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Assessment of the Impact of Trade Partner's Cross-Country Sovereign Rating on the Financial Market of Selected Emerging Market Economies

Ticaret Ortağı Kredi Notunun Seçilmiş Yükselen Piyasa Ekonomilerinin Finansal Piyasaları Üzerindeki Etkilerinin Değerlendirilmesi

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ABSTRACT

In recent years, credit rating agencies such as Moody's, S&P and Fitch either upgraded or downgraded countries when their economies were either blossoming or in a chaotic state. There is general consensus that credit rating agencies' actions have triggered substantial financial unrestrained behaviour that resulted to the recent financial meltdown in 2008. To what extent does a sovereign ratings upgrade or downgrade of the major trade partners of an emerging market economy impact trade both domestically and internationally? This research is done using data from 10 emerging countries between 2000-2011to investigate the cross-country impact of either an upgrade or downgrade of an emerging economy's principal trade partners on its financial market. In addition we analyse the impact prior and after the 2008 financial crisis. The ramifying impact on emerging economies due to sovereign grade change given a 10 days event window prior and after the event is investigated. We use both a pooled panel framework and event study methodology to assess the significance of the effect of rating changes.

Keywords: Contagion, emerging markets, event study, financial markets, pooled panel, sovereign credit rating.

ÖZET

Son yıllarda Moody's, S&P ve Fitch gibi kredi derecelendirme kuruluşları ülkelerin notlarını ekonomilerinin iyi veya kötü durumda olmalarına göre arttırmakta ve düşürmektedirler. Kredi derecelendirme kuruluşlarının hareketlerinin 2008 finansal krizi ile sonuçlanan finansal olarak kontrol edilemeyen davranışları tetiklediği üzerinde genel bir fikir birliğine varılmıştır. Yükselen piyasa ekonomisinin en önemli ticaret ortaklarının kredi notlarının yükseltilmesi ve düşürülmesi ülke ticareti üzerinde ne ölçüde etkilidir? Bu çalışmada 2001-2011 yılları arası 10 yükselen piyasa ekonomisine ait veriler kullanılarak en önemli ticaret ortaklarının kredi notundaki değişikliklerin ülkenin finansal piyasaları üzerindeki etkileri araştırılmıştır. Olay çalışmasında kredi notu değişikliklerinin 10 gün öncesi ve sonrası etkileri araştırılmıştır. Kredi notu değişikliklerinin etkilerinin değerlendirilmesinde havuzlanmış panel ve olay çalışması yöntemi birlikte kullanılmıştır.

Anahtar Kelimeler: Bulaşma, yükselen piyasalar, olay çalışması, finansal piyasalar, havuzlanmış panel, bağımsız kredi derecelendirme.

1. INTRODUCTION

The 1990's was plagued with a series of crises such as the Asian financial crisis which began in July 1997.A glaring example of another devastating crisis was the 1998 Russian currency crisis which led to the default of both public and private debt (Chiodo and Owyang 2002). The Turkish currency crises in 2001 reiterated the fact that such currency loopholes still posed a significant economic threat even with the dawn of the new millennium. The computer age has made the world a global village in which investors can include stocks of different companies, and purchase government bonds from countries scattered all over the globe in an effort to diversify their portfolios. This erratic behaviour portrays the fact that many investors most often than not, ignore the fundamental economic issues that must be gauged before diversifying efficiently. An aspect worth recalling is that globalization also breeds volatility.

Credit rating agencies provide the sovereign rating of countries and thus act as a guide for investors, but these rating agencies nonetheless, have also been accused of magnifying the boom-bust patterns in the financial market when they either upgrade or downgrade a country (Kraussl, 2005, Ferri et al, 1999 and Reisen and von Maltzan, 1999). The most recent aftermath of such actions expose a period of desolation as in the case of the 2008 global recession that exacerbated huge bailouts of both multinational co-operations like General Motors Corporation, as well as entire economies like Greece.

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Sovereign upgrade or downgrade usually diffuses new information which especially in emerging markets is usually asymmetric. It is therefore not uncommon that this information may induce a great deal of investors to flock towards similar investment decisions even when highly diversified. This herding attitude of investors usually leads to unapprised decisions that might impact not only the investors, but also the entire financial markets. The "sovereign ceiling" doctrine, which does not allow companies to have a higher grade than their sovereign, may motivate a switch in the investment choice and country since investors generally evade from investing in a country which has been downgraded, given that the companies cannot have a grade higher than the sovereign.

While considering the cross country impact of sovereign rating, we notice that (Arezki et al 2011) on their study of the spill over effects of sovereign rating news on the European financial markets from 2007-2010, found that there is ample and significant cross country effects across countries and across financial markets. The Tequila crisis of 1994 that affected Chile, Argentina and Brazil is a clear paradigm of financial contagion [1] between a group of countries connected via a similar market and trade mechanism. The key lesson learned from this financial turmoil was that, economists must recognize the key differences in policies and institutional framework between emerging markets and industrialized nations, and therefore employ different policy approaches to combat them (Mishkin 1999). Our research takes cognisance of the cross-country impact of country ratings and how significant they are on the financial system. We do not go into the regional impact since we only account for what happens to the major trade partners of the countries under analysis. This thus gives us a more closely related impact of the contagious nature of changes in the sovereign ratings of emerging market economies both before and after the 2008 recession regardless of their location.

In addition, considering the available information before, during and after certain events that trigger these rating agencies to change the sovereign rating of a country, we use a twelve year span for our period of investigation. We will attempt to give a plausible explanation on what happens to the financial market when there is a change in the sovereign rating of the major trade partners' of some selected emerging market countries. It is clear that after a crisis, credit rating agencies commit to measure the creditworthiness of countries given their debt levels and the capacity for them to absorb such financial shocks. Therefore we also assess the impact of sovereign ratings after the recent financial crisis in order to explain the changes that occur across emerging market countries since they are most susceptible to shocks in the market.

This research uses very recent data up to 2011 thus absorbing the impact of sovereign rating changes in the vicinity of the financial global crisis. We applied both a pooled panel and an event study approach to capture the dynamic impact of credit rating changes on financial markets. Both methods are complementary and produce more robust results for this study. Our research complements previous research on the issue of international transmissions and securities-markets volatility resulting from credit rating changes. From our pooled panel results, we find evidence of considerable and significant impact and financial contagion in both the domestic and foreign financial market. We find that changes in domestic and foreign currency ratings of the sovereign on average impact about 2.4% on the EMBI spread.

We notice that only foreign currency debts of the sovereign are significant while sovereign domestic currency debts show no statistical insignificance. After the crisis, in addition to the changes in foreign currency bond ratings of the sovereign, the domestic currency bonds of the major trade partners is also significant at a 5% level.

The event study results show that on the whole, there is a significant change in the accumulated mean daily change in the EMBI spread of 17.9% in 10-days period. In case of an upgrade, we find that the mean accumulated percentage change in EMBI spreads is about 20.31% but not in expected direction while it is about 7.13% in case the event is a downgrade but not statistically significant. Contrary to this finding is the case where there are apparently no significant changes in the log change in EMBI spreads after a grade change for the trade partners' foreign currency debts, we found a significant effect of bond rating change for the trade partners on the selected EME's EMBI spread. Therefore as seen on Table 7, an interesting finding here is in the case of any grade change in foreign currency bonds of emerging economies. The main impact of change is realized after the event thus implying that rating agencies do not operate pro-cyclically and their announcement do have significant impact on EMBI spread.

This paper continues with section 2 on a review of literature. Section 3 will describe the data used for the study while section 3 will present the data used for the analysis. Section 4 will explain the empirical techniques used for the analysis. Section 5 will discuss the results of the findings and finally we will conclude in section 6.

2. LITERATURE SURVEY

Taking in to account that sovereign ratings constitute a cocktail of information about a country's ability and willingness to repay its debt, ratings agencies use information about each country's socio- economic and political situation to ascertain a grade that transmits viable information about a country regarding its debt repayment capacity. There are several reasons why the major credit rating agencies publish the sovereign ratings of countries. These include the fact that, sovereign ratings provide information that directly relate to determining the borrowing cost of from international capital markets. In addition, in relation to companies and banks in the domestic economy, these ratings on the most part are eminent in setting sovereign ceiling thus affecting private financing costs. Finally, most institutional investors usually set a benchmark of both the country and company's risk exposure within certain limits, below which they will not attempt to invest in a bid to hedge risky involvement of some highly risky assets to their portfolios, while at the same time taking cognisance of their repayment capacity as shown by their sovereign grade.

Even though there is a considerable amount of literature involving the role of credit rating agencies and how this information is used, there still is a difference between what happens in the financial markets in both developing and industrialized nations when there is a change in sovereign rating.

Cantor and Packer (1996) investigated the impact and determinants of credit rating by using a mix of 49 developed and developing countries and found that rating announcements have an immediate effect on market pricing for non-investment-grade issues. Reisen (1997) and Von Maltzan (1999) examine the impact of rating changes of sovereign debt and find that it significantly influences bond yield. Afonso (2003) on the other hand found that GDP per capita was the singular most central determinant of ratings, and that the country's external debt played a key role in the case of developing countries. Some of the literature has shown contrasting results such as the study done by Mulder and Perrelli (2001). They promulgated that for emerging market economies, the ratio of investment to GDP was key in determining ratings. Meanwhile Mellios and Paget-Blanc (2006) found that indicators of corruption were an important determinant of ratings, Archer et al. (2007) concluded that political factors had little effect on bond ratings. In a later work by Afonso et al. (2007), the coefficient for an indicator of government effectiveness was considered significant for country rating.

Some research has also been done in relation to the impact of ratings in both developed and emerging markets give that the country fundamentals differ. Eickmeier, Lemke and Marcellino(2011) studied the changing international transmissions of the US of financial shock on nine developed economies. They found that there is a considerable positive growth impact for all the nine countries when there is a positive shock and vise versa for negative shocks. While they found out the size of the shock in the 2008 recession is by far the largest and constituted 30% of growth in all the countries from 2008-2009, they neither accounted for the impact of this shock on emerging markets within the timeframe, nor did they analyze the joint effect of the shock in order to capture a more complete picture. This gap in the literature is one our research attempts to fill.

Ferri, Liu, and Stiglitz (1999) suggest that rating agencies are promoters of financial excesses thus acting in a pro-cyclical fashion by upgrading countries during financial rallies, and downgrading them during recessions thus magnifying boom-burst patterns in stock markets. Richards and Deddouche (1999) used bank-level data for emerging market to examine the impact of rating changes on bank stock prices but they ended up finding no statistically significant effects. In spite all these different studies, the effect of vulnerability regarding international transmissions of shocks provides considerable discrepancies in the empirical literature. Other contrasting studies include those of Eichengreen and Mody (1998) and Kamin and von Kleist (1999), who find that U.S. interest rate shocks do not affect sovereign bond. Herrera and Perry (2000) on the other hand found out that interest rate shocks signifiacantly affect sovereign bonds. The principal difference resulted in the use of data by Eichengreen and Mody that did not include the Asian crisis while the Herrera and Perry included data on the crisis, which marked significant volatility.

Kiminsky and Schmukler (2001) investigated the

impact of sovereign ratings on stock return, which was centered on the impact of sovereign ratings on country risk and stock returns. They found that although countries that liberalized their financial markets are able to reap the benefits of globalization, the inherent risks are also contagious and thus erode some of these benefits especially if the economies are not comparatively strong.

A more recent study by Afonso et al. (2010) found significant response on government rating bond yield spreads to changes in both credit rating notations and in outlook when studying sovereign credit ratings and financial leakages using European data. Not only did they find that the response results are more important for the case of negative announcement, they also found evidence of bi-directional causality between sovereign ratings and spreads in a 1-2 week window. In the work of Hull et al. (2004), on the relation between credit default swaps, bond yield and credit rating announcements, they found reviews for downgrades carry significant information content while downgrades and negative outlooks do not. Their investigation of rating announcements conditioned on credit default levels and credit default changes found that both provide information in estimating the probability of negative credit rating changes. The findings of some researchers have however been contradictory to the above findings. One such example is the work of Ismailescu and Kazemi (2008), who found evidence of asymmetric immediate reaction of CDS markets on credit rating events with a more persistent impact on positive than negative announcements when examining the reaction of emerging market CDS spreads to sovereign credit rating changes.

This paper's contribution is centered on how imminent and implemented changes in sovereign ratings, outlook and watch of the main trading partners to the selected EME's impact on the financial market. An added flare to current literature by this work is to shows the dynamics of financial markets in and within the vicinity of very severe economic turmoil i.e. global economic meltdown – an angle yet sparsely examined by previous research.

3. DATA

For our analysis, we use five working-day week time series data, comprising the Emerging Market Bond Index (EMBI) [2], each country's interbank rate; S&P and Moody's domestic and foreign currency bond ratings for both the selected EME's and their trade partners, and the US interest rate [3]. We obtained our ratings data from Standard and Poor'sMoody's website while the EMBI and the interbank rate was obtained from DataStream International. The data for this research spans a 12-year period from January 2000 to August 2011. We concentrate on this time period to cover both high and low risk aversion periods in most emerging markets driven by high liquidity levels, rapid economic growth and increasing commodity prices as well as improvement in credit quality of many EME's. This data horizon was in addition selected to include the highest volatile period marked by the recent financial meltdown. The emerging countries considered are Brazil, Turkey, Thailand, Taiwan, Mexico, Hungary, Malaysia, Poland, South Africa and China. The same data is also collected for the first four top trading partners of the above ten emerging market economies (EME's). These trade partners include Argentina, Canada, China, Czech Republic, France, Germany, Hong Kong, Italy, Japan, Malaysia, Russia, South Korea, Singapore, United States, and the United Kingdom.

In order to effectively quantify information pertaining to the performance of sovereign bonds traded internationally by emerging economies, we use the changes in the EMBI spreads [4]which measures the total returns of such bonds(Brady Bonds) and which adhere to specific structural and liquidity benchmarks.

We have considered the first four top trading partners of each of the ten selected emerging countries on basis of the highest trade operations (import plus export in million dollars). For the entire 12 year period, the total number of events (upgrades and downgrades) by both S&P and Moody's are presented in Table 2 and 3 below. There were a total of 514 events comprising 411 upgrades and 103 downgrades for both domestic currency and foreign currency bonds during the test period.

4. METHODOLOGY

We use two types of studies; pooled panel regression and an event study.

Panel Regression: With the pooled panel, we attempt to capture the impact of changes in sovereign credit ratings on the EMBI spread. We hence consider one lag of the dependent variable because further lags proved to be insignificant.

We consider the following five different equations for the pooled panel with random effect underscored by the Hausman [5] test. The pooled

Table 1: Distribution of Sovereign Credit Rating Changes and Their Main Trade Partners

Own Country Soverign Grade						
	S&P		Moday's		Total	
	Domestic Currency Bond	Foreign Currency Bond	Domestic Currency Bond	Foreign Currency Bond	Domestic Currency Bond	Foreign Currency Bond
Up Grade	23	54	19	0	42	54
Down Grade	16	14	5	0	21	14
Total Event	39	68	24	0	63	68
Main Trading Partners' Soverign Grade						
	S&P		Moday's		Total	
	Domestic Currency Bond	Foreign Currency Bond	Domestic Currency Bond	Foreign Currency Bond	Domestic Currency Bond	Foreign Currency Bond
Up Grade	23	54	19	0	42	54
Down Grade	16	14	5	0	21	14
Total Event	39	68	24	0	63	68
Total	411					
Total Downgrades	103					
Total Events	514					

panel considered are as follows,

$$\Delta Y_{i,t} = \alpha + \delta \Delta Y_{i,t-1} + \beta \Delta R_t + \gamma \Delta i_t^{US} + \mu_{i,t} \quad (1)$$

$\Delta Y_{i,t}$ represents the log change in the EMBI spread of country "i"at time "t",and the error term $\mu_{i,t}$ represents an independently distributed random variable with zero mean and constant variance. Given the characteristics of our data, we use the estimated generalized least squares (EGLS) method with random effect to resolve the heteroscedasticity problem.

ΔR_t represents a change in either the sovereign rating, outlook or credit watch which could be an upgrade or a downgrade at time "t". It may take the value of 1(-1) in case of an upgrade/downgrade, positive or negative credit watch or outlook, and a value of zero otherwise.

Changes in the US interest rates at time "t" is represented by Δi_t^{US} .As stipulated by Kamin and Von Kleist (1999), there are three major routes via which the US interest rate can impact on sovereign risk.

$$\Delta Y_{i,t} = \alpha + \delta \Delta Y_{i,t-1} + \beta^i \Delta R_{i,t}^i + \beta^j \Delta R_{j,t}^j + \gamma \Delta i_t^{US} + \mu_{i,t} \quad (2)$$

Equation 2 is fundamentally similar to equation 1 but differs in that it captures the interesting effect of financial contagion. If there is a change in the rating of either the domestic or foreign currency debt at time "t" in country "i", the variable $\Delta R_{i,t}^i$ captures it by taking the value of 1(-1) for an upgrade/downgrade, otherwise it takes the value of zero if there is no grade change. Likewise the variable $\Delta R_{i,t}^i$ takes in to account any grade change on either foreign or domestic currency debt of the major trade partners [6]. This enables us to capture the spillover effect or the effect of financial contagion caused by the effect of credit rating changes.

$$\Delta Y_{i,t} = \alpha + \delta \Delta Y_{i,t-1} + \beta^{i,dc} \Delta R_{i,t}^{i,dc} + \beta^{i,fc} \Delta R_{i,t}^{i,fc} + \beta^{j,dc} \Delta R_{j,t}^{j,dc} + \beta^{j,fc} \Delta R_{j,t}^{j,fc} + \gamma \Delta i_t^{US} + \mu_{i,t} \quad (3)$$

This equation further expands the preceding equation by separating both foreign (fc) and domestic currency (dc) debts of both the trade partners "j", and the sovereign "i". If rating changes portray relevant information, a priori will be a significant coefficient of the dummies representing any type of bond rating.

$$\Delta Y_{i,t}^{bc} = \alpha + \delta \Delta Y_{i,t-1}^{bc} + \beta^{i,dc} \Delta R_{i,t}^{i,dc} + \beta^{i,fc} \Delta R_{i,t}^{i,fc} + \beta^{j,dc} \Delta R_{i,t}^{j,dc} + \beta^{j,fc} \Delta R_{i,t}^{j,fc} + \gamma \Delta i_t^{US} + \mu_{i,t} \quad (4)$$

$$\Delta Y_{i,t}^{ac} = \alpha + \delta \Delta Y_{i,t-1}^{ac} + \beta^{i,dc} \Delta R_{i,t}^{i,dc} + \beta^{i,fc} \Delta R_{i,t}^{i,fc} + \beta^{j,dc} \Delta R_{i,t}^{j,dc} + \beta^{j,fc} \Delta R_{i,t}^{j,fc} + \gamma \Delta i_t^{US} + \mu_{i,t} \quad (5)$$

Equations 4 and 5 are similar to equation 3 but consider rating changes before (bc) and after (ac) the 2008 financial crisis respectively. This will aid us draw inference on any impact of sovereign rating changes both before and after a major global economic turn down. Even though studies such as those of Herrera and Perry (2000) found that shocks in interest rates result in significant effects on sovereign bonds

during the Asian crisis, they did not consider impact of changes within the vicinity of the crisis. Our study nonetheless accounts for the impact of changes in sovereign ratings prior and post the most devastating recession after the great depression.

Event Studies: The importance of performing an event study in this research is to attempt to untangle and understand the catalytic effect of the changes in the EMBI spread caused by spontaneous or previewed changes in the sovereign credit rating. This may probe some insight on how investors may either anticipate or forecast the effects of sovereign ratings changes, as well as hint us on their reaction to the mix of information that flood the financial market.

In the event study approach, we attempt to analyse the relations between alterations in the changes in EMBI spread as a result of sovereign rating changes. Using a 2 day event window, we consider the changes that take place 10 days prior and after the event, and study how these impacts on the changes in the sovereign risk. Since there is a possibility that sovereign rating changes from both credit rating agencies can be interwoven within the test interval, we extract and analyse only isolated events within this time frame in order to capture the unmixed effect of a change in ratings. This isolation aids to portray the true effect of a sovereign grade change.

It is therefore expected that information between S&P and Moody's are closely related given that they use similar criteria in assigning a grade to a sovereign [7]. It is common knowledge that market operators can anticipate events that may occur in the market given the free availability of information. It is however compelling that asymmetry of information is more prominent in EME's than in industrialized economies thus it will be interesting to understand the periodic effect of changes in sovereign ratings. The periodic effect however, may not be as prominent as the changes in sovereign ratings.

5. EMPIRICAL RESULTS

This section will separately present the results of the panel regression and the event study.

Panel Regression: The results of the panel regression are presented in tables 1 to 4. The first row shows the coefficient of the lagged dependent variable with the standard error of each coefficient. The coefficient of each variable is presented together with its level of significance of either 1,5, or 10 percent level represented by ***,**,and * respectively. The results of equations 1 are presented in Table 2.

Table 2: Empirical Results of Equation One

Equation No. 1 Method: Panel EGLS (Cross-section random effects)		
Dependent Variable	Log change in EMBI Spread	
	Coefficient	Std. Error
First lag of Log change in EMBI Spread	-0.335***	0.006
Log Change in US. Interest rate	-0.220***	0.019
D1 (if change in Domestic or Foreign Currency Bond Rating of Emerging Economies or their Trade Partners)	0.003	0.008
Intercept	-0.002	0.001
Total panel (unbalanced) observations	26869	
R-squared	0.106	
S.E. of regression	0.225	
Prob. (F-statistic)	0	
Durbin-Watson stat	1.818	

For column 1, the coefficient of the lagged dependent variable and that of the US interest rate are all negative and significant at 1% level. The coefficient of the dummy representing any change in sovereign ratings on either the sovereign or its major trade partners is statistically insignificant even at a 10% level.

Table 3 examines the impact of changes in both domestic and foreign currency rating for both the sovereign and its foreign partner's ratings on the

EMBI spreads. The results we find are compelling both statistically and economically in that, changes in domestic and foreign currency ratings of the sovereign on average cause changes of up to 2.4% in the EMBI spread. If there is an upgrade/downgrade, the EMBI spread will fall/rise since an upgrade/downgrade is perceived by investors as less/more risky investments. From the overly simplistic perspective, the higher the risk, the higher the return from investing in risky assets. Hence the higher EMBI spreads are an indication of greater returns gained in compensation for the more risky investments. Changes in the partners' rating are also significant at a 10% level. From equation 5, we see that the first rating change captures the sovereign risk, while a change in the bond ratings (domestic and foreign) of the partners captures the risk of devaluation.

The results of the analysis separately examining changes in foreign and domestic currency debts are found on Table 4.We see that only theforeign currency debts of the sovereign are significant. The sovereign domestic currency debts are seen to be statistically insignificant. Information presented from the credit rating agencies on the riskiness of a country as shown by their sovereign rating accounts for about on average of about 4.9% of changes in the EMBI spread.

The results for the impact of sovereign rating changes on EMBI spreads before and after the 2008 financial crisis are shown on Table 5. There may be reason to believe that the impact of sovereign ratings pre and post the 2008 recession may have a significant impact, thus accounting for rapid sovereign rating changes and investors' perception of the market. This may be plausible since there is plenty of empirical literature suggesting the pro-cyclical behaviour of credit rating agencies i.e. upgrading/downgrading sovereigns during financial booms/recessions respectively. Before the 2008 crisis, only changes in the ratings of foreign currency debts of the sovereign had a significant but small impact on EMBI spreads. We realize that after the crisis, in addition to the changes in foreign currency bond ratings of the sovereign, the domestic currency bonds of the major trade partners are also significant at a 5% level. A possible reason may be the awareness that illuminated the market due to the reckless decisions made by some prominent market participants. Also, most of the major trade partners of these selected EME'sare mostly the largest world economies, which apparently are the most diversified and therefore bore the bruntor the most adverseimpact by the recklessness of Wall Street. Hence there has been increasing awareness and scrutiny of the domestic currency debts of the major trade partners by EME's.

Table 3: Empirical Results of Equation Number Two

Equation No. 2 Method: Panel EGLS (Cross-section random effects)		
Dependent Variable	Log change in EMBI Spread	
	Coefficient	Std. Error
First lag of Log change in EMBI Spread	-0.335***	0.006
Log Change in US. Interest rate	-0.221***	0.020
D1(if change in Domestic or Foreign Currency Bond Rating of Emerging Economies)	-0.024*	0.016
D2 (if change in Domestic or Foreign Currency Bond Rating of Trade Partners of Emerging Economies)	0.017*	0.011
Intercept	-0.002	0.001
Total panel (unbalanced) observations	26869	
R-squared	0.106	
S.E. of regression	0.226	
Prob. (F-statistic)	0.000	
Durbin-Watson stat	1.818	

Table 4: Empirical Results of Equation Number Three

Equation No. 3 Method: Panel EGLS (Cross-section random effects)		
Dependent Variable	Log change in EMBI Spread	
	Coefficient	Std. Error
First lag of Log change in EMBI Spread	-0.335***	0.006
Log Change in US. Interest rate	-0.220***	0.020
D1(if change in Foreign Currency Bond Rating of Emerging Economies)	-0.049**	0.024
D2 (if change in Domestic Currency Bond Rating of Emerging Economies)	0.023	0.026
D3 (if change in Foreign Currency Bond Rating of Trade Partners of Emerging Economies)	0.006	0.016
D4 (if change in Domestic Currency Bond Rating of Trade Partners of Emerging Economies)	0.011	0.015
Intercept	-0.002	0.001
Total panel (unbalanced) observations	26869	
R-squared	0.107	
S.E. of regression	0.226	
Prob.(F-statistic)	0.000	
Durbin-Watson stat	1.818	

Table 5: Panel Study of EMBI Spread Reaction to Sovereign Grade Changes before and After Financial Crises

Equation No. 4 and 5 Method: Panel EGLS (Cross-section random effects)		
Dependent Variable	Log change in EMBI Spread	
	Before 2008	After 2008
First lag of Log change in EMBI Spread	1.000***	1.000***
Log Change in US. Interest rate	-1.002***	-0.997***
D1 (if change in Domestic Currency Bond Rating of Emerging Economies)	0.002	0.001
D2(if change in Foreign Currency Bond Rating of Emerging Economies)	0.002*	0.008**
D3 (if change in Domestic Currency Bond Rating of Trade Partners of Emerging Economies)	-0.001	-0.005**
D4 (if change in Foreign Currency Bond Rating of Trade Partners of Emerging Economies)	0.001	0.002
Intercept	0.001	0.001
Total panel (unbalanced) observations	16443	10890

Event Studies: The event study methodology is used to capture the instantaneous impact of changes in both the selected EME's and their main trade partners' sovereign credit rating on foreign currency debts. An event study is a method used to assess the pro-cyclicality claims about credit rating agencies. We fundamentally investigate the impact of sovereign credit rating changes 10 days before an after a pure event (upgrade or downgrade) occurs and see the impact on the mean daily log changes in the EMBI spreads. For both the EME's and their major trade partners, we separately untangle the total effect of a grade change in to the separate effects of either an upgrade or downgrade. Figure 1 below shows how the EMBI spreads reacts to changes before, during and after the occurrence of an event. The chart shows only changes that occur around the vicinity of the event window i.e. + or – 10days before

and after the event. We level the mean changes in EMBI spreads to 100 on the 10th day prior to the event. The day of the actual event is fixed at day zero.

The total number of pure events was 65 comprising 53 upgrades and 12 downgrades for all the 10 selected EME's. The cumulative mean percentage change in the EMBI spread as shown in Table 6 is insignificant before and on the day of the event when there is grade change in foreign currency bond of emerging economies while it is significant immediately after the change. On the whole as shown on the first column of Table 6(i.e. Overall effect, upgrade & downgrade), there is a significant change in the accumulated mean daily change in the EMBI spread of 17.9% in 10-days period. If the event is an upgrade, the mean accumulated percentage change in EMBI spreads is about 20.31% as shown on column two on Table 6(i.e. effect of upgrade)but not in expected direction while it is about 7.13% (see Table 6; i.e. effect of upgrade)in case the event is a downgrade. Although in case of downgrade the change is in the correct direction, it is not statistically significant.

The effect of changes in sovereign ratings on the main trade partners foreign currency debts on the accumulated percentage change in the EMBI spread are presented on Figure 2. From the event study analysis, the impact of rating changes in the log change in EMBI spreads are apparently more sustained with a longer lasting effect, as seen by a significant change of the EME's foreign currency debts when there is a change in the ratings.

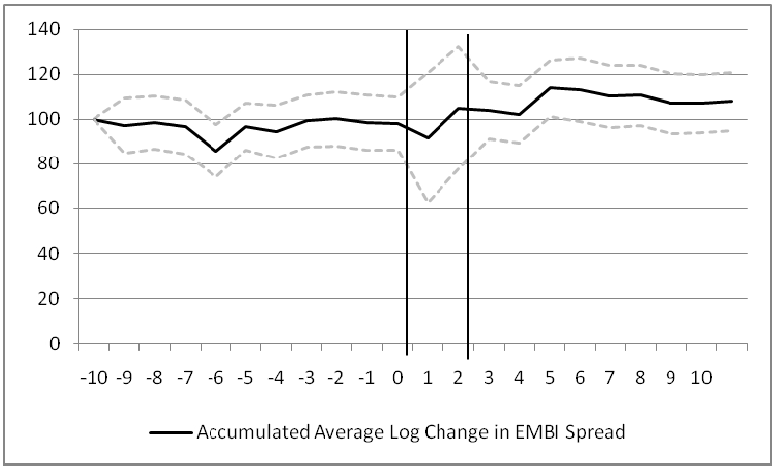

Figure 1: Accumulated Average Log Change in EMBI Spread if Emerging Economies' Foreign Currency Bond Rating Changes.

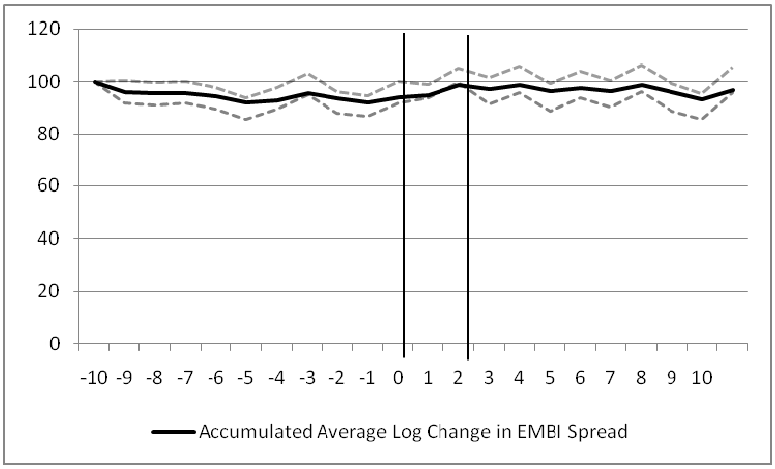

Figure 2: Accumulated Average Log Change in EMBI Spread if Trade Partners' Foreign Currency Bond Rating Changes

Contrary to this finding is the case where there are apparently no significant changes in the log change in EMBI spreads after a grade change for the trade partners' foreign currency debts, we found a significant effect of bond rating change for the trade partners on the selected EME's EMBI spread. (See Table 7).

Table 7: Dynamic Impact of Change in Emerging Countries Foreign Currency Bonds Rating on EMBI Spread

Event Study If There is a Change in Emerging Countries Foreign Currency Bonds Rating							
Number of Upgrade Event	53						
Number of Downgrade Event	12						
Overal Effect (Upgrade&Downgrade)			Effect of Upgrades			Effect Downgrade	
Day To/From Event	Average Daily Log Change in EMBI Spread		Day To/From Event	Average Daily Log Change in EMBI Spread		Day To/From Event	Average Daily Log Change in EMBI Spread
-10	-2,92%		-10	-3,55%		-10	-0,16%
-9	1,52%		-9	3,13%		-9	-5,59%
-8	-2,00%		-8	1,93%		-8	-19,35%
-7	-11,11%		-7	-13,85%		-7	1,03%
-6	12,39%		-6	14,69%		-6	2,25%
-5	-2,03%		-5	-1,82%		-5	-2,97%
-4	4,98%		-4	3,59%		-4	11,10%
-3	0,82%		-3	-1,47%		-3	10,91%
-2	-1,60%		-2	0,85%		-2	-12,42%
-1	-0,46%		-1	-3,48%		-1	12,87%
0	-6,43%		0	-5,15%		0	-12,11%
1	14,48%		1	16,41%		1	5,91%
2	-0,84%		2	-0,73%		2	-1,33%
3	-1,86%		3	-5,25%		3	13,14%
4	11,37%		4	11,74%		4	9,77%
5	-0,62%		5	0,13%		5	-3,91%
6	-2,72%		6	-3,96%		6	2,75%
7	0,51%		7	0,91%		7	-1,22%
8	-3,28%		8	0,24%		8	-18,84%
9	0,00%		9	-4,45%		9	19,67%
10	0,83%		10	5,28%		10	-18,82%
Accumulated Average Percentage Change in EMBI	t-statistic		Accumulated Average Percentage Change in EMBI	t-statistic		Accumulated Average Percentage Change in EMBI	t-statistic
-0,42%	-0,07		0,01%	0,00		-2,32%	-0,22
8,04%	0,54		11,27%	0,74		-6,20%	-0,49
17,88%	2,95		20,31%	2,85		7,13%	0,57

Table 8: Dynamic Impact of change in Emerging Countries' Trade Partners Foreign Currency Bonds Rating on EMBI Spread

Event Study If There is a Change in Emerging Country's Trade Partners Foreign Currency Bonds Rating							
Number of Upgrade Event	124						
Number of Downgrade Event	20						
Overal Effect(Upgrade&Downgrade)			Effect of Upgrades			Effect Downgrade	
Day To/From Event	Average Daily Log		Day To/From Event	Average Daily Log		Day To/From Event	Average Daily Log
-10	-4,11%		-10	-4,93%		-10	0,93%
-9	-0,40%		-9	-0,57%		-9	0,69%
-8	0,20%		-8	0,21%		-8	0,16%
-7	-1,15%		-7	-0,88%		-7	-2,80%
-6	-2,63%		-6	-1,31%		-6	-10,86%
-5	0,77%		-5	1,43%		-5	-3,29%
-4	3,21%		-4	1,92%		-4	11,24%
-3	-2,11%		-3	-2,75%		-3	1,89%
-2	-1,78%		-2	-2,25%		-2	1,09%
-1	1,95%		-1	1,81%		-1	2,86%
0	1,16%		0	1,34%		0	0,11%
1	3,80%		1	4,25%		1	1,05%
2	-1,22%		2	-1,44%		2	0,18%
3	1,63%		3	1,96%		3	-0,40%
4	-2,65%		4	-3,02%		4	-0,37%
5	1,27%		5	1,88%		5	-2,53%
6	-1,31%		6	-1,87%		6	2,19%
7	2,39%		7	2,65%		7	0,73%
8	-2,47%		8	-2,76%		8	-0,69%
9	-3,07%		9	-3,58%		9	0,12%
10	3,90%		10	4,63%		10	-0,61%
-10	-4,11%		-10	-4,93%		-10	0,93%
Accumulated Average Percentage Change in EMBI	t-statistic		Accumulated Average Percentage Change in EMBI	t-statistic		Accumulated Average Percentage Change in EMBI	t-statistic
-6,03%	-2,87		-7,32%	-3,51		1,92%	0,36
4,97%	3,77		5,58%	3,84		1,16%	2,46
2,28%	0,89		2,69%	0,91		-0,32%	-0,27

Therefore as seen on Table 8, an interesting finding here is in the case of any grade change in foreign currency bonds of emerging economies. The main impact of change is realized after the event and it means in this case that rating agencies do not operate pro-cyclically and their announcement do have significant impact on EMBI spread.

6. CONCLUSION

This research investigates the impact of changes in sovereign credit ratings of selected EME's and their major trading partners on the financial market. Our study complements previous studies on the effect of credit ratings on financial markets in emerging markets. We enrich previous literature by using not only an en very recent data, but also by investigating new hypothesis within the vicinity of the most prominent financial meltdown. Using the EMBI Spread as a proxy to quantify the financial strength of the financial market, we find out that not only do changes in sovereign credit rating of the sovereign's domestic currency debts have no significant impact on the EMBI spread, but also no significant impact on the EMBI spread when there are changes in the sovereign credit ratings of its major trading partners (neither domestic nor foreign currency bonds). We nevertheless find that, changes in the foreign currency denominated debts of the sovereign, impact on average to changes in the EMBI spread by about 4.9 per cent. This may be relevant information to possible reactions of financial markets in the event of a change in foreign currency debts and also a pointer to where investors might shift their investments.

Our investigation regarding the impact of sovereign rating changes pre and post the 2008 financial crisis reveals that before the 2008 crisis, changes in the ratings of foreign currency debts of the sovereign had only a minimal impact on EMBI spreads. Nevertheless, after the crisis, we found a significant effect of rating changes on the domestic currency bonds. The 2008 crisis exposed the recklessness of some major market participants thus bringing greater awareness to investors to aid then make more informed investment decisions.

There has been increasing awareness and scrutiny of the domestic currency debts of the major trade partners by EME's given that the largest trade partners were the large economies who bore the heaviest losses due to the recession.

The contemporaneous effect of changes in sovereign credit ratings on the financial market was captured by the event study, which basically settled down on the following key findings. The results show that the occurrence on any clean event (upgrade/downgrade) significantly affects the financial market in the days immediately following the announcement. There is a significant change in the accumulated mean daily change in the EMBI spread of 17.9% in a 10-day period. In the event of an upgrade, the mean accumulated percentage change in EMBI spreads is about 20.31% but not in expected direction while it is about 7.13% in case the event is a downgrade. Although in case of downgrade the change is in the correct direction, it is nevertheless statistically insignificant. Contrary to this finding is the case where there are apparently no significant changes in the log change in EMBI spreads after a grade change for the trade partners' foreign currency debts, we found a significant effect of bond rating change for the trade partners on the selected EME's EMBI spread. We also realize from the analysis that contrary to the results of some researchers, announcements made by credit rating agencies do not act in a pro-cyclical manner. This is due to no significant effect caused by sovereign rating changes on the average accumulated percentage change in the EMBI spread before an event occurs.

END NOTES

[1] Another example of financial contagion is the Russian default which affected both developed and developing countries. Contagion here is used to describe the cross-country spill over effect irrespective of the nature of the shock.

[2] Brady Bonds are bonds issued by governments of emerging market countries and are considered one of the most liquid securities denominated in US dollar traded internationally. JP Morgan also produces EMBI+ which is not only made up of Brady Bonds but also other marketable securities. They transmit an accurate indication for emerge market bonds.

[3] The interest rate considered in this case is the federal funds rate.

[4] We compute the changes in the EMBI spread by taking the daily difference between the EMBI and the US interest rate. This is a provision adopted to foster consistency in the analysis in order to effectively measure the changes in the returns on both the domestic and foreign currency debts of the sovereign and its major trade partners.

[5] Correlated Random Effects-Hausman Test

Equation No.	Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
1	Cross-section random	0.000000	3	1.0000
2	Cross-section random	0.686580	4	0.9530
3	Cross-section random	1.614415	6	0.9515
4	Cross-section random	10.193491	6	0.1167
5	Cross-section random	0.000000	6	1.0000

[6] Country "j" represents any foreign country or alternatively any of the four major trading partners of any of the 10 selected EME's. Country "i" on the other hand stands for the sovereign, or any of the 10 selected EME's

[7] In their study on the statistical properties of Sovereign credit rating, they found that sovereign rating changes between S&P and Moody's are correlated and that approximately 30% of this can be seen over the next semester.(Juan J. Cruces,2001)

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