

The Effect of Business Diversification on the Level and Volatility of Future Performance with Agency Cost as Moderating

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Abstract: *This study aims to study the effect of diversification on the level and volatility of future performance and to study the agency costs in affecting the relationship between diversification and performance. The samples are 370 manufacturing firm data listed on the Indonesia Stock Exchange during 2006 to 2010. Based on empirical tests, we concluded that the diversification strategy has a positive effect on the level of future performance and negative effect on the volatility of future performance. Related and unrelated diversification has a positive effect to the level of performance. Only unrelated diversification proved negative effect on the volatility of performance. The studies proved that the agency costs are moderate the relationship between diversification strategy and the future performance.*

Keywords: *diversification, related diversification, unrelated diversification, agency costs, level of performance and volatility of performance.*

1. Introduction

1.1. Issues

Diversification strategy as one of the strategies for business expansion can be done by opening a new business line, expand existing product lines or expand the marketing of products (C. Montgomery, 1994). Many studies consider that diversification has a positive impact on the firm. Among them, diversification increasing the efficiency of resource allocation due to lower transaction costs (Weston, 1970), increasing the asset utilizations and profitability (Teece, 1982, Williamson, 1975), providing protection against volatility (downside risk) in connection with the acquisition of revenue (Andrew, 2013) and supporting the trade-off between the risk and return (Amit and Livnat, 1989).

The concept that diversification can reduce the risk, has been accepted in the portfolio theory (Markowitz, 1952 in Park and Jang, 2012). The managers consider diversification strategies to avoid unfavorable uncertainties within a single market. In Rumelt (1974), diversification can be understood

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as an aggregation of two or more income streams. Thus, negatively correlated income streams could produce a smaller variance in compared to a single income stream. Of course a perfect negative correlation is rare in the real world, but if two income streams are weakly correlated the volatility of the combined income stream can be reduced (Park and Jang, 2012). If the earnings volatility getting smaller, the income will be more stables (Brown et al, 1987).

In Montgomery (1994), one of perspective that firm to diversify is the perspective of agencies (agency view). In the agency theory, the agency conflict usually arises from differences of interest between principal and agent that will bring the issues between the parties involved (Jensen and Meckling, 1976). In the context of the conflict of interest, diversification as a strategy of the firm becomes not optimal. The manager may choose a strategy of diversification as a personal motive rather than as an attempt to increase the wealth of shareholders. Diversification will profitable for managers associated with the power and prestige that can be obtained on the management of the larger business lines (Jensen, 1986, Stultz 1990 in Denis 1997). Associated with the level of sales, the larger firm, the greater compensation for managers as compensation managerial performance, diversification becomes an effective tool to increase the turnover of the firm (Jensen and Murphy, 1990).

According to Denis et, al (1997), diversified firm will face the increasing of agency costs under the increasing complexity of their organizational form. The agency costs will have a negative impact on the performance of companies (Wang, 2010). The tendency of managers taking investment that decreases the value or project has a negative NPV when allocating on their business segments, causing the firm to lose the opportunity to increase the value of the firm.

In Indonesia, the agency problems are different from the problems in the western countries. Most companies in Indonesia are still owned by family. This creates agency problems between the majority shareholder, who also serves as manager of the firm, with minority shareholders (Kurniawan and Indriantoro, 2000). Because of the nature of the concentrated ownership and the desire to survive, owner's family usually has a strong desire to minimize a risk through diversification (Anderson and Reeb, 2002).

Based on the problems above, the authors interested in doing research related to the practice of diversification in relation to the firm performance. In countries that have emerging economic

conditions, including Indonesia, the level of uncertainty or risk is relatively high, so it will affect the performance and success of the firm to diversify (Satoto, 2009).

1.2. Research Purposes

In general, this study aims to examine and determine the effect of diversification strategy of diversification (related and unrelated diversification) to the level and volatility of future performance and determine the effect of agency costs on the relationship between diversification strategy with the level and volatility of the firm's future performance.

2. Theoretical Framework and Literature Review

2.1. Agency Theory

Jensen and Meckling (1976) define an agency relationship as a contract where the owner has delegated authority to the agent to carry out the activities and decision-making. Agency theory assumes that all individuals acting in their own interests. Agency conflicts will trigger their agency costs to ensure that managers will act under the wishes of the owner. Agency costs consist of the monitoring cost, bonding costs and residual loss (Jensen and Meckling, 1976).

Denis et.al (1997) found that in a diversified firm, along with the increasing complexity of the organizational form, the firm will face increasing the agency costs. Diversification seen as a strategy taken by managers to maximize personal gain. Mueller (1969), Jensen (1986), Shleifer and Vishny (1989) argue that managers tend to choose strategies that benefit the interests of their own when they have equity ownership levels are not significant in the firm. This is detrimental to the shareholders to maximize profits.

There are at least two reasons managers pursue personal interests in the implementation of the diversification strategy: first, the manager lead diversification strategy that companies increasingly rely on the capabilities of the manager. The second reason based on the idea that shareholders can minimize the risk through portfolio diversification, but managers can't diversify risk their jobs efficiently. Therefore, they diversify the firm's business to lower the risk whose impact increases the personal position of manager.

2.2. Diversification

Diversification means the business development from one business to another and it is a strategic option that many managers use to improve their firm performance (Pandya and Rao, 1998). According to Montgomery (1994), in general, there are three perspectives to diversify the firm's motives. First, *Market Power View*, that there is conglomerate power, can be obtained with diversification. Second, *Resources View* argues that rent-seeking firms diversify in response to excess capacity in productive factors, here called resources. Third, *Agency View*, where managers may have personal motives in pursuing a strategy of diversification as a motive compensation where the more complex the job, the manager will expect higher compensation.

Hill and Jones (1998) divide diversification into related diversification and unrelated diversification. Related or unrelated refers to the relationship with the main business being cultivated, or some businesses that make up the value chain within a group of business. In a related diversification, the firm entered into a new business activity that is related to the existing business activity and has similarities between the components of each value chain activity. While the unrelated diversification, the firm entered the industry that do not have a clear relationship to each firm's value chain activities in the main industry. The synergy between the main business and new business diversification results both related and unrelated necessary to ensure the achievement of the greatest value of diversification measures are taken. Synergies realized in horizontal or vertical integration. In horizontal integration, the firm may use shared of intangible resources as a core competency, production facilities, distribution channels, and so forth. The vertical integration is the creation of value that is derived from the parent firm.

2.3. Firm Performance

Firm performance is the result of the company's operations, the operational activities within the firm which indicated by net profit. In this study, performance describes by level/maximization of income and earnings volatility. According Schipper and Vincent (2003), based on the time series of

earnings, one of the constructs of quality of earnings is volatility. Based constructs volatility, high-quality earnings are earnings that have relatively low variability or smooth earnings.

In this study, profitability ratios used to measure a firm's ability to get future earnings is Return on Assets (ROA). ROA reflects how much the firm has obtained the results of the financial resources invested by the company. ROA is often used to measure the financial performance management and assess operational performance in utilizing the resources. The higher the ROA number, the better financial performance. ROA shows the ability of the invested capital in the total assets held to produce income (Munawir, 2002).

2.4. Hypothesis Development

Roger (2001) explained that the reason to diversify can be viewed from the perspective of performance (performance-based arguments). By diversifying, companies that compete in more than one market will get relevant learning business strategies faster, decrease production costs, the transfer of competences and resources that can increase the profitability. Andrew (2013) examined the relationship between diversification and the level and volatility of future earnings and the results show that diversification is negatively associated with the variance of future profitability, but positively associated with the level of future profitability. These findings are consistent with the fundamental objectives of diversification, which include hedging against downside risk associated with earnings and creating higher incomes. Diversification will help stabilize the company's profits and so benefit the owners. On the basis of the description, then made the following hypothesis:

H1a. *Diversification has a positive effect on the level of future performance*

H1b. *Diversification has a negative effect on the volatility of future performance*

Several previous studies have shown that competitive advantage will be gained when the company implemented related diversification (Ansoff, 1965; Bettis, 1981; Lecraw, 1984; Palepu, 1985; Rumelt, 1974; Singh and Montgomery, 1987). This is because related diversification allows the parent company to exploit the interrelationships that exist between different business to gain a cost advantage and product differentiation against its competitors. Williamson and Markides (1994) in Pandya (1998), which specifically examines the relationship of related diversification and

performance, states that companies that apply related diversification gain significant benefits in the form of an increase in revenue and a decrease in production costs due to the strategic assets acquired from the transfer of core competencies. Based on these results, the hypothesis can be made as follows:

H2a. *Related Diversification has a positive effect on the level of future performance*

H2b. *Related Diversification has a negative effect on the volatility of future performance*

Park and Jang (2012), Higgins and Schall (1975) and Lewellen (1971) in a study about the relationship unrelated diversification on the profitability of the company, found that unrelated diversification increases the profitability of the company at a certain level. Unrelated diversification also reduce earnings volatility at a certain level because of the income flows from unrelated business has a weak correlation and if two income streams are weakly correlated the volatility of the combined income stream can be reduced. As the diversification of the portfolio, the idea is to spread the risk in some types of investments (stocks, bonds, cash and other assets such as real estate) that have different returns. Thus, if most of the investment fails, the company will not lose everything, the remaining investment will continue to produce. On the basis of the description, the following hypothesis can be made:

H3a. *Unrelated diversification has a positive effect on the level of future performance*

H3b. *Unrelated diversification has a negative effect on the volatility of future performance*

Palepu (1985) examined the effect of diversification strategy by using the entropy approach to measuring the degree of influence of related diversification and unrelated diversification on firm performance. The results state that the rate of growth of profitability of companies that use related diversification is significantly larger than unrelated diversification. Related Diversification is assumed to generate a high return because the company can transfer resources and core competencies. On the basis of these studies, it made the following hypothesis:

H4a. *Related Diversification has a greater effect on the level of future performance than unrelated diversification*

H4b. *Related Diversification has a greater effect on the volatility of future performance than unrelated diversification*

A diversified firm will certainly increase the complexity of the organizational form (Denis et.al.,1997). The complexity will lead to the increasing of agency cost to ensure that the agent runs the company under the goal of increasing wealth for the owners. Lin (2006) in Fachrudin (2010) examined the effect of agency costs on firm performance. The result found that the agency cost has a negative effect on firm's performance. Likewise, Wright et al. (2009) found that the agency cost has a negative effect on firm performance. According to Jensen (1989) in Wang (2010), when the agency costs is allowed to increase, it can reduce the achievement of competitive advantages that have a negative impact on performance. On the basis of these studies, it is known that the agency costs have a negative effect on the performance of the company so that the hypothesis is taken as follows:

H5a. *Agency costs weaken the positive relationship between diversification with level of future performance*

H5b. *Agency costs weaken the negative relationship between diversification with the volatility of future performance*

Jensen and Murphy (1990) explain that diversification may provide greater opportunities for managers to increase their strength and prestige. Diversifying the firm where business is engaged in another segment (related or unrelated diversification), is more likely to reduce shareholder value when managers have lower ownership (Gaughan, 2007). In case, this creates agency problems and raises the cost of the agency to resolve these issues. Based on the previous description, agency costs can affect the performance of the company. Therefore for two types of existing diversification strategy, the authors take the following hypothesis:

H6a. *Agency costs weaken the positive relationship between related diversification with the level of future performance*

H6b. *Agency costs weaken the negative relationship between related diversification with the volatility of future performance*

H7a. *Agency costs weaken the positive relationship between unrelated diversification with the level of future performance*

H7b. *Agency costs weaken the negative relationship between unrelated diversification with the volatility of future performance*

3. Research Methods

3.1. Data

This study uses data from manufacturing firm listed on Indonesia Stock Exchange (IDX) during the years 2006 through 2013. The sample of the companies whose financial statements are inform about the activities of the operating segments as required under PSAK No. 5. Data obtained from the Indonesia Stock Exchange (IDX) and Thomson Reuters Datastream from Pusat Data Ekonomi dan Bisnis (PDEB) UI.

3.2. Dependent Variables

The dependent variable in this study is divided into levels of performance and volatility of performance. To examine the relation between business segment diversification and the level and volatility of future performance, I first obtain the operating profit data and scale it by lagged total assets to obtain the measure of Return on Assets (ROA). The next step is to calculate the mean value of ROA (MEROA) and Variance ROA (VAROA) using ROA over the three years into the future beginning from the current year (t_0 , $t + 1$ and $t + 2$). Based Park and Jang (2012) the variance had a unique distribution characteristic, which was censored because the variance did not allow for negative values. Consequently, we ultimately used the logarithmically transformed three-year variance as the risk (volatility)

The formula to calculate MEROA:

$$\text{MEROA} = \sum_{t=0}^2 [\text{ROA}] / 3$$

The formula to calculate VAROA:

$$\text{VAROA} = \sum_{t=0}^2 [(\text{ROA}_t - \text{MEROA})^2 / 2]$$

$$\text{LnVAROA} = \text{Ln} \sum_{t=0}^2 [(ROAt - \text{MEROA})^2 / 2]$$

3.3. Independent Variable

The independent variable in this study is the level of diversification. To calculate the concentration of the business segment, I used the entropy measure approach. Entropy is a parameter to measure the level of diversity (heterogeneity) of the data set. The more heterogeneous of the data set, the greater of the entropy value. Jacquemin and Berry (1979) introduced the research into the entropy measure of diversification because it has some benefits. Compared with previous measurements (e.g., Wrigley / Rumelt measure), the entropy measure is more objective, continuous and decomposable. Decomposability means that total diversification entropy could be broken down into related and unrelated diversification entropy. The calculation of the entropy measure is as follows:

$$\text{DT} = \sum_{i=1}^n P_i \times \ln \left(\frac{1}{P_i} \right)$$

Where P_i is the ratio of i -th segment sales to total sales and n is the number of industry segments identified in a company of 4-digit industry groups in the Kode Baku Lapangan usaha Indonesia (KBLI). Segment of companies included in the 4-digit different industry groups in KBLI but has a same 2-digit industry groups are treated as the same group/related business. While segments that have a 2-digit different industry groups are treated as unrelated business (Palepu, 1985). DT represents the total entropy diversification.

Unrelated diversification is calculated from the formula:

$$\text{DU} = \sum_{j=1}^M P_j \times \ln \left(\frac{1}{P_j} \right)$$

DU is the entropy of unrelated diversification and P_j is part of the sales of the segment j to the total sales. While M is a 2-digit number based on KBLI industry groups ($n \geq M$). Therefore, DT is the total entropy, the entropy related (DR) can be calculated as equation $\text{DR} = \text{DT} - \text{DU}$.

3.4. Moderation Variable

Proxy on agency costs in this study using Free Cash Flow (FCF), which is a cash flow that is actually available to be distributed to all investors after the company put the entire investment in fixed

assets, new products, and the working capital required to maintain ongoing operations (Brigham and Houston, 2006). When a company has generated an excessive surplus of FCF and there are not profitable investment opportunities available, management tends to abuse the FCF in hands so as to resulting in an increase in agency costs, inefficient resource allocation, and wrongful investment (Jensen, 1986; Wang, 2010; Piramita, 2012). The firm could attempt to distribute idle cash flows to stockholders by stock repurchase or dividend payments in an effort to avoid the agency conflicts (Crutchley and Hansen, 1989 in Wang, 2010). Efforts to avoidance the agency conflict avoidance through dividend payment is in line with Arifin (2003) who found that the mechanism to reduce the agency problem in the context of agency conflict in Indonesia (the agency conflict between majority and minority shareholders/Agency Conflict Type II) is to make the payment of dividends high. That is because a high level of information asymmetry in the go public companies in Indonesia. The formula for calculating the agency cost on the basis of free cash flow:

$$FCF = \frac{NOPAT - Net\ Investing\ in\ operating\ capital}{Total\ Assets}$$

Where, NOPAT = EBIT (1 – Tax), NOPAT = Net Operating After and EBIT = Earnings before Interest and Tax

3.5. Control Variables

This study uses several control variables including:

a. Company size (SIZE). The size of the firm described the bigger or smaller firm indicated by total assets, total sales, average selling rate, and average total assets. The larger firm, the excess capital can be diversified with the purpose of increasing performance (Hallara and Kahloul, 2010). In this case, the firm size is measured as the natural logarithm of total assets.

b. Debt ratio (DER). Debt ratio is often used by firm to measure the ability in the meet all financial obligations. In previous studies, Hurdle (1974) found that DER has effect to the profitability. The use of leverage can increase the performance of the company through managerial discipline (Jensen, 1986; Stultz, 1990). Research from Taylor and Lowe (1995), Kochhar and Hitt (1998) and Li and Li (1996) in Hutagalung (2012) showed that companies were diversified, have a higher debt ratio.

This is usually done to reduce business risk. Companies that do diversification should take more debt in order to maximizing performance. Debt ratio calculation is as follows:

$$DER = \frac{\text{Total Liability}}{\text{Total Equity}}$$

c. Age Company (AGE). Older companies have a better reputation than the newly established. It is associated with the accumulation of the level of experience, learning and managerial competence (Santarelli and Tran, 2012). In Santarelli and Tran's research, AGE was positively correlated with the improvement of the firm's performance. Older companies will use the capability and experience to take a risk by expanding product portfolio rather than persistent with their core business. Age (AGE) is calculated by the year observation t minus the year existence.

d. Sales Growth (Sales Growth). Sales growth is defined as the change in sales per year. Kusuma (2009) states that sales growth is an increase in sales from a year to year or from time to time. Sales growth has influence in improving the firm performance and firm value where sales growth characterized by an increase in market share will result in increased sales thereby increasing the profitability (Pagano and Schlvari, 2003). Calculation of sales growth, as follows:

$$SG = \frac{\text{Sales } t - \text{Sales } t - 1}{\text{Sales } t - 1}$$

e. Dummy year figures in this research is to control the calendar year by giving a code 1 if the observation in accordance with the year-controlled, instead given the number 0 if the observation is not in accordance with the year-controlled.

3.6. Proposed Models

The relationship between each measure of performance with diversified index was tested using multiple regression. Some models used are as follows:

$$\text{Model 1. } \text{PERFORM}_{i,t} = \alpha + \beta_1 \text{DT}_{i,t-1} + \beta_2 \text{SIZE}_{i,t-1} + \beta_3 \text{DER}_{i,t-1} + \beta_4 \text{AGE}_{i,t-1} + \beta_5 \text{SG}_{i,t-1} + \beta_6 \text{Dyear} + \varepsilon_{t-1}$$

Where PERFORM is the definition of the mean (MEROA) and variance (VAROA) of a firm i in year t . β_1 is positive when PERFORM defined as MEROA and negative when defined as LNVAROA. Independent variables such as the level of diversification is symbolized by DT or the total entropy of diversification of a firm i in year $t-1$. Control variables consist of SIZE as company size, DER as the

ratio of debt to equity, AGE as firm age and SG as sales growth of firm i in year $t-1$. Dyear is a dummy variable over the years the company. This model will be used to test hypotheses H1 and H2.

$$\text{Model 2. } \text{PERFORM}_{i,t} = \alpha + \beta_1 \text{DU}_{i,t-1} + \beta_2 \text{DR}_{i,t-1} + \beta_3 \text{SIZE}_{i,t-1} + \beta_4 \text{DER}_{i,t-1} + \beta_5 \text{AGE}_{i,t-1} + \beta_6 \text{SG}_{i,t-1} + \beta_7 \text{Dyear} + \varepsilon_{t-1}$$

As an information on model 1, in this model the total diversification (DT) is separated in the rate of entropy related diversification (DR) and unrelated diversification (DU). This model will be used to test hypotheses H1a, H1b, H2a, H2b, H3a, and H3b.

Model 3 include moderating variables such as agency costs to see the effect of the relationship between diversification with the level and volatility of future performance after the agency costs.

$$\text{PERFORM}_{i,t} = \alpha + \beta_1 \text{DT}_{i,t-1} + \beta_2 \text{FCF}_{i,t-1} + \beta_3 \text{DT}_{i,t-1} * \text{FCF}_{i,t-1} + \beta_4 \text{SIZE}_{i,t-1} + \beta_5 \text{DER}_{i,t-1} + \beta_6 \text{AGE}_{i,t-1} + \beta_7 \text{SG}_{i,t-1} + \beta_8 \text{Dyear} + \varepsilon_{t-1}$$

Where $\text{FCF}_{i,t-1}$ is moderating variables such as the ratio of free cash flow to total assets at $t-1$ and is a proxy for agency costs. This model is used to test the hypothesis H4a and H4b.

Model 4. For each type of strategy diversification (related and unrelated), there is a modification of two models that involve the agency costs as a moderating variable. So the regression equation becomes:

$$\text{PERFORM}_{i,t} = \alpha + \beta_1 \text{DU}_{i,t-1} + \beta_2 \text{DR}_{i,t-1} + \beta_3 \text{FCF}_{i,t-1} + \beta_4 \text{DU}_{i,t-1} * \text{FCF}_{i,t-1} + \beta_5 \text{DR}_{i,t-1} * \text{FCF}_{i,t-1} + \beta_6 \text{SIZE}_{i,t-1} + \beta_7 \text{DER}_{i,t-1} + \beta_8 \text{AGE}_{i,t-1} + \beta_9 \text{SG}_{i,t-1} + \beta_{10} \text{Dyear} + \varepsilon_{t-1}$$

This model will be used to test hypotheses H5a, H5b, H6a, and H6b

4. Results

4.1. Descriptive statistics

This study was conducted in companies listed on the Indonesian Stock Exchange in the period 2006 to 2010 (5 years). From 570 manufacturing firm in the period, approximately 389 firm data reveal business segmentation according to PSAK 5. It shows that as many as 389 of the 570 firm data is a diversified firm while the remaining 181 are single firm. Based on these comparisons, it can be said that most of the manufacturing firm in Indonesia is a diversified firm. Comparison between the number of companies that apply related diversification and unrelated diversification can be seen in Table 1 based entropy index.

Table 1. Comparison of Firm that Implementing Related and Unrelated Diversification

Strategy	Amount	Percentage
Related Diversification	133	34,19%
Unrelated Diversification	256	65,81%
Total Diversified Firm	389	100%

From Table 1 above it can be seen that most of the diversified manufacturing firm tend to apply unrelated diversification compared to related diversification. A total of 256 firm data or by 65.81% of the total data apply the unrelated diversification.

To avoid violating the assumption of OLS analysis and obtain the appropriate hypothesis test analysis, it is necessary to handling the outlier data. Outlier data handled by zscore and casewise diagnostic analysis. Based on the z-score value, around 49 data is indicated as outliers. Univariate outlier handling was done by using winsorized or change the outliers with the maximum/minimum value. Meanwhile, based on casewise diagnostic founded by SPSS application's, 19 data is indicated as multivariate outlier. Multivariate outlier handling was done by removing data that indicated outliers. After removing the outliers data, this study uses 370 firm data for testing.

Table 2 presents the descriptive statistics of all variables. On average, manufacturing firms in Indonesia tend to implement unrelated diversification strategy. It can be seen from the average of DU 0.351 greater than the average value of DR 0.247 although the difference between the entropy values is not significant. In total, we can see that the degree of diversification of manufacturing is at the level of 0.601 or entropy tends to be low because the entropy values close to zero. Zeros on the total entropy index indicate the company implemented a single business strategy. The higher level of diversification, the total entropy index will increase up to infinity.

Manufacturing firm performance levels based on the average of three-year ROA (MEROA) there is at the level of 7.19%, which means that manufacturers generally able to generate a profit for certain asset levels up to 7.19% of total assets. However, some companies still have not been able to generate a profit/expected earnings that marked with a minus indicator of MEROA. The next performance indicators is volatility/risk performance of manufacturing firms (VAROA) which in this study is transformed with LnVAROA, on average, LNVAROA has a magnitude of 0.521 which means that the average manufacturing company has a fluctuating performance of 52.1%. Low volatility indicates the

stability of the company's performance for the expected earnings. The higher the volatility, the higher the variability of the expected earnings.

Table 2. Descriptive Statistics

I	Obs.	Minimum	Maximum	Mean	Std. Deviation
DT	370	.001	1.753	.601	.403
DR	370	.000	1.131	.247	.314
DU	370	.000	1.385	.351	.363
MEROA	370	-14.930	28.850	7.194	6.518
LNVAROA	370	-2.553	3.392	.521	1.046
SIZE	370	17.506	25.440	20.90 1	1.552
AGE	370	5.000	59.000	31.39 5	11.143
DER	370	-2.114	3.674	.364	.801
SG	370	-.813	10.693	.203	.841
FCF	370	-.411	.552	.056	.119

Table Information:

DT = Total entropy, DR = entropy related diversification, DU = entropy unrelated diversification, FCF = agency costs result from free cash flow ratio to total assets, SIZE = size of the company resulting from the natural logarithm of total assets, AGE = age of the company, DER = ratio debt to equity, SG = sales growth, MEROA = average ROA for 3 years which is a proxy for the level of performance, LnVAROA = variance of ROA for 3 years which is a proxy of the volatility of performance.

FCF showed a pattern where the greater agency costs FCF value indicates the higher agency costs in a company. FCF has an average of 5.6% with a standard deviation of 11.9%. FCF in average indicates the level of agency costs in manufacturing companies amounted to 5.6% of total assets.

The average size (SIZE) manufacturing firm in this study amounted to 20.9 units. The range of company size is not too big observed with a minimum value of 17.5 and a maximum of 25.44. Meanwhile, firm age (AGE) is observed on average 31.4 years with a range of 11 years. The company's ability to meet its obligations can be indicated by the debt ratio (DER). In average, DER has 36.4% with a standard deviation of 80%. It shows that the proportion of equity manufacturing companies is still higher than the use of debt. Sales Growth per year (SG) is in an average of 20.3% with a range of values of 84.1%.

4.2. Hypothesis Testing

4.2.1. Diversification effect on the Level and Volatility of Future Performance

There are 8 (eight) hypothesis to be tested to find the relation between diversification strategy and firm performance. Model 1 is used to test the hypotheses H1a and H1b while Model 2 is used to test the hypothesis H2a, H2b, H3a, H3b, H4a, and H4b. Both Model 1 and Model 2 have met the criteria BLUE (best linear estimator Unbiased) after covering the classical assumption of the normality test, multicollinearity, and heteroscedasticity. Both models have also been through the F statistic test, to test whether there is a significant effect of independent variables on the dependent variable and based on the statistic F test, the diversification strategy and all the control variables are able to explain each of the dependent variable (level and volatility of firm performance). Table 3 shows the results of the regression model 1 and Table 4 shows the results of the regression model 2.

Table 3. Results of Multiple Regression Models 1

Independent Variables	Dependent Variables					
	MEROA			LnVAROA		
	prediction	Koef	Prob.	prediction	Koef	Prob.
DT	+	2.326	0,02**	-	-.255	0,02**
SIZE	+	1.075	0.00***	-	.054	0.06*
AGE	+	.015	0.31	-	-.005	0.17
DER	+	.964	0.01***	-	-.155	0.01***
SG	+	.132	0.37	-	-.062	0.17
D2006	+/-	-1.969	0.03**	+/-	.603	0.00***
D2007	+/-	-1.764	0.04**	+/-	.416	0.01***
D2008	+/-	.568	0.29	+/-	-.073	0.33
D2009	+/-	.955	0.17	+/-	-.316	0.03**
Statistics F	F: 6,76 P=.000 ^b			F: 4,53 P=.000 ^b		
R-square	14,5%			10,2%		

Table Information:

DT = Total entropy, SIZE = size of the company resulting from the natural logarithm of total assets, AGE = age of the company, DER = ratio of debt to equity, SG = sales growth, MEROA = average ROA for 3 years which is a proxy for the level of performance, LnVAROA= ln variance for 3 years which is a proxy of the volatility of performance.

Prob * = significant 10%, ** = significant Prob 5%, *** = significant Prob 1%.

Table 3 shows that the strategy of diversification (DT) has a positive effect on the level (MEROA) and a negative effect on the volatility of performance (LNVAROA). When the proxy is the

level of performance (MEROA), DT has a coefficient of 2.33 and significant at 5%. As for volatility (LnVAROA), DT has a coefficient of -0.255 and significant at 5%. DT has significant influence either of the MEROA or LnVAROA. Thus, H1a and H1b accepted.

The results are consistent with the results of Andrew (2010), which research shows that there is a negative relationship between diversification with the volatility of performance and positive relationship with the level of performance. It is also being consistent with the fundamental objectives of diversification, which include hedging against downside risk associated with earnings and creating higher incomes. By diversifying, companies that compete in more than one market will get faster learning related business strategies in an effort to improve the profitability. Diversification will also help stabilize the firm's profits and consequently benefit the owner (Roger, 2001). The smaller the earnings volatility within a certain time, the more stable the income which in turn has increased the predictability of earnings (Brown et al, 1987).

Control variables in model 1 in the form of firm size (SIZE) and Debt Ratio (DER) has positive influence on the level of performance (MEROA) and negatively to the volatility of performance (LNVAROA). Meanwhile, the control variables of firm age (AGE) and sales growth (SG) did not significantly affect the MEROA and LNVAROA.

Based on the figures dummy, observation data for 2006 until 2007 tend to degrade the performance of the company in 2007 until 2008, which is characterized by the coefficient of the dummy for 2006 and 2007 are likely to negatively (positively) to MEROA (LnVAROA). No significant influence on performance data from 2007 to 2008. The decline in performance in 2008 is probably caused by the impact of the subprime mortgage crisis that hit Indonesia.

Table 4. Results of Multiple Regression Models 2

Independent Variables	Dependent Variables					
	MEROA			LnVAROA		
	prediction	Koef	Prob.	prediction	Koef	Prob.
DR	+	2.529	0.01***	-	-.100	0.29
DU	+	2.276	0.01***	-	-.353	0.01***
SIZE	+	1.071	0.00***	-	.052	0.07*
AGE	+	.015	0.31	-	-.004	0.21
DER	+	.973	0.01***	-	-.157	0.01***
SG	+	.135	0.36	-	-.059	0.18
D2006	+/-	-1.966	0.03**	+/-	.616	0.00***
D2007	+/-	-1.755	0.05**	+/-	.424	0.01***

D2008	+/-	.581	0.28	+/-	-.071	0.33
D2009	+/-	.957	0.17	+/-	-.309	0.03**
Statistics F	F: 6.088 P=.000 ^b			F: 4,28 P=.000 ^b		
R-square	14,5%			10,6%		

Table information:

DR = entropy related diversification, DU = entropy unrelated diversification, SIZE = size of the company resulting from the natural logarithm of total assets, AGE = age of the company, DER = ratio of debt to equity, SG = sales growth, MEROA = average ROA for 3 years is a proxy of the level of performance, LnVAROA = ln variance of ROA for 3 years which is a proxy of the volatility of performance.

Prob * = significant 10%, ** = significant Prob 5%, *** = significant Prob 1%,

Table 4 shows that related diversification (DR) has a positive effect on MEROA with coefficient of 2.529 and significant at 1%. Meanwhile, in relation to the volatility of performance, DR does not affect the LNVAROA that indicated by the significant value of 0.29 DR. Because DR has positive effect on MEROA then H2a accepted whereas H2b rejected as based on the regression results, DR does not affect the LNVAROA.

Related to the level of performance, the results of this study is in accordance with Williamson and Markides (1994), which specifically examines the relationship between related diversification to the performance and found that companies that implement related diversification strategies gain significant benefits in the form of an increase in revenue and a decrease in production costs due to the strategic assets acquired from transfer of core competencies. To the volatility of performance, according to Amit and Livnat (1985), in the related diversification, the firm tends to move in the same cycle that has little impact on risk reduction. Hill and Jones (1998) also explains that related diversification is less effective in bringing together industry risks due to the business cycle is inherently unpredictable so diversified company will find that the economic impact affecting the industry simultaneously.

Table 4 also shows a significant relationship DU and both of performance. From the regression results, DU has a significant coefficient of 2.276 significant 5% to MEROA and a coefficient of -0.353 significant 10% to lnVAROA. Thus, H3a and H3b accepted. This result in line with Higgins and Schall (1975) and Lewellen (1971), in which companies are implementing strategies unrelated diversification can reduce the risk of income, because when a company enters into a business that is

completely different from the core business, the company can stabilize income. This study is also consistent with the results Park and Jang (2012) which unrelated diversification can improve the profitability.

Based on the comparison of the coefficient of DR and DU to MEROA, it can be said that related diversification has greater influence on the level of performance than unrelated diversification because DR coefficient (2.529) is greater than the coefficient of DU (2,276). Thus, the hypothesis H4a can be accepted. The results are consistent with Palepu (1985) in which the growth of profitability in companies that apply related diversification is significantly larger than unrelated diversification because of the level of business linkages can be used to gain a cost advantage as well as the variety of products that ultimately result in increased economies of scale.

Meanwhile, the hypothesis H4b rejected because the variables that significantly influence on the volatility of performance is only DU while DR has no effect because the significance value greater than 10%. According to Amit and Livnat (1998) and Rumelt (1974), companies are implementing related diversification can obtain high profitability but they have a high risk associated operating the same business cycle operation. Meanwhile, companies that use unrelated diversification are less profitable, but they have low business risk over the different business lines. Control variables in Model 2 consistently have the same effect on Model 1.

4.2.2. Effect of Agency Costs between Relationship of Diversification Strategy and Future Performance

In this study, there are 6 (six) hypothesis to be tested to find a relation the between diversification strategy and firm performance. Model 3 is used to test hypotheses H5a and H5b while Model 4 is used to test the hypothesis H6a, H6b, H7a, and H7b. Both Model 3 and Model 4 have met the criteria BLUE (best linear estimator Unbiased) after covering the classical assumption of the normality test, multicollinearity, and heteroscedasticity. Both models have also been through the F statistic test, to test whether there is a significant effect of independent variables on the dependent

variable and based on the F statistic TEST, diversification strategy, moderating variables and all the control variables are able to explain each of the dependent variable is the level and volatility of performance. Table 5 shows the results of the regression model 1 and Table 6 shows the results of the regression model 2.

Table 5. Results of Multiple Regression Models 3

Independent Variables	Dependent Variables					
	MEROA			LnVAROA		
	Prediction	Koef	Prob.	Prediction	Koef	Prob.
DT	+	1.744	0.02**	-	-.126	0.21
SIZE	+	.655	0.00***	-	.071	0.03**
AGE	+	.006	0.41	-	-.004	0.20
DER	+	.995	0.01***	-	-.157	0.01***
SG	+	.258	0.24	-	-.064	0.16
D2006	+/-	-1.775	0.03**	+/-	.596	0.00***
D2007	+/-	-1.453	0.06*	+/-	.401	0.01***
D2008	+/-	.903	0.17	+/-	-.087	0.30
D2009	+/-	.207	0.41	+/-	-.292	0.04**
FCF	-	16.41	0,00***	+	-.191	0.39
DT_FCF	-	10.05	0,07*	+	-1.919	0.053*
Statistics F	F: 12,614 P=.000 ^b			F: 4,15 P=.000 ^b		
R-square	27,9%			11,3%		

Table information:

DT = entropy diversification SIZE = size of the company resulting from the natural logarithm of total assets, AGE = age of the company, DER = ratio of debt to equity, SG = sales growth, MEROA = average ROA for 3 years which is a proxy for the level of performance, LnVAROA = ln ROA variance for 3 years which is a proxy for the volatility of performance. FCF = agency costs of free cash flow ratio results in total assets, DT_FCF = Variable DT interaction with FCF.

Prob * = significant 10%, ** = significant Prob 5%, *** = significant Prob 1%

A variable may moderate the relationship between independent variables and the dependent variable when the probability of interaction between variables moderating and the independent variable is significant at the 1%, 5% or 10%. Based on the results of the regression model 3 in Table 5 it can be seen that the interaction variable between DT with FCF (DT_FCF) had a significant 10% against MEROA and significant 10% to LNVAROA. DT_FCF relationship has an opposite direction with the hypothesis put forward either MEROA or LNVAROA. FCF as agency costs have actually strengthened the positive relationship between diversification and level of performance and negative relationship between diversification with the volatility of performance. Thus, the hypothesis H5a and H5b rejected.

The results of this study indicate that an existing agency costs in manufacturing firms in Indonesia instead tend to improve performance. This condition is likely due to the majority of companies in Indonesia is still owned by the family. Martinez et al (2007) stated that the family firm performance has better results because the family company is managed mostly by family members who hold key positions in the organization. In accordance with Dewantoro (2011) and Hadiprajitno (2013), family ownership can reduce agency costs. Characteristics of family ownership have "stricter control" can set the alignment the interests of principals and agents, as well as better control management. Demsetz and Lehn (1985) also stated that the family ownership has a tendency to monitor because usually most of the family wealth invested in the company, so they will be very concerned about the survival of the company and have a strong urge to do the monitoring. This positive relationship is also in line with the results of Wang (2010) in Piramita (2012), where the increase in free cash flow can improve the performance of the company. This may be due to the interests of management on profitability and increasing the size of the company related to compensation and job security for management. So the existence of free cash flow will be used in an investment that will improve profitability, though also with an increase in agency cost.

When companies apply a diversification strategy, the company will meet the agency conflict that ultimately required the agency cost to avoid the agency conflict. Agency relationships that occur in a diversified company in Indonesia are a positive relationship and tend to improve performance. As explained earlier, the agency relationship occurs between shareholders which, in this case, are still owned by the family with the management. The family owners will be very concerned about the survival of the company so that they will be more motivated to perform monitoring and tighter control of the operating companies. Control variables in Model 3 consistently have the same effect on Model 1 and Model 2.

As the results of the regression model 3, from Table 6 we can see that the interaction variable between each type of diversification strategy (DU and DR) with FCF (DR_FCF and DU_FCF) has a direction opposite to the hypothesis put forward both to MEROA and LNVAROA. The influence of FCF in a moderating relationship of DR and performance can be seen from DR_FCF that not significant to MEROA and significant 5% to LnVAROA. Meanwhile, the influence of FCF in moderating

relationship of DU and performance can be seen from DU_FCF that significant at 5% to MEROA and no significant effect on LnVAROA.

Table 6. Results of Multiple Regression Models 4

Independent Variables	Dependent Variables					
	Prediction	MEROA		Pre diction	LnVAROA	
		Koef	Prob.		Koef	Prob.
DR	+	2.019	0.04**	-	-.082	0.34
DU	+	1.520	0.08*	-	-.288	0.06*
SIZE	+	.636	0.00***	-	.067	0.03**
AGE	+	.005	0.43	-	-.003	0.24
DER	+	.992	0.01***	-	-.161	0.01***
SG	+	.256	0.24	-	-.061	0.17
D2006	+/-	-1.71	0.04**	+/-	.621	0.00***
D2007	+/-	-1.38	0.07*	+/-	.420	0.01***
D2008	+/-	.939	0.16	+/-	-.080	0.32
D2009	+/-	.227	0.41	+/-	-.279	0.05**
FCF	-	15.96	0.00***	+	-.057	0.47
DR_FCF	-	4.77	0.29	+	-2.731	0.04**
DU_FCF	-	14.88	0.04**	+	-1.110	0.23
Statistics F	F: 10,749 P=.000 ^b			F: 3,71 P=.000 ^b		
R-square	28,2%			11,9%		

Table Information:

DR = entropy of related diversification DU = entropy of unrelated diversification SIZE = size of the company resulting from the natural logarithm of total assets, AGE = age of the company, DER = ratio of debt to equity, SG = sales growth, MEROA = average ROA for 3 years which is a proxy for the level of performance, LnVAROA = In variance of ROA for 3 years which is a proxy of the volatility of performance. FCF = agency costs of free cash flow ratio results in total assets, DR_FCF = Variable DR interaction with FCF, DU_FCF = Variable DU interaction with FCF.

Prob * = significant 10%, ** = significant Prob 5%, *** = significant Prob 1%

Based on these results, FCF as agency costs have actually strengthened the positive relationship between related diversification to the volatility of performance and strengthen the negative relationship between unrelated diversification to the level of performance. Meanwhile, agency costs cannot moderate the relationship between related diversification and level of performance and between unrelated diversification with the volatility of performance due to the regression results showed no significant effect. Thus, H6a, H6b, H7a, and H7b rejected.

The effect of agency costs on the relationship between diversification (DR and DU) with performance was generally similar to the results in model 3 where agency costs in manufacturing

companies in Indonesia tend to improve performance. Control variables in Model 4 consistently have the same effect with Model 1, Model 2, and Model 3.

5. Conclusion, Implication, and Limitation

5.1. Conclusions

This study provides evidence on the effect of diversification strategies related to firm performance. The results showed that diversification strategy has a positive influence on the future performance (positive to levels of performance and negative to volatility of performance). These results are consistent with the fundamental objectives of diversification, which include hedging against downside risk associated with earnings and creating higher incomes. For each type of diversification strategy, the results showed that both related and unrelated diversification significantly affects the level of performance of the company. Related diversification has a greater effect on the level of performance. Meanwhile, negative effect on the volatility of performance has been proved by unrelated diversification only.

Agency cost in this study was measured by free cash flow to total assets shown to moderate the relationship diversification with performance. In general, the agency cost strengthens the positive relationship between diversification strategy, either related or unrelated diversification, and firm performance. The results of this study indicate that there are agency costs in manufacturing firm in Indonesia tend to improve performance.

5.2. Limitations and Suggestions

Some limitations that may affect the results of this research and the suggestions that can be given to the next researchers are as follows:

a. The period of this study only is limited to five years of observation because of concerns the limitations of the data collected. Next researchers can extend the period of study so that the results are more accurate.

b. The measurement of the level and volatility of performance in this study only uses proxy of ROA. While there are many other performance measures such as ROE or Tobin's. Then, the measurement of agency costs in this study only uses free cash flow to total assets. Next researchers

can use more appropriate model, variables, and operationalisation as a means of measuring the performance of the company or agency costs.

c. The use of the entropy measure still contains a weakness because it cannot capture the changes in the business segment. For example in the year 20X1 companies run segments A, B and C. A as its main business while B and C as unrelated segment of A. In 20X2, the company changed its business segment into A, D and E. Segment D and E are not related to A. Changes in this segment is not captured in the calculation of entropy because entropy measures only use sales segment to calculate an index. Next researchers can use other measurements to determine the level of diversification.

d. The classification of the industry to determine the degree of linkage segments based on the Kode Baku Lapangan usaha Indonesia (KBLI). Results may vary if research using other classification standards such as the Standard International Classification (SIC). Next researchers can expand the sample to include all existing industries of the companies listed on the Stock Exchange and, if necessary, researchers can use the Standard International Classification (SIC) to classify the types of diversification.

Some suggestions for practitioners:

The results showed that the diversification strategy has a positive effect on performance. This relationship overall supports previous studies showing that by diversification, a company can improve its performance. As the idiom "don't put all your eggs in one basket", the company should not move in only one type of business in an effort to minimize the risk. Based on these results, the company may consider implementing a strategy both related and unrelated diversification. Related Diversification allows companies to exploit existing linkages between different businesses to gain a cost advantage and product differentiation against its competitors. But perhaps less business risk can be minimized due to it is difficult to predict the business cycle and there are may be found that the economic impact affecting same business segments simultaneously. Meanwhile, unrelated diversification allows the company to reduce the risk of income, because when a company enters into a business that is completely different from the core business, the company is able to stabilize earnings.

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