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FARMLAND MOBILITY AND VALUES BY TYPES OF LAND USE:
A CASE STUDY IN A PROVINCE OF EMILIA-ROMAGNA

by

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1. Objectives, limitations and source of data.

Formation and/or consolidation of owner-occupier farms have a long tradition and an increasing role within Italian agriculture. But we know little about these processes outside of the official statistics of each Agricultural Census (Barbero and Mantino, 1988).

Many socio-economic aspects concerning the above mentioned processes have been taken into account in a research project being carried out by I.E.R.Co. in co-operation with the local agricultural offices (SPAA=Servizi Provinciali Agricoltura e Alimentazione) of several provinces of the Emilia-Romagna region.

The case study, which we wish to present here, is necessarily limited to the more significant results for the Ravenna province during a six-year period of observations: 1983-88.

Basic data, surveyed at the SPAA of Ravenna using the "Land Prices Bank" techniques (Grillenzoni and Bazzani, 1988), include:

- i) detailed information on land transfers involving owner-occupiers, either as individual purchasers or as associated purchasers (i.e. farming co-operatives = "co-operative di conduzione terreni");
- ii) estimated "use" values, as an average between market prices and capitalized income values.

2. Transfers analysis

During the survey period, land transactions were 2,245 and concerned more than 12.5 thousands hectares (see table 1). Intra-family transfers covered about 23% of the total.

Changes in farmland ownership amounted to an annual quota of 1.3% on the total surface devoted to agricultural and forestal uses. The degree of land mobility varied over time: it was higher in 1983, 1985 and 1988; lower in the remaining years (see figure 1). At the same time period, the average degree was quite different among communes: it ranged from .9% to 2.2%.

An average size of 5.6 hectares was recorded for the whole province, ranging from about 5 hectares in the plain areas to about 12 hectares in the hill areas.

The size differentiation has been fairly significant from the type of purchaser:

- i) the new owner-occupied farms (what we call "formation") were about 37% of the total transactions, with an average size of 6.3 hectares in the plain and 16.3 hectares on the hill;
- ii) the consolidation of already existing farms (strictly speaking, enlargement of farm size), covering the 63% of the total, recorded an average size of 4.3 hectares in the plain and 7.5 hectares on the hill. On the basis of these purchases, the average farm size has been raised up to 18.4 hectares in the plain and to 20.5 hectares on

the hill. Let us point out that these farm sizes are larger than the EEC average.

Many other aspects might be indicated, as far as professional qualification and family components are concerned. We would just like to stress the fact that purchasers under 40 years old increased from 41% (1983-85) to 60% (1986-88). Specifically, from 38% to 59% in the plain, from 58% to 67% in the hill (table 2 and figure 2).

Two other issues should be emphasized. The first one is related to the enforcement of pre-emption rights⁽¹⁾. Between the two considered periods a sharp decrease was recorded in this kind of purchase (table 3 and figure 3). They represented about the 75% of the total in 1983-85, the 65% (56% on surface basis) in 1986-88. The second issue concerns the support of credit in purchases (Grillenzoni and Gallerani, 1988). As shown by table 4 and figure 4, the share of purchasers who benefit from credit support in plain areas is practically the same as in 1983-85 and 1986-88, while it is very different with regard to hill areas.

⁽¹⁾ The right was first introduced to the farmer working the purchased land (law 590/65), then broadened to farmers owning land contiguous to that for which purchase had been arranged (law 817/71). This right was eventually conceded to farmers who had been renting land for the previous two years (law 265/76)

3. Land uses and values

If transactions are analysed by the main combinations of land uses, we can observe a fairly definite behaviour of the purchasers in the plain and on the hill.

In flat areas preferences have been devoted, moving from 1983-85 to 1986-88:

- to arable land units (from 30.5% to 35.8%), probably due to the flexibility that this type of land offers with respect to many options, associated to lower prices;
- to specialized units of orchards and/or vineyards, due to the expectations of higher profitability, associating capital investment with family labour.

In the hill areas, within the same two periods, preferences have been devoted to the more extensive types of uses: arable land variously combined with pasture and/or woods moved from 22.4% to 43.5% of the total. Many factors may have influenced this trend (limited financial resources, cattle breeding aptitude of the younger owner-occupiers, etc.). In any case, this phenomenon seems to be correlated to the EEC directive no.1790/87, which offers incentives toward extensivation processes.

The enclosed figures (table 5) give a clear picture of farmland values movements and diversification by main type of land use.

Average values by altimetric zones increased - from

1983-85 to 1986-88- by 28% in the plain, but decreased by 7% on the hill.

If we focus on the last three years, a diffused increase of farmland values occurred in both the altimetric zones (figure 5). On the average, farmland values moved from 27.5 millions Lit/Ha to 32.3 millions Lit/Ha (+17.6%) in the plain, and from 7.9 millions Lit/Ha to 10.4 millions Lit/Ha (+31.3%) on the hill.

Analysing these values we discovered that they had a direct relationship to land uses. It is possible to single out the link between them in figure 6, where the average land value and the percentage pertaining to orchards and vineyards on purchased land in different communes have been reported.

A thorough examination was then carried out by means of a more appropriated statistical analysis of data. This study was respectively divided into plain and hill area purchases.

As a first step, widespread analysis of the degree of association between the main farm and purchaser features and values was undertaken. To this effect we used different methodologies in accordance to the kind of data concerned (continuous, dummy or categorical variables). Here we found out a high level of association/correlation for some of the examined variables. An explanatory model was then developed in order to single out the relationship between land price and some continuous and dummy variables related to farm

features. Results were deceptive for the price model of plain areas, which failed to reach a suitable level of statistical parameters (R-square around 50% even if the probability related to the F-test was always less than 1%). A more positive outcome was seen in the model for purchases in hill areas. Here we found very simple functions in which land prices were strictly related to land uses and farm features. Those are:

a) $P = 93.41 AL + 296.49 OR + 159.42 VY - 1935.61 LS + 4547.46 RC$

 ** ** ** * ** R2=0.87

b) $P = 80.32 AL + 299.91 OR + 153.87 VY + 4164.83 RC$

 ** ** ** ** R2=0.86

c) $LP = 0.073 AL + 0.102 OR + 0.067 VY + 2.444 LS + 1.928 RC$

 ** ** ** ** ** R2=0.95

d) $LP = 0.097 AL + 0.096 OR + 0.077 VY + 2.609 RC$

 ** ** ** ** R2=0.90

* => $t > 0.05$; ** => $t > 0.01$

where:

P = land price;

LP = logarithm of land price;

AL = percentage of land classified as arable land;

OR = percentage of land classified as orchard;

VY = percentage of land classified as vineyard;

RC = a dummy variable (0/1) which express bad/good connections with road network;

LS = a dummy variable (0/1) which express steep/slight land sloping.

Even if limited to the context of the presented

case study, these results seem to be consistent with those observed at the national level.

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TABLE 1. Land transfers for consolidation of owner-occupied farms in the province of Ravenna

| | 1983-85 | | | 1986 | | | 1987 | | | 1988 | | | 1986-88 | | |
|--------------------------------------|---------|--------|-----------|------|-------|-----------|------|-------|-----------|------|-----------|-----------|---------|--------|-----------|
| | No | Ha | Ave. size | No | Ha | Ave. size | No | Ha | Ave. size | No | Ha | Ave. size | No | Ha | Ave. size |
| - PLAIN AREAS - | | | | | | | | | | | | | | | |
| 1 LAND TRANSFERS | 1,136 | 5,548 | 4,88 | 293 | 1,372 | 4,68 | 306 | 1,478 | 4,83 | 310 | 1,785 | 5,76 | 909 | 4,635 | 5,10 |
| A NEW OWNER-OCCUPIERS | 434 | 2,547 | 5,87 | 103 | 677 | 6,57 | 97 | 629 | 6,48 | 89 | 658 | 7,39 | 289 | 1,963 | 6,79 |
| B FORMERLY OWNER-OCCUPIERS | 702 | 3,001 | 4,28 | 190 | 695 | 3,66 | 209 | 849 | 4,06 | 221 | 1,128 (a) | 5,10 | 620 | 2,672 | 4,31 |
| 2 LAND OWNED BY FORM. OWN.-OCCUPIERS | 702 | 10,265 | 14,62 | 190 | 1,830 | 9,63 | 209 | 1,377 | 6,59 | 221 | 5,175 (b) | 23,41 | 620 | 8,382 | 13,52 |
| * TOTAL 1B+2 | 702 | 13,266 | 18,90 | 190 | 2,525 | 13,29 | 209 | 2,226 | 10,65 | 221 | 6,302 | 28,52 | 620 | 11,074 | 17,85 |
| ** IN ALL | 1,136 | 15,813 | 13,92 | 293 | 3,202 | 10,93 | 306 | 2,855 | 9,33 | 310 | 6,960 | 22,45 | 909 | 13,017 | 14,32 |
| - HILL AREAS - | | | | | | | | | | | | | | | |
| 1 LAND TRANSFERS | 94 | 880 | 9,36 | 25 | 380 | 14,63 | 43 | 506 | 11,76 | 37 | 587 | 15,87 | 106 | 1,473 | 13,90 |
| A NEW OWNER-OCCUPIERS | 49 | 646 | 13,17 | 10 | 207 | 20,73 | 17 | 276 | 16,21 | 21 | 449 | 21,39 | 48 | 932 | 19,42 |
| B FORMERLY OWNER-OCCUPIERS | 45 | 235 | 5,21 | 16 | 173 | 10,81 | 26 | 230 | 8,85 | 16 | 138 | 8,61 | 58 | 541 | 9,33 |
| 2 LAND OWNED BY FORM. OWN.-OCCUPIERS | 45 | 473 | 10,51 | 16 | 261 | 16,33 | 26 | 382 | 14,70 | 16 | 217 | 13,54 | 58 | 860 | 14,83 |
| * TOTAL 1B+2 | 45 | 708 | 15,72 | 16 | 434 | 27,15 | 26 | 612 | 23,56 | 16 | 354 | 22,15 | 58 | 1,401 | 24,16 |
| ** IN ALL | 94 | 1,353 | 14,39 | 26 | 642 | 24,68 | 43 | 888 | 20,65 | 37 | 804 | 21,72 | 106 | 2,333 | 22,01 |
| - ALL - | | | | | | | | | | | | | | | |
| 1 LAND TRANSFERS | 1,230 | 6,428 | 5,23 | 319 | 1,752 | 5,49 | 349 | 1,984 | 5,68 | 347 | 2,373 | 6,84 | 1,015 | 6,108 | 6,02 |
| A NEW OWNER-OCCUPIERS | 483 | 3,192 | 6,61 | 113 | 884 | 7,82 | 114 | 905 | 7,93 | 110 | 1,107 | 10,06 | 337 | 2,895 | 8,59 |
| B FORMERLY OWNER-OCCUPIERS | 747 | 3,236 | 4,33 | 206 | 868 | 4,21 | 235 | 1,079 | 4,59 | 237 | 1,266 (a) | 5,34 | 678 | 3,213 | 4,74 |
| 2 LAND OWNED BY FORM. OWN.-OCCUPIERS | 747 | 10,738 | 14,38 | 206 | 2,092 | 10,15 | 235 | 1,759 | 7,49 | 237 | 5,391 (b) | 22,75 | 678 | 9,242 | 13,63 |
| * TOTAL 1B+2 | 747 | 13,974 | 18,71 | 206 | 2,960 | 14,37 | 235 | 2,839 | 12,08 | 237 | 6,657 | 28,09 | 678 | 12,475 | 18,37 |
| ** IN ALL | 1,230 | 17,166 | 13,96 | 319 | 3,844 | 12,05 | 349 | 3,743 | 10,73 | 347 | 7,764 | 22,37 | 1,015 | 15,351 | 15,12 |

(a) 247 hectares were purchased by cooperatives (10 obs). Land purchases by farmers not associated interested over 880 hectares, with an average size of 4.17 hectares per transfer.
 (b) This datum includes a surface of over 3,000 hectares owned by cooperatives. Excluding this surface, the residual is equal to 2086 hectares, with an average size of 9.89 hectares per owner-occupier.

TABLE 2. Purchasers by age classes

| | 1983-1985 | | | | 1986-88 | | | |
|-----------------|-----------|-------|-------|-------|---------|-------|-------|-------|
| | No | % (1) | Ha | % (2) | No | % (1) | Ha | % (2) |
| - PLAIN AREAS - | | | | | | | | |
| - 30 years | 141 | 12,5 | 798 | 15,6 | 211 | 23,5 | 1.335 | 30,8 |
| 30 / 35 years | 110 | 9,8 | 566 | 11,1 | 125 | 13,9 | 651 | 15,0 |
| 35 / 40 years | 141 | 12,5 | 601 | 11,8 | 109 | 12,2 | 562 | 13,0 |
| 40 / 45 years | 164 | 14,6 | 916 | 18,0 | 136 | 15,2 | 562 | 13,0 |
| 45 / 50 years | 195 | 17,3 | 940 | 18,4 | 102 | 11,4 | 456 | 10,5 |
| 50 / 60 years | 262 | 23,3 | 959 | 18,8 | 156 | 17,4 | 573 | 13,2 |
| + 60 years | 112 | 10,0 | 319 | 6,2 | 58 | 6,5 | 191 | 4,4 |
| * All | 1.125 | 100,0 | 5.099 | 100,0 | 897 | 100,0 | 4.329 | 100,0 |
| - HILL AREAS - | | | | | | | | |
| - 30 years | 14 | 14,9 | 173 | 19,6 | 27 | 25,7 | 428 | 29,5 |
| 30 / 35 years | 13 | 13,8 | 161 | 18,3 | 16 | 15,2 | 198 | 13,7 |
| 35 / 40 years | 17 | 18,1 | 182 | 20,6 | 15 | 14,3 | 358 | 24,7 |
| 40 / 45 years | 7 | 7,4 | 95 | 10,8 | 13 | 12,4 | 121 | 8,3 |
| 45 / 50 years | 14 | 14,9 | 113 | 12,8 | 11 | 10,5 | 89 | 6,1 |
| 50 / 60 years | 20 | 21,3 | 127 | 14,4 | 16 | 15,2 | 218 | 15,0 |
| + 60 years | 9 | 9,6 | 30 | 3,4 | 7 | 6,7 | 41 | 2,8 |
| * All | 94 | 100,0 | 880 | 100,0 | 105 | 100,0 | 1.453 | 100,0 |
| - ALL - | | | | | | | | |
| - 30 years | 155 | 12,7 | 970 | 16,2 | 238 | 23,8 | 1.762 | 30,5 |
| 30 / 35 years | 123 | 10,1 | 727 | 12,2 | 141 | 14,1 | 849 | 14,7 |
| 35 / 40 years | 158 | 13,0 | 783 | 13,1 | 124 | 12,4 | 920 | 15,9 |
| 40 / 45 years | 171 | 14,0 | 1.012 | 16,9 | 149 | 14,9 | 683 | 11,8 |
| 45 / 50 years | 209 | 17,1 | 1.053 | 17,6 | 113 | 11,3 | 545 | 9,4 |
| 50 / 60 years | 282 | 23,1 | 1.086 | 18,2 | 172 | 17,2 | 790 | 13,7 |
| + 60 years | 121 | 9,9 | 349 | 5,8 | 65 | 6,5 | 231 | 4,0 |
| * All | 1.219 | 100,0 | 5.979 | 100,0 | 1.002 | 100,0 | 5.782 | 100,0 |

(1) Percentage on the land transactions in every area
(2) Percentage on the transferred land in every area

TABLE 5. Land values by types of land use

| LAND USES | | | 1983-85 | | | | 1986-88 | | | |
|-------------------------|------------|------------|---------|-------|-------|-------------|---------|-------|-------|-------------|
| AL | OV | PW | No | Ha | % | 000 Lit./Ha | No | Ha | % | 000 Lit./Ha |
| - P L A I N A R E A S - | | | | | | | | | | |
| > 75 % | < 20 % | < 10 % | 372 | 1.692 | 30,5 | 20.205 | 364 | 1.660 | 35,8 | 24.033 |
| > 60 % | > 20 % | < 10 % | 132 | 866 | 15,6 | 21.322 | 61 | 434 | 9,4 | 25.874 |
| 35% <> 60% | 35% <> 60% | < 10 % | 284 | 1.520 | 27,4 | 24.389 | 134 | 807 | 17,4 | 29.866 |
| > 20 % | > 60 % | < 10 % | 170 | 840 | 15,1 | 26.993 | 157 | 971 | 20,9 | 34.566 |
| < 20 % | > 75 % | < 10 % | 178 | 630 | 11,4 | 28.154 | 193 | 763 | 16,5 | 39.198 |
| All | | | 1.136 | 5.548 | 100,0 | 23.456 | 909 | 4.635 | 100,0 | 29.925 |
| - H I L L A R E A S - | | | | | | | | | | |
| > 20 % | > 60 % | < 10 % | 14 | 124 | 14,1 | 16.286 | 22 | 166 | 11,3 | 24.965 |
| 35% <> 60% | 35% <> 60% | < 10 % | 16 | 163 | 18,6 | 13.164 | 13 | 183 | 12,4 | 14.882 |
| > 60 % | > 20 % | > 20 % | 51 | 396 | 44,9 | 9.596 | 33 | 336 | 22,8 | 8.194 |
| 35% <> 60% | < 10 % | 35% <> 60% | 9 | 114 | 12,9 | 5.933 | 19 | 360 | 24,4 | 6.896 |
| > 20 % | < 10 % | > 60 % | 4 | 84 | 9,5 | 2.091 | 19 | 428 | 29,1 | 3.620 |
| All | | | 94 | 880 | 100,0 | 10.012 | 106 | 1.473 | 100,0 | 9.275 |

AL = Arable land
 OV = Orchards & vineyards
 PW = Pastures & woods

Figure 1 - LAND MOBILITY, 1983 - 88
Average data by altimetric zones

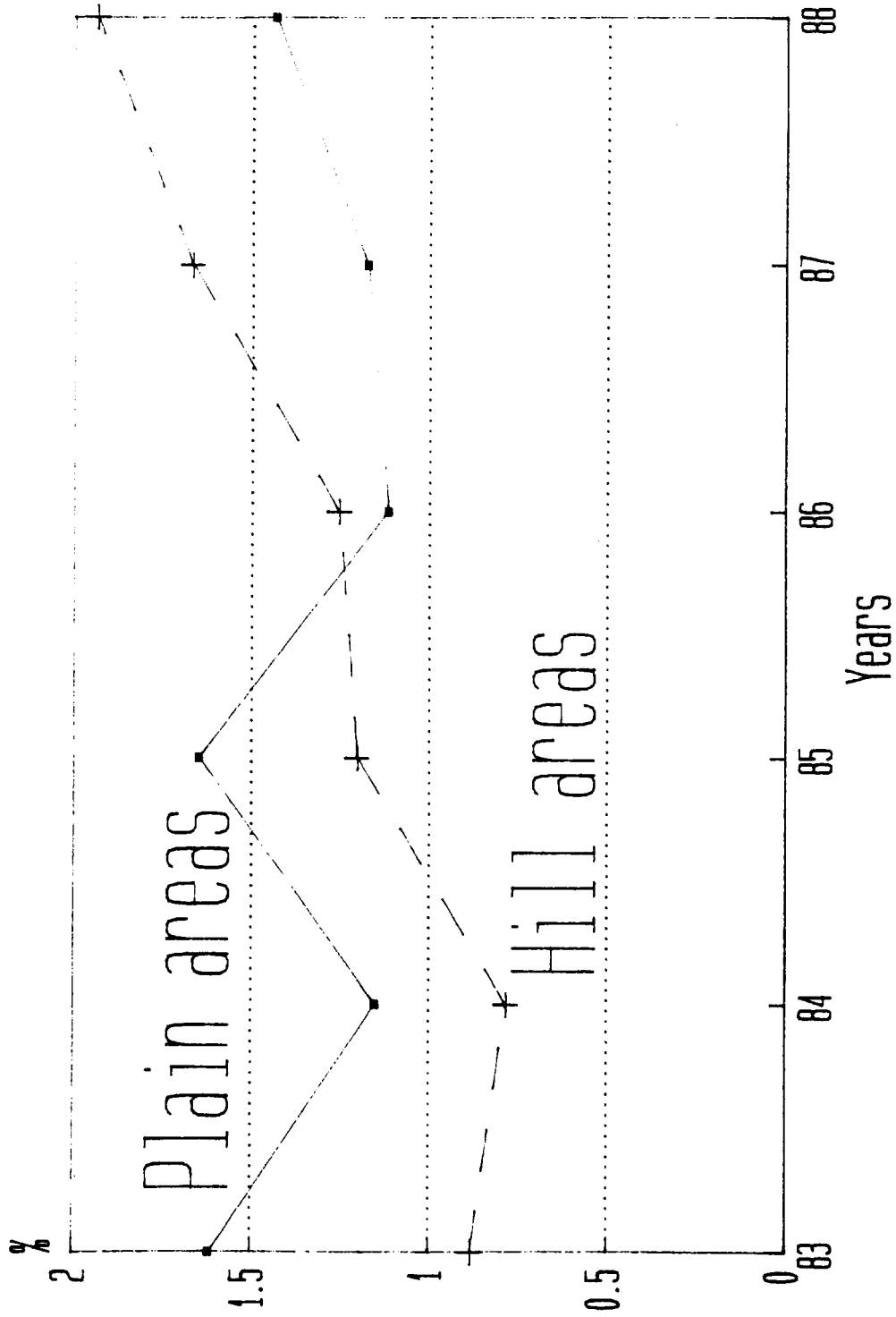


Figure 2 - PURCHASERS UNDER 40 YEARS OLD

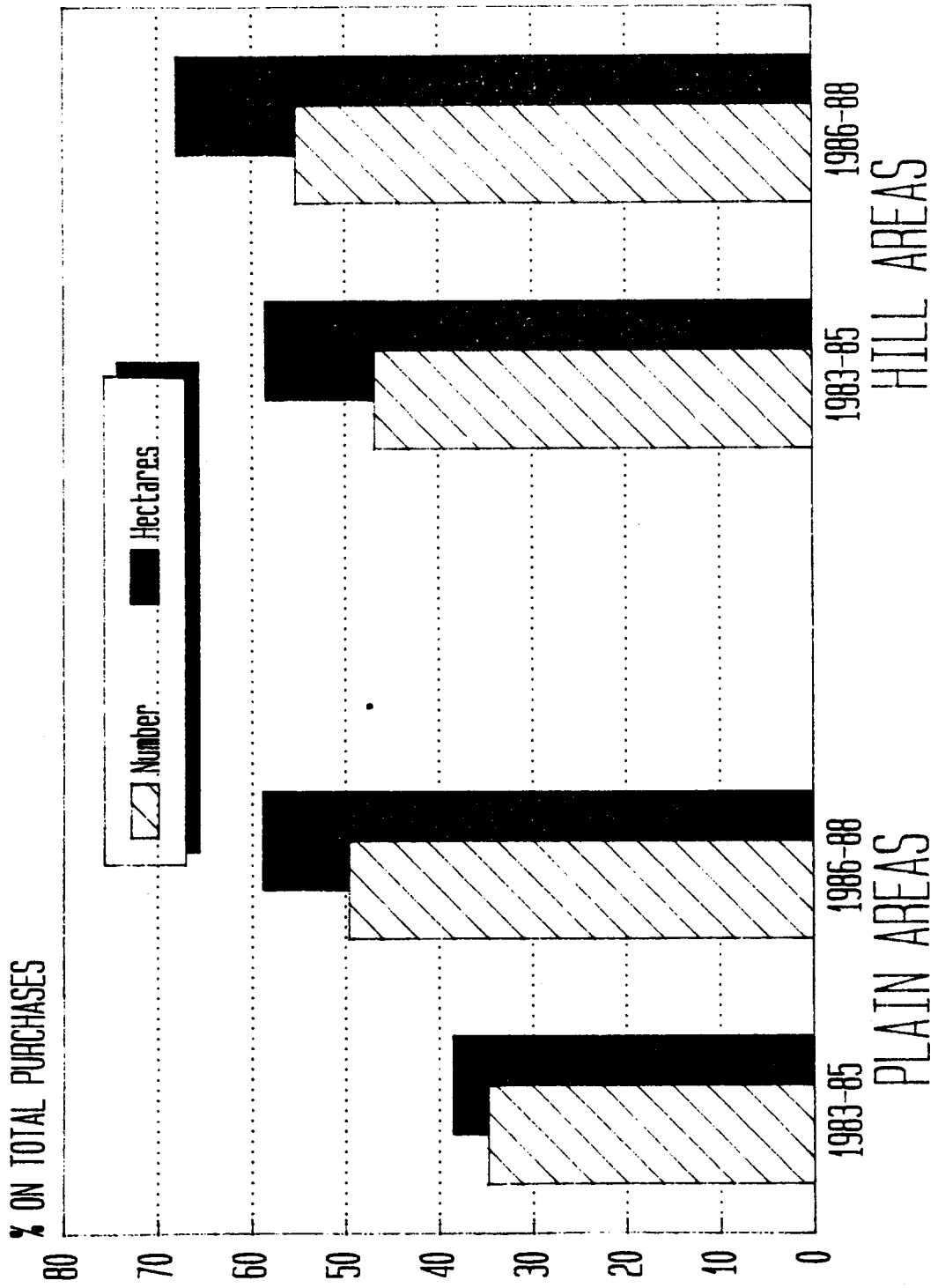


Figure 3 - PRE-EMPTION RIGHT ENFORCEMENT

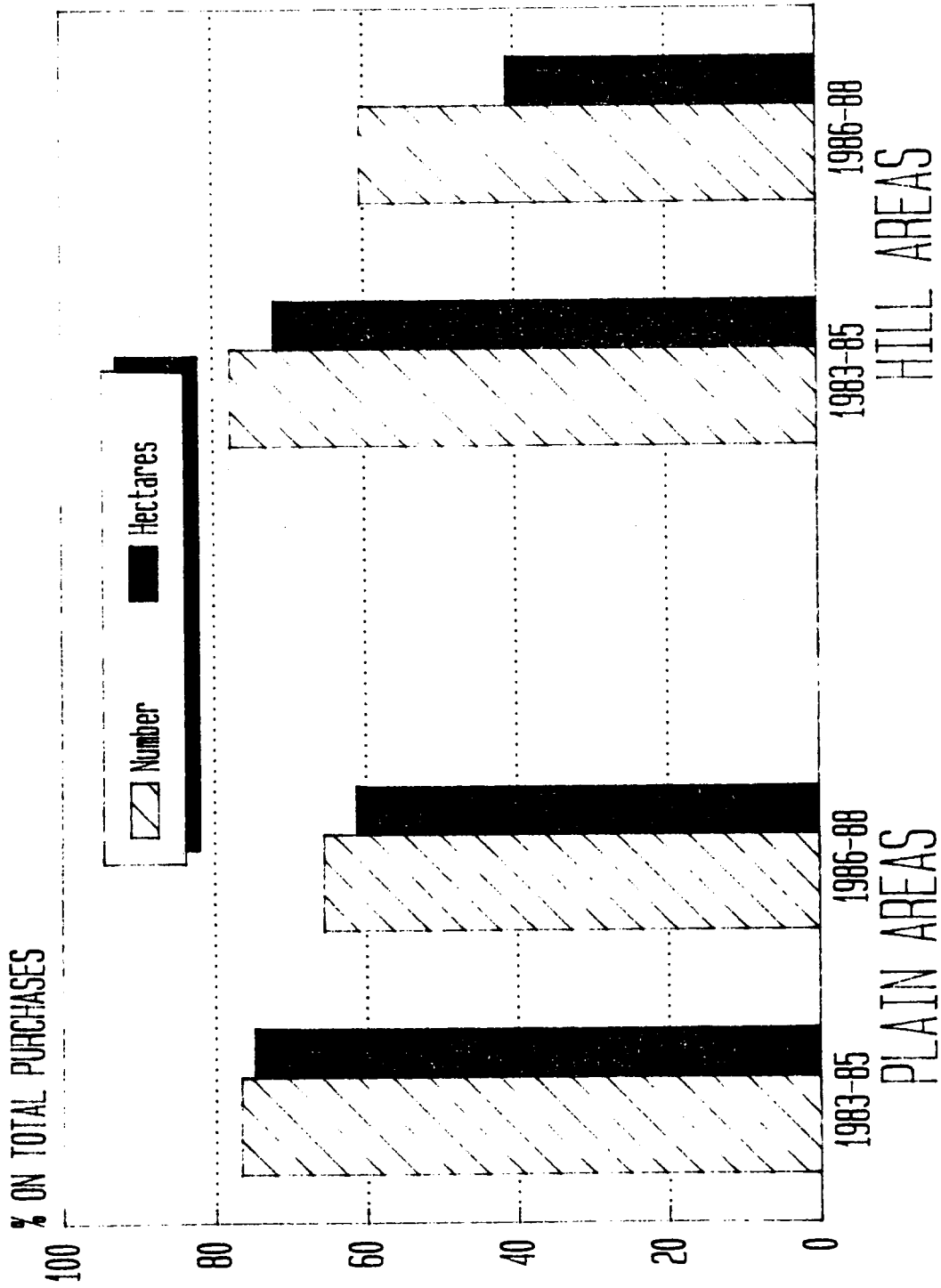


Figure 4 - PURCHASES WITH CREDIT SUPPORT

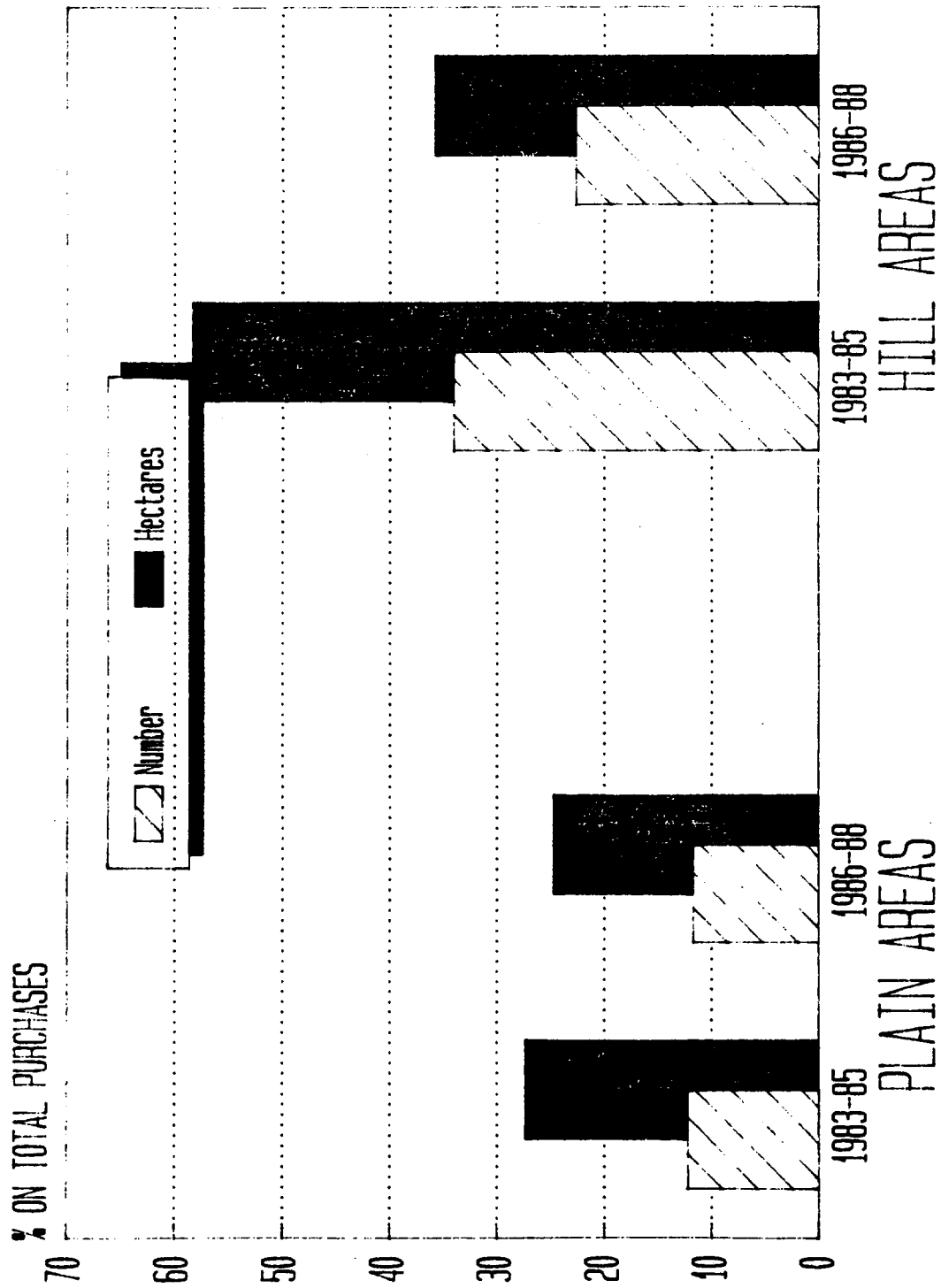


Figure 5 - LAND PRICES, 1983 - 88
Average data by altimetric zones

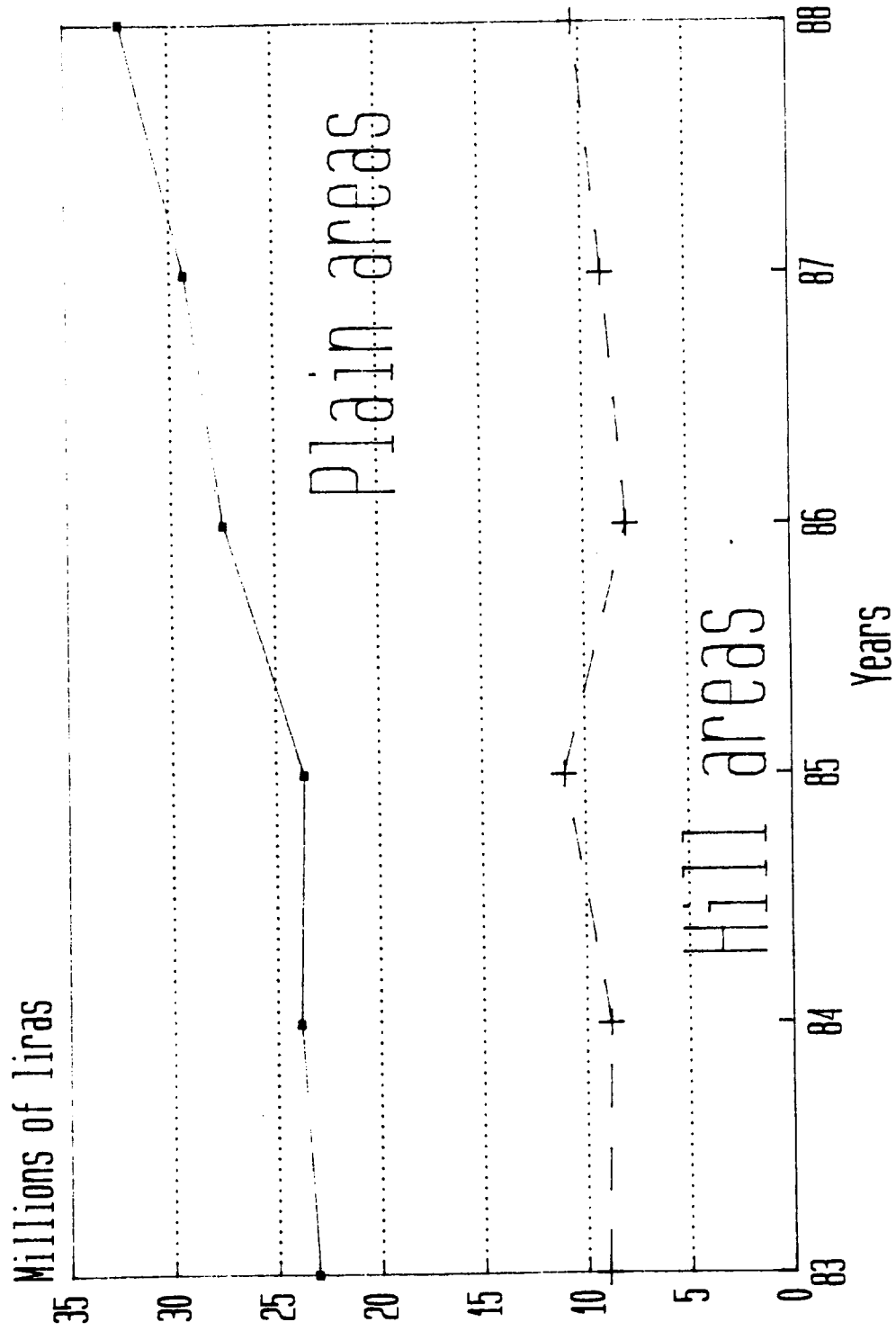


FIGURE 6 - VALUES vs. LAND USES
Communal average data, 1983-85 / 1986-88

