recognition of the landowning working family as the ideal form of land tenure."

The desire of every farmer to be the owner of the land on which he is farming cannot and should not be ignored. The feeling of independence and self-confidence which ownership creates in farming communities throughout the world is a valuable asset to any country.

Young's view of leasing and ownership also merits attention: "Assure a man the property of a naked rock, he will make a garden of it, give him a garden leased for nine years and he will turn it into a desert."

It is conceded that the Commission and the Committee were correct in stating that present legislation in the RSA does not stimulate the leasing of agricultural land and also that leasing can in fact be stimulated by means of legislation, as is clear from the experience of countries where leasing as a form of land tenure plays a very important role.

Our personal feeling is that more research and guidance on hiring and leasing of agricultural land must be undertaken, but that the development of leasing as an alternative form of gaining tenure of land should be allowed to follow its natural course and should not be specially promoted by means of legislation. We are further convinced that a policy should be followed to get the maximum number of owner-occupiers established on the available

agricultural land in the RSA and to see to it that they remain financially strong.

If leasing can serve as an intermediate step in achieving the goal of owner-occupancy, it definitely merits special measures to promote it. It would, however, seem as if leasing plays a very small role in this connection. As already mentioned a recent study by the Division of Agricultural Production Economics brought to light that in a sample of 522 farmers leasing private land only 78 have no land of their own. It is therefore predominantly farmers who already own land who lease additional land.

(b) Rent

All too often rent is calculated by applying current rates of interest to the price the owner feels he would receive if he were to sell the farm. Strictly speaking rent ought to serve as compensation for the agricultural production potential of the land, while the investment potential ought to be compensated for by the capital appreciation of the land.

It has already been pointed out that land prices in the RSA rose by an annual average rate of 7,15 per cent during the 20 year period 1959/60 to 1978/79, whereas the average increase during the last six years of this 20 year period was even higher, namely 11,34 per cent per annum. In the case of lessors of agricultural land, the rent received must be added to this.

To get an idea of how realistic the rent charged is information from farmers leasing land and involved in farming surveys undertaken by the Division of Agricultural Production Economics in the Western Transvaal, Rûens and North-Western Transvaal Bushveld in 1979, was analysed further. This information is summarised in Table 5, together with a few mail-in records results for the two areas.

It would seem as if the average rent paid in the Western Transvaal and Rûens is completely realistic. As regards the North-Western Transvaal Bushveld it would, however, seem as if the rent paid for land is out of all proportion to the income

obtained from the land, although low in terms of rent as a percentage of capital investment in land and improvements.

(c) Contracts of lease

In a study undertaken by the Division of Agricultural Production Economics in 1979 in respect of the leasing of agricultural land a great deal of information was gathered in respect of contracts and terms of lease. In this regard a definite differentiation can be made between three types of bodies that lease land, namely:

1. The Government
2. Local authorities
3. Private bodies and persons

1. The Government

The following Government Departments lease land for agricultural purposes: Agricultural Credit and Land Tenure; Community Development; Coloured Affairs; Forestry; Public Works; Co-operation and Development and Transport. Of these the Department of Agricultural Credit and Land Tenure is the major lessor of state land. For this reason attention has been given only to this Department.

In total the Department of Agricultural Credit and Land Tenure leases 439 952 hectares of land consisting of 606 units. In all 606 cases there is a written contract of lease.

The average term of lease is one year. The reason for the short term of lease is that the land must frequently be readily available for future expansion of projects. If either of the parties wishes to terminate the contract of lease three months notice must be given.

2. Local authorities

Information on 1 355 units covering a total area of 351 819 hectares was supplied by local authorities to the Division of Agricultural Production Economics.

TABLE 5 - Capital investment, net income and rent, North-Western Transvaal Bushveld, Western Transvaal and Rûens, 1978/79

Item	North-Western Transvaal Bushveld	Western Transvaal	Rûens
		R	
<i>Capital investment per hectare</i>			
Land and improvements	97	428	228
Implements and livestock	39	123	89
Total	146	551	317
<i>Net income per hectare</i>			
NFI/ha (mail-in records average for 1976/77-1978/79 in respect of the Western Transvaal and North-Western Transvaal Bushveld, and for 1974/75-1977/78 in respect of Rûens)	1,97	46,06	32,01
	1,46	49,36	24,03
<i>Net income per R100 of capital investment</i>			
Farming surveys	1,45	8,37	10,08
Mail-in records	5,15	8,96	7,58
Rent per hectare	1,80	18,39	7,05
Rent as percentage of capital investment in land and improvements	1,86%	4,30%	3,09%

Local authorities are obliged by the various provincial administrations to enter into written contracts of lease with each lessee. The majority make use of a standard contract of lease made available by the provincial administrations.

The average term of lease is about four years. The Division received 219 contracts of lease and can testify that these agreements are of very high quality in comparison with those used in the private sector.

3. Private bodies and persons

Information was obtained from 522 lessees leasing a total of 944 409 hectares of land. The average term of lease is about five years.

Of the 522 lessees 377 possessed some or other form of written agreement, while 145 (28 %) only had verbal lease agreements. In 102 of these cases land was leased to members of the family or potential heirs. The deduction can be made that verbal agreements mainly apply in family transactions.

Of the 522 lessees only one sent his lease agreement to the Division of Agricultural Production Economics. The other lease agreements were evaluated on the basis of the following: "Give a short description of the main provisions set out in your lease." Table 6 indicates percentage wise how many times a provision was stipulated, according to the type of farming.

As can be deduced from the table the contracts of most lessees leave much to be desired. This factor, together with the short-term nature of most lease agreements, definitely has an adverse effect on the optimum utilisation of the land and on the general acceptance and use of leasing as an alternative method of gaining the land tenure.

SUMMARY

(a) In order to enter the industry prospective farmers must have a large amount of own funds. Farming as an occupation is beyond the means of numerous competent persons for this very reason. Leasing as an alternative method to gain tenure of land can solve this problem to a considerable extent.

(b) The net farming income of farmers in the RSA as a whole increased at a more rapid rate than land prices during the last 20 years. Over a period of 20 years and for the country as a whole the gap between agricultural value and productive value of land therefore did not widen. Regional differences do, however, occur and in certain areas the gap has in fact widened over the past 20 years. However, during the past six years the net income of farmers for the country as a whole increased considerably more slowly than the increase in land prices, with the result that the gap between the market value and the productive value of land tended to widen again.

(c) In comparison with owner-occupancy leasing is a relatively unimportant form of land tenure in the RSA. There is also no indication that leasing will increase in importance. In addition it is also mainly farmers who already own land who use leasing as a supplementary method of gaining tenure of land.

(d) Although the hypothesis that leasing as a form of land tenure will have to increase in importance cannot be unequivocally labelled false since this concerns a prediction of the future, an analysis of events in the immediate past indicates that it is unlikely that leasing will become significantly more important unless it is purposely encouraged and a favourable climate created for it.

(e) Present legislation in the RSA is not aimed at stimulating the leasing of agricultural land purposely. It is conceded that leasing can in fact be stimulated by means of legislation that safeguards

TABLE 6 - Number of times on a percentage basis that a provision was stipulated in contracts

Item	Crop farming	Mixed farming	Stock farming
Number of cases	93	204	231
Number of cases which did not mention any of the provisions	35	38	43
		%	
General maintenance	26	26	27
Carrying capacity	-	30	41
No compensation for the addition of fixed improvements	19	6	12,5
Erection of soil conservation works according to A.T.S. prescriptions	14	13	4,3
Lessees compensated for the addition of fixed improvements	12	7	7,5
Rent strictly payable in advance	12	5,7	-
Compulsory weed control	10	6	2,6
No alterations to be made to fixed improvements without the consent of the lessor	3	-	-
Prescribed fertiliser applications and cultivation practices	2	3	-
No subletting	2	-	1
Laying out of new lands restricted	-	3	-
Lessor retains mineral rights	-	0,3	-
Hunting prohibited	-	-	1
Prevention of fires	-	-	0,7
Making of new roads prohibited	-	-	0,7
No trees to be felled	-	-	0,7
Restriction on the number of Blacks who may live on the farm	-	-	0,7
Total	100	100	100

the interests of lessees and lessors. The question is, however, whether this would be in the interests of the country and whether a policy aimed at ensuring the greatest number of financially strong owner-occupiers should not rather be pursued.

(f) Information on how realistic rentals are that can be evaluated objectively is very scanty at this stage. However, the available information indicates that in general rentals are not excessively high.

(g) Contracts of lease of most lessees leave much to be desired. This fact, together with the short-term nature of most agreements, definitely does not promote optimum soil utilisation or the more general acceptance of leasing as an alternative method to gain tenure of land.

REFERENCES

Anon. *Capital and Finance in Agriculture*, Volume One, General Report, The Organisation for Economic Co-operation and Development, Paris, 1970.

Anon. *Capital and Finance in Agriculture*, Volume Two, Country Studies. The Organisation for

Economic Co-operation and Development, Paris, 1970.

Anon. *Third (Final) Report of the Commission of Enquiry into Agriculture*.

Anon. *Part II of the Report of the Komitee van Ondersoek na Landelike Hervorming*.

Capstick, M. *The Economics of Agriculture*, George Allen & Unwin Publishers, Studies in Economics: 3, 1970.

Herzberg, A. *Huur en Verhuring van Landbougrond in the RSA.*, unpublished research, 1979.

Joubert, J. *Ekonomiese Implikasies van Verskillende Grondbesettingspatrone in the Landbou*, M.Sc. (Agric.) thesis (unpublished), University of Pretoria, 1973.

McEntire, D. and Agostini, D. *Towards Modern Land Policies*, Institute of Agricultural Economics and Policy, University of Padua.

Smith, M.J. *Adjustments in Agriculture - a National Basebook*, Iowa State University Press, Ames, Iowa, 1961.