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INVESTORS ARE MORE SENSITIVE TO INFORMATION ABOUT FINANCIAL RATHER THAN ETHICAL REPUTATION OF A COMPANY: EVIDENCE FROM AN EXPERIMENTAL STUDY

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ABSTRACT. The aim of the research was to identify the nature of the relationship between corporate reputation and individuals' investment decisions. We focused on three reputational factors that influence such decisions: value of stock market analysts' recommendation (either neutral or positive), reputation value (either positive or negative), and reputation domain (either ethical or financial).
We tested two hypotheses in an online experiment and we have confirmed that investors are more sensitive to firm's financial rather than to its ethical reputation. However, we could not confirm that a reputation damage has a stronger impact on changes in the planned investment's value than an improvement in company's reputation.

JEL Classification: M14, G11, C91

Keywords: Corporate Reputation, Investment Decisions, Experiments.

Introduction

Company's reputation is a function of socially shared impressions, collective judgements based on various factors: financial and economic, ethical, social, technological and other environmental impacts (Fombrun, Van Riel, 1997; Scott, Walsham, 2005, Barnett, Jermier and Lafferty, 2006). A good reputation is a strategic asset of a company, as it is said to have an ability to create wealth (Fombrun, 1996).

There is a wide array of research on companies' reputation and its impact on investors' decisions. However, the results are inconsistent. Economists found that the relationship between company's reputation and the return on its shares is significant (Brammer, Brooks, Pavelin, 2006) but it does not always occur (Blajer-Gołębiewska, 2014a). As the results of various studies in this area are inconsistent, the impact of corporate reputation on investors' decisions in the stock exchange still needs to be carefully examined.

As a result, our aim was to identify the nature of the relationship between corporate reputation and individuals' investment decisions. We focused on three reputational factors that influence investment decisions: stock market analysts' recommendation (either neutral or

positive), reputation value (either positive or negative), and reputation domain (either ethical or financial).

In this study our goal was to test the following two hypotheses. Firstly, we to verify that investors are more sensitive to firm's financial rather than to its ethical reputation. Secondly, we wanted to test whether reputation damage has a stronger impact on changes in the planned investment's value than an improvement in company's reputation.

The study presented here extends previous research by evaluating the above hypotheses in an incentivized online experiment and by not relying on a game theoretic approach commonly used in the literature. In turn, we have designed an experiment, which mimics a real stock exchange environment by allowing subjects to buy or sell shares at the volume of their choosing.

The article proceeds as follows. The next section provides a brief overview of previous research on various aspects of corporate reputation and its impact on investors' decisions. In the following section, the applied methodologies, as well as the experimental design, are outlined. In the penultimate section, findings on the impact of corporate reputation on investors' decisions are presented and discussed. The final section provides summary and conclusions.

1. Literature overview

First studies in the area of reputation were focused mainly on building company's good reputation for customers. Later, a growing interest in companies' reputation resulted in analyses of impact of company's reputation on investors' decisions expressed in the demand for shares, share prices, and consequently returns on shares. One of the main streams of research in this area relies on analysis of changes in real share prices on stock exchanges using event study methodology. The proxy for reputation in this case is either a stock market index or a place in the ranking of companies of the best reputation. The reputation refers then either to a company or its managers or even its CFO etc.

The relationship between corporate reputation and investors decisions is still not fully understood. Furthermore, there exists a wide array of research with inconsistent results. For instance, applying a ten years data set Brammer, Brooks, Pavelin (2006) conducted an analysis of short-run prices following announcement of the list of Most Admired Firms in the UK. They found positive impact on the abnormal returns in cases of companies of better reputation. However, for companies whose reputation scores decreased, there were still positive abnormal returns. Authors proposed following conclusions: (1) for some investors "any news is good news", (2) this may refer to the fact that some investor find it hard to interpret financial information, and they increase their demand for shares whenever any information is available, what was also revealed by Schwarzkopf (2003). Although, there was a decrease in scores these companies were still on the list.

The analysis of companies listed on the Warsaw Stock Exchange (Blajer-Gołębiewska, 2014a) revealed a significant increase in shares' prices of analysed companies after inclusion into the RESPECT index – stock index for companies of the best reputation. However, comparing the increase with abnormal returns before the inclusion, the increase was not so impressive. In fact, there was even a slowdown in the rate of growth of abnormal returns. This situation could occur due to following three main reasons. Firstly, if companies of the best reputation are included into index, the reaction of investors to the higher reputation could increase shares prices strongly before the inclusion in the reputational index. Similar effect was also found in other research (DeBond, Thaler, 1985, 1987; Chen, DeBond, 2004). Secondly, in the case of relatively young stock markets, investors do not respond significantly to inclusion of a given company into an index based on reputational factors. And thirdly,

funds investing into corporate social responsibility portfolios are not as popular in Central and Eastern Europe as in the USA or the UK. Popularity of indices based on reputational factors may mirror this behavioural pattern.

The fact that under some conditions such aspects as corporate social responsibility or ethics may be more or less important resulted in the first hypothesis. As this study was conducted in Poland, the earlier-mentioned hypothesis states that financial information is more significant to investors than information considering ethical aspects in the process of corporate reputation building.

Researchers have also noticed that the problem of corporate reputation does not only consider good reputation building. Certain facts may also lead to reputation damage. This can consequently lead to undesirable investors' reactions. In other words the reputation may be considered good or bad.

To analyse this problem, announcements of operational losses are analysed as signals of bad reputation and their impact on company's reputation and stock market reaction is tested. These studies are often based on event study methodology, and focus on companies operating in sectors considered to be reputation sensitive such as banking (Sturm, 2013; Blajer-Gołębiewska, 2014b), financial (Perry, De Fontnouvelle, 2005; Gillet, Hübner, Plunus, 2010), and oil & gas industry (Feria-Dominguez, Jimenez-Rodriguez, Marino-Fdez-Galiano, 2013).

The other way to analyse the problem of corporate reputation relies on its behavioural aspects and utilizes game theoretic experiments. The results also differ even within each group of research.

Most of these experiments have their foundation in the game-theoretic literature on reputation (Kreps, Wilson, 1982; Milgrom, Roberts, 1982; Fudenberg, Levine, 1989; Fudenberg, Levine, 1992; Fudenber, Levine, 1994). Reputational games are repeated games (long-run interactions). A popular setting is that the game concentrates on cases in which myopic short-lived players interact with a long-lived player (or players). The reputational effect in these models is often based on a signal which conveys information that could improve the reputation of the long-run agent.

Likewise in the analysis of real share prices, in the behavioural approach, some researchers have also noticed that the reputation may be considered good or bad (Ely, Välimäki, 2003; Ely, Fudenberg, Levine, 2008; Grosskopf, Sarin, 2007). In the game of Ely and Välimäki, all possibilities for "profitable interactions between a long-lived agent and a sequence of short-lived principals" were eliminated by the need to avoid bad reputation. In the model, a particular commitment type may be "bad" for the long-run player. If it was a one-stage game without commitment types, the unique sequential equilibrium would be good for the long-run agent. Moreover, it would remain in equilibrium even in a repeated version of the game without commitment types. However, a "bad" commitment type implies that the only Nash equilibria are "bad" for a patient long-run agent. In the extended model, the bad reputation effect was examined (Ely, Fudenberg, Levine, 2008). Authors also suggested that commitment types are important, so they allowed many commitment types.

Although Grosskopf and Sarin based their research on abovementioned works, they also experimentally tested the theory. They constructed 2×2 design, where the factors were: either good or bad reputation, and 'either allow for reputation building, by giving information about the past choices of the long run player, or not' (Grosskopf, Sarin, 2007). What they found was that in the "Good Framework" per round earnings were not significantly different whether reputation building was possible or not.

Increases and decreases in company's reputation can have different potency of influence on investors' decisions. A comprehensive explanation of this fact may result from an assumption that utility function is generally steeper for losses than for gains (Kahneman,

Tversky, 1979). Moreover, in behavioural finance, the disposition effect shows that investors tend to sell shares which prices have increased, while keeping assets that have dropped in value (Shefrin, Statman, 1985). This effect is often explained using the prospect theory and loss aversion. These considerations resulted in the second of above-mentioned hypotheses, stating that a reputation damage has a stronger impact on changes in the planned investment's value than an improvement in company's reputation.

In the area of research on corporate reputation, an interesting concept of reputational cascades was also introduced. For instance, in a model of an asset market 'with financial advice' (Rudiger, Vigier, 2013), the sole source of financial information about an asset value is an expert. In the sequential model an expert's reputation, if it is 'sufficiently high' can cause a reputational cascade which can result in market crash, worse liquidity and high price volatility. Assuming that information sent by experts' works as an important signal to investors, in the model presented in this article we also introduces a factor of analysts' recommendation.

The study presented in this paper differs from previous research. Firstly, it compares both good and bad reputation, named respectively: increase in the reputation and reputation damage. Secondly, we used an incentivized on-line experiment which does not rely on any game theoretic framework.

2. Experimental Design

Treatments – We designed a 2x2x2 between subjects full factorial design and varied the following factors: the value of analyst recommendation (neutral or positive), reputation value (negative or positive) and reputation domain (ethical or financial).

Experimental procedure – Subjects were recruited from a pool of economics students from a large public Polish university to participate in an online experiment. Participants received course credit for participation. The experimental procedure was as follows:

1. Random Assignment.
   Subjects were randomly assigned to one of 8 treatment conditions (*Table 1*).
2. Endowment.

At the beginning, we gave each subject 10 000 virtual monetary units (one unit corresponding to 1 Polish zloty) to invest in shares of a virtual company. We told subjects that during the experiment they would make a sequence of decisions with the goal of having the most money at the end of the experiment. Subjects were told that those with more money at the end of the experiment than the median of all of the participants' earnings would receive extra course credit.

3. Analyst recommendation.
   Before subjects made their investment decisions, we displayed analysts' recommendation information on participants' screens. They were told that this recommendation was made on the basis of stock prices and economic performance of the analysed company. The presented recommendation was either neutral or positive. We decided not to present negative recommendations because it would result in most of the participants not investing any money in step 4. This would be undesirable because the amount of money invested corresponded to subjects' valuation of company's stock and we later used this value as a benchmark for evaluating how subjects' preferences changed in response to new information.
4. First investment.
   The participants decided how much of the 10 000 virtual monetary units they wanted to invest.
5. Reputation value and reputation domain.

After subjects invested their money one of the following messages appeared on their screens:

- The media have just published information about the company Alfa having been placed at the bottom of the ranking of companies following business ethics principles (treatment conditions one and two);
- The media have just published information about the company Alfa having won the first place in the ranking of companies following business ethics principle (treatment conditions three and four);
- The media have just published information about the company Alfa's permission to operate on Asian markets having been revoked, which can significantly worsen its financial results.(treatment conditions five and six);
- The media have just published information about the company Alfa having been granted permission to enter Asian markets, which can significantly improve its financial performance (treatment conditions seven and eight);

6. Second investment.

After displaying the information presented in step 5, we gave subjects another 10 000 virtual monetary units. They could use it to buy additional stock of the same company or they could sell some of the stock they had bought earlier at the price of the purchase.

7. Survey.

At the end of the experiment subjects filled out online questionnaires to help us capture the following of their psychological characteristics:

- trust in strangers (a measure introduced in the German Socio-Economic Panel Study);
- individual risk attitudes using a self-reported measure introduced in the German Socio-Economic Panel Study and Dohmen and Falk's (2011) variation of Holt & Laury's (2002) incentivized paired lottery choice task.

Table 1. Number of subjects in treatment conditions

No of treatment condition	Experimental factors			No of subjects
	Analysts recommendation	Reputation value	Reputation domain	
1	neutral	negative	ethical	26
2	positive	negative	ethical	26
3	neutral	positive	ethical	28
4	positive	positive	ethical	30
5	neutral	negative	financial	34
6	positive	negative	financial	40
7	neutral	positive	financial	24
8	positive	positive	financial	29
			Total:	**237**

Source: own compilation.

In total, 237 subjects participated in the experiment with each subject participating only once. The number of subjects per treatment condition is presented in *Table 1*.

3. Findings

Data construction – Out of 247 collected observations we removed 10 because they contained missing data or answers that seemed random and/or incoherent. For example,

following previous research (cf. Heinemann *et al.*, 2009), we excluded those subjects from analysis who switched more than once in paired lottery choice task.

Table 2. Codebook

Variable	Type	Interpretation	Additional information, example questions, etc.
buy shares	binary variable	1 means that the participant bought shares in the second investment, 0 means that she either sold shares or did not do anything	
analysts recommendation	dummy variable	1 means that the recommendation was positive, 0 means it was neutral	
value of reputation	dummy variable	1 means positive reputation, 0 means neutral reputation	
domain of reputation	interaction term	1 means a financial domain, 0 means an ethical domain	
(value of reputation) × (domain of reputation)	interaction term	Interaction of value of reputation and domain of reputation variables	
sex	interaction term	1 means male, 0 means female	
studies	interaction term	1 means a part-time student, 0 means a full-time student	
earnings	psychological measure	higher values correspond to being more risk-loving	
parents education	demographic measure	higher values correspond to being more risk-loving	
risk attitude (D&F)	risk measure	higher values correspond to being more risk-loving	number of risky bets in the incentivized paired lottery choice task
risk attitude (SOEP)	risk measure	higher values correspond to being more risk-loving	How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?
trust in strangers	risk measure	higher values correspond to being more risk-loving	

Source: own compilation.

Sample characteristics – 140 out of all 237 participants identified themselves as females (59.07%). Study participants were either full-time students (almost 74.68%) or part-time students. The mean of subjects' age was 24.2 (median = 24.0, SD = 2.8, min = 19, max = 45).

Data analysis – To verify our hypotheses, we ran a probit regression. In the probit regression model the outcome variable was the result of the buy-or-sell decision (when all three reputational factors were known). In the probit regression, the inverse standard normal distribution of the probability is modelled. In this case in was distribution of the probability as a linear combination of the following 11 predictors, classified in three groups:

- factors in the experiment (A: Analysts recommendation; B: Reputation value, C: Reputation domain; B and C interaction),
- socio-demographic data (sex, studies, subject's earnings, parents' education),
- psychological data (trust in strangers, individual risk attitudes, risk attitudes HL).

The applied model was found statistically significant (Prob>chi2=0) with McFadden's pseudo R-squared at the level of 0.4129. The results shows that each of three factors (analysts' recommendation, reputation value, and reputation domain) is statistically significant in the model (*Table 3*). Better analysts' recommendation increases the predicted probability of buying. This confirms that investors believe in analysts' recommendations, just like in the above mentioned research (Hong, Kubic, 2003). Similarly, interpretation of the second factor is quite straightforward: better reputation increases the predicted probability of buying. Quite interesting is the role of the third factor.

Seemingly information regarding financial factors leads to a higher probability of buying than ethical information. However, we have detected a significant interaction between this factor and the value of the information (1.224 [0.276, 2.172], p=0.011; *Table 3*).

Table 3. Results of the probit model

			Prob > chi2 =			<0.0001
Log pseudolikelihood =	-92.945098		Pseudo R2 =			0.4129
	Robust					
Buy shares	**Coef.**	**Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**	
analysts recommendation (A)	**0.5264806**	0.2217299	2.37	**0.018**	0. 0918979	.9610633
value of reputation (positive/negative; B)	**1.371313**	0.3129438	4.38	**0.000**	.7579546	1.984672
domain of reputation (ethical/financial; C)	**-0.7011657**	0.2532701	-2.74	**0.006**	-1.203552	-.1987795
(value of reputation) × (domain of reputation) = $(B \times C)$	**1.223756**	0.4835483	2.53	**0.011**	. 276019	2.171494
sex	-0.2914531	0.2350519	-1.24	0.215	-.7521464	.1692402
studies	0.4005572	0.2937651	1.36	0.173	-.1752119	.9763262
earnings	0.0352574	0.0444695	0.79	0.428	-.0519013	.1224161
Parents education 1	-1.226492	0.7812	-1.57	0.116	-2.757616	.3046322
2	-1.120067	0.489987	-2.29	0.022	-2.080423	-.1597097
3	-0.2487838	0.7815773	-0.32	0.750	-1.780647	1.28308
4	-0.4804562	0.6334446	-0.76	0.448	-1.721985	.7610724
5	-0.775718	0.5032362	-1.54	0.123	-1.762043	.2106068
risk attitude (HL)	0.0172816	0.0377286	0.46	0.647	-.0566651	.0912283
individual risk attitudes (SOEP)	-0.0661598	0.0612619	-1.08	0.280	-.1862309	.0539113
trust in strangers (SOEP)	-0.0120076	0.0608901	-0.20	0.844	-.13135	.1073348
constant	0.6425028	0.7680847	0.84	0.403	-.8629156	2.147921

Source: own compilation.

The interaction plot for three variables in the experiment shows that investors tend to react much stronger to financial reputation than to the ethical one (*Figure 1*). When the

reputation value (B) is negative, i.e., when there is information about reputation damage, probability of buying is smaller in the financial domain than in the ethical one. In other words, bad information about ethical conduct in a given company does not influence investors' willingness to buy shares as strongly as bad financial information. In the case of an increase in reputation, i.e., when there is information improving company's reputation, financial information increases probability of buying shares more than positive information in the domain of ethics (*Figure 1*).

Finally, we found that none of the socio-demographic data or psychological data was a significantly correlated with our outcome variable (*Table 3*).

As a result, if F is denoted as the cumulative distribution function (CDF) of the standard normal, the predicted probability of buying shares is:

$$F\ 0.6425028 + 0.5264806\,A + 1.371313\,B - 0.7011657C + 1.223756\ C \cdot B\ ,$$

but having a high p-value for the intercept should not be considered statistically significant (0.643 [-0.863, 2.148], p=0.403; *Table 3*).

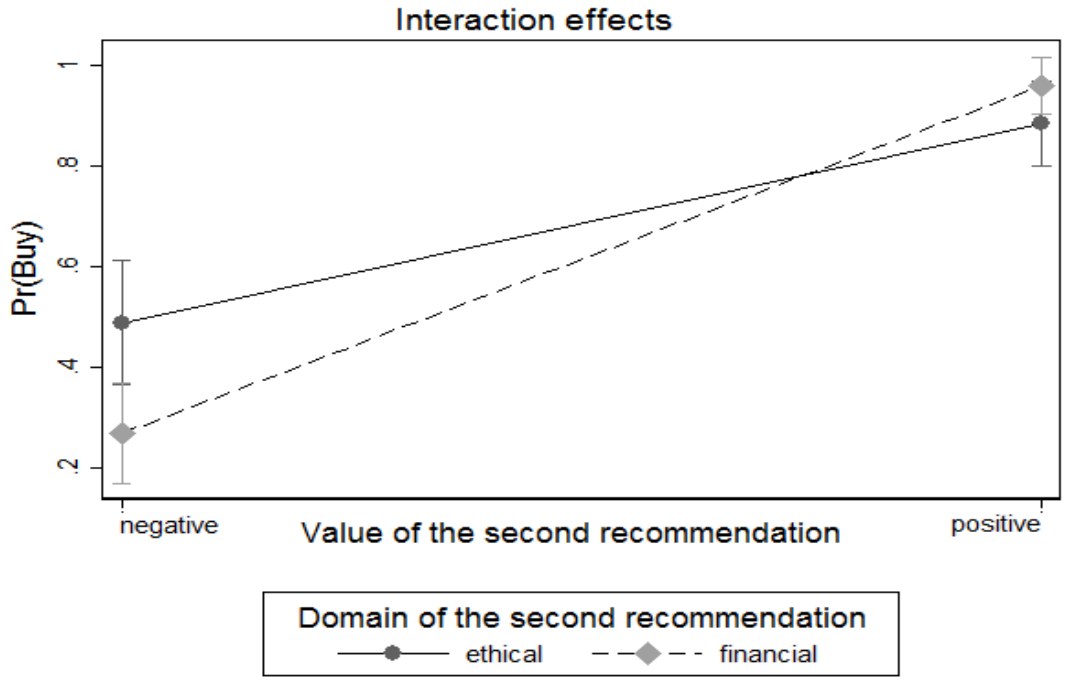

Figure 1. Interaction plot for three variables in the experiment
Source: own compilation.

So far we have shown that investors are more sensitive to financial information than to information about ethics. Now, we will examine if reputation damage has a stronger impact on changes in the planned investment's value than improvement in company's reputation. To that end we compared the percentage change in the amount of money invested after introducing information influencing company's reputation either positively or negatively.

The arithmetical mean of percentage changes in the group of reputation damage equalled -15.35%. This means that after receiving information that was worsening company's reputation subjects withdraw on average 15.35% of the previously invested sum (*Table 4*). After receiving positive information about an increase in company's reputation, subjects increased the amount invested on average by 72.79% of the previously invested sum. However, standard deviations were quite high in both cases.

Table 4. Mean and standard deviation of percentage change in the invested amount in groups receiving negative or positive information

Reputation value (B)	mean(pc)	sd(pc)
Negative	-.153492	.5716549
Positive	.727928	.5973839

Source: own compilation.

We reached similar results even after narrowing our analysis to the interquartile range (*Table 5*). Subjects who received information damaging company's reputation withdraw 18.40% of the invested amount. In turn, participants who received information improving company's reputation increased the invested amount by 77.42%.

Table 5. Mean and standard deviation of percentage change in the invested amount in groups receiving negative or positive information – in the interquartile range

Reputation value (B)	mean(pc)	sd(pc)
Negative	-.184000	.5444794
Positive	.774286	.5111266

Source: own compilation.

Additionally, we conducted a non-parametric equivalent of ANOVA using the Kruskal-Wallis test (*Table 6*) to verify whether samples originate from the same distribution. This test extends the Mann-Whitney U test and is used for comparing two or more samples that are independent, and that may have different sample sizes.

Table 6. Kruskal-Wallis equality-of-populations rank test (by B)

Reputation value (B)	Obs	Rank Sum
Negative	126	9976.50
Positive	111	18226.50
chi-squared = 90.758 with 1 d.f. probability = 0.0001 chi-squared with ties = 91.298 with 1 d.f. probability = 0.0001		

Source: own compilation.

On the basis of the Kruskal-Wallis test, the null hypothesis should be rejected which means that one sample stochastically dominates the other sample. Even when standard deviations were so high, the test shows the statistically significant difference between these groups.

Subjects whose company turned out to have bad reputation were less willing to sell shares than the subjects who invested in a company that turned out to have good reputation were willing to increase their investments (-18.40% vs. +77.42%). This is quite surprising because intuitively investing in a company with a poor reputation seems more risky than investing in a company with a good reputation. If this assumption is true, then it could seem that participants in the bad reputation treatment condition were more risk loving than those in the good reputation treatment condition. We have verified this using a two-sample Wilcoxon

rank-sum (Mann-Whitney) test and found no significant differences in risk attitudes (measured by the incentivized paired lottery choice task) between these two groups of participants ($z = -0.660$, $p = 0.5091$). Based on this result we conjecture that the participants either did not consider investing in companies with poor reputation as risky or there is some outside factor that we did not include in the analysis.

Summary, study weaknesses and directions for future research

We have designed and conducted an experiment to study the impact of reputation on investments decisions. In our analysis we did not find support for the hypothesis that financial information is more significant to investors than information considering ethical aspects in the process of corporate reputation building. However, we have established that reputation damage does not have a stronger impact on changes in the planned investment's value than improvement in company's reputation. This is a surprising result which calls for further examination in the future.

Our study has a few weaknesses. First, subjects in our experiment made one-shot decisions in isolation from other market players. Second, our subject pool consisted only of students and not necessarily of real investors. Finally, participants were incentivized with course credit and not with real money which might have influenced their decisions. To address these shortcomings future studies should allow participants to make repeated investment decisions and to potentially interact with other players. These interactions could either be simultaneous (e.g., players making decisions at the beginning of each one of many rounds) or sequential (e.g., players making decisions after seeing others' actions). To make results more representative, future studies should include a larger and more diverse pool of participants as well as ensure that real monetary payoffs are paid to subjects after the study. Implementation of these recommendations might, however, require substantial financial resources.

This study contributed to the reputation building literature by examining the impact of various factors related to reputation on investor decision-making. We hope that other scholars in this area will build upon this research in their own work.

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