# THE COMPARISON ANALYSIS OF MACROECONOMICS DETERMINANT SOVEREIGN CREDIT RATING AND ITS IMPACT TO STOCK MARKET (EVIDENCE FOR THE EMERGING MARKET COUNTRIES)

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**Abstract:** *The reliability from the ratings issued by the international credit agency has become a debate. It gets a wide attention from the international expert and professional after the global financial crisis, where the international credit agency has been gave the false rating to some countries, this affects to the stock market because sovereign rating has become one of the financial information that is used by investor. The purpose of this research are : (1) analyze the influence of the selected macroeconomic factors to sovereign rating in emerging market country which published by Moodys and Fitch, (2) compare the valuation, issued by these rating agency, to determine which one is better in doing the assessment, (3) is sovereign rating affect the return in stock index. This research is using panel regression and t-test for equality of mean and reinforced by MAE and MAPE method. The result of this research are: (1) GDP/Capita, Debt/Capita, Inflation, CPI and Reserves are significantly affect sovereign rating created by Moodys and Fitch (2) Fitch is better in terms of the rating assessment compared to Moodys (3) sovereign rating have a positive impact on the index's return in the emerging market country. Suggestion for government, they should pay attention to those variables because sovereign rating has the effect on the easiness of borrowing the outside fund and to determine the amount of that loan and also for For the investors that will invest in a country can use the sovereign rating as the information and to study the information path in the capital market of emerging country to facilitate the movement of funds/cash flow because of the effect of the sovereign rating in a country.*

**Key Word:** *Sovereign Credit Rating, Fitch, Moodys, Emerging Market, Stock Return*

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## INTRODUCTION

The rapid increase in the analysis or valuation on a country's credit rating for the past few years (Cantor and Parker, 1996) has made the sovereign rating agency immensely famous. The valuation result from the rating agency can have a huge influence and impact for a country, not only for foreign investor that planning to put their investment but also for the country's access to international credit market. Alfonso (2008) also emphasized the importance of sovereign rating which may have some implication to: First, the interest rate in a country because sovereign rating is the main determinant for a country's interest in the international financial market because it could also determine the borrowing cost. Second, the sovereign rating may hamper the rating for a company, a bank, or a local government obligation. Third, some institutional investors have a bottom limit for the risk on their investment and they will choose the portfolio composition of their bonds by calculating the credit risk through its rank notation. Therefore, it is important for the government and other entities to understand which factors that the sovereign rating agency emphasized in determining sovereign rating (Alfonso, 2008).

However, the application of sovereign rating by international agencies is always become a controversy. Zeng (2012), believed that the reliability from the ratings issued by the international credit agency has become a debate. It gets a wide attention from the international expert and professional after the global financial crisis, where the international credit agency has been gave the false rating to some countries such as Thailand and Korea in 1997/1998. It means that the factors used by sovereign rating agency should be re-investigated to determine which factor that become the key of the existing rating.

Cantor and Packer (1996), stated that the macroeconomic variable can explain about 80%, which is more than enough to say that economic factors are the main factor for the sovereign rating. Between those variables, Mankiw (2007) and Todaro (2006) said that in determining a country's debt, the important variables are GDP/Capita, Debt/GDP, Inflation, Reserves, and Corruption Level (Minescu, 2010).

Furthermore, as a financial information, sovereign rating can affect (more or less) the fluctuation in financial market. the research that examine the relationship between sovereign and stock index, performed by Hopper, et al (2008), who investigate the effect on the changes in sovereign rating at the international capital (financial) market. By using the data panel analysis of 42 countries, for the period of 1995 to 2003, and the volatility of the return in the national stock index as the dependent variable, the result shows that the increase (decrease) in ratings is parallel with the increase (decrease) of national shares rating; this research is in accordance with the research by Klimaviciene (2011) on Baltic Stock Exchange and Kabadayi (2013) on Turkey Stock Exchange.

A different result were found on the research by Mateev (2008), who have studied on how the change in a country's sovereign rating affect the market in another countries using the data from 1998 to 2006. The purpose of his research is to examine the effect of changes by S&P, Moody, and Fitch in Bulgaria, Latvia, Czech Republic of Hungary, Poland, Romania, Russia, Slovakia, and Slovenia, where the shares return for each country is measured in US dollar. The result shows that there is no significant effect on the changes of sovereign rating in the stock market.

Due to the large use of sovereign rating, its controversy, and its impact to the stock market, therefore this research was held to analyze the determinant variables of sovereign rating (Is economic factors (GDP/Capita (+), Debt/GDP (-), Inflation (-), Corruption Perception Index (-), and Reserves (+)) have a significant relationship to the ranking of sovereign rating held by Moodys and Fitch rating agency), Between these two rating agency, which one is better in giving the rating? and to reveal the relationship between the sovereign rating and the fluctuation of the stock return in emerging market.

## LITERATURE REVIEW

### Government Debt

Government debt is defined as the debt accumulation that happen when the government have more expense than income from tax, so the government will borrow from the private sector to cover the budget deficit (Mankiw, 2007).

Debt has been used as an alternative to financing the budget deficit which the government will use it for the development of the country especially for the developing countries and emerging market country. Todaro (2006) believed that developing countries need debt especially for foreign debt mainly because the foreign debt can help the government of developing countries to cover the lack of resources so it may help the economic transformation structurally. Besides, foreign debt can be political, used as a tool for the borrower country to participated in the government activities of the country who borrow, and last is there is a belief that the develop countries has the obligation to participate in increasing the standard of living in developing country.

In the three gap theory model, one of the function of government debt is to cover the deficit in the current transaction, to pay the loan expense, as a reserves for monetary authorities and capital needs, and also for the movement of short term capital flow. Yet, if we subtitute the above equation with the equation of government income and expenses, it clears that the government debt is also used to cover the deficit in saving investment and government's budget deficit and covering the current transaction deficit.

The Harrod-Domar economic growth theory stated that there is connection between the economic growth that determined by saving and investment. If the government saving and investment is small, the economic growth in that country would also small, on the assumption that basically the problem in development is also the problem of how to increase the capital investment. In addition to this matter, Harrod-Domar also stated that the GDP growth rate is determined at the same time with saving from national income and capital-output ratio, which means that the growth rate of national income are positive and closely related to the saving ratio. It means that the higher portion of saving will increase the GDP growth directly. On the other hand, the growth rate that reachable on every saving and investment rate are the number of output which is obtained from a certain unit.

### Risk and Return

Rowe (1997) define risk as an undesirable negative potency that become the consequence of an event or an activity, while a lot of researcher defined risk as a probability measurement and a deviation level of an event (Merna, 2008).

The existence of risk is always followed by Return, where the link between risk and return is positive and has the same direction. Return is a motivation, encouragement, and also a reward for investment (Jones, 2007). Return is the total amount of profit or loss from an investment at a certain period of time (Gitman, 2009). The return itself is divided into two parts that is capital gain/loss and yields. Yield is the main component of return who can reflect the cash flow or income generated periodically from an investment, while capital gain/loss is the increase/decrease of price from a bonds (investment) which can give a profit/loss for the investors (Tandeilin, 2010).

### Credit Risk

Credit risk is a potential losses due to the borrower's failure to meet the contractual obligation to pay his debt. Credit risk divided into two categories, short term credit risk and long term credit risk (Fahmi, 2010). Short term credit risk is a risk that arise from the debitur's inability to fulfill the short term liability especially liquidity of obligation.

### Sovereign Rating

Sovereign credit is a type of loan from the country which issued financial instrument to the investors in the form of government obligation. The risk that arises from this matter is known as Sovereign Credit Risk, a risk that happened when the government failed to settle the debt principal and interest. Sovereign

Credit Risk is a part of the country risk (Masyud, 2006). The level in sovereign credit determined by the rating agencies like Moody's and Fitch which has been known for the sovereign rating based on the various indicators for every rating agency.

**GDP/Capita** is the indicator for the economic growth levels that portray the growth level in goods and services production. GDP/Capita has become a reference for the economist to see the development on a country's economy level. Moreover, the increase in a country's GDP can also show the increase of people welfare (income) on that country. As a result, a country with a high GDP/Capita shows their ability in managing their economic policy includes the management of the debt settlement. Since the country with high level of Debt/Capita have the level of debt settlement that relatively safe, it placed that country on the list of the country with less potential of default.

**Debt/GDP** identifies the government leverage, the smaller the ratio shows the increase in government production and sales of goods and services. As a result, the government will tend to increase debt and hold the settlement of existing debt. The more government debt to fund domestic/foreign activities creates the burden for the government budget If it is not handled carefully, the greater burden of government budget may have a potency of the obstruction in the debt payment/settlement. So the higher Debt/GDP will decrease a country's ability on settling the debt payment, which implies on the reduction of the rank in sovereign credit rating. On the other word, Debt/GDP and sovereign rating has the reverse relationship.

**Inflation** defined as the event where the level of price and the general cost is increasing. Inflation has the reverse impact with sovereign rating, since the high inflation creates the distortion on economy and may create a political instability. The high inflation also show that the government does not have the ability or will to finance the budget expense through the tax increase or debt insurance. It will reduce the country's ability to repay its debt and therefore reduce the government's ability on debt settlement which implies in the reduction on the sovereign rating as a reflection of the high inflation.

**Corruption** as a misappropriation of trust or authority for the personal interest, may have a negative effect on every person in that authority. Mellios and Blanc (2004) argue that the level of corruption reflects the development and the quality of a country's governance in managing the country. The increase in corruption index shows that the government system is failed, which may lead to the less fund either because the loss on State budget or because of the use of expense that doesn't match its purposes. This may lead to the higher cost on the country's repairment and management so the possibility of default is higher and the sovereign rating will decrease.

Reserves owned by a country have the significant role in the sovereign credit rating, where the higher a country's reserves means more resources to pay its debt. On the other hand, the small reserves may lead to default (Alfonso, 2008, Minescu, 2010, and Rowland, 2005).

Moreover, the sovereign rating can also affect the fluctuation on the stock market. Kabadayi (2013), stated that sovereign rating have a positive impact on the stock market. Sovereign rating is one factor that became the investor's consideration in constructing their portfolio, investment strategy, risk tollerance and the comparison on the estimated relative value between the securities. The changes on rating can give the new information for the investor or the economist about the event in a country, such as economic downturn, etc. The effect of this information is stronger in the developing country's market which has a higher asymmetric information and transparency problem and also can be a wake-up call for the country with the same economic level (Kaminsky, 2002). So the relationship between rating and stock return is proportional.

## RESEARCH METHOD

The method use in this research is the descriptive explanatory method. The population of this research is the emerging market countries based on IMF 2011 report. The sampling technique used in this research is non probability sampling-purposive technique. The countries that become the sample on this research are Argentina, Bahrain, Brazil, Chile, China, Croatia, Hongaria, India, Indonesia, Lebanon, Namibia, Philipina, Poland, Romania, Rusia, Saudi Arabia, South Africa, Sri Lanka, Thailand, Turkey, Vietnam.

The data on this research are taken from www.imf.org, worldbank.org, www.eiu.com, www.transparencyinternational.org for the economic characteristic, and www.moodys.com and www.fitchrating.com for the sovereign rating, and also the website from the emerging market country's stock exchange through bloomberg.com or finance.yahoo.com.

The statistical analysis from this research is using panel data regression from 2003 until 2014 and correlation to examine the effect and the relationship for each variable. The equation of Panel Regression from this research are listed below:

**Model 1:**

$$\acute{Y}_{(Moodys/Fitch)\mathbf{p}} = \alpha + \beta1(X_1)_{\mathbf{p}} + \beta2\ (X_2)_{\mathbf{p}} + \beta3\ (X_3)_{\mathbf{p}} + \beta4\ (X_4)_{\mathbf{p}} + \beta5\ (X_5)_{\mathbf{p}} + \varepsilon$$

expected: $\beta1 > 0; \beta2 < 0; \beta3 < 0; \beta4 < 0; \beta5 > 0$

Where:

$\acute{Y}_{(Moodys/Fitch)}$: *Sovereign Rating* Moodys ($Y_1$) dan Fitch ($Y_2$)$X_1$: *GDP /Capita; $X_2$:Growth of Debt/GDP; $X_3$: Growth of Inflation; $X_4$:Corruption Perception Index; $X_5$: Reserves*

**Model 2:**

$$Y_{3p} = \alpha + \beta 1\, X_{1,1p} + \varepsilon \quad Y_{3p} = \alpha + \beta 2\, X_{1,2p} + \varepsilon$$

expected: $\beta 1 > 0$; $\beta 2 > 0$

Where: $\acute{Y}_3$ : Return Index; $X_{1,1}$: Moody`s Sovereign rating; $X_{1,2}$: Fitch Sovereign rating

Furthermore, this research also using independent T test in comparative test for the two models to know which one is better, added with MAE and MAPE method.

The test that will be done for the models in this research are: Hausman Test, Normality and Multicolinearity Test, Coefficient Determination Test (adj. R). Coefficient Regression t Test, Independent T Test (also MAE and Mape).

## FINDINGS AND DISCUSSION

The result from the data processing for the factors that affect sovereign rating issued by Moody's and Fitch is presented below

**Table 1**
**Result for Model I**

| Variabel | Moodys ($Y_1$) | | Fitch ($Y_2$) | | Expected sign | Kesimpulan |
|---|---|---|---|---|---|---|
| | Coefficient | t-stat | Coefficient | t-stat | | |
| GDP/Capita (X1) | 0.372623 | 3.655377*** | 0.264549 | 3.104354*** | + | H1$_{a/b}$ didukung |
| Debt/GDP (X2) | -0.010505 | -11.62427*** | -0.004583 | -2.439446** | - | H2$_{a/b}$ didukung |
| Inflasi (X3) | -0.037957 | -7.439071*** | -0.075956 | -5.917525*** | - | H3$_{a/b}$ didukung |
| Corruption Perception Index (X4) | -0.005827 | -2.616339*** | -0.005736 | -3.118612*** | - | H4$_{a/b}$ didukung |
| Reserves (X5) | 0.034066 | 3.484583*** | 0.040996 | 8.195594*** | + | H5$_{a/b}$ didukung |
| R-Squared | 0.388606 | | 0.380041 | | | |
| Adj.R-squared | 0.365447 | | 0.356558 | | | |
| F-Statistic | 16.7800 (0.000000)*** | | 16.18347 (0.000000)*** | | | |

With : *** significant at the 1 % level ; ** significant at the 5 % level ; * significant at the 10 %

GDP/Capita As an indicator of economic growth rate that pictured the amount of growth in goods and services production, GDP/Capita has become a reference for the economist to understand the development on a country's economy. A country with high GDP/Capita indicates that the economy in this country is more evolving, have the more stable institution, have a government that is not in-debt, so they will be less vulnerable to the external shocks (Alfonso et al, 2007). Zeng (2012) also agrees that the higher GDP can help the government of a country to increase their ability to pay all of their debt since they tend to have a higher income.

A country with the higher economic growth can use their extra resources for the government savings. Those savings could become the source of fund for the domestic investment needs. Besides, savings can be used to make a payment for the government debt, or at least to secure the debt payment in the future.

As the indicator for a country's debt, the higher Debt/GDP shows the higher government's debt to fund the domestic/foreign activities which creates a bigger burden for the country's state budget. The bigger state budget burden if not handled properly can rise the inhibition of the debt repayment/settlement. Therefore, the higher Debt/GDP may decrease a country's ability in settling the debt payment which can decrease the sovereign credit rating.

The pattern of debt growth in the developing countries that relatively high, that is used to accelerate the country's development made it crucial for the calculation in payment and settlement of government's debt. When the amount of debt exceeds the economic capability of a country, it creates the condition called debt overhang. Debt overhang happen mostly in the emerging market country and developing country. Moreover, the high debt will decrease investment growth because it can increase the tax in the future and decrease the rate of return on domestic investment. It could also shows the high cost of capital in a country. As a result, the government needs more money to managing those things. Which means if the government could not rely on tax and retribution, another way is to rely on debt that potentially increase the risk of government debt in the future.

Inflation can affect (1) the redistribution of income and wealth between the a variety of groups, (2) distortion on the output's relative price from the goods and sometimes on the output and the use of labor for the economy as a whole, so the high inflation can create the distortion on economy and causing political instability (Samuelson, 1985).

Inflation has some effects on the investment in a country because inflation and investment also related to the government interest rate that affect the rate of return for the investors. It may create disincentive to do the investment since the investment cost is higher and lead to the decrease in a country's growth rate. To solve this problem, usually the government will give the economic incentive

that needs a lot of funds so it will give more burden to the country's state budget. Usually, the emerging market countries will rely on the debt to pay this thing, because income with draw although tax and other retribution tends to be problematic in the emerging market country. Another way to solve this problem is with increasing the amount of money supply by printing more money, that if it is not arranged properly, it will increase the risk of the higher inflation and decreasing the currency value that made the government pay the debt at the higher price and at the end it will increase the risk of default on government's debt.

The high inflation also shows that the government does not have the ability or will to fund the budget expenses through tax increase or debt insurance. It will reduce the country's ability to pay its debt (Zeng, 2012).

Basically, corruption will create inefficiency. It is because the money, either in form of taxes, retribution, etc., that was given to the government is not allocated properly for the provision of public goods. As the quantity and quality of the public services is lower than it should be, the growth and development of the economy in a country will be hampered/slower since the cost of development is higher.

In some researches by economic researcher, Mauro (1995), the relationship between corruption and the other economic variables are found. Corruption, in that research, have a reverse relationship with the investment and economic growth and also the government expense, especially for the social and public welfare programs. Dieter Frish (1995) added that the corruption will increase the cost of goods and services. As a result, the country's debt will soar and finally reduce the quality standard for the goods and services provision (Asriani, 2009).

Reserves have an important role and also an indicator of the economic fundamental condition in a country that may avoid the crisis in that country. Reserves could also stimulate the economy.

The condition of inadequate reserves will increase the demand for foreign currency debt or at least it will create the changing perception on the market about the sustainability of the government debt. This change will affect the fiscal deficit, not only directly (through interest expense) but also indirectly (through central bank's profit and loss statement). The cost needed by the central bank to sterilize the exceed liquidity in the domestic money market tend to increase, consider that there is a significant spread between sterilization cost and the result on reserves. It will push the government to increase export, reduce the import on consumption goods, rescheduled the payment of government's or private's foreign debt, and stop the currency credit for a while. Furthermore, the government will create a good investment climate/condition in order to let the foreign investment in, that in the end will increase the reserves in that country.

The high reserves could be used to maintain the liquidity and adds time to absorb the economic shocks in the situation where the access to loans is limited or very expensive. Besides, reserves give the trust to the government commitment to pay the debt on time and it can support the domestic currency gains.

In other words, the higher the value of the reserves in a country, the lower the default risk of the government debt, that will implies on the increase in the country sovereign rating

**Table 2**
**Result Independent T Test**

|  | *t-test for Equality of Means* | | |
| --- | --- | --- | --- |
|  | t | df | sig. |
| Equal variances assumed | 2,795 | 274 | .006 |

Sumber: Hasil Pengolahn Data

**Table 3**
**Error Test for Model Moodys dan Fitch Sovereign Rating**

| *Test Method* | *Moody's Model* | *Fitch's Model* |
| --- | --- | --- |
| Mean Absolute Error | 0.142180 | 0.127690 |
| Mean Abs. Percent Error | 1.805859 | 1.590131 |

On the table 2, we can see the value of t-statistic in Independent Test have the amount of 2,795 with probability of significant is, 006. From this result, we can conclude that for the sovereign rating model, the Fitch model and the Moody's model (on the average) have difference but we can conclude which of the two of rating agency give a better assessment. But, if we see table 3 shows that for the MAE result, there is a differences between Moody's amd Fitch's error model, where the Fitch's MAE is smaller than Moody's MAE. The same result is shown with the MAPE, which Fitch's is smaller than Moody's.

Based on this result we concludes that the sovereign rating issued by Fitch is better compared to Moody's. The reason is Fitch as a rating agency has the rating method that significantly different with Moody's. The result from the Fitch rating is highly awaited by the economist if there is a differences in the rating issued by Moody's and S&P. Andreas Kruck (2011) stated that Fitch rating has become the conclusion if the other two rating agencies (Moody's and S&P) has a different result or even the same. Therefore, Fitch rating is considered as the balance between the other rating agencies.

**Table 4 a:**
**Result for Model II**

| Variabel | Stock Index Returns ($Y_3$) | | | Expescted sign |
|---|---|---|---|---|
| | *coefficient* | *t-stat* | *Prob.* | |
| Sovereign Rating of Moodys ($X_{1.1}$) | 0.009152 | 0.245194 | 0.8067 | + |
| R-Squared | 0.000510 | | | |

**Table 4b:**
**Result for Model II**

| Variabel | Stock Index Returns ($Y_3$) | | | Expescted sign |
|---|---|---|---|---|
| | *coefficient* | *t-stat* | *Prob.* | |
| Sovereign Rating of Moodys ($X_{1.2}$) | 0.008261 | 0.221986 | 0.8247 | + |
| R-Squared | 0.000419 | | | |

Kaminsky (2002), said that the news about a financial instrument can affect the price or the rate of return of another financial instrument. For example the stock market may be influenced by the decline in a country's bond rate. This is happen because the government can increase the tax to cover the loss in budget deficiency from the increase in government interest rate triggered by the declining in rating, where the cross effect of instrument may increase the financial market instability.

However, Tandeilin (2010) adds that rating is not a suggestion to buy, sell, or to hold a financial instrument. The rating is useful to bridge the discrepancy of information between the issuer of an instrument/bond and the investor by providing the general information on the level of credit risk. Generally the investors will use the bond rating to measure the risk. Afonso (2008) adds that some investors consider sovereign rating as the lower limit for the risk in their investment and they will choose the composition of the bonds portfolio over the shares by calculating the credit risk through the issued notation. Thus, we cannot say that the information about the sovereign rating is the reason for the economist and the capital market participant to choose and buy the capital market instrument which can increase or decrease the yields obtained by the investors.

The characteristic of emerging market countries that tends to have a high asymmetric information in its capital market which emphasized by Kaminsky (2002) to give more attention on the economic factors and follow the information path in order to find out the asymmetric information on the developing and emerging market country. As a result, the country's bonds rating cannot give a significant result to the yields/return in the emerging market country's capital

market. The tendency of the capital market in the emerging market countries is following and highly connected with the capital market in the develop countries.

Moreover, the sovereign rating in a country will be more incline to affect the Foreign Direct Investment (FDI) from overseas into a certain country. We understand that the sovereign rating could become a reference in a country's risk because the rating can affect the coupon or the return that should be paid to the investors. The changes in a country's rating can be the one factor that influences the investment direction when foreign investors will invest in a certain country.

## CONCLUSIONS

Based on the previous data analysis and discussion, the conclusions are: GDP/Capita and Reserves have the significant effect and move in same direction (positive) with the sovereign rating by Moody's and Fitch, while Debt/GDP, Inflation, and Corruption Perception Index have a significant negative effect on sovereign rating. And Between the two rating agency, Fitch is better and have less error in delivering the sovereign rating for the emerging market countries. Also, Sovereign rating is positively (not significant) responded by the developing market countries which marked by the effects of the sovereign rating to the stock return in the emerging market countries that has a positive direction.

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