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IMPACT OF BUSINESS RISK, GROWTH, AND LIQUIDITY ON THE CAPITAL STRUCTURES: EMPIRICAL ANALYSIS OF AGRO-BASED COMPANIES IN INDONESIA

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ABSTRACT

The study was conducted using secondary data from audited financial statements of agricultural companies listed on the Indonesian Stock Exchange during the period 2010-2014 Those companies are sub-sectors of food crops, plantations, fisheries, forestry, wood and its processing, pulp & paper, and animal feed. The number of companies used as the objects of this research are 22 companies which is generated 110 observation points. The data processed through analysis of regression statically panel data. Regression model used random effect model. The results of this study indicate that the risk of business and growth has positive effect on the capital structure. In the other hand, the liquidity has negative impact on the capital structure. The result of this study can be used as consideration for investors in making decision before investing on agricultural sector. This research can be used as consideration for agricultural company's management to establish the optimal capital structure.

KEYWORDS
business risk, growth, liquidity, capital structure, panel data.

INTRODUCTION
Capital structure is an arrangement structure of capital sources which comes from equity and debts. Each company has different capital structure, although it is from the same industry (Brigham dan Houston 2014). Business risk is one factor which influences capital structure. In the other hand, the company ability to add capital will affect the company to making decision on capital structure. Each company should deal with operational difficulty so that the investors would like to invest their money.

Agriculture sector is one of the most important for the Indonesia's economy, contributing up to 13,75% of Gross Domestic Product (GDP) as the second largest contributor in 2014. It contributed to export as the main commodities besides manufacturing and mining & energy (OECD, 2015). Employment in agriculture reached 35.76 Million or approximately 30.27% of the total workface in Indonesia (Ministry of Agriculture 2015). Agricultural companies has business risk that must be overcome to improve the company's performance in dealing with changes in demand and supply of various products. Risks that occur in business activity may affect businesses expenses. Indonesia has a little information about impact of business risk, growth and liquidity to capital structure on a company's agricultural commodities. Therefore, this paper explained the level of impact business risk, growth, and liquidity on the company's capital structure in various agricultural commodities.

REVIEW OF LITERATURE
There are several studies about the factors that affect the capital structure in various industry sectors such as the research have done by (Wu et al. 2014), (Zhao et al.2008), (Hailu et al. 2007), and (Afza and Ahmed 2010). Research on the factors affecting capital structure in the agricultural sector was researched by Aulova and Hlavsa (2013). The results showed that the size of the company, the structure of assets, retained earnings, and liquidity significantly influence the capital structure of agricultural companies. In the short term debt liquidity is a factor that most affects the debt. Meanwhile, the long-term debt, asset structure, non-debt tax shields and retained earnings are the most influential factor. (Foster 1996) examined the relationship between capital structure, business risk and stock returns for investors in the agribusiness sector. The result showed that the risk of the business and capital structure had an important role in stock returns. Bassey et al. (2014) also noted that the agricultural-based company's firm size, asset structure and growth of the company significantly correlated positively to short-term and long-term debt. Pecking order theory dominates the behavior of agricultural-based companies financing in Nigeria.

OBJECTIVES
To analyze impact of business risk, growth and liquidity on the capital structures of agro-based companies in Indonesia (2010-2014).

RESEARCH METHODOLOGY
Research is limited by agricultural company listed on Indonesia Stock Exchange in 2010-2014. There are 22 companies consist of the food crops, plantations, fisheries, forestry, wood and its processing, pulp & paper, and animal feed sub-sectors. Data was obtained from Indonesia Stock Exchange website (www.idx.com). The dependent variable of the study was capital structure defined as the Debt to Equity Ratio (DER) and Debt to Assets Ratio (DAR). Meanwhile, the independent variables are business risk, growth and liquidity. Table I shows the definition of variables and the theory of capital structure which are reference to this study.

TABLE 1: VARIABLES DEFINITIONS

Variable	Definition	Pecking Order	Agency
Dependent variables			
Debt to Equity Ratio (DER)	Total liabilities to total equity		
Debt to Asset Ratio (DAR)	Total liabilities to total assets		
Independent variables			
Business Risk	Standard deviation of earnings scaled by total assets	-	+
Growth (%)	Growth rate in total sales	+	-
Liquidity (%)	Current assets / current liabilities	-	-

We used data panel to aggregate the data time series and cross-sectional. This study used data panel model from Baltagi's research (2001). Data panel analysis is divided into three estimation approaches which are the fixed effect model (FEM), pooled least squares (PLS), and a random effects model (REM). Before using estimated approach, it must be tested. Testing of the first model is the Hausman test to determine the best approach between the FEM and REM. Hausman statistical formula is:

$$\mathrm{H} = (\beta_{REM} - \beta_{FEM})'(\mathrm{M}_{FEM} - \mathrm{M}_{REM})^{-1}(\beta_{REM} - \beta_{FEM}) \sim X^2\,(k)$$

β_{REM} and β_{FEM} is the coefficient REM and FEM. M is the covariance matrix for the parameter and k is the degree of freedom. If the result shows a model of REM, the data can be analyzed directly but if the result obtained is a model of FEM, it is necessary to do a Chow test. Chow test is used to determine whether the model used is PLS or FEM. Chow statistical formula is:

$$\mathrm{Chow} = \frac{(RRSS - URSS)/(N-1)}{URSS/(NT - N - K)}$$

RRSS (Restricted Residual Sum Square) obtained Sum of Square Residual from panel data estimation using PLS. URSS (Unrestricted Residual Sum Square) obtained Sum of Square Residual from panel data estimation using FEM. N is the number of cross section data. K is the number of explanatory variables and T is the number of time series data. Based on the analysis, the best approach is the approach used in the study REM. Data panel regression model used is as follows:

$$Y_{it} = \alpha + \beta X_{it} + (e_{it} + \mu_{it})$$

Y_{it} is the company's capital structure for n-i and year t. β is the slope coefficient of the independent variable, and X_{it} is the independent variables for the company n-i and year t. REM models do not require testing heteroscedasticity and autocorrelation, because REM models uses generalized least squares (GLS) in the calculation process so it is assumed there is no heteroscedasticity and autocorrelation problem.

RESULTS & DISCUSSION

DESCRIPTIVE STATISTICS AND INTERPRETATION

Food crops sub-sector

TABLE 2: FOOD CROPS SUB-SECTOR

Variable	2010	2011	2012	2013	2014	Mean
DER	0.12	0.19	0.15	0.16	0.17	0.16
DAR	0.11	0.16	0.13	0.14	0.14	0.14
Risk	0.04	0.01	0.01	0.01	0.01	0.01
Growth (%)	14	12	(13)	22	9	9
Liquidity (%)	846	608	808	763	725	750

Food crops sub-sectors is the lowest capital structure of the agricultural sector. Low capital structure caused by the company appllied the precautionary principle in terms of funding, relying on positive cash flow to fund business activities. These conditions resulted in the minimum long-term debt, so the company can take advantage of a strong cash position. Capital used to develop new varieties of horticultural seeds, pesticides, fertilizers, and hybrid corn seed products in order to grow in dry and rainy seasons. Business risk consists of the risk of failure on hybrid seed product, product counterfeiting, pests and diseases, climate change, and the risks of labor. The growth has decreased in 2012 because it is influenced by weather conditions that were not conducive to planting corn, other crops and horticulture. High rainfall resulted in a reduction in planting corn and affecting the seed company's product. Then there was a significant increase in growth in 2013 due to an increase of hybrid corn seeds, vegetables and fruits along with rising average selling prices. The high liquidity is due to repayment of short-term bank loans.

Plantation sub-sector

TABLE 3: PLANTATION SUB-SECTOR

Variable	2010	2011	2012	2013	2014	Mean
DER	0.90	0.85	1.03	1.45	1.40	1.13
DAR	0.41	0.40	0.45	0.52	0.51	0.46
Risk	0.02	0.01	0.04	0.04	0.03	0.03
Growth (%)	23	34	(8)	(2)	43	18
Liquidity (%)	152	175	152	102	99	136

Plantation sub-sector needs capital for business expansion activities such as research and development to improve crop productivity. Business risk consists of the risk of fluctuations in the market price of the product, raw material procurement, competition, and the certainty of land tenure, as well as the risk of catastrophe and climate change. Business risk increased in 2012 caused by a decrease in selling prices of crude palm oil (CPO), palm kernel, palm kernel oil (PKO) and palm kernel expeller (PKE). The growth companies declined in 2012 due to the trend of declining CPO prices, causing a decline in margins from product processing company. The decline in total sales was also due to reduction in crop and purchases from third party, and as the consequence, a decrease in total production of crude palm oil and palm kernel. Furthermore, the harvest of rubber plantation also declined, in line with the age profile of the composition of the plant. However, the return of growth in 2014 due to growth in sales volume of crude palm oil and the increase in the average selling price so that profits increased more rapidly as a result of margin expansion. The low liquidity was caused by the failure of payment by consumers, changes in market variables such as interest rate and currency exchange rate, as well as the gap between receipts and payments.

Fisheries sub-sector

TABLE 4: FISHERIES SUB-SECTOR

Variable	2010	2011	2012	2013	2014	Mean
DER	2.89	1.72	0.85	0.75	0.65	1.37 *
DAR	0.52	0.57	0.55	0.49	0.49	0.52
Risk	2	9	9	8	8	7 *
Growth (%)	(1)	(0.1)	37	20	14	14
Liquidity (%)	245	194	214	115	133	180 *

Note: * Data outliers excluded

Fisheries sub-sector needs capital to expand the business to make processed food products. There is a very high DER value and become an outlier in one of the companies. It caused by the company's interest expense and bonds payable denominated in US dollars. Fisheries sub-sector is the highest business risks in the agricultural sector. Business risks due to the risk of fluctuations in the exchange rate, third-party supply of raw materials, importing countries policy, business competition, disease arising in fish bred in captivity, and water pollution. There is the value of the business risk is very high and become an outlier in one of the companies in the fisheries sub-sector. The company's high business risk is due to the impact of the subprime mortgage crisis in the USA. In addition, mandatory quality standards of seafood imports coming into the USA by the FDA (US Food & Drug Administration) has an impact on export companies, which are now required to keep the processing free of heavy metals, bacteria, and to create a more qualified labor standards. The low growth of fishing company in the year 2010 was due to a decrease in product sales. However, continued growth due to the increased sales of tuna products, fillets, octopus, cuttle fish, and whole in export and local. There is a very high liquidity value and become an outlier in one of the companies. The high liquidity in the company is due to the decrease in short-term liabilities. Decrease in liabilities caused by a decrease in taxes payable because the company has no debt from banks and other financial institutions.

Forestry sub-sector

TABLE 5: FORESTRY SUB-SECTOR

Variable	2010	2011	2012	2013	2014	Mean
DER	0.07	0.20	0.51	3.45	4.63	1.77
DAR	0.06	0.17	0.34	0.78	0.82	0.43
Risk	0.01	0.01	0.04	0.002	0.01	0.02
Growth (%)	108	13	159	(24)	(8)	50
Liquidity (%)	4690	756	6747	14	34	2448

The capital structure increased in 2010-2014 period. Improved capital structure is due to the increase in total long-term liabilities of the company. The increase in total long-term liabilities due to higher finance lease vehicle purchases, companies's debt to third parties for the sale and purchase agreement notes (secured promissory note), liabilities for employee benefits, and advance sales of logs. Business risk is determined by the weather and macroeconomic conditions. The company's business related to the survival of plants depends on the weather conditions that can lead to failure of compliance with production standards. Besides the weather, the decline in economic growth could affect the purchasing power of people and weakened the company's investment so as to reduce the public interest in farming and affect the revenue of the company. Forestry is a sub-sector with average growth and the highest liquidity in the agricultural sector. Average growth due to the high value product sales, which are mainly sales of logs. It is also because Indonesia is a potential market for the development of biotechnology products related to forestry plants. Average liquidity due to the increase in net inventories of logs and debt reduction efforts.

Wood and its processing sub-sector

TABLE 6: WOOD AND ITS PROCESSING SUB-SECTOR

Variable	2010	2011	2012	2013	2014	Mean
DER	3.33	4.02	5.45	11.25	7.69	6.35
DAR	0.77	0.80	0.85	0.92	0.88	0.84
Risk	0.03	0.02	0.04	0.01	0.07	0.03
Growth (%)	(1)	(7)	13	14	10	6
Liquidity (%)	118	145	119	98	110	118

Capital structure in wood and its processing sub-sector is the highest capital structure in the agricultural sector. It is because the company needs more funding in the operations of the company to increase sales volume. The increase in sales volume of the company and its processing timber to maintain cash flow due to a decline in selling prices and lower demand due to weak economic growth in the countries that became market such as Europe, Japan, and America. The types of risks are the supply risk of the log, fluctuations in the exchange rate, operational, the policy of importing countries, and political as well as social and environmental. There is an increased risk in 2014 due to wood products began to compete with the materials of the other buildings that tend to be lightweight and durable. Wood and its processing is a sub-sector with the lowest growth and liquidity. It is caused by fluctuations in selling prices of products because of the slow recovery of the American and European markets. The decline in the selling price of plywood is also caused by the weakening of the Japanese market. The Japanese economy's stagnant progression causes the selling price of the company's products and lower market demand for the company's products. Companies address growth by producing more raw plywood and polyester that is quite expensive so the average selling price of the company is not experiencing a significant decline.

Pulp and paper sub-sector

TABLE 7: PULP AND PAPER SUB-SECTOR

Variable	2010	2011	2012	2013	2014	Mean
DER	1.65	1.79	1.89	1.95	1.84	1.82
DAR	0.61	0.63	0.64	0.65	0.64	0.64
Risk	0.01	0.01	0.01	0.02	0.02	0.01
Growth (%)	14	5	8	10	16	11
Liquidity (%)	216	134	161	139	178	166

Improved capital structure in this sector is used for the purchase of raw materials and paper machine investment. Business risk is the lowest in the agricultural sector, amounting only 0.01. Pulp & paper sub-sector did not experience problems due to the company's ability to manage business risks quite well. The low business risk are also caused by the price of product pulp & paper. Risk management conducted to reduce the business risk is to monitor receivables and payables in foreign currencies, creating a good drainage system, cooperation with various parties related to the raw material, implement the whistleblower program, creating a clear work rules, and perform risk control. A decline in growth in 2011, this is due to rising raw material prices, energy costs, foreign exchange losses and the rising cost of borrowing to improve the company's projects. However, pulp and paper sub-sectors continue to experience growth until 2014 due to the increase in product prices.

Animal feed sub-sector

TABLE 8: ANIMAL FEED SUB-SECTOR

Variable	2010	2011	2012	2013	2014	Mean
DER	1.22	1.21	1.26	1.36	1.58	1.33
DAR	0.49	0.51	0.53	0.55	0.59	0.54
Risk	0.03	0.03	0.02	0.03	0.04	0.03
Growth (%)	6	18	17	14	0.1	11
Liquidity (%)	223	192	184	200	163	192

Improved capital structure in this sector is used for the purchase of raw materials and to increase bond debt. The types of risks are the risk of fluctuations in the availability and price of raw materials, as well as the risk of disease. Growth in this sub-sector has decreased in the period 2012-2014. The company's net sales declined as the outcome of the development of national and global economic issues. In addition, the company's sales decline was also due to the low market price of the DOC (day old chicken) which led to oversupply.

REGRESSION RESULTS AND INTERPRETATION

Based on the results obtained from panel data estimates, independent variables such as business risk, growth and liquidity together give a significant effect on the determination of the company's capital structure in the agricultural sector. The results of the panel data regression using random effects model can be seen in Table 9.

TABLE 9: REGRESSION RESULTS OF THE CAPITAL STRUCTURE MODEL

Variable	DAR	DER
C	-0.86 *	-0009
Std. Error	0.15	0.24
Business risk	1.89 *	4.37 *
Std. Error	0.69	1.13
Growth	12.54 *	12.47 **
Std. Error	0.15	0.24
Liquidity	-0.04 *	-0.05 *
Std. Error	0.15	0008
R^2	0.38	0.34
Adjusted R^2	0.36	0.32
SE of regression	0.32	0.52
F-statistic	21.46 *	17.91 *

Note * Significant at α = 1% ** Significant at α = 5%

Overall business risk has a positive significant effect on the capital structure at the level of 1% with a coefficient of 1.89 and 4.37. In general, the company will avoid debt when business risks increased, thus increasing the interest rate for the company. Therefore, high business risk is supposed to make the company improve efficiency and avoid debt. However, different things happen in this study. This journal on business risks in the agricultural sector is using the standard deviation of ROA. Despite of the existence of business risk, agricultural companies' ROA tend to increase and give a good interpretation to banks and investors. It makes financial institutions and investors saw their business growth prospects, and provide loans and invest in agricultural companies. The positive effects of business risk variables to capital structure in accordance with agency theory which indicates that the higher risk business, the company's total debt as measured by DAR and DER will also be higher. The results also support the research (Mostarac and Petrovic 2013), (Amidu 2007), and (Ramjee and Gwatidzo 2012).

The company's growth in the agricultural sector as a whole has a positive significant effect with significance level of 5% on the capital structure with a coefficient of 12.54 and 12.47. Business risk coefficients (4.37) sizeable indicates that business risks are among the factors which influenced the capital structure. This is supported by Gitman (2009) which states that the business risk is one of the important things in consideration for the company's capital structure decision making. The positive influence on the growth of variable capital structure in line with the the pecking order theory. Based on the pecking order theory, a rapidly growing company needs to improve long-term operating assets (Malinic et al. 2013).

Liquidity of companies in the agricultural sector as a whole has a negatively significant influence, with the real level amounting 1% on the capital structure with a coefficient of -0.04 and -0.05. The negative relationship between liquidity and capital structure is in accordance with the pecking order theory and agency theory. This is due to high liquidity will make lenders limit the amount of debt financing for the company (Al-Ajmi *et al.* 2009).

SUGGESTIONS

Investor analysis

Sub sector of pulp and paper is a sub-sector with the lowest level of business risk. Today, Indonesian pulp industry was ranked the 9th and paper industry was ranked 6th in the world. National pulp and paper industry was ranked 3rd in Asia. Investors can invest with low risk and high benefit due to increased exports of pulp annually due to increased volumes and sales prices. Pulp & paper are exported to foreign market in Asia, the Pacific, Australia and will be extended to the EU. Pulp and paper industry continued to make investments, expansion, and construction of the plant in order to national and international demand. Indonesia's tropical regions also support the growth of the wood so that it can produce the raw material only in 5-6 years. Risk-averse Investors are advised to invest in the pulp and paper sub-sectors.

Based on the trend of growth in the agricultural sector, a risk neutral investors are advised to invest in plantation sub-sector. it is a safe and profitable to invest because it has a low level of risk that is 0.03 and growth has increased significantly in 2014 to reach 43%. The positive trend of growth in plantation sub-sector due to an increase in average selling price of the product. At this time, the price of farm products, especially crude palm oil (CPO) to increase due to an increase in demand in line with the increase in consumption in major importing countries such as China and India. The Government committed to make the plantation sector widened main sectors that can encourage local community life. This is because 40% of the total area of oil palm plantations are owned by the people.

Meanwhile, for risk seeker investors are advised to invest in the fisheries sub-sector. Fisheries sub-sector is a sub-sector that has the highest business risks in the agricultural sector. However, the fisheries sub-sector also has a relatively high growth rate. Investors who are risk seekers can choose to invest in the fishing sector because Indonesian territorial waters is a great economic potential for the fishery industry. Food industry growth basing on fishieries, which is included as a priority in the National Industrial Development Master Plan (NRMP) also helped boosting the fishing industry. The government also plans to build a number of export ports and to improve the infrastructure to support the fishing industry. Export port development could boost the market and facilitate business processes.

Companies Management

Based on agency theory, an increased risk of the business will make companies tend to use debt as a source of funding to funding the operational and investment projects. The increase in risk and debt signified that the agricultural companies are optimistic with the available resources to get more profit by increasing investment and production capacity.

Positive relationship between growth and capital structure showed that the high growth would make the company use more external costs or debt due to insufficient internal resources needed. In addition, the debt through external cost is made to expand market opportunities (Sharif et al. 2011). The larger the growth of a company, the bigger chance it will attract the attention of investors to invest and easier for companies to get loans from investor's confidence in company performance. Although there are consequences of an increased risk of additional debt, but investors believe that the management overcome well. Based on research (Bassey et al. 2014) companies with high growth requires a greater long-term debt to finance growth and investment opportunities such as business expansion, acquisitions, as well as meet current expenditures.

Restrictions on the amount of financing makes companies prefer to utilize internal financing sources to fund investments and pay off current debts. it reduced the level of long-term debt of the company. The company's internal financing sources come from retained earnings based on the company's operations.

CONCLUSION

Descriptive analysis showed that the highest debt ratio was in food crops sub-sector. The highest business risk was fishery sub-sector and the lowest was pulp and paper sub-sector. The highest growth was in forestry sub-sector and the lowest was in the wood management sub-sector. The highest liquidity was forestry sub-sector and the lowest was the wood management sub-sector. The regression analysis of panel data showed that business risk and growth in agricultural sector has the significant effect on capital structure. Moreover, the test result of liquidity effect on capital structure showed in agricultural sector has negative significant effect. For further study, is recommended to add variables representing other financial ratios in order to produce a model that is able to explain the company's capital structure in the agricultural-based company better.

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