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The Effect of Company Performance to Managerial Risk Taking: an Insight from Prospect Theory

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Abstract

One of the fundamental principle in Finance is that people behave in risk averse manner. Risk is only taken if it will result in higher expected value. The higher the risk, the higher also value to be expected. However, Prospect Theory predicts that in loss situation people will exhibit risk seeking behaviour. We test this hypothesis by evaluating how company performance influence managerial risk taking. It is proposed that low performance will induce managers to be risk seeking, and thus increase the level of managerial risk taking. The result is important as past performance might shift the amount of risk from optimal level, and thus affecting company value negatively. Company management might need to device certain procedures to neutralize the effect of performance to managerial risk taking.

Keywords: Managerial Risk Taking, Risk Aversion, Prospect Theory, Behavioral Finance

1. Introduction

One of the main theory in Finance is the positive relation between risk and return. This is because human beings will only be willing to take additional risk only if there is additional return. This behavior is called risk aversion. It is assumed that human being are always risk averse, thus the positive relation between risk and return. However several papers found that in certain situation the relation between risk and return is negative. Ang et al. (2006), Baker, Bradley and Wurgler (2011), Blitz, Pang and Van Vliet (2013), Frazzini and Padersen (2014), Dutt

and Humphery-Jenner (2014), Garcia et al (2015), and Blitz (2016) found that stocks with lower volatility earn higher return. This phenomena is called volatility paradox. Volatility paradox is usually explained as the result of human tendency to be affected by various kind of bias (Baker, Bradley dan Wurgler, 2011). For example, overconfidence bias makes stock investor overestimate his ability to pick winning stocks. However, so far there is no empirical result that connect the bias to negative relation between risk and return.

Another phenomena that also shows negative relation between risk and return is Bowman Paradox (Bowman, 1980). Bowman found that companies with low organizational risk (as measured by variance of ROE and ROA) have higher return (as measured by ROE and ROA). Bowman explained it as the result of management capability. Companies with high management capability are able to reduce risk and in the same time increase return. While companies with low management capability are unable to reduce risk, and also are unable to increase return. The result of Bowman paradox has been confirmed by various subsequent papers. For example Fiegenbaum and Thomas (1988), Fiegenbaum (1990), Bromiley (1991), Wiseman dan Bromiley (1996), Tsai dan Luan (2016), Patel et al. (2017), and Gupta (2017).

Later papers on Bowman Paradox use Reflection Effect in Prospect theory to explain negative relation between risk and return. According to Reflection Effect, human beings behave differently in gain and in loss situation (Kahneman and Tversky, 1979). In gain situation human beings are risk averse, just as predicted by conventional Finance theory. However, in loss situation, human beings are risk seeking. The risk seeking behavior gives rise to negative relation between risk and return. In relation to Bowman Paradox when return is low, management is in loss situation and thus become risk seeking. The risk seeking management naturally results in higher organizational risk. The process causes negative relation between company return and organizational risk. Fiegenbaum dan Thomas (1988) found that Bowman Paradox only happens in companies with low return, and thus supports argument that Bowman Paradox is due to Reflection Effect.

Assuming that management behavior affecting organizational risk directly might not be appropriate. Prospect Theory describes behavior of individual human being instead of organization. It is more appropriate to assume that management behavior affects managerial risk taking. Managerial risk taking is defined as “top managers’ strategic choices associated with uncertain outcome” (Hoskisson et al., 2016). It is different from organization risk which is defined as ‘outcome uncertainty due to managerial risk’. This paper investigate the relation between company performance and managerial risk taking. It is hypothesized that in company with low performance, management is in loss situation and thus become risk seeking. The risk seeking behavior will make management engage in managerial risk taking. Thus managerial risk taking will be higher in low performance company compared to high performance company.

2. Literature Review

It is usually assumed that human beings always behave rationally such that when faced with two options with uncertain outcome, the choice is made in a way that maximize its utility. The theory that describes this behavior is Expected Utility Theory (EUT). EUT was proposed by Neumann and Morgenstern (1944). It has been widely used as the basis of economic theory (Schoemaker 1982; Starmer 2000). However, several research found that there are situations where human beings do not follow prediction of EUT (Elsberg, 1956).

To explain behaviors that deviate from EUT predictions, Kahneman and Tversky (1979) proposed a new theory called Prospect Theory (PT). Prospect Theory can be seen as a further development from Expected Utility Theory. In contrast to EUT, human behaviors predicted by PT are sometime looks irrational. This irrationality is demonstrated empirically, and cannot be explained by previous theories that consider humans are entirely rational in making decisions. Kahneman and Tversky's was awarded the Nobel prize in economics in 2002 for their finding.

The main difference between the Expected Utility Theory and Prospect Theory is on the use of reference point in Prospect Theory. It creates the difference on the source of utility. At EUT, the utility comes from the total value. At PT, the utility comes from a change of value. For example someone who has Rp.600,000 gets an additional Rp. 400,000 so the total has Rp.1,000,000. At EUT, the addition of utilities comes from a utility difference of Rp.1,000,000 with a Rp.600,000 utility. Or in other words the addition of utility = $U(\text{Rp.1,000,000}) - U(\text{Rp.600,000})$. At PT the addition of utilities is calculated as a utility of Rp.400,000. Or in other words the addition of utility = $U(\text{Rp, 400,000})$.

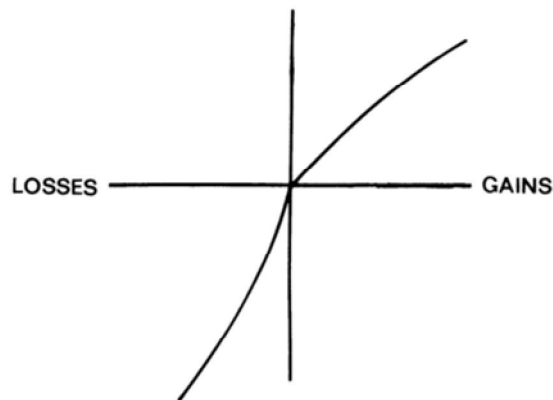
The change of value as a source of utility at the PT suggests a point of reference to measure the magnitude of the change in value. This point of reference causes two states to arise, namely loss and profit. A loss state is when a change in value is negative, or a value reduction occurs. Instead the state of profit is when value addition occurs. The concept of the reference point, the state of loss, and the state of profit are only in the PT, and are not known on the EUT

According to Prospect Theory, a human being will compare his/her situation with a reference point, and then determine whether he/she is experiencing gain or losses (Kahneman and Tversky 1979). It was found that humans behave differently on the state of the gain and loss situation.

Prospect Theory suggests the following three things in describing human behavior when it took a decision on the selection of risky choice:

- a) Diminishing utility in the state of profit: more profit will result in higher utility in smaller and smaller scale
- b) Diminishing utility in the state of loss: more loss will result in lower utility in smaller and smaller scale
- c) Loss aversion: Losses results in greater suffering than the level of satisfaction generated by a gain by the same amount.

With these three concepts, the Utility Function in Prospect Theory is as follow



Figur 1 Utility Function in Prospect Theory
Source: Kahneman and Tversky (1979)

Several features are prominent in Figure 1:

1. There are two areas, namely the profit area to the right of the reference point and the loss area to the left of the reference point
2. The utility function takes the form of a concave in the area of profit, and is in the form of a convex in the loss area
3. The angle of inclination of the utility function is steeper in the loss area than in the profit area.

Concave utility function makes human beings risk averse in gain domain. This is because any increase in gain brings lower and lower utility. Thus any increase in risk must be accompanied with large enough gain. In loss domain, the shape of utility function is convex. Any loss causes less and less negative utility. Thus any risk has potential for both gain and loss is seen as favorable, creating risk seeking behavior.

3. Hypothesis

According to Reflection Effect in Prospect Theory human beings in gain situation will be risk averse, and risk seeking in loss situation. Management of a company with high performance is in gain situation and thus will be risk averse. Management of a company with low performance is in loss situation, and thus will be risk seeking. Management who is risk seeking will engage in more managerial risk taking activities compared to management who is risk averse. Thus it is hypothesized that company with low performance will have higher managerial risk taking in the subsequent period compared to company with higher performance.

4. Method

Companies in the sample is divided into companies with high and low performance. Companies with high performance is defined as companies with ROE in a particular year higher than median ROE of the companies in the same industry. For robustness, another division of high and low performance company is made based on ROA. Industry qualification follows nine industrial sector of Indonesian Stock Exchange. The nine industrial sectors are as follow:

1. Agriculture
2. Mining
3. Basic industry and chemical
4. Miscellaneous industry
5. Consumer goods
6. Property and real estate
7. Infrastructure, Utilities and Transportation
8. Finance
9. Trade, service, and investment

Managerial risk taking is proxied by two items, Capital Expenditure and Long Term Debt in annual report. Capital Expenditure is considered risky as the result of CE investment is uncertain, while Long Term Debt is risky as it increase bankruptcy risk (Palmer and Wiseman (1999), Low (2009), Coles, Daniel, and Naveen (2006), Devers et al. (2008)). Capital Expenditure is normalized with sales and Long Term Debt is normalized with equity. Long Term Debt is retrieved directly from annual report. Capital Expenditure is calculated as the increase of Fix Asset from previous year plus depreciation expense in current year.

Sample of this research consists of stocks from KOMPAS100 announced in January 2009, January 2010, January 2011, January 2012, January 2013, and January 2014. KOMPAS100 is list of 100 publicly traded company, chosen based on high liquidity, big market capitalization, and good fundamental. The list is maintained by Kompas daily in cooperation with Indonesian Stock Exchange. It is updated twice a year, every January (for period of February to July) and July (for period of August to December). Companies from Finance industrial sector are excluded from sample.

Every year, median ROE and median ROA of companies in each industrial sector is calculated. This calculation is based on all listed companies in that particular year. Median ROE and median ROA are used to determine whether a particular company has high performance or low performance. ROE and ROA of companies listed in January KOMPAS100 in that particular year are compared to industrial sector median ROE and ROA. Companies with higher ROE and ROA than median are classified as high performance companies. Companies with lower ROE and ROA than median are classified as low performance companies. Normalized long term debt and normalized capital expenditure of each company are then calculated, both for the current and subsequent year.

Normalized long term debt and normalized capital expenditure are then compared between current and subsequent year. Increase in normalized long term debt or normalized capital expenditure means increase in managerial risk taking. Decrease in normalized long term debt or normalized capital expenditure means decrease in managerial risk taking. Average change in normalized long term debt and normalized capital expenditure are calculated for both high performance group and low performance group, and the values are compared.

5. Result and Discussion

Result of the method described in previous section is summarized in below table.

Table 1, Comparison between High Performance and Low Performance Company

		ROE		ROA	
		High Performance	Low Performance	High Performance	Low Performance
LTD / E	# increase	141	27	141	27
	# decrease	165	31	164	32
	# no change	26	4	26	4
	Average change	0,86%	2,31%	1,07%	1,18%
CE / Sales	# increase	147	22	148	22
	# decrease	152	22	150	23
	# no change	2	0	2	0
	Average change	-4,45%	14,91%	-4,44%	14,45%

As hypothesized, companies with high performance show lower level of managerial risk taking compared to low performance companies. This is true either the performance is measured using ROE or ROA, and either the managerial risk taking is measured using Long Term Debt or Capital Expenditure.

As measured using ROE, high performance companies averagely increase Long Term Debt (as proportion to Equity) by 0.86% per year. Whereas low performance companies increase it by 2.31%. Measured using ROA, the numbers are 1.07% and 1.18% respectively.

Same result is derived when managerial risk taking is measured using Capital Expenditure. As measured using ROE, high performance companies averagely reduce Capital Expenditure (as proportion of Sales) 4.45% per year. In the contrary, low performance companies increase Capital Expenditure by 14.91% per year. Measured using ROA, the numbers are -4.44% and 14.45% respectively.

To determine whether the difference is significant or not, independent sample t test is performed using spss. The result is disappointing as the difference is not significant, even to 90% confidence level.

6. Conclusion and Recommendation

The result is problematic. On the one hand, the result is as predicted by hypothesize whereby low performance companies will show higher level of risk compared to high performance companies. It is true for both measurement of performance (ROE and ROA), and for both measurement of managerial risk taking (Long Term Debt and Capital Expenditure). However, t test shows that the difference is not significant. There are several factors that can cause the result. First, it is possible that the variation of Long Term Debt and Capital Expenditure changes are too spread out that it masks the difference between high and low performance company. Second, it is possible that company managements do not use industry median as reference point for their performance. Instead, they compare the current ROE and ROA with the previous year ROE and ROA. Management feels that they are in high performance condition if current year ROE and ROA is higher compared to previous year, and thus become risk averse. Conversely, when last year ROE and ROA higher, management feels that they are in low performance condition, and become risk seeking. Future reserach will seek for these possibilities.

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