The Impact of Indonesia Sovereign Credit Rating Upgrades and Investment Grade Status on the Sovereign Spread Changes

Dwi Anggi Novianti
Fiscal Policy Office, Ministry of Finance of the Republic of Indonesia

Dwi Nastiti Danarsari
Faculty of Economics and Business, Universitas Indonesia, dwi.nastiti@ui.ac.id

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Dwi Anggi Novianti*
Fiscal Policy Office, Ministry of Finance of the Republic of Indonesia

Dwi Nastiti Danarsari**
Department of Management, Faculty of Economics and Business, Universitas Indonesia

Getting sovereign credit rating upgrades and achieving investment grade status are main goals for countries in order to gain lower yield spread and cost of borrowing. By using ordinary least square method, this research is aimed to analyze the impact of Indonesia sovereign credit rating upgrade and investment grade status on sovereign spread changes. The result shows that the sovereign credit rating upgrades within speculative grade category and investment grade status for Indonesia do not significantly impact sovereign spread reduction. On the other hand, the global condition, especially global risk appetite, has significant impact to Indonesia sovereign yield spread. The research also indicates that Indonesia macroeconomic fundamentals do not significantly explain the movement of sovereign yield spread.

Keywords: *Yield spread, sovereign credit rating, investment grade, Indonesia*

Introduction

Even though debt instruments involve a promise of reguler payments of cash flow streams, the bondholders are still exposed by several types of risks, one of which is default risk or credit risk. Credit rating is one of the indicators of default risk of debt instruments (Fabozzi, 2007). Better the credit ratings reflects lower default risk of a particular bond. Issuer of bond can be corporations and governments.

The demand of countries to have sovereign credit rating has increased as the needs for financing source from international market rises. By getting sovereign credit rating assess-

ment, countries desire to achieve credit rating upgrades and investment grade status. Investment grade status is linked to a lower default risk described by lower yield spread and therefore would result in lower financing costs for the sovereign. A good sovereign credit rating represents low default risk and indicates good economic conditions of a country, thus can attract capital investment inflow to the country. Meanwhile, if a country fails to maintain its quality of sovereign credit ratings, there can be a capital outflow and distraction in financial and economic system (Setty and Dodd, 2003).

As a country with deficit budget, Indonesia seeks for financing source from both domestic and international market to cover the defi-

23

cit. One of the highest Indonesia state budget deficit comes from government bonds issuance. In order to be able to issue bond internationally, Indonesia has also been assessed by rating agencies, mainly Standard and Poor's (S&P), Moody's, and Fitch. After the 1998-1999 Asian financial crisis, the story of Indonesia credit rating has been improving alongside with strengthening economic performance. In December 2011 and January 2012, Fitch and Moody's upgraded the country's sovereign credit rating to BBB- and Baa3, respectively, and Indonesia finally regains the investment grade status.

This study builds on the existing literature on the impact of credit rating upgrades and investment grade status of Indonesia in several ways. *First*, the paper captures the impact of Indonesia sovereign credit rating upgrades within speculative grade status on yield spread reduction. *Second*, the paper captures the impact of Indonesia credit rating upgrade from speculative grade to investment grade on yield spread reduction. *Third*, the paper assesses whether credit rating upgrade from speculative grade to investment grade would lower yield spread more than upgrades within speculative grades. Using monthly time series data of Indonesia for the period of October 2004 to March 2012, the analysis for Indonesia sovereign spreads is based on ordinary least squares method.

The remainder of this paper are structured as follows. Section 2 discusses empirical findings related to credit rating changes and its impact on yield spreads. Section 3 describes the data employed and variables used in this study. Section 4 presents the descriptive statistics, the estimation results and discussions. The conclusions are given in Section 5.

Literature Review

Credit ratings and yield spreads

Some empirical studies show that better credit ratings would decrease the yield spread. Canton and Parker (1996) examined that one notch decrease of debt rating would increase the yield spread by 25%. Kaminsky and Scmukler (2002) showed that changes in credir rating and

outlook would have impact on financial market in emerging market countries, by increasing yield spread of 2% on average for one notch downgrade of rating. Sy (2002) found that one notch increase of credit rating would reduce yield spread by 14%. Furthermore, Hartellius et al. (2008) proved that upgrade in credit rating of emerging market countries would decrease yield spreads since the year 2002. However, Gonzales-Rozada et al. (2008) showed the opposite findings. They concluded that credit rating was the endogeanous factor which shows the yield spread rather than anticipate it, so it was important to consider the exogenous factor such as international business cycle.

Some other studies more focused on the impact of investment grade status on yield spread and show various findings. Kamim and von Kleist (1999) identified that one notch decrease in credit rating within investment grade category would increase yield spread by 21%, meanwhile decrease of credit rating within speculative grade category would increase yield spread by 26%. Jaramillo and Tejada (2011) found that there were cross category changes of credit rating, it only had small impact on the market. Using panel data of 35 emerging market countries from the year 1997 to 2010, they showed that investment grade status was able to decrease the yield spread by 36%. The decrease was bigger than the 5-10% reduction due to the upgrade of credit rating within investment grade category, caused no change if the credit ratings upgrade was within the non-investment grade category.

Before 1997, Indonesia had already gained investment grade status from S&P and Moody's, however as the Asian financial crisis stroke and Indonesia economy badly suffered from that crisis, the country was downgraded and lost its investment grade status. As the economy rebound and strengthen, since 2001 Indonesia sovereign credit rating has been continuing to improve and on an upward trajectory. Eventually, Fitch and Moody's had restored investment grade status to Indonesia sovereign credit as of December 15th, 2011 and January 18th, 2012 respectively. Meanwhile, S&P still positioned Indonesia as non-investment grade country by assigning BB+ rating with positive outlook, or
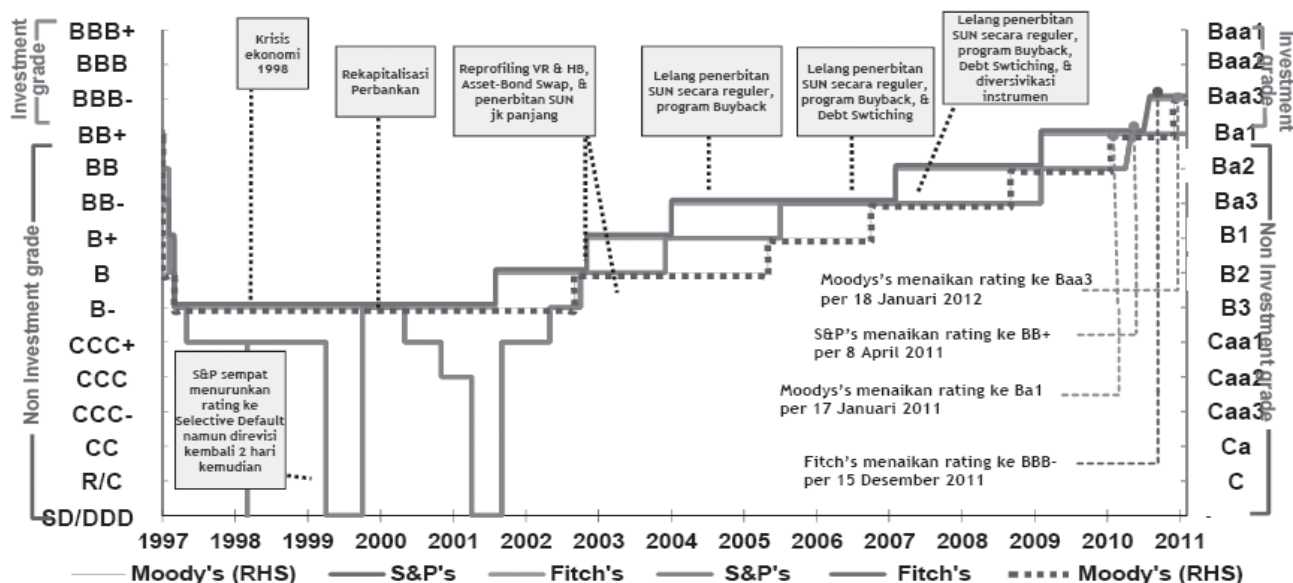
Figure 1. Indonesia sovereign credit rating improvements

Source: Debt Management Office, Ministry of Finance of the Republic of Indonesia (2012)
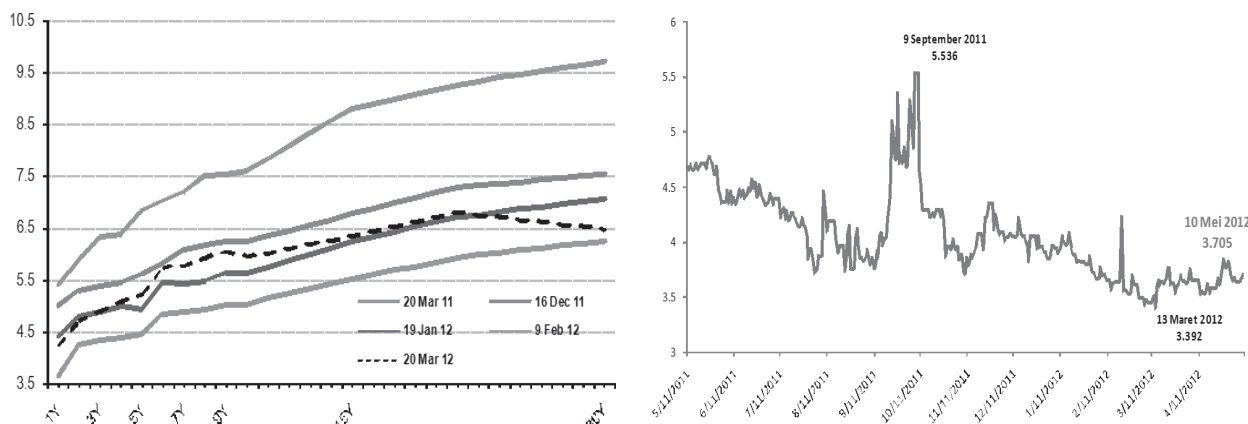

Figure 2. Indonesia sovereign credit rating improvements and yield spread trends

Source: Bloomberg (2012)

only one notch below investment grade. Improvements of Indonesia sovereign credit rating year by year are presented in Figure 1.

The reasons of improvement of Indonesia's sovereign rating, which leads to investment grade status, are the strength and the resilience of Indonesia's economic during the global crisis; the decreasing of debt to GDP ratio; the enhancement of external liquidity; and the prudent macroeconomic policy (Fitch, 2011). Moody's (2012) also stated that the Indonesia sovereign rating upgrade to investment grade was primarily driven by the resilience of Indonesia's economic growth to large external shocks, the presence of policy buffers that address finan-

cial vulnerabilities, and also healthier banking system capable of withstanding stress. On the other hand, S&P (2012) said that an upgrade to investment grade for Indonesia will be awarded if government reforms reinforce fiscal trends, support foreign direct investment, and allow subsidy cuts without reversing recent improvement in inflation.

Investment grade status becomes an important achievement of Indonesia's government, especially during the recent global economic crisis where some of advance economies experience sovereign rating downgrades. Investment grade status also becomes one of the priority of Indonesia government as it is expected

25

to derive benefits for increasing investment in Indonesia, both direct investment and portfolio investment, as well as equality status among other developing countries. Debt Management Office, Ministry of Finance of the Republic of Indonesia estimates that every one notch level upgrade in sovereign rating will decrese the yield of newly issued international sovereign by 75-115 bps, which leads to the potential reduction of the cost of borrowing, that will benefit to government of Indonesia. In line with the economic strengthen and improvement of sovereign rating, the yields of Indonesia sovereign credit are in a decreasing trends, as presented in Figure 2.

The improvement of sovereign credit rating not only brings a positive effect to the government itself, but also to private sector. Borensztein et al., (1997) proved that sovereign credit rating affected corporate credit ratings, corporate cost of borrowing, as well as capital flows.

Research Method

This study aims to investigate the impact of Indonesia sovereign credit rating upgrade and investment grade status on sovereign spread changes. Naturally, better credit rating reflects lower risk of default, therefore is expected to result in lower spread (Jaramillo and Tejada, 2011) This study uses monthly time series data for period of October 2004 to March 2012 and Ordinary Least Squared (OLS) as estimation. Model used in this study and their measurements are adopted from Jaramillo and Tejada (2011), the model is expressed as follows:

$$
\begin{aligned}
SPREAD = &\, c + b_1 DUMMY01 + b_2 DUMMY2 \\
&+ b_3 GROWTH + b_4 DEBT \\
&+ b_5 RESERVE + b_6 FED \\
&+ b_7 VIX + u1
\end{aligned} \tag{1}
$$

where:

$SPREAD$: log *yield spread* of Indonesia Government Bond.

$DUMMY01$: upgrade of Indonesia Sovereign credit ratings within speculative grade category; 1 for rating upgrade occurence, 0 for others.

$DUMMY2$: achievement of investment grade status of Indonesia sovereign bonds; 1 for achieving investment grade, 0 for others.

$GROWTH$: economic growth (%).

$DEBT$: government debt to GDP ratio (%).

$RESERVE$: ratio of foreign reserve to GDP (%).

FED : effective interest rate of FED (%).

VIX : VIX Index.

c : constanta.

$b_1, b_2, ..., b_7$: regression coefficient.

u_i : error term.

Monthly yield spreads data is obtained from Emerging Market Bond Index (EMBI) spread sovereign Indonesia; the data is released by JP Morgan and downloaded from Bloomberg. Monthly rating of Indonesia Government bonds data is taken from three rating agencies, namely S&P, Moody's, and Fitch. Monthly Indonesia economic growth are obtained from Indonesia Center of Statistic Bureau. However, we need to interpolate the data to gain monthly data, since the data issued is in quarterly and yearly basis. Both monthly effective FED interest rate and VIX Index are downloaded from Bloomberg. Monthly Indonesia foreign reserve data is obtained from report issued by Bank Indonesia. Monthly government debt to GDP ratio are obtained from Statistics of Indonesia Government Debt released by Debt Management Office, Ministry of Finance of the Republic of Indonesia.

Result and Discussion

Descriptive statistics

The summary statistics of the dependent and independent variables over the observation periods are presented in Table1.

The data in Table 1 shows that during the observation period of October 2004 to March 2012, Indonesia sovereign credit had average spread (*SPREAD*) of 292.81 bps; the higest level of spread was 890.78 bps in November 2008 and the lowest level was 143.95 bps in

Table 1. Descriptive statistics

	SPREAD (bps)	GROWTH (%)	DEBT (%)	RESERVE (%)	FED (%)	VIX
Mean	292.81	5.71	35.18	12.68	2.15	21.59
Median	261.18	5.67	31.37	12.63	1.98	19.14
Maximum	890.78	6.46	58.70	15.62	5.41	62.64
Minimum	143.95	4.58	23.34	9.72	0.04	10.82
Std. Dev.	160.37	0.496	10.34	1.36	2.10	10.68
Observations	90.00	90.00	90.00	90.00	90.00	90.00

Source: Eviews 7 output

Table 2. Regression results

Dependent variable: *DLOGSPREAD*

Variable	Coefficient	Std. error	*t*-statistic	Prob.
DDEBT	0.019592	0.032247	0.607572	0.5452
DFED	-0.076607	0.032200	-2.379108	0.0197
DGROWTH	0.007829	0.123711	0.063288	0.9497
DRESERVE	-0.028332	0.018420	-1.538098	0.1279
DUMMY01	-0.004370	0.028640	-0.152596	0.8791
DUMMY2	-0.016814	0.053812	-0.312448	0.7555
DVIX	0.018154	0.002040	8.899135	0.0000
C	0.003124	0.016720	0.186859	0.8522
R-squared	0.624837	*Mean dependent var*		-0.004248
Adjusted R-squared	0.592416	*S.D. dependent var*		0.138489
S.E. of regression	0.088415	*Akaike info criterion*		-1.927965
Sum squared resid	0.633192	*Schwarz criterion*		-1.704267
Log likelihood	93.79444	*Durbin-Watson stat*		1.870834
F-statistic	19.27232			
Prob(F-statistic)	0.000000			

Source: Eviews 7 output

June 2007. The highest level was in November 2008, when the financial market and economy got the negative sentiment from US subprime mortgage crisis. Indonesia experienced average economic growth (*GROWTH*) of 5.71%, with the highest level was 6.46% in December 2011 and the lowest growth was 4.58% in December 2009. The lowest economy growth recorded in December 2009 as the result of subprime mortgage crisis that led to a deterioration and slowdown in global economy, including Indonesia. However, in 2009 Indonesia could still maintain positive growth of 4.6% (y.o.y), in the midst of negative economic growth recorded in many advance countries.

The average of government debt to GDP ratio (*DEBT*) was 35.18%, with the highest level was 58.70% in October 2004 and the lowest ratio was 23.34% in March 2012. Government debt to GDP ratio of Indonesia is in a consistent declining trend, no wonder descriptive statistic

shows that the highest level is in October 2004 which is the first observation period, and the lowest level is in March 2012 as the last observation period. The average of ratio of foreign reserve to GDP (*RESERVE*) was 12.68%, the highest ratio was 15.62% in August 2011 and the lowest level was 9.72% in April 2009. Moreover, during the observation periods, average effective rate of Fed (*FED*) was 2.15%, with the highest rate of 5.41% in February 2007 and the lowest rate was 0.04% in December 2011. VIX Index (*VIX*) had average level of 21.59, with the highest level of 62.64 in November 2008 and the lowest level of 10.82 in November 2006. The highest level occurred in November 2008, signaling that at that time the risk and uncertainty in the financial market rose as US financial crisis happened. This is consistent with the level of Indonesia sovereign credit spread that peaked up in November 2008.
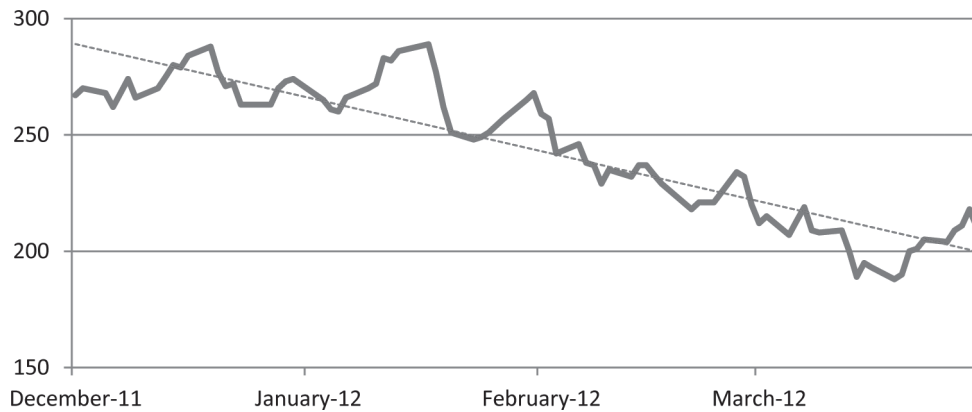
27

Figure 3 Indonesia yield spread trends, December 2011 to March 2012
Source: Bloomberg (2012)

Estimation results

The regression result is presented in Table 2, which shows that only two variables: effective interest rate of Fed and VIX index are proven to be significantly affect the yield spread changes in confidence level of 5%. Meanwhile, remaining variables: upgrade in Indonesia sovereign credit rating within speculative grade category; achievement of investment grade status of Indonesia sovereign bonds; economic growth; and government debt to GDP ratio seemed to be insignificantly affect the yield spread changes. The OLS regression has adjusted R^2 of 59.24% and appears to be able to explain variations in yield spread changes. Furthermore, the F-statistic confirms the significance of the OLS regression model.

Discussion

According to the estimation results, dummy variable of upgrade in Indonesia sovereign credit rating within speculative grade category has a negative insignificant relationship with the yield spread changes. The direction of the coefficient shows consistency with the theory, which means that upgrade in Indonesia sovereign credit rating will cause the decreasing in yield spread changes. However, the t-statistics probability of 0.8971 (higher than α of 5%) shows insignificant result. Upgrade of Indonesia sovereign credit ratings within speculative grade category does not appear to have sufficient explanatory power to assess decrease in

default risk of Indonesia government bond. This finding is consistent with the result of Jaramillo and Tejada (2011), which state that credit rating upgrades within speculative grade category had no significant impact on yield spread changes in emerging countries bond market.

Dummy variable of upgrade in Indonesia sovereign credit rating from speculative to investment grade also shows negative insignificant relationship with yield spread changes. Even though the direction of the coefficient shows consistency with the theory, which means that upgrade in Indonesia sovereign credit rating from speculative into investment grade will cause the decreasing in yield spread changes; the t-statistics probability of 0.7555 (higher than α of 5%) shows insignificant result. This finding is inconsistent with the result from Jaramillo and Tejada (2011) which proved that upgrades of sovereign credit rating to investment grade category in emerging countries bond market would significantly decrease the yield spread by 36% on average. Widening of investor basis and increasing of capital inflows were the main factors that cause decreasing of yield spread for the countries achieved investment grade status (Jaramillo and Tejada, 2011).

Indonesia achieved investment grade status from Fitch (BBB-) and Moody's (Baa3) on December 15th, 2011 and January 18th, 2012, respectively. Those dates represent last three and four months of observation periods. The relatively short period of remaining time from obtaining investment grade status to the end of observation periods, might cause the insig-
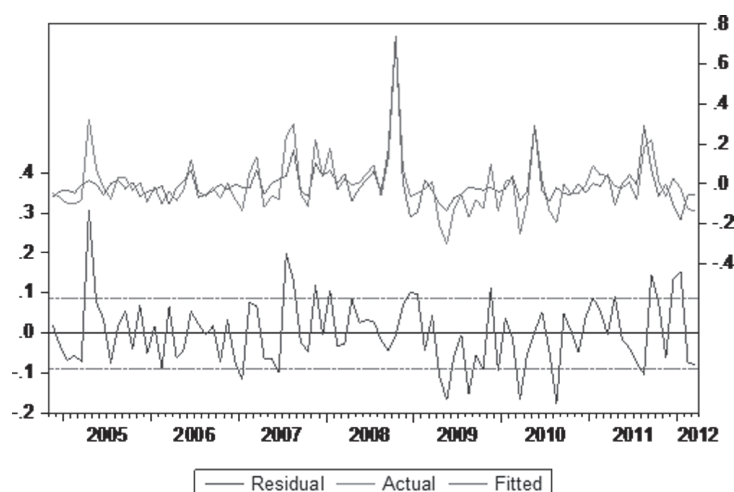
Figure 4. Residual, actual, fitted regression output

Source: Eviews 7 output

Table 3. Regression output using dummy unexpected event

Dependent variable: DLOGSPREAD

Variable	Coefficient	Std. error	t-statistic	Prob.
DDEBT	0.019421	0.0314	0.618527	0.5380
DFED	-0.077170	0.03135	-2.461235	0.0160
DGROWTH	-0.012763	0.12078	-0.105674	0.9161
DRESERVE	-0.029745	0.01795	-1.657432	0.1013
DUMMY01	-0.001326	0.02792	-0.047504	0.9622
DUMMY2	-0.015360	0.0524	-0.293117	0.7702
DVIX	0.017923	0.00199	9.011374	0.0000
D_07_07	0.202897	0.08705	2.330812	0.0223
C	0.000660	0.01631	0.040436	0.9678
R-squared	0.648694	Mean dependent var		-0.004248
Adjusted R-squared	0.613563	S.D. dependent var		0.138489
S.E. of regression	0.086091	Akaike info criterion		-1.971195
Sum squared resid	0.592928	Schwarz criterion		-1.719535
Log likelihood	96.718000	Hannan-Quinn criter.		-1.869758
F-statistic	18.465200	Durbin-Watson stat		1.883979
Prob(F-statistic)	0.000000			

nificance of the variable. After announcement of investment grade status of Indonesia, yield spread showed decreasing trends, as presented in Figure 3.

Variable of economic growth shows a positive insignificant relationship with yield spread changes. Theoretically, increase in economic growth will lead to decrease in bonds yield spreads, because better the economic condition of a country indicates better ability to cover its obligations and thus, should be reflected in lower yield spreads. To investigate this inconsistency, we perform analysis through residual data and residual plot to search for the model's highest deviation. We find that the highest devi-

ation occured in April 2005, which had residual value of 0.30770. We add dummy unexpected event in regression model with number 1 (one) arise in April 2005 (as shown in Figure 4). Regression result which incorporates dummy unexpected events, is able to alter regression coefficient of variable economic growth from positive into negative, even though the t-statistic still indicates insignificant result. The output is presented in Table 3.

Variable of government debt to GDP ratio show a positive insignificant relationship with yield spread changes. The positive regression coefficient is consistent with the theory, which states that higher the government debt
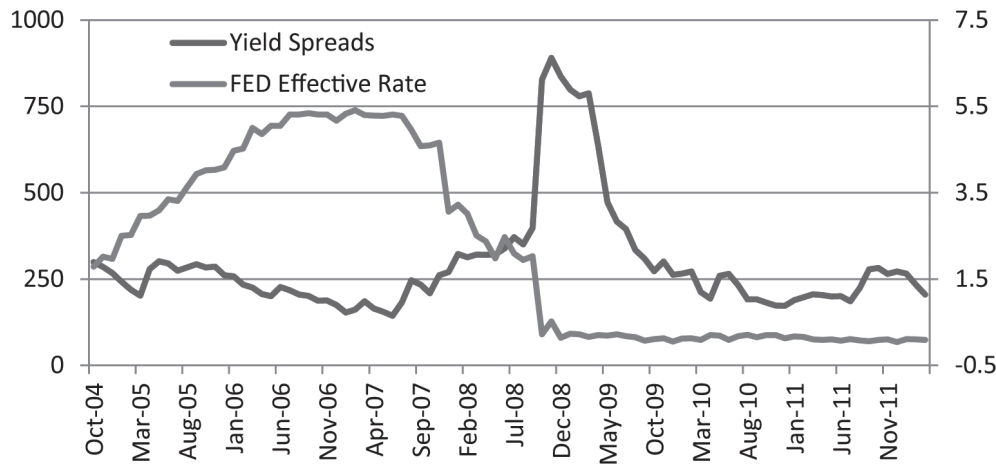
Figure 5. The movement of Fed effective interest rate and Indonesia yield spread
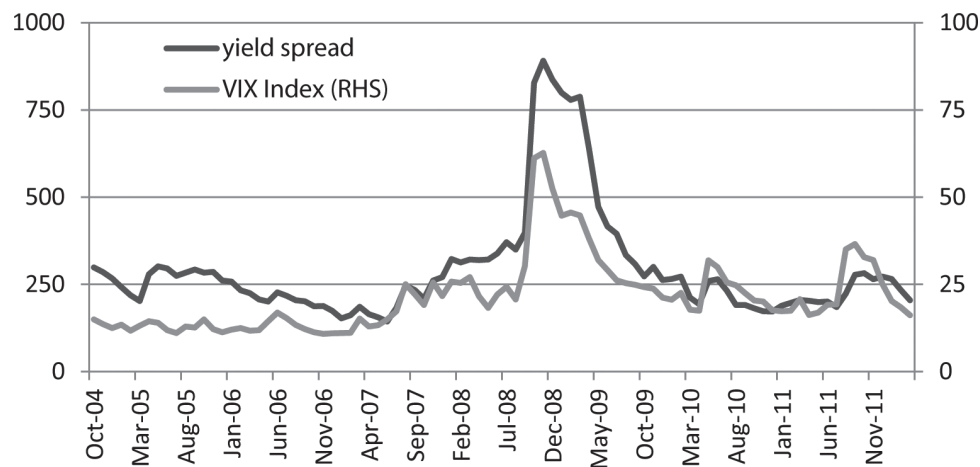Source: Bloomberg (2012)

Figure 6. Comovement of VIX index and Indonesia yield spread
Source: Bloomberg (2012)

level, higher the probability of default and consequently causing higher the yield spread. However the probability of *t*-statistic of 0.5452 (higher than α of 5%) shows insignificant result. This finding is consistent with the empirical result from Jaramillo and Tejada (2011) as well as from Ariefianto and Soepomo (2011), which proved that ratio of government debt to GDP in emerging countries did not significantly affect sovereign credit spreads.

Variable of foreign reserve to GDP shows a negative insignificant relationship with yield spread changes. The negative regression coefficient is consistent with the theory, which states higher level of foreign reserve, indicating capability of government to meet its foreign exchange obligation, thus reflecting in lower yield spread. The probability of *t*-statistic of 0.1279

(higher than α of 5%) shows insignificant result. The finding is consistent with result from Jaramillo and Tejada (2011).

Variable of effective rate of Fed shows a negative significant relationship with yield spread changes. This finding is consistent with result from Matsumura and Vicente (2010) which investigates the effect of Fed effective interest rate on yield spread changes in Brazil. However, this finding is not consistent with result from Jaramillo and Tejada (2011). The opposite movement direction of Fed effective interest rate and yield spread is presented in Figure 5.

Variable of VIX index shows a positive significant relationship with yield spread changes. This result is consistent with the finding from from Jaramillo and Tejada (2011) which proved that VIX Index positively significantly affect

yield spreads in emerging countries. The significance effect of VIX index on Indonesia sovereign credit spread indicates the role of international economy condition, specifically international risk appetite, in influencing Indonesia government bonds yield spread. Comovement of VIX index and yield spread is presented in Figure 6. This finding is also in line with descriptive statistics result for Indonesia yield spread and VIX index that both spiked up in November 2008.

Based on discussions about the effect of each independent variable on yield spread changes described above, we can extract several important points. *First*, sovereign credit rating upgrade does not significantly affect yield spread changes of Indonesia government bond. This result is similar with the study conducted by Elton et al. (2001), which found that default risk only explained about 25% of corporate bond spreads. There are other factors that better explain the yield spreads, namely taxes and risk premium. In related to Indonesia government bonds, it is really possible that yield spread changes are influenced by factors other than default risks.

Second, achievement of investment grade status statistically does not affect yield spread changes of Indonesia sovereign bonds. A fixed income analyst, Yulianto (2011) stated that investment grade status achieved by Indonesia did not impact significantly on bond yield spread, because market considered that Indonesia government yield had already reflected investment grade yields. Furthermore, governor of Indonesia central bank, Nasution (2011), stated that the impact of investment grade status would not be reflected in short-term period, considering the uncertainty of global economy conditions; however, investment grade status had a potential to widen investor basis in long-term period.

Third, sovereign credit spread changes are more influenced by economic global condition than by macroeconomic fundamental. These results are consistent with research performed by Matsumura and Vicente (2010). They studied about probability of default in Brazilian government bonds and employed five variables, namely Fed interest rate, VIX index, real exchange rate, stock market index, and swap rate. They found that the Fed interest rate and VIX significantly influenced defaut risk of Brazilian government bonds. Our study is also consistent with research performed by Arifianto and Soepomo (2011), which investigated the impact of macroeconomic variables and global risk appetite on sovereign credit risk in emerging countries. They found that sovereign credit risk was mainly affected by global risk appetite. Furthermore, our study is also consistent with results from Weigel and Gemmil (2006). They analyzed the factors influencing credit risk in Argentina, Brazilia, Mexico, and Venezuela. They proved that 80% of variety in economic fundamentals could only explain about 8% of the credit risks; meanwhile, regional and global conditions could explain credit risk about 45% and 25% respectively.

Conclusion

This study aims to examine the impact of Indonesia sovereign credit rating upgrade and investment grade status on sovereign spread changes. Using 90 observations of monthly time series data from October 2004 to March 2012, the estimation results show that the sovereign credit rating upgrades within speculative grade category and investment grade status for Indonesia do not significantly impact sovereign spread reduction. While the global condition, especially global risk appetite, has significant impact to Indonesia sovereign yield spread. The research also indicates that Indonesia macroeconomic fundamentals do not significantly explain the movement of sovereign yield spread.

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