

# Why Rating Agencies Disagree on Sovereign Ratings

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## **Abstract**

This paper explores why rating agencies disagree on a country's sovereign default risk. Specifically, we analyze the sovereign ratings of four agencies and their interactions on an empirical basis. Our findings indicate that the frequency of split ratings and their lopsidedness are the result of uncertainty and the use of different rating methodologies but not of a home bias. Still, rating agencies treat world regions differently. Finally, a small and subscriber paid agency appears to be more independent but also more volatile in its rating behavior than the issuer-paid Big Three (Standard & Poor's, Moody's and Fitch).

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## 1. Introduction

The recent financial crisis has evoked a revival of the discussion about the role of Credit Rating Agencies (CRAs). During the sovereign debt crisis in Europe, the so called Big Three rating agencies Standard & Poor's, Moody's and Fitch Ratings started to downgrade several euro area economies and even assigned junk status to Ireland, Portugal and Greece. The sudden decline of trust in the solvency of European economies led many politicians to claim that the Big Three did either not realize the true credit risk or that their decisions were biased by political influence.<sup>1</sup>

Also, the academic literature has contributed to this debate: For instance, [Gaertner et al. \(2011\)](#) find that ratings in selected euro area economies between 2009 and 2010 ranked 2.3 notches below a hypothetical rating for a country outside the monetary union with the same economic fundamentals. [Ferri et al. \(1999\)](#) show that ratings have been pro-cyclical during the Asian crisis, thereby amplifying the recessions in affected countries. Add to this, [Fuchs and Gehring \(2013\)](#) find that sovereign ratings are subject to a home bias (where home refers to both the location of headquarters and ownership). A home bias exists if the resident agency assigns a rating which is on average one notch higher than the rating of competitors.<sup>2</sup> Further, by comparing the behavior of nine agencies, the authors find that cultural distance (for instance language) and economic ties (bank exposure, export interests) with the home country affect the respective country's rating. However, the channels through which the ratings are biased vary substantially across the individual agencies. Finally, the authors admit that most of the variation in ratings is explained by macroeconomic and political fundamentals.

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<sup>1</sup>see Handelsblatt (January 17, 2012): "The myth of the U.S. conspiracy"

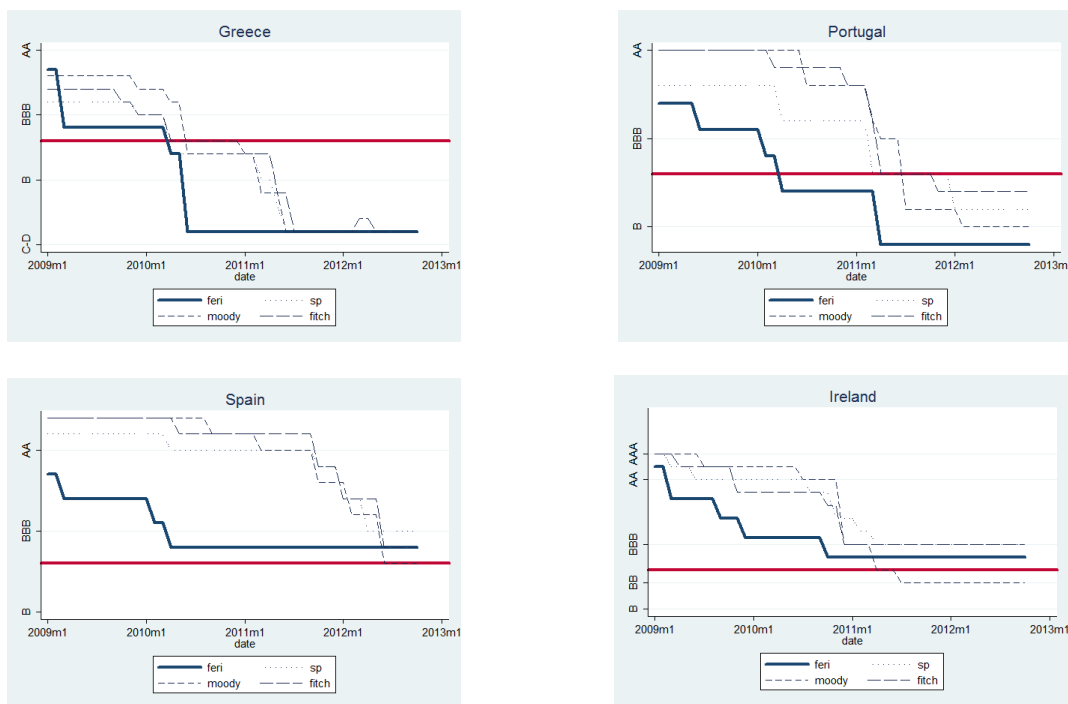
<sup>2</sup>The authors find that the Big Three exhibit only a weak home bias. Only S&P is shown to rate the United States better than other countries and Fitch exhibits a home bias for both France and the United States (based on ownership and headquarter).

At the same time, the literature on determinants of sovereign credit ratings shows that large parts of the variation can be explained with few macroeconomic variables (see for instance [Cantor and Packer \(1996\)](#)). In a related panel analysis for sovereign ratings between 1995 and 2005, [Afonso \*et al.\* \(2011\)](#) find that their model (including a set of macroeconomic, political and regional variables) correctly predicts 75 percent of the ratings (within one notch variation) despite the fact that expectations for future economic development or other qualitative assessments are not taken into account by the respective agency.

Thus, empirical evidence towards the adequacy of sovereign ratings appears to be mixed: In general, ratings seem to map the credit risk of a country quite well, however, during times of crisis, the Big Three have often been accused of reacting too late and to be overly bearish towards a country's creditworthiness. However, compared to the corporate sector it remains difficult to assess the adequacy of ratings since at least the advanced countries have not defaulted for many years. Therefore, one has to rely on indirect measures of performance such as the relative activity of rating agencies by studying follower-leader behavior ([Hill and Faff \(2010\)](#)) or by comparing whether some regions systematically receive better ratings than others ([Fuchs and Gehring \(2013\)](#)). However, recent publications have put less attention to the emergence of split ratings across rating agencies. Do rating agencies disagree more often on the creditworthiness of a specific region than on another? Or do we find that emerging markets are subject to more split ratings than advanced countries due to more volatile economic and political developments? We think that disagreement can have important implications for the affected countries. Especially if split ratings occur at the threshold between investment and speculative grade, a rating change can have a significant effect on refinancing costs. Also, disagreement on sovereign ratings can be regarded as a indicator of uncertainty and thus scare investors away. Finally, the mere fact that the Big Three agencies

Figure 1: Sovereign Credit Ratings during the Euro Crisis

The rating data have been retrieved from the four rating agencies whereby Feri uses a different rating scale but offers a translation table of their 9-notch-scale to the 21-notch-scales of the Big Three. The red line illustrates the threshold between investment and speculative grade status.



disagree on sovereign ratings is of interest: The assessment of sovereign creditworthiness has major repercussions not only for the refinancing costs of a government but also for the corporate sector within the country. Currently, three influential agencies provide ratings to the whole world facing only very small competitors (see the market shares provided in A.14). Thus, one may question if the established agencies use all relevant information or if ratings are rather retained unchanged because of the rare instances of sovereign defaults.

Figure 1 illustrates the downgrades of euro area countries during the sovereign debt crisis. It shows that the Big Three decided almost unanimously on euro area ratings (besides Moody's downgrade for Ireland to speculative grade status). However, when

adding the ratings from a smaller European rating agency named Feri EuroRating, it appears that the agency has started to downgrade the same countries earlier and it assigned junk status to Portugal even one year before the Big Three took action. This behavior shows exactly the opposite of a home bias. Still, it remains to be explained why rating agencies sometimes disagree on sovereign ratings, especially because most information about their creditworthiness is publicly available.

In this paper, we show that disagreement among CRAs is rather a consequence of the use of different rating methods and uncertainty than the result of a home bias. In addition, we find that a small and subscriber-paid rating agency disagrees with the Big Three agencies more than three times as often than the Big Three disagree among themselves. Also, the small agency is clearly more volatile in its rating behavior by assigning almost twice as many rating changes to the countries in our sample compared to the average Big Three agency.

The paper is organized as follows: Section 2 briefly reviews the related literature. Section 3 presents our sample and a classification of ratings and split ratings. In section 4, we show the results for political, macroeconomic and regional determinants of split ratings between the four agencies. In Section 5, we explore whether ratings are lopsided across agencies and analyze potential determinants of optimism and pessimism before section 7 concludes.

## **2. Literature Review**

In principle, we distinguish between three types of explanations for the emergence of split ratings:

First, split ratings are the consequence of uncertainty towards the true credit risk. Until now, the literature has only focused on banks ([Morgan \(2002\)](#)) and non-financial firms ([Livingston \*et al.\* \(2007\)](#)). The authors find that disagreement is not randomly

distributed but that those companies with higher asset opaqueness are more likely to receive split ratings. To our knowledge, determinants of sovereign split ratings have not been studied so far. However, looking at the frequency of rating splits (see section 5.2), it seems that rating agencies have different views on a country's default risk. These may be attributed to the use of different rating models or uncertainty in times of adverse shocks. For instance, one agency may put more weight on the default history and public debt ratio of a country whereas another primarily considers the economic well-being and political stability in a country. Taking into account the empirical findings during times of crisis, one may also contemplate whether the frequency of split ratings increases when a country is subject to adverse shocks.

Second, prior studies have discussed whether different business models among rating agencies can be a reason for split ratings. Using corporate bond ratings from 1999 to 2013 [Bruno \*et al.\* \(2013\)](#) find that a subscriber funded rating agency (Egan-Jones Rating Company) provides more rating updates than a rating agency that uses the issuer-pays model (Big Three agencies). This observation is robust to the registration of Egan-Jones as a National Recognized Statistical Rating Organization (NRSRO) in 2007. The authors conclude that the rating behavior is thus driven by different business models (issuer-pays vs. subscriber funded). [Bhattacharya \*et al.\* \(2014\)](#) find that Egan-Jones provides not only more rating updates but also a higher rating quality suggesting that subscriber-funded agencies are even better suited to act in the best interest of investors. In case of sovereign ratings it is more difficult to measure the rating performance due to a lack of defaults. However, issuer-paid agencies may be acting in the home country's interest in order to keep their mandate whereas subscriber funded companies should be primarily interested in satisfying their customers.<sup>3</sup>

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<sup>3</sup>Only a limited number of the Big Three ratings are unsolicited (26.6% in this sample). We find no significant difference across rating agencies between unsolicited and solicited ratings for one particular

Third, split ratings can be the consequence of a rating agency's inclusion into regulatory frameworks. Many studies find that decisions by the Big Three have an impact on bond rates (Gaertner *et al.* (2011), Afonso *et al.* (2012), Alsakka and ap Gwilym (2010), Arezki *et al.* (2011)) and stock prices. That is to say, interest rates often follow rating decisions.<sup>4</sup> One may suggest that a part of the causal relationship is driven by the quasi-automatic impact on bond rates and stock prices via the inclusion of external ratings in regulatory frameworks: According to the Basel rules, European banks are required to hold a fixed share of investment grade rated bonds in their portfolio. The decision of a rating agency to downgrade a country close to (or even to) junk status, might prompt investors to sell the respective bonds just to comply with the established rules.<sup>5</sup> In other words, CRAs may have incentives to follow the decisions of other regulated competitors if ratings are included in regulation. Theoretical work by Opp *et al.* (2013) shows that the inclusion of ratings in regulatory frameworks such as Basel may lead to a rating bias and pro-cyclical behavior of CRAs whose ratings are used for regulatory purposes. Kisgen and Strahan (2010) support this result by showing that rating agencies certified for regulatory use take the rating behavior of their certified competitors explicitly into account for their own decisions.<sup>6</sup>

Moreover, CRAs whose ratings are used by regulators may have incentives to be reluctant towards sovereign downgrades when they use sovereign ceiling policies which compel rating agencies not to assign a better rating to a firm than to the sovereign (Borensztein *et al.* (2013)). Adelino and Ferreira (2014) find that the downgrades of

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country. The results are available on request.

<sup>4</sup>Some of those studies find that the relationship is bi-directional.

<sup>5</sup>Investors do not necessarily rely on the rules of this standardized approach if they use the internal risk based approach (IRB).

<sup>6</sup>The authors find that the certification of a new CRA (DBRS) was followed by rating upgrades from the Big Three for those firms which received higher ratings by DBRS after certification.

banks due to sovereign ceiling policies have significant negative effects on bank lending. This may lead rating agencies to be reluctant towards changes in sovereign credit risk. However, if one of the Big Three agencies takes the first step, competitors face incentives to follow this decision due to expected repercussions on the country's credit risk. On the contrary, a smaller CRA has a higher degree of flexibility (it rates fewer big issuers like large banks and corporate firms (Bhattacharya *et al.* (2014))) and may thus have less concern to change a country's rating. Moreover, small agencies (like Feri) often follow subscriber-paid business models which means they have less concerns to downgrade issuers than issuer-paid agencies (i.e. the Big Three).

We contribute to the literature by exploring major determinants of split ratings for sovereigns across the four agencies. In particular, we investigate two hypotheses why split ratings for countries may exist:

(1) Split ratings for sovereigns can be explained by model uncertainty when rating agencies measure default risk differently, especially in the presence of large adverse shocks to credit risk.

(2) Conditional on the place of residence and the ownership, rating agencies assign better ratings to certain geographically and/or economically integrated regions (given the economic and political environment within the respective countries).

### **3. Data and Stylized Facts**

In this paper, we use monthly sovereign ratings from the Big Three rating agencies and from Feri Eurorating AG, Germany's largest non-bank adviser/asset manager for private and institutional assets. Table A.14 of the Appendix entails a detailed overview of the four agencies (ownership, market share, rated countries). Feri is a small rating agency compared to the Big Three in terms of market share but of comparable size with



other small credit rating agencies such as Dominion Bond Rating Services (DBRS) or the Economist Intelligence Unit (EIU).

Exploring these data, we obtain a sample of 54 countries with monthly rating actions ranging from June 1999 to October 2012. The sample comprises 23 industrial countries and 31 emerging market economies and the maximum number of monthly observations for each rating agency is 9,016 (Moody's and Feri) country-month observations.<sup>7</sup> During our sample period of 13 years, we observe between 169 (Moody's) and 393 (Feri) rating changes. For robustness checks, we also considered watch and outlook decisions by the Big Three. However, the great majority of these precede rating changes and thus entail no additional explanatory value for our analysis.

One part of this paper will use annual data due to the fact that a number of political and economic variables are only available on a yearly basis. The sample entails a maximum of 702 annual rating observations per rating agency.

We start by mapping the alphabetical notches into numerical values in order to perform statistical analyses.<sup>8</sup> A 17 maps the best rating (AAA or AAa) and a 1 the worst (D/D/C). Therefore, lower values indicate a higher default probability. The Big Three ratings have 22 notches when using a linear scale.<sup>9</sup> Feri uses 11 notches and provides a translation table for comparison with the Big Three. We apply this transformation.<sup>10</sup> The dividing line between investment grade and speculative grade on Feri's scale is between C and D, for S&P and Fitch the dividing line is between BBB- and BB+ and for Moody's it runs between the Baa3 and Ba1.

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<sup>7</sup>A country list is provided by Table A.13 of the Appendix.

<sup>8</sup>see Table A.15 in the Appendix of this paper

<sup>9</sup>We follow Güttler and Wahrenburg (2007) and Afonso *et al.* (2011) in restricting the scale to 17 values since there are few observations in the lowest range.

<sup>10</sup>see Feri press releases on country ratings: [http://fr.feri.de/files/documents/fer/press/2010-06-07\\_FER\\_PM\\_0.pdf](http://fr.feri.de/files/documents/fer/press/2010-06-07_FER_PM_0.pdf). By now, Feri has also adopted the rating scale of the Big Three with 22 notches.

In order to compare rating differences across CRAs, the most convenient approach would be to use the transformation in Table A.15. However, we cannot ensure that the values in the provided diagram by Feri are perfectly comparable. For instance, we are not able to verify that a letter B+ on the Feri scale is comparable to the letter A on the Big Three scale. Also with regards to the Big Three, we have no guarantee that the distance between each notch is treated the same across agencies.<sup>11</sup> For that reason, we classify the rating scales into broader categories as to ensure a better comparability. In the roughest classification we distinguish between three classes (see Table 1): First, we separate the best possible rating category (AAA) from those ratings considered as investment grade (while lower than AAA). The third category entails country-year observations with speculative grade ratings. This approach has two advantages: First, we ensure that ratings are better comparable across agencies. In particular, the Big Three are most exposed to financial market attention when they assign rating changes across the three categories, namely if they withdraw AAA status or push a country below investment grade. Second, the balanced number of ratings in each category enables us to exploit differences in the rating behavior among industrialized countries (AAA/ investment grade) and emerging markets (investment grade/ speculative grade). Despite the loss of a number of observations at this stage, we think that a conservative approach of comparing ratings across agencies makes our results more robust against measurement errors. A more segmented classification is provided in Table A.16 of the Appendix and has been used for the mean-comparison tests in section 5 and for the analysis of split ratings among the Big Three.

Table 2 presents the share of split ratings as a percentage of total ratings across the

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<sup>11</sup>For instance, S&P's may be more hesitant to push a country to junk status (BBB- to BB+) than to assign a downgrade within the range of investment grade ratings.

Table 1: Classification of Ratings

This Table summarizes monthly observations of ratings (end-of-year observations in brackets) across CRAs according to the three rating categories AAA/investment grade/speculative grade.

|                          | (1)<br>S&P         | (2)<br>Moody's     | (3)<br>Fitch       | (4)<br>Feri        |
|--------------------------|--------------------|--------------------|--------------------|--------------------|
| <i>AAA/Aaa/AAA</i>       | 2,188 (179)        | 2,515 (204)        | 2,093 (170)        | 1,756 (142)        |
| <i>Investment Grade</i>  | 4,399 (351)        | 4,473 (327)        | 4,473 (360)        | 5,388 (435)        |
| <i>Speculative Grade</i> | 2,042 (167)        | 2,108 (170)        | 2,018 (164)        | 1,550 (125)        |
| <i>Observations</i>      | <b>8,629 (697)</b> | <b>8,694 (702)</b> | <b>8,584 (693)</b> | <b>8,694 (702)</b> |

Table 2: Split Ratings across Rating Agencies

This Table presents percentages of monthly split ratings according to the three categories AAA/investment grade/speculative grade. A summary of rating splits among the Big Three by using the full rating scale is shown in Appendix A.18.

|                              | (1)<br>Split Feri | (2)<br>Split S&P's | (3)<br>Split Moody's | (4)<br>Split Fitch |
|------------------------------|-------------------|--------------------|----------------------|--------------------|
| <i>Feri</i>                  | -                 | 33%                | 37%                  | 32%                |
| <i>Standard &amp; Poor's</i> | 33%               | -                  | 9%                   | 6%                 |
| <i>Moody's</i>               | 37%               | 9%                 | -                    | 9%                 |
| <i>Fitch Ratings</i>         | 32%               | 6%                 | 9%                   | -                  |

four agencies. The split ratings are based on monthly data and we use the broad classification of three categories (AAA-investments grade- speculative grade). The results for the Big Three when using the full rating scale are presented in Table A.18 of the appendix.

We observe that Feri disagrees with the Big Three at least in every third case. As opposed to this the Big Three show split ratings among each other in not even every tenth case. This share increases to 33-44% when we use the full rating scale. The use of annual data show slightly larger shares across all pairs of agencies.

The share of split ratings across the four agencies indicates that Feri has a different perception towards country risk than the Big Three. However, the results do not explain to us whether the observed differences are region-specific or randomly distributed. We shed more light on this issue in the next section. Also, we need to explore if one agency is in general more optimistic or pessimistic than the other.

#### **4. Determinants of Split Ratings**

We now turn to show how often rating agencies disagree on a region's rating. Table 3 provides an overview of the absolute number of rating splits across regions by using the three rating classes defined above. Two facts are worth mentioning:

The descriptive results show that Feri disagrees more often on a rating across every region except for the developed Asian & Pacific countries. Thus, different opinions on credit risk are not restricted to specific areas. Also, disagreement does not seem to depend on a region's level of economic development. Even the reverse is true for the Big Three who disagree on average more often on developed countries' ratings (first four lines) than on emerging markets. We should keep in mind that the disagreement moves along the lines of AAA versus investment grade and investment grade versus speculative grade. Rating changes within these classes are ignored at this stage. We

Table 3: Split Ratings across Regions

This Table presents monthly split ratings across selected regions by applying the three-scale classification in Table 1. A detailed list of of countries and regional affiliation is provided by table A.13 in the appendix.

|                       | (1)<br>Feri S&P | (2)<br>Feri Moody | (3)<br>Feri Fitch | (4)<br>Split Big3 | (5)<br>Observations |
|-----------------------|-----------------|-------------------|-------------------|-------------------|---------------------|
| Western Europe ex EMU | 30%             | 35%               | 26%               | 9%                | 824                 |
| EMU                   | 24%             | 29%               | 27%               | 10%               | 1,729               |
| US/Canada             | 28%             | 34%               | 25%               | 13%               | 322                 |
| Asia & Pacific (ind.) | 28%             | 43%               | 22%               | 46%               | 772-805             |
| Asia (emerg.)         | 33%             | 32%               | 36%               | 9%                | 1,242-1,253         |
| Latin America         | 43%             | 47%               | 43%               | 6%                | 1,123-1,127         |
| Eastern Europe        | 42%             | 44%               | 40%               | 11%               | 2,083-2,116         |
| Africa incl. Israel   | 22%             | 31%               | 22%               | 10%               | 483                 |

provide a robustness check in Table A.18 in the appendix, which shows rating splits among the Big Three across regions by using the full rating scale. The results show the smallest share of disagreement among S&P’s and Moody’s.

We also observe an unusual frequency of split ratings across the Big Three in developed Asian & Pacific countries (close to 50% of the observations). The large share of splits is mainly driven by Australia and New Zealand. In the following, we test whether specific regions still show a higher probability to experience split ratings when we control for the macroeconomic stance on the country level, the political environment and adverse shocks to country risk.

In the empirical analysis, we distinguish between disagreement at the threshold of AAA versus investment-grade and investment-grade versus speculative-grade ratings. Thereby, we can distinguish between different impact factors such as a country’s history of debt restructurings. Also, rating agencies may use different thresholds in their models before assigning AAA-status or investment grade status. We also perform a robustness analysis when we analyze split ratings across the complete rating scale (according to table A.15) above and below investment grade for the Big Three. We carry out two separate regressions by using a multivariate probit model to identify the determinants of observed split ratings.

$$Pr(\textit{Split AAA}_{ij,t}) = F(\textit{macro}_{k,t}, \textit{region}, \Delta\textit{CCR}_{k,t}) + e_{ij,t} \quad (1)$$

and

$$Pr(\textit{Split InvJunk}_{ij,t}) = F(\textit{macro}_{k,t}, \textit{region}, \textit{default}_k, \Delta\textit{CCR}_{k,t}) + e_{ij,t}. \quad (2)$$

The binary variable is equal to one if agencies disagree on a country’s rating in one year and we assume that the error terms are normally distributed. The assumption of

a logistic distribution has neither a significant effect on the size of the marginal effects nor on the confidence levels.<sup>12</sup> Then, we restrict the sample to countries with a rating split between AAA and below. We exclude a country if it has never been assigned a AAA rating.<sup>13</sup> In the second probit model, we measure the probability of a country to receive a split rating at the threshold between investment and speculative grade status. No country except for Ireland has experienced a rating transition from AAA to speculative grade during the sample period.

Next, we use a number of exogenous variables in order to test for uncertainty and different rating methodologies. In general, rating agencies apply two risk concepts to determine sovereign risk: First, political risk which determines the willingness to repay debt and second, economic risk which mirrors the country's ability to repay. Both variables are considered in the rating agencies' methodologies.<sup>14</sup>

In the following, we include two determinants of political uncertainty in the empirical model: (1) *Political stability* measures the probability of a government to be destabilized by unconstitutional or violent means. If political stability is endangered rating agencies may face uncertainty about future political developments within the country or on future governments. (2) *Government effectiveness* captures the ability of a government to provide public services, the degree of independence from political pressures and government credibility (Kaufmann *et al.* (2010)). If government effectiveness is low, rating agencies are assumed to face uncertainty with respect to the formal capacity of the government to service its debt.

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<sup>12</sup>Logit estimation results are available from the author on request.

<sup>13</sup>Besides the emerging market economies, this applies also to a number of industrialized countries, namely Greece, Israel, Portugal, South Korea and the Eastern European countries.

<sup>14</sup>For instance, Fitch Ratings describe political risk as "*the risk that the sovereign authorities will lack the political capacity and will to mobilize resources necessary to honour their financial obligations*" (Fitch (2014)). The other agencies provide similar concepts (Moody's (2013), Standard and Poor's (2013)).

We also use determinants for economic uncertainty: First, a higher (1) *GDP per capita* should reduce the uncertainty towards a country’s ability to repay its debt due to a large tax base. Second, a low ratio of (2) *government debt to GDP* reduces uncertainty as well as a positive (3) *fiscal* and (4) *external balance* and high (5) *GDP growth*. We also control for (6) *past debt restructurings* where a past restructuring on domestic or external debt (after 1970-1999) increases uncertainty. We use the database on sovereign haircuts by [Cruces and Trebesch \(2013\)](#).

Finally, we include a measure for adverse shocks to a country’s default risk within a given year. If a country is subject to adverse shocks, we assume that rating agencies face a greater uncertainty with regards to the ability to repay its loans. In the model, we use the Institutional Investor’s country credit rating (7) *CCR* which is based on a semi-annual survey among institutional investors and weighted by their exposure to sovereign risk. The variable enters the regression as year-on-year changes whereby only negative values are considered.<sup>15</sup> A positive coefficient indicates that adverse shocks to country risk increase the split probability. A negative coefficient signals that the rating agencies respond in line with investors to publicly available information. Descriptive statistics on all exogenous variables are presented in table 4.

Table 5 provides the results obtained from the probit regression on AAA-level splits. Columns (1) and (2) present results for the split probabilities for Feri versus the Big Three and columns (3) and (4) present split probability results among the Big Three. The results for split ratings among the Big Three when using the full rating scale are provided by table A.19 in the appendix. The coefficients are expressed as average marginal effects. The interpretation of the coefficients differs between discrete (i.e. regions) and continuous independent variables (i.e. macroeconomic and political re-

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<sup>15</sup>Positive values are set equal to zero.



Table 4: Descriptive Statistics of explanatory variables (annual frequency)

|  | (1)<br>Obs. | (2)<br>Mean | (3)<br>Std. Dev. | (4)<br>Min | (4)<br>Max |
|--|-------------|-------------|------------------|------------|------------|
| <i>log GDP per Capita</i>                              | 702         | 9.64        | 0.82             | 7.19       | 11         |
| <i>Government Debt</i>                                 | 685         | 52.5        | 32.49            | 3.7        | 230.3      |
| <i>External Debt</i>                                   | 299         | 128.45      | 79.32            | 23.43      | 452.52     |
| <i>Political Stability</i>                             | 702         | 0.27        | 0.89             | -2.39      | 1.67       |
| <i>Government Effectiveness</i>                        | 702         | 0.82        | 0.88             | -1.19      | 2.43       |
| <i><math>\Delta</math> Country Credit Rating (CCR)</i> | 702         | -1.34       | 3.08             | -30.1      | 0          |
| <i>Economic Growth</i>                                 | 702         | 3.42        | 3.86             | -17.7      | 18.3       |
| <i>External Balance</i>                                | 702         | 0.02        | 6.74             | -25.2      | 26.9       |
| <i>Fiscal Balance</i>                                  | 687         | -1.94       | 4.48             | -30.9      | 18.8       |

Table 5: Split Ratings AAA vs. Non-AAA

This Table presents annual split probabilities for advanced economies at the threshold between AAA and below. We use a bivariate probit model with a dummy variable equal to one if two (types of) agencies disagree on the rating category (AAA/Non-AAA) in one year. Positive coefficients reflect an increase in the split probability, negative coefficients indicate a decrease. The coefficients are expressed as average marginal effects. Standard errors are clustered on the country level.

|                          | (1)                | (2)                  | (3)                | (4)                  |
|--------------------------|--------------------|----------------------|--------------------|----------------------|
|                          | Split Feri-Big3    | Split Feri-Big3      | Split Big3         | Split Big3           |
| CCR shock                | -0.0159<br>(-1.40) | -0.0209<br>(-1.26)   | -0.0160<br>(-1.13) | -0.0233<br>(-1.26)   |
| EMU                      | 0.216<br>(1.19)    | 0.147<br>(1.22)      | 0.0735<br>(0.69)   | -0.0475<br>(-0.47)   |
| Western Europe           | 0.104<br>(0.45)    | 0.140<br>(0.80)      | 0.0239<br>(0.20)   | -0.0247<br>(-0.21)   |
| Asian & Pacific (adv.)   | 0.430**<br>(2.46)  | 0.399***<br>(4.50)   | 0.450***<br>(4.43) | 0.344***<br>(4.51)   |
| log GDP per capita       |                    | -0.482*<br>(-1.74)   |                    | -0.541**<br>(-2.42)  |
| Government Debt          |                    | 0.000942<br>(0.80)   |                    | -0.000320<br>(-0.56) |
| Fiscal Balance           |                    | 0.00435<br>(0.37)    |                    | -0.00161<br>(-0.23)  |
| External Balance         |                    | -0.0244**<br>(-2.33) |                    | -0.00799<br>(-1.28)  |
| GDP growth               |                    | -0.00738<br>(-0.45)  |                    | 0.00593<br>(0.45)    |
| Government Effectiveness |                    | 0.235<br>(1.05)      |                    | 0.0937<br>(0.91)     |
| Political Stability      |                    | 0.113<br>(0.69)      |                    | 0.0571<br>(0.60)     |
| Observations             | 247                | 247                  | 234                | 234                  |
| Pseudo $R^2$             | 0.068              | 0.185                | 0.234              | 0.370                |
| $AIC$                    | 326.7              | 300.6                | 218.2              | 194.9                |
| $BIC$                    | 340.8              | 339.2                | 232.1              | 232.9                |
| Correctly Classified     | 63.16              | 71.66                | 82.05              | 85.47                |
| chi2-value Wald test     | 8.093              | 43.42                | 22.09              | 107.8                |

$t$  statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 6: Split Ratings Speculative vs. Investment Grade

This Table presents annual split probabilities for countries at the threshold between investment grade and junk status. We use a probit model with a dummy variable equal to one if two (kinds of) agencies disagree on the rating category (Investment Grade/Junk status) in one year. Positive coefficients reflect an increase in the split probability, negative coefficients indicate a decrease. The coefficients are expressed as average marginal effects. Standard errors are clustered on the country level.

|                          | (1)                  | (2)                   | (3)                 | (4)                   |
|--------------------------|----------------------|-----------------------|---------------------|-----------------------|
|                          | Split Feri-Big3      | Split Feri-Big3       | Split among Big3    | Split among Big3      |
| CCR shock                | -0.0190**<br>(-2.26) | -0.0139<br>(-1.24)    | -0.00665<br>(-1.64) | -0.00959<br>(-1.39)   |
| Eastern Europe           | 0.351**<br>(2.52)    | 0.197<br>(1.35)       | 0.0490<br>(0.81)    | 0.0357<br>(0.65)      |
| Asia                     | 0.245<br>(1.26)      | -0.244<br>(-1.22)     | 0.00804<br>(0.12)   | -0.109<br>(-1.46)     |
| Latin America            | 0.343**<br>(2.20)    | 0.107<br>(0.71)       | 0.00179<br>(0.03)   | 0.0315<br>(0.47)      |
| log GDP per capita       |                      | -0.239***<br>(-2.75)  |                     | -0.0933**<br>(-1.96)  |
| Government Debt          |                      | -0.0000862<br>(-0.05) |                     | 0.000236<br>(0.28)    |
| Past Debt Restructuring  |                      | -0.0954<br>(-0.90)    |                     | -0.0720*<br>(-1.74)   |
| Fiscal Balance           |                      | 0.00185<br>(0.18)     |                     | 0.00235<br>(0.45)     |
| External Balance         |                      | -0.00196<br>(-0.38)   |                     | -0.0000333<br>(-0.01) |
| GDP growth               |                      | -0.00587<br>(-0.63)   |                     | 0.00109<br>(0.20)     |
| Government Effectiveness |                      | -0.155<br>(-1.28)     |                     | -0.0607<br>(-0.82)    |
| Political Stability      |                      | -0.0103<br>(-0.16)    |                     | 0.0543*<br>(1.65)     |
| Observations             | 468                  | 449                   | 468                 | 449                   |
| Pseudo $R^2$             | 0.070                | 0.191                 | 0.013               | 0.069                 |
| <i>AIC</i>               | 611.4                | 527.4                 | 361.7               | 316.1                 |
| <i>BIC</i>               | 628.0                | 576.7                 | 378.3               | 365.4                 |
| Correctly Classified     | 62.39                | 74.83                 | 87.18               | 88.86                 |
| chi2-value Wald test     | 9.169                | 19.86                 | 3.706               | 38.24                 |

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

gressors). For example, being a member of the Asian & Pacific region increases the probability of disagreement among Feri and the Big Three by 0.399 percentage points (*ceteris paribus*) whereas a 1 percent increase of log GDP per capita lowers the probability of disagreement by 0.48 percent (see column (2)). The model prediction quality ranges between 63-85% of the observed split ratings if we use a threshold probability of 0.5.

We find that countries in the Asian and Pacific region experience a higher probability to receive a split rating than other regions. In contrast to S&P's and Moody's, Fitch has never assigned AAA-status to these countries. Also, the Big Three are often discordant on Japan's credit risk with S&P's being the most pessimistic agency. The results in table A.19 show that disagreement for the Asian and Pacific region is driven by split ratings between Moody's and Fitch. As opposed to this, we find no significant increase in the probability of disagreement towards the European Monetary Union or to other Western European countries. GDP per capita reduces disagreement across all rating agencies (rich countries such as Norway or Switzerland always received AAA-status). Adverse shocks to country risk have no significant effect on disagreement among the agencies.

Taken together, the findings for splits on AAA-status do not suggest that the rating agencies disagree more often on country risk in the euro area. What is new, on the other hand, is that the frequency of disagreement increases among Asian & Pacific countries, confirming the descriptive result in Table 3. The insignificance or negative signs of the macroeconomic coefficients indicates that the four agencies attribute relatively equal weights to these factors.

Table 6 presents the results for splits between investment and speculative grade ratings. Split ratings among Feri and the Big Three are shown to be more likely in Eastern

Europe and Latin America, however, the regional coefficients become insignificant if we include other independent variables. We also find no indication for systematic disagreement among the Big Three agencies. However, S&P's and Moody's seem to disagree more frequently over ratings for Eastern Europe if we use the full rating scale (see table A.20). A previous debt restructuring leads to more consistency among Big Three ratings. This indicates unanimous sanctioning of previous defaulters by the Big Three.

To sum up, the results on split ratings lead us to suggest that disagreement among rating agencies decreases with a log of GDP per capita. The Big Three tend to agree on ratings for countries with a debt restructuring in the past whereas high political stability increases disagreement. In addition, we find that regional splits are more likely to be observed in Asian & Pacific countries and in Eastern Europe (at least for S&P's and Moody's). Short-term economic developments (fiscal balance, external balance, GDP growth) do not affect disagreement across CRAs.

The split results give us no yet an indication for the direction of disagreement. In the following, we explore whether agencies tend to be more optimistic or pessimistic in their rating behavior across regions.

## 5. Are Sovereign Ratings Lopsided?

During the euro crisis, policy makers have expressed the expectation that a European based rating agency would publish a more unbiased view about European countries than rating agencies with headquarters in the U.S. Accordingly, one should expect that the U.S. based agencies assign better ratings to their immediate neighbors. Given the recent criticism by European politicians, we first examine rating differences in the euro area. A rating is defined as lopsided if it is higher or lower than the ratings of the other agencies in the sample.

First, we explore the rating differences in industrialized and emerging markets and

Table 7: Mean Comparison of Ratings to the World

Differences of the ratings are based on the transformation in Table 1; Positive coefficients indicate a better rating average compared to Feri; Significance levels of T-test are given as \*\*\*, \*\*, and \* representing 1%, 5%, and 10% respectively

| <i>Country Group</i>                | (1)<br>Feri - S&P | (2)<br>Feri - Moody's | (3)<br>Feri - Fitch | Observations |
|-------------------------------------|-------------------|-----------------------|---------------------|--------------|
| <b>1999-2012</b>                    |                   |                       |                     |              |
| <i>All Countries</i>                | 0.18***           | 0.12***               | 0.19***             | 702          |
| <i>industrialized Countries</i>     | -0.1***           | -0.16***              | -0.09***            | 299          |
| <i>Emerging Economies</i>           | 0.12***           | 0.11***               | 0.11***             | 403          |
| <b>Great Moderation (1999-2007)</b> |                   |                       |                     |              |
| <i>All Countries</i>                | 0.36***           | 0.33***               | 0.35***             | 486          |
| <i>industrialized Countries</i>     | 0.02              | -0.03                 | -0.02               | 207          |
| <i>Emerging Economies</i>           | 0.62***           | 0.60***               | 0.58***             | 279          |
| <b>Crisis Period (2008-2012)</b>    |                   |                       |                     |              |
| <i>All Countries</i>                | -0.22***          | -0.32***              | -0.16***            | 216          |
| <i>Advanced Countries</i>           | -0.37***          | -0.46***              | -0.34***            | 92           |
| <i>Emerging Economies</i>           | -0.11***          | -0.22***              | -0.02               | 124          |

Table 8: Mean Comparison of Ratings within the Euro Area

Differences of the ratings are based on the transformation in Table 1; Positive coefficients indicate a better rating average compared to Feri; Significance levels of T-test are given as \*\*\*, \*\*, and \* representing 1%, 5%, and 10% respectively

| <i>Rating Agencies</i>              | (1)<br>Feri - S&P | (2)<br>Feri - Moody's | (3)<br>Feri - Fitch | Observations |
|-------------------------------------|-------------------|-----------------------|---------------------|--------------|
| <b>1999-2012</b>                    |                   |                       |                     |              |
| <i>euro area</i>                    | -0.18***          | -0.31***              | -0.25***            | 137          |
| <i>GIIPS</i>                        | -0.17**           | -0.38***              | -0.25***            | 63           |
| <i>Non - GIIPS</i>                  | -0.22***          | -0.11*                | -0.26***            | 87           |
| <b>Great Moderation (1999-2007)</b> |                   |                       |                     |              |
| <i>euro area</i>                    | 0.03              | -0.09                 | -0.08               | 89           |
| <i>GIIPS</i>                        | 0.05              | -0.12                 | -0.09               | 43           |
| <i>Non - GIIPS</i>                  | 0.02              | -0.07                 | -0.07               | 46           |
| <b>Crisis Period (2008-2012)</b>    |                   |                       |                     |              |
| <i>euro area</i>                    | -0.58***          | -0.71***              | -0.56***            | 48           |
| <i>GIIPS</i>                        | -0.65***          | -0.95***              | -0.6***             | 20           |
| <i>Non - GIIPS</i>                  | -0.54***          | -0.54***              | -0.54***            | 28           |

with respect to the euro area in particular. Tables 7 and 8 show the mean comparisons of rating differences between Feri and the Big Three. The coefficients indicate that Feri has assigned more positive ratings to emerging markets (between 1999 to 2007) and it had a more pessimistic view on industrialized countries (only during the crisis). Within the euro area (table 8), we observe no significant difference across the agencies during the Great Moderation, but a strong decline in both euro area groups (GIIPS and non-GIIPS countries) between 2008-2012.

These preliminary findings indicate that Feri tends to be more pro-cyclical in its rating behavior than the Big Three and that it surprisingly perceives the entire euro area as a more risky asset. On the contrary, [Fuchs and Gehring \(2013\)](#) find that in general rating agencies give preferential treatment to their home country and to countries with close cultural and economic ties to the home country.<sup>16</sup>

We also differ from [Fuchs and Gehring \(2013\)](#) by using a different definition of the home bias: They reproduce the rating models used by each agency and compare their results with the actual ratings. If the predicted rating is lower than the actual rating, the authors define this as a home bias. In this paper, we focus instead on the determinants of disagreement across agencies. Specifically, we ask whether the observed optimistic/pessimistic stance of a rating agency relative to competitors can be explained by the use of different rating models (for instance by assigning different weights to economic or political factors) or to the belonging to the home region. The identification of a home bias on the country level is not possible due to the limited variation across the four rating agencies with respect to the ratings for the United States, Germany and France. Thus, we stick to the previously defined regions in order

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<sup>16</sup>The home bias has not been identified for Feri and Moody's and it is shown to hold for Fitch in France and the U.S. at the same time (ownership and headquarter).

to find out whether rating agencies are subject to a systematic upward/downward bias.

In table 9, we summarize the share of months in which a CRA had a more pessimistic stance compared to all competitors across regions.<sup>17</sup> In the case of Feri, we use the three-scale classification of table 1. The comparison among the Big Three is based on the scale of alphabetical notches. For instance, we consider a more pessimistic stance for Feri if the agency assigns investment grade whereas all Big Three agencies assign AAA-status. In case of the Big Three, we already attribute a negative stance if one agency assign B+ whereas another one assigns a B. Therefore, the percentages in column (1) are not based on the same classification as those in columns (2)-(4). As we have shown in table 2, Feri disagrees more often with the Big Three than the Big Three among themselves.

The descriptive findings indicate that Feri is more often pessimistic compared to the Big Three in Western Europe, Eastern Europe and North America with more than 20% of the rating assignments below all Big Three ratings. Standard & Poor's takes the lead by having most often a pessimistic stance towards the euro area whereas Moody's exhibits a large negative bias towards Latin America and emerging Asia. Fitch Ratings has the most pessimistic stance to industrialized Asian and Pacific countries.

The findings for optimism in Table 10 show that Feri assigns more often higher ratings to emerging Asia and Latin America than the Big Three. Moody's takes the optimistic lead in the case of EMU, Eastern Europe, Africa and in the Asian & Pacific region.

Taking the findings of both tables together, three observations are worth mentioning: First, we observe that rating agencies are more likely to "lean against the wind"

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<sup>17</sup>We compare the ratings of each Big Three agency only with its large competitors and not with Feri in order to be able to apply the full rating scale.



Table 9: No. of Negative Deviations towards other CRAs

This Table displays country-month observations in which a rating agency has assigned lower ratings to specific regions than its competitors. Due to the different scales, we compare Feri's ratings with those of the Big Three along the pre-defined three rating categories whereas we compare the Big Three only among themselves by using the full rating scale for the Big Three.

|                            | (1)       | (2)      | (3)        | (4)        | (5)          |
|----------------------------|-----------|----------|------------|------------|--------------|
|                            | Feri Pes. | S&P Pes. | Moody Pes. | Fitch Pes. | Observations |
| Western Europe ex. EMU     | 25%       | 0.1%     | 0%         | 9%         | 824          |
| EMU                        | 15%       | 18%      | 5%         | 6%         | 1,729        |
| North America              | 21%       | 5%       | 0%         | 11%        | 322          |
| Asia & Pacific (industr.)  | 1%        | 12%      | 9%         | 16%        | 805          |
| Latin America              | 5%        | 1%       | 37%        | 9%         | 1,127        |
| Eastern Europe             | 24%       | 13%      | 14%        | 7%         | 2,116        |
| Asia (em. markets)         | 0%        | 13%      | 15%        | 7%         | 1,288        |
| Africa incl. Israel        | 0%        | 0%       | 10%        | 6%         | 483          |
| Average share of pessimism | 11%       | 8%       | 11%        | 9%         |              |

in emerging market economies than in advanced countries. However, this may also be a consequence of more volatile economic and political conditions in those regions. Second, the Big Three are more often optimistic towards advanced countries whereas Feri has more frequently assigned better ratings to the emerging world (except for Eastern Europe). Also, it was more often pessimistic with regards to advanced economies which may explain the early downgrades of euro area countries during the euro crisis. Third, we observe that Moody's appears to be most likely to deviate from common rating assignments among the Big Three. Also, it turns out that pessimism is more dispersed across agencies and regions than optimism.

Table 10: No. of Positive Deviations towards other CRAs

This Table displays country-month observations in which a rating agency has assigned higher ratings to specific regions than its competitors. Due to the different scales, we compare Feri's ratings with those of the Big Three along the pre-defined three rating categories whereas we compare the Big Three only among themselves by using the full rating scale for the Big Three.

|                           | (1)       | (2)      | (3)        | (4)        | (5)          |
|---------------------------|-----------|----------|------------|------------|--------------|
|                           | Feri Opt. | S&P Opt. | Moody Opt. | Fitch Opt. | Observations |
| Western Europe ex. EMU    | 0.4%      | 0.2%     | 7%         | 0%         | 824          |
| EMU                       | 7%        | 4%       | 11%        | 3%         | 1,729        |
| North America             | 0%        | 4%       | 1%         | 0%         | 322          |
| Asia & Pacific (industr.) | 6%        | 12%      | 27%        | 20%        | 805          |
| Latin America             | 37%       | 14%      | 11%        | 10%        | 1,127        |
| Eastern Europe            | 12%       | 14%      | 35%        | 7%         | 2,116        |
| Asia (em. markets)        | 27%       | 10%      | 7%         | 15%        | 1,288        |
| Africa incl. Israel       | 21%       | 0%       | 41%        | 3%         | 483          |
| Average share of optimism | 14%       | 7%       | 18%        | 7%         |              |

Next, we include the same set of macroeconomic variables as in the analysis of split

ratings except for the country credit rating (CCR). Again, we use two probit models by defining the dependent variable as one if a rating agency assigns a lower rating than its competitors. In the second model, the dependent variable is equal to one when a rating agency a higher rating than competitors. We apply the same classification of ratings as before but use annual instead of monthly rating observations.

$$Pr(\textit{pessimism}_{ij,t}) = F(\textit{macro}_{k,t}, \textit{region}, \textit{default}_k) + e_{ij,t}. \quad (3)$$

and

$$Pr(\textit{optimism}_{ij,t}) = F(\textit{macro}_{k,t}, \textit{region}, \textit{default}_k) + e_{ij,t} \quad (4)$$

We do not include North American countries and Africa due to the small number of observations. Also, Western Europe is dropped in most specifications due to missing optimistic/pessimistic observations. Table 11 presents the probit results for a negative rating bias. The coefficients are expressed as average marginal effects analogous to our previous estimations on split ratings.

Our probit models explain 90% of the pessimistic deviations correctly if we choose a threshold probability of 0.5. The results show that Feri is less often pessimistic than the Big Three towards the Asian & Pacific region, countries with high growth, large debt ratios and a positive current account. The pessimism towards European countries shown in table 9 now appears to be captured by the macroeconomic variables. With regards to S&P's, we find that the agency has more often a pessimistic stance towards Asian & Pacific countries, the euro area and Eastern Europe than the other two of the Big Three. The probability to be more pessimistic than Moody's and Fitch declines if a country underwent a debt restructuring in the past. On the contrary, Moody's frequently assigns lower ratings to previous defaulters than its competitors. Then, they appear to be more bearish on Latin America than the others. Also, we find

Table 11: Probit Results for a Negative Bias

This Table displays the probit results for the probability to have a more pessimistic stance on a country's rating. The binary variable takes the value one in all years when the respective CRA assigns a lower rating (class) than competitors. Standard errors are clustered on the country level.

|                         | (1)                    | (2)                  | (3)                  | (4)                   |
|-------------------------|------------------------|----------------------|----------------------|-----------------------|
|                         | Feri Neg.              | S&P Neg.             | Moody Neg.           | Fitch Neg.            |
| log GDP per capita      | 0.115*<br>(1.88)       | -0.0714<br>(-1.52)   | -0.108***<br>(-3.13) | 0.0613<br>(1.16)      |
| Government Debt         | -0.00322***<br>(-3.63) | 0.000628<br>(1.23)   | -0.000975<br>(-1.41) | -0.0000329<br>(-0.05) |
| Fiscal Balance          | -0.00176<br>(-0.39)    | -0.000447<br>(-0.11) | -0.00184<br>(-0.31)  | 0.000675<br>(0.17)    |
| External Balance        | -0.00890***<br>(-3.09) | 0.00400<br>(1.36)    | 0.00118<br>(0.40)    | -0.00138<br>(-0.55)   |
| GDP growth              | -0.0163***<br>(-3.88)  | -0.00245<br>(-0.74)  | 0.00429**<br>(1.98)  | -0.000847<br>(-0.19)  |
| Past Debt Restructuring | -0.0665<br>(-1.07)     | -0.0921**<br>(-2.15) | 0.115***<br>(3.85)   | -0.0573<br>(-1.53)    |
| Political Stability     | 0.0294<br>(1.01)       | -0.0279<br>(-1.13)   | -0.0129<br>(-0.59)   | 0.0107<br>(0.41)      |
| Western Europe          | 0.0531<br>(0.68)       |                      |                      | -0.00725<br>(-0.11)   |
| EMU                     | 0.00668<br>(0.09)      | 0.240***<br>(2.64)   | 0.254***<br>(3.02)   | -0.0312<br>(-0.43)    |
| Asian & Pacific (adv.)  | -0.283***<br>(-2.97)   | 0.189**<br>(2.24)    | 0.258***<br>(2.83)   | 0.0483<br>(0.59)      |
| Latin America           | 0.0140<br>(0.15)       | -0.00422<br>(-0.05)  | 0.178**<br>(2.25)    | 0.118<br>(1.31)       |
| Eastern Europe          | 0.0825<br>(0.98)       | 0.228***<br>(2.69)   | 0.0961<br>(1.18)     | 0.0564<br>(0.92)      |
| Asia                    |                        | 0.0708<br>(0.85)     | 0.0222<br>(0.26)     | 0.121<br>(1.06)       |
| Observations            | 676                    | 676                  | 676                  | 676                   |
| Pseudo $R^2$            | 0.274                  | 0.156                | 0.243                | 0.047                 |
| $AIC$                   | 419.6                  | 373.7                | 380.7                | 384.8                 |
| $BIC$                   | 473.8                  | 427.9                | 434.9                | 443.5                 |
| Correctly Classified    | 86.69                  | 90.83                | 89.05                | 92.01                 |
| chi2-value Wald test    | 103.2                  | 29.31                | 142.1                | 15.80                 |

$t$  statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 12: Probit Results for a Positive Bias

This Table displays the probit results for the probability to have a more optimistic stance on a country's rating. The binary variable takes the value one in all years when the respective CRA assigns a higher rating (class) than competitors. Standard errors are clustered on the country level.

|                         | (1)                  | (2)                  | (3)                  | (4)                   |
|-------------------------|----------------------|----------------------|----------------------|-----------------------|
|                         | Feri Pos.            | S&P Pos.             | Moody Pos.           | Fitch Pos.            |
| log GDP per capita      | -0.242***<br>(-6.07) | -0.0163<br>(-0.47)   | 0.0503<br>(0.68)     | -0.0573*<br>(-1.93)   |
| Government Debt         | 0.00239***<br>(3.09) | 0.000284<br>(0.56)   | 0.000945<br>(1.25)   | 0.000274<br>(0.78)    |
| Fiscal Balance          | 0.00643<br>(1.25)    | -0.000795<br>(-0.16) | -0.0106*<br>(-1.68)  | 0.00637*<br>(1.74)    |
| External Balance        | 0.00758**<br>(2.27)  | -0.00115<br>(-0.48)  | -0.0120**<br>(-2.50) | -0.00270<br>(-1.23)   |
| GDP growth              | 0.00603<br>(1.34)    | 0.000743<br>(0.30)   | -0.00252<br>(-0.52)  | -0.00426**<br>(-2.14) |
| Past Debt Restructuring | 0.0830<br>(1.59)     | 0.0998*<br>(1.89)    | -0.0681<br>(-0.92)   | 0.0344<br>(1.22)      |
| Political Stability     | -0.0525**<br>(-2.07) | 0.0656***<br>(2.79)  | -0.0279<br>(-0.52)   | -0.0813***<br>(-3.60) |
| Western Europe          | 0.191*<br>(1.67)     |                      | -0.0222<br>(-0.16)   |                       |
| EMU                     | 0.259***<br>(2.68)   | 0.0825<br>(1.38)     | -0.146<br>(-1.17)    | 0.147**<br>(2.27)     |
| Asian & Pacific (adv.)  | 0.0966<br>(0.79)     | 0.113*<br>(1.64)     | 0.126<br>(0.87)      | 0.270***<br>(2.84)    |
| Latin America           | 0.0566<br>(0.74)     | 0.145**<br>(2.23)    | 0.0195<br>(0.12)     | 0.0485<br>(1.05)      |
| Eastern Europe          | 0.0189<br>(0.21)     | 0.129**<br>(1.98)    | 0.184<br>(1.52)      | 0.0754<br>(1.39)      |
| Asia                    | -0.200**<br>(-2.06)  | 0.144<br>(1.64)      | -0.00485<br>(-0.03)  | 0.0206<br>(0.36)      |
| Observations            | 676                  | 676                  | 676                  | 676                   |
| Pseudo $R^2$            | 0.491                | 0.154                | 0.177                | 0.268                 |
| $AIC$                   | 323.3                | 334.2                | 586.7                | 277.5                 |
| $BIC$                   | 382.1                | 388.4                | 645.4                | 331.7                 |
| Correctly Classified    | 90.98                | 92.31                | 81.36                | 92.75                 |
| chi2-value Wald test    | 96.78                | 33.96                | 78.15                | 101.6                 |

$t$  statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

relatively more pessimistic views on the euro area and the Asian and Pacific region. Moody's assigned lower ratings particularly to Belgium and Estonia whereas S&P's had a more negative assessment on Austria, Finland and France. In the Asian & Pacific region, S&P's was more pessimistic especially towards Japan but also on New Zealand and South Korea whereas Moody's assigned relatively low ratings to Singapore. Fitch Ratings shows no negative bias towards any region.

Table 12 presents the probit results for a positive rating bias. We find that Feri is more often optimistic on euro area members. This result surprises as they were the first to downgrade crisis countries during the euro crisis. For instance, Belgium received a higher rating for many years by Feri compared to the Big Three. Furthermore, countries with high GDP per capita, high political stability and from emerging Asia have a lower probability of receiving optimistic assessments whereas a higher debt ratio and a current account surplus increase the probability to be treated more favorably by Feri. Compared to Moody's and Fitch, S&P's shows a higher probability to be optimistic towards credit risk in Latin America, Eastern Europe and emerging Asia. Fitch takes the optimistic lead towards the euro area and the Asian and Pacific region.

In contrast to widespread political presumptions our results do not point to the existence of a home bias across the four rating agencies. If anything, rating agencies have different opinions on certain regions at certain times. However, even within regions we observe varying optimism and pessimism across agencies. This said, the empirical results indicate that S&P's and Moody's have a more pessimistic opinion towards the euro area and the Asian and Pacific countries than Feri and Fitch. For Latin America, Asia and Eastern Europe, we find rather mixed results with no systematic pattern across agencies. One may attribute this finding to the higher economic volatility in these countries which is mirrored by higher uncertainty across rating agencies. Finally, it appears that Moody's takes more often a pessimistic stance on a country's credit risk

whereas Fitch tends to be more optimistic in its general rating behavior.

## 6. Concluding Remarks

The purpose of this paper is to explore why rating agencies have different perceptions of country credit risk. The rating behavior of four agencies suggests that belonging to a particular world region or the membership in the European Monetary Union neither leads to a higher split probability nor do rating agencies assign systematically lower or higher ratings to particular regions as a consequence of the so called home bias. In other words, our findings indicate that sovereign ratings are not shaped by the origin or the ownership of the rating agency. Thus, the issuer-pays model does not constitute a conflict of interest for sovereign ratings. This is possibly because fees for sovereign ratings are relatively low compared to fees for structured finance products. Also, the agencies produce unsolicited ratings.<sup>18</sup>

In addition, we find that all four agencies appear to disagree especially often in their assessment towards the Asian & Pacific region, in particular with respect to New Zealand, Australia and Japan. Also, Moody's is the relatively most pessimistic agency whereas Fitch tends to be more optimistic on sovereign credit risk across the sample period.

Besides, the subscriber funded European agency Feri appears to be more volatile in its rating behavior whereas the Big Three seem to be more hesitant to change a rating in the first place. On the one hand, a more volatile rating assignment speaks against the reliability of Feri's ratings versus those of the Big Three. On the other hand, the early downgrades of euro area economies may lead investors to suggest that the small rating agency is equipped with a better working early- warning system. Alternatively,

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<sup>18</sup>Feri produces only unsolicited ratings and the Big Three also have a share of 10-20% unsolicited ratings across all country groups and regions.

one could argue that a less-influential agency which is paid by subscribers feels less compelled to maintain a rating than agencies whose ratings are used for regulatory purposes and who are (often) paid by issuers.

To conclude, our analysis does not support the notion that rating agencies have deliberately caused or at least aggravated the sovereign debt crisis in the euro area and might thus contribute to soothe concerns of European politicians. However, the inclusion in regulatory frameworks and the sheer size of agencies may have led to some unintended pro-cyclicality. Of course, we do not claim that this conclusion should be adopted to other asset classes such as structured finance products where the issuer-pays model is of much more importance.



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## Appendix A. Tables

Table A.13: Country Table by Region 1999-2012

| <i>Industrialized<br/>Region</i>      | <i>Countries</i>  | <i>Emerging Markets<br/>Region</i> | <i>Countries</i>   |
|---------------------------------------|---|------------------------------------|--|
| <b>European Monetary Union</b>        | Austria<br>Belgium<br>Estonia (since 2011)<br>Finland<br>France<br>Germany<br>Greece (since 2001)<br>Ireland<br>Italy<br>Portugal<br>Slovak Rep. (since 2009)<br>Slovenia (since 2007)<br>Spain | <b>Eastern Europe</b>              | Bulgaria<br>Croatia<br>Czech Republic<br>Estonia (until 2010)<br>Hungary<br>Latvia<br>Lithuania<br>Poland<br>Romania<br>Russia<br>Slovak Rep. (until 2008)<br>Slovenia (until 2006)<br>Turkey<br>Ukraine |
| <b>Western Europe</b>                 | Denmark<br>Greece (until 2000)<br>Norway<br>Sweden<br>Switzerland<br>United Kingdom   | <b>Latin America</b>               | Argentina<br>Brazil<br>Chile<br>Colombia<br>Mexico<br>Peru<br>Venezuela  |
| <b>North America</b>                  | Canada<br>United States   | <b>Asia (emerging)</b>             | China<br>India<br>Indonesia<br>Malaysia<br>Philippines<br>Thailand<br>Vietnam  |
| <b>Asian &amp; Pacific (industr.)</b> | Australia<br>Japan<br>New Zealand<br>Singapore  | <b>Africa/Near East</b>            | Egypt<br>Israel<br>South Africa  |

Table A.14: Overview Rating Agencies

|  | (1)<br><i>Standard &amp; Poor's</i> | (2)<br><i>Moody's</i> | (3)<br><i>Fitch Ratings</i>                   | (3)<br><i>Feri EuroRating</i>    |
|--|-------------------------------------|-----------------------|---|----------------------------------|
| Headquarters                             | New York, USA                       | New York, USA         | New York, USA;<br>London, UK                  | Bad Homburg, Germany             |
| Ownership                                | publicly traded                     | publicly traded       | privately-owned<br>(50% US and 50%<br>French) | privately-owned<br>(100% German) |
| Ratings since                            | 1949                                | 1949                  | 1994  | 1999                             |
| Sovereigns rated                         | 125                                 | 113                   | 101   | 56                               |
| EU market share in<br>2014 <sup>19</sup> | 40.42%                              | 34.67%                | 16.8%   | 0.64%                            |

Table A.15: Rating Transformation

| (1)<br><i>Rating Notation</i> | (2)<br><i>Feri</i> | (3)<br><i>S&amp;P/Fitch</i> | (4)<br><i>Moody's</i> |
|-------------------------------|--------------------|-----------------------------|-----------------------|
| AAA/AAA/AAa                   | 17                 | 17                          | 17                    |
| AA/AA+/Aa1                    | 16                 | 16                          | 16                    |
| AA/AA/Aa2                     | 16                 | 15                          | 15                    |
| A/AA-/Aa3                     | 13.5               | 14                          | 14                    |
| B+/A+/A1                      | 12                 | 13                          | 13                    |
| B+/A/A2                       | 12                 | 12                          | 12                    |
| B/A-/A3                       | 10.5               | 11                          | 11                    |
| C/BBB+/Baa1                   | 9                  | 10                          | 10                    |
| C/BBB/Baa2                    | 9                  | 9                           | 9                     |
| C/BBB-/Baa3                   | 9                  | 8                           | 8                     |
| D/BB+/Ba1                     | 7                  | 7                           | 7                     |
| D/BB/Ba2                      | 7                  | 6                           | 6                     |
| D/BB-/Ba3                     | 7                  | 5                           | 5                     |
| D-/B+/B1                      | 4                  | 4                           | 4                     |
| D-/B/B2                       | 4                  | 3                           | 3                     |
| D-/B-/B3                      | 4                  | 2                           | 2                     |
| E/CCC+/Caa1                   | 1                  | 1                           | 1                     |
| E/CCC/Caa2                    | 1                  | 1                           | 1                     |
| E/CCC-/Caa3                   | 1                  | 1                           | 1                     |
| E-/CC/Ca                      | 1                  | 1                           | 1                     |
| E-/C/Ca                       | 1                  | 1                           | 1                     |
| Default/Default/C             | 1                  | 1                           | 1                     |

Rating transformation based on the Feri translation Table

Sources: Feri Rating GmbH, Standard & Poor's, Moody's, Fitch

Table A.16: Classification of Ratings

|                               | (1) | (2)     | (3)   | (4)  |
|-------------------------------|-----|---------|-------|------|
|                               | S&P | Moody's | Fitch | Feri |
| <i>AAA/Aaa/AAA</i>            | 179 | 191     | 169   | 142  |
| <i>AA/Aa/AA</i>               | 95  | 89      | 104   | 118  |
| <i>A/A/A – B</i>              | 122 | 129     | 117   | 145  |
| <i>BBB/Baa/C</i>              | 134 | 122     | 141   | 172  |
| <i>BB/Ba/D</i>                | 113 | 112     | 110   | 52   |
| <i>B/B/D–</i>                 | 43  | 50      | 43    | 34   |
| <i>CCC – D/Caa – D/E – E–</i> | 16  | 8       | 11    | 39   |



Table A.17: Split Ratings across the Big Three (full rating scale)

This Table summarizes the percentage of split ratings according to the full rating scale as presented in A.15. The annual splits presented in column (2) are based on averages of annual ratings.

|                              | (1)            | (2)           | (3)                |
|------------------------------|----------------|---------------|--------------------|
|                              | Monthly Splits | Annual Splits | Total observations |
| <i>S&amp;P's vs. Moody's</i> | 44%            | 56%           | 3,819 (697)        |
| <i>S&amp;P's vs. Fitch</i>   | 33%            | 48%           | 2,813 (693)        |
| <i>Moody's vs. Fitch</i>     | 43%            | 54%           | 3,730 (693)        |

Table A.18: Split Ratings across regions (full rating scale)

This Table summarizes the percentage of split ratings in different regions across the Big Three agencies. We use the full rating scale as presented in A.15. The annual splits presented in column (2) are based on averages of monthly rating observations between 1999 and 2012.

|                                  | (1)                          | (2)                        | (3)                      |
|----------------------------------|------------------------------|----------------------------|--------------------------|
|                                  | <i>S&amp;P's vs. Moody's</i> | <i>S&amp;P's vs. Fitch</i> | <i>Moody's vs. Fitch</i> |
| Western Europe ex EMU            | 7%                           | 9%                         | 15%                      |
| EMU                              | 33%                          | 30%                        | 24%                      |
| US/Canada                        | 9%                           | 19%                        | 11%                      |
| Asia & Pacific (ind.)            | 47%                          | 53%                        | 63%                      |
| Asia                             | 40%                          | 44%                        | 36%                      |
| Latin America                    | 56%                          | 32%                        | 63%                      |
| Eastern Europe                   | 69%                          | 40%                        | 60%                      |
| Africa incl. Israel              | 51%                          | 9%                         | 58%                      |
| <b>Average Split Probability</b> | <b>39%</b>                   | <b>29.5%</b>               | <b>41%</b>               |

Table A.19: Split Ratings AAA vs. Investment Grade

This Table presents annual split probabilities for countries by using the full rating scale as presented in table A.15. We restrict the sample to countries which have never experienced a speculative grade rating during the sample period (except for Ireland). We use a probit model with a dummy variable equal to one if two agencies disagree on a country's rating in one particular year (at least in one month of the respective year). Positive coefficients reflect an increase in the split probability, negative coefficients indicate a decrease. The coefficients are expressed as marginal effects. Standard errors are clustered on the country level. The results of test statistics are provided at the bottom.

|                          | (1)                  | (2)                   | (3)                  | (4)                  |
|--------------------------|----------------------|-----------------------|----------------------|----------------------|
|                          | Split S&P's-Moody    | Split S&P's-Fitch     | Split Fitch-Moody    | Split Big3           |
| log GDP per capita       | -0.979***<br>(-4.12) | -0.635**<br>(-2.23)   | -0.695**<br>(-2.28)  | -0.891***<br>(-2.85) |
| Government Debt          | 0.00122<br>(1.45)    | 0.000416<br>(0.48)    | 0.000481<br>(0.76)   | 0.000474<br>(0.56)   |
| Fiscal Balance           | -0.0105<br>(-1.36)   | -0.0106<br>(-1.47)    | -0.0153**<br>(-2.05) | -0.0106<br>(-1.43)   |
| External Balance         | 0.00101<br>(0.18)    | 0.00145<br>(0.17)     | -0.00741<br>(-1.25)  | -0.00420<br>(-0.56)  |
| GDP growth               | 0.0166<br>(1.19)     | 0.0298**<br>(2.19)    | 0.00171<br>(0.17)    | 0.0158<br>(1.07)     |
| Government Effectiveness | -0.162<br>(-1.33)    | -0.00843<br>(-0.06)   | 0.0407<br>(0.23)     | -0.0218<br>(-0.13)   |
| Political Stability      | 0.109<br>(1.03)      | 0.0283<br>(0.29)      | 0.0597<br>(0.59)     | 0.0854<br>(0.72)     |
| CCR shock                | -0.0196<br>(-1.58)   | -0.0347***<br>(-2.74) | -0.0111<br>(-1.07)   | -0.0250*<br>(-1.79)  |
| EMU                      | -0.0972<br>(-0.98)   | -0.148<br>(-1.00)     | -0.150<br>(-1.13)    | -0.148<br>(-1.02)    |
| Western Europe           | -0.0576<br>(-0.50)   | -0.0886<br>(-0.55)    | 0.0143<br>(0.11)     | -0.0592<br>(-0.37)   |
| Asian & Pacific (adv.)   | 0.137<br>(1.48)      | 0.132<br>(0.78)       | 0.275***<br>(2.90)   | 0.278**<br>(2.48)    |
| Observations             | 234                  | 234                   | 234                  | 234                  |
| Pseudo $R^2$             | 0.474                | 0.266                 | 0.466                | 0.439                |
| <i>AIC</i>               | 163.2                | 215.9                 | 167.6                | 188.2                |
| <i>BIC</i>               | 201.2                | 253.9                 | 205.6                | 226.3                |
| Correctly Classified     | 85.47                | 78.63                 | 85.90                | 85.04                |
| chi2-value Wald test     | 92.32                | 114.6                 | 388.3                | 129.9                |

$t$  statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A.20: Split Ratings Speculative vs. Investment Grade

This Table presents annual split probabilities for countries by using the full rating scale as presented in table A.15. We restrict the sample to countries which have experienced both investment grade and speculative grade ratings during the sample period. We use a probit model with a dummy variable equal to one if two agencies disagree on a country's rating in one particular year (at least in one month of the year).

|                          | (1)                 | (2)                  | (3)                 | (4)                 |
|--------------------------|---------------------|----------------------|---------------------|---------------------|
|                          | Split S&P's-Moody   | Split S&P's-Fitch    | Split Fitch-Moody   | Split Big3          |
| log GDP per capita       | 0.0676<br>(0.72)    | 0.0969<br>(1.07)     | 0.0746<br>(0.76)    | 0.0657<br>(0.77)    |
| Government Debt          | 0.00190<br>(1.11)   | 0.000390<br>(0.26)   | 0.000296<br>(0.17)  | 0.000957<br>(0.65)  |
| Past Debt Restructuring  | 0.0521<br>(0.66)    | -0.123<br>(-1.45)    | 0.0139<br>(0.14)    | 0.0117<br>(0.15)    |
| Fiscal Balance           | 0.00980<br>(1.08)   | 0.0261**<br>(2.19)   | 0.00615<br>(0.60)   | 0.0135<br>(1.61)    |
| External Balance         | 0.000388<br>(0.06)  | 0.00569<br>(0.87)    | 0.00103<br>(0.16)   | 0.00114<br>(0.18)   |
| GDP growth               | 0.00505<br>(0.70)   | -0.00857<br>(-1.13)  | 0.00777<br>(1.09)   | 0.00230<br>(0.40)   |
| Government Effectiveness | -0.0484<br>(-0.46)  | -0.217**<br>(-2.14)  | -0.0760<br>(-0.71)  | -0.103<br>(-1.06)   |
| Political Stability      | 0.0431<br>(0.57)    | 0.0666<br>(1.39)     | -0.0631<br>(-0.91)  | 0.0257<br>(0.41)    |
| CCR shock                | -0.00450<br>(-0.58) | -0.0168**<br>(-2.12) | -0.0137*<br>(-1.75) | -0.00843<br>(-1.31) |
| Eastern Europe           | 0.250***<br>(2.63)  | 0.143<br>(1.24)      | 0.199<br>(1.59)     | 0.213**<br>(2.28)   |
| Asia                     | 0.0900<br>(0.53)    | 0.147<br>(0.78)      | -0.0314<br>(-0.17)  | 0.0696<br>(0.42)    |
| Latin America            | 0.0977<br>(0.85)    | 0.0702<br>(0.51)     | 0.103<br>(0.75)     | 0.0620<br>(0.54)    |
| Observations             | 449                 | 449                  | 449                 | 449                 |
| Pseudo $R^2$             | 0.068               | 0.060                | 0.062               | 0.079               |
| $AIC$                    | 508.0               | 595.8                | 555.1               | 438.2               |
| $BIC$                    | 557.3               | 645.1                | 604.4               | 487.5               |
| Correctly Classified     | 73.05               | 63.03                | 71.49               | 79.73               |
| chi2-value Wald test     | 17.55               | 44.19                | 21.68               | 22.18               |

$t$  statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$