

## **AN EMPIRICAL ANALYSIS OF ECONOMIC EXPOSURE AND ITS DETERMINANTS OF THE MISCELLANEOUS COMPANIES IN INDONESIA**

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### **ABSTRACT**

This research empirically measures the economic exposure of 11 selected miscellaneous companies in Indonesia. It also attempts to empirically explore the influence of firm size (SIZE) export (EXPORT), liquidity (QR), and leverage (LTD) on the economic exposure of those companies. Annual data from 2007 to 2010 which was collected from the [www.idx.co.id](http://www.idx.co.id) and [www.bi.go.id](http://www.bi.go.id) were used and analyzed by the multiple linear regression to measure the economic exposure and examine the influences of SIZE, EXPORT, QR, and LTD on the economic exposure. Both partial (t-test) and simultaneous (F-test) hypotheses were constructed and tested at the 5% level of significance. Data was analyzed by the software of SPSS for Windows. The research documented that, with the exception of the QR which has a negative and significant effect partially on the economic exposure, all other variables, i.e., SIZE, EXPORT, and LTD were found to have insignificant effects. Meanwhile, based on the F-test, the research found that the SIZE, EXPORT, QR, and LTD affected simultaneously and significantly the economic exposure of the companies. These findings imply that in order to manage their economic exposure, the companies should control these variables, especially QR.

Keywords : Economic Exposure; Firm Size; Export Ratio; Quick Ratio; Long Term Debt to Total Asset Ratio; Miscellaneous Companies; Indonesia.

### **Introduction**

In the era of globalization, it is almost impossible for the companies to isolate their activities from international markets. Companies that enter into foreign markets must transact their international business activities with multiple foreign currencies of the trading partners as a medium of exchange. United States currency, U.S. Dollar (USD) has been the most dominant currency used in the international business transactions worldwide due to the stability of its value. Similarly, the USD has also dominantly used by the companies in Indonesia that involve in the international trading activities. On average, the use of USD in non-oil and gas exporting and importing activities in Indonesia during the period from 2007 to 2010 was 93.37% and 77.88%, respectively (Bank Indonesia, 2010). Thus, when the USD fluctuates against the local currency, Indonesian Rupiah (IDR), the value of those companies in Indonesia will be affected as reflected in their stock prices, and it will, in turn, affect the performance of the firms. If the IDR depreciates, the interest expense on the foreign debt the firms owned has to be paid higher.

Fluctuations of the exchange rate affect the cash inflow and cash outflow of the companies which is dominated by the domestic currency. However, the currency fluctuation is not always bad to the companies. As for the exporter companies, the depreciation of IDR or appreciation of foreign currencies will make local products and services become cheaper and

more competitive in overseas markets so that those firm can sale more products and services in foreign markets, and thus their revenues increase. On the other hand, the IDR depreciation causes the foreign products and services become more expensive, and thus it negatively affects the performance of the importer companies. Since investors have diversified their investments into stocks in various foreign stock markets, thus values of their stocks will be exposed to the fluctuations of exchange rate.

In international finance, these changes in the values of companies due to foreign currency fluctuation are so-called foreign exchange exposure (exposure rate) or economic exposure. Exposure of exchange rate fluctuations measures the sensitivity of changes in the real value of assets, liabilities, or operating income expressed in the domestic currency to unanticipated of exchange rate changes (Levi, 2001: 313). In other words, the economic exposure signifies the extent to which the present value of future cash flows of a company is affected by exchange rate fluctuations. In a nutshell, it basically shows the impact of exchange rate fluctuations on the cash flow of company which is a reflection of the company's value (Madura: 2005: 285).

A miscellaneous company in Indonesia is one of the dominant players in the international trading activities. These companies (comprise companies of automotive and its components, textile and garment, cable and electronics) have been actively involving in the international business activities, thus any fluctuations in trading partners' currency will in turn affect the values of the companies as well as their performances. Therefore, the study on economic exposure and its impact to the firm performances is of great importance as it provides some lights for the companies to properly select risk management instruments to reduce the impact of the economic exposure (Pantzali, 2001). Commonly, the companies undertake hedging activities to anticipate exchange rate risk. Hedging can reduce the volatility of company cash flows because the cash inflows and expenses will not affected by fluctuations in foreign currency (Madura, 2000: 274). Furthermore, in order to reduce the impact of foreign exchange fluctuations, the companies must also consider factors affecting the economic exposure includes the firms size (Anggraeni, 2004, Kurniawati and Anggraeni, 2008, Ameer, 2010, and Lin et al. 2010), export ratio, liquidity (Anggraeni, 2004, Kurniawati and Anggraeni, 2008, and Lin et al. 2010), and total asset ratio (Lin et al. 2010). Firm size determines the ability of the firm to perform hedging activities (Ameer, 2010), the larger the firm the smaller the effect of economic exposure on the firms' performance (Anggraeni, 2004). Meanwhile, the export ratio which reflects the degree of internationalization of the company's operations is positively economic exposure of the firms (Kurniawati and Anggraeni, 2008). Similarly, the firm with higher liquidity (quick ratio) will has little incentive for hedging (He and Ng, 1998), thus it has a positive effect on the economic exposure of the firm (Kurniawati and Anggraeni, 2008). Finally, the long-term debt to total asset ratio reflects the probability of a firm in facing financial distress costs, and therefore desire of firm to perform hedging activity will be greater (Ameer, 2010), therefore the companies with a high long-term debt to total assets ratio tend to have lower value of economic exposure (Li et al., 2011).

The studies on economic exposure and its impact to the firm performance have been conducted intensively in the developed and other emerging economies, but similar studies on the companies in Indonesia have been scarce and these studies only focused on the banking and industrial sectors. Anggraeni (2004) investigated the foreign exchange exposure of go-public banks in Indonesia during the period 1999-2003 found that loan to deposit ratio, return on equity and non-performing loan had significantly affected the economic exposure of the banks. Meanwhile, Kurniawati and Anggraeni (2008) explored empirically the foreign exchange exposure of companies in the industrial sector in Indonesia during the period 1992-

2004 and documented that export ratio positively had affected economic exposure of the firms, while book-to-market had a negative effect. Although all investigated variables (i.e., firm size, export ratio, quick ratio, and debt to equity) simultaneously influenced the economic exposure of the companies, but the firm size, quick ratio, and debt to equity ratio were found to be partially insignificant in affecting the economic exposure of the firms.

Unlike the above-reviewed studies that focused on the banking and industrial sectors, this study measures the economic exposure of the 11 selected miscellaneous companies listed in the Jakarta Stock Exchange during the period of 2007-2010. It also attempts to empirically investigate the extent to which the firms' size, export ratio, liquidity (proxied by quick ratio) and leverage (proxied by long-term debt to total assets ratio) influence the economic exposure of the companies. The finding of the study is hoped to shed some lights for the companies to reduce the impact of the economic exposure on the firms' value by implementing a proper risk management strategy.

The rest of the study is organized as follows. Section 2 highlights the empirical framework and data preliminaries of the study. Section 3 discusses the empirical findings. Finally, section 4 summarises the major findings and draws relevant policy implications.

## **Research Methods**

### **Empirical Framework**

Since the objectives of the study are twofold, thus two-stage of analysis of multiple regression will be conducted, i.e., (i) to measure the economic exposure of the miscellaneous companies in Indonesia; and (ii) to empirically explores the effects of firms' size, export ratio, liquidity (proxied by quick ratio) and leverage (proxied by long-term debt to total assets ratio) on the economic exposure of the companies. The first regression model (Equation 1) is conducted to measure the economic exposure of the companies can be written as follows:

$$R_{it} = \beta_0 + \beta_1 \Delta ER_{it} + \beta_2 Rm_{it} + e \dots\dots\dots(1)$$

Where the  $R_{it}$  is return of individual stocks which calculated by  $R_{it} = \frac{P_t - P_{t-1}}{P_{t-1}}$ ,  $\Delta ER_{it}$  is the changes in the cross rate of IDR against USD which is calculated by  $\Delta ER_{st} = \frac{ER_{st} - ER_{st-1}}{ER_{st-1}}$ ,  $Rm_{it}$  is the market return which is calculated by  $RM_{it} = \frac{JCI_{it} - JCI_{it-1}}{JCI_{it-1}}$ ,  $\beta_0$  is the constant term,  $\beta_1$  and  $\beta_1$  are the coefficients of economic exposure and market return, respectively, and  $e$  is the error term.

After measuring the coefficient of economic exposure in the Equation (1), then in the second stage, the study empirically investigates effects of the firms' size, export ratio, liquidity (proxied by quick ratio) and leverage (proxied by long-term debt to total assets ratio) on the economic exposure of the companies with the following Regression Model (2):

$$\Delta ER_{st} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 EXPORT_{it} + \alpha_3 QR_{it} + \alpha_4 LTD_{it} + \epsilon \dots\dots\dots(2)$$

Where  $\Delta ER_{st}$  is the economic exposure,  $SIZE_{it}$  is the firm's size,  $EXPORT_{it}$  is export ratio,  $QR_{it}$  is the quick ratio,  $LTD_{it}$  is the long-term debts to total assets,  $\alpha_0$  is the constant term,  $\alpha_1$ ,  $\alpha_2$ ,  $\alpha_3$ , and  $\alpha_4$  is the coefficients estimates for independent variables, and  $\epsilon$  is the error term. In this study,  $\Delta ER_{st}$  is defined as the sensitivity level of changes in the IDR the USD to the company's individual stock returns which is measured by the Equation (1). Meanwhile,  $SIZE$  is measured by the logarithm of total assets owned by the company;  $EXPORT$  is calculated based on the ratio between company's total overseas sales with total sales of the company, and

this variable shows the level of internationalization of the firm; QR is measured by the Quick Ratio which signifies the level of liquidity of a company; and LR is calculated based on the ratio of long-term debt to total assets, and this ratio indicates the level of the corporate growth opportunity. Finally,  $i$  and  $t$  refer to the companies  $i$  for period  $t$ .

Before the Equations (1) and (2) are estimated, the classical assumptions of normal distribution, multicollinearity, and heteroscedasticity were earlier tested.

## Data

This study measures and investigates empirically the economic exposure and its determinants of the companies in the miscellaneous sector which are listed in the Jakarta Stock Exchange for the period 2007 to 2010. 11 companies of the miscellaneous sector (i.e., PT. Polichem Indonesia Tbk, PT. Astra Otoparts Tbk, PT. Indo Kordsa Tbk, PT. Ever Shine Tex Tbk, PT. Goodyear Indonesia, Tbk, PT. Pania Indonesia Tbk, PT. Sumi Indo Kabel Tbk, PT. Indorama Synthetics Tbk, PT. KMI Wire and Cable Tbk, PT. Supreme Cable Manufacturing Tbk, and PT. Voksel Electric Tbk) were selected based on the availability of data and their involvement in the international trading activities. Secondary data consists of daily individual stock price indices, market index (Jakarta Composite Index, JCI), and exchange rate (cross rate of IDR against USD) were used in the study to measure the economic exposure of the companies. These data were collected from the websites of the Jakarta Stock Exchange (<http://www.idx.co.id>) and website of Bank Indonesia (<http://www.bi.go.id>). Meanwhile, the annual data of the size of the firm ( $\Delta ER_{st}$ ), export ratio ( $EXPORT_{it}$ ), quick ratio ( $QR_{it}$ ), and long-term debts to total assets ( $LTD_{it}$ ) were used to explore their effects on the economic exposure. These data were collected from the financial reports of the companies.

## Results and Discussion

Before discussing the major findings of the paper and its implication, the study present first the descriptive statistics of the variables in Table 1 and their correlation coefficients in Table 2.

Table 1. Descriptive Statistics

Variable	Minimum	Maximum	Mean	Standard Deviation
Economic Exposure	-5,801	2,83	-0,102	1,270
SIZE	11,691	12,825	12,126	0,351
EXPORT	0,035	0,971	0,387	0,252
QR	0,276	5,194	1,23	1,036
LTD	0,003	0,517	0,132	0,131

Table 1 shows that the lowest value of economic exposure is -5.801, while the highest value is 2.830 with the average of -0.102 and standard deviation of 1.270. The lowest and highest values of SIZE were 11.691 and 12.825, respectively, while its average value and standard deviation were 12.126 and 0.351. EXPORT has the lowest and highest values of 0.035 and of 0.971, with the average value of 0.387 and standard deviation of 0.252. QR has the lowest value of 0.276, the highest value of 5.194, the average value of 1.239 and standard deviation of 1.036. Finally, the lowest and highest values for LTD were 0.003 and 0.516, respectively, and this variable has average value of 0.132 and standard deviation of 0.131. With

the exception of the economic exposure, all other variables recorded positive values.

Table 2 shows the correlation of the variables, namely the study of economic exposure, SIZE (Firm Size), EXPORT (Export Ratio), QR (Quick Ratio) and LTD (Long Term Debt to Total Assets Ratio) in various industrial companies listed on Indonesia Stock Exchange during the study period from 2007 until 2010.

Table 2. Coefficients of Pearson Correlation. Note: \* and \*\* indicate significant at the levels of 1% and 5%, respectively.

	<b>Economic Exposure</b>	<b>SIZE</b>	<b>EXPORT</b>	<b>QR</b>	<b>LTD</b>
Economic Exposure	1,000				
SIZE	-0,125 (0,435)	1,000			
EXPORT	-0,312* (0,021)	-0,168 (0,140)	1,000		
QR	-0,451** (0,001)	-0,191 (0,110)	0,445** (0,001)	1,000	
LTD	-0,006 (0,484)	0,356** (0,010)	-0,143 (0,180)	-0,196 (0,104)	1,000

In relation to the economic exposure, only two independent variables, i.e., EXPORT and QR have weak significant negative correlation with the economic exposure with the coefficient correlation of -0.312 and -0.451, respectively. Overall, the coefficients of correlation were relatively small, thus this indicates that the variables used in the study are free from multicollinearity problem (See Table 2). Other classical assumptions of normality and heteroscedasticity were tested, and the study found that the variables fulfilled these assumptions. This implies that the variables investigated in the study can be used for further in depth analysis to get robust findings.

### **Measuring Economic Exposure**

The result of economic exposure which is estimated by the Equation (1) was reported in Table 3. Based on the Table 3, on the average, the study found that except for the year 2008, all the values of economic exposure were negative. The average values of economic exposures for 2007, 2008, 2009 and 2010 were -0.647, 0.056, -0,186 and -0.463, respectively. Overall, the average value for economic exposure during the study period was -0,310. PT. Indorama Synthetics Tbk recorded the lowest values of economic exposure (-2.778), while PT. Voksel Electric Tbk recorded the highest one with the value of 0.814. These findings suggest that during the period 2007 to 2010, the company which was hardly affected by the depreciation of the IDR against the USD was is PT. Indorama Synthetics Tbk, and PT. Voksel Electric Tbk gained benefits during the depreciation of the national currency, IDR. Of 11 companies, only 5 companies recorded positive values of their economic exposures, signifying that they were helped by the depreciation of the IDR. Meanwhile, most of other companies, their values was

negatively affected by the weakening of the IDR.

Table 3. Economic Exposures of the Miscellaneous Companies, 2007-2010

Companies	Economic Exposure				
	2007	2008	2009	2010	Mean
PT. Polichem Indonesia, Tbk	-0,104	0,186	-0,297	0,223	<b>0,002</b>
PT. Astra Otoparts Tbk	0,059	-0,222	-0,015	-0,591	<b>-0,192</b>
PT. Indo Kordsa Tbk	-5,801	-0,002	-0,803	0,661	<b>-1,486</b>
PT. Ever Shine Tex Tbk	0,007	-0,69	0,244	2,83	<b>0,598</b>
PT. Goodyear Indonesia, Tbk	-0,346	0,454	0,306	-0,735	<b>-0,08</b>
PT. Pania Indosyntex Tbk	-0,202	-0,049	0,663	1,23	<b>0,411</b>
PT. Sumi Indo Kabel Tbk	0,778	0,228	-1,246	-2,462	<b>-0,676</b>
PT. Indorama Synthetics Tbk	-0,725	-0,124	-1,013	-9,25	<b>-2,778</b>
PT. KMI Wire and Cable Tbk	0,747	0,697	-0,766	0,81	<b>0,372</b>
PT. Supreme Cable Man. Tbk	-0,402	-0,61	-0,197	-0,381	<b>-0,398</b>
PT. Voksel Electric Tbk	-1,131	0,754	1,072	2,562	<b>0,814</b>
<b>Mean</b>	<b>-0,647</b>	<b>0,056</b>	<b>-0,186</b>	<b>-0,463</b>	<b>-0,310</b>

#### Analysis of the Determinants of Economic Exposure

The findings of effect of independent variables (Firm Size, Export Ratio, Quick Ratio and Long Term Debt to Total Assets Ratio) on economic exposures of the companies in the miscellaneous sector in Indonesia during 2007-2010 which was estimated based on the Equation (2) was reported in Table 4.

Table 4. Regression Results of Economic Exposure and Its Determinants

	Unstandardized Coefficients		t-value	Sig. value
	A	Std. Error		
Constant	10,753	6,624	1,623	0,113
SIZE	-0,811	0,547	-1,483	0,146
QR	-0,527	0,194	-2,717	0,010
EXPORT	-0,838	0,789	-2,061	0,025
LTD	-0,334	1,465	-0,228	0,821
Adjusted R <sup>2</sup> = 0.195; F-Sig = 0.015				0,195

Based on the regression results in the Table 4, the multiple regression Equation (2) can be re-written as follows:

$$\Delta ER_{st} = 10.753 - 0.811SIZE_{it} - 0.527EXPORT_{it} - 0.838QR_{it} - 0.334LTD_{it} + \epsilon$$

Based on the Table 4, the study found that only liquidity of the companies (proxied by Quick Ratio, QR) and EXPORT was found to be negatively and significantly affected the values of company's economic exposure at 1% and 5% levels of significance, respectively. Meanwhile, the other variables were found to be insignificant in predicting the economic exposure of the miscellaneous companies in Indonesia during the study period.

The liquidity of the firm (QR) is found to have a significant negative impact on the economic exposure at the 5% significance level. This result indicates that although the company increased their liquidity level, but the company still maintained and did not reduce t

their incentives for hedging activity. This finding is in harmony with the results of the study by Li et al. (2010).

The insignificant finding of the effect of size on economic exposure was similar to the findings of the study by Anggraeni (2004), and Anggraeni Kurniawati (2008) and Li et al. (2010). According to Li et al. (2010), a large company has a higher level of access to hedge their international business trading activities than a smaller company, so that large company is less exposed to the fluctuations of the currency compared to the small company. In practices, there were some smaller companies who have actively involved in hedging their international transactions to reduce the level of risk of bankruptcy due to exchange rate fluctuations. Thus as for the size and its relation to the economic exposure, this variable might have positive, negative or insignificant effect on the firm's value.

As for the variable EXPORT (Export Ratio), the study found significant and negative effect on the economic exposure. This indicates that the higher the degree of internationalization of the company, the company will further intensify their hedging activities to protect the values of company deteriorated by the exchange rate fluctuations due to their involvement in the international business transactions. This finding is similar to the research by Kurniawati and Anggraeni (2008).

Finally, as for variable long-term debt to total assets ratio (LTD), the study found insignificant effect of it on the economic exposure. This fact signifies that the significant levels of financial distress do not affect the company's future economic exposure. This means that a significant rise and fall of the LTD does not affect the economic exposure of the companies, the finding similar to Li et al.'s (2010) study.

Overall, the study found that all the independent variables recorded significant effect on the economic exposure of the companies simultaneously, as shown by the significant F-values of at least at 5% level. As indicated by the coefficient of determination (Adjusted R<sup>2</sup>) of 0.195, the ability of independent variables to explain variations in the level of economic exposure was only 19.5%. This implies that there are many other potential factors should be included in the analysis when predicting the economic exposure of the companies.

As SIZE increases and firm gets larger, the company need to increase their liquidity level indicated by an increase in QR, and followed by an increase of their internationalization (EXPORT) and thus the company need to also improve their cash flows due to an increase in the company's LTD. At this juncture, the probability of the firms to be exposed to the risk of higher debt burden will increase due to the foreign exchange fluctuation, and then the firm tend to intensify their overall hedging activities. This explains the significant and simultaneous effects of the SIZE, QR, EXPORT, and LTD on the economic exposure.

## **Conclusion**

This research empirically measures the economic exposure of 11 selected miscellaneous companies in Indonesia. It also attempts to empirically explore the influence of firm size (SIZE) export (EXPORT), liquidity (QR), and leverage (LTD) on the economic exposure of those companies during the period 2007-2010. Since the objectives of the study are twofold, thus two-stage of analysis of multiple regression were respectively conducted to: (i) measure the economic exposure of the miscellaneous companies in Indonesia; and (ii) empirically explores the effects of firms' size, export ratio, liquidity (proxied by quick ratio) and leverage (proxied by long-term debt to total assets ratio) on the economic exposure of the companies. The study found that the values of economic exposure during the period of the study was varies across the companies with an average of -0.320. Except for the year 2008, all the values of economic exposure were negative. The average values of economic exposures for

2007, 2008, 2009 and 2010 were -0.647, 0.056, -0,186 and -0.463, respectively. These findings suggest that during the period 2007 to 2010, the company which was hardly affected by the depreciation of the IDR against the USD was PT. Indorama Synthetics Tbk, and PT. Voksel Electric Tbk gained benefits during the depreciation of the national currency, IDR. Of 11 companies, only 5 companies recorded positive values of their economic exposures, signifying that they were helped by the depreciation of the IDR. While most of other companies, their values were negatively affected by the weakening of the IDR. As for the effects of independent variables on the economic exposure, the study documented only liquidity of the companies (proxied by Quick Ratio, QR) and EXPORT were found to be negatively and significantly affected the values of company's economic exposure at 1% and 5% levels of significance, respectively. Meanwhile the other variables were found to be insignificant in predicting the economic exposure of the miscellaneous companies in Indonesia during the study period. This implies that in order to predict the economic exposure, the companies should take into account the liquidity and the level of companies' internationalisation (export ratio). This information will help the firm to manage the risk of foreign currency fluctuations by hedging their international business activities.

To enhance and provide new insights on the issue of this research, it is recommended for further studies investigating economic exposure of the companies in Indonesia should incorporate other potential factors affecting the economic exposure both firm's characteristics and macroeconomic variables, and covers firms in a more sector of economy in the country. Further research also suggested to compare the economic exposure of firms across the countries with a different economic level of activities.

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