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Determinants of the use of farm risk management strategies

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Abstract

The farmer's choice for different risk management tools is both complex and of great importance to the continuation of the farm business. Hence, studies investigating this choice are vital. Different studies have investigated the determinants of a single risk strategy. Predominantly, the determinants for price risk management strategies, such as future markets and forward contracting, and yield risk management such as crop insurances are well investigated. This study simultaneously investigates the determinants of eleven different risk management strategies shown below. It was found that risk attitude is a significant predictor for the intended adoption of most of the investigated strategies, but other determinants are highly specific.

Methods

In March 2013, a survey was sent to 759 farmers, covering the entire FADN sample of Flanders (Belgium). In April 2013 about 624 surveys were recollected, representing a response rate of 82%. The data from the survey was complemented with the data from the local FADN data set, hence allowing to link individual's intended behaviour and risk attitude with socio-demographic data, farm characteristic and farm economic data. The impact of the determinants on the intended risk behaviour was estimated using Seemingly Unrelated Regression (SUR) and Seemingly Unrelated ESTimation (SUEST):

$$\begin{pmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{pmatrix} = \begin{pmatrix} X_1 & 0 & \cdots & 0 \\ 0 & X_2 & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & X_n \end{pmatrix} \begin{pmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_n \end{pmatrix} + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_n \end{pmatrix}$$

Strategies

Average scores on the question "To what extent are the following strategies a valid and useful option on your farm to manage risks?" from 1 (definitely not) – 5 (definitely) ; N = 614
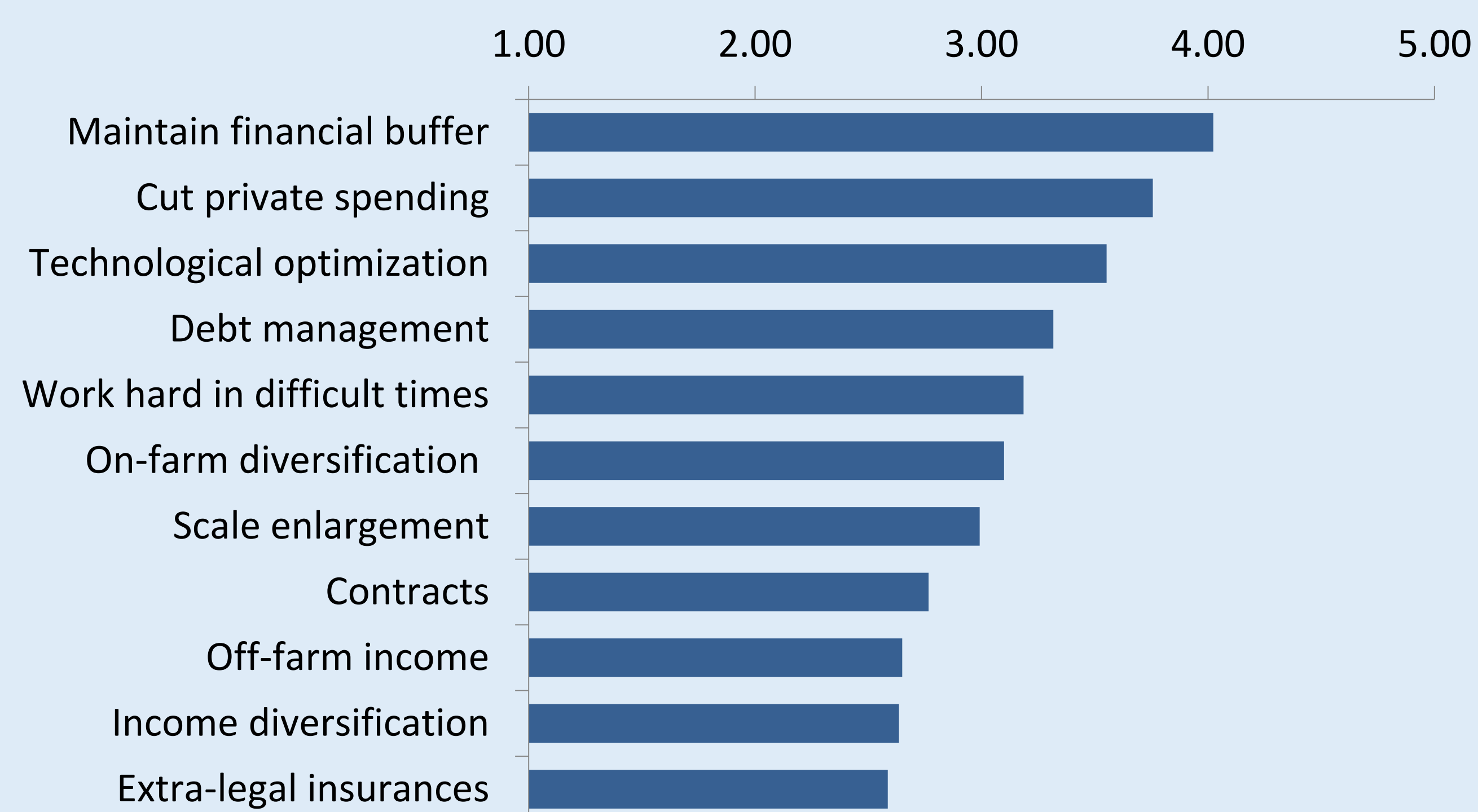
Results

	Maintain buffer	Debt management	Cut private spending	Hard work	Prod. Diversification	Contracts	Extra-legal insurances	Technological optimization	Scale-enlargement	Income Diversification	Off-farm employment
Risk Attitude	**-0.32*****	**-0.59*****	**-0.51*****	-0.07	**0.30****	0.08	0.03	**0.36*****	**0.48*****	**0.33****	**-0.26***
Age	-0.00	-0.01	-0.00	-0.00	-0.01	0.01	-0.01	-0.00	**-0.02****	0.01	0.01
Education Lvl. (*elementary*)	.	.	.	.	.	.	.	.	.	.	.
lower technical / vocational	0.12	0.15	-0.48	-0.11	-0.44	0.21	**0.53***	**0.82***	-0.03	0.25	-0.29
college or university level	0.27	0.07	-0.56	-0.28	-0.30	0.23	0.36	**0.95****	-0.15	0.45	-0.30
Education Spec. (*none*)	.	.	.	.	.	.	.	.	.	.	.
agricultural specialisation	0.11	-0.08	0.02	0.16	-0.08	0.09	-0.05	-0.13	0.09	0.08	-0.12
Solvability	-0.28	**-1.03*****	**0.53***	0.28	-0.27	**0.68***	**0.61***	**0.50***	**0.56***	0.27	0.27
NOI (100k euro)	**0.12*****	-0.00	**0.09***	**0.11***	0.01	0.06	0.07	**0.13*****	**0.11***	-0.10	**-0.21*****
NOI COV	-0.03	-0.23	0.33	**0.46***	0.04	-0.33	0.19	-0.07	0.32	0.28	0.25
Subsidy	0.02	0.02	0.05	0.06	-0.05	-0.04	**-0.09***	**0.10***	0.07	-0.06	0.09
Diversification	0.05	0.08	0.11	0.24	-0.31	-0.33	-0.19	0.13	**-0.73****	-0.24	-0.25
Insurance	-1.91	-2.94	1.99	9.02	-1.61	-4.49	**17.28****	-4.99	**-11.72***	13.23	2.53
Off-farm (*none*)	.	.	.	.	.	.	.	.	.	.	.
off-farm income	0.16	**0.22***	0.10	-0.02	0.08	**0.35****	0.19	0.17	0.01	0.22	**1.08*****
R^2	0.07	0.16	0.09	0.05	0.05	0.05	0.09	0.17	0.20	0.05	0.22

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Conclusions

Our results suggest that farmers consider the extensively studied risk management strategies such as contracts, futures and insurances, to a lesser extend, while rather relying on internal strategies such as debt management, liquidity management and diversification. These results hardly differ according to farm and farmer characteristics. The coefficients of determination of the models are low and the determinants that are significant in predicting the use of risk strategies depend highly on the particular risk strategy, i.e. no determinant is significant for all strategies. These findings could indicate that choice of implementation of risk strategies is greatly depending on specific context. An exception hold for risk attitude, that was found to be a significant predictor for the intended adoption of most strategies. Finally, it was found that the intention to adopt one risk strategy is positively correlated with the intention to use all other risk strategies. This correlation should be taken into account in future research on intended use of farm risk strategies, by choosing methods that allow to analyse systems of equations simultaneously.