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Relevance of risk information for depositors' judgment and decision-making

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Received: 02-05-2015 Accepted: 20-05-2015 Available online: 28-05-2015	For several years risk reporting of banks has been high on the agenda. Banks must disclose information on their risk exposure to enhance market discipline. As a precondition for this positive effect of risk reporting, the risk information provided by the banks must be relevant for the depositors' and other investors' judgments and decisions. In this paper, we analyze
Keywords: Risk disclosure; Risk reporting; Risk management.	whether this is really true. Using an experimental design we show that risk information may influence the individuals' judgments and decisions. We find that positive (negative) risk information lead to more positive (more negative) evaluations. In the case of conspiring risk and financial statement information the judgments and decisions are most pronounced. However, this enhancing effect of risk information is not significant. Considering opposing risk and financial statement information we find that positive (negative) risk information lead to
JEL Classification: C12; G21; M41.	information can even reverse the effect of opposing financial statement information on the individuals' judgment of the banks' risk exposure.

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1.0 Introduction

For several years risk reporting of banks has been high on the agenda. In 2004, for example, the Basel Committee on Banking Supervision (2004) introduced a third pillar of banking regulation. To enhance market discipline banks must disclose information on their risk exposure. Moreover, standard setters have released accounting standards like IFRS 7 Financial Instruments: Disclosures or the German Accounting Standard (GAS) 5-10 Risk Reporting by Financial Institutions and Financial Service Institutions so that investors and other users of financial statements may gain additional insight into the risk exposure of banks.

All these requirements and regulations are based on the idea that risk disclosure may solve the problems of asymmetrically distributed information between bank insiders and outsiders and especially prevent risk shifting of bank owners at the creditors' expense.¹ In case of risk transparency depositors may react to excessive risk taking of their bank by withdrawing their deposits. The regulators hope that because of these threatening reactions the bank owners refrain from excessive risk taking.

As a precondition for this positive effect of risk reporting, the risk information provided by the banks must be relevant for the depositors' judgments and decisions. In this paper, we analyze whether this is really true. Is the

¹ Cf. the seminal paper of Jensen and Meckling (1976) and the comprehensive analysis of Kürsten (1994).

risk information provided by banks in their management report indeed relevant for depositors' judgments and decision-making? If the answer is yes, we will find another argument to justify the existence of (regulated) risk reporting and even more generally financial reporting (Coenenberg and Haller, 1993b).

Using an experimental design we show that risk information may influence the individuals' judgments and decisions. We find that positive (negative) risk information lead to more positive (more negative) evaluations. In the case of conspiring risk and financial statement information the judgments and decisions are most pronounced. However, this enhancing effect of risk information is not significant. Considering opposing risk and financial statement information lead to more positive/less negative (more negative/less positive) judgments and decisions. Risk information can even reverse the effect of opposing financial statement information on the individuals' judgment of the banks' risk exposure.

Our analysis of the relevance of accounting information belongs to the part of empirical accounting research that deals with potential benefits of information. This strand of literature attempts to capture the effect of specific accounting information on its users and to derive general conclusions with the aim to enhance financial accounting (Coenenberg and Haller, 1993b).

Judgments and decisions of individuals, like buying or selling stocks of a company, are based to a great extent on information published by the company. In particular, financial statement information can be considered to be relevant for the decision-making process because compared to other sources of information the high level of detail as well as the auditor's report lead to a high degree of reliability (Keller and Möller, 1993). Most empirical research concerning the relevance of accounting information makes use of the capital market-oriented approach.² The studies focus on the aggregate behavior of capital market participants. An event or selected data are considered as information input while the decision-making process of capital market participants is regarded as a "black box" (Coenenberg and Haller, 1993b). The first study in this research field was published by Ball and Brown (1968). The direct effect of information was first described by Beaver (1968). Cready and Mynatt (1991) look at transaction volumes and find that financial statements are a relevant source of information for small investors. The effect of financial statement information on decision-making has also been confirmed for the German capital market (Coenenberg and Brandi, 1979; Bühner and Möller, 1985). Several studies show that the publication of financial statement information affects decision-making. Even the expected direction of the effects has been demonstrated (Coenenberg et al., 2009). In summary, it has been shown that financial statements basically provide relevant information and that variables such as earnings are one of the main factors used in decisionmaking. Most of the capital market-oriented studies consider earnings as a substitute for all financial statement data (Mölls and Strauß, 2005; Lev, 1989).

However, in order to investigate the effect of accounting information systematically and in more detail, studies of particular parts of financial reporting are required. In addition, the previous studies only include the aggregated information processing of financial statement users via capital market data. A greater involvement of individual decision-making and thus of behavioral aspects is desirable (Mölls and Strauß, 2005). Therefore, our paper examines the relevance of information from a behavioral perspective. Instead of indirectly measuring the aggregate behavior of the capital market participants, we try to gain insight into individual information processing.

Our study uses an integrated judgment and decision-making (JDM) approach (Maines, 1995). This approach is based on the idea that judgment precedes decision so that both should always be considered together. Depending on its specific characteristics, information reported by a company influences an individual's JDM. That means having some information would lead to different judgments and decisions as if this information was not available.

The focus of behavioral accounting³ lies on individuals and their reactions to financial reporting. An inductive approach which tries to generalize empirically observable behavior is typical for this strand of literature (Holzer and Lück, 1978; Hofmann, 2007). Former studies show that at least financial statement information is relevant in the JDM process of users of financial reporting.⁴

In our paper, we concentrate on a special kind of information, namely risk information, which is provided in the management report, more precisely the risk report, of German saving banks. Management reporting and specifically risk reporting has hardly been investigated from behavioral perspective, yet. Little literature comes

² An overview of the capital market-oriented approach and empirical work on decision-relevance of accounting information is provided by, e. g., Leuz and Wüstemann (2004), Mölls and Strauß, 2005, and Coenenberg et al. (2009).

³ An overview of early work can be found in Bruns/DeCoster (1969). See also Hofstedt (1976) and Ferris (1988).

⁴ An overview of behavioral accounting studies can be found in Coenenberg and Haller (1993a), Libby et al., 2002 or Gillenkirch and Arnold (2008).

for instance from Hodder et al. (2001), who investigate the behavioral implications of the different alternative reporting formats that follows from the disclosure requirements of FRR 48 of the SEC concerning market risk. Koonce et al. (2005b) study investors' risk judgment of financial issues. They conclude that risk judgment can be best explained by a model that includes variables from behavioral and decision-theoretical perspectives. Koonce et al. (2005a) also experimentally investigate how investors assess risk-related information on economic issues. In contrast, our study shows the relevance of risk reporting as part of the annual report of companies. Thus we make a first step towards a systematic research of the effects of risk information on individuals' JDM.

Quite often banks are not taken into account when analyzing the effects of risk reporting even though risk taking is typical for banks. Therefore, we concentrate on banks and especially on savings banks, which are not capital market-oriented. More than 70 % of the total assets of German savings banks are financed by deposits. Depositors are thus an important part of the customer base of German savings banks. As far as we know, we are the first who analyze the effect of risk information on depositors' JDM. In addition, a unique feature of our study is the investigation of the effects of almost realistic risk reports, based on the results of Türr (2014), who conducted a comprehensive content analysis of risk reports of German savings banks.

The paper is organized as follows. In Section 2 the theoretical background is explained and hypotheses are developed. In Section 3 the experimental design of our study is described. The results are presented in Section 4. The paper ends with a conclusion in Section 5.

2.0 Theory and hypotheses

In Germany, banks have to report about their risk exposure according to section 340a together with section 289 of the German Commercial Code (hereinafter "HGB"). The risk report is part of the management report that German banks must publish together with the financial statement. In the management report, German banks have to assess and explain the expected development of their business with the substantial opportunities and risks. The aims and methods of risk management as well as the different risk types the bank is exposed to have to be described as far as they are of relevance for the judgment of the situation and development of the bank.

According to section 264 II of the HGB the financial statements must provide a true and fair view of net worth, financial position, and results of operations of the company. This sort of general rule corresponds to section 289 I of the HGB. The management report should give a true and fair view of the financial performance and position of a company. Since the general rules of section 264 II and 289 I of the HGB are almost the same, management reporting must fulfill the same purpose, which is the provision of information. As the management report is not part of the financial statement and thus not bound by its conventions, it is able to (and has to) give additional information, for example on the expected development (section 289 II 2 of the HGB). Therefore, the only purpose of management reporting is to provide information which refers to past and present events as well as future events (Baetge et al., 1989; Bieg, 2010; Ellrott, 2010).

Moxter (1976) introduced, in addition to the German required accounting principles, the principle of decisionoriented accountability, which includes the principle of (decision-) relevant information. Also Ballwieser (2002) assumes in his work on the information purpose that relevance is an essential accounting principle. He argues that not all transmitted messages are relevant for the addressees' decisions. Even the legislator demands only certain data to be published and does not consider the provision of all data to be useful. This is reflected in the development of section 289 of the HGB (Bundestag, 2004; Bundestag, 1998). The legislator wanted to improve the provision of relevant information. The German Accounting Standard (GAS) 5-10 regulating the risk reporting of banks (in consolidated financial statements) adopts the principle of decision-usefulness of international accounting standards and recommends the presentation of relevant and reliable information.⁵ Thus, the objective of the Accounting Standards Committee of Germany concerning banks' risk reporting is to provide relevant and reliable information. Weber (2010) even describes the relevance and reliability of risk information as key quality criteria. Decision-relevant accounting information must be designed such that it supports or modifies the judgments and decisions of the addressee.⁶

The decision-relevance of accounting information is in particular investigated in the judgment and decisionmaking literature. The studies examine whether and how the users, especially professional investors, of accounting information are affected (Libby et al., 2002; Maines, 1995). Further empirical research suggests studying private investors as well (e.g., Maines and McDaniel, 2000; Kaufmann, 2011). Some authors argue private

⁵ The GAS 5-10 was replaced by the GAS 20 in the beginning of 2013. However, the GAS 5-10 is valid for our research period.

⁶ See, e. g., Schildbach (2004), Pellens and Fülbier (2000) as well as already American Accounting Association. Committee to Prepare a Statement of Basic Accounting Theory (1966), who describes information as relevant when it influences the decision by helping to evaluate events and confirm or correct past evaluations, respectively.

investors have no interest in and a lack of understanding of risk information (Zepp, 2007). Savings banks refinance themselves mostly on deposits. That is why the depositors belong to the main addressees of risk reporting (Türr, 2014). The high proportion of deposits shows the potential to influence the going concern of the bank, e.g., via deposit withdrawal. Because of a deposit insurance and guarantee system in Germany it is questionable if the depositors really react to savings bank actions. Thiry (2009) examines whether saving banks in Germany are sanctioned by fully insured depositors by constraints in volume or interest. He finds evidence that depositors in fact react by restriction of deposit volume when their saving bank is ready to take more risks.

Referring to these results, it is reasonable to assume that risk reporting of banks indeed provides relevant information and thus affects the JDM of private investors, namely depositors. According to the decision-usefulness theory of accounting individuals respond exactly to the direction given by the information (Staubus, 2000). Therefore, we assume that good (bad) news about a bank's risk exposure are identified as such and thus lead to positive (negative) reactions.

H1: With positive risk information depositors' judgments and decisions are more positive than in the case of negative risk information.

Positive decisions mean, e.g., that the individuals would deposit their money in the savings bank. Negative decisions mean that the depositors do not take their money to the savings bank any longer but change to another bank.

As already mentioned above, a bank's financial statement has to be accompanied by a risk report (as part of the management report). Thus depositors get risk information in addition to information about assets, liabilities, and earnings. As the confirmation of one's view by additional information leads to less ambiguous views, we put forward the hypothesis that positive (negative) judgments and decisions due to information from a financial statement become even more positive (negative) when supported by positive (negative) risk reporting.

H2: Depositors' judgments and decisions are most positive (negative) if positive (negative) risk information is presented together with positive (negative) information from the financial statement (conspiring information).

But what does happen if positive risk information is combined with negative information from the financial statement and vice versa? An answer to this question can be found with the help of schema-theoretic findings. Schemata are active organization unities of knowledge. Due to experiences they combine different concepts of objects, conditions, events and actions in one complex of knowledge (Schnotz et al., 1981). According to Anderson and Pearson (1984) schemata have a selecting function. Information that is relevant for existing schemata receives more attention than irrelevant information and therefore is better remembered. One of the most comprehensive studies that have been conducted in Germany to find out which parts of companies' annual report are most important for the investor was done by Ernst et al. (2009). It became clear that balance sheet and income statement data are the most commonly used information. The media also report most frequently about information like equity and profit instead of management report information. Thus financial statement information about assets, liabilities, earnings, and so on is more heavily weighted than risk information in the individuals' judgment and decision-making.

H3: Depositors' judgments and decisions are positive (negative) if positive (negative) information from financial statements is presented together with negative (positive) risk information (opposing information).

To gain insight into the individuals' information processing, we additionally examine people's risk perception. Based on the findings of psychology and consumer behavior research (Slovic, 1987; Cunningham, 1967; Koonce et al., 2005b; Kumar and Kumar, 2012) we try to find out not only whether risk information affects people's JDM but if it affects it properly. Moreover, we look at the credibility of the bank (and its risk information) because it may influence the individual's risk perception and may lead to a greater willingness of information reception (Lowin, 1969; Thayer, 2011; Küster-Rohde, 2010). Quite close to risk perception is the question of understandability. Therefore, we also check whether the risk information provided is understandable and whether differences in JDM can be explained by differences in understandability of the risk report.

3.0 Experiment

The hypotheses are tested using an experimental design. 151 business students of the University of Rostock, who were enrolled in a second year bachelor course, participated in the experiment. 57.7 % of the students are male and 42.3 % female. On average, the students were 23 years old. We took students as subjects because they are

good surrogates in decision-making studies (Ashton and Kramer, 1980) and furthermore they are all depositors because everyone got at least a current account. We randomly assigned the participants to one of six groups by lottery. The experimental materials were given to the participants in one session that lasted between fifteen minutes for the two control groups, who were in a separate classroom, and twenty-five minutes for the four treatment groups. Each student received 5 Euro as compensation for his time.

The stimulus material consists of two parts, selected information from a financial statement and an excerpt from a risk report. The financial statement information (FSI) includes ten balance sheet data, e.g., total assets, loans, deposits, and equity, three items from the income statement (interest income, operating income, net income) and five selected key figures especially informative for banks, for example, the Tier 1 capital ratio. All data are presented in a three-year trend (2010 to 2012). Two versions were prepared, whereas the positive version (FSI^p) includes "rising" data implying a positive trend and the negative version (FSIⁿ) "falling" data showing a negative trend. The data represent real numbers insofar as we calculated the average over all German saving banks based on the data for 2012.

The risk report is a representative version of risk reports of savings banks in eastern Germany. Referring to the results of a content analysis of risk reports of all eastern German saving banks by Türr (2014), we created some sort of typical risk report. In the experiment, we confine ourselves to reporting on counterparty credit risk and market risk because in reality the savings banks report mostly on these risk types, which are essential for them. We chose typical phrases and manipulated it by reversing the tendentious statements to get a positive (RI^p) and a negative (RIⁿ) version.

In our experimental design for each financial statement (positive or negative trend) there were three versions of risk reporting (no risk report, risk report with positive information, risk report with negative information). Thus we chose a 2x3 between-subjects design. The levels of the independent variables, i.e. risk information, RI, and financial statement information, FSI, are positive and negative. The control groups made their judgments and decisions only with financial statement information (noRI, FSI^p or FSIⁿ). In a preliminary study we tested whether it is possible to create neutral risk information for the control groups to make sure that the probands of all experimental conditions get the same volume of information. However, the results show that a risk report may not be entirely neutral. Consequently, we chose a procedure according to the presence-absence-technique.⁷

Table 1: Experimental Design			
	noR	I RIp	RIn
FSIp	CG1	TG1	TG2
FSIn	CG2	TG3	TG4
Note. The experiment uses a 2x3 between-subjects design. The independent variables	financial	statement information	(FSI) and risk

Note. The experiment uses a 2x3 between-subjects design. The independent variables financial statement information (FSI) and risk information (RI) were manipulated in a positive (p) and negative (n) way. The control groups (CG) made their judgments and decisions based on FSI and got no risk information (noRI) whereas the treatment groups (TG) got a combination of FSI and RI.

After reviewing the stimulus materials the participants were asked to answer a questionnaire. All of the four dependent variables were rated on a seven-point scale. First they had to judge the economic situation of the savings bank (ECO, with 1 = very bad and 7 = very good) and second its general risk situation (RISK, with 1 = low risk and 7 = high risk). Moreover, they were asked to decide how likely it is that they would deposit their money in this bank (DEPOSIT, with 1 = no, not at all and 7 = yes, that's for sure) and how likely it is that they would change to another bank if they were already a customer of this bank (EXIT, with 1 = no, not at all and 7 = yes, that's for sure).

Additionally, the questionnaire includes a series of questions to control for the risk perception of the participants, the credibility of the savings bank, and the understandability of the risk report excerpt. To determine the participants' perceived risk, they had to decide on a seven-point scale how far they agree to eight statements. Referring to previous research on risk perception the statements are based on behavioral variables from psychology as well as variables from consumer behavior research (Slovic, 1987; Cunningham, 1967; Koonce et al., 2005b; Kumar and Kumar, 2012). The aim is to find out whether and in what way the participants transfer the risk exposure of the bank to their own financial risk situation to get insight into their information processing.

According to Hovland et al. (1953) and Newell and Goldsmith (2001) the credibility of the savings bank was assessed with the help of perceived expertise and trustworthiness, each with four statements on a seven-point scale. Corporate credibility is defined as "the extent to which consumers feel that the firm has the knowledge or

⁷ For an extensive overview of experimental methodology see Christensen (2007).

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ability to fulfill its claims and whether the firm can be trusted to tell the truth or not" (Newell and Goldsmith 2001, p. 235). Whether positive or negative reporting influences the perceived credibility is considered.

Whether depositors really use annual reports is often regarded critically. It is argued that they do not understand the content (Zepp, 2007). As part of the experiment the understanding of important key messages presented in the risk report was explicitly investigated. We created a paraphrases-verification test to check the understandability of the risk information (Mrazek, 1979; Kercher, 2013). Seven statements of the risk report were paraphrased. The participants had to decide whether they are right or wrong.

4.0 Results

4.01 Descriptive statistics

To provide a first insight into the results and to clarify the structure of our variables, we show some descriptive statistics in Table 2, namely the means of the dependent variables ECO, RISK, DEPOSIT, and EXIT for each treatment and control group. Risk information (RI) affects the judgments and decisions of the participants in conjunction with financial statement information (FSI). The results show that each treatment group with risk information (RI^p or RIⁿ) on average acted differently than the corresponding control group without risk information (noRI). This gives us a first idea of the relevance of risk information and suggests that the content of risk reports of saving banks has some sort of information value for depositors.

Table 2: Descriptive Statistics												
	FSIp				FSI ⁿ			Total				
	noRI	RIp	RI ⁿ	Σ	noRI	RIp	RIn	Σ	noRI	RIp	RIn	Σ
ECO	5.17	5.24	4.85	5.08	3.16	3.67	3.08	3.29	4.13	4.47	3.96	4.18
RISK	3.00	2.88	4.31	3.42	4.12	3.13	4.77	4.03	3.58	3.00	4.54	3.72
DEPOSIT	4.87	4.88	4.38	4.70	3.12	4.21	2.77	3.35	3.96	4.55	3.58	4.02
EXIT	2.57	2.64	3.58	2.95	4.20	3.63	4.96	4.28	3.42	3.12	4.27	3.62
n	23	25	26	74	25	24	26	75	48	49	52	149

Note. The table shows the means of the four dependent variables ECO, RISK, DEPOSIT, and EXIT, which are judged on a 7-point Likert scale by different groups of participants. ECO is the answer to the question "How do you judge the economic situation of the MUSPA?" (with 1 = very bad and 7 = very good). (MUSPA is the name of the fictional savings bank in our study.) RISK is the answer to the question "How do you judge the total risk of the MUSPA?" (with 1 = low risk and 7 = high risk). DEPOSIT is the answer to the question "Would you deposit your money in the MUSPA?" (with 1 = now risk and 7 = high risk). DEPOSIT is the answer to the question "Would you deposit your money in the MUSPA?" (with 1 = no, not at all and 7 = yes, that's for sure). EXIT is the answer to the question: "If you were a customer of the MUSPA, would you take account of the change to another bank due to the available information?" (with 1 = no, not at all and 7 = yes, that's for sure). EXIT is the independent variable indicating the groups of participants with positive (negative) financial statement information. RI^p (RIⁿ) is the independent variable indicating the groups of participants with positive (negative) risk information. noRI characterizes the control groups with no risk information.

The participants of the groups with positive (negative) financial statement information, FSI^p (FSIⁿ), attributed a positive (negative) economic situation (ECO) to the bank because the mean in each group is above (below) the scale midpoint of 4.00. The judgment of the experimental group with FSI^p (FSIⁿ) that also got positive (negative) risk information, RI^p (RIⁿ), shows in the same direction. The mean is even higher (lower) than in the control group. This gives us a first hint of a confirmatory or reinforcing effect in case of conspiring information. It means that the assessment of additional risk information supports the statement about the economic situation of the bank.

In case of opposing information, the additional risk information modified the participants' judgments into the manipulated positive or negative direction. However, on average it could not change positive judgments in negative ones and vice versa. In case of positive (negative) financial statement information the mean of ECO is always above (below) the scale midpoint.

The influencing effect of risk information is also visible in the participants' judgments of the risk exposure of the bank. The mean of RISK is above the scale midpoint in the experimental groups that got negative risk information, RIⁿ. It is noteworthy that the mean of RISK for the control group with negative financial statement information (4.12) is also higher than 4.00 which means that it judges the bank as relatively risky. This might be explained by some financial statement information like, for example, a decreasing Tier 1 capital ratio, that give some hints that the savings bank is not able to bear that much risk anymore.

The judgment in case of conspiring positive financial statement information and risk information does not seem to be that obvious. The mean of RISK only differ by 0.02 between RI^p (2.88) and noRI (3.00) so that additional positive risk information only marginally enhances the participants' positive judgments of the risk exposure of the bank. If opposing risk information is provided (RIⁿ in addition to FSI^p, or RI^p in addition to FSIⁿ), the average judgments of RISK change from 3.00 (4.12) to 4.31 (3.13) and hence from positive to negative (or vice versa). The

impact of risk information seems to dominate the influence of financial statement information on the participants' general risk assessment.

Concerning the third variable, DEPOSIT, the reinforcing effect of conspiring positive information again seems to be very low (4.88 compared to 4.87). The impact of positive risk information on the participants with negative financial statement information, however, is rather heavy. This group inclines to deposit its money in the bank whereas the corresponding control group does not tend to give its money to this bank.

A similar effect of positive risk information can be seen if we look at the decision to leave the bank and thus on the variable EXIT. Again positive risk information seems to more than compensate the impact of negative financial statement information so that on average the participants tend to stay at the bank.

4.02 Analyses of variance

The multivariate analysis of variance (MANOVA) in Table 3 shows that both independent variables (and factors), FSI as well as RI, exert a main effect on the dependent variables ($p \le 0.05$). For the evaluation of the MANOVA, we use the Pillai's trace because it is considered as strongest and most robust test (Field, 2009). To find out the size of these effects we use Eta². It is a measure of the explanatory power of the factors and their interaction effects with respect to the dependent variables. Eta² indicates the proportion of total variance that is explained by the factor (Field, 2009; Backhaus et al., 2011). The MANOVA shows that financial statement information explains 51.9 % of the total variance whereas risk information explains 14.9 % after all.

Table 3: Multivariate Analysis of Variance								
Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta ²		
Intercept	0.992	4434.567	4	140	0.000	0.992		
FSI	0.519	37.733	4	140	0.000	0.519		
RI	0.298	6.166	8	282	0.000	0.149		
FSIxRI	0.057	1.025	8	282	0.417	0.028		

The analyses of variance (ANOVA) presented in Table 4 for every dependent variable show significant main effects of both factors ($p \le 0.05$). The effects of interaction are not significant. Thus, financial statement information and risk information independently influence participants' judgments and decisions.

Table 4: Analyses of Variance							
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta ²	
Panel A: ECO							
Corrected Model	126.319	5	25.264	30.671	0.000	0.517	
Intercept	2615.834	1	2615.834	3175.729	0.000	0.957	
FSI	118.528	1	118.528	143.898	0.000	0.502	
RI	6.136	2	3.068	3.725	0.026	0.050	
FSIxRI	1.179	2	0.590	0.716	0.490	0.010	
Error	117.788	143	0.824				
Panel B: RISK							
Corrected Model	79.659	5	15.932	12.795	0.000	0.309	
Intercept	2036.310	1	2036.310	1635.371	0.000	0.920	
FSI	13.782	1	13.782	11.069	0.001	0.072	
RI	61.275	2	30.637	24.605	0.000	0.256	
FSIxRI	5.031	2	2.516	2.020	0.136	0.027	
Error	178.059	143	1.245				
Panel C: DEPOSIT							
Corrected Model	100.323	5	20.065	12.025	0.000	0.296	
Intercept	2425.671	1	2425.671	1453.677	0.000	0.910	
FSI	67.313	1	67.313	40.340	0.000	0.220	
RI	23.682	2	11.841	7.096	0.001	0.090	
FSIxRI	8.462	2	4.231	2.536	0.083	0.034	
Error	238.616	143	1.669				
Panel D: EXIT							
Corrected Model	104.850	5	20.970	11.011	0.000	0.278	
Intercept	1921.807	1	1921.807	1009.082	0.000	0.876	
FSI	66.243	1	66.243	34.782	0.000	0.196	
RI	36.244	2	18.122	9.515	0.000	0.117	
FSIxRI	2.608	2	1.304	0.685	0.506	0.009	
Error	272.345	143	1.905				

To find out which groups actually differ and thus to test the hypotheses we perform post hoc tests. We use the Bonferroni's procedure because it is strong and controls the Type I error and the familywise error very well (Field, 2009). As first part of the post hoc tests it is examined whether the groups with positive information input differ from the groups with negative information input. In addition, we analyze whether the postulated direction of the effects occur. Table 5 shows that for risk information the groups with positive information input differ significantly from those with negative information input ($p \le 0.05$). Moreover, the postulated direction of the effect can be confirmed, which is indicated by the sign of the mean difference. The mean differences are always positive when the mean of the group with negative information input is subtracted from the mean of the group with positive information input for ECO and DEPOSIT. They are negative for RISK and EXIT due to the reversed scale. Accordingly the participants made more positive (negative) judgments and decisions if they got positive (negative) risk information. These findings support H1.

The influence of additional risk information can be displayed in profile plots as part of the post hoc procedures. These diagrams represent the estimated marginal means of the six experimental groups, which include the group mean and the effect of interaction between the factors. The relevance of risk information is obvious because the lines of the experimental groups are not congruent with the lines of the control groups (noRI) in Figures 2, 4, 6, and 8 and because the lines are kinked in Figures 1, 3, 5, and 7. Hence the reinforcing effect of additional risk information is visible. Additional positive (negative) risk information causes judgments that are more positive (more negative) than the judgments of the corresponding control group and provides first evidence for H2.

Table 5: Post hoc analysis for H1					
	(I)RI	(J)RI	Mean Difference (I-J)	Standard Error	Sig.
	noPI	RIp	-0.34	0.184	0.191
	ΠΟΚΙ	RIn	0.16	0.182	1.000
ECO	DIn	noRI	0.34	0.184	0.191
ECU	KIP	RIn	0.51	0.181	0.017
	DIn	noRI	-0.16	0.182	1.000
	KI"	RIp	-0.51	0.181	0.017
	noDI	RIp	0.58	0.227	0.033
	ΠΟΚΙ	RIn	-0.96	0.223	0.000
DICK	DIn	noRI	-0.58	0.227	0.033
KISK	ΠP	RIn	-1.54	0.222	0.000
	DIn	noRI	0.96	0.223	0.000
	KI"	RIp	1.54	0.222	0.000
	noDI	RIp	-0.59	0.262	0.076
	ΠΟΚΙ	RIn	0.38	0.259	0.427
DEDOCIT	DIn	noRI	0.59	0.262	0.076
DEFUSIT	Π ^ρ	RIn	0.97	0.257	0.001
	DIn	noRI	-0.38	0.259	0.427
	KI	RIp	-0.97	0.257	0.001
	noPI	RIp	0.29	0.280	0.887
	ΠΟΚΙ	RIn	-0.85	0.276	0.007
EVIT	DIn	noRI	-0.29	0.280	0.887
LAII	ΠP	RIn	-1.15	0.275	0.000
	DIn	noRI	0.85	0.276	0.007
	KIn	RIp	1.15	0.275	0.000





Whether the differences between the control groups and the treatment groups are indeed significant, can be seen in Table 6 until 9. The mean differences result from subtracting the mean of the second column group (J) from the mean of the first column group (I). Table 6 until 9 show the mean differences of TG1 (FSI^p and RI^p) and TG4 (FSIⁿ and RIⁿ) on the one hand and all experimental groups on the other hand. For example, Table 6 for ECO reveals that the differences between the group means of TG1 (TG4) and all experimental groups have the same positive (negative) sign. It suggests that the group mean of TG1 (TG4) is always the highest (lowest) and thus the judgments of the TG1 (TG4) individuals are most positive (negative). The same results hold for the other dependent variables RISK, DEPOSIT, and EXIT. That implies the group mean of (I) is always the highest or lowest, respectively, due to the scale. A single exemption can be seen in Table 9 by comparing TG1 and CG1 in EXIT.

For ECO we observe that the mean differences between the treatment group with both, positive financial statement information and positive risk information (TG1) and all groups with negative financial statement information (CG2, TG3, TG4) are significant. However, the mean difference between TG1 and its relevant control group CG1 is not significant. The same holds for the mean difference between TG4 and the relevant control group CG2. As can be seen from Table 7 until 9 these results also hold for the other variables (see bold numbers). This means that the enhancing effect of risk information is always insignificant. Therefore, we cannot support H2.

The opposing information effect is also observable in Figures 1 to 8. Positive risk information lead to a more positive or less negative JDM. Negative risk information lead to a more negative or less positive JDM. In both cases (positive risk information combined with negative financial statement information and vice versa), the probands' judgments and decisions were changed by the additional risk information towards the expected direction. Risk information cannot reverse the effect of financial statement information on ECO (see Figures 1 and 2) and EXIT (see Figures 7 and 8). Moreover, the differences are not significant, which gives evidence for H3. This can be seen in Table 10 looking at TG2 (FSI^p and RIⁿ) compared with CG1 as well as TG3 (FSIⁿ and RI^p) compared with CG2. However, the judgment of RISK and the decision to DEPOSIT can be changed by additional risk information. The post hoc procedure shows significant differences, which argues against H3. The comparison of the groups leads to significant results for RISK ($p \le 0.05$) and the comparison of CG2 and TG3 leads to weakly significant results for DEPOSIT ($p \le 0.10$) as well. The judgment of the bank's risk situation and the decision to deposit the money in the bank are thus heavily influenced by additional risk information, which can even reverse the direction of the financial statement information.

Table 6: Post hoc analysis for H2 ECO						
(I)G	(J)G	Mean Difference (I-J)	Standard Error	Sig.		
	CG1	0.066	0.262	1.000		
	CG2	2.080	0.257	0.000		
TG1	TG2	0.394	0.254	1.000		
	TG3	1.573	0.259	0.000		
	TG4	2.163	0.254	0.000		
	CG1	-2.097	0.260	0.000		
	CG2	-0.083	0.254	1.000		
TG4	TG1	-2.163	0.254	0.000		
	TG2	-1.769	0.252	0.000		
	TG3	-0.590	0.257	0.347		

Table 1: Post hoc analysis for H2 RISK						
(I)G	(J)G	Mean Difference (I-J)	Standard Error	Sig.		
	CG1	-0.120	0.322	1.000		
TG1	CG2	-1.240	0.316	0.002		
	TG2	-1.428	0.313	0.000		
	TG3	-0.245	0.319	1.000		
	TG4	-1.889	0.313	0.000		
	CG1	1.769	0.319	0.000		
	CG2	0.649	0.313	0.594		
TG4	TG1	1.889	0.313	0.000		
	TG2	0.462	0.309	1.000		
	TG3	1.644	0.316	0.000		

Table 8: Post hoc analysis for H2 DEPOSIT							
(I)G	(J)G	Mean Difference (I-J)	Standard Error	Sig.			
	CG1	0.010	0.373	1.000			
	CG2	1.760	0.365	0.000			
TG1	TG2	0.495	0.362	1.000			
	TG3	0.672	0.369	1.000			
	TG4	2.111	0.362	0.000			
	CG1	-2.100	0.370	0.000			
	CG2	-0.351	0.362	1.000			
TG4	TG1	-2.111	0.362	0.000			
	TG2	-1.615	0.358	0.000			
	TG3	-1.439	0.366	0.002			

Table 2: Post hoc analysis for H2 EXIT							
(I)G	(J)G	Mean Difference (I-J)	Standard Error	Sig.			
	CG1	0.075	0.399	1.000			
	CG2	-1.560	0.390	0.002			
TG1	TG2	-0.937	0.387	0.249			
	TG3	-0.985	0.394	0.205			
	TG4	-2.322	0.387	0.000			
	CG1	2.396	0.395	0.000			
	CG2	0.762	0.387	0.762			
TG4	TG1	2.332	0.387	0.000			
	TG2	1.385	0.383	0.006			
	TG3	1.337	0.391	0.012			

Table 3: Post hoc analysis for H3						
	(I)G	(J)G	Mean Difference (I-J)	Standard Error	Sig.	
ECO	CG1	TG2	0.328	0.260	1.000	
ECU	CG2	TG3	-0.507	0.259	0.791	
DICK	CG1	TG2	-1.308	0.319	0.001	
KISK	CG2	TG3	0.995	0.319	0.033	
DEDOCIT	CG1	TG2	0.485	0.370	1.000	
DEPOSIT	CG2	TG3	-1.088	0.369	0.056	
EXIT	CG1	TG2	-1.012	0.395	0.172	
	CG2	TG3	0.575	0.394	1.000	

4.03 Perceived risk, credibility, and understanding

The analysis of variance shows that both independent variables (FSI and RI) exert a main effect on the perceived risk of the participants ($p \le 0.05$). In case of a positive (negative) risk situation the perceived risk is lower (higher). The financial statement information explains 9 % and the risk report information even 16 % of the total variance. Thus the participants transferred the risks the bank is subject to correctly to their own financial risk situation and the participants risk perception is indeed affected by the published risks of the savings bank.

Furthermore, we investigate whether the individuals' perceived credibility of the savings bank is related with the banks reporting. The credibility was analyzed by perceived expertise and trustworthiness. In the analysis of variance it becomes clear that only the financial statement information exerts a significant main effect on the expertise of the institute ($p \le 0.05$). No other significant differences between the experimental groups can be found

with respect to credibility. The risk report information exerts no effect on the construct of credibility in this experiment.

A broad understanding of risk information is already evident in the results of the analyses of variance in Section 4.02 as well as the evaluation of the risk perception. Moreover, the result of the paraphrases-verification test shows a moderate understanding of the content of the risk report. On average four of seven of the paraphrases were assessed correctly. This result is not very good. Nevertheless it is remarkable that the effects of the risk information on JDM follow the expected direction.

5.0 Conclusion

In this paper the effect of risk information on depositors' behavior was analyzed with the help of an experimental design. Consistent with the theoretical predictions the provision of risk information in addition to financial statement information leads to a change in the participants' JDM. We find that positive risk information results in significantly more positive judgments and decisions than in the case of negative risk information. This suggests influencing potential of risk information. We reveal that the subjects' judgments and decisions are most positive (most negative) when they get conspiring information. However, this enhancing effect is not significant. In the case of opposing information the influencing effect of added risk information is obvious. Positive (negative) risk information leads to more positive or less negative (more negative or less positive) judgments and decisions. Our mixed results show that risk information influences the judgment of the banks' economic situation and the decision to change the institute not significantly but cannot only weaken but reverse the effect of financial statement information on the depositors' judgment of a bank's risk and their decision to deposit their money in the bank.

Besides we analyzed the participants' risk perception as well as the perceived credibility of the bank and the understandability of the risk report. The statistical analyses show that risk information as well as financial statement information exert a significant main effect on the risk perception of the participants in the experimental condition. The pro-bands transfer the risks the bank is subject to correctly to their own financial risk situation. In contrast, the results show no main effect of risk reporting on the perception of the banks' credibility. Contrary to critical expectations the participants' understanding of the banks' risk reporting information cannot be denied. The answers to a paraphrases-verification test reveal an "average" understanding of risk information. Even though the participants do not understand every detail, they show the expected reaction to the published risk information.

The primary contribution of this study is to provide first evidence of the effect of risk reporting of savings banks on depositors' judgment and decision-making behavior. The results imply a justification of the existence of risk reporting, at least from a behavioral perspective. Thus banks should pay greater attention to and be very carefully with the preparation of risk reports. However, to what extent people can be affected must be examined in more detail by exploring selected pieces of risk information. It is still an open question which components of risk reporting achieve which kind of effects. For that purpose a qualitative approach seems to be reasonable but will not be followed in this paper any more.

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