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## SOVEREIGN RATING CHANGES AND THE IMPACTS ON SHORT-TERM EMERGING MARKET FINANCIAL STABILITY\*

*This study aims to investigate the relationship between sovereign rating announcements and financial markets. In particular, this study examines the role of sovereign rating changes in the view of fluctuations at financial markets. The empirical analysis of 25 emerging market economies is done using the index of speculative market pressure, created on the basis of weighted average of main financial indices (i.e., interest rate, exchange rate, and capital market index). ARMA model is then used to compute the abnormal jumps in the produced financial index. Thereafter an event study has been done to test for significance of any impact of rating changes on the speculative market pressure index. The empirical results indicate that credit rating agencies have significant short-term effects on financial markets. Market indicators apparently are highly sensitive to the announcements made by credit rating agencies, and their impact is greatly amplified when there is a downgrade rather than when there is an upgrade.*

*Keywords:* sovereign credit rating, emerging economies, event study, ARMA model.

*JEL Code:* G00, G14, G19.

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## ЗМІНИ СУВЕРЕННИХ КРЕДИТНИХ РЕЙТИНГІВ ТА ЇХ ВПЛИВ НА КОРОТКОСТРОКОВУ СТАБІЛЬНІСТЬ ФІНАНСОВИХ РИНКІВ, ЩО РОЗВИВАЮТЬСЯ

*У статті досліджено взаємозв'язок між оголошеними суверенними кредитними рейтингами та фінансовими ринками, проаналізовано роль змін суверенного рейтингу у зв'язку з коливаннями на фінансових ринках. Емпіричний аналіз 25 фінансових ринків, що розвиваються, здійснено з використанням індексу тиску спекулятивного ринку, створеного на основі середньозважених основних фінансових показників (процентна ставка, обмінний курс і індекс ринку капіталу). Модель ARMA використано для розрахунку аномальних стрибків фінансових показників, далі протестовано значущість впливу зміни рейтингу на індекс тиску спекулятивного ринку. Емпіричні результати показують, що агентства з кредитного рейтингу мають значний короткостроковий вплив на фінансові ринки. Ринкові показники чутливі до заяв рейтингових агентств, а їх вплив значно посилюється в разі пониження, а не підвищення рейтингу.*

*Ключові слова:* суверенний кредитний рейтинг, економіки, що розвиваються, аналіз подій, модель ARMA.

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## ИЗМЕНЕНИЯ СУВЕРЕННЫХ КРЕДИТНЫХ РЕЙТИНГОВ И ИХ ВЛИЯНИЕ НА КРАТКОСРОЧНУЮ СТАБИЛЬНОСТЬ РАЗВИВАЮЩИХСЯ ФИНАНСОВЫХ РЫНКОВ

*В статье исследована взаимосвязь между объявленными суверенными кредитными рейтингами и финансовыми рынками, проанализирована роль изменений суверенного рейтинга в связи с колебаниями на финансовых рынках. Эмпирический анализ 25*

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*развивающихся финансовых рынков осуществлен с использованием индекса давления спекулятивного рынка, созданного на основе средневзвешенных основных финансовых показателей (процентная ставка, обменный курс и индекс рынка капитала). Модель ARMA использована для расчета аномальных скачков финансовых показателей, далее протестирована значимость влияния изменения рейтинга на индекс давления спекулятивного рынка. Эмпирические результаты показывают, что агентства по кредитному рейтингу имеют значительное краткосрочное влияние на финансовые рынки. Рыночные показатели чувствительны к заявлениям рейтинговых агентств, а их воздействие значительно усиливается в случае понижения, а не повышения рейтинга.*

*Ключевые слова: суверенный кредитный рейтинг, развивающиеся экономики, анализ событий, модель ARMA.*

**1. Introduction:** Sovereign credit rating is principally a progressive indicator, which quantifies the bond issuer's ability and (or) willingness to repay the principal and interest of financial instruments on pre-assigned timeline. The fundamental aspects when discussing sovereign credit rating give inference essentially to economic and political risks. The ability to repay is linked to the economic component while the willingness to repay by sovereign bond issuer relates to the political aspect of ratings.

In the last 2 decades, there has been unprecedented growth in the securities market as a major source of external funding because of the relatively fast growth experienced at emerging markets. This growth was prompted by the availabilities of huge profit opportunities in these markets as opposed to those in developed countries.

By assigning a grade on a financial instrument, credit rating agencies (i.e., S&P and Moody's) have provided market participants (issuers, buyers and regulatory institutions) with invaluable information on a multitude of ways for their investment activities. These ratings have brought many benefits to issuers including more accessibility to less costly funds that are at larger international capital markets. Apparently, as inferred by White (2002), ratings may be viewed by lenders as some kind of international identification system which diffuses investment opportunities from different countries with different business and accounting practices. In other words, any unknown issuer once graded, can possibly attract investment anywhere by virtue of a comprehensive assigned grade. In a like manner, the use of ratings by lenders attempts to eliminate the inherent asymmetry of information present at a market (Lynch, 1999). Rating agencies have gained substantial popularity especially among institutional investors since they are limited to putting their money only in investment-grade rated bonds.

There has been some consensus (Corsetti, Pesenti and Roubini, 1999; Kraussl, 2005; McKinnon and Pill, 1996; Rodelet and Sachs, 1998) regarding the impact of sovereign ratings on financial markets of emerging economies, which generally are prone to having a bulk of investors with low market confidence and who usually have volatile investing attitudes. Some researchers have concluded that the upgrade of East Asian economies in the early 90s triggered huge amounts of capital inflow and the subsequent downgrade in the late 90s led to severe financial crisis (The Asian Crisis). Conversely, some studies (Larrain, Reisen, and von Maltzen, 1997) suggest that due to the fact that credit ratings are assigned basing on publicly available information such as foreign debt, GDP, exchange reserves, balance of payment etc. in case of sov-

ereign credit ratings, changes in ratings can be predicted and known by all market participants. Regardless this fact, it is not entirely signifying that credit ratings have no bearing on evaluating credit worthiness.

In the past, in order to verify the impact of credit rating changes on financial stability, most researchers such as Reisen and Maltzan (1999) used the yield spreads of financial instruments as compared to a benchmark index. An important shortfall of this type of research is that they lay emphasis only on a specific financial instrument. In this study, to investigate the effect of credit rating changes on financial stability, an index of speculative market pressure (SMP) is used. This index is created from daily changes of 3 main elements of financial markets (interest rates, foreign exchange rate and capital market index). The relevance of this study which is not seen in previous research is that, in addition to implemented rating changes, the impact of imminent announcement like credit watch and outlook is taken into account. The key importance of considering these aspects is to investigate the dissociated impact if the news (upgrade or downgrade) is predictable.

In order to test any significant impact of any announcement by rating agencies, we undertake an event study which seeks to find the relationship between the decisions of any rating agency on the ratings of US dollar denominated sovereign debts and changes in the SMP index used as a proxy for financial market performance. We use an autoregressive moving average (ARMA) model in order to compute the abnormal returns of SMP for the event study. We used daily data for 20 emerging countries (Appendix 1) from 1998 to 2010 and their ratings by 2 major rating agencies (S&P and Moody's), which cover over 80% of the ratings market.

The findings of this study are consistent with most studies reviewing the impact of sovereign credit rating announcements on financial markets. Using an event study, we found that credit rating changes impact significantly the financial market index (i.e., speculative market pressure) and they move in expected direction. This effect is more severe in case of downgrades where it causes the speculative market pressure to increase significantly.

The most outstanding distinction of this study compared to previous related studies is that it is a model based ex-ante prediction of speculative market pressure to calculate abnormal return used in event study. A much larger span of data is used which increases the accuracy of predicting the SMP than in previous works. It also a complement to previous research studying the behavior of the speculative market pressure index, composed of daily changes of exchange rate, interest rate, and capital market index instead of a single financial instrument (e.g., bonds' yield spread) to detect the short-term impact of announcement by sovereign rating agencies. An added flare of this study to the literature is its contribution in analyzing imminent credit changes (i.e., outlook change and credit watch change) in addition to implemented grade changes.

The rest of the paper is organized as follows: Section 2 will focus on the review of previous literature in the related field; Section 3 will explore the data and methodology. The fourth section will present the findings, while Section 5 will present the concluding remarks.

**2. Review of Literature.** There exists a bulk of empirical literature on the influence of credit rating agency's announcements on financial markets. These different

works employed a variety of approaches such as event study, Granger causality analysis and vector autoregressive (VAR) modeling inter alia.

The effect of sovereign rating announcement on government bond yield spread was investigated by Cantor and Parker (1996). Using daily data on 35 emerging and industrialized countries they used 79 rating announcements and suggest that an upgrade of a credit status substantially reduces government bond yield spread. They also found that the effect is more severe in case of speculative rather than investment-grade sovereigns.

Reisen and von Maltzan (1999) to investigate the same, used the data on 29 countries including 152 changes over an 8-year period beginning with 1989. The only significant impact on government bond yield spread occurs when there is a downgrade. Although their findings contradict those of Cantor and Parker (1996), they have a marked similarity in that the sharpest rating effect is found on speculative grade sovereign bond with lower quality. From their perspective, rating agencies lag rather than lead the market based on the results of their Granger causality tests and therefore heighten the boom-bust pattern in emerging market lending.

To examine the relationship between sovereign rating announcement and government bond yield spread, Kraussl (2000) used the VAR model. As opposed to the findings of other studies, he found no immediate effect of unexpected sovereign rating changes on government bond yield spread. The findings still show that rating agencies lag rather than lead financial markets.

Hand, Holthausen and Leftwich (1992) suggested there are actually changes in the bond price when there is either an upgrade or downgrade. An investigation of the level of performance of emerging market bank stocks using an event study by Richards and Deddouche (1999) led to the conclusion there exist cumulative abnormal returns during a downgrade, and no particularly positive effect in the case of an upgrade. When a company's financial future appears bright (except the cases attributed to an increase in either leverage, or reorganization), Goh and Erderington (1993) only found a negative impact of stock market downgrade. In 1999 while using cross-sectional variation in stock market reaction, they showed a very strong negative reaction amongst speculative rather than investment grade in case of a downgrade.

Pinches and Singleton (1978) found equity returns following a direct relationship regarding upgrades and downgrades by credit rating agencies with respect to stock market returns. Wansley, Glascock, and Clauretje (1992) found that immediately before and after a negative rating announcement, there is a strong negative impact on bond return which is usually unseen in the case of a positive announcement. In addition they conclude that negative excess returns are positively correlated with the intensity of changes.

The strongest reaction of bond prices as found by Hite and Warga (1997) is in negative rating actions and in speculative grade class of bonds. Dynkin, Hyman and Konstantinovsky (2002) confirm this by showing a significant loss in the bond value for non-investment grade bond when there is a downgrade. Steiner and Heinke (2001) stated that Euro bonds that receive a negative outlook or a downgrade showed negative abnormal returns in the first 2 days following the announcement. Their results reveal this is not the case when there is a positive action and review. These results are synonymous to those propounded by Wansley et al. (1992).

One very recent study by Ismailsecu and Hossein (2010) analyzed the effect of sovereign credit rating announcement on CD's spread using daily data from 2001-2009 for 22 countries. Their results prove there is a greater effect on CD's due to positive rating events in 2 days following the announcement. In other words, they learned that negative actions are anticipated by market participants. Kraussl (2005) reported that rating actions and reviews relevantly affect the lending market in emerging countries by both size and volatility. This study shows a stronger effect when there is a downgrade or negative outlook.

**3. Methodology.** In order to investigate the impact of changes in sovereign credit ratings on financial markets, we used an event study for the analysis. We defined the SMP index created from daily changes of 3 main elements of financial markets (interest rates, foreign exchange rate and capital market index). Unlike other researchers who undertook a similar analysis considering only government bond yield spread, the SMP index does not take government yield spread into account since in most emerging economies such government bonds are not actively traded. In addition, prices for government bonds in these countries during financial turbulence are not a true representation of their value. Another pertinent issue to take into account is that the bonds used in previous studies do not have the same maturities, and are known to change over time.

There is broad consensus in empirical literature that the parameters used to calculate SMP index are indicative of the status of financial markets of emerging countries. Corsetti et al. (1999) show that capital outflow and foreign investment during the South Asian capital market crash were induced by a fall in the capital market index. This is a clear case of how domestic currency and capital market index are a measure of the events at financial markets. Also, future success of an economy can be indicative of the stock market return. These changes in returns are reflections of the investors' views of credit risks as shown by Hartmann, Straetmans and de Vries (2004).

Some studies have underlined the fact that financial crises are not uniquely confined to a single market. Rose and Frankel (1996), Drazen (2003), and Aziz, Caramazza and Salgado (2000) showed that negative changes in exchange rates is a clear indicator of a depressed economy. Hence when emerging markets are faced with significant financial hurdles, all markets are impacted (i.e., exchange rates will decrease, interest rates will rise and the capital market index will fall). This, therefore, consolidates our use of the SMP index for this analysis.

We then define SMP index as the weighted average of daily changes in short-term interest rates, capital market index and exchange rates:

$$\begin{aligned}
 SMP_{it} &= \omega_1 e_{it} + \omega_2 r_{it} + \omega_3 s_{it} \\
 e_{it} &= \frac{E_{it} - E_{it-1}}{E_{it-1}}, \\
 r_{it} &= \frac{R_{it} - R_{it-1}}{R_{it-1}}, \\
 s_{it} &= \frac{S_{it} - S_{it-1}}{S_{it-1}}
 \end{aligned}
 \tag{1}$$

$e_{it}$ : the exchange rate of country  $i$  at time  $t$ .

$r_{it}$ : the interbank interest rate of country  $i$  at time  $t$ .

$s_{it}$ : the stock market index of country  $i$  at time  $t$ .

The relationship between a change in sovereign credit rating and SMP index is negative because a reduction in sovereign ratings leads to an increase in SMP index and an increase in sovereign rating leads to a decrease in SMP index. This is the case because an increase in sovereign credit rating causes a decrease in exchange rate; hence, negative relation between sovereign rating and exchange rate. A downgrade increases interest rate which is indicative of the negative relationship between interest rate and sovereign credit rating. In the case of capital market index, there is a positive link because an upgrade leads to a rise in capital market index. To make the components of SMP index consistent, we multiply the changes in capital market index by (-1) as such giving a negative relationship amongst all the components of SMP index and rating events.

The components of SMP index are weighted according to inverse proportion of their volatilities (here variance) in order to eliminate the index dominance that could be caused by any factor's volatility:

$$\omega_1 = \frac{\frac{1}{\sigma_e^2}}{\frac{1}{\sigma_e^2} + \frac{1}{\sigma_r^2} + \frac{1}{\sigma_s^2}}, \quad (2)$$

where:

$\sigma_e^2$ : the variance of exchange rate;

$\sigma_r^2$ : the variance of interbank interest rate;

$\sigma_s^2$ : the variance of stock market index.

Apart from studying the impact of changes in sovereign credit ratings at financial markets, using an event study, we also test the procyclical nature of the actions of rating agency (upgrades in good times and downgrades in bad times). This requires linking events (changes in credit ratings) to an abnormal return (movements in SMP index). In order to compute abnormal returns, we find the difference between the model generated SMP index and the actual SMP index. The actual SMP index is computed as in equation (3), while the model generated SMP index is calculated by the ARMA ( $p, q$ ) model below:

$$SMP_t = c + \beta_1 SMP_{t-1} + \beta_2 SMP_{t-2} + \dots + \beta_{t-q} SMP_{t-q} \quad (3)$$

In the estimation of  $p$  and  $q$ , the AIC criterion is used to find the most appropriate  $p$  and  $q$  so that they are both less than 8. Through this, we have a one step ahead forecast of SMP index using the last actual 500 SMP indices calculated from equation (4). This thus facilitates the computation of the abnormal return at time  $t + 1$ .

$$\Delta SMP = SMP_t - \overline{SMP}_t \quad (4)$$

$\Delta SMP$ : the abnormal return of speculative market pressure.

$SMP_t$ : the actual speculative market pressure at time  $t$ .



$\overline{SMP}_t$ : the model generated speculative market pressure.

It is necessary to have clean flow of market information when performing the event study hence all overlapping events must be ignored. This must be done so that the even window should be isolated so that the impact of a single event may be identified. The impact of a potential sovereign rating change is considered using a 10-day period (i.e., before and after announcement). The even window is taken to be 2 days to compensate for exactness in the occurrence of the event.

**4. Data.** For the purposes of our study we use daily sovereign credit ratings assigned to long-term foreign currency bonds published by 2 major rating agencies (S&P and Moody's). The data used is for from 25 countries rated by both agencies from January 1, 2000 to August 25, 2011. This period includes the complete period of the recession beginning August 2007. These countries are under the classification of emerging market economies by "The Economist" and "Financial Times" as of 1997. The total sample by continents is made up of 10 Asian, 2 African, 7 South American and 6 countries in Eastern Europe. The end date for the data is not balanced because the most updated available information is dissimilar for different countries. For both rating agencies, the data was collected from their official websites and also from their client service department.

In total, there are 422 announcements within the study period including 59 negative and 103 positive outlook announcements, 13 negative and 42 positive credit watches, 50 downgrades and 155 upgrades.

To compute our SMP index, we used the nominal exchange rates, short-term interest rates and stock market index taken from DataStream. We used the overnight interest rate since it is considered a typical watch indicator of money market liquidity. Regarding the stock market index, the major national stock market indices are used measured in US dollars. Weekends and holidays are excluded from the data.

**5. Empirical results.** A vivid view of the stability of the financial markets is illustrated in Table 1. It provides us with the statistical features of the sample emerging countries' financial markets. Regardless the large sample period, the results are still high. On the whole, the overnight interest rate has the highest average change of 6.4%. The stock market index has a 1.2% average change while the nominal exchange rate has a 0.3% average change. The mean change for SMP index is 0.4%.

Table 1. Descriptive Statistics of the Variables

Log Change in Variable	Mean	Median	Min	Max	SD
Nominal Exchange Rate	0.0034	0.0058	0.0002	0.0136	0.0061
Stock Market Index	0.0124	0.0131	0.0072	0.0229	0.0143
Overnight Interest Rate	0.0649	0.0626	0.0061	1.2667	0.1523
SMP Index	0.0040	0.0020	0.0000	8.6718	0.0156

Table 1 shows the statistical characteristics of the main variables of the 25 countries under study.

*5.1. Actions of sovereign credit rating agencies in the short term.* The outcome of the analysis of the significance of overall dynamic impact of credit rating agencies' actions at financial markets is presented below (Table 2). Changes of the cumulative mean of SMP index together with their respective t-statistics are shown. The event study results for the 10 trading day windows before and after an announcement by the cred-

it rating agency can be seen. In addition, the 2-day event window is also shown in the table. The total effect of all watch, outlook, or grade changes on SMP index are tested. We notice that 10 days before and after the event announcement shows a statistically significant impact on the market at the 1% significance level, while in the event window with the 0.09% cumulative average change of SMP index, such an effect is insignificant even at 10%. The accumulated mean change 10 days after the event is less than the same statistics in the entire sample. On the whole, sovereign-rating announcements published by both Moody's and S&P are very similar and neither of their announcements exhibits a priority stance as considered by market participants (Appendix 2).

**Table 2. Overall Analysis Of All Changes**

	Accumulated Average Abnormal Return, %	t-statistics
<b>10 Days Before Event</b>	-0.52	-9.44
<b>Event Window</b>	-0.09	-1.15
<b>10 Days After Event</b>	0.17	2.85

Table 2 shows the results of the event study when considering all positive, negative, implemented, and imminent changes.

*5.2. Impact Of Actual Sovereign Rating Changes.* The results presented in Table 3 take only an actual change in the sovereign rating (upgrade/downgrade) into account. We see that actual changes have significant impact on SMP index with the expected signs in the post-event window. There is a lower/higher pressure during an upgrade/downgrade in the post-event window and not necessarily in the event window. As expected, we notice a greater level of significance when there is a downgrade rather than when there is an upgrade.

**Table 3. Short Term Impact of Actual Credit Rating Changes**

	Upgrades		Downgrades	
	Accumulated Average Abnormal Return, %	t-statistics	Accumulated Average Abnormal Return, %	t-statistics
10 Days Before Event	-2.46	-9.40	-2.46	-9.40
Event Window	0.12	0.22	0.12	0.22
10 Days After Event	0.97	7.75	0.97	7.75

Table 3 shows the results of the event study when considering only positive and negative implemented changes of sovereign credit ratings.

The following figure is an illustration of the abnormal fluctuation of SMP index in the 22-days window indexed at 100, which includes both the pre- and post-event window. It is clearly seen from both the figure and the table that the impact of a downgrade is more significant than that of an upgrade.

Figure 1 shows the amplified effect of downgrades vs. upgrades on speculative market pressure index.

*5.3 Imminent Sovereign Rating Changes.* It is relevant to find out the impact of announcements that may not account for an immediate grade change, such as positive/negative credit watch and positive/negative credit outlook. Table 4 reports both the cumulative mean and median changes of SMP index separately for all types of



imminent changes. Except for the cumulative mean change of the negative credit watch, all other imminent rating announcements have a significant impact on post-event window. It is interesting to find that the reaction is insignificant immediately after a negative imminent announcement (i.e., the event window). On the other hand, in the case of a positive imminent announcement, the change is at least significant at the 5% level.

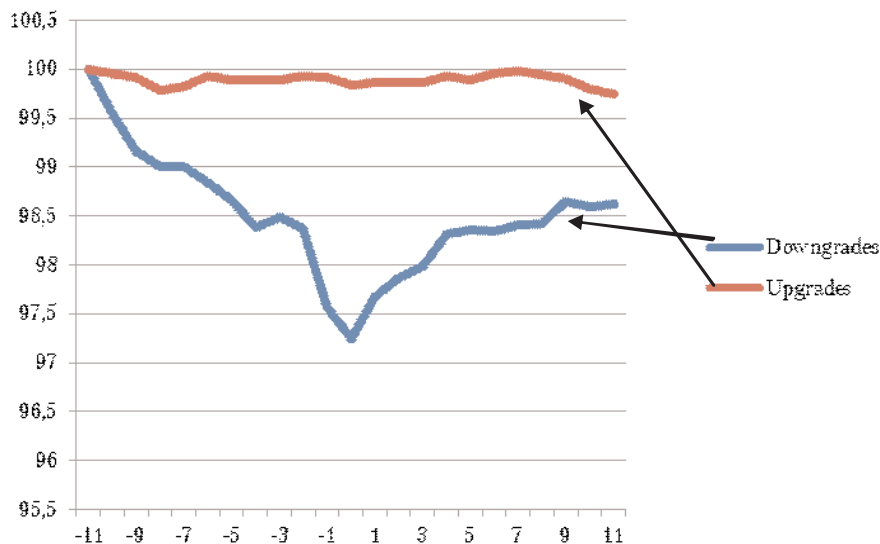


Figure 1. Short-Term Impact of Actual Credit Rating Changes

Table 4. Impact of Imminent Sovereign Rating Changes on SMP Index

	Accumulated Average Abnormal Return, %	t-statistics	Accumulated Median Abnormal Return, %	t-statistics
<b>Analysis of Negative Credit Watch</b>				
10 Days Before Event	-1.45	-5.13	-0.74	-11.08
Event Window	-0.92	-1.12	-0.31	-2.18
10 Days After Event	0.82	0.60	0.67	7.63
<b>Analysis of Positive Credit Watch</b>				
10 Days Before Event	-0.33	-3.74	-0.11	-3.07
Event Window	-0.19	-17.27	-0.02	-1.25
10 Days After Event	-0.60	-6.40	-0.07	-2.54
<b>Analysis of Negative Outlook Change</b>				
10 Days Before Event	-0.93	-7.11	-0.33	-5.00
Event Window	0.22	0.97	-0.03	-4.77
10 Days After Event	0.61	2.60	0.25	4.96
<b>Analysis of Positive Outlook Change</b>				
10 Days Before Event	-0.31	-6.16	-0.01	-1.75
Event Window	-0.02	-1.98	-0.07	-2.05
10 Days After Event	-0.21	-2.79	0.01	1.00

Table 4 shows the significant impact of positive and negative imminent changes (credit watch and outlook) on speculative market pressure.

*5.4 Analysis of anticipated vs. unanticipated rating change announcements.* To provide a clear picture, we separately analyze if the impact of a grade change in the case where there is an announcement differs from the impact in a situation where the grade change comes unexpectedly. We solely take into account only the cases where there is a unidirectional grade change and the announcement (i.e., outlook and credit watch change). A situation of this nature is termed an anticipated change with regards to the announcement. In the case where there is a grade change not backed by either an outlook or credit watch announcements, we then consider it to be an unanticipated change.

As viewed in the Table 5, accumulated mean abnormal change of SMP index is significant in the event and post-event windows when there is an unanticipated sovereign rating change at the 1% significance level. Conversely, the accumulated mean abnormal change of SMP index is insignificant when the sovereign rating change is anticipated.

**Table 5. Impact of Anticipated vs. Unanticipated Credit Rating Changes on SMP Index**

	Anticipated		Unanticipated	
	Accumulated Average Abnormal Return, %	t-statistics	Accumulated Average Abnormal Return, %	t-statistics
10 Days Before Event	-0.72	-5.93	-0.59	-4.83
Event Window	0.02	0.06	-0.03	-2.30
10 Days After Event	0.10	0.95	0.16	2.17

Table 5 shows the significant impact of unanticipated credit rating changes on speculative market pressure index.

**6. Conclusion.** The implications of changes in creditworthiness of a sovereign rating as represented by credit rating agencies provide pertinent information to market participants. Although there has been a widespread agreement by market participants that sovereign credit rating agencies' actions were time inconsistent and therefore procyclical, is still such information is an important signal for many investors. In this study, we aimed at investigating the short-term impact of sovereign credit rating announcements on financial markets of emerging economies using the event study methodology.

We used an index of speculative market pressure as a proxy of the status of a financial market and through an event study. Abnormal returns are calculated using ARMA model; we analyzed the dynamic impact of sovereign credit rating change on financial markets of emerging economies. Our remarks are threefold. Firstly, on the whole, financial markets react to any type of change (upgrade/downgrade). We found that the severity of reaction in the case of a downgrade is more significant than for an upgrade.

Secondly, we found that imminent changes are also very significant. Markets also show some reaction to changes in both outlook and credit watch. Except for the cumulative mean change of the negative credit watch, all other imminent rating

announcements have significant impact on post even window. Thirdly, the reaction of markets on unanticipated sovereign rating announcement is greater than the case where there is anticipation at a market.

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## Appendix 1. Countries in the Study

Countries			
<b>Asia</b>	<b>East Europe</b>	<b>Africa</b>	<b>South America</b>
1. China	11. Czech Republic	17. Morocco	19. Argentina
2. Hong Kong	12. Hungary	18. South Africa	20. Brazil
3. India	13. Russia		21. Chile
4. Indonesia	14. Poland		22. Colombia
5. Malaysia	15. Slovakia		23. Mexico
6. Pakistan	16. Turkey		24. Peru
7. Philippines			25. Venezuela
8. South Korea			
9. Taiwan			
10. Thailand			

## Appendix 2. Comparison of Announcement Impacts on Financial Markets By S&amp;P and Moody's

	S & P		Moody's	
	Accumulated Average Abnormal Return, %	t-statistics	Accumulated Average Abnormal Return, %	t-statistics
<b>Overall Analysis of Events</b>				
10 Days Before Event	-0.48	-6.35	-0.12	-2.37
Event Window	-0.17	-6.58	-0.10	-1.12
10 Days After Event	-0.08	-0.75	0.05	0.81
<b>Announcement of Downgrade</b>				
10 Days Before Event	-2.79	-9.85	-1.87	-6.03
Event Window	0.32	0.87	-0.27	-0.32
10 Days After Event	1.17	6.99	0.64	3.01
<b>Announcement of Negative Credit Watch</b>				
10 Days Before Event	-2.05	-4.83	0.47	1.07
Event Window	-6.41	-2.62	-0.03	-0.05
10 Days After Event	4.81	2.46	-2.08	-7.39
<b>Announcement of Negative Outlook</b>				
10 Days Before Event	1.19	6.43	1.46	5.92
Event Window	-0.32	-1.00	0.40	1.42
10 Days After Event	-0.90	-3.15	1.04	2.67
<b>Announcement of Upgrade</b>				
10 Days Before Event	-0.27	-3.09	0.03	0.45
Event Window	0.06	0.62	-0.14	-1.67
10 Days After Event	-0.26	-4.66	-0.02	-0.24
<b>Announcement of Positive Credit Watch</b>				
10 Days Before Event	-3.06	-4.15	-0.03	-0.39
Event Window	-2.39	-1.37	-0.01	-0.10
10 Days After Event	-1.44	-2.99	-0.43	-3.87
<b>Announcement of Positive Outlook</b>				
10 Days Before Event	-0.33	-4.16	-0.32	-3.59
Event Window	0.02	0.60	-0.14	-2.83
10 Days After Event	-0.55	-4.97	0.51	6.26

Стаття надійшла до редакції 25.11.2012.