Equity Investment by Global Funds: Return and Sovereign Risk

Christoforos Andreou[a], Neophytos Lambertides[a] and Andreas Savvides[a*]

[a] *Cyprus University of Technology*

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Abstract

We examine the rate of return earned by global funds on equity investment in emerging markets (EMs) particularly the role played by sovereign credit risk. Changes in sovereign credit ratings by global agencies influence excess (over risk free rate) returns earned by foreign investors: lower excess returns are associated with lower risk. The effect of credit upgrades and downgrades, however, is not symmetric. Information contained in credit outlook or credit watch announcements does not seem to influence excess returns. When it comes to abnormal (risk-adjusted) returns, foreign investors treat the information contained in credit ratings differently from that in outlook/watch announcements. The differing effect of these announcements is not evident for risk-adjusted returns for the broad stock market index. There is evidence, however, that the behaviour of foreign investors influences significantly risk-adjusted returns in EM stock markets.

Keywords: Foreign investors, equity return, sovereign risk

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[a] Department of Commerce Finance and Shipping, Cyprus University of Technology, P.O. Box 50329, 30 Archbishop Kyprianou St., Limassol 3603, Cyprus.

* Corresponding author: Andreas Savvides, Department of Financial Economics and Shipping, Cyprus University of Technology, P.O. Box 50329, 30 Archbishop Kyprianou St., Limassol 3603, Cyprus, tel.: +357 25002544, Email: andreas.savvides@cut.ac.cy

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1. Introduction

During the 1990s many emerging markets (EMs) embarked on programs of financial liberalization, especially the opening of stock markets to foreign investment. This has led foreign investors to add EM stocks to their portfolios, providing portfolio exposure to these economies as part of strategies aimed at diversification. A substantial literature has developed on the consequences of liberalization for stock market returns in EMs and the factors that drive international portfolio capital flows to these economies.[1] There is, however, very little study of the performance of foreign equity investors in EMs. The purpose of this paper is to study the return earned by global investment funds on their equity investments in emerging economies. We examine the factors that have played an important role in the returns earned by global funds in EMs, paying special attention to the impact of sovereign credit rating announcements on the return of foreign equity portfolio holdings. Sovereign credit ratings are considered an important determinant of access by EMs to international capital markets (Reinhart, 2002) because they are one of the sources of information that foreign investors can use to assess the level of riskiness in EMs.

The performance of stock markets in EMs and their comparison to stock markets of developed countries has been thoroughly examined in the literature (e.g. Diamonte *et al.*, 1996; Fama and French, 1998; Griffin *et al.*, 2010). What has received little attention is the performance of foreign equity investment in EMs. In this study, we use a proprietary dataset compiled by *EPFR Global* to study the factors

[1] Studies include, *inter alia*, Bekaert and Harvey (2000), Edison and Warnock (2008) and Thapa and Poshakwale (2012). The literature is discussed in greater detail in the next section.

behind the aggregate rate of return earned by global investment funds in EMs during 1998-2013. Figure 1 shows the MSCI Emerging Market (EM) and Developed Market (DM) total return index during 1999-2013 (rebased to January 1999). The figure shows that stock markets in EMs have outperformed those of DMs during this period: while the MSCI DM index doubled it increased fivefold in MSCI EMs. The outperformance of DM stock markets by EMs has been well documented. Figure 1 also presents an index of the performance of global investment funds in EMs (Fund Index) during this period.[2] The figure shows that global investment funds have outperformed the MSCI EM index during this period. Our study focuses on the return by global funds and looks into the factors behind the outperformance of the stock market indexes, particularly the role played by sovereign credit risk.

Figure 2 shows the annual rate of return earned by global investment funds in sixteen EMs (left axis) and the amount of net foreign equity capital invested in the same EMs by global funds (right axis). The rate of return has generally been positive, with notable exceptions during the early years of the opening of EM stock markets (2000-02) and the height of the global financial crisis (GFC). The figure also shows that, starting from low levels in the early 2000s, equity capital flows to EMs increased continuously to reach $10bn by 2006. While there was a small net outflow during the early stages of the GFC in 2008, flows rebounded in 2009-10 to reach $20bn in 2009. As many commentators have argued, while investors shunned DMs in the early phases of the GFC, EMs were increasingly seen as attractive destinations due to the perception of strong fundamentals and the "decoupling" hypothesis: the economic fate

[2] We computed the global fund return index with monthly data on the aggregate rate of return earned by global investment funds in 16 EMs. The data used in the calculation of this index are described in Section 3.

of EMs came to be seen as differing from that of DMs. Net capital flows turned negative in 2011 and especially 2013 as the first signs of the reversal of quantitative easing policies especially in the US ("taper tantrum") appeared.

This paper makes several contributions. First, to the best of our knowledge, this is the first paper to offer a systematic study of the sovereign risk along with other factors shaping the performance of global investment funds in EMs. By studying the determinants of the rate of return, it provides an assessment of the factors behind portfolio investment decisions by global investors in EMs. Second, by investigating the role of sovereign credit ratings, it contributes to our understanding of the informational role of announcements by credit rating agencies in international capital markets. To achieve this objective we employ several methodologies comprising event study, panel regressions and two-stage asset pricing models. Event studies are mainly used to examine the impact of credit rating announcements (credit ratings and credit outlooks) on investors' and stock market returns.[3] They show a strong relation between credit rating announcements and foreign investors returns, consistent with studies on the relation between bond ratings and stock returns (e.g. Odders-White and Ready, 2006; Almeida *et al.*, 2017). The results from the event methodology are supported by panel estimates of the determinants of investors' rate of return. The panel regression results show that a credit-rating upgrade is associated with lower excess (over risk-free rate) returns for foreign investors, consistent with the fundamental risk-return relationship in finance. On the other hand, changes in credit outlook are unrelated to investors' returns. Third, we study abnormal (risk-adjusted)

[3] According to S&P, credit outlook is an assessment of "the potential direction of a long-term rating over the intermediate term (typically six months to two years)". Credit outlook can be positive, negative or stable

returns both for foreign investors and for stock markets in EMs. We follow a two-stage asset pricing procedure. In the first-stage, three global asset pricing models (single-, three- and five-factor models) are estimated using the global risk factors of Fama and French (1993, 2012 and 2015) to obtain risk-adjusted returns both for investors and stock markets. In the second stage we estimate the determinants of risk-adjusted returns. We find that the informational content of credit rating announcements (upgrade or downgrade) differs from that of announcements of credit outlook (positive or negative). This result holds for the risk-adjusted returns of investors but not for those of stock markets. We attribute this finding to differences in behavior and level of sophistication between foreign and domestic stock market participants in EMs. Finally, our study examines the role of foreign equity flows by global funds on the rate of return. We find evidence of "return chasing", i.e. investment flows to countries where investors anticipate higher risk-adjusted returns.

The following section provides a brief review of the literature on stock returns and sovereign credit ratings in EMs. Section 3 describes the data and measurement of variables. The following section outlines panel estimation results of the determinants of investors' excess returns and the relationship to sovereign credit ratings. Section 5 investigates the abnormal (risk-adjusted) return of foreign investors and for stock markets in EMs. The last section concludes.

2. Background Literature

When constructing their portfolio, international investors seek to maximize their return/risk tradeoff. Given the level of risk, investors tend to raise their investment in markets that are expected to provide higher returns and retreat from markets where expected returns are low (Bohn and Tesar, 1996). EMs have come to

constitute an important component of international portfolios. International investors consider a number of factors or risks that may influence portfolio allocation across markets such as stock market development, stock market liquidity, exchange rate return, and sovereign credit ratings by the various rating agencies (S&P, Moody's and Fitch).

Levine and Zervos (1996) show that greater stock market development (higher market capitalization to GDP) is positively related with long-run economic growth. This can act to attract long-term foreign investors but may be also be a disincentive for foreign investors that look for short-term return because a more mature stock market (higher capitalization) is associated with lower economic uncertainty or risk and, consequently, lower returns.

Regarding the relation between equity market and exchange rate returns, Hau and Rey (2006) show that the correlation structure of equity market and exchange rate returns is related to the level of equity market development (market capitalization to GDP). Specifically, they find that in countries with higher equity market development the more negative the correlation of equity returns and exchange rate returns.

A notable difference between emerging and developed equity markets is market liquidity, an important consideration for international investors. Amihud *et al.* (2015) show that emerging markets are more illiquid than developed markets. Market liquidity, according to Chuhan (1994), is an important factor for international investors before allocating their funds and low liquidity is a discouraging investment factor. Thapa and Poshakwale (2012) show that investors prefer to invest more in larger developed markets with more liquidity that have a higher degree of market efficiency. Liquidity risk is an important factor in asset pricing models (Amihud, 1986

and 2002). The impact of liquidity on stock returns in EMs is studied by Bekaert *et al*. (2007) whose main liquidity measure has strong predictive power on stock returns, much more so than the local market risk.[4]

There is extensive research of the relationship between corporate bond rating changes and common stock returns in developed markets (Holthausen and Leftwich, 1986; Zaima and McCarthy, 1988; Hsueh and Liu, 1992; Goh and Ederington, 1993 and 1998; Almeida et al., 2017).[5] However, there is little study of the effects of sovereign credit ratings on stock market returns, especially in EMs. Reisen and Maltzan (1999) found a significant impact of credit-rating changes on stock markets in EMs. Brooks *et al.* (2004) indicate that a downgrade of EMs may lead to a negative impact on local stock returns. Kaminsky and Schmukler (2002) show that sovereign credit rating changes influence not only the related financial instruments (government bonds), but also stock market returns. In addition, they show that the effects of credit ratings changes are stronger during crises. The impact of sovereign ratings on local stock returns can be more pronounced for companies that have bonds in their capital structure (Dittmar and Yuan, 2008). This study investigated the spillover effects between EM sovereign bonds and corporate bonds and found that the introduction of sovereign bonds improves corporate markets regarding risk transparency and liquidity. Almeida *et al*. (2017) show that sovereign ratings affect corporate policies that are difficult to explain by unobservable firm characteristics and/or macroeconomic conditions. Furthermore, they show that sovereign ceiling policies

[4] Their main liquidity measure is the proportion of daily zero stock returns for EM corporations averaged over the month.

[5] Durbin and Ng (2005) examine the impact of countries' credit ratings on corporate bonds ratings in EMs and show that corporate bond spreads in EMs are not always higher than government bond spreads. This implies that the so-called "sovereign ceiling" is not always applicable in EMs.

apply (Borensztein *et al.*, 2013) and they argue that these policies may affect corporate investment and financial policies.

An International Asset Pricing (APT) has been developed, the international two-factor model, which is able to capture distress-related information associated with the value premium in international returns. Hou *et al.* (2011) developed a global three-factor model that includes factor-mimicking portfolios of momentum and cash flow-to-price along with a global market factor. They claim that their model performs better than the global three-factor model of Fama and French (1993).[6] More recently, Fama and French (2012) advocate the application of global risk factors, to develop three- and four-factor global capital asset pricing models (CAPM) to explain returns of global portfolios of mutual funds. It should be noted that most global asset pricing models ignore exchange rate risk.

Following on developments in asset pricing models, several studies have shown that the risk factors that can forecast expected stock returns in DMs such as size, value and momentum can also explain expected returns in EMs. According to Rouwenhorst (1999), risk factors that imitate size and value strategies also exist in EMs and can be used to forecast the expected stock returns. Kaminsky *et al.* (2004) show that a momentum strategy is evident in EM stock market returns since investors systematically buy winning stocks and sell losers, especially during crises. Harvey (1995) showed that the global capital asset pricing models cannot explain the cross-section of average returns in EMs and that these markets are influenced more by local

[6] The Fama and French (1993) three-factor model is a leading asset pricing model. The three-Factor model includes, along with the market risk premium, two risk-factors relating to firm size and book-to-market equity.

information such as sovereign credit ratings. Cakici *et al*. (2016), however, show that size and momentum strategies do not lead to superior returns.

All the studies outlined above relate to returns either of individual corporations or the broad stock market indexes ignoring the important role of foreign investors. In this paper we draw on previous studies, to study the determinants of stock returns for global funds in EMs. Specifically, central to our analysis is the role of sovereign credit ratings. We test for this factor after controlling for various determinants of the cross-section of EM returns. We also adopt the global asset pricing models discussed above to look at the risk-adjusted (abnormal) returns of foreign investors as well as for stock markets of EMs.

3. Data, Measurements and Methodology

The main purpose of this paper is to examine the behaviour returns on equity investment by foreign funds in EMs. Our main sample consists of monthly information about equity holding returns by global investment funds in 16 EMs for the period May 1998 - September 2013. The countries are: Brazil, Chile, China, Czech Republic, Egypt, India, Indonesia, South Korea, Malaysia, Mexico, Philippines, Russia, South Africa, Taiwan, Thailand and Turkey.

In the rest of this section, we describe the data for the variables central to our hypotheses. We begin with a description of the data on the rate of return of global equity funds in EMs. Subsequently, we describe the construction of credit ratings that are used in both an event study and regression analysis. Finally, we describe the construction of the remaining variables.

3.1 Rate of Return by Global Investment Funds in EMs

Our data on the rate of return earned by global investment funds in EMs come from a proprietary data set compiled by *EPFR Global* (www.epfr.com). This source provides information on the aggregate rate of return achieved by global funds in various EMs. As of mid-2014, EPFR tracked 17,732 global funds with over $5tn in equity assets. The funds tracked are registered globally (not just in the US) and thus the data track the performance of global portfolio investors in EMs. *EPFR Global* collects aggregate data for each EM during each month on the following variables: (i) total net assets (*TNA*) in each EM at the end of each month; (ii) changes in net asset value (*RNAV*) or the rate of return between the end of the previous month and the current month; and, (iii) for funds not denominated in U.S. dollars, changes in total assets due to currency fluctuations (ΔFX).[7,8] These data are the basis for the calculation of net flows (*FLOW*) or investor contributions/redemptions to each emerging market during each month as follows:

$$FLOW_{i,t} = TNA_{i,t} - (1 + RNAV_{i,t}) \times TNA_{i,t-1} - \Delta FX_{i,t} \quad (1)$$

where *i* represents each EM and *t* each month. The rate of return funds earn in each EM ($RNAV_{i,t}$) is the central variable of our study. We also make use of the data on fund flows ($FLOW_{i,t}$) and total net assets ($TNA_{i,t}$).

[7] According to *EPFR Global* it has established direct data feeds "…by the investment management firms or by their fund administrators that have been given the responsibility for tracking individual security pricing, calculating the net asset value of the fund, and conveying this information on to shareholders, regulatory bodies, securities exchanges, and third-party data vendors".

[8] Fund providers that track funds denominated in currencies other than the US dollar are required, according to *EPFR Global*, "…to database currency rates and calculate each fund's base currency fluctuation against the USD".

3.2 Credit Ratings

One of the important variables in our analysis is credit ratings by international agencies. Three major agencies (Standard & Poor's, Fitch and Moody's) provide information about sovereign debt creditworthiness based on maturity (short-term vs. long-term) and currency denomination (foreign vs. local currency). In our study, we use foreign-currency long-term issuer ratings compiled by Standard & Poor's (S&P) and assembled from their document *S&P Sovereign Rating and Country T&C Assessment Histories*. We have chosen the foreign-currency long-term ratings because they are the most relevant for foreign fund investors.[9] The choice of S&P ratings is because it is the lead among rating agencies (e.g. Kaminsky and Schmukler, 2002; Brooks *et al.*, 2004; Almeida *et al.*, 2017).[10]

S&P provides general-purpose letter sovereign credit ratings as well as additional information in the form of special-purpose ratings (what are termed credit actions). Special-purpose ratings consist of announcements on credit outlook and credit watch. According to S&P, credit outlook announcements provide an assessment of "the potential direction of a long-term rating over the intermediate term (typically six months to two years)". Credit outlook announcements take one of three forms: positive, negative, or stable. A positive outlook implies a country rating may be raised, a negative the opposite, while a stable outlook implies the country rating is most likely to be unchanged. The second type of special-purpose rating or credit rating action is a credit watch announcement. This is S&P's "opinion regarding the

[9] Although short-term ratings may also be relevant for foreign investors with a different time horizon, these ratings have a shorter history than longer-term ratings.

[10] Gande and Parsley (2014) show that ratings among agencies are highly correlated and test whether there exists a leader/follower relationship between the rating agencies. The Gande/Parsley test showed the "leader" rating agency to be S&P. Using their result and the fact that ratings do not differ significantly between rating agencies, we focus on S&P rating announcements.

potential direction of a short-term or long-term rating." Credit watch actions place a country either on a positive watch or negative watch.

Table 1 shows the frequency of rating announcements by country during our sample period. Upgrades (improvements in letter grade) outnumber downgrades by a factor of 2:1. Positive and negative outlook announcements occur at roughly the same frequency.[11] The country with the highest number of events[12] was Russia (20) and the countries with the lowest were the Czech Republic, Taiwan and Thailand (5 each).

Our empirical analysis consists, in the first place, of an event study to examine the behaviour of several variables around credit events: upgrades/downgrades and positive/negative outlook announcements. We proceed with various econometric tests of the relationship between credit events and equity returns. For the latter purpose, we create two variables that incorporate information on credit events provided by S&P. The first variable, the credit rating variable (CR), converts the letter credit ratings assigned by S&P to a numerical scale (see, e.g Gande and Parsley, 2005 and 2014; Almeida *et al.*, 2017) for a similar conversion). Countries that have defaulted on their obligations are coded 0 while countries with the highest rating, triple A ("AAA"), are coded 21.[13] The second variable includes information about credit outlook and credit watch announcements ($CO\&W$). Specifically, $CO\&W$ combines this information as follows: it assigns the value -1 for a negative outlook announcement, 0 for stable outlook, and +1 for a positive outlook +1; it assigns the value 0.5 for credit watch

[11] The table does not present information on credit watch announcements because there were only 8 (negative) credit watch announcements during the sample period. Nevertheless credit watch announcements are used to compute the credit outlook and watch score of each country (described in the next paragraph).

[12] In this paper an event denotes a change in letter grade or outlook or watch.

[13] The numerical transformation of credit ratings is provided in Appendix Table 1.

positive announcement and -0.5 for credit watch negative. We summarize the ratings information provided by S&P into two distinct variables because we are interested in the differential effect (if any) of the information content of these two on foreign investors' returns.[14]

3.3 Country-specific Variables

We describe the data for several country-specific variables. The first is the rate of return of each EM's domestic stock market index (*RMKT*). This index serves as a yardstick by which to compare the rates of return achieved by global funds. It is computed as the logarithmic difference of the main stock market index of each EM. We also compute several indicators widely used in the literature on stock market development. The ratio of stock market capitalization to GDP (*MCAP/GDP*) is thought to be a measure of market size and maturity (Levine and Zervos, 1996, 1998). Stock market capitalization (*MCAP*) is the value (in local currency) of shares of domestic companies listed on the stock exchange at the end of each month. Given that GDP data (in local currency) are not available at monthly frequency, we use quarterly GDP data and assign the same value for each month in a quarter. Annual GDP for a specific month is then obtained as the sum of the last four quarterly GDP values. Second is a measure of stock market liquidity, the turnover ratio (*TOVER*), defined as the value of domestic shares traded divided by market capitalization (Levine and Zervos, 1996). To compute a monthly figure for the numerator of this variable, we use

[14] Previous studies (e.g. Gande and Parsley (2005, 2014), Almeida *et al.* (2017)), have focused only on letter ratings or combined the information in letter ratings and credit outlook/watch into a comprehensive measure of credit ratings (using the scoring method adopted here). Our contention (and empirical tests) is that the information content of these two has quite different implications for stock returns.

daily data on the value of shares traded adjusted for the numbers of trading days and normalized to 21 (the average number of trading days in a month). Thus

$$TOVER_{i,t} = \frac{\sum_{j=1}^{N_{i,t}} VTRAD_{i,j,t} \times \left(\frac{21}{N_{i,t}}\right)}{MCAP_{i,t}} \quad (2)$$

where $VTRAD_{i,j,t}$ is the value (in local currency) of domestic shares traded on day *j* of month *t* on the stock exchange of country i, $N_{i,t}$ is the number of trading days, and $MCAP_{i,t}$ is stock market capitalization at the end of month *t*. Additional variables included in the empirical analysis are the size of the domestic economy, inflows of foreign equity capital and exchange rate risk. Economic size (ln*GDP*) is measured by the (logarithm) of domestic GDP in US dollars (for comparison across countries). Foreign capital flow (*FLOW*/*TNA*) is the ratio of equity capital flows during a specific month relative to total net foreign assets at the end of each month (*FLOW* and *TNA* were defined in (1)). Finally, exchange rate risk (*ERV*) is measured as the rolling standard deviation (with a 36-month window) of exchange rate returns relative to the US dollar..

The source of data for the stock market variables (*RMKT*, *VTRAD*, *MCAP*) is DataStream. Data on GDP in local currency and the exchange rate are from the *International Financial Statistics* of the IMF. Data on *FLOW* and *TNA* are from *EPFR Global*.

4. Empirical Analysis

4.1 Descriptive Statistics

Table 2 presents the mean, standard deviation and Sharpe ratio for foreign investors' and local stock market returns by country.[15] Foreign investors achieved the highest mean (monthly) return in Turkey (1.8%) but volatility (standard deviation) associated with it was also the highest (14.1%). The lowest rate of return was earned in Taiwan. The highest Sharpe ratio was for Korea (13.4%) and the lowest for Taiwan (1.1%). By comparison, the highest mean stock market return was achieved by Turkey's Borsa Istanbul 100. Turkeys' stock market index also experienced the second highest standard deviation (Russia the highest). The highest Sharpe ratio was achieved by the Mexican Bolsa IPC index and the lowest by Taiwan's Stock Exchange Index. The performance of foreign investors compares favourably to the local stock market. The mean return of foreign investors across all EMs was 1.1% and that of domestic stock markets 0.8%. The monthly difference between the two is 0.28% and significant (*t*-statistic = 3.560). Foreign investors' rate of return was higher than the stock market's in all but two EMs (Egypt and Mexico). On the other hand, the variability of foreign investors' returns was generally higher (for all but three countries) compared to that of the market. In sum, the performance of foreign investors, as measured by the Sharpe ratio, is superior to that of the domestic stock market index (mean Sharpe ratio for foreign investors was 9.8% compared to 6.7% that domestic stock markets).

Table 3 reports summary statistics and correlation coefficients for our variables (some variables contain fewer observations due to lack of data).). The mean

[15] The Sharpe ratio is the average return in excess of the risk free rate (one-month US T-bill rate) divided by the standard deviation of returns.

(median) credit rating (*CR*) is 12.6 (13.0), a number that translates to an average rating of triple B (BBB). Mean stock market capitalization relative to GDP (*MCAP*/*GDP*) is 44.1% and its volatility is 34.6%; these values are comparable to those reported elsewhere (e.g. *World Development Indicators* of the World Bank). On average, EMs experienced a small monthly outflow of foreign equity funds relative to total net assets (-0.4 and median outflow of -0.1%). Fund flows are volatile with a monthly standard deviation of 20.3%. Monthly turnover relative to market capitalization is 2.8% but is not volatile (standard deviation is 3.8%).[16]

4.2 Credit Ratings and Equity Investments in EMs: An Event Study

In this section, we analyse the impact of negative announcements (a downgrade or negative outlook) and positive announcements (an upgrade or positive outlook) on market-specific variables through an event study.[17] The variables considered are *RNAV*, *RMKT*, *FLOW*/*TNA*, *MCAP*/*GDP* and *TOVER*.

4.2.1 Negative Announcements by S&P

Figure 3 presents event-study results with a 3-month window either side of a negative announcement. The first column of Figure 3 (Figures 3a – 3e) shows the behaviour of market-specific variables surrounding a credit downgrade, while the second column (Figures 3a′ – 3e′) shows the same for negative outlook announcements.

[16] The three indicator of risk reported in Table 3 (Political, Economic and Financial) are used as control variables in robustness analysis and will be explained in a subsequent section.

[17] The event study considers downgrade/upgrade and positive/negative outlook announcements but not positive/negative watch announcements because there were only 8 of these during the sample period. In the econometric analysis of subsequent sections these two (outlook and watch) were combined in the variable *CO&W* as described in the previous section.

Figures 3a and 3a′ show foreign investors' rate of return (*RNAV*). We note that during the period before the negative announcement, when sovereign creditworthiness is judged low by credit rating agencies, foreign investors earn negative returns. Following a negative announcement (downgrade or negative outlook), the rate of return earned by foreign investors is higher, a finding consistent with finance theory that higher (lower) risk should be rewarded by higher (lower) returns (Sharpe (1964), Lundblad (2007)). As investors adjust to higher risk, their required rate of return increases. This finding is reaffirmed by test results in Table 4: Panel A shows results for a two-sample *t*-test and Panel B for the Kolmogorov-Smirnov (KS) test.[18] The average rate of return the three months following a downgrade is 6.1% higher than the three months preceding the upgrade (and the difference is significant at the 0.01 level). Similarly, the difference either side of a negative outlook is 6.3% (also significant).

Figures 3b and 3b′ present the market rate of return (*RMKT*) around negative announcements. The results are similar to those for investors' rate of return. Before the negative announcement, markets had discounted much of the negative forthcoming information by lower valuations (rates of return were negative the three months preceding the announcement), whereupon provided increased returns to compensate for higher risk. In this case, the difference in returns following a downgrade announcement is 6.9% and a negative credit outlook is 3.4% (both significant). There seems to be a differential impact on the rate of return of the two announcements, a conjecture explored more formally in the following sections.

[18] Two-sample *t*-tests examine the hypothesis of equality of means of two samples: before and after the credit event announcement. The *t*-tests are computed using Welch's formula. Kolmogorov-Smirnov (KS) is a nonparametric test that compares the equality of distributions of two samples.

Figure 3c shows that during periods surrounding a downgrade (either before or after the announcement) net fund flows are negative as investors withdraw funds from markets about to be or recently downgraded. The same holds true for the period around negative credit outlook (Figure 3c′, with exceptions one month before and the month of the negative credit outlook). However, there is no evidence of significant changes in capital flows around these events (Table 4). Finally, there is no evident pattern concerning stock market development (Figures 3d and 3d′) and stock market liquidity (Figures 3e and 3e′) around negative announcements.

4.2.2 Positive Announcements by S&P

Next, we consider positive announcements and the same market-specific variables in Figure 4. The first column of Figure 4 (Figures 4a-4e) refers to announcements of a credit upgrade while the second column (Figures 4a′-4e′) positive credit outlook. Figures 4a and 4a′ present results for investors' rate of return (*RNAV*) around positive events. We note that foreign investors earn positive returns during the period before and after a positive announcement. Following the positive announcement, the rate of return decreases: during the three months after the announcement the rate of return is 1.8% lower (upgrade) and 3.1% lower (positive outlook). The same pattern is observed for stock market returns (*RMKT*) in Figures 4b and 4b′. Comparing the rates of return for foreign investors' and stock markets following a downgrade and an upgrade, a possible asymmetry can be deduced from the event study. The change in the rate of return is large (in absolute value) and significant the period following a downgrade. By comparison, the change in return is small (absolute value) and insignificant during the period following an upgrade. This

apparent asymmetry between changes in rates of return following a credit upgrade or downgrade is a conjecture that we test in the following section.

Figures 4c and 4c′ present equity capital flows. Net capital flows are positive during periods surrounding positive announcements. The difference between average equity flows before and after an upgrade is not significant whereas after the positive outlook it is -1.6% and significant (Table 5). Finally, we find no significant changes in market development (*MCAP*/*GDP*) or liquidity (*TOVER*) following negative announcements. Combining these results with those of negative announcements, we find no observable pattern for equity capital flows, stock market development and market liquidity during periods surrounding credit events.

The overall preliminary evidence from the event study is that rates of return for foreign investors and EM stock markets behave significantly differently around periods surrounding credit rating announcements. This is consistent with a hypothesis that foreign investors allocate funds to EMs taking into account, among other factors, sovereign credit risk. To examine the validity of this hypothesis, we proceed with more formal tests based on regression analysis.

4.3 Credit Ratings and Investor Excess Returns

4.3.1 Panel Methodology

In this section, we examine the effect of the two credit risk variables (*CR* and *CO&W*) on the excess rate of return (or market premium) earned by foreign investors in a panel-regression framework. We estimate the following model:

$$(RNAV_{it} - RF_t) = \gamma_i + \delta_t + \theta_1 CR_{it-1} + \theta_2 CO\&W_{it-1} + \boldsymbol{\zeta Z'_{it-1}} + u_{it} \qquad (3)$$

where RF_t refers to the global risk free rate[19] and $\boldsymbol{Z}$ is a vector of explanatory variables. All explanatory variables are lagged one period for two reasons. We are interested in the impact of various factors along with credit ratings events on expected returns and, second, lagging the explanatory variables mitigates any endogeneity effects. The estimated model includes country- and time-specific parameters to control for unobservable country characteristics and time effects. The elements of $\boldsymbol{Z}$ are market-specific and country-specific variables. Stock market development (*MCAP*/*GDP*) is known to affect foreign investors' decisions (Thapa *et al*. 2013). Net flow of foreign capital (*FLOW*/*TNA*) is used to examine the hypothesis that aggressive investment behavior (return chasing) by foreign investors affects returns. The final market-specific variable is the liquidity proxy, *TOVER*. Country-specific variables include a measure economic activity (the log of GDP) by way of accounting for a country's economic size on returns and a measure of exchange rate variability (*ERV*) to account for the effects of currency risk on returns. For each EM, *ERV* is estimated as the rolling standard deviation of exchange rate returns (relative to the US dollar) with a 36-month estimation window.

Table 6 presents estimation results. Specification (1) is the partial correlation model between credit ratings or outlook/watch and investors' returns. An increase in credit rating or a positive outlook/watch is related to lower required rates of return whereas the opposite is true for reductions or negative outlook/watch. Specification (2) includes several control variables. Changes in credit ratings are negatively and significantly related to the rate of return. Equity investments in countries with higher credit ratings (higher *CR* or lower risk) tend to receive a lower rate of return, a finding

[19] Following the methodology of Fama/French the global risk free rate is measured as the one-month US T-bill rate.

that is consistent with the risk-return trade-off (Ghysels *et al*. (2005), Lundblad (2007)) and is consistent with the event study conclusions. An increase in value for *CR* by one unit (an upgrade by one notch) is associated with a reduction in investors' rate of return by 0.38%. On the other hand, after accounting for several control variables, changes to credit outlook/watch are not significantly related to returns. This result is consistent for all specifications of Table 6 and is further explored in the next section.

The size of national economies (as measured by GDP) is negatively related to returns indicating that investors in larger economies expect to receive lower returns; alternatively higher economic size may allow for reduction in market risk and consequently lower excess return. Foreign investors' returns tend to be lower in more developed stock markets (higher *MCAP/GDP*). This is consistent with the notion of lower rates of return in more mature markets as profit opportunities are reduced in these markets. Finally, equity returns do not seem to follow higher equity capital flows i.e. there is no evidence of return chasing. This result, however, will be re-examined in subsequent sections.

The results remain unchanged when additional control variables are introduced in specifications (3) and (4). Both additional variables (stock market liquidity and exchange rate variability) are insignificant factors in explaining investors' excess returns.[20] Next, we examine whether the effects of downgrades and upgrades are asymmetric.

[20] It should be noted that the inclusion of *TOVER* reduces sample size because stock market turnover (the numerator of *TOVER*) is available for a limited number of countries/time periods. We also estimated three additional (unreported) models that include the International Country Risk Guide (ICRG) measures of the PRS group (http://www.prsgroup.com/about-us/our-two-methodologies/icrg). The ICRG measures summarize several metrics to arrive at aggregate indicators of economic, political

4.3.2 Are Downgrades and Upgrades Asymmetric?

The event study raised the possibility that the effect of downgrades and upgrades on returns may not be symmetric and that the effects of downgrades may be more pronounced. There is some evidence in the finance literature (Kamisky and Schmukler, 2002; Brooks et al., 2004, Avramov et al., 2009) that downgrades and upgrades have different effects on stock returns. To test this proposition we estimate modified versions of model (3) as follows:

$$(RNAV_{it} - RF_t) = \gamma_i + \delta_t + \theta_2 CO\&W_{it-1} + \theta_3 DOWN_{it-1} + \theta_4 UP_{it-1} + \boldsymbol{\zeta Z'_{it-1}} + u_{it} \quad (4)$$

$$(RNAV_{it} - RF_t) = \gamma_i + \delta_t + \theta_1 CR_{it-1} + \theta_2 CO\&W_{it-1} + \theta_3 DOWN_{it-1} + \theta_4 UP_{it-1} + \theta_5 (CR \times DOWN)_{it-1} + \theta_6 (CR \times UP)_{it-1} + \boldsymbol{\zeta Z'_{it-1}} + u_{it} \quad (5)$$

where $DOWN$ is a binary variable that indicates whether a downgrade has occurred (equal to 1 and zero otherwise) and similarly UP is a binary variable that records upgrades. Model (4) examines the direct effect of upgrades/downgrades on investors' returns and can be used to gauge a possible asymmetry between the two ($\theta_3 \neq \theta_4$).) In addition to asymmetry, model (5) allows the effects of upgrades/downgrades to depend on a country's current credit rating and serves to test whether any asymmetric effects have different impact on investor returns when countries are grade higher (receive higher letter grades) or lower by S&P..

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and financial risk. These risks are measured on a scale of 0 to 100 with higher values indicating lower risk (see Table 2 for descriptive statistics for these variables). The results show that these indicators are not significant but all our other conclusions remain robust.

We estimate models (4) and (5) using specification (2) of Table 6.[21] The results are in Table 7. Specifications (1) and (2) present the estimates of models (4) and (5), respectively, whereas specifications (3) and (4) estimate the same models but the dependent variable is the 2-period ahead cumulated excess return. There is evidence of an asymmetric effect of downgrades and upgrades. Downgrades are associated with significantly higher excess returns for foreign investors. On the other hand, upgrades do not seem to influence significantly investors' excess returns. Moreover, specification (2) indicates that the asymmetric effect depends on a country's credit rating: the coefficient of the interaction effect ($CR \times DOWN$) is negative and significant indicating that downgrades have a larger effect on investors' returns when a country's credit rating is low. In addition, the total effect of credit ratings on investors' excess returns is negative and significant, confirming the results of the previous section.[22] The total effect of downgrades is positive but (in comparison to the partial) is insignificant. All these conclusions hold when instead of looking at one period returns, we investigate the asymmetric effects of downgrades/upgrades on 2-period-ahead returns. In conclusion, we find evidence that the effect of downgrades and upgrades on investors' returns is asymmetric and the effect is stronger in magnitude when sovereign ratings are low.

The results so far have examined the effects of credit events on the excess return of foreign investors over the risk-free rate. Next, we turn attention to foreign investors' abnormal rates of return and examine the link between sovereign credit ratings and abnormal returns.

[21] Results with the other specifications of Table 6 are similar.

[22] All total effects (and corresponding significance tests) presented in this paper are evaluated at the mean value of the relevant variables.

5. Risk-Adjusted Rates of Return

5.1 The Risk-Adjusted Rate of Return Earned by Foreign Investors

The results, so far, indicate a significant relationship between foreign investors' excess rate of return and sovereign credit ratings. We investigate further the information content of credit events on returns in EMs after controlling for standard asset pricing factors. More specifically, we employ a two-stage procedure similar to Wermers (2000). In the first stage, we estimate three global asset pricing models: the international CAPM or single-factor model and the three- and five-factor models of Fama and French (1993, 2015).[23] The estimated models are used to generate risk-adjusted returns (alphas) specific to each country. In the second stage, we estimate the effect of sovereign credit events and other variables on the risk-adjusted rate of return earned by foreign investors.

The International CAPM and the three- and five-factor Fama-French models are given by

$$(RNAV_i - RF_t) = \alpha_{it} + \beta_{i,RMKT} \times RMKT_t + \beta_{i,GMRP} \times GMRP_t + \varepsilon_t \quad (6)$$

$$(RNAV_i - RF_t) = \alpha_{it} + \beta_{i,RMKT} \times RMKT_t + \beta_{i,GMRP} \times GMRP_t + s_{i,GSMB} \times GSMB_t + s_{i,GHML} \times GHML_t + \varepsilon_t \quad (7)$$

[23] The three-factor model includes, apart from the market risk premium, the small-minus-big and high-minus-low (SMB and HML) factors. These account for the return difference between small- and big-sized firms and the spread in returns between value and growth companies. The size proxy used for the development of the SMB factor is the natural logarithm of firm's market capitalization while for the HML factor the auxiliary variable is the book-to-value ratio. The five-factor model includes two additional risk-factors, the profitability factor, RMW (robust minus weak), and the investment factor, CMA (conservative minus aggressive). The RMW factor uses as profitability proxy the firm's annual revenue minus cost of goods sold, interest expense and selling general and administrative expenses all divided by book equity at the end of the previous fiscal year. The investment variable in CMA factor is the growth of total assets estimated as the percentage of total assets between the end of year t-2 and t-1.

$$(RNAV_i - RF_t) = \alpha_{it} + \beta_{i,RMKT} \times RMKT_t + \beta_{i,GMRP} \times GMRP_t + s_{i,GSMB} \times GSMB_t + s_{i,GHML} \times GHML_t + r_{i,GRMW} \times GRMW_t + c_{i,GCMA} \times GCMA_t + \varepsilon_t \quad (8)$$

Model (6) is the International CAPM. It includes the return on the domestic stock market index (*RMKT*) and the global market risk premium $GMRP$ (global market index return minus global risk-free rate) to capture systematic risk with the local and global market. The three- and five-factor models in (7) and (8) include the global risk factors of Fama and French (1993, 2015): small minus big ($GSMB$), high minus low ($GHML$), robust minus weak ($GRMW$) and conservative minus aggressive ($GCMA$).[24] The models in (6)-(8) are estimated for each country separately by rolling regressions with a 36-month window to yield time-variant country-specific estimates of risk-adjusted returns (alphas).

In the second stage, we estimate the determinants of the risk-adjusted returns in a panel framework. We allow for asymmetric effects of downgrades/upgrades and employ a framework similar to models (4) and (5). Specifically, we estimate the following models:

$$\widehat{\alpha_{it}} = \gamma_i + \delta_t + \varphi_2 CO\&W_{it-1} + \varphi_3 DOWN_{it-1} + \varphi_4 UP_{it-1} + \boldsymbol{\eta H'_{it-1}} + \epsilon_{it} \quad (9)$$

$$\widehat{\alpha_{it}} = \gamma_i + \delta_t + \varphi_1 CR_{it-1} + \varphi_2 CO\&W_{it-1} + \varphi_3 DOWN_{it-1} + \varphi_4 UP_{it-1} + \varphi_5 (CR \times DOWN)_{it-1} + \varphi_6 (CR \times UP)_{it-1} + \boldsymbol{\eta H'_{it-1}} + \epsilon_{it} \quad (10)$$

where the $\widehat{\alpha_{it}}$ are generated from models (6) – (8) and $\boldsymbol{H}$ is a vector of explanatory variables.

[24] The global risk factors along with the global risk-free interest rate are obtained from Kenneth R. French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

The results are in Table 8. Columns (1) and (2) are the estimates of models (9) and (10), respectively, when the alphas were generated by model (6). Column (3) estimates the model in (10) when the dependent variable is the 2-period ahead cumulated return. The variables included in ***H*** are those in specification (3) of Table 6. The remainder of Table 8 estimates these three specifications with alphas generated by the 3-factor model (specifications (4)-(6)) and 5-factor models (specifications (7) – (9)). Table 8 also reports the mean (and *t*-test for its significance) of the risk-adjusted returns (alphas) calculated by model specifications (6)-(8). The mean risk-adjusted return is significantly different from zero in all three cases. Moreover, as we move from the ICAPM to the five-factor model, the mean return decreases from 0.30% to 0.16%, a finding that is consistent with numerous previous applications of factor models.

There is a negative and significant (both partial and total effect) relation between sovereign credit ratings (*CR*) and foreign investors' abnormal returns in all models of Table 8. Foreign investments in higher-rated EMs have lower risk-adjusted returns than lower-rated EMs. In contrast to foreign investors' excess returns, the estimate of credit outlook and watch (*CO&W*) is positive and significant in all specifications indicating that the information content of *CO&W* is potentially different from that of *CR*. We ascribe this to the forward-looking nature of *CO&W* in that it provides information about future potential changes to *CR*, something that foreign investors can use to benefit earning higher abnormal returns. The distinct impact of *CR* and *CO&W* on abnormal returns can be characterized by the well-known investment adage "buy the rumour, sell the fact" where "rumours" of impending upgrades/downgrades are incorporated in *CO&W*, and the change in credit rating (*CR*) is "the fact" that reinforces the rumour by which time higher rated EMs (considered

lower risk) offer investors lower risk-adjusted returns. The estimates for downgrade/upgrade are generally insignificant. For the ICAPM and 3-factor models without *CR*, the estimate for downgrades is positive and significant indicating that foreign investors treat announcements of downgrades as increased sovereign risk and thus demanding higher expected returns; the total effect, however, of downgrades on abnormal returns is insignificant. For the ICAPM and 3-factor model the total effect of credit upgrades is positive and significant.

By comparison with the results for excess returns, stock market development (*MCAP/GDP*) is positively and significantly related to abnormal returns. Holding economic size constant and accounting for risk factors, more mature EM stock markets offer possibilities for higher abnormal returns for foreign investors. Equity capital flows to EMs (*FLOW/TNAV*) are positively and significantly related to investors' risk-adjusted returns: foreign investors have pursued policies of actively chasing higher abnormal returns in EMs. Finally, in most specifications market liquidity (*TOVER*) is negatively and significantly related to abnormal returns: higher turnover reduces foreign investors' opportunities for abnormal returns, a finding consistent with many studies of stock market liquidity in developed markets.

5.2 The Risk-Adjusted Return of Domestic Stock Markets

Thus far we have examined the role of credit risk announcements on foreign investors' returns. In this section, we look at the impact of credit risk announcements on returns for the broad domestic stock market index of EMs. We postulate that the activities of foreign investors are expected to have a significant impact on domestic stock market returns in EMs, especially during periods of credit rating announcements

since foreign investors make use of such information in their portfolio strategy.[25] To examine whether foreign investors influence the behaviour of stock market returns in EMs and the role played by sovereign credit risk we use the same two-stage procedure as in the previous section with two main differences: the return in the first-stage models of (6) – (8) refers to return of the domestic stock market index (net of the risk free rate) for each EM [26] and in the second-stage models (9) and (10), the vector of explanatory variables includes the return of foreign investors (*RNAV*) and its interactions with the two credit variables (*CR* and *CO&W*). The results are presented in Table 9.

The mean abnormal return for domestic stock markets is positive and significant and declines with additional factors included, a pattern similar to foreign investors' risk-adjusted returns (section 5.1). The impact of changes in credit ratings is either insignificant or positive and significant (the 3-factor model). This is different from the result for investors' risk-adjusted returns: foreign investors treat changes in credit ratings differently from domestic investors. We postulate that foreign investors in EMs tend to be more sophisticated than local investors, choosing to invest in stocks that take into account announcements of changes in credit ratings to lower risk-adjusted returns in response to improved ratings. On the other hand, local investors in EMs, possibly less sophisticated, do not account for credit risk announcements, as

[25] The role of foreign investors in stock markets of EMs and the relative information advantage that such investors may possess is a subject for debate. The evidence is mixed. For instance, Froot *et al.* (2001) and Bailey *et al.* (2007) find that foreign investors have a relative information advantage compared to local investors in EMs. Others (e.g. Choe *et al.* (2005) and Teo (2009)) find that local investors are better informed. Ferreira *et al.* (2017) find that though there is an information advantage for local investors, there is no significant difference in the performance of local and foreign investors. Their study, however, is not confined to EMs but includes 32 countries most of which are developed economies.

[26] Thus in (6)-(8) we replace *RNAV* with *RMKT* and of course *RMKT* no longer appears as explanatory variable.

evidenced by the insignificant (or positive) result for changes credit ratings. The local markets in EMs are dominated by possibly less sophisticated local investors that do not account for sovereign credit rating changes.

The information contained in credit outlook/watch (*CO&W*) is priced, a finding reinforcing the results for foreign investors' adjusted returns. The forward-looking nature of the information contained in credit outlook/watch influences both local and foreign investors' risk perception. The effect of credit rating downgrades is negative (and significant) for the models without *CR.* This is additional evidence that the broad stock market treats announcements of credit rating changes differently from private investors. Announcements of downgrades are not treated as indications of reduced creditworthiness and domestic stock market expected returns do not increase accordingly. In the model with *CR*, the partial effect of downgrades continues to be negative and significant, though the total effect is insignificant. Finally, there is no evidence that domestic stock market returns respond to announcements of upgrades.

The specifications in Table 9 include as an additional explanatory variable the return of foreign investors (*RNAV*) and its interactions with sovereign ratings. The effect (partial and total) of *RNAV* on abnormal stock-market returns is positive and significant. We interpret this as evidence that investments by foreign investors contribute to an improved performance for the local stock markets as well, and as indirect evidence that foreign investors possess a different information set and operate differently from local investors, a factor that contributes to higher returns for the whole of the domestic stock market. We find no evidence that the performance effect of foreign investors on domestic stock returns depends on assessments of sovereign

credit risk: neither interaction effect between foreign investor returns and credit ratings and credit outlook/watch is significant.

Market liquidity (*TOVER*) is positively and significantly related to stock-market abnormal returns. This would seem to indicate that, during periods of increased stock market turnover, market abnormal returns are on average higher, a counterintuitive finding and in contrast to the experience of developed-market abnormal returns (Amihud and Mendelson (1989), Bernan *et al*. (1998), Acharya and Pedersen (2004)). A possible explanation is the differing behaviour of domestic and foreign investors. Local investors (especially retail) in EMs lack experience compared to foreign investors and may consist of noise traders. Thus increased turnover may in fact be the outcome of activities by noise traders or new or optimistic traders that enter markets/exit stock markets during prosperous/crisis periods that lead to the positive relationship between turnover and local stock returns. Finally, there is no evidence that foreign equity capital flows chase returns in the broader stock market.

5.2 Foreign Investors' Risk-Adjusted Rate of Return in Excess of the Market

In the introductory section, we noted that the rate of return earned by foreign investors is generally in excess of the domestic stock market. In this section, we investigate the role of credit rating events in explaining this difference. We follow the same two-step procedure as before but the difference in returns in (6)-(8) is the difference between the foreign investors' return and the domestic stock market return (*RNAV – RMKT*). The alphas in (9) and (10) can now be termed the risk-adjusted return of foreign investors in excess of domestic stock returns. The results are in Table 10.

Credit ratings are negatively (and significantly) related to excess risk-adjusted returns. Improvements in credit risk (increases in *CR*) are associated with lower excess returns for foreign investors. On the other hand announcements of positive outlook/watch are viewed differently than changes in credit risk. Announcements of positive outlook/watch are accompanied by higher returns for foreign investors compared to market returns. A possible rationale for the finding is, as outlined earlier, that foreign investors treat information contained in outlook/watch announcements differently from participants in the broader stock market. Foreign investors act on information contained in positive outlook/watch as precursors of upgrades and exploit this information to earn higher returns relative to the market. The effect of credit downgrades is insignificant. On the other hand, in the ICAPM and 3-factor models, the effect of upgrades is positive and significant. Finally, increased turnover reduces the risk-adjusted returns of foreign investors relative to the domestic market. There is also evidence that return chasing increases the return advantage of foreign investors over the domestic market and this advantage is more pronounced in more mature EM markets.

6. Conclusion

The information contained in sovereign credit ratings (letter grades) by S&P influences excess (over the risk free rate) returns earned by foreign investors on equity investment in EMs. Foreign investors require a lower excess return for lower risk. On the other hand, after taking into account the determinants of excess returns, information contained in announcements of credit outlook/watch by S&P does not seem to influence the excess returns of foreign investors. The effect of credit upgrades

and downgrades is asymmetric. Downgrades appear to influence foreign investors' returns and the effect is more pronounced when EMs are assigned lower credit ratings by S&P.

When it comes to foreign investors' abnormal or risk-adjusted, the information contained in credit ratings and credit outlook/watch is treated differently. Announcements of a positive credit outlook/watch by S&P are associated with higher abnormal returns while an increase in the credit rating with lower. The contrasting effect of credit ratings with credit outlook/watch is related to the forward-looking nature of credit outlook announcements that foreign investors take into account and modify their investment strategy accordingly. The strategy bears out the market adage "buy the rumour sell the fact."

The effect of credit ratings on abnormal returns for the broad stock market index of EMs differs from that for foreign investors: the effect on stock market returns is generally insignificant. On the other hand, announcements of positive credit outlook/watch have similar effects on abnormal stock market returns: the estimated coefficient is positive and significant. The domestic market treats the information content in a similar way to foreign investors. We ascribe this to the importance of foreign investors in driving abnormal returns in EMs. This conjecture is reinforced by strong evidence that foreign investor returns exert a positive and significant influence on stock market abnormal returns. The trading behaviour of foreign investors differs from that of locals in that stock market liquidity has a negative (and significant) effect on foreign investors' abnormal returns but (counter intuitively) a positive (and significant) effect on abnormal stock market returns, such that, in the latter case, higher trading turnover is associated with higher returns. Local investors who may be

relatively unsophisticated trade noisily thus generating both higher turnover and higher abnormal returns.

While credit rating agencies have come under heavy criticism especially since the advent of the global financial crisis, our results show that their announcements provide important signals that foreign investors may exploit in formulating their investment strategies in EMs. On the other hand, domestic investors appear immune to announcements of credit rating changes. Their trading activities may, in fact contribute to generating opportunities for abnormal returns that foreign investors can pursue.

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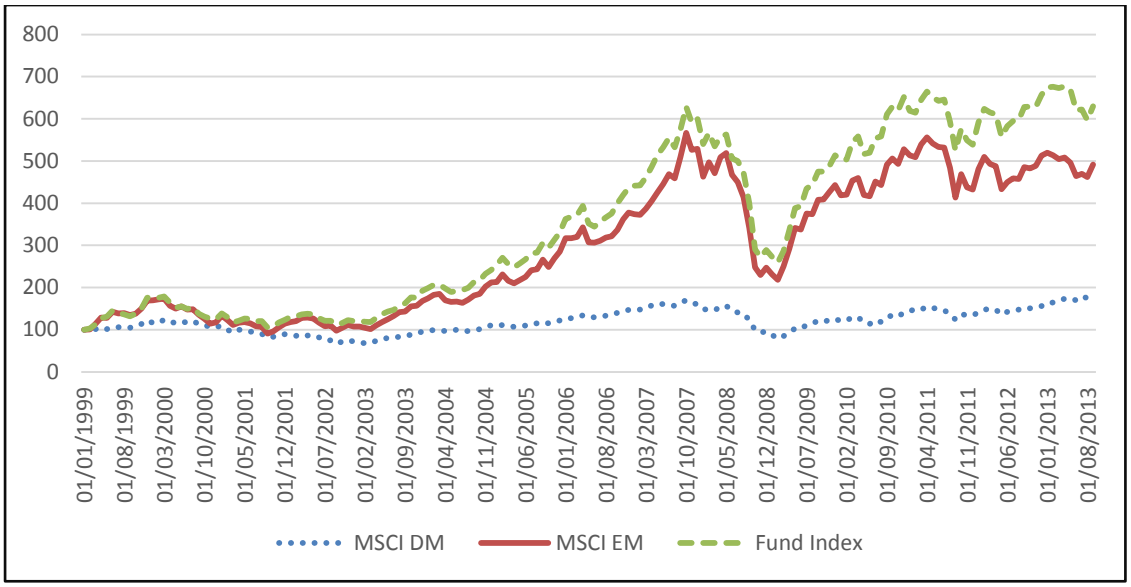
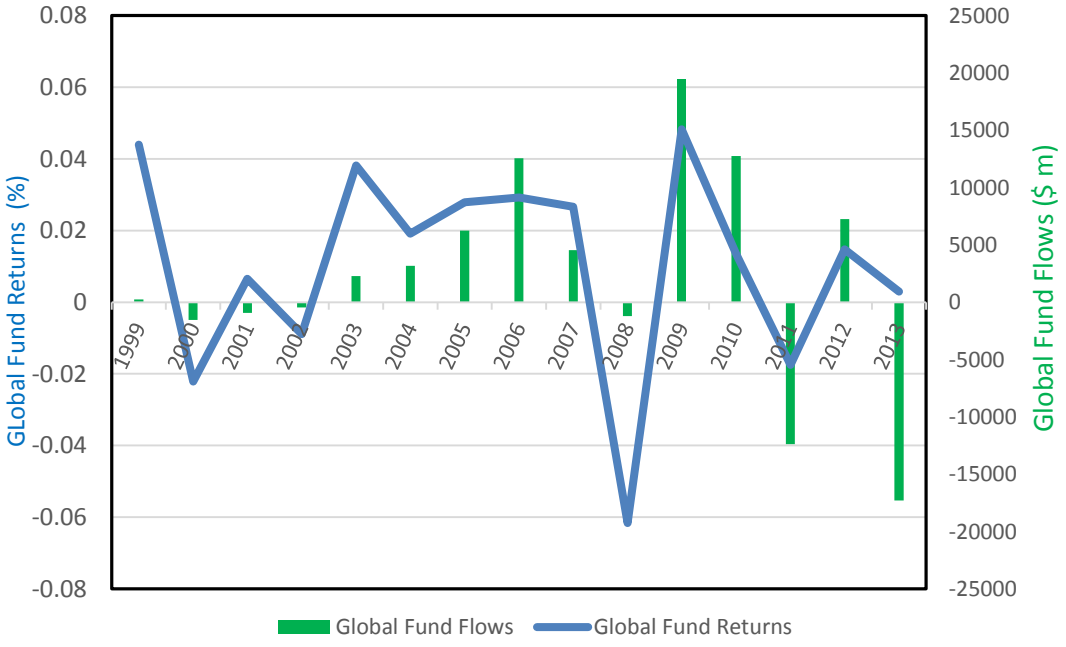
Figure 1. Stock Indexes (Jan. 1999 = 100)



Sources: DataStream and authors' calculations based on data from EPFR Global

Figure 2. Annual Rate of Return of Foreign Investors and Net Capital Flows to EMs



Source: Authors' calculations based on data from EPFR Global

Figure 3. Downgrade and Negative Credit Outlook Announcements

The figures present event studies around announcements by S&P of a sovereign downgrade (Figures 3a – 3e) or negative credit outlook (Figures 3a′ – 3e′). Events are marked month 0 in both cases. The variables that are considered are RNAV, RMKT, Fund Flows to TNAV, MCAP over GDP and TOVER. MCAP divided by GDP (MCAP /GDP) represents the stock market development. TOVER refers to the stock market liquidity that is defined as the value of domestic shares traded over the market capitalization. ln(GDP) is the natural logarithm of GDP proxies for the economic size of each country. Fund Flows/TNAV is the ratio of equity capital flows during a specific month relative to total net foreign assets at the end of each month.

Downgrade announcement

Figure 3a

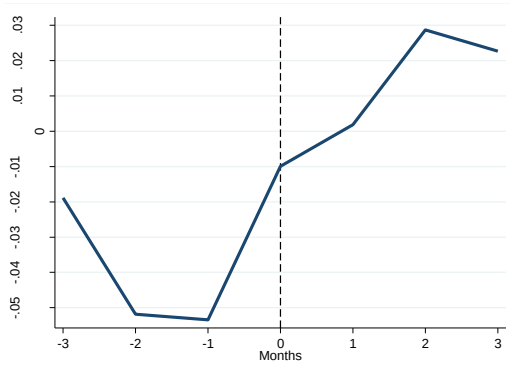


Figure 3b

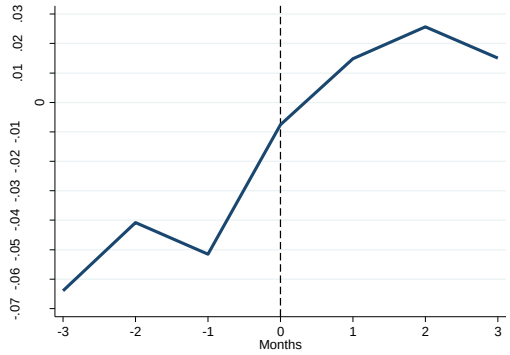


Figure 3c

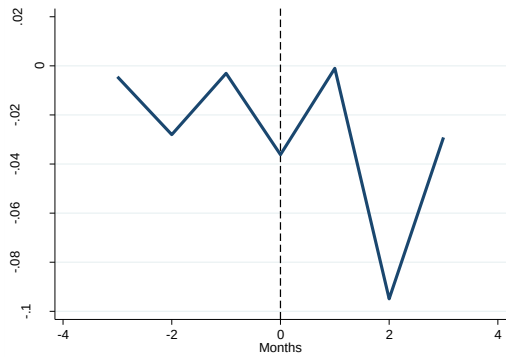


Figure 3d

Negative Credit Outlook announcement

Figure 3a′

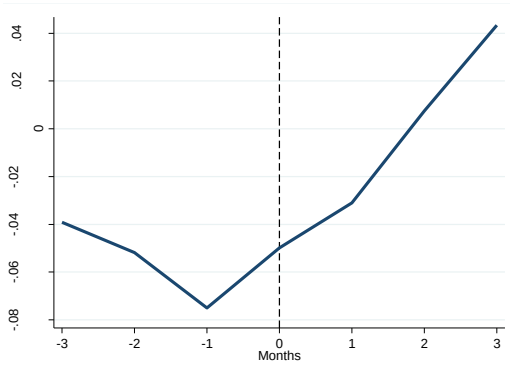


Figure 3b′

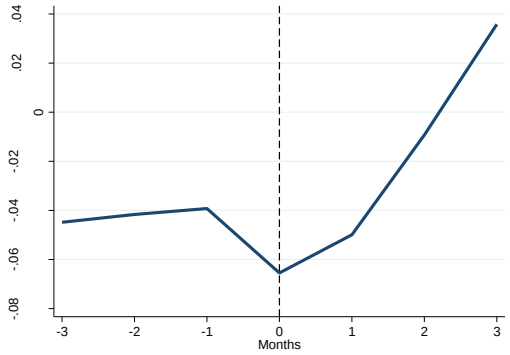


Figure 3c′

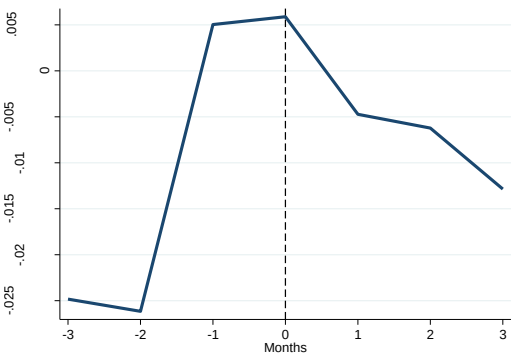
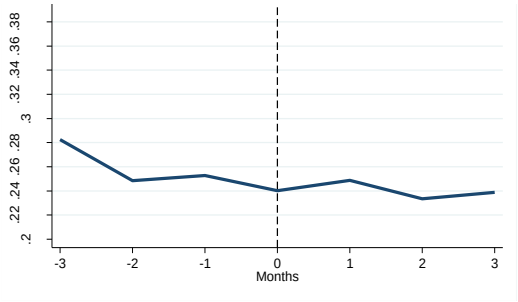


Figure 3d′



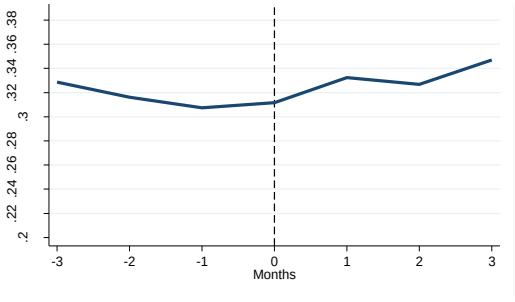


Figure 3e

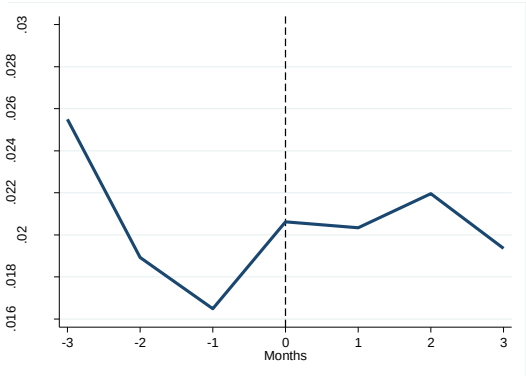


Figure 3e′

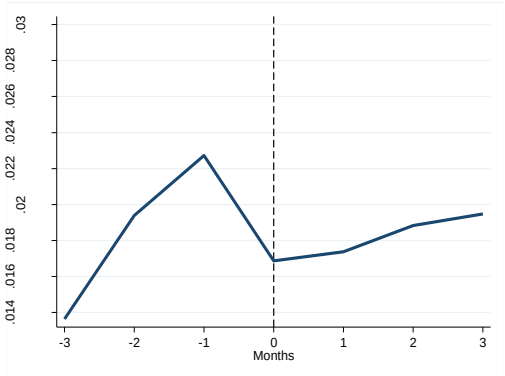
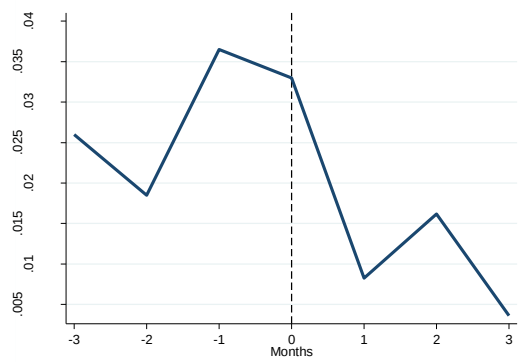


Figure 4. Upgrade and Positive Credit Outlook Announcements

The figures present event studies around announcements by S&P of a sovereign upgrade (Figures 4a – 4e) or positive credit outlook (Figures 4a′ – 4e′). Events are marked month 0 in both cases. The variables that are considered are RNAV, RMKT, Fund Flows to TNAV, MCAP over GDP and TOVER. MCAP divided by GDP (MCAP /GDP) represents the stock market development. TOVER refers to the stock market liquidity that is defined as the value of domestic shares traded over the market capitalization. ln(GDP) is the natural logarithm of GDP proxies for the economic size of each country. Fund Flows/TNAV is the ratio of equity capital flows during a specific month relative to total net foreign assets at the end of each month.

Upgrade announcement
Figure 4a



Positive Credit Outlook announcement
Figure 4a′

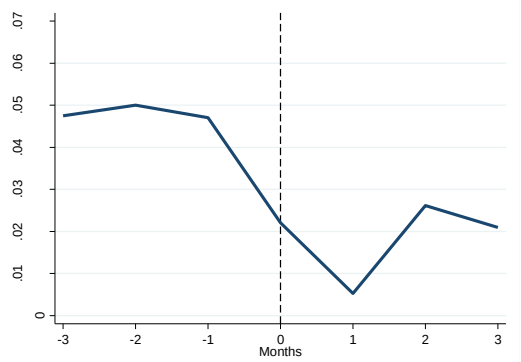


Figure 4b

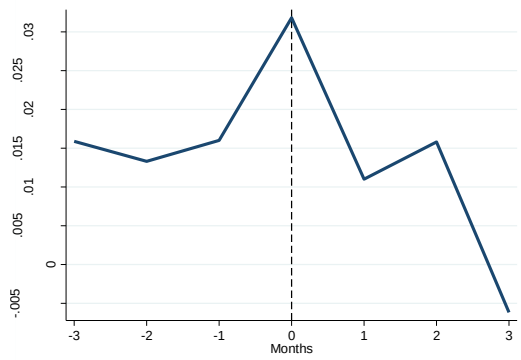


Figure 4b′

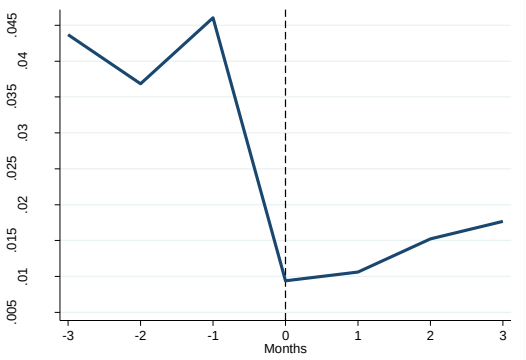


Figure 4c

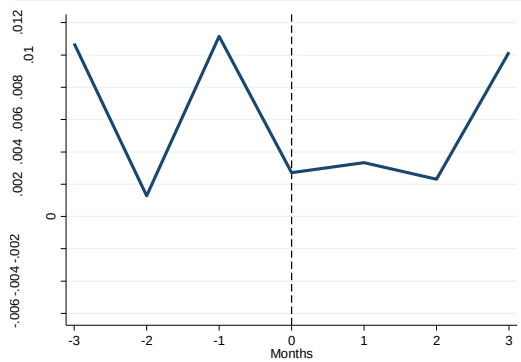


Figure 4c′

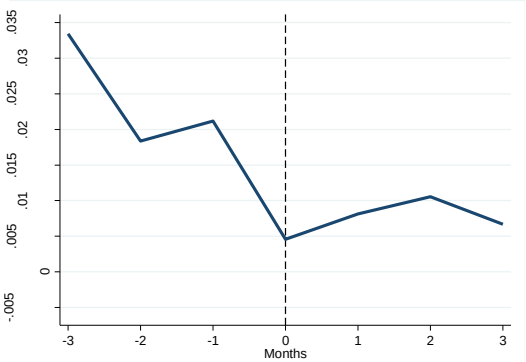


Figure 4d

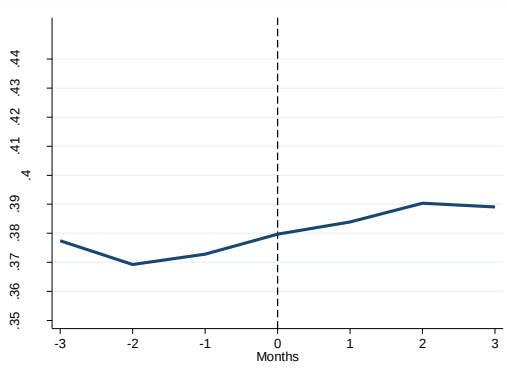


Figure 4d′

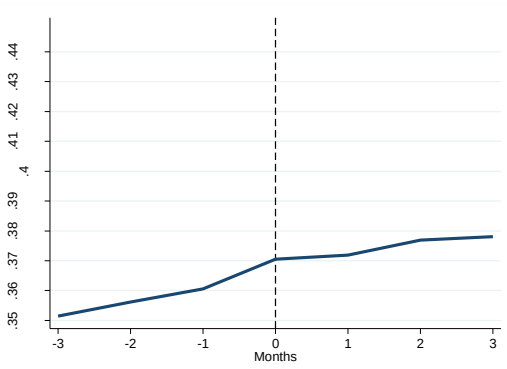


Figure 4e

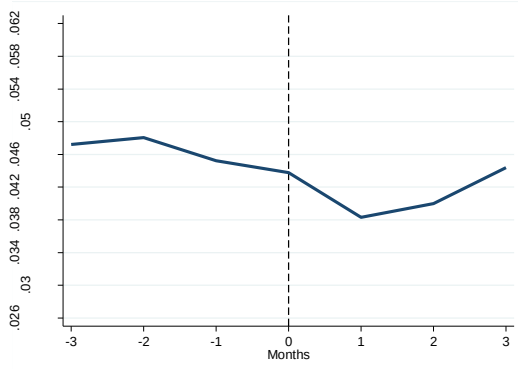


Figure 4e′

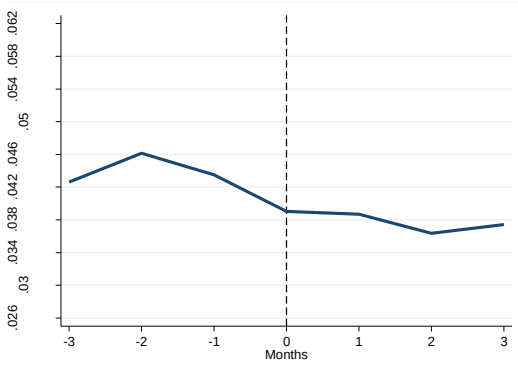


Table 1
S&P Credit Rating Announcements (May 1998 – September 2013)

This table presents the credit ratings announcement (upgrades, positive outlooks, downgrades and negative outlooks) for each country. The credit rating announcements are collected by S&P.

Country	Upgrade	Positive Outlook	Downgrade	Negative Outlook
Brazil	6	5	2	3
Chile	3	3	0	0
China	5	2	1	1
Czech Rep.	2	2	1	0
Egypt	0	0	7	4
India	2	3	1	4
Indonesia	8	3	4	3
South Korea	6	1	0	0
Malaysia	3	3	2	1
Mexico	4	3	1	1
Philippines	3	2	2	4
Russia	9	3	5	2
South Africa	3	1	1	2
Taiwan	0	0	2	3
Thailand	2	1	0	2
Turkey	6	6	2	4
Total	62	38	31	34

Table 2
Investors and Stock Market Performance (May 1998 – September 2013)

Table 2 shows the mean, standard deviation and sharp ratio of foreign investors return and local market returns for each country. The Sharpe ratio is average return in excess of the risk-free rate (one-month US T-bill rate) divided by standard deviation.

	Investors' Rate of Return (*RNAV*)			**Market Rate of Return (*RMKT*)**		
Country	Mean	Std. Dev.	Sharpe ratio	Mean	Std. Dev.	Sharpe ratio
Brazil	0.013	0.099	0.108	0.008	0.090	0.067
Chile	0.009	0.066	0.115	0.008	0.046	0.125
China	0.011	0.085	0.106	0.003	0.081	0.008
Czech Rep.	0.004	0.053	0.040	0.004	0.074	0.022
Egypt	0.005	0.066	0.044	0.009	0.090	0.075
India	0.012	0.088	0.111	0.010	0.084	0.091
Indonesia	0.017	0.116	0.127	0.012	0.081	0.125
Korea	0.014	0.093	0.134	0.008	0.081	0.080
Malaysia	0.010	0.064	0.130	0.006	0.065	0.057
Mexico	0.010	0.075	0.105	0.011	0.067	0.138
Philippines	0.008	0.088	0.070	0.006	0.073	0.051
Russia	0.014	0.111	0.106	0.008	0.142	0.044
South Africa	0.010	0.069	0.119	0.010	0.060	0.129
Taiwan	0.003	0.077	0.011	-0.000	0.073	-0.027
Thailand	0.012	0.090	0.114	0.007	0.084	0.055
Turkey	0.018	0.141	0.117	0.016	0.130	0.105
Mean	0.011	0.089	0.098	0.008	0.086	0.067

Table 3. Summary Statistics and Correlation Coefficients

This table reports summary statistics (Panel A) and correlation coefficient (Panel B) for our variables. RNAV is the foreign investors' return while RMKT is the domestic market return. CR and CO&W represents the credit ratings and credit outlooks along with credit watches, respectively. MCAP divided by GDP (MCAP /GDP) represents the stock market development. TOVER refers to the stock market liquidity that is defined as the value of domestic shares traded over the market capitalization. ln(GDP) is the natural logarithm of GDP proxies for the economic size of each country. Fund Flows/TNAV is the ratio of equity capital flows during a specific month relative to total net foreign assets at the end of each month. Political, Economic and Financial Risk are aggregate indicators that are measured on a scale of 0 to 100. These indicators are collected by PRS Group.

Panel A. Summary Statistics

	RNAV	*RMKT*	*CR*	*CO&W*	*MCAP /GDP*	*TOVER*	*ln(GDP)*	*Fund Flows/TNAV*	*Political Risk*	*Economic Risk*	*Financial Risk*
Mean	0.011	0.008	12.577	0.010	0.440	0.028	15.9654	-0.004	67.211	36.855	39.545
Median	0.014	0.011	13.000	0.000	0.334	0.020	15.87686	-0.001	67.500	37.000	40.000
Minimum	-0.530	-0.825	0.000	-1.000	0.001	0.000	11.15915	-10.340	40.000	16.000	22.000
Q1	-0.037	-0.034	10.000	0.000	0.207	0.000	14.65	-0.017	61.500	34.500	37.000
Q3	0.060	0.054	15.000	0.000	0.625	0.040	17.319	0.015	74.250	40.000	43.000
SD	0.089	0.086	3.480	0.568	0.345	0.038	1.979648	0.203	8.403	4.484	4.749
Maximum	0.619	0.587	20.000	1.000	1.771	0.328	21.07043	0.417	83.000	45.500	48.500
# Obs.	2960	2960	2960	2926	2421	2040	2748	2960	2960	2960	2960

Panel B. Pearson Correlation Coefficients

	RNAV	*RMKT*	*CR*	*CO&W*	*MCAP/ GDP*	*TOVER*	*ln(GDP)*	*Fund Flows/TNAV*	*Political Risk*	*Economic Risk*	*Financial Risk*
RNAV	**1.000**										
RMKT	0.832**	1.000									
CR	-0.043*	-0.042*	1.000								
CO&W	-0.009	-0.017	-0.016	1.000							
MCAP/GDP	0.020	0.006	0.540**	-0.097**	1.000						
TOVER	0.030	0.039	0.031	0.227**	-0.314**	1.000					
ln(GDP)	-0.027	-0.040*	0.441**	0.063**	0.062**	-0.034	1.000				
Fund Flows/TNAV	0.065**	0.055**	-0.007	0.009	0.048*	0.050*	-0.011	1.000			
Political Risk	-0.023	-0.025	0.755**	0.121**	0.361**	-0.018	0.363**	-0.019	1.000		
Economic Risk	-0.073**	-0.065**	0.617**	0.227**	0.463**	0.093**	0.427**	-0.009	0.528**	1.000	
Financial Risk	-0.011	-0.015	0.616**	0.017	0.466**	0.089**	0.388**	0.017	0.268**	0.606**	1.000

Table 4. Test of Difference around Negative Announcements

Panel A presents two sample *t*-tests for the difference in means of five main variable around negative (downgrade or negative credit outlook) announcements. The variables that are examined are RNAV, RMKT, Fund Flows to TNAV, MCAP over GDP and TOVER. The Panel illustrates the difference in means and the t- ratio in parentheses where the degrees of freedom use Welch's formula. The symbol t in the first column represents the months. Panel B presents the results of the nonparametric Kolmogorov-Smirnov test for differences in distribution around negative events. The parentheses in Panel B are probability values. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Panel A. Two-Sample *t*-test

	Downgrade Announcement					Negative Credit Outlook Announcement				
Time Period	***RNAV***	***RMKT***	***Fund Flows/TNAV***	***MCAP/GDP***	***TOVER***	***RNAV***	***RMKT***	***Fund Flows/TNAV***	***MCAP/GDP***	***TOVER***
t-1 and t+1	0.055	0.066	0.002	-0.004	0.004	0.044	-0.011	-0.010	0.025	-0.005
	(1.603)	(1.436)	(0.110)	(-0.053)	(0.672)	(1.591)	(-0.388)	(0.681)	(0.274)	(-0.683)
t-2 and t+2	0.081**	0.066**	-0.067	-0.015	0.003	0.059**	0.032	0.020	0.011	-0.001
	(2.172)	(2.193)	(-0.738)	(-0.220)	(0.457)	(1.982)	(1.112)	(1.215)	(0.120)	(-0.063)
t-3 and t+3	0.042	0.079**	-0.025	-0.044	-0.006	0.082***	0.081***	0.012	0.018	0.006
	(1.228)	(2.102)	(-1.405)	(-0.521)	(-0.698)	(2.503)	(2.182)	(0.917)	(0.198)	(0.833)
Avg. 3-mo. before	0.061***	0.069***	-0.029	-0.019	0.001	0.063***	0.034*	0.007	0.018	0.000
- Avg. 3-mo. after	(3.017)	(3.095)	(-0.900)	(-0.447)	(0.192)	(3.557)	(1.873)	(0.813)	(0.348)	(-0.040)

Panel B. Kolmogorov-Smirnov test

	Downgrade Announcement					Negative Credit Outlook Announcement				
	RNAV	***RMKT***	***Fund Flows/TNAV***	***MCAP/GDP***	***TOVER***	***RNAV***	***RMKT***	***Fund Flows/TNAV***	***MCAP/GDP***	***TOVER***
Avg. 3-month before	0.202	0.224**	0.098	0.074	0.137	0.244***	0.192**	0.151	0.083	0.082
	(0.050)	(0.025)	(0.491)	(0.744)	(0.338)	(0.003)	(0.031)	(0.114)	(0.607)	(0.635)
Avg. 3-month after	0.000	-0.013	-0.080	-0.167	-0.069	-0.001	-0.011	-0.015	-0.139	-0.099
	(1.000)	(0.988)	(0.622)	(0.223)	(0.761)	(1.000)	(0.988)	(0.979)	(0.249)	(0.520)
Combined K-S	0.202	0.224**	0.098	0.167	0.137	0.244***	0.192*	0.151	0.139	0.099
	(0.099)	(0.049)	(0.869)	(0.441)	(0.650)	(0.007)	(0.061)	(0.227)	(0.491)	(0.899)

Table 5. Tests of Difference around Positive Announcements

Panel A present two sample *t*-tests for the difference in means of five main variable around positive (upgrade or positive credit outlook) announcements. The variables that are examined are RNAV, RMKT, Fund Flows to TNAV, MCAP over GDP and TOVER. The Panel illustrates the difference in means and the *t*- ratio in parentheses where the degrees of freedom use Welch's formula. The symbol t in the first column represents the months. Panel B presents the results of the nonparametric Kolmogorov-Smirnov test for differences in distribution around positive events. The parentheses in Panel B are probability values. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Panel A. Two Sample *t*-test

	Upgrade Announcement					Positive Credit Outlook Announcement				
Time period	***RNAV***	***RMKT***	***Fund Flows/TNAV***	***MCAP/GDP***	***TOVER***	***RNAV***	***RMKT***	***Fund Flows/TNAV***	***MCAP/GDP***	*TOVER*
t-1 and t+1	-0.028*	-0.005	-0.008	0.011	-0.007	-0.042**	-0.035*	-0.013	0.011	-0.005
	(-1.938)	(-0.342)	(-0.821)	(0.234)	(-0.685)	(-1.998)	(-1.792)	(-0.971)	(0.167)	(-0.346)
t-2 and t+2	-0.002	0.003	0.001	0.021	-0.008	-0.024	-0.022	-0.008	0.021	-0.010
	(-0.151)	(0.191)	(0.125)	(0.438)	(-0.679)	(-1.181)	(-1.295)	(-0.631)	(0.311)	(-0.627)
t-3 and t+3	-0.022	-0.022	-0.001	0.012	-0.003	-0.027	-0.026	-0.027*	0.027	-0.005
	(-1.456)	(-1.423)	(-0.046)	(0.234)	(-0.256)	(-1.239)	(-1.261)	(-1.726)	(0.387)	(-0.416)
Avg. 3-mo. before -	-0.018**	-0.008	-0.003	0.015	-0.006	-0.031***	-0.028**	-0.016**	0.020	-0.007
Avg. 3-mo. after	(-2.013)	(-0.948)	(-0.443)	(0.528)	(-0.946)	(-2.580)	(-2.533)	(-1.991)	(0.507)	(-0.824)

Panel B. Kolmogorov-Smirnov test

	Upgrade Announcement					Positive Credit Outlook Announcement				
Time period	***RNAV***	***RMKT***	***Fund Flows/TNAV***	***MCAP/GDP***	***TOVER***	***RNAV***	***RMKT***	***Fund Flows/TNAV***	***MCAP/GDP***	***TOVER***
Avg. 3-month before	0.006	0.023	0.086	0.086	0.079	0.000	0.009	0.018	0.159	0.073
	(0.994)	(0.910)	(0.262)	(0.352)	(0.531)	(1.000)	(0.991)	(0.964)	(0.104)	(0.6960)
Avg. 3-month after	-0.129	-0.065	-0.051	-0.066	-0.059	-0.172**	-0.157*	-0.202***	-0.050	-0.087
	(0.0490)	(0.470)	(0.621)	(0.540)	(0.700)	(0.036)	(0.062)	(0.010)	(0.800)	(0.593)
Combined K-S	0.129	0.065	0.086	0.086	0.079	0.172*	0.157	0.202**	0.159	0.087
	(0.099)	(0.844)	(0.515)	(0.674)	(0.909)	(0.073)	(0.125)	(0.020)	(0.207)	(0.957)

Table 6
Foreign Investors' Excess Rate of Return

The table reports the results of four panel models using countries and time effects. The dependent variable in all models is foreign investors' excess rate of return ($RNAV - R_f$). The covered period is from May of 1998 to September of 2013. The main independent variables are CR and CO&W. The control variables are ln(GDP), $(MCAP/GDP)$, $(FLOW/TNA)$, $TOVER$, ERV. All dependent variable are lagged by a month. A constant is estimated but not reported. The t-statistics are presented in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)
$\boldsymbol{CR_{t-1}}$	-0.434***	-0.382***	-0.301**	-0.385***
	(-4.30)	(-3.08)	(-2.44)	(-3.03)
$\boldsymbol{CO\&W_{t-1}}$	-0.476**	-0.275	-0.127	-0.280
	(-1.99)	(-1.07)	(-0.45)	(-1.07)
$\boldsymbol{\ln(GDP_{t-1})}$		-2.274***	-2.374***	-2.278***
		(-3.32)	(-2.71)	(-3.32)
$\boldsymbol{(MCAP/GDP)_{t-1}}$		-3.726***	-3.153***	-3.729***
		(-3.13)	(-2.68)	(-3.13)
$\boldsymbol{(FLOW/TNA)_{t-1}}$		0.951	0.001	0.949
		(0.55)	(0.00)	(0.55)
$\boldsymbol{TOVER_{t-1}}$			4.232	
			(0.66)	
$\boldsymbol{ERV_{t-1}}$				-1.016
				(-0.11)
Time Effects	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes
# Obs.	2910	2395	1845	2395
R-Squared	0.520	0.544	0.590	0.544

Table 7.
Panel A. Testing Ratings Asymmetry

Panel A present the results of four panel models using countries and time effects. The dependent variable in the first two models is foreign investors' excess rate of return ($RNAV - R_f$) and in the following two models (3and 4) is the two month Cumulative Excess Return. The covered period is from May of 1998 to September of 2013. The main independent variables are CR, CO&W and the DOWN and UP dummies. DOWN dummy indicates whether a downgrade has occurred (equal to 1 and zero otherwise) while UP dummy indicates whether upgrade has occurred (equal to 1 and zero otherwise). The control variables are ln(GDP), (MCAP/GDP) and (FLOW/TNA). All models have two interaction terms, $CR \times DOWN$ and $CR \times DOWN$. The independent variable are lagged by a month. A constant is estimated but not reported. In addition, Panel B presents the total effects of CR, DOWN and UP taking into account their interaction effects. The t-statistics are presented in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Dependent Variable	**Excess Return**	**Excess Return**	**Cumulative Excess Return**	**Cumulative Excess Return**
$\mathbf{CR_{t-1}}$		-0.290**		-0.342***
		(-2.30)		(-3.87)
$\mathbf{CO\&W_{t-1}}$	-0.174	-0.183	-0.109	-0.141
	(-0.67)	(-0.71)	(-0.61)	(-0.78)
$\mathbf{DOWN_{t-1}}$	4.475***	13.560***	2.066**	4.392*
	(3.22)	(3.73)	(2.14)	(1.74)
$\mathbf{UP_{t-1}}$	0.362	2.541	0.252	1.012
	(0.39)	(0.73)	(0.39)	(0.42)
$\mathbf{ln(GDP_{t-1})}$	-2.974***	-2.352***	-2.619***	-1.964***
	(-4.60)	(-3.44)	(-5.80)	(-4.11)
$\mathbf{(MCAP/GDP)_{t-1}}$	-4.152***	-3.743***	-4.130***	-3.645***
	(-3.53)	(-3.15)	(-5.03)	(-4.40)
$\mathbf{(FLOW/TNA)_{t-1}}$	1.017	0.849	1.951	1.793
	(0.59)	(0.49)	(1.63)	(1.50)
$\mathbf{(CR \times DOWN)_{t-1}}$		-0.976***		-0.291
		(-2.86)		(-1.23)
$\mathbf{(CR \times UP)_{t-1}}$		-0.172		-0.054
		(-0.61)		(-0.28)
Time Effects	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes
# Obs.	2395	2395	2380	2380
R-Squared	0.544	0.548	0.611	0.614

Panel B. Total Effects

$\mathbf{CR_{t-1}}$		-0.3017***		-0.219***
		(-2.41)		(-2.45)
$\mathbf{DOWN_{t-1}}$		1.161		0.443
		(-0.68)		(0.36)
$\mathbf{UP_{t-1}}$		0.352		0.293
		(-0.37)		(0.41)

Note: *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively

Table 8
Panel A. Foreign Investors' Risk-Adjusted Rate of Return

The table reports the parameters of a two-stage procedure similar to Wermers (2000). More specifically, in the first stage we employee three asset pricing models: the international CAPM or single-factor model (models 1-3) and the three- and five-factor models of Fama and French (1993, 2015) (models 4-6 and 7-9, respectively) using an additional risk-factor for the domestic market risk premium in each asset pricing model. The risk-adjusted returns (alphas) that capture the Foreign Investors' abnormal returns are then used in the second stage as dependent variables. The covered period is from May of 1998 to September of 2013. The main independent variables are CR, CO&W and the DOWN and UP dummies. DOWN dummy indicates whether a downgrade has occurred (equal to 1 and zero otherwise) while UP dummy indicates whether upgrade has occurred (equal to 1 and zero otherwise). The control variables are ln(GDP), (MCAP/GDP), (FLOW/TNA) and TOVER. All models have two interaction terms, CR×DOWN and CR×DOWN. The independent variables are lagged by a month. A constant is estimated but not reported. In addition, Panel B presents the total effects of CR, DOWN and UP taking into account their interaction effects. The t-statistics are presented in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent Variable	**ICAPM**	**ICAPM**	**Cum-ICAPM**	**3-Factor**	**3-Factor**	**Cum-3-Factor**	**5-Factor**	**5-Factor**	**Cum-5-Factor**
$\mathbf{CR_{t-1}}$		-0.138***	-0.144***		-0.128***	-0.133***		-0.092***	-0.095***
		(-12.01)	(-12.53)		(-9.44)	(-9.78)		(-6.68)	(-6.90)
$\mathbf{CO\&W_{t-1}}$	0.227***	0.199***	0.185***	0.130***	0.105***	0.093***	0.094***	0.077***	0.065**
	(8.74)	(7.97)	(7.51)	(4.30)	(3.55)	(3.18)	(3.12)	(2.58)	(2.20)
$\mathbf{DOWN_{t-1}}$	0.327**	-0.125	-0.179	0.277*	-0.001	-0.106	0.197	0.165	0.084
	(2.44)	(-0.41)	(-0.59)	(1.78)	(-0.00)	(-0.30)	(1.27)	(0.45)	(0.23)
$\mathbf{UP_{t-1}}$	0.220**	0.497	0.308	0.166	0.648*	0.468	0.043	0.222	0.049
	(2.44)	(1.55)	(0.97)	(1.58)	(1.70)	(1.25)	(0.41)	(0.58)	(0.13)
$\mathbf{ln(GDP_{t-1})}$	-0.679***	-0.360***	-0.356***	-0.342***	-0.041	-0.042	-0.162*	0.055	0.047
	(-8.41)	(-4.43)	(-4.41)	(-3.64)	(-0.43)	(-0.43)	(-1.73)	(0.56)	(0.48)
$\mathbf{(MCAP/GDP)_{t-1}}$	0.135	0.378***	0.386***	0.750***	0.976***	0.976***	0.590***	0.750***	0.752***
	(1.24)	(3.58)	(3.70)	(5.93)	(7.80)	(7.87)	(4.67)	(5.92)	(6.00)
$\mathbf{(FLOW/TNA)_{t-1}}$	0.532***	0.460***	0.445***	0.594***	0.524***	0.513***	0.552***	0.506***	0.502***
	(3.52)	(3.19)	(3.14)	(3.39)	(3.07)	(3.05)	(3.15)	(2.93)	(2.95)
$\boldsymbol{TOVER_{t-1}}$	-2.133***	-2.000***	-1.835***	0.306	0.418	0.737	-1.252*	-1.162*	-0.862
	(-3.51)	(-3.44)	(-3.21)	(0.43)	(0.61)	(1.09)	(-1.77)	(-1.67)	(-1.26)
$\mathbf{(CR \times DOWN)_{t-1}}$		0.018	0.020		0.001	0.010		-0.017	-0.011
		(0.60)	(0.70)		(0.03)	(0.28)		(-0.49)	(-0.31)
$\mathbf{(CR \times UP)_{t-1}}$		-0.018	-0.004		-0.035	-0.020		-0.011	0.002
		(-0.71)	(-0.18)		(-1.17)	(-0.70)		(-0.38)	(0.07)
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Obs.	1635	1635	1623	1635	1635	1623	1635	1635	1623
R-Squared	0.355	0.414	0.416	0.371	0.409	0.414	0.377	0.397	0.401
Mean of alphas (%)	0.301***	0.301***	0.301***	0.179***	0.179***	0.179***	0.161***	0.161***	0.161***
***t*-statistic (alpha=0)**	(19.01)	(19.01)	(19.01)	(10.48)	(10.48)	(10.48)	(9.207)	(9.207)	(9.207)

Panel B. Total Effects						
$\mathbf{CR_{t-1}}$	-0.138***	-0.144***	-0.129***	-0.134***	-0.092***	-0.095***
	(-12.09)	(-12.60)	(-9.54)	(-9.86)	(-6.75)	(-6.94)
$\mathbf{DOWN_{t-1}}$	0.106	-0.184	0.014	0.021	-0.062	-0.056
	(0.63)	(-1.17)	(0.07)	(-0.10)	(-0.30)	(-0.28)
$\mathbf{UP_{t-1}}$	0.263***	0.299***	0.191**	0.199**	0.074	0.077
	(2.99)	(3.63)	(1.83)	(1.93)	(0.70)	(0.74)

Table 9
Domestic Stock Market Risk-Adjusted Rate of Return

The table reports the parameters of a two-stage procedure similar to Wermers (2000). More specifically, in the first stage we employee three asset pricing models: the international CAPM or single-factor model (models 1-3) and the three- and five-factor models of Fama and French (1993, 2015) (models 4-6 and 7-9, respectively) using an additional risk-factor for the domestic market risk premium in each asset pricing model. The risk-adjusted returns (alphas) that capture the Domestic markets' abnormal returns are then used in the second stage as dependent variables. The covered period is from May of 1998 to September of 2013. The main independent variables are CR, CO&W and the DOWN and UP dummies. DOWN dummy indicates whether a downgrade has occurred (equal to 1 and zero otherwise) while UP dummy indicates whether upgrade has occurred (equal to 1 and zero otherwise). The control variables are ln(GDP), (MCAP/GDP), (FLOW/TNA) and TOVER. All models have two interaction terms, CR×DOWN and CR×DOWN. The independent variables are lagged by a month. A constant is estimated but not reported. In addition, Panel B presents the total effects of CR, CO&W, DOWN, UP, RNAV taking into account their interaction effects. The t-statistics are presented in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

	(1) ICAPM	(2) ICAPM	(3) 3-Factor	(4) 3-Factor	(5) 5-Factor	(6) 5-Factor
CR_{t-1}		0.033		0.092***		-0.020
		(1.52)		(3.81)		(-0.79)
$CO\&W_{t-1}$	0.290***	0.294***	0.219***	0.238***	0.117**	0.106*
	(6.11)	(6.02)	(4.19)	(4.45)	(2.12)	(1.86)
$DOWN_{t-1}$	-0.853***	-1.412**	-0.890***	-1.185*	-0.766***	-1.565**
	(-3.50)	(-2.39)	(-3.31)	(-1.83)	(-2.69)	(-2.27)
UP_{t-1}	0.156	0.645	0.054	-0.390	0.041	-0.518
	(0.94)	(1.04)	(0.30)	(-0.57)	(0.22)	(-0.72)
$\ln GDP_{t-1}$	-0.160	-0.233	0.263	0.044	0.716***	0.743***
	(-1.08)	(-1.50)	(1.62)	(0.26)	(4.15)	(4.08)
$(MCAP/GDP)_{t-1}$	3.313***	3.279***	3.313***	3.156***	3.272***	3.322***
	(16.67)	(16.12)	(15.13)	(14.14)	(14.10)	(13.96)
$(FLOW/TNA)_{t-1}$	0.117	0.119	0.342	0.394	0.520	0.519
	(0.42)	(0.43)	(1.12)	(1.29)	(1.60)	(1.59)
$TOVER_{t-1}$	8.628***	8.614***	9.346***	9.282***	9.481***	9.556***
	(7.75)	(7.73)	(7.62)	(7.59)	(7.30)	(7.34)
$RNAV_{t-1}$	0.020***	0.036***	0.021***	0.029**	0.021***	0.024*
	(4.50)	(3.24)	(4.16)	(2.38)	(4.01)	(1.82)
$CO\&W_{t-1} \times RNAV_{t-1}$		-0.001		-0.001		-0.000
		(-1.51)		(-0.65)		(-0.26)
$CR_{t-1} \times RNAV_{t-1}$		-0.002		-0.003		0.001
		(-0.28)		(-0.44)		(0.20)
$CR_{t-1} \times DOWN_{t-1}$		0.069		0.053		0.081
		(1.23)		(0.86)		(1.23)
$CR_{t-1} \times UP_{t-1}$		-0.041		0.032		0.045
		(-0.85)		(0.62)		(0.81)
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1635	1635	1635	1635	1635	1635
R-Squared	0.356	0.357	0.295	0.301	0.252	0.251
Mean of alphas (%)	0.432***	0.432***	0.144***	0.144***	0.099***	0.099***
***t*-statistic (alpha=0)**	(15.057)	(15.057)	(4.945)	(4.945)	(3.306)	(3.306)
Panel B: Total Effects						
CR_{t-1}		0.032		0.093***		-0.019
		(1.45)		(3.85)		(-0.75)
$CO\&W_{t-1}$		0.292***		0.236***		0.108**
		(6.09)		(4.47)		(1.92)
$RNAV_{t-1}$		0.019***		0.021***		0.020***
		(3.97)		(3.98)		(3.64)
$DOWN_{t-1}$		-0.498		-0.481		-0.495
		(-1.53)		(-1.35)		(-1.30)
UP_{t-1}		0.105		0.038		0.079
		(0.62)		(0.20)		(0.40)

Table 10
Risk-Adjusted Returns of Foreign Investors in Excess of the Stock Market

The table reports the parameters of a two-stage procedure similar to Wermers (2000). More specifically, in the first stage we employee three asset pricing models: the international CAPM or single-factor model (models 1-3) and the three- and five-factor models of Fama and French (1993, 2015) (models 4-6 and 7-9, respectively) using an additional risk-factor for the domestic market risk premium in each asset pricing model. The risk-adjusted returns (alphas) that capture the abnormal returns of Foreign Investors in excess of the stock market return are then used in the second stage as dependent variables. The covered period is from May of 1998 to September of 2013. The main independent variables are CR, CO&W and the DOWN and UP dummies. DOWN dummy indicates whether a downgrade has occurred (equal to 1 and zero otherwise) while UP dummy indicates whether upgrade has occurred (equal to 1 and zero otherwise). The control variables are ln(GDP), (MCAP/GDP), (FLOW/TNA) and TOVER. All models have two interaction terms, CR×DOWN and CR×DOWN. The independent variables are lagged by a month. A constant is estimated but not reported. In addition, Panel B presents the total effects of CR, DOWN and UP taking into account their interaction effects. The t-statistics are presented in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

	(1) ICAPM	(1) ICAPM	(3) 3-Factor	(4) 3-Factor	(5) 5-Factor	(6) 5-Factor
CR_{t-1}		-0.138***		-0.128***		-0.092***
		(-12.01)		(-9.44)		(-6.68)
$CO\&W_{t-1}$	0.227***	0.199***	0.130***	0.105***	0.094***	0.077***
	(8.74)	(7.97)	(4.30)	(3.55)	(3.12)	(2.58)
$DOWN_{t-1}$	0.327**	-0.125	0.277*	-0.001	0.197	0.165
	(2.44)	(-0.41)	(1.78)	(-0.00)	(1.27)	(0.45)
UP_{t-1}	0.220**	0.497	0.166	0.648*	0.043	0.222
	(2.44)	(1.55)	(1.58)	(1.70)	(0.41)	(0.58)
$\ln GDP_{t-1}$	-0.679***	-0.360***	-0.342***	-0.041	-0.162*	0.055
	(-8.41)	(-4.43)	(-3.64)	(-0.43)	(-1.73)	(0.56)
$(MCAP/GDP)_{t-1}$	0.135	0.378***	0.750***	0.976***	0.590***	0.750***
	(1.24)	(3.58)	(5.93)	(7.80)	(4.67)	(5.92)
$(FLOW/TNA)_{t-1}$	0.532***	0.460***	0.594***	0.524***	0.552***	0.506***
	(3.52)	(3.19)	(3.39)	(3.07)	(3.15)	(2.93)
$TOVER_{t-1}$	-2.133***	-2.000***	0.306	0.418	-1.252*	-1.162*
	(-3.51)	(-3.44)	(0.43)	(0.61)	(-1.77)	(-1.67)
$CR_{t-1} \times DOWN_{t-1}$		0.018		0.001		-0.017
		(0.60)		(0.03)		(-0.49)
$CR_{t-1} \times UP_{t-1}$		-0.018		-0.035		-0.011
		(-0.71)		(-1.17)		(-0.38)
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1635	1635	1635	1635	1635	1635
R-Squared	0.281	0.346	0.299	0.341	0.306	0.327
Mean of alphas (%)	0.301	0.301	0.179	0.179	0.161	0.161
***t*-statistic (alpha=0)**	(19.01)	(19.01)	(10.48)	(10.48)	(9.21)	(9.21)
Panel B. Total Effects						
CR_{t-1}		-0.138***		-0.129***		-0.092***
		(12.09)		(-9.54)		(-6.75)
$DOWN_{t-1}$		0.106		0.014		-0.062
		(0.63)		(0.07)		(-0.30)
UP_{t-1}		0.263***		0.193*		0.074
		(2.99)		(1.85)		(0.70)

Appendix

Table A1.

Credit Ratings based on Standard & Poor. This table shows how the letters transform into numbers in order to create the credit rating variable.

SD/D	0
C	1
CC	2
CCC-	3
CCC	4
CCC+	5
B-	6
B	7
B+	8
BB-	9
BB	10
BB+	11
BBB-	12
BBB	13
BBB+	14
A-	15
A	16
A+	17
AA-	18
AA	19
AA+	20
AAA	21