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The Effects of Change in Credit Rating to the Returns of Banking Industry of Different Emerging Countries

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Abstract: While sovereign credit rating upgrades affect the whole economy, one of the first sectors affected is the banking sector. Typically, sovereign credit rating upgrades would bring about optimism that would improve investments in the economy. Since banks serve as the forerunner of this whole development, it is expected that they would achieve abnormal returns. This study aims to test the immediate significant effect of sovereign credit rating upgrades on the banking sector listed in the stock market and to see whether these upgrades could be used to accurately measure the performance of this sector. To have a more accurate gauge on its short-term effect, only the top bank stock prices of Philippines, Indonesia, Turkey and Mexico were used to represent the banking sector of each country across the time period of 60 days before and 60 days after the credit rating upgrades. A regression analysis of the dataset, comprised of daily movements of the cumulative abnormal return, percent change of stock prices, volume of trades, policy rate, exchange rates and the sovereign credit rating upgrade dummy variable, were used. The study showed that the exchange rate was the only significant variable proven in having a cumulative abnormal return. But the result was contrary to a-priori expectations; the exchange rate of these emerging economies did not appreciate much after the credit rating upgrade. However, it was proven that the domestic currency of these emerging economies if pegged to US dollar had been depreciating at a much slower rate after the upgrade. As for their stock prices, it turned out that though it had increased during the first few days after the upgrade, it was not sustained in the 60 day period. Thus, it relatively turned out that it was not able to affect the stock prices in the given time period.

Key Words: sovereign credit rating; banking; emerging countries; abnormal return; stock price

1. Introduction

1.1 Background of the Study

Credit ratings have been a widely accepted tool of measure by investors as to the credit quality of their counterparties. Boot, Milbourn, & Schmeits (2006) claims that credit rating agencies potentially reduces the problem of asymmetrical information between the lenders and the borrowers. Therefore, the opinions of these credit rating agencies affect the market prices. In March 27 2013, Fitch Rating had given the Philippines a sovereign credit rating upgrade from BB+ to BBB-. Following this news, the PSEi had an all-time high of 6,847.47 points, which was up by 2.74% last March 27. In May 3 2013, the potential growth of the Philippines was reaffirmed with Standard and Poor's credit rating. Then, the PSEi had another all-time high of 7,215.35 points, which was up by 1.72%.

Aside from just the Philippines, other emerging countries have also recently received sovereign credit rating upgrades. Indonesia received their BB+ upgrade last April 8, 2011, Turkey received their BB+ as well last June 11, 2012 and lastly, Mexico received their BBB+ last May 9, 2013. This paper would delve into the effects these upgrades would have on the financial sectors of these emerging countries.

1.2 Research Question & Objectives

This study would be focusing on affirming whether or not a change in the credit rating of a country has a significant effect to the banking sector of an economy. Specific objectives of the study are as follows: First, to establish whether a credit rating upgrade of a country has an immediate significant effect to the banking sector of the stock market. Second, to see whether an upgrade in the credit ratings of emerging economies prove to be accurate in the performance of stocks in the banking sector of an economy.

1.3 Scopes and Limitations

This study will only focus on the effects of sovereign credit rating upgrade on the banking sector alone. Hence, this study will only use the banking sector index of the stock market, and not the country's stock index. Explanatory variables to be studied would only be limited to stock price, volume,

policy rate and exchange rate. The stock price that would be used will only be stock prices of the top banks in each specific country, which are determined by banks with the largest market capitalization. For the purpose of this study, the top bank should be enough to capture the immediate effect of the sovereign credit rating upgrade since they will be the most affected bank in that given country. Moreover, the time period to be observed will only be 60 days before and 60 days prior to the sovereign credit rating upgrade. The researchers will limit the study to only four emerging countries namely the Philippines, Mexico, Indonesia and Turkey.

1.4 Review of Related Literature

According to Gibley (2012), emerging countries are countries which have not yet established itself to be developed in terms of economic and political stability, but have been undergoing economic growth and industrialization and are becoming bigger players in the global economy. Kim & Wu (2008) investigated the effects of sovereign credit ratings to different financial markets of emerging countries. Their result states that sovereign credit ratings have a significant influence on the financial market development and capital inflows, and that the government had played an important role in supporting the financial development of a country.

Similarly, Kaminsky & Schmuckler (2002) discusses how changes in sovereign credit ratings elicit financial volatility in emerging markets where asymmetric information problems are more serious. Their results showed ratings do affect the stock market, specifically a 1 percentage point reaction to a domestic downgrade. In addition, panel regression showed that a fluctuation in credit rating during crises has a more severe impact across financial markets, which may spread market instability.

Previous studies have shown that a credit rating downgrade produces a significant negative reaction, but a credit upgrade does not produce a significant positive reaction or abnormal return. Behavioral Finance Theory of Representativeness in the research of Fromlet (2001) described representativeness as "the tendency to give certain developments, or statements more importance or a higher degree of probability than they really deserve." Hence, investors more or less tend to be overly pessimistic when a negative news is released,

which explains why a downgrade significantly impacts investors as compared to upgrades.

2. METHODOLOGY

Cumulative Abnormal Return (CAR) was used to measure the effect of sovereign credit rating upgrades to the banking sector of the country. Abnormal returns were calculated using the index method approach. The following computations were employed:

$$AR_{it} = Rit - R_{mt} \quad (\text{Eq. 1})$$

where:

AR_{it} = Abnormal return of the stock during period t

R_{it} = Actual return of the stock during period t

R_{mt} = Return on market index during period t

$$CAR = \alpha + \beta_1 PSTOCK + \beta_2 VOL + \beta_3 ER + \beta_4 PR + \beta_5 (CR * PSTOCK) + \beta_6 (CR * VOL) + \beta_7 (CR * ER) + \varepsilon \quad (\text{Eq. 2})$$

where:

Where the CAR is the summation of the difference between the actual return of the stock to the return of the banking sector index, PSTOCK is the percentage of the stock price, VOL is the volume traded of the stocks, ER is the exchange rate, CR*PSTOCK is the rate of impact of the credit rating upgrade to the stock price, CR*VOL is the rate of impact of the credit rating upgrade to the volume traded on given stocks, and CR*ER is the rate of impact of the credit rating upgrade to the exchange rate.

The dataset was gathered from two different sources namely: Yahoo Finance and Thomson Reuters, to ensure that the data on hand was reliable and consistent.

The researchers used a panel data with a time frame of 60 days before and after the credit rating upgrades of each country. To be able to ensure that the regression was reliable, the following tests were performed: Wald's restricted least squares, Breusch-Pagen, and Durbin-Watson. All test proved that there were no problems in multicollinearity, heteroscedasticity, and autocorrelation.

As to concluding which model would be most suitable between Random Effects, Fixed Effects, and Pooled OLS models, the Breusch-Godfrey and Hausman tests were used to decide. The results showed that Fixed Effects Model was better to use than the Random Effects Model. However, there were insufficient degrees of freedom for the Fixed Effects Model, so the Pooled OLS model was deemed as the best model for the study.

3. RESULTS AND DISCUSSION

Result 2.0 OLS Regression

Dependent variable: CAR				
	coefficient	std. error	t-ratio	p-value
const	0.00463408	0.00279568	1.658	0.0981 *
PSTOCK	0.748962	0.123369	6.071	2.62e-09 ***
VOL	8.38521e-11	6.16281e-11	1.361	0.1743
ER	1.19474e-06	1.84891e-07	6.462	2.58e-10 ***
PR	-0.00123680	0.000626616	-1.974	0.0490 **
CRPSTOCK	0.0394684	0.167174	0.2361	0.8135
CRVOL	-3.63382e-11	6.67773e-11	-0.5442	0.5866
CRER	-9.14418e-07	4.45807e-08	-20.51	2.56e-67 ***
Mean dependent var	0.001552	S.D. dependent var	0.030278	
Sum squared resid	0.329321	S.E. of regression	0.026414	
R-squared	0.250054	Adjusted R-squared	0.238932	
F(7, 472)	22.48269	P-value(F)	2.72e-26	

Fig. 1. Gretl Results of Final OLS Regression

I. Coefficients and Individual Test of Significance

Stock Price

The researchers were expecting stock prices to have a significant abnormal return on the banking industry since the credit rating upgrade would reduce the risk involved in investing. Therefore, this will result to more demand that will eventually pull up the stock prices. The variable PSTOCK was a significant variable before the credit rating upgrade. After the credit upgrade, however, it turned out that it was contrary to the a-priori expectation of the researchers. There was no sufficient evidence to prove that it was a statistically significant variable.

This result was actually consistent to the study of Norden & Weber (2004), Fromlet (2001), and Holthausen & Leftwich (1986), which showed that stock prices have little or no statistical significant abnormal return after the credit rating upgrade. A possible reason for CRPSTOCK to be statistically insignificant might be because of the inherent nature of changes in the credit ratings. As claimed by Pettit

et al. (2004), credit ratings are sticky; their immediate effect could not be readily seen in the short run. Other possible factors that are to be considered are the following: the study only made use of a 120-day time period and it was only able to take into account the stock prices of the top banks. Lastly, there was no sufficient evidence that could disprove the Efficient Market Hypothesis since there was no significant abnormal return after the credit rating announcement. In summary, it may be inferred that based from other studies, the credit rating downgrade is quite accurate in determining the performance of stocks. But as for credit rating upgrades, there had yet to be sufficient and valid evidence to prove that there exists a significant positive correlation.

Volume

As for the volume traded of a stock, the researchers were expecting it to increase together with the stock prices. The volume traded of a stock is a good indicator to assist the changes in the stock price, because a sustained change should be influenced by both an increase in stock price and increase in volume. Since the stock prices have a positive relation to the CAR, then volumes traded should have the same relation with CAR. But it turned out that it disproves the researchers' a-priori expectation and thus making this variable statistically insignificant in explaining the CAR of an economy. Even after the credit rating upgrade, the CRVOL remained to be an unreliable and statistically insignificant. A possible reason of it having no effect on CAR after the credit rating upgrade could be that investors continued to act rationally or had already taken into account the positive news or positive trend around the world and thus traded normally. Moreover, a larger time frame could have given a better representation of the before and after effect of the CR on VOL.

Exchange Rate

The researchers were expecting that there would be a negative effect on the abnormal return by the exchange rate of a country. The lower the current exchange rate of a country, the more it has appreciated against foreign currencies. Also, having an appreciated currency would mean having more value for the currency on hand, which also results to

having lesser loans to pay or it being easier to pay off foreign debt. Therefore, banks would have to pay less money from foreign loans as their currency appreciates. Thus, increasing as well the CAR. As a result, the ER was a statistically significant variable to the study. ER had resulted inversely with the a-priori expectation possibly because prior to the upgrade announcement, it was still depreciated but had continued to appreciate even before the announcement. A possible explanation inverse a-priori expectation would be because as exchange rates go up or depreciate, imported goods start becoming more expensive and exports become cheaper to other countries, which leaves their goods as more sought out. This increases the goods traded from said countries. Such increase in trades would then influence the CAR of the banks in the countries as local companies exporting would earn more money and then have this money stored in the banks. To witness the effect of the credit rating upgrade to the exchange rate, the variable CRER would be considered and it was a statistically significant variable. It just proves that exchange rate appreciates during the credit rating upgrade, and that the study of Levich, Reinhart & Majnoni (2002) has been proven right.

Policy Rate

The policy rate was expected to have a negative influence on the abnormal return to CAR. This is because a higher credit rating would result to a lower risk in investing, which means the lesser the default risk. Thus, central banks would be influenced to lower its policy rates, making banks easier to lend and pay their loans. But the study uses PR solely as a control variable.

Constant

The constant in the model represents the intercept of CAR when all regressors are zero ($x=0$). This simply means that this is the normal return of the banking industries of the said emerging countries prior to the credit rating upgrade.

II. Joint Test of Significance

The F-Test is used to determine whether the explanatory variables can jointly impact CAR. It turned out that the model is significant, which means

to say that jointly, the explanatory variables are able to impact CAR.

III. Proportion of Variation of Y explained by X

The model was able to capture 25.0054% of the variation of CAR, which can already be considered a good explanatory variable. The dependent variable, Cumulative Abnormal Return, could not simply just be explained by a few variables alone but could have over a hundred different factors that could affect it. Thus, a 25% R-Squared by these few variables is already a huge chunk of the CAR.

IV. Standard Error

The standard error of the regression is the square root of the variance as a whole. Standard errors represent the variation of the mean to the expected value of the variable. In this study, the standard error of the regression is 0.026414, which is a relatively small amount. Thus, the result of this study can be said reliable.

4. CONCLUSIONS

Prior to the credit rating upgrade, this study initially showed that stock prices and exchange rate are statistically significant variables contributing to the CAR of the banking sector industry in four emerging countries. This is expected since credit ratings announcements are only reaffirmations about how the economy is doing. However, the exchange rate contributes positively symbolizing the depreciation of the domestic currency of the emerging countries. Volumes traded in stocks were statistically insignificant but the researchers still believe that it is a good indicator of CAR, indirectly. The higher the volume traded in the stock, it can be expected that the price increase of the stock is sustained. Perhaps though the reason of its insignificance in this study is because the study only took into account the top bank's volume. This amount of volume wasn't able to capture the whole banking sector's trading volume.

Taking into account the effect of credit rating, the results showed that, on average, there had been no statistical significant effect on stock prices and volume of trading. However, the study of Norden & Weber (2004), Fromlet (2001), and Holthausen & Leftwich (1986) supports the conclusion of no immediate significant effect on stock prices. With the credit rating upgrades in the

Philippines though, it was evident that stock prices immediately shoot up after the announcement of a credit rating upgrade as seen in the Philippine Stock Market. The immediate price shoot up though may be explained as a good news that made the price immediately rise, but this price increase was not sustained for the time period of 60 days. Lastly, the exchange rate was a significant variable after the credit rating upgrade. The announcement slowed down the depreciation of these emerging countries, which verified the study of Levich, Reinhart & Majnoni. With the declining depreciation of the domestic currency, this implies that the banking industries of these countries could improve their returns due to the stronger value of their currencies, which makes paying off foreign debts cheaper. This could infer that, in the long run, this might actually have a significant effect to the banking sector and thus, this will have a domino effect to the stock prices. However, further research must be done in order to prove this.

Furthermore, future researchers could improve this study in two ways. First, it is recommended that future studies have a larger time frame to have a better hold of the effect on the banking sector's cumulative abnormal return after a credit rating upgrade. Pettit et al. (2004) claimed that credit rating changes are inherently sticky by nature, so this might have caused the insignificance of the stock price variable. On the other hand, if future researchers don't believe that credit rating changes are sticky, then they could shorten the time period to see the immediate effect of the credit rating. In doing any of the two suggestions, future researchers must add more banks in the study since it is not sufficient to only take account a single top bank as a representation of the performance of the banking sector of an economy.

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