Staff Papers Series

Volume III

First Annual Conference on

AGRICULTURAL POLICY AND THE ENVIRONMENT

Proceedings of a Conference Sponsored by

University of Minnesota
Center for International Food and Agricultural Policy

Agricultural Development Regional Agency (ESAV)

University of Padova

Motta di Livenza, Italy
June 19-23, 1989

Department of Agricultural and Applied Economics

University of Minnesota
Institute of Agriculture, Forestry and Home Economics
St. Paul, Minnesota 55108

AN ANALYSIS OF THE LAND MARKET IN THE VENETO REGION:
FACTORS AFFECTING AGRICULTURAL LAND PRICES (1)

by

Maurizio Merlo and Paolo Rosato

Dipartimento Territorio e Sistemi Agro-Forestali
Università degli Studi di Padova.

1. Purpose and Contents

The purpose of this paper is to analyse and identify the different factors which have influenced the value of agricultural land in the Veneto Region over the past thirty years. In particular, a distinction is made between factors related to long-term as opposed to short-term trends. A survey is then carried out to identify the influence of different land features on prices, on the basis of a sample of land transactions undertaken over the years 1986-88.

The conclusions of the paper concern the nature of the land market and hypotheses are put forward about its future development.
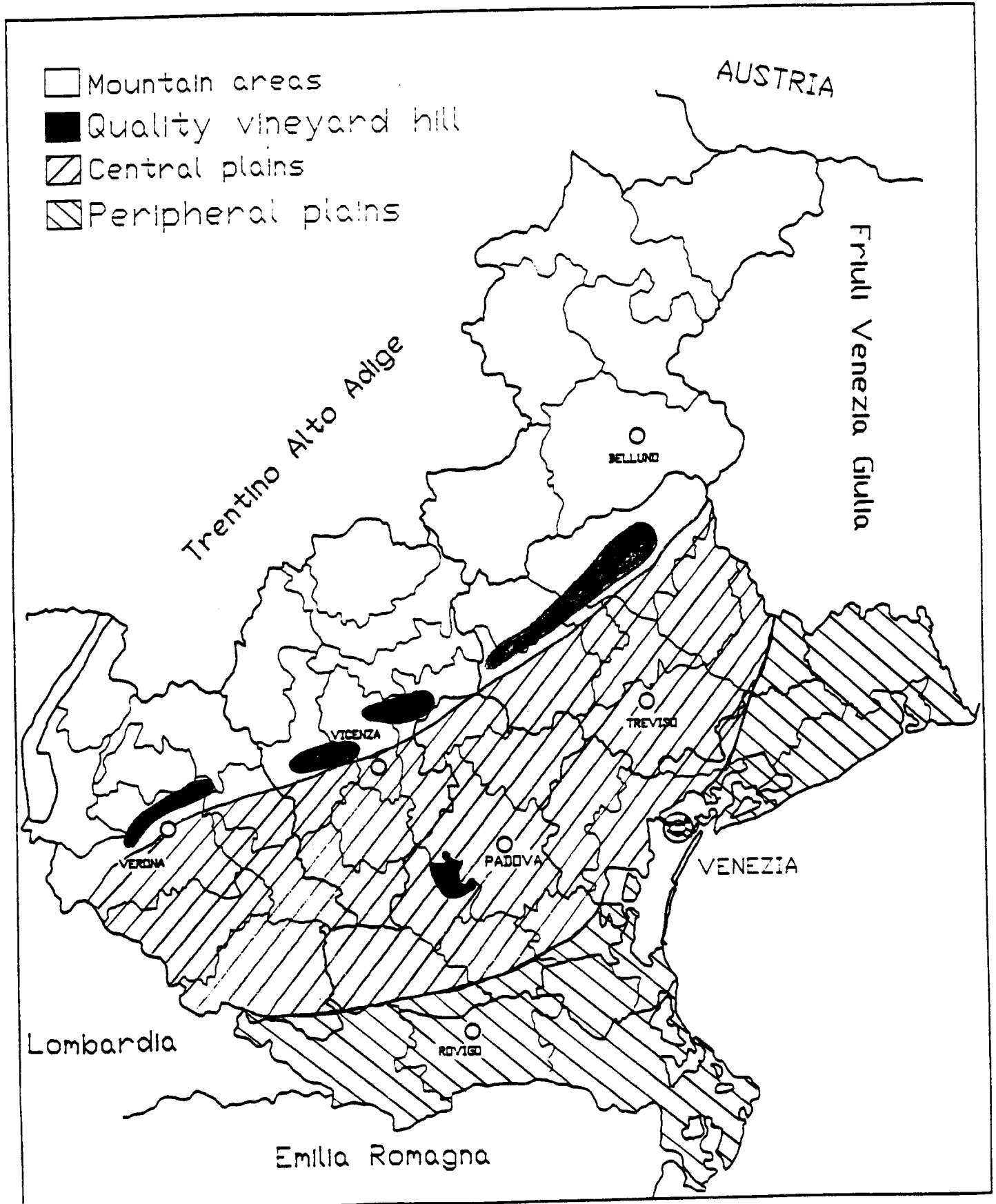
2. Data Sources and Methodologies

The analysis of land prices (and the factors that influence them) was undertaken on the basis of historic series from the '60s to the '80s. Given the extremely complex nature of the land market -which is at times controversial if not contradictory- a multiplicity of variables were considered, some of which were later discarded during the analysis.

The sources of land prices (taken as dependent variable) were worked out from the INEA annual reports (Annuario dell'Agricoltura-Agricultural Year Book). The following farm typologies were considered in particular: central plain (Treviso, Padova, Vicenza and Verona provinces), peripheral plain (provinces of Rovigo and eastern Venice), hills with quality vineyards and mountain areas (Belluno, Vicenza and Verona) (see map).

1

Veneto Region

Mountain areas
Quality vineyard hill
Central plains
Peripheral plains

AUSTRIA

Friuli Venezia Giulia

Trentino Alto Adige

BELLUNO

TREVISO

VICENZA

VERONA

PADOVA

VENEZIA

Lombardia

ROVIGO

Emilia Romagna

A weight was attributed to each of these typologies in order to obtain an average regional price (2).

The other variables considered were:

- **Gross Internal Product per capita** (GIPpc), from ISTAT sources, a variable related to the flow of regional wealth and hence of purchasing power;

- **Agricultural Added Value per hectare** (AAVha), based on ISTAT sources, a variable related to land productivity and revenues;

- **Agricultural Land per farm worker** (ALfw) and **Added Value per farm worker** (AVfw), worked out from ISTAT sources, variables related to labour productivity and revenues, as well as technical progress.

The following variables were also considered in order to provide a more complete picture of long-term trends:

- the **Prices of Agricultural Products** that are particularly important in the Veneto region (maize, quality wine and milk), again based on ISTAT sources;

- **Financing for the Creation of Small Family Farms**, based on ISTAT sources;

- **Prices of Urban Housing** per square metre, worked out from "Consulente Immobiliare";

- **Average Values of Stocks and Shares**, from data provided by "Bollettino della Banca d'Italia";

- **Agricultural and Urban Land per capita**, from ISTAT sources.

The Analysis of the factors which may influence land values on the short term was completed by considering the historic series of the following variables:

- **Annual Percentage Variations in Land Prices** (current values);

- the **Inflation Rate** (average wholesale and retail prices) and related annual variations;

- **Bank of Italy Discount Rate**;

- **Average Revenues of Government Bonds**;

- **Average Revenues of Shares**.

The distinction between long-term and short-term trends is obviously open to criticism. Practically all the variables mentioned above reflect both long-term and short-term aspects which are difficult to separate. It should be pointed out that an attempt was made to distinguish in particular between the basic trend variables (agricultural and non-agricultural income, technical progress, alternative investments, availability of resources, agricultural and land-use policies) and contingent trends depending on short-term variables (largely of a financial character, such as the inflation rate and income from alternative financial investments).

The analysis of the factors that influence land prices was thus shifted from a temporal to a spatial level,

---

(2) The weights, related to the estimated extension of the various typologies, are as follows: central plain (39%), peripheral plain (24%), vineyard hills (2%), mountain areas (35%).

3

particularly by attempting to provide an explanation of the different land values for the sub-regional areas on the basis of settlement patterns, economic development, and hence the specific features of the transacted land.

This latter aspect was analysed by means of a sample survey of land transactions carried out over the past three years (1986-88). 75 cases were considered, relating the land price to the following variables:
- **land revenue** (soil rent);
- **farm acreage**;
- **altitude**;
- **location** (on sloping or flat ground);
- **parcelling of fields**;
- **quality of farm buildings**;
- **accessibility**;
- **use of land**;
- **seller** (socio-economic status);
- **buyer** (socio-economic status and related legal consequences);
- **quality of the environment**.

Since notable differences were noted between the characteristics of the land market in the large sub-regional areas -central plain and pre-mountain plain, peripheral plain and mountain areas- this last analysis was also carried out according to subregional areas.

The work is concluded providing an overview of the land market in the Veneto region, considering the amount of land sold, the economic and legal context and the subjects involved. On the basis of historic experience over the last thirty years, the sample survey and political and institutional aspects, hypotheses are put forward regarding future trends in the land market.

3. Long-term trends in Land Values

Land values in the Veneto Region over the period 1960-1988 show clearly growing trends in current terms (from 1-2 million lire/ha to 40 million lire/ha, as shown by fig.1). In real terms (fig.2), this growth, though evident, came to a halt in 1980, giving way to a subsequent fall in value. Only over the last 2-3 years has there been a positive trend in land prices. In any case, the fact is that land prices have tripled in real terms since the '60s. However, this increase in real terms is less notable in the mountain areas (100%) and in the plains of Rovigo and Venice provinces (150%), with respect to the central Veneto plain and pre-mountain areas where prices have tripled.

Two types of explanation may be given for the variations in land prices as shown by the graphs: the first is economic, related to basic trend variables, while the second is financial, connected with short-term variable. It is far from easy, however, to provide distinct explanations for the two types of factors, given the economic and financial "turbulence" due to inflation in the '70s and

Fig. 1 — Current Land Value
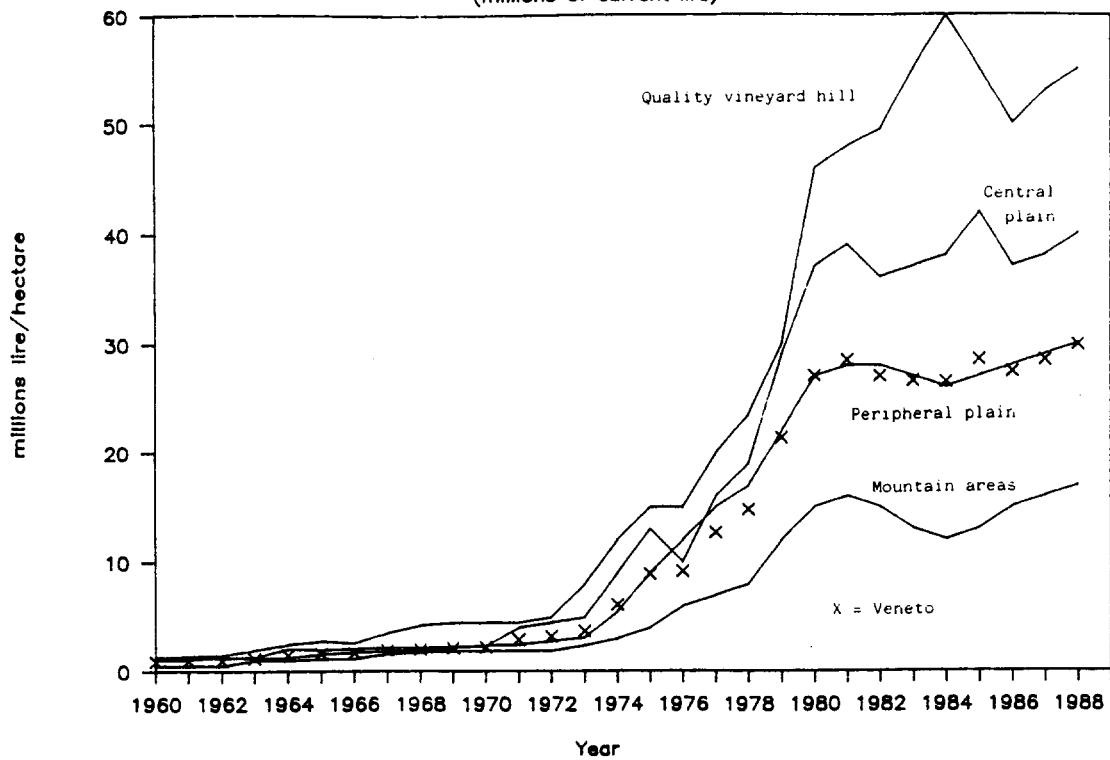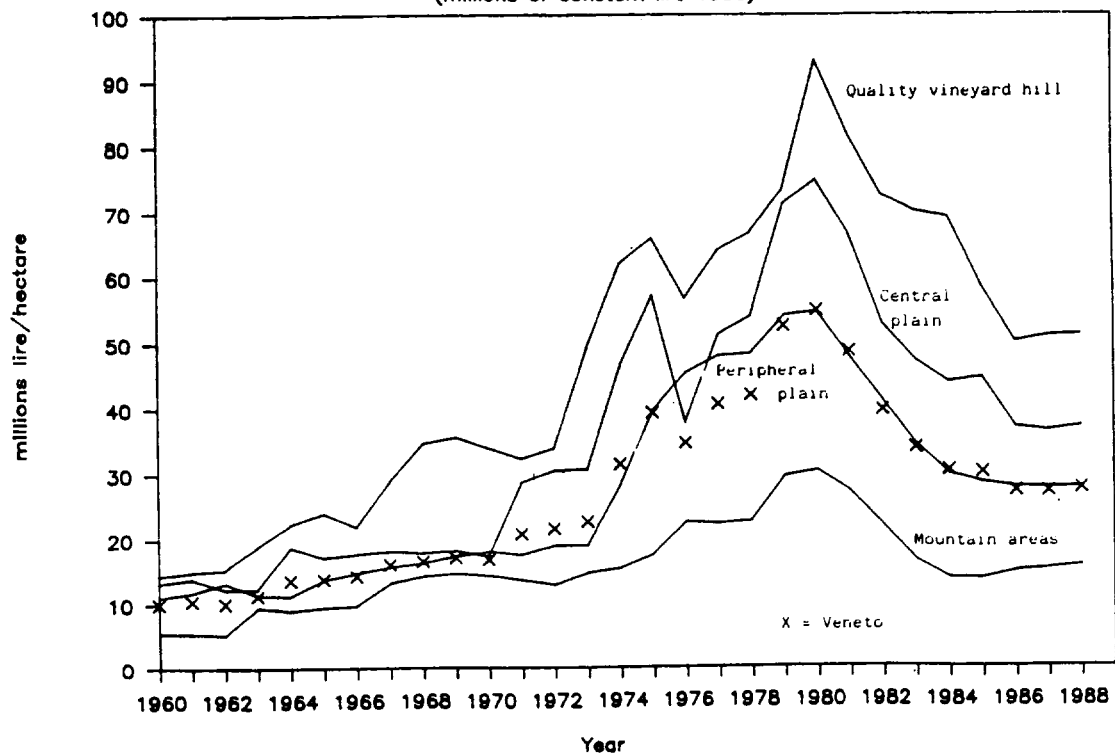### (millions of current lire)

- millions lire/hectare (y-axis): 0, 10, 20, 30, 40, 50, 60
- Year (x-axis): 1960 1962 1964 1966 1968 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988

Quality vineyard hill
Central plain
Peripheral plain
Mountain areas
X = Veneto

Fig. 2 — Real Land Value
(millions of constant lire 1986)

- millions lire/hectare (y-axis): 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
- Year (x-axis): 1960 1962 1964 1966 1968 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988

Quality vineyard hill
Central plain
Peripheral plain
Mountain areas
X = Veneto

5

'80s, as well as the significant growth in industry and services which took place in the entire Veneto, to the extent that the Region appears to be half-way between a state of Integrated Rural Development (as agricultural and rural economists would say) and that of a City-Region (as urbanists and regional planners would say).

3.1 Regional Wealth: Gross Internal Product Per Capita

The relationship between Land Values and Gross Internal Product per capita appears evident when comparing figs. 1-2 and 3, to the extent that one can presume that there is an underlying long-term relationship between the two variables. Real land values and internal gross product per capita were both tripled over the period considered. This clear correlation might be explained by the demand for land on the part of a population spread out over the rural areas, with a rural mentality and strong connections with the land (note the widespread practice of part-time farming) and which has seen significant increases in its income and purchasing power. The land thus takes on the characteristics of a consumer good with a flexible demand in relation to income and a notably limited and hence rigid supply. The statistic correlation between land values and GIPpc is rather high and significant (r = 0.88, sign. t > 0.01).

The feeling is however that, as often occurs in analysis of time series, the explanation proposed is only one of the possible explanations for the trends in land values. There are in fact other basic trend variables which have influenced land values (above all, agricultural revenues). Short-term variables have also had an important role to play. For example, one cannot disregard the fact that the most significant increases in land values (in the years 1973-75 and 1978-80) occurred when the levels of Gross Internal Product were stagnant. These were the years of evident economic crisis: stagnation and high inflation rates evidently encouraged land investment (in the absence of alternatives). On the other hand, the falls in land values generally correspond to growth trends in Gross Internal Product (the years 1968-73 and 1982-88). However, it is somewhat difficult to find years in which stagnation in land values corresponds to stagnation in GIP (1980-82): on closer examination, it appears that land values fell in this period because previously they had reached levels that were too high for the market. It appears clear then, even on brief analysis, that short-term factors interact with long-term ones, thus complicating the analysis.

3.2 Agricultural Revenues and Technical Progress: Added Value per Hectare, Agricultural Prices and Added Value per Farm Worker

Added value per hectare (fig.4) -which can in a sense be considered a proxy for soil rent- underwent significant

Fig. 3 – G. I. P. per capita
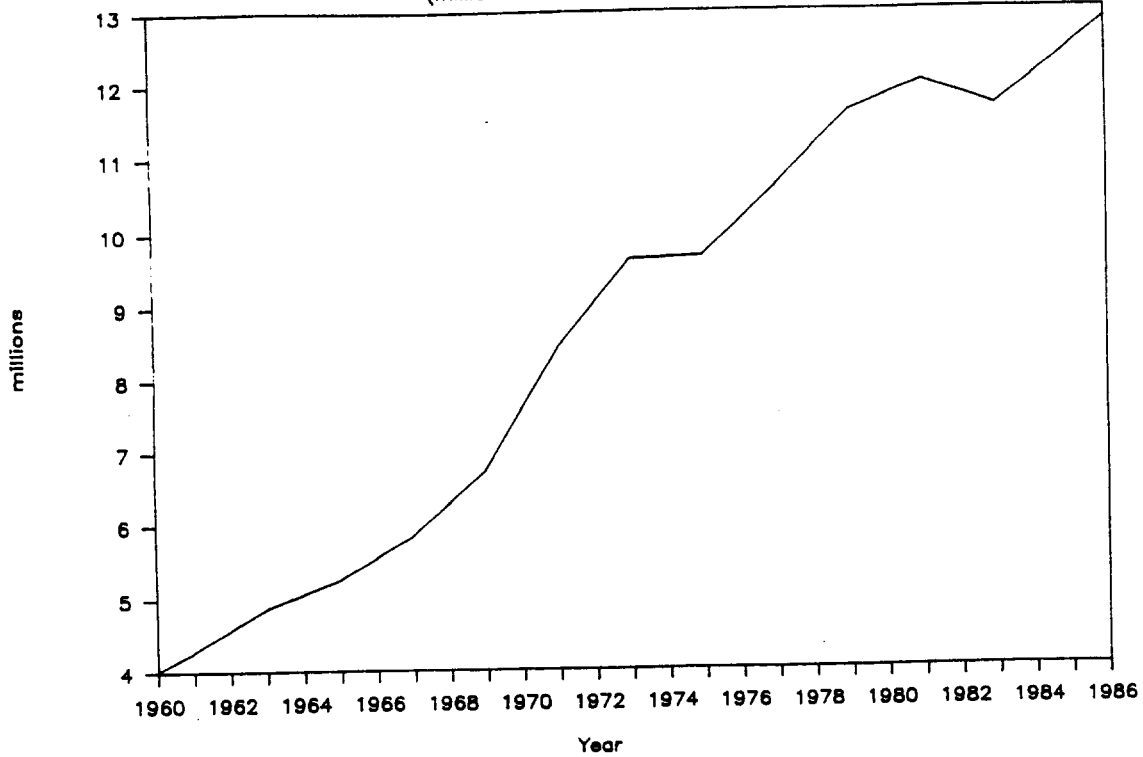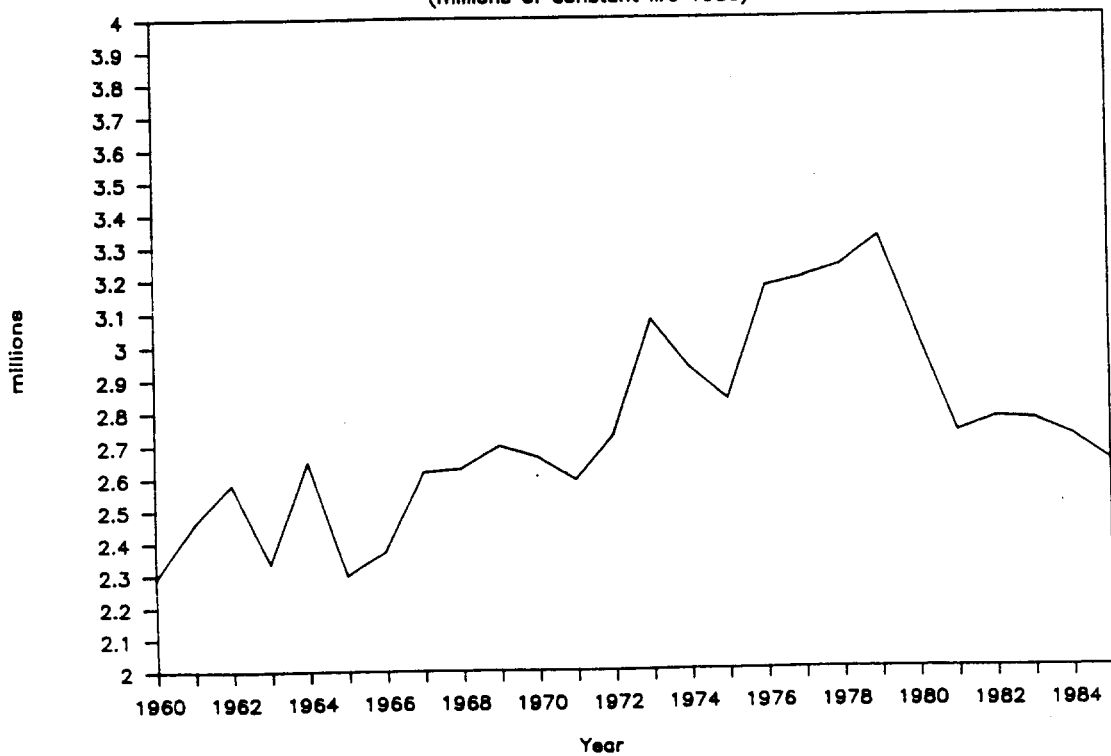### (millions of constant lire 1986)

Fig. 4 – Agricultural Added Value/ha
(millions of constant lire 1986)

7

variations over the three decades. However, at regional level it increased by 10-20% in real terms (from 2 to 2.5 million lire/ha), an increase which all in all was not particularly significant. The increase is greater, however, if the mountain and hill areas are not counted, but does not in any case justify the increases in land values. It should be noted, however, that the increases in added value per hectare show some degree of correlation with trends in land values, as seen in the notable increases in the years 1973-75 and 1978-80. The two variables show a limited correlation (r) equal to 0.66, but which is nevertheless significant (sign. t > 0.01).

On the other hand, one should discard any hypothesis regarding correlation with the prices of the main agricultural products in Veneto (maize, milk and wine) which fall in value in real terms (fig.5), so that the increase in added value per hectare can only be due to increases in productivity.

It would seem that technological progress -roughly measured by the amount of land per farm worker (ha/worker) and by the added farming value per farm worker (AV/work) (figs. 6 and 7)- is more closely correlated with land values than added value per hectare. Over the three decades considered the acreage of land per worker was tripled (from 3 to 10 hectares) (fig. 6), in the same way that the added farming value per worker (fig. 7) increased in real terms from 6 to 24 million lire/ha.

Analysis of these different trends in land and labour productivity (fig.4, 6 and 7) shows a clear statistical relationship between land values and revenue per worker (r = 0.89, sign. t > 0.01), rather than between land values and land earnings alone (r = 0.66, sign. t > 0.01).

It may be claimed that there is a cause - effect relationship between agricultural revenue per worker and land values, to the extent that the buyer does not simply intend to acquire the income from the land but rather the aggregate of incomes related to farming. This hypothesis may be accepted in cases where the purchasers are themselves farmers, belonging to the category which, as many surveys have shown, is the most active in the land market in the Veneto Region.

Of course the analysis undertaken so far, along with the relative statistical data, leave some doubts about which is the most important variable in determining land values: agricultural income, which should express the value of the land as a productive factor, or the whole Veneto population income per capita (GIPpc) which should express the value of the land as a "consumer good". Although this is difficult to demonstrate statistically (3), both these

(3) The relationship between Land Values, GIPpc and AVfw shows the following parameters:

LV = -10005.671 + 4.2896 GIPpc   R² = 0.76
     (sign t>0.05)(sign t>0.01)   DW = 0.45

8

Fig. 5 - Agricultural Product Price

(thousands of constant lire 1986)

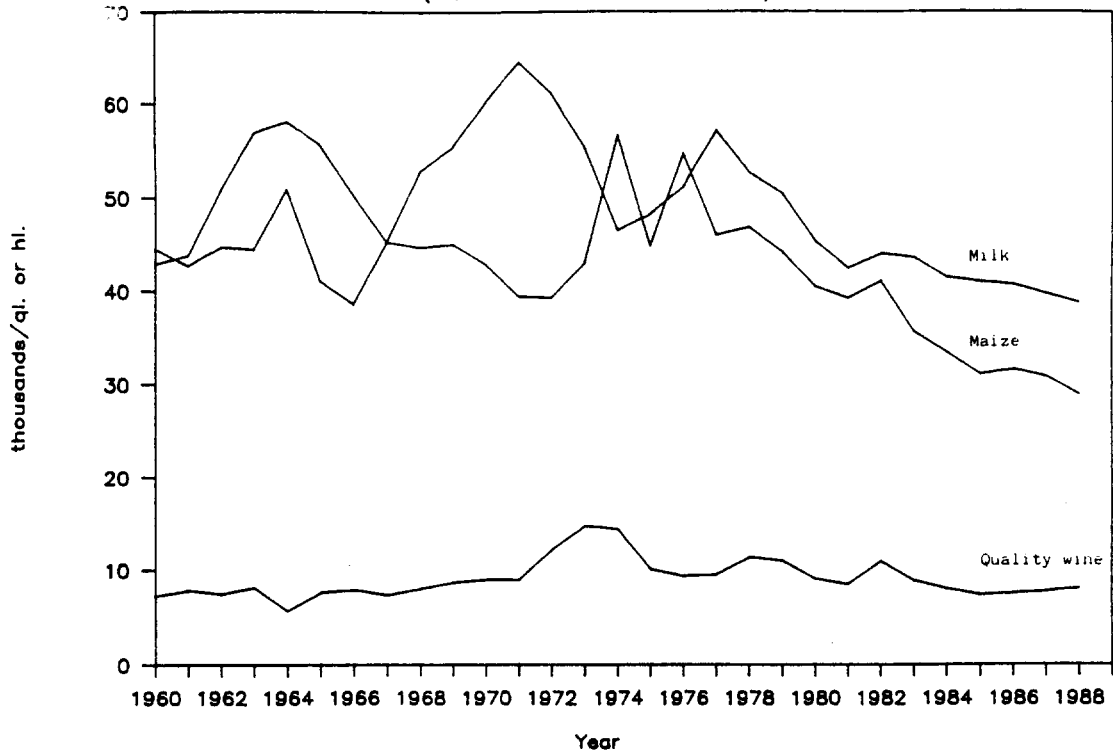Milk

Maize

Quality wine

Year

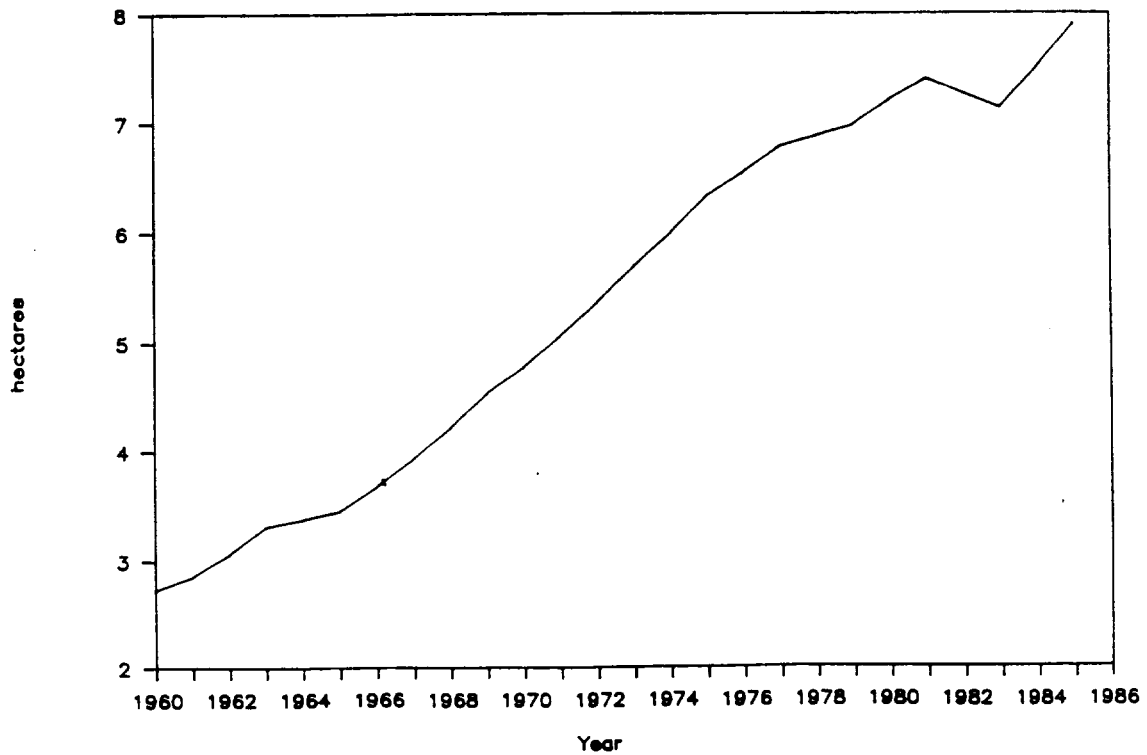# Fig. 6 - Farmland/Worker

Year

Fig. 7 -- Agricult. Added Value/Worker
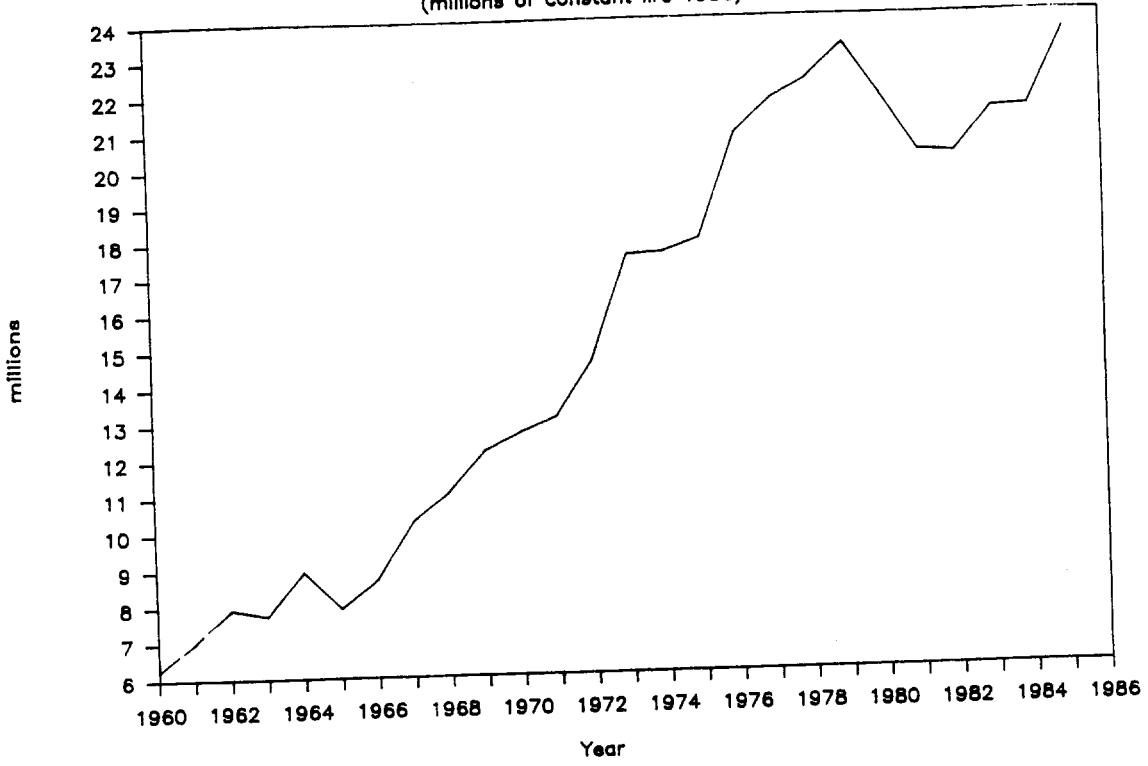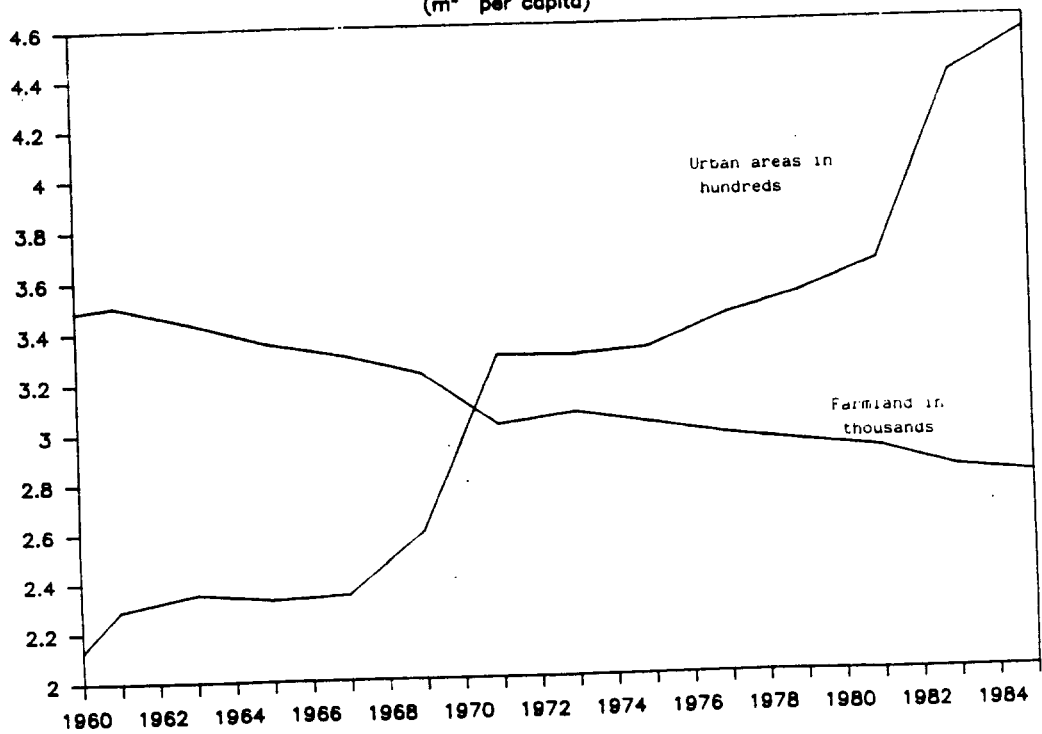### (millions of constant lire 1986)

Fig. 8 — Land Use
(m² per capita)

factors seem to have contributed to the increases in land values, and it can be claimed that they act together, sustaining one another, as such large increases cannot be explained otherwise.

3.3 Land Availability and Settlement Patterns

Given that income (both agricultural and non-agricultural) plays an influential role in defining land values, one should also point out other factors which have contributed to real growth in land values. First of all, the scarcity of farmland (3,000 sq.m per capita) should be stressed accompanied by widespread settlement patterns and industrial development throughout the rural areas which have interacted and competed with agriculture in the demand for land.

Over the period considered the extension of urban growth per capita more than doubled (fig.8), displacing agriculture over the most fertile areas where settlement patterns were historically more intense. At the same time the amount of farmland was significantly reduced, due to both urban expansion and abandonment of mountain and hill areas which had become economically sub-marginal due to the difficulties of mechanisation.

The scarcity factor (or rigid supply) can thus be considered to be a main reason for the increase in land values. The correlation between land values to urban areas per capita ($r = 0.72$, sign. $t>0.05$), or farmland per capita ($r = 0.82$, sign. $t>0.05$), undoubtedly contributes to explaining the increase in land values.

However the first factor in determining the increase in land values appears to be that of income (largely responsible for the increased demand for land), while the scarcity of land (or rigid supply) played a consequent role. This is demonstrated by the fact that the most relevant increases in land values occurred in the central plain and pre-mountain areas of the region (Treviso, Padova, Vicenza and Verona) where the population density is higher (inhabitants per sq.km) and where economic and industrial development is more intense and scattered in rural areas with respect to the other peripheral areas -the provinces of Rovigo and eastern Venice and the mountains- where the population density is lower and decentralised economic development in the countryside is practically non-existent.

It is particularly interesting to compare land prices in the central plain (46 million lire per hectare according to our survey and 40 million according to INEA Report) with

$$LV = -6042.164 + 2.129AVfw \qquad R^2 = 0.79$$
$$(sign\ t>0.1)\ (sign\ t>0.01) \qquad DW = 0.76$$

The regressions were carried out with the ordinary minimum squares method, using the TSP programme on PC.

11

the southern (Rovigo) and eastern (Venezia) plains (33 million lire per hectare and 30 million according to INEA Report). It can be seen that prices increased at much lower rates in the peripheral plain with respect to the central areas of the region though agricultural productivity and revenues are practically similar, if not higher (see fig.1 showing the map of the Veneto Region indicating the peripheral and central areas).

3.4 Agricultural Financing and Alternative Investments: Housing and Stock Market

Low-interest subsidised loans to family farmers for purchasing land no doubt played an important role in the '60s in sustaining land values (fig. 9). In more recent years such interventions came to end due to the lack of public financing, while the normal financial system probably played a role only in the early '70s when bank rates were lower than the inflation rate. However, it can be claimed that, over the last ten years, the high interest rates applied by the banks -operating without public subsidies- have practically excluded the role played by financing in defining land values.

With regard to alternative investments -housing and shares- it seems that they played a "controlling" role in the land market, by widening the range of investments which were traditionally restricted for the Venetian rural population to purchasing land. The average saver in the '60s and '70s may well have considered housing to be an alternative to the purchase of farmland. Both these assets have the advantages of (i) guaranteeing the real value of the investment, and (ii) being easy to manage. Both types of investment appear to have followed similar trends related to financial variables (inflation, interest rates), as shown by fig. 10.

As far as shares are concerned, the trends are notably differentiated from those of land values. Over the thirty years considered share prices fell significantly with respect to land. Between 1960 and 1980 there was a net decline in average share prices expressed in constant lire (1960 = 100) which was only partly recovered by the free distribution of shares and dividends (which were certainly higher than soil rent). Only by restricting the comparison to the last decade (1978-88) does the value of shares become competitive with that of land. In reality, if there had not been the boom in the stock market in the years 1984-86, linked to the relaunching of Italian industry, the real value of shares would not have covered the inflation rate.

Thus it can be claimed without any doubt that investment in good farmland on the plain and in the hill vineyards in the Veneto provided much more satisfactory results than investments in the stock market (fig. 11). If the analysis of land prices over the period from the '40s to the '60s carried out by Ferro (1968) led to conclusions

in favour of land investment as opposed to shares, the last
thirty years support this view all more. 100 lire invested
in land in the Veneto region in 1966 had become 2,000 lire
by 1985, while the same amount invested in shares was worth
600 lire. However, it should be noted that such an
increase, clearly shown in the Veneto Region, did not take
place throughout the whole country, as Grillenzoni's
analysis shows.

In any case, analysis of trends in share values brings
out a clear differentiation between the land and the share
markets, showing that completely different subjects are
involved in the two markets: farmers in the land market and
savers and financial operators in the stock market. It
should not be disregarded, however, that the notable
increases in the unit price of large farms occurring over
the past 2-3 years could in a sense be connected with the
profits made in the stock market over the period 1984-86
(along with relative de-investment). However, analysing the
typology of purchasers of large farms, it appears that they
consist largely of local industrialists, traders and
economic operators who often have economic and cultural
ties with the agricultural world.

4. Short-term Trends in Land Values: Annual Variations in
   Land Values, the Inflation Rate and other Financial
   Variables

The above consideration of trends in agricultural
financing, in the housing market and share prices, has to
some extent brought the analysis of the land market to the
level of short-term factors. It clearly shows the influence
that financial variables may have on real trends in land
values. The most evident aspect is inflation which, as
various authors have already pointed out, seems to clearly
influence land values in real terms as well as current
ones. This relationship is illustrated in fig. 12, showing
the **real land values** along with the inflation rate. It
appears evident that growth in the inflation rate involves
increases in land prices in real terms. One could also
suppose from the graph that a role is played by the
expectation about future inflation rates, so that land
values increase when there is expectation of inflation,
while an opposing trend appears to occur when the inflation
rate is falling. It should be noted that it is double-
figure inflation (above 10%) which especially influences
land values. One could also suppose from the graph in fig.
12 that inflation has an amplified effect on current land
values, in the sense that increase in inflation rates (fig.
13) involve percentage variations which are more than
proportional in land values (figs 13 and 14). In 1973, for
example, the price index rose by 15%, while the price of
land rose by 50%. Similarly, an increase of 10% inflation
rate over 1978-80 brought about a 30% increase in current
land values.

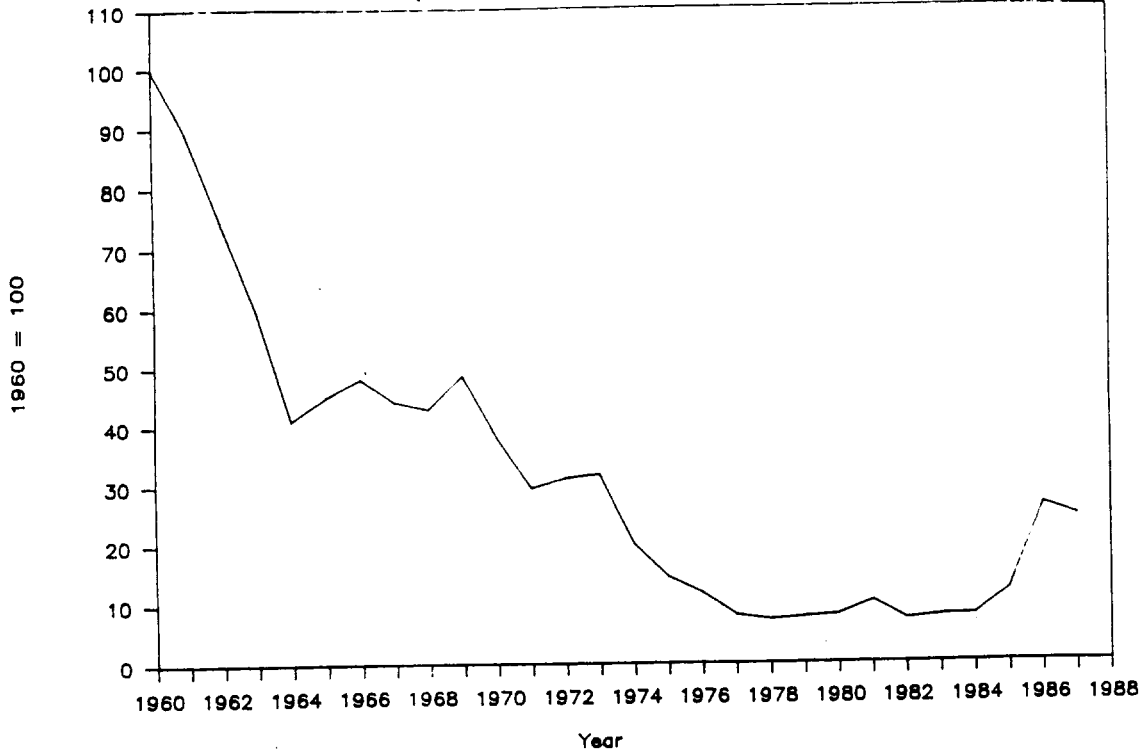# Fig. 11 – Average Share Price
(index of real value)

Fig. 12 – Real Land Value and Inflation
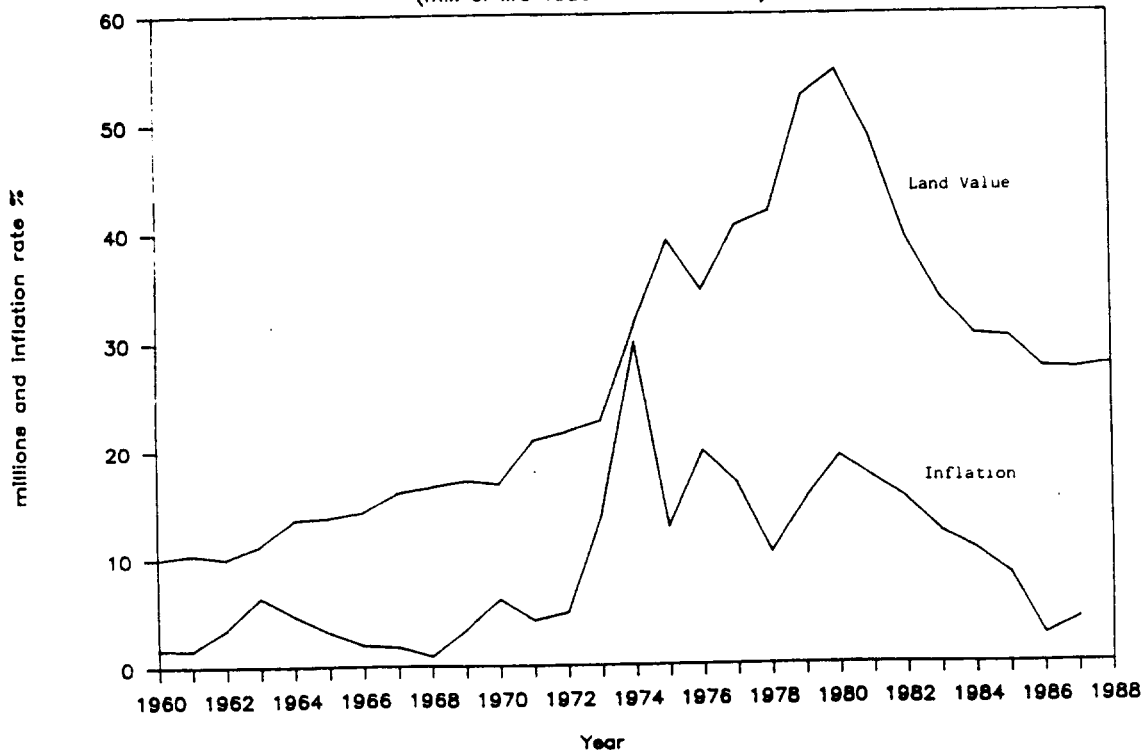## (mil. of lire 1986 – inflation rate)

Fig. 13 – Inflation Rate
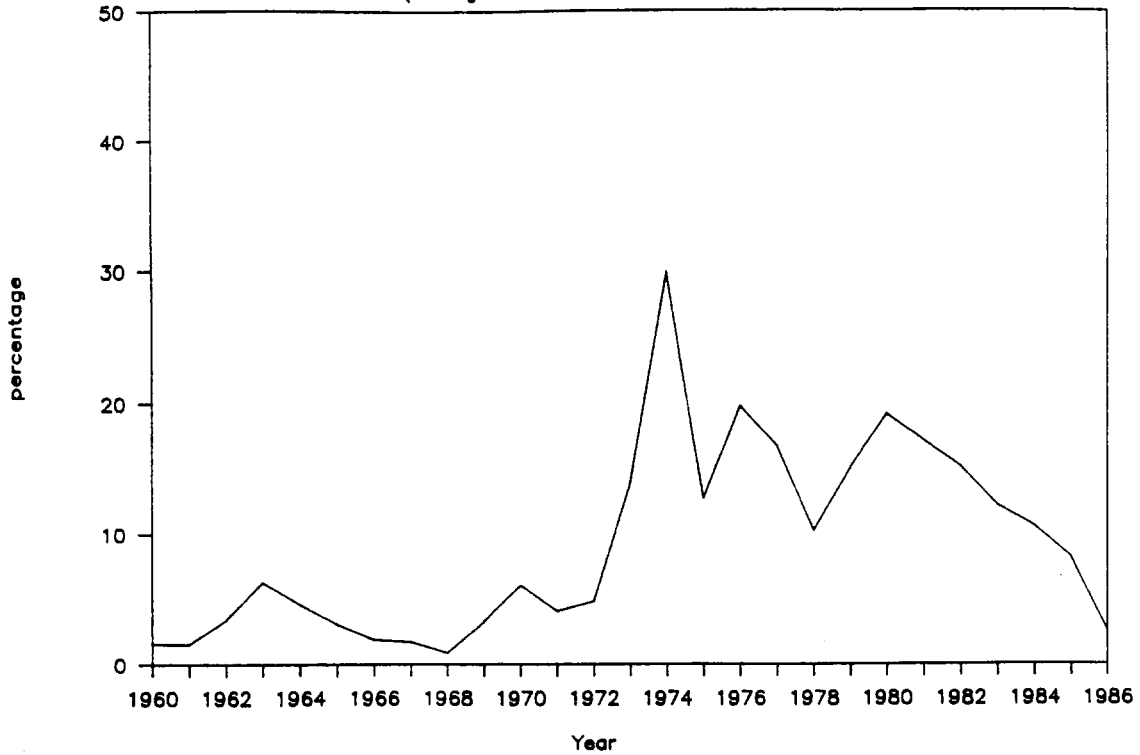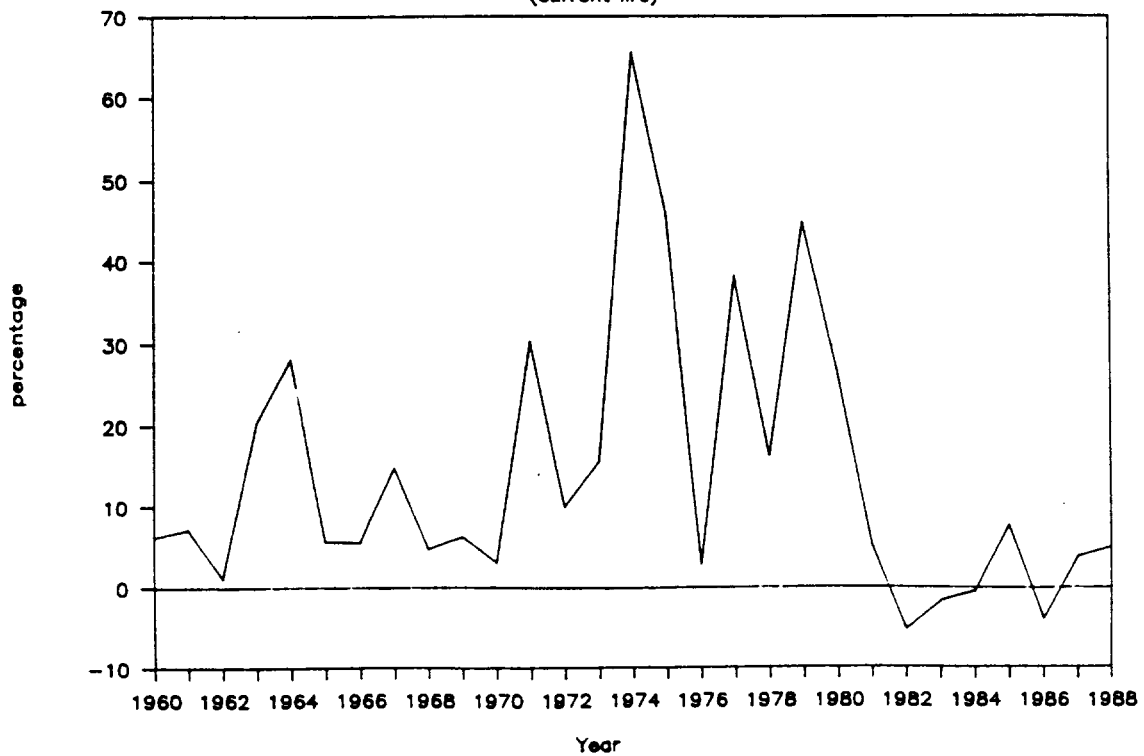### (average retail and wholesale prices)

Fig. 14 – Variation in Land Value
(current lire)

Thus it can be concluded that inflation is a key variable for explaining alternate trends in the land market, not only in current terms (which is rather obvious), but also in real terms, a further demonstration that inflation (as a financial variable) has clear effects on the real economy. Further confirmation of these effects on land values are provided by examination of the Bank of Italy discount rate and the interest rates from state bonds and stocks which are clearly linked to the inflation rate (figs. 15 and 16).

5. A General Model of Variables Influencing Land Values over the Period 1960-85.

In order to undertake a global evaluation of the above-mentioned phenomena, an explanatory multiple regression model of the real variations in land values was constructed on the basis of the time series 1960-85. Parameters were introduced into the model according to their role in explaining trends in land values (R^2) and the significance of the relationships (4).

With all the limitations involved in such exercises, the following model was considered to be satisfactory as an initial approximization:

$$LV = -31612.0+2.48 GIPpc+11.54 AAVha+602.54 VAPI \qquad \begin{array}{l} R^2=0.832 \\ DW=1.12 \end{array}$$
$$(\text{sign. } t > 0.01)$$

where:

GIPpc = Gross Internal Product per capita (constant values, expressed in thousands of lire, 1986).

AAVha = Added Agricultural Value per hectare (constant values, expressed in thousands of lire, 1986).

VAPI = Inflation rate: variation in the Average Price Index (wholesale and retail), expressed as a percentage.

Basically the model confirms that the real land values are influenced by the flow of wealth produced, by land revenue and the inflation rate. However, the following points can be made with respect to the equation and coefficients. First of all, the variability explained appears to be satisfactory with an adjusted R^2 equal to 0.832; meanwhile, the significance of the regression coefficients is high. The major limitation in the model is the low value of the Durbin-Watson coefficient which does

(4) The regressions were carried out with the ordinary minimum squares method, using the TSP programme on PC.

16

Fig. 15 – Bank of Italy Discount Rate
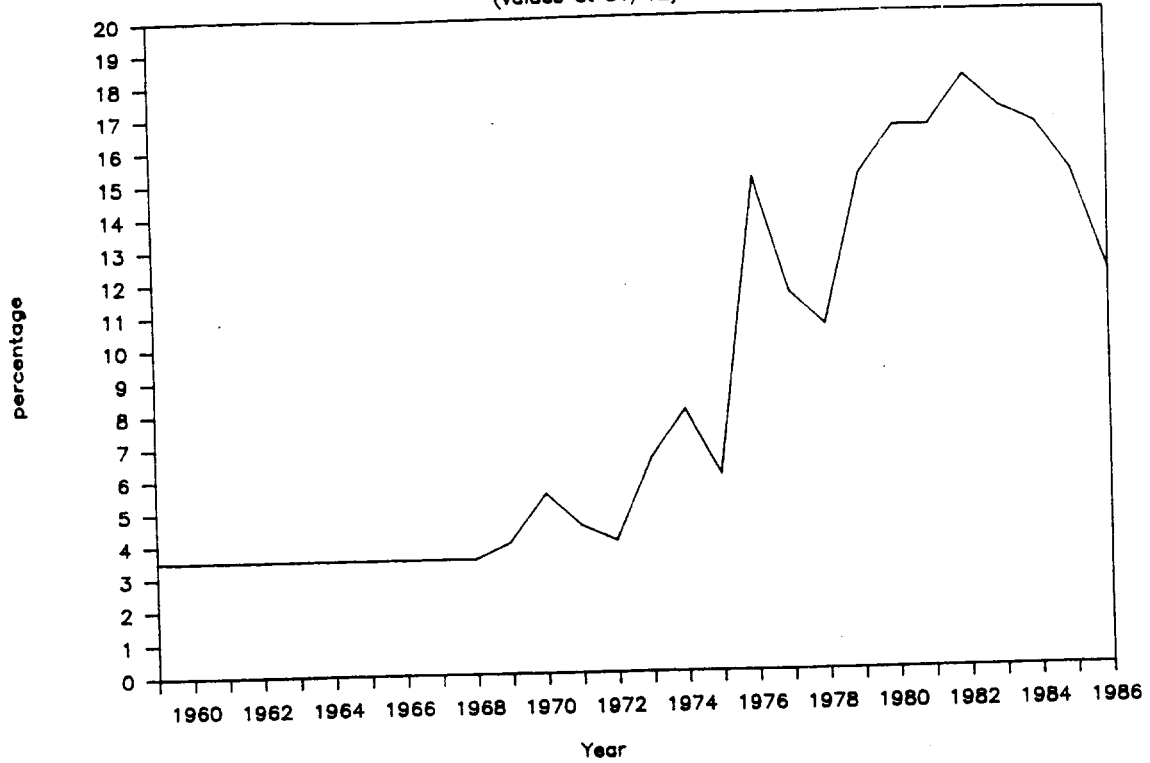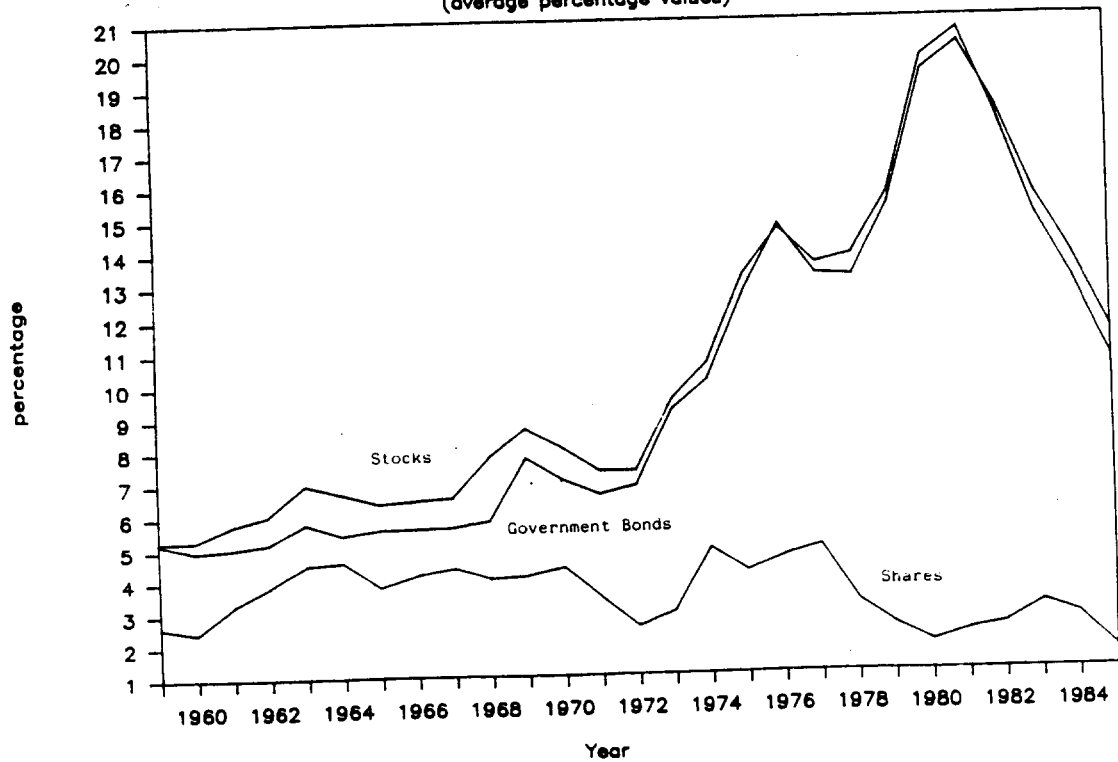
(values at 31/12)

Fig. 16 – Share and Bond Revenue

(average percentage values)

17

not exclude correlation in the residuals and hence the presence of "hidden factors" that may contribute systematically to trends in land value (5).

6. Values Related to Farmland Features

6.1 Settlement Patterns and Economic Development

The trends in land values shown by figs. 1 and 2 underline that more significant increases occurred in the central Veneto plain and pre-mountain areas with respect to the southern and eastern plains and the mountain areas. Land prices in fact underwent greater increases in the areas characterised by more intense economic development, more widespread settlement patterns in the countryside and higher population densities.

These data emerging from the annual INEA statistics were further confirmed by our survey of land values over the three year period, 1986-88:

Areas		Our Survey	INEA Report
- Central Veneto plain	mil./ha	46	40
- Southern and eastern Veneto plain	"	33	30
- Mountain areas	"	24	25

This is further confirmation of the fact that the spread of development in rural areas involves obvious increases in land values, as indicated by other analyses (Grillenzoni 1981).

6.2 Farmland Features and Prices

The sample survey allowed to move the emphasis in the analysis from dynamic factors acting over time to spatial factors (cross sectional data) connected with the farmland features. The survey, conducted with a questionnaire, involved 75 cases of land transactions occurring during the period 1986-88 and regarding large and small farms as well as single plots and parts of farms. The data were supplied by agriculturalists (university graduates) working locally as consultants, surveyors or in the regional extension service.

Without presuming that the survey provides a significant picture of the land market in the Veneto region

---

(5) Given the complexity of the phenomenon described and the difficulty of obtaining reliable data previous to 1960, it seems to be difficult to overcome this limitation without introducing a large number of variables into the equation. However, most of these variables have low significance values and it is difficult to define their precise role in the scenario in which land values are formed.

(the sample seems biased by information sources), the
following data emerged from it:
- **average land price**: 35 million lire/ha;
- **seller typology**: 25% working farmers, 19% farmers, 13%
  employed in different fields, 11% traders, 32% other
  categories;
- **buyer typology**: 43% working farmers, 29% farmers, 29%
  other categories;
- **pre-emption rights** were exercised in 23% of the cases,
  and could have been exercised in another 30% of the
  cases; they were non-existent in the other cases;
- **total acreage of land transacted**: ha 2428 (5-10% of
  the annual acreage transacted);
- **average acreage of land transacted**: ha 32.4.

Correlating the land values and farm features, it
appears that in general land values increased according to:
(i) productivity and revenue; (ii) settlement patterns and
development (central or peripheral areas); (iii) the volume
of the farm houses and related buildings; (iv) the farm
investments such as orchards; (v) the facilities
(particularly accessibility); (vi) the possibility of
mechanisation; and lastly, quite important, (vii) the
quality of the environment (landscape amenities etc.).

Factors which do not appear to influence land values
seem to be the distance from town centres and farm size.
Though these last results appear to partially contradict
previous analyses (Grillenzoni, 1982), they may be due to
distortions in the sample. However, one should not discard
the hypothesis of a certain evolution in the land market
during the second half of the 80's. It could be explained,
for example, that in a context of dispersed and
decentralised settlement patterns, the distance from town
centres is no longer an influential factor on land values.
This point also emerged from other surveys carried out in
the Veneto Region (Merlo, 1980).

Farm size, in the sense that smaller farms or single
plots of land ought to obtain higher prices per hectare as
there is a greater demand for them, may no longer influence
land values, since there are purchasers with sufficient
financial resources to acquire the larger farms and who are
willing to pay a higher price per hectare, as they are
aware that scale economies can only be realised in farms of
a certain size. The survey in fact shows that some of the
highest land prices were paid for average if not large-
scale properties, for which there has been a great demand
in recent years.

An explanatory multiregression step-wise (SPSS
programme) model can now be presented with regard to the
relationships existing between prices and farmland
features. The relationship identified at regional level is
the following:

$$LV = -5.852 + 9.57R + 6.259EQ + 5.7Pc + 0.036CM - 0.234NM$$
$$(*) \quad (**) \quad (**) \quad (*) \quad (**) \quad (**)$$

(*) = sign t>0,05;   (**) = sign t>0.01; $R^2 = 0.62$

where:

LV = land value per hectare, in millions of current lire
1986-1988

R = soil rent, (imputed according to standard revenues)
in millions of lire per hectare

EQ = Environmental quality expressed on a scale from 1
(very poor) to 6 (excellent)

Pc = dummy variable (1/0) indicating whether the farm
is situated in the Central Veneto plain

CM = cubic metres of farmhouse and buildings per
hectare of farmland

Nm = percentage of non-mechanizable farmland

The main problem with the model resulting from the sample survey data is due to the fact that it refers to the land market in the whole region, while local peculiarities and factors are not taken into account. In other words, the model does not allow for internalisation of the various typical local factors which often play a decisive role in the formation of land values.

In order to improve the analysis an attempt was made to build different models for individual sub-regional areas. Despite all their contradictions, if not controversial aspects, the results undoubtedly support the idea of a land market which is closely connected to the local context and is affected by local factors which differ from one area to another.

For instance, the data obtained from the survey, already tested in the general model, allow one to build a land market model for the mountain areas in which the independent variables provide a good explanation of land prices variability ($R^2 = 0.89$). To a certain extent land prices can be explained by the independent variables resulting from the survey also in the peripheral plains ($R^2 = 0.60$).

As far as the central plain and the pre-mountain areas are concerned, the information obtained from the questionnaires did not allow us to identify sufficiently reliable relationships. This difficulty may be due to the fact that, in areas of more intense non-agricultural economic development, such as this one, the influence of local factors external to agriculture is dominant with respect to the farm features considered by the questionnaire.

7. Economic, Legal and Institutional Features of the Veneto Land Market (Some remarks)

No firm conclusions about land market situation and evolution certainly emerge from the present analysis. Further analysis: data collecting and reliable models are needed. However some remarks about the economic, legal and institutional features of land market can be put forward. Particularly in analysing the land market in Italy, and in Veneto, account should be taken of the following aspects:

(i) The land market is extremely hypothetical; the annual transactions are limited to 1-3% of the total land, as various surveys have shown (Vanzetti, 1965). In the entire region the quantity of land transacted annually amounts to 15-40,000 hectares, of which about 5-15% (about 2,000 hectares) is devoted to urban uses. Besides it seems that in periods of high inflation, the number of transactions is significantly reduced to about 1% of the total land (Merlo,1980).

(ii) Settlement patterns, rural industrialisation and urban growth seem to play a key economic role in the land market, especially in the central plain where agricultural features are becoming less and less important in determining land values.

(iii) Limited supply is the main typical feature of the land market which appears to be monopolised by sellers (Ferro 1968, Einaudi, 1934). Often it can be a matter of a duopolistic bilateral market between seller and buyer, constraint by the legal context of the land market.

iv) Pre-emption rights -and the fiscal benefits provided by law for working farmers and to some extent for farmers fully involved in farming- move the market in favour of these categories, as this survey and previous research have clearly shown.

(v) It is certainly not easy to forecast future development: however, market evolution and agricultural land policies should act, hopefully, in order to increase land mobility in a more flexible context. **Market evolution,** in the sense of scale economies obtained through consolidation, careful attention to farm structure, should assume central importance in the market (supply and demand sides). **Agricultural and land policies,** after years of increasing legal constraints on the land market, seem to have reached a turning point represented by the 1982 Tenancy Law. There is a growing awareness that farm structures should be protected not only for farming and productivity purposes, but also because the need is felt for more effective environmental policy (landscape conservation, pollution, etc). New legislation concerning tenancy could also influence and relax the tension in the farmland market.

(vi) Recent analysis concerning the rural situation in Northern Europe points out the danger of "strong agricultures but weak rural economies" (Wibberley, 1981). The opposite is true in the Veneto and the other Italian

regions where the rural economies are much stronger thanks to industrialisation and urban growth, as compared to agricultural economies (poor farm structures and rural environment). The new trends towards environmental and agricultural practices, management agreements, environmental policy, acknowledgment of property rights (rural land as a public good) are all factors that should determine new evolution in the land market.

Bibliography

AA.VV., *Agricoltura ed inflazione*, Atti del XIX° Convegno SIDEA, Rivista di Economia Agraria, n. 1, 1983.

Antonietti A., *Terra e Agricoltura*, Atti dell'Accademia dei Georgofili, 1970

Bollettino della Banca d'Italia, (annate varie).

Caggiati P. Gallerani V., *L'analisi dei prezzi di mercato dei beni fondiari in Emilia Romagna*, Ce.S.E.T. - Notizie Aestimum, 11/12, 1984.

Caggiati P., Gallerani V., Grillenzoni M., *Un modello di inferenza statistica nella stima dei valori fondiari*, Genio Rurale, n. 1, 1982.

Einaudi L., *Categorie astratte e scatoloni pseudo economici*, La riforma sociale, nov. dic. 1934.

Ferro O., *Attuali problemi e prospettive del mercato fondiario in Italia*, Rivista di Politica Agraria, n. 3, 1968.

Grillenzoni M., *Il valore della terra*, Edagricole, Bologna, 1981.

Grillenzoni M., *Appraising Land Values in the '80s scenario*, International Real Estate Journal, vol. 12, 1986.

IL CONSULENTE IMMOBILIARE, (annate varie).

INEA, Annuario dell'Agricoltura Italiana, Roma, (annate varie).

ISTAT, Annuario Statistico Italiano, Roma, (annate varie).

ISTAT, Annuario di Statistica Agraria, Roma, (annate varie).

Jacobs H., *Analisyis of price differences of agricultural land in Northwestern Europe*, European Rewiew of Agricultural Economics, vol. 1-3, 1973.

Merlo M., *Territorio, agricoltura e mercato fondiario*, Agricoltura delle Venezie, n. 7, 1980.

Panattoni A., *Il mercato fondiario*, Vent'anni di agricoltura italiana, Edagricole, Bologna, 1976.

Raup P.M., *Land Values Research Approaches and Data Needs*, USDA-Staff Papers P82-7, 1982.

Traill B., *An empirical model of the U.K. land market and the impact of price policy on land values and rents*, European Rewiew of Agricultural Economics, vol. 6-*2*, 1979.

Vanzetti C., *Il mercato fondiario in Italia*, Giornale degli Economisti ed Annali di Economia, n. 3-4, 1965.

Wibberley G., *Strong agricultures but weak rural economies*, European Review of Agricultural Economics, Vol. 2-3, 1981