

OVERCONFIDENCE MANAGERS AND THE PRESENCE OF LEVERAGE RISK

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Abstract

How to cite this paper: Martono, S., Yulianto, A., & Wijaya, A. P. (2023). Overconfidence managers and the presence of leverage risk [Special issue]. *Corporate Governance and Organizational Behavior Review*, 7(2), 392–398. <https://doi.org/10.22495/cgobrv7i2sip17>

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ISSN Online: 2521-1889
ISSN Print: 2521-1870

Received: 27.10.2022
Accepted: 22.05.2023

JEL Classification: G41, G32
DOI: 10.22495/cgobrv7i2sip17

In the presence of risky debt, the manager's incentives change from refusing to accept projects with more risk (risk-shifting) and rejecting projects with less risk (risk-avoidance). Managers with all-level confidence produce different biases of behavior about risk and uncertainty. The paper aims to analyze the influence of the debt to asset ratio (DAR) and managers' overconfidence level on business risk. After extremely censored data 10 percent above, the type of pooled data collected is 3016 observation units of companies listed on the Indonesia Stock Exchange (IDX) period 2008–2019. Dummy regression was used for analysis with DAR, and *level of overconfidence manager* (high, upper middle, upper lower, low of overconfidence) is the explanatory variable, and *business risk* is the dependent variable. The presence of risky debt does not always produce risk-shifting, but in the reverse form is risk-avoidance (underinvestment in risky projects). Managers fear losing their jobs and earning a bad reputation, and the results have distorted the managers' all-level confidence role.

Keywords: Leverage, Risk, Overconfidence, Risk-Shifting, Risk-Avoidance

Authors' individual contribution: Conceptualization — S.M. and A.Y.; Methodology — S.M. and A.Y.; Validation — A.P.W.; Formal Analysis — A.Y. and A.P.W.; Investigation — S.M. and A.Y.; Data Curation — A.P.W.; Writing — Original Draft — S.M. and A.Y.; Writing — Review & Editing — S.M., A.Y., and A.P.W.; Supervision — S.M.; Project Administration — A.P.W.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

Acknowledgements: The Authors express gratitude to the Ministry of Education, Culture, and Research Technology, Republic Indonesia through a research grant of Universitas Negeri Semarang, 2022.

1. INTRODUCTION

Tversky and Kahneman (1992) proposed prospect theory, managers in companies that have lost impact increasing risk and decreasing risk if the company makes a profit. After the debt contract and understanding of the risk probability, risky debt has changed managers' incentives, whereas the overinvestment problem provides incentives for risk-shifting. Managers create value for shareholders from debtholders by selecting projects with higher-than-average risk (Jensen & Meckling, 1976). On the contrary, it stimulates risk avoidance, where debt managers choose conservative and prudent investment policies by staying focused on the core

business by selling or reducing assets (Brito & John, 2002).

The ownership structure in Indonesia tends to concentrate on majority shareholders (La Porta et al., 1999), and the agent (manager) has an affiliation with the principal (Claessens et al., 2000), resulting in ownership and control functions are not separated (coincide as owner-manager firm). As a result, there is a conflict of interest between internal and external shareholders who are not directly involved in firm management (Jensen & Meckling, 1976). The overconfidence in managers exacerbates this situation; they think that many know more than the truth or have overestimated self-capability (Stein, 2001), thus producing more losses for external shareholders, including debtholders.

Manager overconfidence is a form of biased behavior from individuals that leads to irrational decisions. Behavioral biases include asymmetric risk preference, namely, when there is a loss, the individual becomes a risk seeker. On the other hand, when there is profit, he becomes risk-averse (Fernandes, 2007). In contrast, managers as risk-averse and risk-seeker agents can be prevented through institutional roles, resulting in efficient investment decisions (Jarbouli & Boujelbene, 2012). In another form, overconfidence managers underestimate the probability of bankruptcy risk and financial distress to have more leverage than when they are rational or probability-weighted (Rihab & Lotfi, 2016; Tversky & Kahneman, 1992).

When the manager's confidence level is related to the overestimate of available competence and self-ability and is optimistic about the company's condition (Stein, 2001), they act unusually and irrationally. In prospect theory, Tversky and Kahneman (1992) explains that managers as individuals have behavioral biases because differences in risk and uncertainty preferences result in risk seekers and underestimate the probability of bankruptcy. The presence of asymmetric information has produced biases in the behavior of overconfident managers. Managers who are more informed as they act in the interests of shareholders and the presence of risky debt have shifted their incentives to risk. The ownership structure in Indonesia is concentrated so that managers act on the interests of shareholders, so the presence of risky debt stimulates managers to risk-shifting and risk-avoidance. Therefore, the paper aims to analyze the effect of risky debt on business risk at each level of manager confidence.

The rest of the paper is organized as follows. In Section 2, the literature on pecking order and signaling theory. Section 3 describes the research method. Section 4 describes the empirical results; thus Section 5 describes the discussion and finally, Section 6 concludes.

2. LITERATURE REVIEW

Paper by Tversky and Kahneman (1992) criticized traditional finance, which assumed an efficient market, investors are rational, and cognitive errors do not determine investors' decisions. When managers are more informed about the company's prospects in the future, compared to the other parties, managers can make rational decisions to gain informational advantages over shareholders (Harris & Raviv, 2010; Stiglitz, 2000). Managers as rational economic agents, try to maximize their utility. As a result, they use scientific methods in making decisions.

In fact, not all parties have perfect information about the future (symmetric and imperfect information). However, the advantage of the manager is that the agent manages the firm directly so that it can act on its interests or the interests of the shareholders. As a result, managers prefer to speculate when losses are compared to profits (Zhang et al., 2022). The presence of uncertainty can stimulate managers' incentives to be irrationally caused by psychological factors (Jarbouli & Boujelbene, 2012). The impact, when the manager's irrational decisions act on the interests of

shareholders, can be detrimental to the other party. Lang et al. (1996) have documented that growth opportunities are uncertain, so managers can take completely different actions when more informed.

The presence of uncertainty causes investment decisions to become essential when their psychology and environment stimulate managers' decisions to be biased. Behavioral biases can be categorized into cognitive and emotional, leading to irrational decisions. Cognitive bias occurs because of faulty reasoning to be aligned with rational theory when given advice and information. Contrary, emotional bias is caused more by impulsive feelings or intuition than reasoning, so it is difficult to harmonize with rational theory (Fernandes, 2007).

Tversky and Kahneman (1992) have explained the irrational behavior in the S-Shape; when the shape is concave (loss), then the agent tends to be risk avoidant; on the contrary, when the shape is convex (gain), the agent tends to be a risk seeker. Managers are more sensitive to losses than gains, so they tend to act as risk-seeker than risk-averse (Benartzi & Thaler, 1995). Thus, when managers as individuals act to serve the interests of shareholders, they are sensitive to losses; hence, they tend to act as risk-seekers rather than risk-avoidance. This situation is exacerbated by the manager's overconfidence, a cognitive disorder (Jarbouli & Boujelbene, 2012) where they make irrational decisions because they give an opinion that overestimates ability above average. It affects the agent's decision in rational economic decisions.

The problem of overinvestment and underinvestment is related to the country's economy due to changes in the global economy. The 2018 economic crisis in developing countries, including Indonesia, resulted in uncertain economic conditions, further encouraging companies to overinvest by adopting unprofitable projects (Irawan & Okimoto, 2021). In contrast, when overinvestment is carried out pre-crisis, many companies go bankrupt during the crisis; hence, it impacts post-crisis prevention through underinvestment (Park et al., 2009).

The risk-shifting and risk-avoidance behavior is an overconfident manager's financial decision based on a preference for risk. They are likely risk-seekers by risk-shifting; the presence of leverage stimulates them to choose a risky project because even though the probability is low, it can provide higher yields. Jensen and Meckling (1976) explained that managers at levered firms tend to choose projects with above-average risks because they will generate higher yields. On the contrary, Brito and John (2002) explain the risk-avoidance or risk-averse hypothesis: individuals tend to have a low risk or high probability but provide low yields. Managers prefer projects with below-average risk; even though the yield is lower but high probability.

Capital structure relates to growth opportunities caused by economic conditions (Bruto & John, 2002). Total resources, including capital structure, are lower than they should be to take advantage of growth opportunities. In this case, the investment policy is underinvestment and hinders the creation of the company's economic value (La Rocca et al., 2011; Myers, 1977). On the contrary, the allocation of company resources exceeds the optimal one, so managers overinvest and enjoy

greater personal benefits (Jensen, 1986). To sum up, the deviation of investment level relates to the utilization of growth opportunities caused by economic conditions. The presence of information asymmetry, along with incomplete contracts and conflicts between managers, shareholders, and debtholders, produce investment inefficiency when debt levels are high or low.

In addition to resource allocation to take advantage of growth opportunities based on the high or low level of debt, the risk profile is also determined. The inherent risk difference in investment decisions stimulates managers' decisions that differ from before when the company's risk exceeds the average risk. Companies invest with above-average risk when debt levels are high, resulting in the risk-shifting transference of value from debtholders to shareholders (Jensen & Meckling, 1976). On the contrary, when it is estimated that future growth opportunities will provide more benefits, the company will avoid higher-than-average investments (Brito & John, 2002; La Rocca, 2007).

Thus, the presence of a level of leverage not only impacts investment decisions but also depends on risk. With the high level of leverage and above-average risk, managers decide on risk-shifting so that debtholders will lose value if they fail. On the contrary, they are risk-avoidance and choose a lower risk than average, so they can take advantage of future growth opportunities.

Managers' overconfidence exacerbates the risk-shifting problem when in principle, needs and egomania replace the needs and interests of the principals. As a result, their financial decisions become irrational by choosing a risky project above the company average. In different circumstances, managers become rational when a higher level of leverage, i.e., avoiding risky projects because it indirectly impacts their reputation (Hernández-Lagos et al., 2017) and loses their job (Agrawal & Matsa, 2013). The deviation of investment policy is shown in Table 1.

Table 1. The sources setting the deviation of investment policy

<i>Level of investment</i>	
Overinvestment	Jensen (1986)
Underinvestment	Myers (1977)
<i>Level of risk</i>	
Risk-shifting	Jensen and Meckling (1976)
Risk-avoidance	Brito and John (2002)

Debt is a trade-off between costs and benefits. Although the ownership structure is proven to discipline the behavior of managers in using resources directly, it is proven that debt is indirect because the debt must be paid first, and the interest is charged (La Rocca et al., 2007). On the other hand, changes in leveraged-to-leveraged firms result in increased risk, even when debt is less than cash flow (Berg & Demarzo, 2017).

The presence of leverage in companies with overconfident managers will result in irrational behavior. In contrast to optimism, overconfidence causes them to reduce risk and increase returns more than they should (Jarbouli & Boujelbene, 2012). They make decisions that overestimate from low

probability or underestimate from high probability (Fernandes, 2007). When the increased risk causes the possibility of bankruptcy to rise, they can act irrationally with underestimates of bankruptcy. The result is that investment decisions are risk-shifting. In contrast, when the probability of bankruptcy is small due to low leverage, they overestimate, resulting in risk-avoidance.

Thus, the presence of leverage and the behavioral biases of managers in the form of overconfidence that has been produced by uncertainty can result in the selection of more risky projects (risk-avoidance). Inverse, when the agent is more informed and certain then chooses a project with less risk (risk-shifting) (agency theory). Then the alternative hypothesis is:

H1: Prospect theory perspective, uncertainty has resulted in a negative effect of leverage on business risk at every level of confidence.

H2: The perspective of agency theory, certainty, and more informed agents have produced a positive effect of leverage on business risk at every confidence level.

3. RESEARCH METHODOLOGY

Data has been collected on 8 industrial sectors and published financing and banking sectors listed on the Indonesia Stock Exchange (IDX) 2008–2019 and 3016 units of observation have been obtained. The difference between the regulator between the financing and banking sector and others is: 1) the Financial Services Authority (OJK) in Indonesia is only a regulator in the financing and banking sector (Martono et al., 2021); 2) substantially the capital structure by banking differs from the non-financial sector from various sectors, it includes deposits, sources of financing which are generally not found in non-financial and banking (Allen, 1991; Flannery & Rangan, 2006). To compile the analysis, the paper omitted the extreme data by censoring the upper and lower extreme data by 10% each (Mueller, 2011).

The fundamental base is that a project is a high risk if it exceeds the total risk in the total company and a low risk if it is smaller (La Rocca et al., 2007). To measure the overconfidence level, use an ordinal scale with a chief executive officer's (CEO) profile photo proxy in the annual report (Schrand & Zechman, 2012). When there is no photo profile given point 1, one page other than the CEO photo is given point 2, less than one page is given point 3, and more than one page is given point 4. Points from 1 to 4 indicate managers with very low (low), low (upper-lower), high (upper-middle), and very high (high) confidence.

Skewness is the degree of asymmetry of the observed data in a probability distribution compared with the average risk (Brito & John, 2002; La Rocca et al., 2007). When the risk has a positive skewness, the chance of a below-average risk is greater than an above-average or a low-risk project. In contrast, when the risk has a negative skewness, the above-average risk opportunities are greater than those below the average or high-risk projects.

We develop an analysis (Gujarati & Porter, 2009) which is based on a dummy based on the prediction of the effect of debt to asset ratio (DAR) on business

risk at each manager's confidence level (Chai et al., 2016), and the equations:

$$Y_i = C_i + \beta_{1i}D_{1i} + \beta_{2i}O_{2i} + \beta_{3i}O_{3i} + \beta_{4i}O_{4i} \quad (1)$$

where,

- D = DAR;
- $O_2 = 1$ when managers are low confidence and $O_2 = 0$ is other;
- $O_3 = 1$ when managers are high confidence and $O_3 = 0$ is other;
- $O_4 = 1$ when managers are very-high confidence and $O_4 = 0$ is another.

The paper used the DAR because when leverage exceeds total assets, bankruptcy occurs, and there is nothing more the company can do (Spiegel, 2016). For risk, the paper used the standard deviation of return on assets (ROA) to explain the earning volatility caused by the leverage (Huq, 2016; Wen, 2010).

The generalized form of prediction is inferential to test hypotheses. The alternative hypothesis will be accepted if the probability (Prob.) does not exceed 0.05. The positive sign in the coefficient D (DAR) is that β_{1i} is interpreted by agents as more informed and more certain so they

can make better decisions than debtholders (supported by agency theory). As a result, they are risk-shifting. Inverse, when negative is interpreted, both have imperfect information (uncertainty), and the agent is stimulated to risk-avoidance.

4. RESEARCH RESULTS

4.1. Descriptive statistics

Testing data outliers after being censored shows a symmetrical size and tends to be bell-shaped on the normal curve. The company's risk and DAR at each confidence level are relatively homogeneous, and no data outliers are found.

Panel A of the Table 1 reports that managers with high confidence have a larger unit of observation than others of the level of confidence. The level of over-confidence manager produces a negative skewness, or most units of observation have a DAR that exceeds the median; in contrast to other levels of confidence, they have a DAR of less than the median.

Table 1. Descriptive statistics

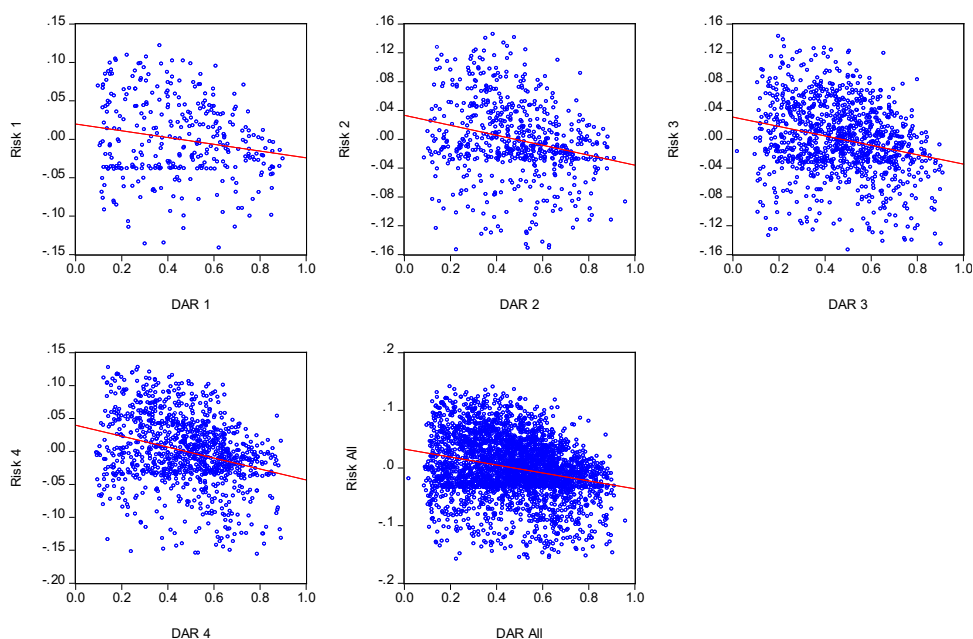
Profile of overconfidence manager					
	Very low	Low	High	Very high	All
N obs.	329	611	1049	1027	3016
Panel A: Descriptive statistics					
<i>DAR</i>					
Min	0.099	0.088	0.020	0.092	0.020
Q1	0.269	0.338	0.330	0.340	0.328
Median	0.451	0.479	0.473	0.489	0.476
Q3	0.614	0.616	0.610	0.617	0.615
Max	0.900	0.960	0.912	0.893	0.960
Mean	0.451	0.481	0.472	0.479	0.474
Kurtosis	-1.008	-0.740	-0.786	-0.729	-0.785
Skewness	0.161	0.080	0.059	-0.058	0.031
<i>Risk</i>					
Min	-0.141	-0.153	-0.154	-0.156	-0.159
Q1	-0.037	-0.027	-0.029	-0.030	-0.030
Median	-0.005	-0.007	-0.001	-0.003	-0.003
Q3	0.041	0.033	0.033	0.036	0.035
Max	0.122	0.145	0.143	0.127	0.141
Mean	0.000	0.000	0.000	0.000	0.000
Kurtosis	-0.397	0.325	0.244	0.218	-0.785
Skewness	0.032	-0.014	-0.142	-0.202	0.031
Panel B: Regression analysis					
Intercept	0.059*	0.063*	0.064*	0.078*	0.033*
DAR	-0.044*	-0.069*	-0.065*	-0.083*	-0.069*
R-squared	0.033	0.058	0.059	0.083	0.063
F-test	11.257	37.713	66.002	92.252	201.034
Prob.	0.001	0.000	0.000	0.000	0.000

4.2. Robustness test

Before testing the regression test, the paper explained that the data has robustness with sub-sample tests at various confidence levels (Li & Chen, 2016). Each figure name describes the DAR

pattern at each level of confidence, namely low (low) for DAR 1, low (upper-lower) for DAR 2, high (upper-middle) for DAR 3, and very high (high) for DAR 4, and DAR 5 describes the slopes for all levels of confidence.

Figure 2. Robustness test



Dissimilar regression explains that at all confidence levels, there is no difference in the negative relationship between DAR and the choice of risk business. When DAR increases, it results in a decrease in business risk by managers. To sum up, it provides additional evidence due to differences in intercept and slope due to differences in risk preferences that affect differences in decisions at each confidence level.

4.3. Regression test

Panel B of the Table 1 reports at all levels of confidence, DAR has a significant negative impact on the risk (standard deviation) of ROA. The increase in managers' confidence levels has produced a more influential DAR to risk. Managers with more overconfidence, do not produce riskier project selection, but inverse, they tend to avoid risk. Managers with very-low of confidence have positive skewness and negative at the other level of confidence. Most of the observation units in managers with very low confidence choose risk over the median risk.

5. DISCUSSION OF THE RESULTS

The result tested two main hypotheses from the perspective of prospect and agency theory and found support for prospect theory. Managers with all confidence levels tend to avoid risk, as evidenced by the negative sign in regression analysis. The presence of risky debt, around 50%, has produced different incentives for managers; they choose to reduce risk when debt increases. With a concentrated ownership structure and the relationship between managers and majority shareholders, agency conflict does not occur between managers and shareholders but between manager shareholders and debtholders. All level-confidence managers act as if they are the best for shareholders with overestimates of available competencies and abilities compared to the actual

situation. As a result, they carry out investment activities that do not necessarily provide optimal returns (Stein, 2001). According to the findings, they can perceive the probability of the risk is lower than it should be, thus choosing risk-shifting.

Managers with low and very high overconfidence have a higher median of DAR than all firms as reference points. Indifferent in each confidence level, an increase in risky debt produces a decrease in risk. In Indonesia, the type of managerial ownership that is concentrated and affiliated with the majority shareholders produces managers acting on the interests of the majority shareholders. The presence of risky debt produces risk aversion because the majority shareholders maintain control of the firm. When the company is declared bankrupt, it bears debtholders and shareholders served by managers (Berg & Demarzo, 2017). Consequences for managers such as job loss (Agarwal & O'Hara, 2007), lost reputation (Hernández-Lagos et al., 2017), delayed, future growth opportunities are not taken advantage of by others, even to the point of losing control over the company (La Rocca et al., 2007). Thus, managers can act in their interests and majority shareholders are interested. As a result, it is detrimental to the interests of minority shareholders because they may miss investment opportunities with a positive net present value (risk-avoidance).

6. CONCLUSION

We have found that at every level of managers' confidence, the presence of uncertainty has increased in the capital structure which stimulates managers to choose projects with lower business risks. Thus, when agents act on self-interested and interesting share-holders, it can hurt debtholders. Managers are more careful and prefer to avoid risk, as a form of maintaining their reputation, they are even afraid of losing their jobs.

Paper by La Porta et al. (1999) documented that Indonesia is one of the countries with a concentrated

ownership structure. Therefore, they try to choose affiliated directors or commissioners to defend their interests (Claessens et al., 2000). In fact, with debtholders, agents who act in their interests and interested shareholders have symmetric information about uncertainty in the future. The presence of information asymmetry, which results in concentrated ownership, stimulates a more severe situation, the manager's all-level confidence decision which is a behavioral bias that can be caused by limited information (cognitive) and "mental error" (emotional). As explained in prospect theory, managers as individuals can make different decisions, including financing decisions, due to differences in preferences for risk and uncertainty. At all confidence levels, managers were found to be risk-avoidance projects with low-risk probabilities has producing risky debt. In line with the ownership

structure in Indonesia, they are trying to improve the welfare of the majority shareholders affiliated with them.

Presence of less leverage, they do risk-avoidance on projects with low risk because they don't want to transfer wealth to minority shareholders. The increase in leverage will be offset by an increase in the probability of bankruptcy, and with the limited liability of shareholders, debtholders will take over the company. As a result, managers lose their jobs, reputations, and total control over the company.

The limitation of the research is the inability to observe the behavioral biases of each manager experimentally. Bringing together managers and conducting experimental research is impossible because of their busy lives, so the paper only uses secondary data.

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