STOCKING RATE AND CAPITAL INDICATORS IN EXTENSIVE SHEEP FARMS
(SW SPAIN)

INDICADORES DE CARGAS GANADERAS Y CAPITAL EN
SISTEMAS OVINOS EXTENSIVOS

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ADDITIONAL KEYWORDS

SUMMARY
The animal production systems in the SW of the Iberian Peninsula are characterized by extensive livestock farming. The data for the present study were collected by survey in the year 2000 from 96 dehesa sheep farms in Extremadura. We studied the stocking rate effects on a number of capital indicators for each farm. The data were analysed for three stocking rate levels: low (<0.25 UGM/ha), medium (0.25-0.5 UGM/ha), and high (0.5 UGM/ha). The differences were compared by analysis of variance, following the GLM procedure.

INTRODUCTION
The sheep farming systems in Extremadura are usually linked to the exploitation of dehesa pastures, whether woodland or treeless land. The Merino is the most common sheep breed, which together with other autochthonous livestock species is able to utilise pastures in semi-arid zones. The traditional system presents distinctive characteristics with respect to other systems, mainly in the capability of high quality livestock products. Dehesa systems should mainly be oriented towards high quality products, as this is becoming an important consumer demand. These

systems must also provide a balance between the animals and the grazing resources.

We here study the economic structure of dehesa systems by analysing a number of indicators of capital, production, and income for sheep-farms in Extremadura. This paper is part of the Research Project Study of the CAP Reform Impact on Extensive Livestock Farming in Extremadura, financed by the 1st Regional R&D Program, and it is a continuation of the authors' work of case analysis in the EU Project CAMAR CT90-0028.

MATERIAL AND METHODS

The method we used consisted of a survey following a random sampling design for a confidence level of 95 percent and an error under 5 percent. The survey was carried out in the first semester of the year 2000, with the last data corresponding to the year 1999. The effects of stocking rate levels on monetary incomes are analysed. We used three stocking rate levels as a classification variable: low (<0.25 UGM/ha UFS), medium (0.25-0.5 UGM/ha UFS) and high (0.5 UGM/ha UFS). The differences between stocking rate levels for each economic indicator was determined by means of an analysis of variance.

CAPITAL INDICATORS

In this sense, for the development of the present work, we consider fixed capital (KFi) to be the monetary value of the long-term goods of the system. They were determined by inventories for each type of capital in the analysed farms. The fixed capital of an agrarian system can be classified into four types: land (KFti), infrastructure (KFib), machinery (KFmm), and livestock (KFg), in accordance with the following formula:

\[ KFi = KF_{ti} + KF_{ib} + KF_{mm} + KF_{g} = KF_{te} + KF_{ex} \]

RESULTS AND DISCUSSION

Table I gives details of the fixed capital of the analysed farms. The mean value is 4250 euro/ha. It can be observed that 91.9 percent is territorial capital, with the mean land value being 71.4 percent of the total. Livestock represents only 5 percent, and the farm capital 8.1 percent. These data on the fixed capital structure of Extremaduran sheep farms are in consonance with those found in other dehesa studies in the 1980’s and 1990’s (Campos y

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1Useful Farming Surface.

2The fixed land capital consists of the value of the fertile soil, together with the value of the improvements that have been made into it. The infrastructure capital consists of the goods and investments which, being subject to the farm's extension, do not constitute an increase in the production of vegetation. The infrastructure includes the installations, fencing, buildings, watering points, and tracks and roadways. These two types of capital are subject to the physical area of the farm and constitute the territorial capital (KFte).

The machinery fixed capital consists of the vehicles, motors, sheepfolds, implements and tools which in the period (t) are considered as presenting a monetary value. The livestock fixed capital consists of the breeding stock. These two types of capital are readily modulated by management decisions, and constitute the exploitation capital (Kfex).
STOCKING RATE AND CAPITAL INDICATORS IN EXTENSIVE SHEEP FARMS

Table I. Fixed capital as a function of stocking rate levels. (Capital fijo en función de los niveles de carga ganadera).

<table>
<thead>
<tr>
<th>Stocking rate levels (Euro/ha total surface area)</th>
<th>percent of KFt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators High (n=26)</td>
<td>Medium (n=43)</td>
</tr>
<tr>
<td>KFl</td>
<td>3013.5</td>
</tr>
<tr>
<td>KFib</td>
<td>1155.7</td>
</tr>
<tr>
<td>KFte</td>
<td>4169.8</td>
</tr>
<tr>
<td>KFg</td>
<td>348.8</td>
</tr>
<tr>
<td>KFmm</td>
<td>204.3</td>
</tr>
<tr>
<td>KFx</td>
<td>5529.3</td>
</tr>
<tr>
<td>KFt</td>
<td>4722.8</td>
</tr>
</tbody>
</table>

KFli= land fixed capital; KFib= infrastructure fixed capital; KFte= territorial fixed capital; KFg= livestock fixed capital; KFmm= machinery fixed capital; KFx= farm fixed capital; KFt= total fixed capital.
NS= differences not significant; *p<0.05; **p<0.01; ***p<0.001. Different letters in the superscripts of a given row indicate significant differences between groups.

The farm capital is seen to be very low with respect to the territorial capital, so that the effects of management have little influence on the overall capital structure or on the income indices that are generated. This structure is, however, greatly affected by variations in land prices.

Comparing the different stocking rate levels, it can be concluded that those farms with higher levels of stocking rate present greater overall values of fixed capital due to the infrastructure, the machinery, and the breeding stock.

As the levels of stocking rate decrease, there is an increase in the percentage of the total capital corresponding to land capital. Thus farms with high levels of stocking rate, which a priori would correspond to those with a smaller territorial basis, modulate their fixed capital structure by management decisions aimed at achieving competitive levels of income, in an attempt to palliate or minimize the weight of the land value.

It may be assumed that the great weight of the land capital item in the total fixed capital structure in these dehesa sheep farming systems has led, since the 1980’s, to major capital gains deriving from the increase in land prices and, consequently, to very high rates of current profitability (Pulido y Escribano, 1994).

CONCLUSION

In the sheep farms analysed, it was found that 91.9 percent of the fixed capital is territorial capital, with the mean value of the land fixed capital being 71.4 percent of the total. Farms
with high levels of stocking rate have lower surface and high overall values of fixed capital due to infrastructure, machinery, and breeding stock. Farm capital is very low with respect to territorial capital. Business management practices hence have a low impact on the overall capital structure, which is highly conditioned by price variations of the land.

REFERENCES


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