

# Do stock markets react to the re-rating of sovereign risk?

Rating agencies provide the market report cards on which investment decisions are made. **ROBERT BROOKS, ROBERT FAFF, DAVID HILLIER** and **JOSEPH HILLIER** take a look at the impact of rating sovereign risk.

**ROBERT BROOKS**  
Research  
Development Unit,  
RMIT Business,  
RMIT University.

**ROBERT W. FAFF**  
Department of  
Accounting and  
Finance, Monash  
University.

**DAVID HILLIER**  
Department of  
Accounting and  
Finance, University  
of Strathclyde.

**JOSEPH HILLIER**  
Department of  
Finance and  
Accounting,  
Glasgow  
Caledonian  
University.

**D**o stock markets react to the re-rating of sovereign risk? We view this as a companion question to that posed by Erb, Harvey and Viskanta (1996, p.29) when they opened their article by asking: “What is country risk, and how should it affect global investment strategies?” In this vein, our question could be slightly re-phrased: “Given that sovereign ratings is one important measure of country risk, when a re-rating takes place, how does it affect global investors?” The fact that there are four key players in the sovereign rating agency market—Standard & Poor’s (S&P), Moody’s, Fitch and Thomson—suggests that the sovereign ratings industry is important.

While our focus is on S&P re-ratings due to the fact that this agency provides both local currency (LC) and foreign currency (FC) ratings, we investigate whether re-ratings announced by these agencies induce a differential equity market impact. Our analysis also differentiates between: upgrade and downgrade re-ratings; and ‘leading’ and ‘following’ re-ratings.

There is a well-developed literature which suggests that individual company bond rating upgrades have no impact on the bond and stock markets. Studies that support this conclusion include Barron, Clare and Thomas, 1997; Ederington and Goh, 1998; Goh and Ederington, 1993, 1999; Griffin and Sanvicente, 1982; and Holthausen and Leftwich, 1986.

In contrast, Ederington and Goh, 1998 and others have found that a counterpart ratings downgrade is generally associated with significant negative market impact. Notably, this literature is currently silent on the market reaction to the sovereign re-rating event.

With the inevitable globalisation of markets, investors—and particularly managed funds—are increasingly focused on international diversification. The formation of international portfolios requires a range of fundamental inputs into the asset allocation decision. In the case of more active investment strategies, there are major information events that may affect the top-down choice of the basic allocation of funds to different regions and national markets.

The change of sovereign ratings is one such key event that may trigger substantial re-weighting of international portfolios. Specifically, does it matter if S&P announces an LC or an FC re-rating? Does it matter whether there is a sovereign rating upgrade or a rating downgrade? Does it matter whether it is S&P or Moody’s or Fitch or Thomson that re-rates a country’s sovereign risk? Does it matter whether it is a ‘leading’ or a ‘following’ re-rating event?

## *Experiment design*

Our analysis investigates the own-market impact of sovereign re-rating on aggregate stock market returns of countries between January 1973 and July 2001. Re-ratings made by S&P,

TABLE 1 A COMPARISON OF RATING AGENCIES' CREDIT RATING MEASURES

Consolidated Rating Number	Moody's	S&P	Fitch/BCA	TBW
1 (Highest Credit Rating)	Aaa	AAA	AAA	AAA
2	Aa1	AA+	AA+	AA+
3	Aa2	AA	AA	AA
4	Aa3	AA-	AA-	AA-
5	A1	A+	A+	A+
6	A2	A	A	A
7	A3	A-	A-	A-
8	Baa1	BBB+	BBB+	BBB+
9	Baa2	BBB	BBB	BBB
10	Baa3	BBB-	BBB-	BBB-
11	Ba1	BB+	BB+	BB+
12	Ba2	BB	BB	BB
13	Ba3	BB-	BB-	BB-
14	B1	B+	B+	B+
15	B2	B	B	B
16	B3	B-	B-	B-
17	Caa1	CCC+	CCC	CCC
18	Caa2	CCC	CC	CC
19	Caa3	CCC-	C	D
20	Ca	CC	DDD	
20	C	SD	DD	
20 (Lowest Credit Rating)		D	D	

TABLE 2 S&P LONG-TERM ISSUER CREDIT RATINGS

Rating	Definition
AAA	EXTREMELY STRONG capacity to meet financial commitments
AA	VERY STRONG capacity to meet financial commitments—differs from AAA 'only in small degree'
A	STRONG capacity to meet financial commitments—more susceptible to adverse effects of changes in circumstances and economic conditions
BBB	ADEQUATE capacity to meet financial commitments
BB	LESS VULNERABLE in the near term than other lower-rated obligors. It faces major ongoing uncertainties and exposure to adverse business, financial and economic conditions which <i>could lead</i> to it having an <i>inadequate</i> capacity to meet its financial commitments
B	MORE VULNERABLE than BB-rated obligors. Adverse conditions <i>will likely impair</i> its capacity or willingness to meet its financial commitments
CCC	CURRENTLY VULNERABLE—dependent on favorable conditions to meet financial commitments
CC	CURRENTLY HIGHLY VULNERABLE
+ / -	Modifies 'AA' to 'CCC' to show relative standing within major rating categories

Notes: The information contained in this table is a summary of the material provided by S&P on its website at [www.standardandpoors.com](http://www.standardandpoors.com)

All categories rated BB and below are regarded as having significant 'speculative' characteristics.

Moody's, Fitch and Thomson are analysed.

A credit rating represents an assessment of the overall creditworthiness of an obligor in terms of both its capacity and willingness to meet its financial commitments as they fall due.

Accordingly, rating agencies provide an evaluation of a country's creditworthiness and assign a rating to that country. Although the individual agencies' ratings are measured on different scales, there are very broad similarities between them. Table 1 presents the rating scales used by each rating agency. Table 2 provides a summary description of each of the S&P ratings categories. For example, the main set of S&P long-term ratings range from the highest level of 'AAA' (Extremely strong) down to 'CC' (Currently highly vulnerable). S&P provides us with the unique research opportunity of investigating both long-term foreign currency (FC) and local currency (LC) issuer credit re-rating effects. The other agencies only provide foreign currency ratings.

Table 3 presents some basic features of the S&P credit re-ratings sample. First, we see that the largest FC upgrade (downgrade) is five grades from 'CC' to 'B-' for Pakistan in December 1999 (four grades from 'BBB-' to 'B+' for Korea in December 1997). Second, the maximum number of separate FC ratings upgrades over our sampling period is three—shared by Israel, Portugal, Korea, Malaysia and Hungary. In contrast, the maximum number of separate FC ratings downgrades over our sampling period is six for Indonesia. Third, we see that the largest LC upgrade (downgrade) is two notches from 'BBB-' to 'BBB+' for Korea in February 1998 (four notches for Indonesia, Portugal and Romania during 1998). Finally, the maximum number of separate LC ratings upgrades (downgrades) over our sampling period is three by Korea (six for Indonesia).

Figure 1 graphically presents a summary of the re-rating activity across the four agencies. From the figure we see a number of key features. First, we see that the total number of upgrades and downgrades are approximately equal in our sample. Second, Moody's

TABLE 3 SOME FEATURES OF THE S&P SOVEREIGN RATING CHANGE SAMPLE

Upgrades		Downgrades		
Date	Details	Date	Details	
<i>Foreign Currency Rating Changes</i>				
Largest single change	21.12.99	Pakistan: CC to B-	22.12.97	Korea: BBB- to B+
Maximum number of single changes	-	THREE: Israel; Portugal; Korea; Malaysia; Hungary	-	SIX: Indonesia
<i>Local Currency Rating Changes</i>				
Largest single change	18.02.98	Korea: BBB- to BBB+	27.01.98 6.05.98 19.10.98	Indonesia: BBB to BB- Portugal: AAA to AA- Romania: BBB- to B+
Maximum number of single changes	-	THREE: Korea	-	SIX: Indonesia

has produced the most re-ratings— notwithstanding the fact that it is only the second oldest agency. Third, despite its relative youth, Fitch alone provides a sample in excess of 100 re-ratings.

An issue of some interest in this multiple agency setting relates to the question of whether a particular agency tends to 'lead' ('follow') the other agencies' activity on changing

sovereign ratings. Figure 2 sheds light on this question by displaying the number of cases in which an agency 'leads' the others (i.e. there were no other rating changes for a given country by any agency in the previous six months) and the number of cases in which an agency 'follows' the others (i.e. there was at least one other rating change for a given country by any

agency in the previous six months). The figure reveals that S&P tends to 'lead' the other agencies with 107 out of its 171 re-ratings (62.5%) being 'first move' re-ratings. Conversely, Moody's tends to be a 'follower' with 111 out of its 200 re-ratings (55.5%) being 'following' cases.

We obtained from Datastream International daily and weekly market returns in \$US for those countries which experienced a re-rating event. In addition, the Morgan Stanley World Index is used as the proxy for the world market portfolio. We conducted a conventional event study experiment based on a market model regression. For example, in the case of the weekly data analysis, the market model parameters are generated from a 50-week estimation period beginning 59 weeks through 9 weeks before the sovereign re-rating date. The event window reported is from  $t = -8$  to  $t = +12$  weeks around the re-rating event at  $t = 0$ .

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Table 4 succinctly reports the outcome of our weekly event study analysis focusing on S&P re-ratings. The associated plots of the FC sample

TABLE 4: WEEKLY ABNORMAL RETURN IMPACT OF SOVEREIGN RATING CHANGE

Period	Rating Upgrade Sample		Rating Downgrade Sample	
	Abnormal Return (%)	t-statistic	Abnormal Return (%)	t-statistic
<i>Foreign Currency Rating Change Sample</i>				
week -8 to week 0	+4.78	-0.61	-30.36	-6.02*
week -1 to week 0	+0.38	2.08*	-10.42	-2.50*
week 0	-0.41	1.21	-7.36	-5.85*
week +1 to week +12	+1.67	0.88	+3.87	0.66
week -8 to week +12	+6.45	0.19	-26.49	-0.21
<i>Local Currency Rating Change Sample</i>				
week -8 to week 0	+9.76	0.31	-23.63	-5.09*
week -1 to week 0	-0.10	0.39	-7.50	-0.97
week 0	+0.55	0.19	-6.30	-4.29*
week +1 to week +12	+1.25	0.48	+4.58	0.64
week -8 to week +12	+11.01	-0.63	-19.05	-0.73

Notes: Abnormal returns are generated using a standard event study methodology where the market model is used to determine the expected return. Market model parameters are generated from a 50-week estimation period beginning 59 weeks through 9 weeks before the sovereign rating change.

\*5% level of significance.

cumulative abnormal returns (CARs) are displayed in Figure 3, while plots of the LC sample CARs are displayed in Figure 4. In addition, daily analysis of the potential short-term impact from 10 days before to 10 days after the re-rating event is shown in Figures 5 and 6 for the FC and LC cases, respectively.

**FC rating upgrades have little market impact**

The results for the FC rating upgrade portion of our sample are presented on the left-hand-side of the upper panel of Table 4. In general, while we find no evidence of any significant abnormal returns for this group (the CAR plots for the FC upgrade re-rating sample in Figures 3 and 5 display a somewhat flat

shape), a few points can be briefly noted.

First, while we see that the (week -8 to week 0) impact of FC upgrades is positive at 4.78%, it is statistically insignificant.

Second, negligible price reaction is detected around the event date. Both the two-week window (week -1 to week 0) and the event week (week 0) itself show insignificant abnormal returns of +0.38% and -0.41%, respectively.

Third, in unreported results we find that the daily reaction in the 20 days centred on the upgrade re-rating event is statistically insignificant.

Fourth, consistent with market efficiency, the FC rating upgrades show little market impact in the 12 weeks subsequent to week 0.

**FC rating downgrades reveal a negative market impact**

The results for the FC rating downgrade portion of our sample are presented on the right-hand-side of the upper panel of Table 4.

In general, we find some evidence of significant abnormal returns for this group and several observations are worthy of note. First, we see that the (week -8 to week 0) impact of FC downgrades is statistically negative at -30.36%.

This suggests that to some extent the market anticipates the downgrade—and/or that the rating agency is tardy with its rating re-assessment. Second, while the price reaction detected around the event date is much more modest—the two-week window (week -1 to week 0) and the event week (week 0) itself show abnormal returns of -10.42% and -7.36% respectively, they are still considerably large in economic terms.

Third, once again consistent with market efficiency, the FC rating downgrades show little market impact in the 12 weeks subsequent to week 0.

Finally, we note the CAR plot for the downgrade re-rating sample (Figure 3) displays a steady decline to around week +5, before levelling off to a relatively flat trend.

The daily FC downgrade analysis, as reflected in Figure 5, shows a detectable decline on the event date—the decline measuring about 2%, which is also found to be statistically significant from zero. All other days in the 20-day period centred on the FC downgrade event are statistically insignificant.

**LC rating upgrades have little market impact**

The results for the LC rating upgrade portion of our sample are presented on the left-hand-side of the lower panel of Table 4. In general, we find a very similar outcome to the counterpart case of the FC upgrades as discussed above—namely, we find no evidence of any significant abnormal returns for this group. Again, in Figure 4 (Figure 6), the weekly (daily) CAR plots for the LC upgrade re-rating sample display a somewhat flat shape—as such, no further comment is necessary.

TABLE 5 MARKET REACTION TO LEADING AND FOLLOWING FOREIGN CURRENCY SOVEREIGN RATING DOWNGRADES BY AGENCY

	CAR <sub>t-10:t-1</sub>	AAR <sub>t=0:t+1</sub>	CAR <sub>t+2:t+10</sub>
<i>'Leading' Downgrade Sample</i>			
Moody's	0.0220 (0.67)	-0.0184 (-1.53)	0.0009 (0.03)
Standard & Poor's	0.0005 (0.02)	-0.0263** (-2.06)	-0.0016 (-0.07)
Fitch IBCA	-0.0379* (-1.99)	-0.0330 (-1.83)*	0.0008 (0.03)
Thomson	0.0345 (1.92)*	0.0073 (0.78)	0.0034 (0.16)
<i>'Following' Downgrade Sample</i>			
Moody's	-0.0374 (-1.33)	-0.0039 (0.34)	-0.0500 (-1.32)
Standard & Poor's	-0.0010 (-0.03)	-0.0205* (-1.94)	0.0257 (0.84)
Fitch IBCA	-0.0757 (-1.08)	-0.0787* (-1.90)	0.0940 (0.98)
Thomson	-0.0980** (-2.38)	0.0104 (0.49)	0.0078 (0.15)

Notes: The upper panel reports the market reaction to 'leading' FC downgrades across agencies, whereby a 'leading' re-rating is one in which there has been no other rating change for the same country by any agency in the six months prior to announcement. The lower panel reports the market reaction to the 'following' sample of FC downgrades across agencies, whereby a 'following' re-rating is one in which the downgrade follows a rating change for the same country by any agency in the six months prior to announcement. Selected average abnormal returns (AAR) and cumulative abnormal returns (CAR) are reported as indicative measures of the own-market reaction to foreign currency rating downgrades and AAR and CAR are generated using a standard event study methodology. Market model parameters are generated from a 100-day estimation period beginning 120 days through 21 days before the sovereign re-rating. All returns are denominated in US dollars. The column headed CAR<sub>t-10:t-1</sub> contains the cumulative abnormal return measured over the 10-day pre-event window t-10 to t-1. The column headed AAR<sub>t=0:t+1</sub> contains the average abnormal return on the event day (0). The column headed CAR<sub>t+1:t+10</sub> contains the cumulative abnormal return measured over the 10-day post-event window t+1 to t+10.

\* 10% level of significance.  
\*\* 5% level of significance.

FIGURE 1 SOVEREIGN RE-RATING SUMMARY ACROSS FOUR AGENCIES

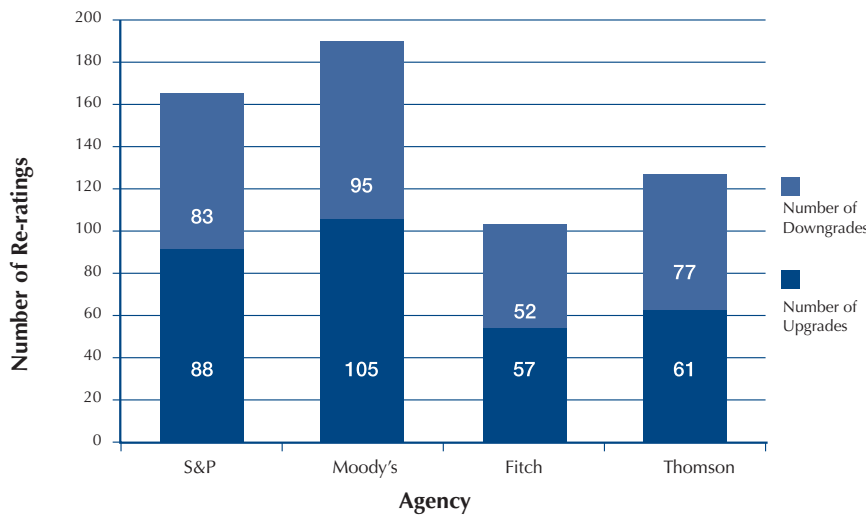
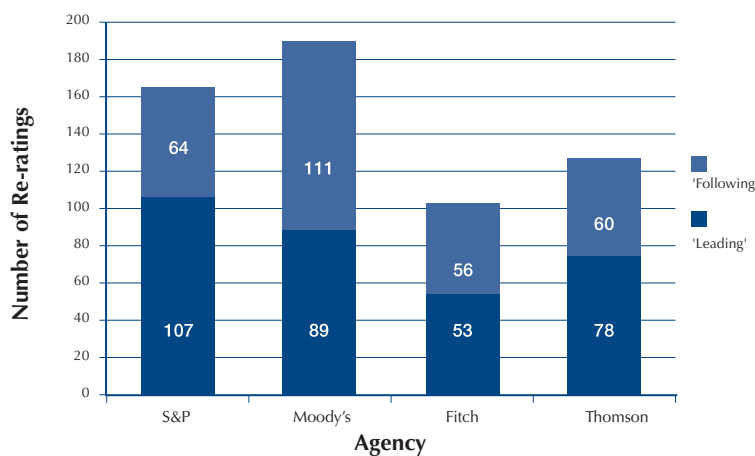
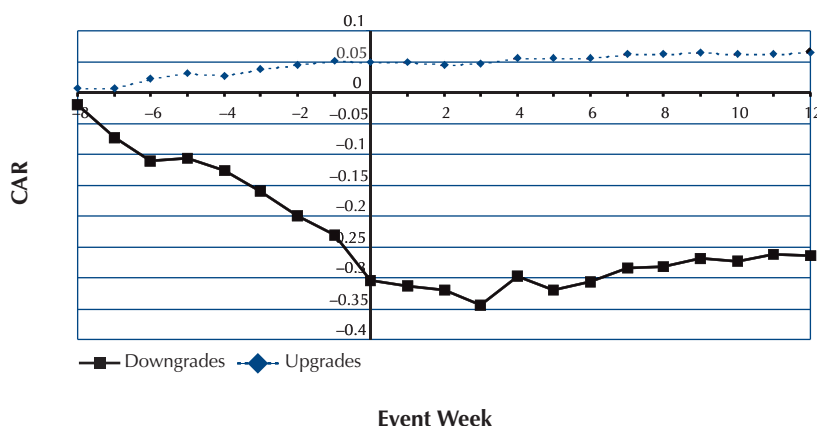


FIGURE 2 SUMMARY OF LEADING/FOLLOWING RE-RATINGS



Note: 'Leading' re-rating – there has been no other rating change for the same country by any agency in the six months prior to announcement. 'Following' re-rating – rating change announcement follows an announcement of a rating change for the same country in the previous six months.

FIGURE 3 WEEKLY MARKET REACTION TO S&P FOREIGN CURRENCY SOVEREIGN RE-RATINGS



**LC rating downgrades reveal a negative market impact**

The results for the LC rating downgrade portion of our sample are presented on the right-hand-side of the lower panel of Table 4. In general, we find a very similar outcome to the counterpart case of the FC downgrades as discussed above—namely, there is some evidence of abnormal returns for this group centred on the event week. Again, in Figure 4 we see that the CAR plot for the downgrade re-rating sample displays a steady decline in the weeks leading up to the re-rating event, before levelling off to a relatively flat trend.

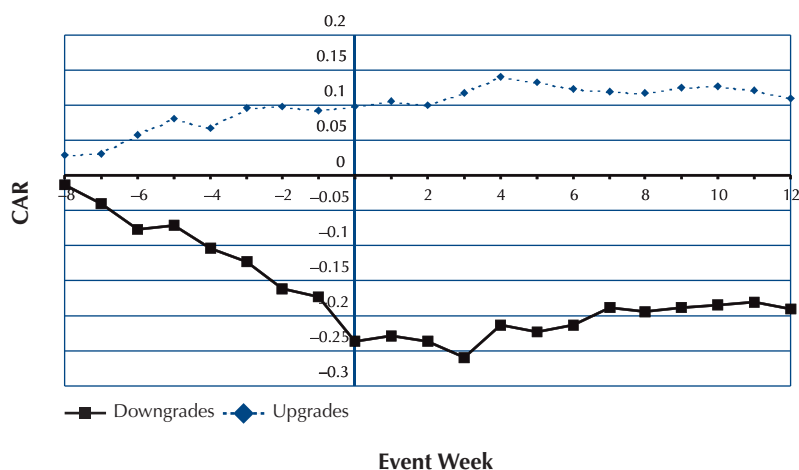
Interestingly, while the daily plot shows a detectable negative trend over the several days leading up to the LC downgrade event (in unreported results), statistical tests struggle to show a significant impact at anything more than the 10% level.

**Ratings downgrades by different agencies reveal a differential market impact**

Our findings suggest that there is an unequal market reaction to sovereign ratings downgrades by different agencies. Specifically in unreported results, we find that only S&P (-2.24% two day decline,  $t=0: t+1$ ) and Fitch (-6.50% two day decline,  $t=0: t+1$ ) are associated with significant (negative) market reactions surrounding the ratings downgrade event date. Interestingly, the 10-day ( $t=-10: t-1$ ) pre-event date impact associated with Thomson re-ratings is estimated at almost -9% and significantly negative, which may suggest that this agency tends to hold off announcing a downgrade until after the market has in essence given its 'verdict'. In the days following a ratings downgrade, there are no significant abnormal returns associated with any agency ratings change.

As stated above, an issue of some interest in this multiple agency setting relates to the question of whether a particular agency tends to lead (follow) the other agencies activity on changing sovereign ratings. Does this affect the estimated impact of re-ratings announcements? To help answer this question, the upper panel of Table 5 reports the market reaction to 'leading' FC downgrades across agencies,

FIGURE 4 WEEKLY MARKET REACTION TO S&P LOCAL CURRENCY SOVEREIGN RE-RATINGS



whereby a ‘leading’ re-rating is one in which there has been no other rating change for the same country by any agency in the six months prior to announcement. The table reveals that the two-day event period impact ( $t=0$ :  $t+1$ ) remains negative for both S&P (-2.63%) and Fitch (-3.30%), although the latter is now only significant at the 10% level.

Similarly, the lower panel of the table reveals that for the ‘following’ downgrade sample, it is still S&P and Fitch that dominate market reactions. Hence, in terms of predicting the market impact, it appears inconsequential as to whether the re-rating is a ‘leading’ or a ‘following’ event.

CONCLUSIONS

In this article we investigate the aggregate market impact of sovereign rating changes. Specifically, we analyse re-ratings announced by four specialist ratings agencies: Standard & Poor’s, Moody’s, Fitch and Thomson, and our sample includes those countries experiencing long-term foreign and local currency issuer credit re-rating during the period 1973 to 2001.

We conduct an event study analysis and a summary of our findings is as follows. First, we found that neither foreign currency (FC) nor local currency (LC) rating upgrades produce any detectable market reaction. Second, and in contrast to the above, both FC and LC rating downgrades tend to be associated with an overall reduction in own-market equity value. Third, the negative reaction to downgrades is most pronounced in the case of S&P and Fitch re-ratings. Finally, we found that whether the re-rating is a ‘leading’ (first re-rating event for a given country over a six-month period) or a ‘following’ rating, change does not seem to matter—the negative market impact to downgrades by S&P and Fitch appears robust to this distinction.

So finally what is the important message that comes from this study? Over our sample period, if you were an international equity investor you would have done well to take note of imminent downgrade re-ratings events—particularly if it were likely that S&P or Fitch were the agency making the

FIGURE 5 DAILY MARKET REACTION TO S&P FOREIGN CURRENCY SOVEREIGN RE-RATINGS

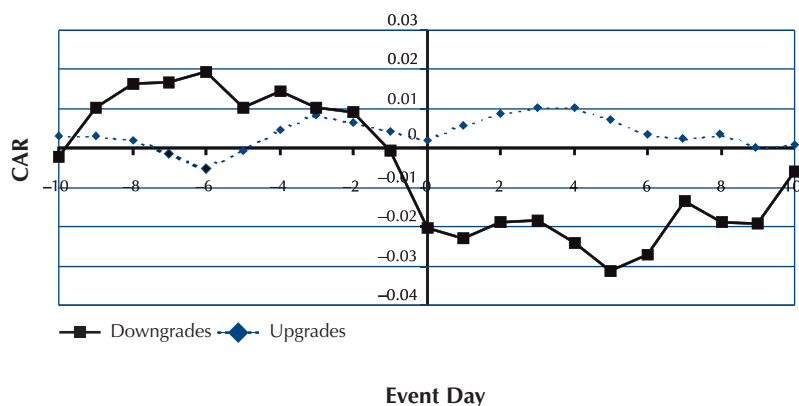
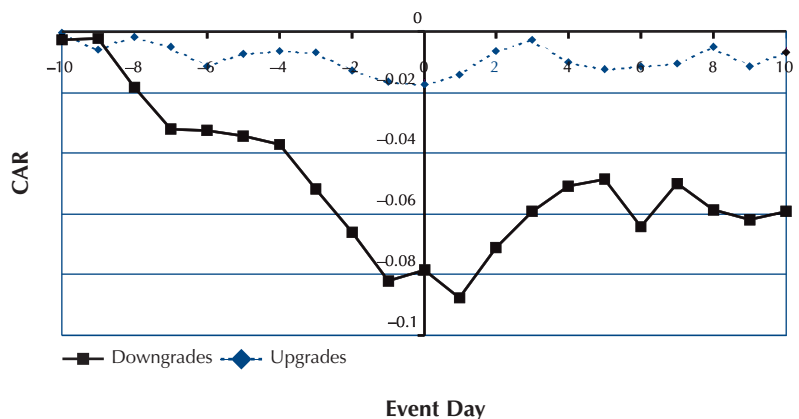


FIGURE 6 DAILY MARKET REACTION TO S&P LOCAL CURRENCY SOVEREIGN RE-RATINGS



call. You would have gained little from caring about trying to distinguish FC or LC re-ratings or from caring whether a 'leading' or a 'following' re-rating announcement was about to take place. Will such 'lessons' hold up in the future? Only time will tell.

**REFERENCES**

Barron, M J., Clare, A D. and Thomas, S H., (1997), The effect of bond rating changes and new ratings on UK stock returns, *Journal of Business Finance and Accounting* 24, pp. 497-509.

Brooks, R., Faff, R., Hillier, D. and Hillier, J., (forthcoming), The national market impact of sovereign rating changes, not yet published in *Journal of Banking and Finance*.

Ederington L H. and Goh J C., (1998), Bond rating agencies and stock analysts: who knows what when?, *Journal of Financial and Quantitative Analysis* 33, pp. 569-85.

Erb, C B , Harvey, C. and Viskanta, T., (1996), Political risk, economic risk and financial risk, *Financial Analysts Journal*, 52, pp. 28-46.

Foss, G W., (1995), Quantifying risk in the corporate bond markets, *Financial Analysts Journal* 51, pp. 29-34.

Goh, J C. and Ederington L H., (1993), Is a bond rating downgrade bad news, good news, or no news for stockholders?, *Journal of Finance* 48, pp. 2001-2008.

Goh, J C. and Ederington, L H., (1999), Cross-sectional variation in the stock market reaction to bond rating changes, *Quarterly Review of Economics and Finance* 39, pp. 101-112.

Griffin, P A. and Sanvicente, A Z., (1982), Common stock returns and rating changes: a methodological comparison, *Journal of Finance* 37, pp. 103-119.

Hite, G. and Warga, A., (1997), The effect of bond-rating changes on bond price performance, *Financial Analysts Journal* 53, pp. 35-51.

Holthausen, R W. and Leftwich, R W., (1986), The effect of bond rating changes on common stock prices, *Journal of Financial Economics* 17, pp. 57-89.

Impson C M., Karafiath, I. and Glascock, J., (1992), Testing beta stationarity across bond rating changes, *Financial Review* 27, pp. 607-18.

Matolcsy, Z P and Lianto, T., (1995), The incremental information content of bond rating revisions: the Australian evidence, *Journal of Banking and Finance* 19, pp. 891-902.

Wansley, J W, Glascock, J L and Clauretje, T M., (1992), Institutional bond pricing and information arrival: the case of bond rating changes, *Journal of Business Finance and Accounting* 19, pp. 733-50. J

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