

THE EFFECT OF DEBT TOWARD BALANCE SHEET EFFECT ON THE MINING INDUSTRY IN INDONESIA

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Abstract

Mining commodity prices plummeted in the middle of this decade as the world economic slowdown and the financial crisis is still going on in several countries. The mining industry generally rely on debt in its operations, both in foreign currencies, mainly the US dollar, and the domestic currency. The purpose of this study was to look at the impact of the debt by proxy Debt in US Dollar (DOL), Total Debt (TD), amount of Domestic Debt two Logarithmic in Real Interest Rates (DOMLOG) and Debt in Rupiah (DOM) toward fixed assets as a proxy of the balance sheet effect of the mining industry in Indonesia. Total samples were 26 mining companies in Indonesia with the period 2013-2015. By using the processing SPSS.ver 21. This study showed that the DOL, TD, DOM have an influence on the balance sheet effect even DOL and DOM have negative sign. Meanwhile DOMLOG no effect. It can be concluded that companies using Debt in US Dollar (DOL) and DOM are the main cause of balance sheet effect. Using debt in US dollars (DOL) less than debt in domestic currency (DOM) for investment so that they will decrease in the amount of debt recorded in accountancy, and its will cause the Total Debt (TD) has positive sign toward Balance Sheet Effect. Hence, to minimize this effect, be advised companies to do the hedge on dollar debt that will mature, issue bonds in domestic currency, and increase sales in US Dollars.

Keywords : Balance sheet effect, Debts, Investment, Currency Depreciation, Mining Industry,

Introduction

Performance of company can be seen from its financial statements. Financial Statements are also as a source information for investor to make an investment (Subramanyam and Wild : 2007), and other stakeholders to take action. The financial statements are consists of Comprehensive Income Statement, Retained Earnings Statement, Statement of Financial Position, and Notes to Financial Statements. These reports are generally divided in two types that are Income statement which comprises of result of revenue against expenses in one period, and Statement of Financial Position which figure out the position of assets, liabilities and equities on the certain date. The primary objective of financial reporting is to provide high-quality financial reporting information concerning economic entities, primarily financial in nature, useful for economic decision making (FASB, 1999; IASB, 2008) (Beest, Bramm & Boelens : 2009).

The condition of financial statements are prepared according to standards that is vulnerable to external factors such as market risk. Market risk is defined as the risk arising from the movement of market variables (adverse movement) of the portfolio owned by the company. Movements of market variables such as changes in exchange rates, interest rates, and macroeconomic and monetary factors, this can cause the impact of profit or loss for the company in the perspective. According to Nichita & Vulpoi (2016), risk disclosure “is influenced by the standard setters’ requirements through the issuance of accounting standards (IAS 32, IFRS 7, IFRS 8 Financial instruments: disclosure, IFRS 9 Operating segments, IFRS 13 Fair value measurements) underpinning the reporting of risk”.

Changes in interest rates are relatively rare even constant in a certain period of time, but not so with the exchange rate fluctuations that can change every second (volatile). The foreign currency exchange rate against the domestic currency may appreciate the strengthening of the domestic currency against the foreign currency, or depreciate, which means the weakening of the domestic currency against foreign currencies. However, under certain conditions, the depreciation conditions can increase production and economic growth in some countries that have flexible exchange rates (Forbes, 2002). Another impact has been the increased cost of importing components but affecting exporters in terms of cost advantage relative to foreign competitors (Forbes, 2002). However, when

viewed from the standpoint of the companies' debt position on transactions in foreign currency, the value of debt will increase the cost of borrowing in which this condition can reduce the company's wealth. This effect is called net worth effect. Depreciation can increase the company's excellence with a competitiveness effect that can increase sales, and increase the company's growth. The extreme depreciation of many regional currencies and the ensuing economic fallout (Yannis, Brown and Klapper, 2003).

If the net worth effect is more dominant than the competitiveness effect. This means that the impact of depreciation is negative for firms as this will raise the cost of non-offset debt by increasing sales and net income. This condition is called the balance sheet effect.

The Problem of this study derive from weaken price of mining commodities has dicline in line with the slow growth of the world's economy which mining products used for energy production. On the other side the mining industries require large investments that are generally obtained from loans and the loans are mostly using the US dollar because the basis of their revenue in US dollar. This condition can trigger a balance effect in this industries. Bonomo, Martins, and Pinto (2003) who investigated the balance sheet effect in Brazil, Benavente and Johnson (2003) in Chile and Prasetyantoko (2007) in Indonesia, all found that in countries experienced a negative balance sheet effect. While Bleakley and Cowan (2002) actually found an inverse result when examining the five Latin American countries where the depreciation would provide a positive relationship.

Literature Review

1. Balance Sheet Effect

Prasetyantoko (2008: 234) states many studies are conducted on financial turmoil by taking into account microeconomic factors, such as the health of the corporate sector, reflected in the condition of the balance sheet. This approach is often referred to as a balance sheet effect. The balance sheet effect approach emphasizes the importance of microeconomic factors in explaining macroeconomic fluctuations. Corsetti, Pessenti, and Roubini (1998) have made it clear that implicit guarantees will encourage behavior that is no longer cautious in lending. Prasetyantoko (2008: 236), stated that the balance sheet effect focuses on the difference in value of assets and obligations related to fluctuations in exchange rates". If the company has foreign currency denominated debt, then the cost of borrowing depends on the exchange rate. Depreciation in exchange rates occurs in situations where most firms have liabilities in foreign currencies, then the depreciation will be followed by an increase in assets (exports), but it impacts much more dramatically on the liability side (Prasetyantoko, 2008: 237). It is called the balance sheet effect. This condition explains why after a large currency depreciation, many countries are in recession and take a long time to recover as the impact of the 1997 crisis (Krugman, 2000). Balance Sheet Effect is commonly identified in developing countries (Eichengreen, Hausmann, and Panizza, 2003), which means there are special characteristics that cause a country to be more vulnerable to the balance sheet effect. The main factor is the ownership of debt denominated in foreign currency.

2. Competitiveness Effect vs Net Worth Effect

When exchane rate depreciation occurs, there are two possible impacts on the company's condition. For exporters, this impact will be positive because the value of domestic currency is relatively more expensive against other currencies so that the income of companies from abroad will increase. Prasetyantoko (2008: 236) said that exchange rate depreciation does not always have a negative impact on the condition of the balance sheet. For a company that does not have foreign debts or foreign currency, the value of its assets actually rises and the debt is relatively unchanged, this condition is called competitiveness effect. Companies that use debt in foreign currency denominated, the depreciation of domestic currency leads to increased borrowing costs. Increasing the cost of these loans will reduce the company's worth. This impact is called a net worth effect. When the crisis of 1997, the balance sheet of companies in Indonesia became negative (Tarmidi, 1998). Roper and Harvey (1999) provided evidence of a net worth effect that caused the 1997 crisis to worsen. In this study use investment as proxy of balance sheet effect to know which effect is stronger between competitiveness effect and net worth effect. If the net worth effect is greater then the company's investment will drop after exchange rate depreciation, it means the balance sheet effect occurs, or vice versa.

3. Investment (INV)

Investment is a large expense financed by the company for the purchase of assets used for its operations to generate income. Investments in companies are made into capital goods such as land and buildings, plants, machineries and equipments, and inventories (Curatman, 2010: 61-62). In deciding the form of investment, the decision is based on reasonable (rational) considerations determined by the expected rate of return and risk cost of investment (Tandelilin 2014: 9-10). Bleakley and Cowan (2002), investment variables (INV) were obtained by the following calculations:

$$\text{INV} = \frac{\text{Inventories}_{(it)} - \text{Invenories}_{(it-1)} + \text{Fixed Assets}_{(it)} - \text{Fixed Assets}_{(it-1)}}{\text{Investment}_{(it-1)}}$$

4. Debt in US Dollar (Foreign Currency Debt)

Foreign Currency Debt (FC) Are loans denominated in dollars that are converted into local currency (Bleakley and Cowan, 2002). In this case, most companies in Indonesia use the loan in foreign currency in US Dollar, so it uses the Debt in US Dollar (DOL). Simandjuntak (2004: 190) stated that debt is defined as the obligation of the debtor to pay the amount of money arising from the debt agreements (credit agreements) in the form of principal debt and or interest. Debt can dominate foreign currency, generally in the form of UD Dollar or Euro. This foreign currency loan will experience exchange value from foreign currency to domestic currency called exchange rate. The exchange rate can cause the domestic currency to be depreciated as the value of the domestic currency relative to the foreign currency increases, or appreciates the higher as value of the domestic currency compared to the foreign currency. The Depreciation will make the debts denominated in foreign currencies multiplied, thus exacerbating the company's financial balance (Krugman (2000). Rothig, Semmler, and Flascher (2005) drew the conclusion that the negative effects of the exchange rate on corporate balance sheets can be minimized by applying risk management practices. Bleakley and Cowan (2002) studied 500 non-financial corporations in Latin America show that when depreciation occurs, companies that have foreign currency debt invest were higher. While Prasetyantoko (2007) gave the opposite result, where during depreciation in Indonesia in 1997 showed the decreasing of investment made by companies. This study is in line with Aguiar (2004) who examined the balance sheet effect in the Mexican state. Allayannis, Brown, and Klapper (2003) also gave similar results in cases in Asian countries, Bonomo, Martins, and Pinto (2003) in Brazil, Gilchrist and Sim (2007) in Korea, De Brun, Gandelman and Barbieri (2002) in Uruguay, as well as Benavente and Johnson (2003) in Chile, all studied found that the balance sheet effect occurred in the countries they studied. This ratio aims to see the impact of the use of dollar debt on investments and to investigate what factors influence the company's decision to use dollar debt in conducting business operations (Bleakley and Cowan, 2002). The formula is:

$$\text{DOL} = \frac{\text{Debt in Foreign Currency Dollar}_{(it)}}{\text{Investment}_{(it-1)}}$$

5. Total Debt (TD)

Kasmir (2008: 151) stated that the ratio of solvency or leverage ratio was the ratio used to measure the extent to which the companies' assets were financed with debt. This means that how much debt burden borne by the companies compared to their assets. Total debt is obtained from short-term and long-term debt in both domestic and foreign currency denomination. In this study, leverage ratio is calculated is the ratio of total debt to capital goods (inventory and fixed assets). This ratio is to see how much influence the company to make investment by borrowing from domestic and abroad (Bleakley and Cowan, 2002). It is measured by :

$$\text{TD} = \frac{\text{Total Debt}_{(it)}}{\text{Investment}_{(it-1)}}$$

6. Domestic Debt with Logarithmic in Real Interest Rate (DOMLOG)

DOMLOG is a debt that is influenced by inflation and interest rates (Bonomo, Martins, and Pinto, 2003), DOMLOG is calculated by comparing domestic debt adjusted for inflation and real interest rates divided by the firm's capital goods (inventories and fixed assets). According to Bonomo, Martins, and Pinto (2003), DOMLOG is measured by:

$$\text{DOMLOG} = \frac{\text{Local Currency Debt}_{(it-1)} \times \Delta \ln \text{Interest Rate (IR)}_{(t)}}{\text{Investement}_{(it-1)}}$$

7. Debt in Rupiah (Local Currency Debt)

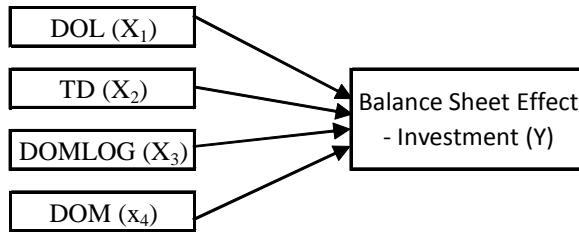
In this study, Local Currency Debt is called Debt in Rupiah (DOM). Pratap and Urrutia (2004) concluded that rupiah debt is the short-term and long-term liabilities held in the form of domestic currency that must be paid by a company. Debt in this domestic currency is not adjusted in advance with the existing interest rates and inflation rates that occur, but this debt is a result of the pure weight of loans made by the company. The formula used is (Bonomo, Martins, and Pinto ,2003) :

$$DOM = \frac{\text{Local Currency Debt}_{(it-1)}}{\text{Investment}_{(it-1)}}$$

Methods

Methods in this study using multiple regression where the proxy of the effect balance sheet is an investment as dependent variable. While the independent variables that will be used are Debt in US Dollar (DOL), Total Debt (TD), Domestic Debt with Logarithmic in Real Interest Rate (DOMLOG) and Debt In Rupiah (DOM). The hypothesis model in this research is as follows:

Fig.1. Hypothesis Model



The hypothesis of this study is as follows :

1. Many companies use foreign currency loans for their investments primarily in fixed assets where the purchase of fixed assets generally use US Dollar except for land and buildings. Beleaky and Cowan (2002) showed that DOL has a positive and significant influence toward Balance Sheet Effect with investment as proxy
 H_1 : DOL has a positive relationship and significant influence on Balance Sheet Effect with investment as proxy
2. Not all debts can be obtained in the form of foreign currency. Similarly investment does not always use the American dollar as a means of payment. Purchases of land and buildings generally use local currency (Rupiah), while purchasing from equipment can be paid by rupiah or US dollars. Therefore, total debt is used as a factor to see if there is an effect on the balance sheet effect with investment as a proxy.
 H_2 : TD has a positive relationship and significant influence on Balance Sheet Effect with investment as proxy
3. The interest rate factor on domestic currency indebtedness (DOMLOG) directly or indirectly affects the companies' expenses in paying interest as their obligation. The interest rate is an external factor that is difficult to predict by companies. This will be one of the considerations of companies in making debt-financed investments, in line with studies by Bonomo, Martins and Pinta (2004)
 H_3 : DOMLOG has a positive relationship and significant influence on Balance Sheet Effect with investment as proxy
4. Financing for purchase of fixed assets may use domestic currency (Rupiah) debt. This financing is generally done for investments that use domestic currency (Rupiah) without taking into account of the interest rate change
 H_4 : DOM has a positive relationship and significant influence on Balance Sheet Effect with investment as proxy.

The samples are companies in the mining industry sector listed on the Indonesia Stock Exchange in the period 2013-2015. The number of companies is 36 companies so that the eligible data for three years are 78.

Result and Discussion

Result

The classical assumption test conducted on the data obtained showed that no autocorrelation problem because the value for this regression model is 1.855, and according to the Durbin-Watson test table, if $k = 4$, and $n = 78$, then dU obtained is 1.7415, and $4-dU$ of 2.2585. The result of Normality Test by using One Sample Kolmogorov-Smirnov Test showed the data has a significance value of 0.096, is greater than 0.05, which means the data are normally distributed. The result of multicollinearity test showed that DOL, TD, DOMLOG, DOM have tolerance values below 0.10 and VIF values above 10 which concluded that this regression model is not found multicollinearity problem. Meanwhile, the Heteroscedasticity Test by using Glejser Test showed that the significance value of DOL, TD, DOMLOG, DOM have significance value above 0.05. Finally, t-test obtained results as follows:

Table 1. Partial Regression Coefficient Test Result (t test)

Model	Unstandardized Coefficients		T	Sig.	Collinearity Statistics	
	B	Std. Error			Tolerance	VIF
(Constant)	.097	.071	1.368	.176		
DOL	-.772	.049	-.976	-.000	.252	3.965
TD	.814	.027	1.608	30.529	.000	.356
DOMLOG	-.012	.011	-.038	-1.165	.248	.916
DOM	-.970	.135	-.365	-7.161	.000	.381

a. Dependent Variable: Investment

Source : SPSS V21

From the table above, DOL has significant influence but negative relationship to Balance Sheet effect with Investment as proxy. This result is in line with Forbes (2002), Galindo, Panizza and Schiantarelli (2003), Bonomo, Martin and Pinta (2004), Pratap and Urrutia (2004), Sahminan (2004), Prastyantoko (2007), and Janot, Garcia and Novaes (2008), but opposite with Bleaky and Cowan (2002) which DOL has positive relationship with Balance Sheet Effect. Meanwhile, the result of TD shows that TD has significant influence and positive relationship. This results opposite with Bonomo, Martin and Pinta (2004), and Prastyantoko (2007). The t- test result of DOM as same as DOL result. This result is in line with studied by Pratap and Urrutia (2004), Sahminan (2004). Finally, DOMLOG has no significant influence and negative relationship to Balance Sheet with investment as proxy. This result is opposite with Bonomo, Martin and Pinta (2004), meanwhile Forbes (2002) had result DOMLOG has significant influence with negative relationship to Balance Sheet effect. Therefore, according the t-test result above, only TD has significant influence and positive relationship with Balance Sheet.

Dicussion

Given the limitations of this study, such as at least a few companies in the mining industry in Indonesia that are accessible (only public companies), and lack of information on the use of debt in US dollars or in local currency for certain investments, the results of this study can be explained below.

The results can be interpreted that companies with high US Dollars debt (DOL) have a significant influence on the Balance Sheet but have a negative relationship. The balance of US dollar debt relies heavily on the movement of the exchange rate of the local currency against the US Dollar. If there is a depreciation of the local currency, it will raise the interest expense on the debt, so that companies reduce investment, and vice versa.

What can be concluded from this result. Interest rates do not affect the impact on the level of debt-financed investment, but the size of the debt itself and the likelihood of debt increase due to the value of the dollar deposited due to depreciation of the rupiah.

To solve this problem, companies hedge on dollar debt that will mature, issue bond in domestic currency, and increase sales in US Dollars so as to reduce potential losses in the financial statements. The results of hypotheses on domestic currency debt (DOM) indicate that DOM has the same result with DOL that has significant influence but has a negative relationship to the Balance Sheet Effect. This is because DOM value of debt is not changed due to changes in exchange rates. Furthermore, the interest rate factor on domestic currency indebtedness (DOMLOG) also shows similar results with DOM, which indicates that changes in interest rates do not affect the Balance Effect due to relatively small interest rate changes. This will be different if the country is in a state of financial crisis or heat economy.

However, Total Debt (TD) consisting of DOL and DOM has significant influence and positive relationship to Balance Sheet Effect, it can happen because investment by mining companies in Indonesia where investment is funded with DOM portion bigger than DOL and done simultaneously, so in aggregate TD has a positive relationship.

References:

Aguiar, M. (2004). Investment, Devaluation, and Foreign Currency Exposure: The Case of Mexico. *Working Paper, Federal Reserve Bank of Boston.*

Allayannis, G., Brown, G.W., & Klapper L. (2003). Capital Structure and Financial Risk: Evidence from Foreign Debt Use in East Asia. *Journal of Finance*. (58). pp. 2667-2709.

Beest, v.F., Bramm.G., & Boelens. S. (2009). Quality of Financial Reporting: Measuring Qualitative Characteristics. NiCE Working Paper 09-108. April 2. 09.

Benavente, J. M., Johnson, C., & Morández, F. (2003). Debt Composition and Balance Sheet Effect of Exchange Rate Depreciations: A Firm-Level Analysis for Chile. *Emerging Markets Review*. (44). pp. 397-416

Bleakley, H., & Cowan, K. (2002). Corporate Dollar Debt and Depreciations: Much Ado About Nothing? *Working Paper, University of Chicago, US*.

Bonomo, M., Martins, B., & Pinto, R. (2003). Debt Composition and Exchange Rate Balance Sheet Effect in Brazil: A Firm Level Analysis. *Princeton University*. pp. 1-40.

Corsetti, G., Pesenti, P., & Roubini, N. (1998). What Cause The Asian Currency and Financial Crisis? *NBER Working Paper No. 6834*.

Curatman, A. (2010). *Teori Ekonomi Makro*. Yogyakarta: Swagati Press.

De Brun, J., Gandelman, N., & Barbieri, E. (2002). Investment Equations and Financial Restriction at Firm Level: The Case of uruguay, Latin American Research Network Working Paper R-462. Washinton, DC. *United States: Inter-American Development Bank, Reserach Department*.

Eichengreen, B., Hausmann, U., & Panizza, U. (2003). Currency Mismatches, Debt Intolerance and Original Sin: Why They Are Not The Same and Why It Matters. *Cambridge: National Bureau of Economic Research*. pp. 1-62.

Forbes, K. (2002). How Do Large Depreciations Affect Firm Performance? *Cambridge: National Bureau of Economic Research*. pp. 1-37.

Galindo, A., Panizza, U., & Schiantarelli, F. (2003). Debt Composition and Balance Sheet Effects of Currency Depreciation: Empirical Evidence. *Inter-American Development Bank Banco Interamericano de Desarrollo (BID) Research Department Departamento de Investigación*. pp 1-29.

Gilchrist, S., & Sim, J.W. (2007). Investment During The Korean Financial Crisis: A Structural Econometric Analysis. *Working Paper no. 13315*. pp. 1-52.

Janot, M. M., Garcia, M. G. P., & Novaes, W. (2008). Balance Sheet Effect in Currency Crises: Evidence from Brazil. *Working Paper Series 162*. pp. 1-45.

Kasimir. (2008). *Analisis Laporan Keuangan*. Jakarta: Raja Grafindo Persada.

Krugman, P. (2000). Crises: The Price of Globalization? Global Economic Integration: Opportunities and Challenges. *Federal Reserve Bank of Kansas City*. hal. 75-106.

Nichita, M.E., & Vulpoi, M. (2016). Relationship Between Risk and Transparency in The Financial Statements of Professional Services Entities. *Audit Financial Year XIV.540*. No.5 (137)/2016, 540-550. ISSN: 1583-5812; ISSN on-line: 1844-8801.

Prasetyantoko, Agustinus. (2008). *Bencana Finansial Stabilitas sebagai Barang Publik*. Jakarta : Buku Kompas

Prasetyantoko, Agustinus. (2007). *Debt Composition and Balance Sheet Effect of Currency Crisis in Indonesia*. Jakarta : School of Business, Atma Jaya University.

Pratap, S., & Urrutia, C. (2004). Firm Dynamics, Investment, and Debt Portfolio: Balance Sheet Effects of The Mexican Crisis of 1994. *Cambridge: National Bureau of Economic Research*. pages 1-33.

Roper, Andrew H., & Harvey, Campbell R. (1999). The Asian Bet. *National Bureau of Economic Research (NBER)*. pp. 1-45.

Rothig, A., Semmler, W., & Flaschel, P. (2005). Hedging, Speculation, and Investment in Balance-Sheet Triggered Currency Crises. *Center for Empirical Macroeconomics*. University of Bielefeld.

Sahminan. (2004). Balance Sheet Effects of Exchange Rate Depreciation: Evidence from Individual Commercial Banks in Indonesia. *Department of Economics The University of North Carolina at Chapel Hill*. pp. 1-26

Subramanyam, K. R., & John J. Wild. (2007). *Financial Statement Analysis. 10th edition*. New York : McGraw – Hill

Tandelilin, E. (2014). *Portofolio dan Investasi: Teori dan Aplikasi*. Yogyakarta: Kanisius (anggota IKAPI)

Tarmidi, Lepi. (1998). *Krisis Moneter Indonesia: Sebab, Dampak, Peran IMF, dan Saran*. Jakarta : Universitas Indonesia

Yannis, G. A., Brown. W. G., & Klapper. E. (2003), Capital Structure and Financial Risk : Evidence from Foreign Debt Use in EastAsia. *The Journal of Finance*. Vol LVIII. No.61.