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The Role of Bounded Rationality in Farm Financing Decisions
– First Empirical Evidence –

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Abstract

Farmers do not often change from their house bank to another bank, even if the competing banks offer better conditions. This "reluctance to switch" can be explained, on the one hand, by the transaction costs resulting from such a change of business relation. On the other hand, it may be the result of bounded rationality. The results of a survey of North German farmers show that they are indeed bounded rational borrowers. They greatly underestimate the monetary disadvantages which are caused by the higher interest rates for loans from their house bank. In other words: They do not switch bank even if their individually perceived transaction costs are already "covered" by the lower interest rates of the alternative loan offer.

Key words

Financing behavior; bounded rationality; switching costs

JEL classification

Q12; G32; C91

1. Introduction

Around 420 € per hectare are invested in German agriculture every year. As a result of technological progress and relative factor price changes, farmers will spend even more money in the future on investment goods. Since there is no alternative to leverage for many farms and especially for growth farms, financing decisions are becoming increasingly important.

Financing conditions often vary greatly from bank to bank. Due to the high profit impact of the cost of capital, farmers should make funding decisions just as carefully as investment decisions; i.e. they should be thoroughly informed with regard to both their need for capital and the cost of capital, as resulting from differing loan offers.

In many cases farmers have business relations with a single bank only (their "house bank"). They do not switch to another bank, even if it offers a higher rate of credit interest or a lower rate of debit interest. This "reluctance to switch" is possibly the result of transaction costs (cf.

WILLIAMSON, 1985) that may arise for two reasons: firstly, the search for alternative loan offers incurs information costs. Secondly, as a result of Basel-II, the credit approval process has become risk-oriented, i.e. borrowers are evaluated systematically in terms of their business risk (rating). A higher rate of interest has to be paid for a worse rating (higher risk). Switching to another bank, therefore, causes a great deal of paper work for the farmer who has to document the farm's economic reliability and profitability to the new bank, whereas the "house bank" already has this information at its disposal. In addition, farmers may anticipate future advantages from their "house bank" such as a preferential treatment and a more favorable rating in the future as a result of having been a good business partner for a long period (cf. PLÖTSCHER, 2001: 140).

However, "reluctance to switch" may also result from suboptimal decisions being made by farmers with incomplete information and limited cognitive abilities in processing information. SIMON (1956) defines this as a *"bounded rationality"*. GIGERENZER (2002) stresses that many people are not able to interpret relative figures such as percentages correctly due to their "figure blindness". This is relevant with regard to financing decisions, as banks use the effective rate of interest (a relative figure) so as to enable comparisons to be made between different loans. Bounded rationality may thus be revealed by farmers not recognizing the monetary differences between alternative loan offers when the information is presented as a difference in the effective rate of interest.

Set against this background, this paper investigates the behavior of farmers in financial decision-making. On the basis of a written survey, two central research questions are examined which, to our knowledge, have not previously been investigated empirically: firstly, do farmers make bounded rational financing decisions? If so, to what extent? Secondly, which factors explain bounded rationality? The results of the investigation should enable preliminary decisions to be drawn as to whether and how systematic decision-support can improve farmers' financing decisions

2. Data basis and research design

The basis for the analysis is a written survey of North German farmers carried out in the middle of the year 2008. Out of 280 questionnaires, 73 could be included in the evaluation. However, not all of the latter questionnaires contain a complete set of information.

Of the 73 surveyed farms, 96% are farmed on a regular basis and 4% on a sideline basis. 80% of the farms are predominantly engaged in cash cropping, 15% are engaged in mixed crop and livestock activities, and 5% are livestock farms. The average farm acreage is 214 ha. The average leverage amounts to 16%. On average, farmers are 48 years old. In brief one can thus summarize that our analysis is mainly based on a survey of rather large farms which are managed on regular basis by experienced farm managers.

In addition to general information on the farm (legal form, type of business, production capacities etc.), socio-demographic data and various opinion-based statements, information related to actual financing behavior was gathered. Above all, however, farmers were "experimentally" subjected to the following decision-making situation: a building investment of €250,000 is to be made. €100,000 can be provided by equity. To finance the remaining €150,000, the house bank offers an annuity loan at an interest rate of 6% p.a. and with a maturity of 15 years. Another bank is offering a competitive alternative financing package. Accepting this package requires the farmer to switch from his house bank to the new bank. The following questions were asked to assess the farmers' willingness to pay (WTP) for continuing business with the house bank:

1. *Absolute WTP*: if your house bank were to charge acquisition fees, what is the maximum amount you would accept, in the case of a €150,000 loan, before you would change to an alternative bank with no fees and otherwise equal conditions (e.g. interest rate, maturity)?
2. *Relative WTP*: if an alternative bank were to offer you a loan at a lower interest rate than your house bank, how many interest points below that of your house bank do you accept, under otherwise equal conditions (e.g. acquisition fees, maturity), before you would switch to the new bank?

Bounded rationality is often linked to limited information processing capacity *and* incomplete information (cf. SIMON, 1956). Since the absolute WTP and the relative WTP for continuing business with the present house bank were captured by different framings of the WTP questions which were answered separately by each decision-maker, the limited information processing capacity can be investigated independently of the available information: the absolute WTP provides information on how the individual farmer subjectively assesses the level of the switching costs. Assuming this level as given, the difference between the absolute WTP and the capitalized relative WTP reveals the limited information processing capacity.

3. Identifying bounded rationality

In 64 of the 73 questionnaires examined, farmers quantified the absolute WTP (in €) *and* the relative WTP (in percentage points). Seven of the 64 farmers stated that switching from their house bank was out of question for them. For the remaining 57 farmers, the increased interest payments resulting from their relative WTP for staying with the house bank were capitalized using the lowest cost of capital for discounting. In other words, we calculated "the maximum monetary disadvantage" (present value) that the farmers accepted in the form of increased interest payments for the house bank loan.

Fig. 1 shows the "absolute WTP" and the "capitalized relative WTP" of the 57 farms. The farms were arranged in ascending order, according to the difference between the capitalized relative WTP and the absolute WTP. This framing-related difference is referred to below as "DELTA-WTP". Eight farmers would switch from their house bank as soon as it demanded higher acquisition fees. This corresponds to an absolute WTP for staying with the present house bank of zero. Only two of these eight farmers also have a capitalized relative WTP of zero and would switch as soon as the interest rate of the house bank became higher. For 51 out of 57 farmers (89%), the stated absolute WTP is below the capitalized relative WTP. The fact that 89% of the farmers underestimated the monetary disadvantage of a higher interest rate provides first evidence that farmers - due to their cognitive limitations - are prone to suboptimal decision-making when choosing between loans with different interest rates.

If the farmers were rational, then the absolute WTP for staying with the present house bank should correspond to the capitalized relative WTP. Of course, we did not expect that the DELTA-WTP equals zero. Even experts will find it impossible to calculate the monetary disadvantage of a higher interest rate by mental arithmetic. However, frequently stated combinations, as "€300 of absolute WTP and 1% relative WTP", cannot be explained by deficits in compound interest calculation alone. In the example at hand (i.e. for a loan of €150,000), the value of the increased debt service in the first year alone is higher than the stated absolute WTP.

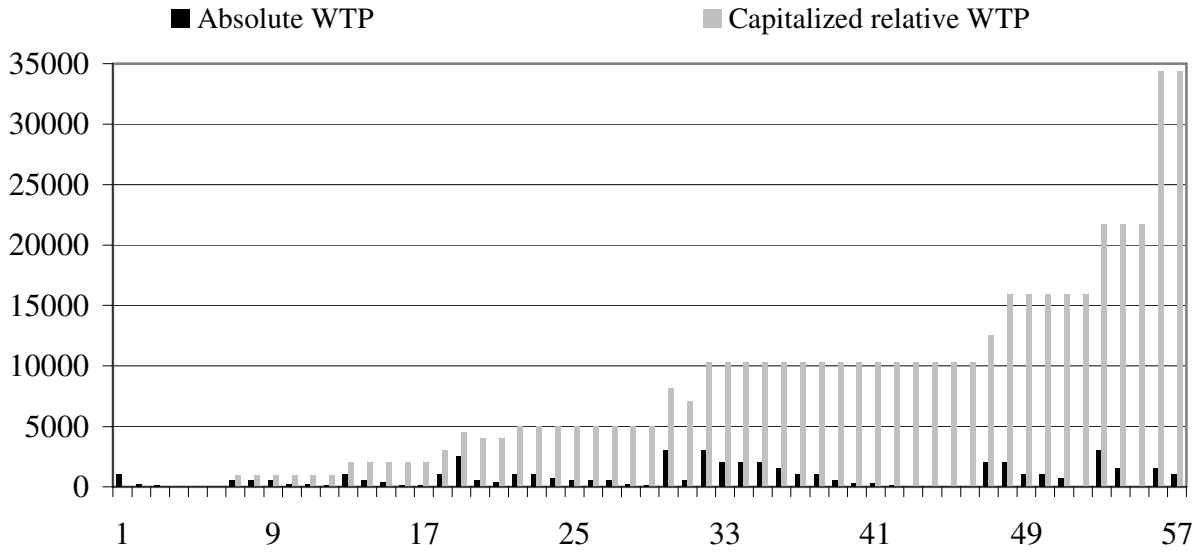

Fig. 1. Absolute WTP and capitalized relative WTP of farmers in € (in ascending order, according to the difference between the two variables)

On average, the absolute WTP stated by the farmers for staying with their present house bank amounts to €796 (standard deviation: €825). The average relative WTP comes to 0.78% (standard deviation: 0.70%). For a 15-year annuity loan of €150,000 provided at an interest rate of 6% p.a., a difference in interest of 0.1% causes a monetary disadvantage of nearly €1,000. The difference in interest of 0.78% that the farmers would accept on average before switching to the new bank corresponds to a monetary disadvantage of €8,195. The discrepancy between the average absolute WTP of €796 and the capitalized relative WTP of €8,195 reflects the extent of their bounded rationality.

With a view to the economic consequences of such bounded rational financing behavior three different situations can be distinguished. Fig. 2 illustrates the facts using a farmer portrayed as the average decision-maker of the surveyed sample.

- Area A: the farmer observes only loan offers with effective rates of interest less than 0.08% below that of his house bank. In accordance with his bounded rational decision criterion (i.e. a switching trigger of 0.78%), he will not switch to another bank. However, this is not a wrong decision, as his (subjectively perceived) switching costs of €796 are indeed not covered by the difference in interest payments ("right for the wrong reasons").
- Area B: the farmer observes loan offers with effective rates of interest between 0.08% and 0.78% below that of his house bank. In accordance with his bounded rational switching trigger of 0.78% he will not switch yet. However, this is a wrong decision, as his (subjectively perceived) switching costs are already covered by the capitalized difference in interest payments.
- Area C: the farmer observes loan offers with effective interest rates of more than 0.78% below that of his house bank. He will switch to a new bank and thereby not make a mistake, as his (subjectively perceived) switching costs are actually covered by the difference in interest payments ("right for the wrong reasons").

A comparison of means shows that the discrepancy between the absolute WTP and the capitalized relative WTP is significant with a probability of error of less than 1% (p-value = 0.00). That is to say, if one "sells" the disadvantage of the house bank's loan offer in the form of a percentage, farmers will accept a much greater monetary disadvantage than in a situation where they are directly provided with the information in the form of an absolute monetary value. The effective interest rate which, when correctly interpreted, makes the cost of capital transparent, is thus only of *very* limited value in practical decision support for farmers. In other words: even financing conditions that are transparently communicated in principle may become non-transparent due to limited information processing capacities. This indicates a need for objective financing advice.

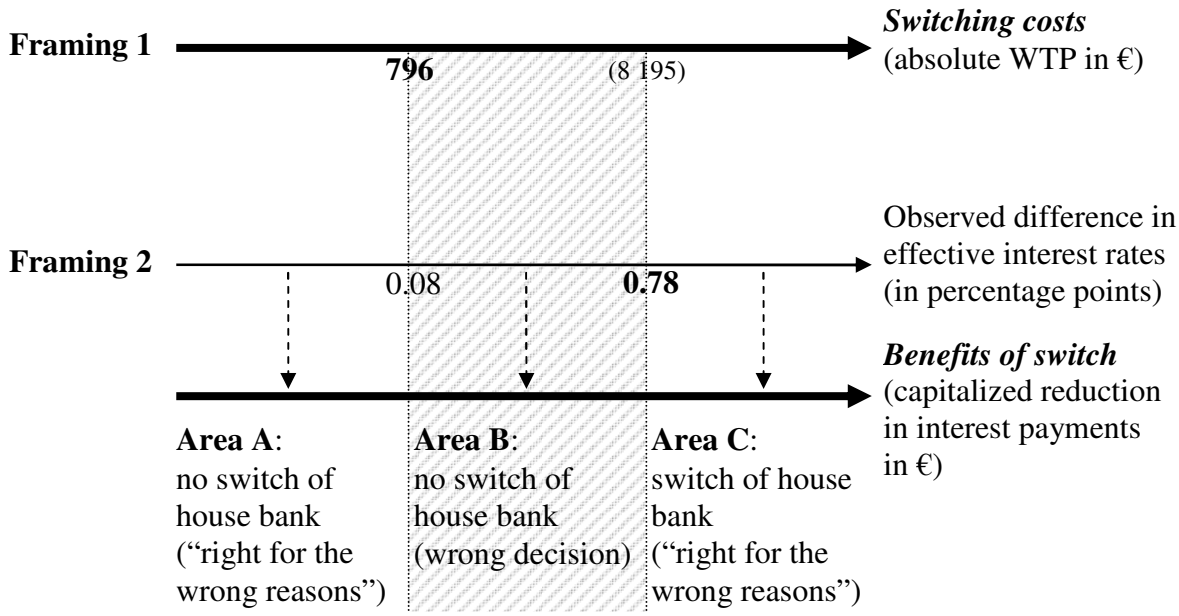

Fig. 2. Consequences of bounded rational financing behavior for a farmer portrayed as the average decision-maker of the surveyed sample

4. Explaining the reluctance to switch

In order to successfully support farmers' decision-making it is not sufficient to merely identify the potential for business improvements. Effective communication with the managers is also essential. For this, it is necessary to understand how they make their assessments and for what reasons they act in a bounded rational way. We will therefore first use a regression analysis to examine which factors the absolute WTP and thus the level of subjectively assessed switching costs depend on. Then we will analyze which factors influence the DELTA-WTP and thus the limited information processing capacity.

4.1 Decision-theoretic analysis of switching costs and bounded rationality

To explain the subjective assessments regarding the level of switching costs or the absolute WTP, the following factors seem relevant from a decision-theoretic point of view:

(a) *Rating disadvantages*: the convenient offer could be a "misleading bargain offer" by the new bank. In the future, it my provide loans under conditions "usual in the market". The present value of the expected future rating disadvantages represent switching costs, be-

cause it is not possible to switch back to the previous house bank without suffering disadvantages (cf. MÜNCHOW, 1994: 113f).

(b) *Individual efforts*: additional switching costs are incurred by information costs. Before switching, the farmer must first search for alternative loan offers. In addition, documents (e.g. annual statements) must be prepared and presented to the new bank (search, information and bargaining costs; cf. VOGT, 1997: 19f).

(c) *Realistic assessment of switching costs*: farmers who have switched to another bank before may better be able to assess the costs than ones with no previous experience in switching. Reports on wrong assessments of switching costs are, for instance, provided in the context of switching from conventional to organic farming (cf. SCHNEIDER et al., 2002).

(d) *Tradition*: in addition to economic aspects, further preferences may play a role. For instance, maintaining a long-standing relationship to the house bank could be of value to the farmer (he knows the contact person well, trusts him etc.). That is to say, the personal relationship itself may have an intrinsic value and the farmer may derive procedural utility from the collaboration which goes beyond the results achieved (cf. FREY et al., 2004).

Table 1 shows the variables drawn on as indicators for the relevant factors from which it is assumed that they have an influence on the absolute WTP. In addition, the expected direction of effect is illustrated and briefly substantiated.

Table 1. Variables and hypotheses to explain the absolute WTP (N=45)

	Variable	Average	Standard deviation	Expected direction*	Explanation
	Dependent variable: absolute WTP**	**865.6 €**	**797.2 €**	**–**	represents the individually estimated switching costs
Independent variables	(i) Duration of the business relationship (in years)	27.6	14.4	↑	qualitative component of the rating process which depends on the duration of the business relationship
	(ii) Proportion of debt	17.5 %	19.8 %	↑	the higher the proportion of debt, the more valuable is a positive evaluation through the house bank
	(iii) Internet use for finance information***	-0.2	1.4	↓	search costs for alternative offers are lower
	(iv) Number of business relationships to different banks (0: one Bank, 1: more than one bank)	62 % have business relationship to more than one bank		↓	information costs as well as work effort for documentation (balance sheets etc.) are lower
	(v) Farmer has already switched from house bank in the past (0: no, 1: yes)	17.8 % have switched		?	are absolute WTP higher or lower without experiences? (i.e. are switching costs over- or underestimated?)
	(vi) Age of the farmer (in years)	48.9	9.9	↑	preservation of a long-standing relationship provides intrinsic utility

* ↑ absolute WTP increases; ↓ absolute WTP decreases; ? no a priori hypothesis on the direction of effect.
** The sample size differs from those in Section 3 due to the independent variables under consideration.
*** Measured on a 5-scale between -2 and +2.

The two independent variables first mentioned are indicators of (a) rating disadvantages, the third and fourth variables of the (b) individual effort, the fifth variable of a (c) realistic assessment of switching costs and the sixth variable of (d) tradition. To explain the absolute WTP, a multiple linear regression analysis is performed:

$$y_i = \sum_{j=1}^{J} a_j \cdot x_{ij} + \chi_i \text{, with } i = 1, 2, ..., I \tag{1}$$

Here y_i indicates the dependent variable of the ith observation and a_j the corresponding regression coefficient for the jth independent variable x_{ij}. χ_i denotes the error term of the regression. The regression coefficients a_j are estimated using the method of Ordinary Least Squares.

A second regression analysis investigates how DELTA-WTP can be explained. Here the following factors seem relevant, from a decision-theoretic point of view.

(a) *Education*: it is to be expected that farmers are more rational and that their absolute and relative WTP are "more" concordant when they have more economic knowledge and better analytical and planning skills (including finance mathematics).

(b) *Active search for knowledge improvement*: using the opportunities for information, advice and further training with regard to financial matters leads to a change in the level of farmers' knowledge. It should also lead to a reduction of bounded rationality. It should be noted, however, that "advice" from the house bank only improves the level of knowledge *if* it is objective and independent of any interests in keeping the customer.

(c) *Satisfaction with the house bank*: satisfaction with the house bank and long-standing trust that it "will provide fair and convenient financing" can lead to the fact that differences in interest rates, as observed, for instance, in the economic section of the daily newspaper, are mentally played down ("self-manipulation of beliefs"; cf. BROCAS and CARRILLO, 2003). In other words: avoiding cognitive dissonance (cf. FESTINGER, 1957; AKERLOF and DICKENS, 1982) farmers, who want to stay with their present house bank, may not want to realize that a higher interest rate which looks small (in terms of figures) actually corresponds to a relatively large monetary disadvantage because such a knowledge would "hurt".

Table 2 shows variables drawn on as indicators for the relevant factors from which it is assumed that they have an influence on DELTA-WTP. In addition, the expected direction of effect is illustrated and briefly substantiated.

Table 2. Variables and hypotheses for explaining DELTA-WTP (N=49)

	Variable	Average	Standard deviation	Expected direction*	Explanation
	Dependent variable: DELTA-WTP**	**7,342.6 €**	**6,922.4 €**	**–**	represents the limited cognitive abilities in processing information
Independent variables	(i) Graduate degree (0: no, 1: yes)	42.9 % have studied		↓	farmers with graduate degree have a higher level of knowledge
	(ii) Intensity of house bank consultancy***	1.1	1.1	?	house bank consultancy increases/decreases the farmers' knowledge?
	(iii) Internet use for finance information***	-0.2	1.4	↓	acquisition of "objective" knowledge improves the ability to judge
	(iv) Willingness to recommend the house bank***	0.8	1.0	↑	satisfaction with the present business relationship indicates the level of "self-manipulation of beliefs"

* ↑ DELTA-WTP increases; ↓ DELTA-WTP decreases; ? no a priori hypothesis on the direction of effect.
** The sample size differs from those in Section 3 due to the independent variables under consideration.
*** Measured on a 5-scale between -2 and +2.

The first independent variable is an indicator of (a) education, the second and third variables of (b) active search for knowledge improvement and the fourth variable of the (c) satisfaction with the house bank. To explain the DELTA-WTP, a multiple linear regression analysis is performed in accordance with equation (1).

4.2 Results

Table 3 shows the results of the regression analyses performed to explain the absolute WTP, on the one hand, and the difference between the absolute and capitalized relative WTP, on the other.

Table 3. Results of the two regressions

Independent variable	Regression 1 absolute WTP (N=45)		Regression 2 DELTA-WTP (N=49)	
	coefficient	p-value	coefficient	p-value
Duration of the business relationship	10.4	0.17	–	–
Proportion of debt	11.3	0.04	–	–
Internet use for finance information	-195.0	0.02	-1,558.9	0.02
Number of relationships to banks	-437.8	0.07	–	–
Already switched from house bank	630.6	0.05	–	–
Age of the farmer	10.0	0.09	–	–
Graduate degree	–	–	2,477.3	0.11
Intensity of house bank consultancy	–	–	3,476.6	0.00
Willingness to recommend house bank	–	–	1,991.7	0.03
R^2 (adjusted R^2)	0.68 (0.64)		0.63 (0.60)	

According to the F-test, for both regression models a misspecification can be excluded with a probability of error of less than 1%. They also have a high explanatory content, with an R^2 of 0.68 and 0.63 and an only marginally lower adjusted R^2.[1]

In regression 1 (absolute WTP) all coefficients - with the exception of the one for the "duration of the business relationship" - are significantly different from zero, with a probability of error of less than 10%. The estimated value for the dummy variable "already switched from house bank" is positive: farmers who have switched from their house bank in the past estimate associated costs at €631 higher on average than other farmers. The signs for the other coefficients correspond to the expected directions of effect as indicated in Table 1.

In regression 2 (DELTA-WTP) all coefficients - with the exception of the one for the "graduate degree" - are significantly different from zero, with a probability of error of considerably less than 5%. The sign for "internet use for finance information" corresponds to the expected direction of effect as indicated in Table 2. The positive sign for the farmers' "willingness to recommend" the house bank indicates that satisfaction with the house bank results in an increase in limited information processing capacities ("self-manipulation of beliefs").

[1] In both regression models the constant is not significant (p-value greater than 0.5).

The “intensity of house bank consultancy” is, with a probability of error of less than 1%, positively connected to DELTA-WTP and thus the wrong interpretation of the interest rate. This is a surprising finding, especially given its unambiguousness. Even if we interpret it very cautiously, this means that farmers are at least not enlightened by house bank consultation as to the economic relevance of differences in interest rates. Being slightly less cautious, the result could also be interpreted as an indication of a moral hazard problem in that “consultation” by the house bank contributes to an underestimation of the economic significance of differences in interest rates. Whether this second interpretation is appropriate or not cannot clearly be determined given the information from the survey. This is due to the fact that we cannot control whether the farmers who use intensive house bank consultancy have a particularly low level of finance-mathematical knowledge from the outset.

The positive sign of the coefficient for the dummy variable “graduate degree” is surprising. Farmers with a graduate degree exhibit, on average, a DELTA-WTP which is €2,477 higher than that of farmers without a degree. In other words: with a probability of error of approximately 10%, farmers with a degree have lesser cognitive capacities for processing the relative parameter “interest rate” than those without a degree. This (contra-intuitive) result is very robust even for alternative formulations of the remaining regressors. While we have to acknowledge that we have not differentiated the specialization of the graduate degrees, a working hypothesis for future research to be induced from this result would be that finance-mathematical knowledge is better provided by vocational training than by university studies. In future studies, we should control for the graduate specializations such as engineering, agricultural economics and other studies not related to agriculture at all. Moreover, linking the limited information processing capacities and the graduate degree could represent a “spurious correlation”; i.e. there may be a purely statistical correlation because both are linked to a third variable. This would be the case, for instance, if the surveyed farmers who have a graduate degree predominantly cooperate with the same house bank. Given the information from the survey only allows vague speculations to be made regarding the reasons for this unexpected direction of effect. One could control for this, however, in future studies.

5. Conclusions

Our survey of North German farms on their financing behavior shows that farmers are bounded rational with regard to financing decision-making, as a result of a lack of information processing capacities. 90% of the farmers confronted with an "experimental" decision situation underestimated the monetary disadvantage (present value) of increased interest payments resulting from a higher effective rate of interest. In other words: if information on the cost of capital is only available in the form of interest rates, farmers will accept a much greater monetary disadvantage for remaining with their house bank than if the information is available in the form of an absolute monetary value. The results of this study thus confirm the statement of GIGERENZER (2002) that many people are "blind to figures" and that they find it particularly difficult to correctly interpret relative parameters such as percentage values. On average, framing the question regarding the WTP for staying with the present house bank in the form of "accepted difference in interest rate" provided a WTP ten times greater than framing the question directly in the form of absolute monetary WTP. Thus, bounded rationality can be a significant component in explaining the "reluctance to switch".

The results obtained for the sample of farmers under investigation do not represent a generalizable "finding" with regard to the extent and causes of bounded rationality in farmers' financing decisions. Rather, the results "indicate" that further research needs to be carried out to answer the following questions:

- In the first instance, there is the question of how robust or context-dependent the results are. Other group of farmers and regions would have to be included in future studies to answer this question.
- Does the contra-intuitive relationship between limited information processing capacities and the "level of educational qualification attained" represent a "spurious correlation" or is it really true that finance-mathematical knowledge is better taught in academic studies than by vocational specialist training?
- Does intensive "house bank consulting" actually increase bounded rationality or do farmers with a lower level of knowledge rely more on advice from their house bank?

In addition to further studies on the decision-making behavior of farm businesses, the research question should be asked to which extent bounded rationality leads to wrong financing decisions in the light of the differences in interest rates that are actually observed in practice. There may be situations where the differences in interest rates are either so small or so large that bounded rationality has no negative effect, because decision-makers are "right for the wrong reasons."

As for other empirical studies which are based on samples that could be accessed due to some chance reason, the results of this study should be interpreted with caution in view of the small size and lack of representativeness of the sample. However, given the unambiguousness of the empirical evidence, some conclusions can be drawn that may be of interest to various actors:

1. Banks which offer financial packages that generate lower cost of capital for borrowers could increase their penetrating power in the market if they reviewed their marketing concepts and communicated not only their competitive interest rates but also the absolute cost advantages to borrowers.
2. Management consultants could provide significant added value for farmers if they succeeded in communicating the actual economic difference between financing alternatives with different interest rates.
3. Farmers themselves could better align their decisions with their individual preferences (and eventually increase profits), if they improved their finance-mathematical skills to assess the economic advantages and disadvantages of different loan offers.
4. Policy advisors have to allow for bounded rationality when assessing the impact of public interventions that change the economic environment and thus the relative competitiveness of various actions. Decision-makers may not have the capacity to act rationally. They may consequently not adjust to objectively changed conditions the way normative model predict. Models that are geared at predicting the actual behavioural outcomes of changed conditions must therefore account for bounded rationality. In some instances, a change of

behaviour may require capacity building (e.g. advisory programs aimed at improving the entrepreneurial competence) rather than a change of economic parameters.

Last but not least, it should be noted that decision-support is not about influencing or changing the farmer's preferences. Instead, it is about increasing the farmer's utility by reducing his bounded rationality and enabling him to make decisions that are better aligned with his individual preferences.

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6. References

AKERLOF, G.A.; DICKENS, W.T., 1982: The Economic Consequences of Cognitive Dissonance. In: American Economic Review 72 (3): 307-319.

BROCAS, I.; CARRILLO, J.D., 2003: The Psychology of Economic Decisions: Rationality and Well-being. Oxford University Press, Oxford.

FESTINGER, L. (1957): A Theory of Cognitive Dissonance. Stanford University Press, Stanford.

FREY, B.S.; BENZ, M.; STUTZER, A., 2004: Introducing Procedural Utility: Not Only What, But Also How Matters. In: Journal of Institutional and Theoretical Economics 160 (3): 377-401.

GIGERENZER, G., 2002: Calculated Risks: How to Know when Numbers Deceive You. Simon & Schuster: New York.

MÜNCHOW, M.M., 1994: Bankenmacht oder Kontrolle durch Banken - Eine institutionenökonomische Analyse der Beziehung zwischen Banken und Unternehmen in Deutschland. Pro Universitate Verlag, Sinzheim.

PLÖTSCHER, C., 2001: Finanzierungsrestriktionen bei Unternehmen - Ursachen und Auswirkungen in Deutschland. Deutscher Universitäts-Verlag, Wiesbaden.

SCHNEIDER, R.; SCHNEEBERGER, W.; EDER, M.; FREYER, B., 2002: Umstellungsprobleme werden überschätzt. In: Blick ins Land 06/2002: 29-30.

SIMON, H.A., 1956: Rational Choice and the Structure of Environments. In: Psychological Review 63 (2): 129-138.

VOGT, J., 1997: Vertrauen und Kontrolle in Transaktionen. Gabler, Wiesbaden.

WILLIAMSON, O.E., 1985: The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting. Free Press, New York.