Relationship between the Land Rent and Agricultural Land Prices in the Czech Republic

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Abstract

The aim of this article is the evaluation of factors and the importance of their impact on the land rent and land price. A great share of rented land in the Czech Republic requires an assessment of relationship between the land rent and the price of land. Price of land is primarily influenced by location, size and purpose of use of the purchased land. An average market price of agricultural land regardless its location, size and purpose of the land use showed significant differences year by year. The ratio between the land rent and market price of land referred to as the capitalization rate has been increasing continuously since 2003. The payback period that is reciprocal to the capitalization rate corresponds to the standards of European developed states. An average growth rate of the land rent should not exceed 6 % neither should it lead to a mismatch between the development of the land rent and land prices or to a disproportionate growth of land price.

INTRODUCTION

Total agricultural area covers 4 244 thousand hectares in the Czech Republic. Agricultural land forms 54 % of the total land area as 38 % of the total is represented by arable land. The share of arable land has been slowly decreasing from approximately 75 % in 1991 to about 71 % in 2008. Property rights related to agricultural area are consolidated with the exception of the state owned land. Total area is divided into 17.5 million parcels of land with an average area of 0.52 ha (Ministry of Agriculture, 2009). Major part of agricultural area is owned by individuals, less is owned by state or private companies and associations of different type.

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There is a great number of small owners in the Czech Republic while majority of them do not manage the land they own. Compared to the EU in the Czech Republic, the share of rented land is more than twice as much. The land market has been revived by sales of agricultural land owned by state.

There are two types of land price in the Czech land market. Administrative price is set according to land valuation published in price regulations of the Ministry of Finance of the Czech Republic. Market price is regulated by supply and demand. An average rent of farm land is low in the Czech Republic, compared to the EU; however the growth rate is increasing.

1 LITERATURE SURVEY AND METHODS

The market land price setting is based on three basic approaches specifying current method of valuation. The cost approach is based on the premise that the informed buyer would not pay more than for a property with comparable features. The comparison approach is based on comparing current market prices of land with comparable characteristics. The income approach is based on capitalization of the land income.

Gwartney (2004) adjusted the methodology of the land price valuation by other specific methods: Sales Comparison is based on analysis of vacant parcels and their comparison in order to provide the price of the assessed land. The Proportional Relationship is based on comparison of the size of a parcel with standard size. The difference is expressed as a ratio adjusting the price of a standard parcel. The Land Residual Technique assumes that the land is improved to its best use. All operating expenses and the return attributable to other agents of production are deducted, and the net income is capitalized. The allocation divides the price into two parts expressing the land value and its improvements. The extraction estimates the land value by subtracting estimated value of depreciated improvements from the known sales price of the property. The Ground Rent Capitalization is used when the land rent and market price data are available. The Subdivision Development is based on the assumption that uncultivated land is of the same value as the cultivated and sold land. Cultivating costs and other charges are subtracted from the sales price, and the net income projection is discounted over the estimated period required for market absorption of the cultivated sites.

Huang et al. (2006) discussed the impact of factors that are not directly related to the production. Explanatory variables included land productivity, parcel size, and distances to large cities, an urban–rural index, farm density measures, income, and inflation. They proved that farmland price increases with soil productivity and population density and declines with parcel size, country character of the district, and distance from large cities. A hedonic price model of forest land prices in Northern Minnesota is presented in Snyder et al. (2007). They included economic and social factors as well as recreational features and some commodity variables as explanatory. Access to roads and density, proximity to population centres, presence and proximity to a water body, and the use of contract financing had showed the most positive influence. Chavas and Shumway (1981) model land price as function of economic rent. The economic rent includes the land rent as well as the maximum profit. The land price is expressed as annual discounted flow. To this end, a single Gordon's model with a constant growth rate is specified. Gwartney (2004) compares the land rent and the market price of land. The above mentioned method is based on the following relations:

$$Capitalization\ rate = Land\ rent\ /\ Market\ price\ of\ land. \tag{1}$$

The following results imply:

$$Market\ price\ of\ land = (Land\ rent - Land\ tax)\ /\ Capitalization\ rate, \tag{2}$$
$$Land\ rent = Market\ price\ of\ land \times Capitalization\ rate + Land\ tax. \tag{3}$$

The assessment in the analysis has been based on the above mentioned relations. The capitalization rate is a very sensitive index requiring special abilities to assess it. To this end, payback period in years is used as well since it is more instructive indicator.

$$Payback\ period = 1\ /\ Capitalization\ rate. \tag{4}$$

Both static and dynamic approach can be employed in the calculation. The statistic approach calculates with the number of years to pay the land rent as a reciprocal value of the capitalization rate. The dynamic approach calculates the time value of money that allows calculating the number of years within required interest rate.

Changes at the land market, land price and land rent after the EU enlargement are discussed in Buday (2007), Němec and Kučera (2007), Hamza and Miskó (2007). The impact of Single Area Payment scheme on the land market and the land rent is analysed by Boinon et al. (2007), Patton et al. (2008) showing that the distributional impact of different types of payment provides a space for further research. Their study revealed that direct decoupled payments are directly connected with land and they directly influence the land rent. The results of simulations prepared up to 2030 with dynamic model of partial balance revealed that the GDP growth resulted to a stronger effect on changes in the land use than the CAP (Ciaian, 2007).

Assessing farmland price in the Czech Republic employs different types of analysis. The research of the Czech Statistical Office covered the whole area. The data are sourced from the land price specified in commercial (purchase) agreements recorded by the Ministry of Finance for purposes of the real estate transfer tax assessment. The research of prices of purchased state land is also monitored within the whole area according to Act 95/1999 Sb. This research is based on the records of the Land Fund of the Czech Republic on purchased farmland classified by the purchase type:

a) according to Section 7 specification — transfers to self-employed farmers and farmland owners, business companies partners, members of cooperatives with the price resulted from the competition; and

b) according to Section 8 — purchase to other individuals (land that was not sold under the previous paragraph).

Land transfers according to paragraphs 5 and 6 are not considered due to their low coverage. The price recorded by the SGAFF (the Support and Guarantee Agricultural and Forestry Fund) is based on commercial agreements between the seller and the buyer selling private land, where the part of interest was paid from the PGRLF to buyers. The programme was announced in 2004 and the submission of requests finished in 2010.

The land rent is based on the FADN (The Farm Accountancy Data Network) database consisting of monetary and in-kind payments per 1 ha of rented ("external") farmland. Classification into production areas is based on localization of a parcel to the land plan within the appropriate area. Currently, there are three types of agricultural area in the Czech Republic: production areas, less favoured areas and vulnerable areas. This paper deals with the land rent in the first and second above mentioned type.

2 RESULTS AND DISCUSSION

2.1 Land price and its development according to different research types

In the Czech Republic, both market price of farmland and official price are used for tax purposes and for the sale and purchase of state-owned land. An average official price amounted to 52 400 CZK/ha ranging from 7 000 CZK/ha to 148 100 CZK/ha. An average market price is similar to the official price as reported by the Czech Statistical Office. The Czech Statistical Office does not specify or analyze (classification, the influence of factors) the data. The land purchased for further non-agricultural use is not distinguished in any way (Table 1).

Table 1 Growth of farmland price in the Czech Republic (CZK / ha)

	2003	2004	2005	2006	2007	2008	I2008 / 2003	Av. growth rate
Farmland price	48 481	49 791	48 279	46 806	51 848	59 257	1.222	1.041

Source: CZSO

Sample survey of prices based on a selection of commercial agreements is presented in Table 2. The data were sourced from commercial agreements and their survey. Agreements were not filtered from the land purchased for non-agricultural purposes (in 2004, the category of land for building purposes was defined as the "virgin building land" before transferring into the category of building land) with the market price up to ten times bigger compared to the average market price of land for agricultural purposes.

Table 2 Sales price growth according to the size of a parcel (CZK / ha)

	2000	2001	2002	2003	2004	2005	2006	2007
Up to 1 ha	921 360	1 087 776	971 424	1 166 803	1 042 360	957 673	1 470 704	1 594 934
1–5 ha	135 994	199 450	129 042	132 286	136 285	107 641	204 698	215 576
Above 5 ha	41 971	55 664	34 020	35 742	37 511	37 094	36 128	35 875

Source: Institute of agricultural economics and information

According to the survey conducted by the Institute of Agricultural Economics and Information (FADN, 2010), the price is significantly influenced by location, size and purpose of purchased land. An average market size of agricultural land regardless location, size and purpose of the purchase differs significantly year by year. The price of land of less than 1 ha has increased by 73 % in 2007 compared to 2000. The price of land from 1 to 5 ha has increased by 58.5 %. Market price of farmland is significantly influenced by the way of land use. Land parcels of less than 1 ha are purchased for different purpose than farming in up to 95 % (Ministry of Agriculture, 2009). It increases their market price considerably. Land parcels of the size ranging from 1 to 5 ha are used for different than farming purposes in 40–50 %. On the contrary, land parcels of more than 5 ha are purchased mainly for agricultural production (approximately 85 %). The development of sales prices is presented in Table 3. The price is defined separately in two categories — arable land and permanent pastures.

Table 3 Sales price of state-owned farmland in the Czech Republic (CZK / ha)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Purchase according to §7	65 943	59 448	46 184	40 877	43 383	42 230	43 992	47 569	52 705	54 058
Arable land	78 093	76 544	62 908	57 763	58 302	54 564	55 923	57 875	65 556	66 877
Permanent pastures	32 447	24 817	22 040	22 302	24 389	27 316	27 580	32 969	36 838	37 878
Purchase according to §8	66 370	24 193	43 430	37 872	42 395	44 527	52 899	68 291	72 407	91 099
Arable land	68 707	28 641	50 730	45 671	50 957	50 842	56 831	78 113	83 244	105 730
Permanent pastures	19 085	14 634	24 945	25 448	28 267	31 901	42 966	51 814	55 876	70 941

Source: Land Fund of the Czech Republic

Table 3 revealed that there has been a change in prices of land purchased according to Section 7 and Section 8 since 2005. By that time, an average price did not differ between the above mentioned categories (with the exception of 2001). Since 2005, the price of land purchased to other people (according to Section 8) has been significantly higher (by 68.5 % in 2009). The greatest difference occurred in the category of permanent pastures which was sold for prices bigger by approximately 15 % in 2002–2005. After 2005, the price of permanent pastures increased by 52–87 % (within the comparison of Section 7 and 8) — see Table 3.

The survey of the SGAFF is based on purchased land not owned by state as the SGAFF extends loan for such purchases. The purchase of 47 738 ha of land was supported within the framework of the Land Purchase Programme to 2008. This type of land is largely used for farming purposes. Comparing different ways of the average land price valuation in the Czech Republic revealed the highest price of land up to 1 ha in which different use than farming is very likely.

Table 4 Price of farmland supported by the SGAFF (CZK / ha)

	2004	2005	2006	2007	2008	2009
Support to purchase of private land	38 484	43 504	42 693	52 741	46 851	69 938

Source: Support and Guarantee Agricultural and Forestry Fund (SGAFF)

Prices of land purchased with the SGAFF support in 2005–2007 with differences smaller than 10 % were the most similar to the survey of the Czech Statistical Office that consider neither the land use nor the parcel size (Table 4). The differences between the results of survey conducted by the Czech Statistical Office and state-owned land purchases ranged between 6 and 15 %.

2.2 AVERAGE LAND RENT CLASSIFIED ACCORDING TO PRODUCTION AREA

Compared to the EU, the rented land in the Czech Republic constitutes a big share in the total area. In 2008, the share amounted to 87 % of farm land and 95 % of arable land. The situation of land owners not farming their land is specific for the Czech Republic with no similar situation in any other state of the EU (Ministry of Agriculture, 2009) was reported. In the Czech Republic, the land rent is established by law and unless the owner and the renter agree differently the land rent amounts to 1 % of the official price of farm land.

Table 5 Growth of land rent according to production area (CZK / ha)

Production area	2003	2004	2005	2006	2007	2008	2009	I2009 / 2003	Av. growth rate
Maize	1 058	1 136	1 273	1 356	1 491	1 624	1 747	1.65	1.09
Beet	1 100	1 247	1 434	1 452	1 534	1 600	1 845	1.68	1.09
Potato	456	508	617	673	752	879	1 011	2.22	1.14
Potato and oats	354	419	508	538	625	765	885	2.50	1.16
Mountain	211	329	376	443	451	510	670	3.17	1.21
CZE	693	782	890	963	1 058	1 134	1 307	1.88	1.11

Source: Farm Accountancy Data Network (FADN)

An average land rent based on the FADN survey amounted to 1 307 CZK/ha in 2009. There were significant differences in the land rents in different production areas. There was only a small difference between maize and beet area while the land rent in potato area amounted to 43–58 % of land rent in maize area, land rent in potato and oat area amounted to 31–51% of land rent in maize area and land rent in mountain areas amounted to 18–38 %. The comparison of the land rent growth rates revealed that the increase was due to worse production area decreasing the difference of the land rent in various production areas (Table 5). The land rent in maize and beet area increased by 65 % and 68 % compared to 2003 while it went up more than three times in mountain areas. Faster increase of the land rent in mountain areas is influenced by compensatory payment in the LFA.

Table 6 The land rent according to LFA (CZK / ha)

LFA type	2001	2002	2003	2004	2005	2006	2007	2008	2009	I2009 / 2001	Av. growth rate
Mountain	231.7	252.0	246.6	339.5	394.6	446.0	499.9	571.3	764.8	3.30	1.16
Other than mountain	396.2	412.6	463.2	503.0	542.6	576.7	685.7	752.1	922.0	2.33	1.11
Partial	792.9	640.3	697.2	674.4	737.2	762.0	843.4	857.0	1 067.0	1.35	1.04
Outside LFA	959.8	1 019.0	1 042.0	1 196.0	1 373.0	1 417.0	1 492.0	1 608.0	1 805.0	1.88	1.08

Source: Farm Accountancy Data Network (FADN)

Discussion on the LFA land rent revealed the same trend as in classification by production area. An increase of the land rent amounted to 88 % outside the LFA in 2001–2009, while in the mountain LFA it amounted to 230 % with double average growth rate in the mountain area (Table 6).

2.3 Relationship between the land rent and market price of land

The ratio between the land rent and market price of rent is called the capitalization rate of farmland. The payback period that is reciprocal to the capitalization rate is more instructive defining the number of years necessary to pay the price of land in the land rent.

Table 7 Capitalization rate of farmland and payback period

	2003	2004	2005	2006	2007	2008
Price of FL (CZK / ha)	48 481.00	49 791.00	48 279.00	46 806.00	51 848.00	59 257.00
Land rent (CZK / ha)	693.00	782.00	890.00	963.00	1 058.00	1 134.00
Capitalization rate (%)	01.43	01.57	01.84	02.06	02.04	01.91
Payback period	69.91	63.69	54.23	48.58	49.01	52.26

Source: Price of Land — CZSO, Land Rent — FADN

In the Czech Republic, the capitalization rate ranged between 1.43 % and 2.06 % (Table 7). The impact of the land rent on average capitalization rate is presented in Figure 1. The degree of this linear relation expressed as the correlation coefficient of 0.86 has revealed significant statistical dependence.

Figure 1 Relation of capitalization rate and land rent
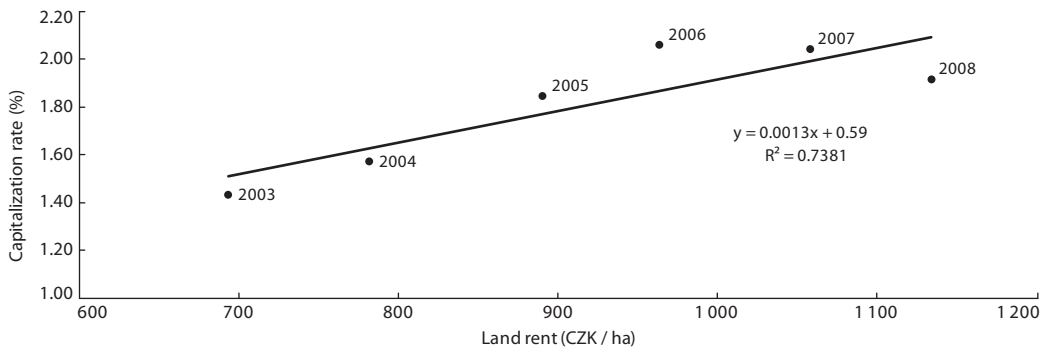
Source: Price of Land — CZSO, Land Rent — FADN

2.4 Time value of money and the capitalization rate

The price of a parcel should express the bearing interest of the land rent as well as the land rent in a number of years. It is important to compare interest rates of long-term loans with the capitalization rate. The same interest and capitalization rate mean efficient purchase of land. Long-term loans are quite high in different states which do not fit the creation of land price as presented below. An adequacy of bank interest rate and the capitalization rate can be assessed by the real discounted payback period. Discounted payback period:

$$n = \frac{\log \dfrac{P_0}{P_0 - r \cdot CP_0}}{\log (1 + r)}, \tag{5}$$

with P_0 = land rent in the period 0, r = interest rate, CP_0 = land price in the period 0 (per 1 ha). The above mentioned equation can be solved only if the capitalization rate will be greater than the interest rate. This condition is connected with many restrictions. If it is required when calculating the average payback period to use the average interest rate for each year, the interest rate in every year must be less than the rate of capitalization in that particular year (Table 8).

Table 8 Number of years necessary to pay the price of farmland by the land rent

	2003	2004	2005	2006	2007	2008
Capitalization rate	1.43	1.57	1.84	2.06	2.04	1.91
Payback period for 0.5 % interest rate	86.00	77.00	63.00	56.00	56.00	61.00
Payback period for 1 % interest rate	121.00	102.00	79.00	67.00	68.00	74.00
Real interest rate	4.12	4.82	3.54	3.80	4.30	4.63
Maximum interest rate that is possible to calculate	1.43	1.57	1.84	2.06	2.04	1.91
Payback period for maximum interest rate	574.00	585.00	336.00	271.00	419.00	333.00

Source: CZSO

Table 8 shows that in any year is not possible to use long-term interest rate as the capitalization rate is significantly lower. In addition, the discounted payback period is unreal even for the applicable maximum return on the appropriate level of capitalization rate. Payback period, the discounted payback period of purchased agricultural land, respectively, ranged from 49 to 70 years in the monitored years. Payback period discounted by one percent ranged from 67 to 121 years, i.e. it is almost twice as long.

The domain of the discounted payback period can be defined by these limits. The lower limit of discounted payback period is determined by the number of years, corresponding to a zero interest rate and thus the inversed capitalization rate. Upper limit of the discounted payback period for the capitalization rate is the interest rate approaching the capitalization rate from the left. Determination of discounted payback period is a question of subjective decision-making. In this respect, you can program the price of land so that for any given level of capitalization rate the expected return can be achieved (Table 9).

Table 9 Discounted payback period in relation to the capitalization rate and interest rate

Capitalization rate (Land rent / market price) in %	Payback period for zero interest rate (years)	Selected interest rate in % (CR — 0,1)	Payback period for selected interest rate (years)
1	100.00	0.9	257.0
2	50.00	1.9	159.2
3	33.33	2.9	119.0
4	25.00	3.9	96.4
5	20.00	4.9	81.8
6	16.67	5.9	71.4
7	14.29	6.9	63.7
8	12.50	7.9	57.6
9	11.11	8.9	52.8
10	10.00	9.9	48.8
1.4304 (2003)	69.90	1.329	201.4
2.0584 (2006)	48.60	1.957	156.0

Source: Own calculation

2.5 Use of the Gordon's model to assess the discounted payback period

Other models based on capitalization rate, which can be used are the Gordon models. Their use is proposed for example by Chavas and Shumway (1981). In terms of international comparisons, the single Gordon model with one continuous growth rate of rents is suitable.

$$CP_n = \frac{P_0 (1 + g)^n}{r - g}. \tag{6}$$

By this model a discounted payback period as well as the land price is possible to asses,

$$n = \frac{\log\big(CP_n (r - g)/P_0\big)}{\log (1 + g)}, \tag{7}$$

or acceptable interest rate:

$$r = \frac{P_0 (1 + g)^n}{CP_n} + g, \tag{8}$$

where CP_n = land price after n years; P_0 = land rent in the period 0; g = growth rate of land rent; r = interest rate; n = discounted payback period in years. The above mentioned analysis revealed that it is impossible to reach appropriate interest rate within mentioned prices and land rent. The calculation of the real interest rate in 2004–2008 is presented in Table 10.

Table 10 Real interest rate based on the land price and land rent

Land rent	2003	693.5
Growth rate of land rent (g)	2003–2008	0.1033
	2004	49 791
	2005	48 279
Land price	2006	46 806
	2007	51 848
	2008	59 257
	2004	11.87
	2005	12.08
Maximum interest rate r (%)	2006	12.32
	2007	12.32
	2008	12.25

Source: Own calculation

Real interest rate created by comparing the land rent growth rate and land price showed inappropriately high interest rates. It is very likely that the growth rate of price will always be less flexible compared to the growth rate of price which will always be connected with inappropriate growth of interest rate.

To assess the relation between the land rent dynamics and the land price, the capitalization ratio can be used. Its value and dynamics in relation to selected interest rate show if it is profitable to sell the land. Regarding the analysis, it is useful to assess the appropriateness of the land rent growth rate from the following views:

1. To what extent does the real adjustment of land price affect the capitalization rate of given growth rate within certain interest rate?
2. How does the inflation in each year influence this relation?

2.6 The influence of the land rent growth rate on adjusted land price

As a criterion for the assessment of the first task, adjusted real land prices based on the Gordon model is possible to use. This criterion assumes that the growth rate affects the return on rents, but rents will offset dynamics of the dynamics of land prices. Verification of the reality of this condition was comparison of the actual price with the modified price. The average growth rate was calculated for the period of 2003–2008.

$$UCP = \sum_{n=1}^{N} \frac{P_{08} \, (1 + g)^n}{(1 + r)^n} . \qquad (9)$$

Table 11 Influence of the land rent increase on the adjusted land price

Land rent 2008	P_{2008}	1 134
Growth rate	g	0.103
Interest rate of long-term loans 2008	r	0.046
Land price 2008	CP_{2008}	59 257
Adjusted land price	UCP	324 270
Difference	$UCP{-}CP$	265 013
Ratio	$UCP\,/\,CP$	5.47

Source: Own calculation

In terms of adjusted discounted land price (UCP), compliance with the higher growth rates is unrealistic, since the adjusted discounted price of land is 5.5 times higher than real price in 2008 (Table 11). It is becoming clear that the price of land is not able to follow the dynamics of growth rate of rents. The high growth rate of rent has been caused by excessively low rents in 2003. As a result of subsidies and price changes, the profit has improved influencing the growth rate of the land rent. Unbalanced dynamics of land prices leads to the fact that cases of high growth rate of rent is the advantage of the buyer, whereas low rents is an advantage to the seller. This discrepancy may also cause a reluctance to sell land.

2.7 The influence of inflation on adjusted land price

The minimum requirement for the discounted price of land is that the inflation rate should not affect the pricing adversely. It turns out that when the average inflation rate (i) is less than 5 %, the static payback period may not increase the price of land. Inflation rate is reliably covered with the level of capitalization. The impact of inflation is assessed by comparing the land price in 2008 in relation to the modified price discounted by fixed-rate loans. Discounted adjusted price of an average inflation rate is equal to:

$$UCP = \sum_{n=1}^{N} \frac{P_{08} \, (1 + i)^n}{(1 + r)^n} . \qquad (10)$$

Table 12 Influence of inflation on adjusted land price

Land rent 2008	P_{2008}	1 134
Average inflation	i	0.0257
Interest rate of long-term loans 2008	r	0.046
Land price 2008	CP_{2008}	59 257
Adjusted land price	UCP	36 322
Difference	$UCP{-}CP$	−22 935
Rate	$UCP\,/\,CP$	0.61

Source: Own calculation

Application of the average rate of inflation for the years 2003–2008 for a static payback period does not interfere with calculation of land prices, as the average rate of inflation is less than the level of capitalization. Applying the growth rate of inflation for the other constant conditions causes a decrease of land prices. Compared to the price of land in 2008, adjusted discounted price of land is by 39 % lower than the price in 2008 (Table 12). This reduction is significant. Low average inflation, along with lower price also means lower rates of capitalization and consequently longer discounted payback period.

2.8 Acceptable growth rate of land rent including the inflation rate for different price models

The impact of the two previous criteria raised the following question: what is an acceptable average growth rate of land rents for the capitalization rate at which the price of land would not change or increase in prices would be acceptable. Table 13 shows the acceptable growth rate of rent for the price of land in 2008 and 1.1 multiple up to 1.5 multiple of that price.

Table 13 Average growth rate of land rent in 2008 price and its multiples

	g	Capitalization rate	Payback period
For 2008 price	0.0465		
For 1.1 multiple of 2008 price	0.0502	0.0211	47
For 1.2 multiple of 2008 price	0.0535	0.0228	44
For 1.3 multiple of 2008 price	0.0565	0.0244	41
For 1.4 multiple of 2008 price	0.0592	0.0258	39
For 1.5 multiple of 2008 price	0.0617	0.0272	37

Source: Own calculation

Assuming normal development, i.e. that the price of land in 2008 could increase by 50 %, the capitalization rate from 2.1 to 2.7 % and the discounted payback period is also relatively constant. The average growth rate of rent higher than 5 %–6 % would have induced an excessive increase in prices of land, or would lead to a mismatch between the development of rents and land prices. Such a situation would be acceptable only for a transitional period and could lead to a slowdown in trade with land.

CONCLUSION

Many institutions have been dealing with establishing a market price of land in recent years. Unfortunately, their estimates of market land prices vary considerably. The estimated average market price of land in addition to a targeted survey requires a detailed classification of land prices, not only from the aspect of the quality of the land and its size; but also considering the type of its future use, see e.g. Snyder et al. (2007), Chavas and Shumway (1981) and others. A big share of rented land in the Czech Republic (87 % of agricultural land and 95 % of arable land) requires an assessment of the relation of rent and land prices. This relation in addition to other factors affects market with the rented land. The average annual growth rate of rent outside the LFA was 108 %, 116 % in mountain area and 111 % of other LFAs.

Capitalization rate of agricultural land has been increasing continuously since 2003 (1.43) to 2006 (2.06) showing a slight drop in the following years. In 2008, the capitalization rate was 1.91 %. The payback period, which is the reciprocal of the capitalization rate in the range of 52–69 years and corresponds to the standard of developed European states. The discounted payback period due to low level of capitalization is not the solution within higher interest rates, keeping unreasonable price of land with low interest. The high rate of the land rent growth in Gordon's model cannot be reconciled with the level of capitalization that adjusted land prices were real.

The above relations result in the fact that regarding the capitalization rate it is currently advantageous to buy farmland, but it is disadvantageous to sell. On the other hand, there may be other reasons to sell land not mentioned in the paper. The settlement of relations between rents and capitalization rate by increasing the land price is limited while stabilization of the growth rate of land rent is more acceptable.

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