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Land Values and Appraisals

- Denmark

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ABSTRACT

The price of farm land went up strongly during the 1970's followed by a fall in the early 1980's due to a combination of factors; among which economic return in agriculture and variation in capital costs are the major ones. The combined effect of inflation, taxation and capital support programmes has created uncertainty about the real cost of capital, affecting the stability of land markets. The real estate markets should be made more transparent and farmers should be given better information about the conditions for farming as a basis for their planning.

Land Values and Appraisals - Denmark

A. Jorgensen, Denmark

In many countries, the price of farm land went up strongly during the 1970's followed by a fall in the early 1980's. This is a result of a combination of factors, among which economic return in agriculture and variation in capital costs are major factors. The development conceals an overrating of land values which might be linked to the change of policy in the early 1970's, leading to global expansion in farm production. Furthermore, the combined effect of inflation, taxation and capital support programmes has created uncertainty about the real cost of capital, affecting the stability of land markets. It is concluded that real estate markets should be made more transparent and that farmers should be given better information about the conditions for farming as basis for their planning.

The international development in land prices

During the last 10 to 15 years, the price of farm real estate has fluctuated widely with prices in many countries increasing steeply during the 1970's followed by a fall in the early 1980's. Taking the Netherlands and Denmark as an example, the price of farm real estate doubled over 2-3 years to 1978-79, followed by an almost equally strong fall to 1982 (Figure 1). Since then, the market for farm real estate has recovered with prices increasing considerably up to 1986.

A somewhat similar development is found in other European countries although at a different magnitude. In Germany and France, the variation in prices has been somewhat more moderate whereas in the United Kingdom, the market for real estate has been characterized by large price fluctuations since the beginning of the 1970's when the U.K., together with Ireland and Denmark, entered the Common Market. In Sweden, which is not a member of the EEC, the development has in many ways been been similar to that of the Common Market member states (1).

A recent investigation of land values in the U.S. (USDA 1985) shows a similar strong variation in the price of farm real estate although with considerable regional differences. Land prices seem to have increased most in California and in certain parts of the South, whereas the fall of recent years in land prices has effected the Corn Belt most. In certain parts of the Midwest, the price of farm real estate has almost halved during the last five years. Taking the U.S. as a whole, however, the picture seems to be quite similar to that of Europe, but with the fall in prices occurring somewhat later (Figure 1).

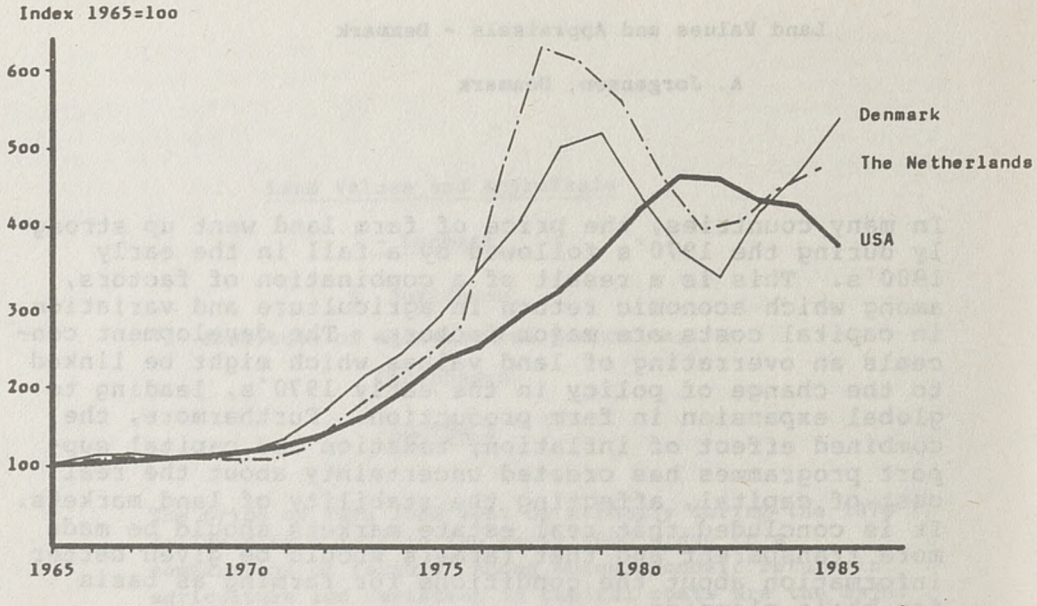


Figure 1. Price of Farm Real Estate (current prices)

Source: National statistics

Note: USA: Index of the average value per acre of land and buildings.
The Netherlands: Price per ha of farms larger than 1 ha (non-rented land).
Denmark: Price of farms 15-6o ha.

The common development in real estate values indicates that the fall observed in the price of farm real estate is not an isolated national phenomenon but must be explained on the basis of common international factors.

Among such factors should be mentioned the high rate of inflation during the 1970's which caused the price of real estate to increase fast. Adjusting the price of farm real estate to allow for inflation, it is found, however, that European farmers obtained considerable capital gains during the 1970's as the increase in the price of farm real estate by far exceeded inflation (Figure 2). This was the case of the Netherlands, Denmark and Germany in particular but in the U.K. and Sweden too, farmers obtained capital gains during that period. Indeed, a large part of these gains have since been absorbed by capital losses in connection with the fall of recent years in the price of farm real estate.

In the U.S., a similar development has been observed with capital gains in the 1970's being counterbalanced by capital losses in the early 1980's. An analysis of the development in the value of farm real estate since 1920 shows (Figure 3) that U.S. farmers were facing capital losses during the 1920's too, whereas most of the post-war period has been characterized by positive capital gains (2).

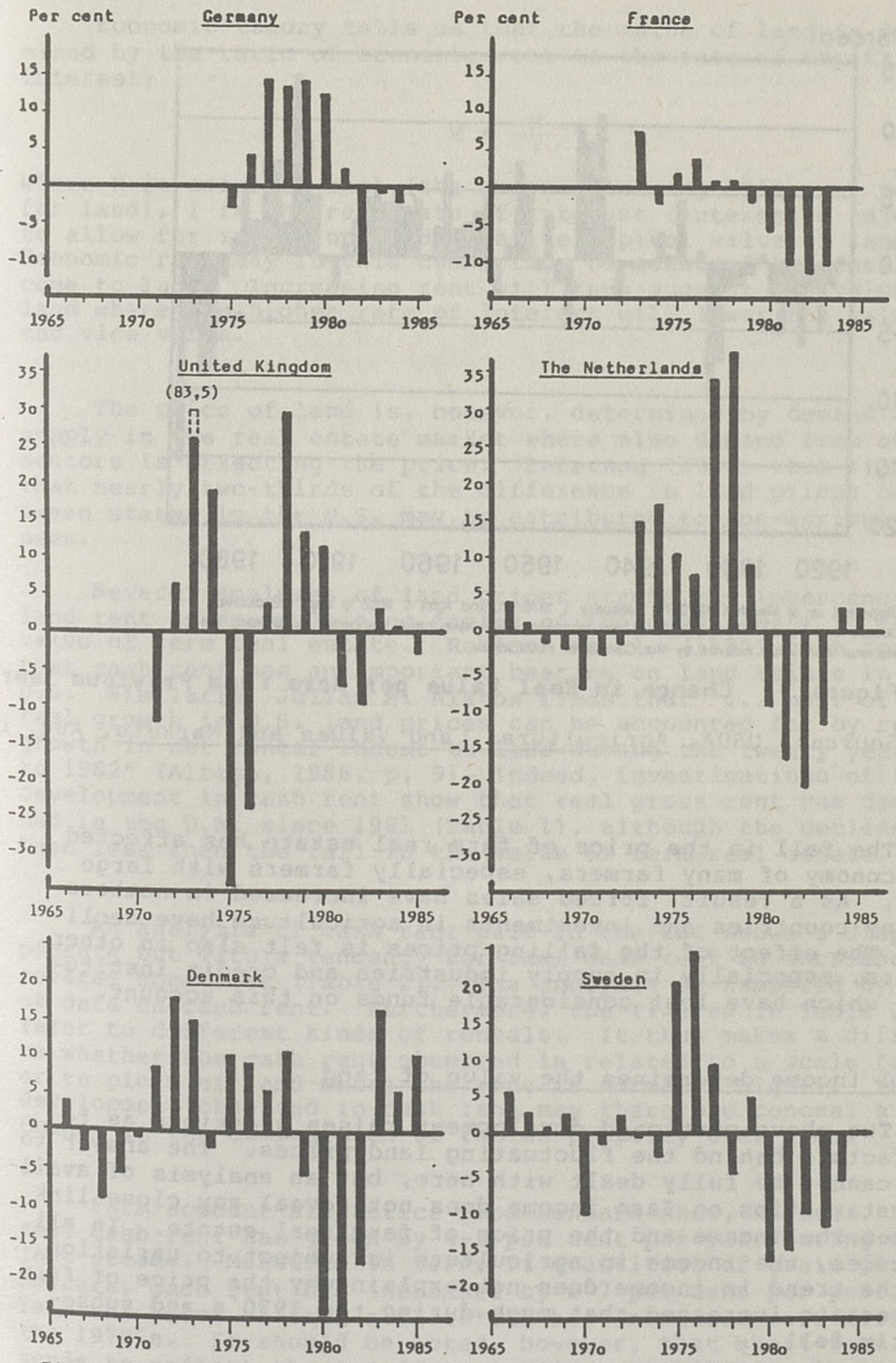
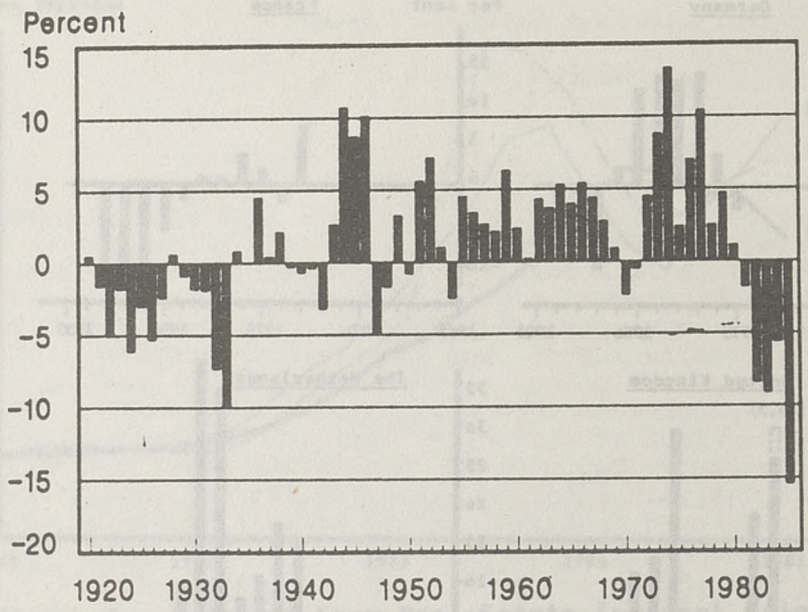


Figure 2. Year-to-Year Change in Real Value of Farm Real Estate

Source: National statistics

Note: The figures are calculated as the change in current prices of farm real estate deflated by consumer prices.
Germany: Price of plots of farm land
France: Cultivated land and permanent grassland
United Kingdom: All sales of land and buildings in England and Wales
The Netherlands: Farms above 1 ha (non-rented land)
Denmark: Farms 15-60 ha
Sweden: All sales. Weighted values of farmland and buildings



Reported as of March 1, 1920-75, February 1, 1976-81, and April 1, 1982 to date. Excludes Alaska and Hawaii. The indexes of real farmland value have been computed by dividing the nominal land value indexes by the Consumer Price Index.

Figure 3. Change in Real Value per Acre From Previous Year

Source: USDA, Agricultural Land Values and Markets, Aug. 1985

The fall in the price of farm real estate has affected the economy of many farmers, especially farmers with large debts. As a result, forced sales have increased in numbers in many countries and investments in agriculture have declined. The effect of the falling prices is felt also in other sectors, especially in supply industries and credit institutions which have lost considerable funds on this account.

Rental income determines the value of land

The above-mentioned development raises questions as to the factors behind the fluctuating land prices. The answer to this cannot be fully dealt with here, but an analysis of available statistics on farm income does not reveal any close link between the income and the price of farm real estate. In all countries, the income in agriculture is subject to variation, but the trend in income does not explain why the price of farm real estate increased that much during the 1970's and subsequently fell.

Of course, one should not forget that, in a situation where farm real estate is overvalued, a temporary drop in income may release a fall in the price of real estate or reinforce a depression in the real estate market. This may also help explaining why prices did not fall at the same time in different countries, as the development in income varies from one country to another.

Economic theory tells us that the value of land is determined by the ratio of economic rent to the rate of capital interest:

$$V = \frac{R}{i}$$

where R is economic rent (the amount of money left over to pay for land), i is the real rate of interest (interested adjusted to allow for inflation) and V is the capital value of land. Economic rent may in this connection be measured by rental income to land. Increasing rent will thus augment the value of land whereas a higher rate of interest will lower the value and vice versa.

The price of land is, however, determined by demand and supply in the real estate market where also demand from other sectors is affecting the price. Peterson (1986) thus finds that nearly two-thirds of the difference in land prices between states in the U.S. may be attributed to non-agricultural uses.

Several analyses of land prices stress the importance of land rent as an explaining factor of the development in the value of farm real estate. Robison et al. (1985) have found that cash rent has an important bearing on land values in the U.S. Similarly, Julian M. Alston finds that "... most of the real growth in U.S. land prices can be accounted for by real growth in net rental income to land during the twenty years to 1982" (Alston, 1986, p. 9). Indeed, investigations of the development in cash rent show that real gross rent has declined in the U.S. since 1981 (Table 1), although the decline has been less than the fall in the value of farm real estate.

An analysis of cash rent paid in the EEC shows a disperse picture but with a tendency for real cash rent to increase in several countries (Table 2). The analysis is hampered by lack of data on cash rent. Furthermore, the figures in Table 2 may refer to different kinds of rentals. It thus makes a difference whether the cash rent observed is related to a whole farm or to plots of land where the rent is normally higher. The development observed in cash rent may therefore conceal a change in the composition of rented property over time.

Farm account statistics from Denmark show, however, that real cash rent has grown by 4-5 per cent per year during the last decade. Measured in terms of quantities of grain per hectare, cash rent has increased by 6-7 per cent per year. Yet, the value of farm real estate has increased more during the 1970's. It should be noted, however, that short-term rent tends to reflect the immediate income possibilities in agriculture, whereas the price of farm real estate is determined by long-term expectations about farm income. The prospects for a growing surplus of farm products in the coming years is bound to affect the farmers' expectations which in turn may help explain the force of the recent fall in the price of farm real estate.

Table 1. Gross Cash Rent per Acre, 1981-price
Farms Rented for Cash in the US.

	1981	1982	1983	1984	1985
	US $				
Northeast	43.3	43.9	45.5	47.3	41.6
Lake States	54.6	53.8	53.3	48.9	44.5
Corn Belt	88.0	84.8	79.6	78.1	69.4
Northern Plains	23.2	22.8	22.6	21.4	19.3
Appalachian	40.2	40.7	37.4	35.9	32.0
Southeast	29.5	26.9	25.9	23.1	22.4
Delta States	38.9	39.8	34.3	31.1	31.5

1) Gross cash rent deflated by US-consumer price index

Source: Own calculations based on: USDA, Agricultural Land Values and Markets, Outlook and Situation Report, USDA Economic Research Service, Aug. 1985.

Table 2. Cash Rent of Farm Land, EEC (10)

	ECU per ha 1982	Yearly change in real cash rent[1]	
		Period	Per cent
Germany	153	1981-83	5.2
France[2]	72	1980-83	-7.6
Italy	-	-	-
The Netherlands[3]	170	1980-84	3.6
Belgium[3]	103	1980-84	-8.0
Luxembourg	-	-	-
United Kingdom[4]	118	1980-84	6.1
Ireland	-	-	-
Denmark	166	1980-82	7.8
Greece[5]	398	1980-84	-9.0

1) Deflated by consumer prices

2) Arable land. 1964-figure adjusted by a national account deflator (INSEE)

3) Arable land

4) Total rented land, England

5) Mostly irrigated land

Source: EEC Commission, The Situation of Agriculture in the EEC.

The divergence observed between the development in rental income to land and the price of farm real estate need therefore not exclude rent as an explanatory factor, although rent alone clearly cannot explain the fluctuating land prices of recent years.

Increasing real rate of interest oppresses land prices

The other main factor influencing the value of farm real estate is the cost of capital. The link between the rate of interest and the value of real estate is complex, cost of capital to the borrower being affected by both inflation and taxation. In principle, it is therefore the real rate of interest after tax which should be used as basis for comparison, but for lack of such data, the real rate of interest before tax in presented in figure 4 for a number of European countries.

As seen from the figure, the development in the real rate of interest has differed considerably between countries. Moreover, because of fluctuating inflation, the calculated real rate of interest varies more in some countries than in others indicating that there is uncertainty about the virtual level of interest (3). In all countries, however, the real rate of interest has shown a marked increase in recent years which is bound to oppress the price of real estate.

An investigation in the U.S. capital market shows a similar development, the real rate of interest increasing from around 0-2 per cent during the 1970's to 7-8 per cent in the early 1980's.

The high real rate of interest observed in some countries should be seen in relation to the tax savings effect from deduction of interest payments which tends to lower the cost of capital, in particular for borrowers in high income brackets. This has especially been true of Denmark where the marginal tax rate may run as high as 75 per cent. Adjusted to allow for taxation, the real rate of interest has been below zero during most of the 1970's, rising to a positive level in the early 1980's.

In this connection it should be mentioned that in a recent report from the Organisation for Economic Cooperation and Development (OECD, 1986, p. 30) it is found that the tax systems in the Scandinavian countries and in the Netherlands in particular allow for tax relief as a result of deduction of interest payments.

Capital support for agriculture likewise has an effect on the price of farm real estate as such support tends to be capitalized into the value of the land. Almost every country applies capital support for agriculture in one way or another. In Denmark, a number of capital support programmes were implemented during the 1970's to abate the effect of the high market interest rate.

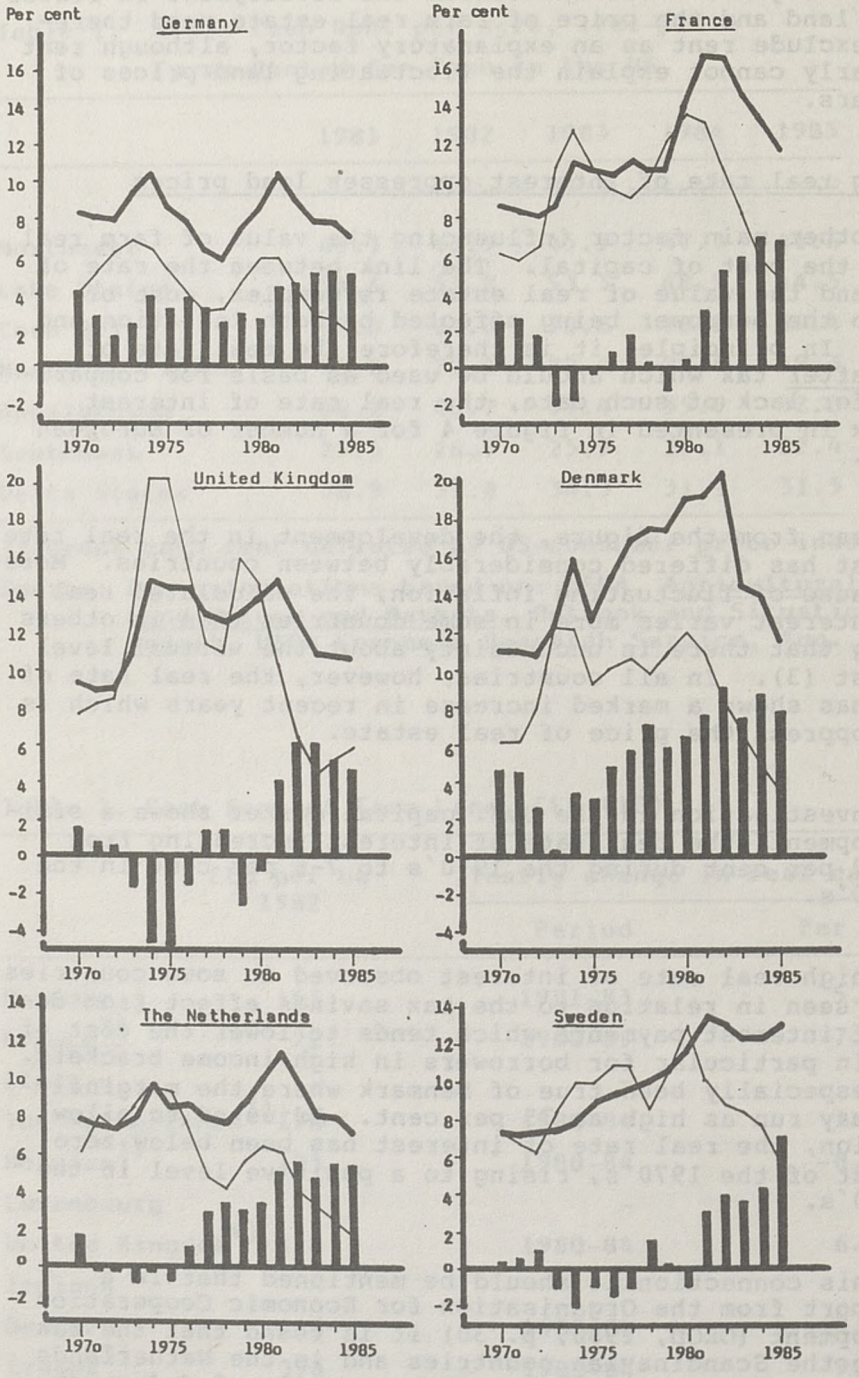


Figure 4. Interest rate adjusted for inflation

Nominal rate of interest of long term bonds

Rate of inflation (based on two-years moving average of consumer price indeces)

Real rate of interest (nominal interest adjusted for inflation)

Source: Own calculations based on Main economic indicators, OECD, and national statistics

When taking these factors into consideration, cost of capital plays a much more central role in the determination of land values. Thus, it is tempting to expect that the large variation in inflation in some countries during the 1970's has created uncertainty about the real cost of capital. This would affect the price of farm real estate, in particular in cases where the real rate of interest (taking taxation into account) has been close to zero. In such a situation, expectations of continuous growth in rental income can easily lead to an overrating of land values and thereby create a boom in the market for farm real estate.

Conclusion

The large fluctuation in the price of farm real estate in recent years is the result of a combination of different factors, among which economic return in agriculture and the variation in the cost of capital play the major role.

It is tempting to link the large international increase in land prices during the 1970's with the change in policy after the "cereal crisis" in the early 1970's, leading to global expansion of agricultural production. Expectations of a continuation of this policy might explain part of the prolonged increase in the real price of farm land up to the end of the 1970's. This would also explain the subsequent slump in prices when it became clear that the increasing surplus of farm products would ultimately affect land prices.

In addition, the high and often fluctuating inflation rate during the 1970's, combinbed with the effect of taxation and capital support programmes, might have blurred the real cost of capital and thereby supported the variation in land prices. The mere fact that the real rate of interest has been close to zero may partly explain the boom in land prices in some countries, as well as the subsequent fall in prices might have been reinforced by the increasing real rate of interest of recent years.

The analysis stresses the importance of a transparent market for farm real estate. This relates in particular to the cost of capital where the tax system and capital support programmes often tend to distort the price formation. Furthermore, it is important that farmers be given solid information about the conditions for farming in the future as basis for their planning and acquisition of farm property. The decision rests, however, ultimately with the farmer who must also take responsibility for the consequences of his actions.

Notes

(1) Comparison of the development in land prices in different European countries is difficult because of differences in statistics and lack of information about transfer of farms in certain countries. This is for instance the case in parts of Southern Europe where transfer of farms for a great deal is carried out through inheritance, literally without fixing a market price. In addition, purchase and sale of farms may be subject to regulations which limit a free market trade or influence the price of farm property (e.g. Norway). A similar effect may arise from regulation of rental incomes as it is the case in e.g. The Netherlands where the land market virtually is divided into rented and non-rented land.

(2) The observed development disregard investments in agriculture. Peterson (1986) finds e.g. that the quality of California land has increased over 25 per cent from 1949 to 1978 due to investments in irrigation etc.

(3) The calculation of real rate of interest should, in principle, be based on expected inflation. The large variation in the calculated real rate of interest may thus partly be explained by differences between expected and actual inflation which is used here as basis for calculation. Uncertainty about the development in the real rate of interest will, however, always be larger in case of fluctuating inflation than under more stable price conditions. In the United Kingdom which has had highly fluctuating inflation during the 197o's, the real value of farm land has varied considerably, whereas in Germany there has been a much more stable development in both consumer prices and land values.