# Credit ratings and bond spreads of the GIIPS

de Vries, Tim; de Haan, Jakob

*Published in:*
Applied Economics Letters

*DOI:*
10.1080/13504851.2015.1054063



*Publication date:*
2016

APPLIED ECONOMICS LETTERS, 2016
VOL. 23, NO. 2, 107–111
http://dx.doi.org/10.1080/13504851.2015.1054063

Routledge
Taylor & Francis Group

# Credit ratings and bond spreads of the GIIPS

Tim de Vries[a] and Jakob de Haan[a,b,c]

[a]De Nederlandsche Bank, Amsterdam, The Netherlands; [b]University of Groningen, Groningen, The Netherlands; [c]CESifo, Munich, Germany

**ABSTRACT**
We examine the relationship between credit ratings and bond yield spreads of peripheral countries in the euro area (Greece, Ireland, Italy, Portugal and Spain) for the period 1995–2014. Since 2012, bond spreads of those countries have come down very fast, whereas credit ratings have hardly changed. Our results suggest that credit rating agencies have become more cautious and have changed their approach to assess credit risk of sovereigns, and that the impact of sovereign credit risk ratings on sovereign bond spreads has changed.

**KEYWORDS**
Credit ratings; bond yield spreads; euro crisis; GIIPS

**JEL CLASSIFICATION**
E44; E47; G15

## I. Introduction

Sovereign credit ratings are a condensed assessment by credit rating agencies (CRAs) of a government's ability and willingness to repay its public debt both in principal and in interests on time. During the recent euro debt crisis, the quality of CRAs' sovereign debt ratings was criticized. For instance, according to the then-President of the European Commission, 'ratings appear to be too cyclical, too reliant on the general market mood rather than on fundamentals – regardless of whether market mood is too optimistic or too pessimistic' (Barroso 2010).

Since 2012, bond spreads of countries in the periphery of the euro area have come down very fast, dropping to almost pre-crisis levels. In contrast, credit ratings for Greece, Ireland, Italy, Portugal and Spain (GIIPS) have hardly changed since 2012. This article examines two potential explanations for this development: the impact of sovereign credit risk ratings on sovereign bond spreads has changed, or CRAs have become more cautious in view of the criticism raised earlier and have changed their approach to assess credit risk of sovereigns.

## II. The changing relationship between ratings and yield spreads

Afonso, Furceri, and Gomes (2012) report a significant response of government bond yield spreads to credit rating changes, particularly for the case of downgrades. Generally, sovereign ratings and bond spreads of countries in the euro area (yields on sovereign bonds *vis-à-vis* the yield on German bonds) move in opposite directions. However, more recently the relationship between ratings and spreads for the GIIPS countries has changed. Figure 1 shows the credit ratings and the bond spreads for the GIIPS countries. The rating shown is the average of the sovereign credit ratings of Moody's, S&P's and Fitch. Following Afonso, Furceri, and Gomes (2012), ratings have been transposed to a range from 17 (AAA) to 1. Figure 1 shows that bond spreads have come down substantially, whereas credit ratings have moved little.

During the euro crisis, spreads of the GIIPS countries to some extent reflected the risk of a break-up of the Economic and Monetary Union (EMU). However, after European Central Bank (ECB) President Draghi told an investment conference in London in July 2012 that: 'Within our mandate, the ECB is ready to do

**CONTACT:** Jakob de Haan j.de.haan@dnb.nl
The views expressed do not necessarily reflect the position of DNB.

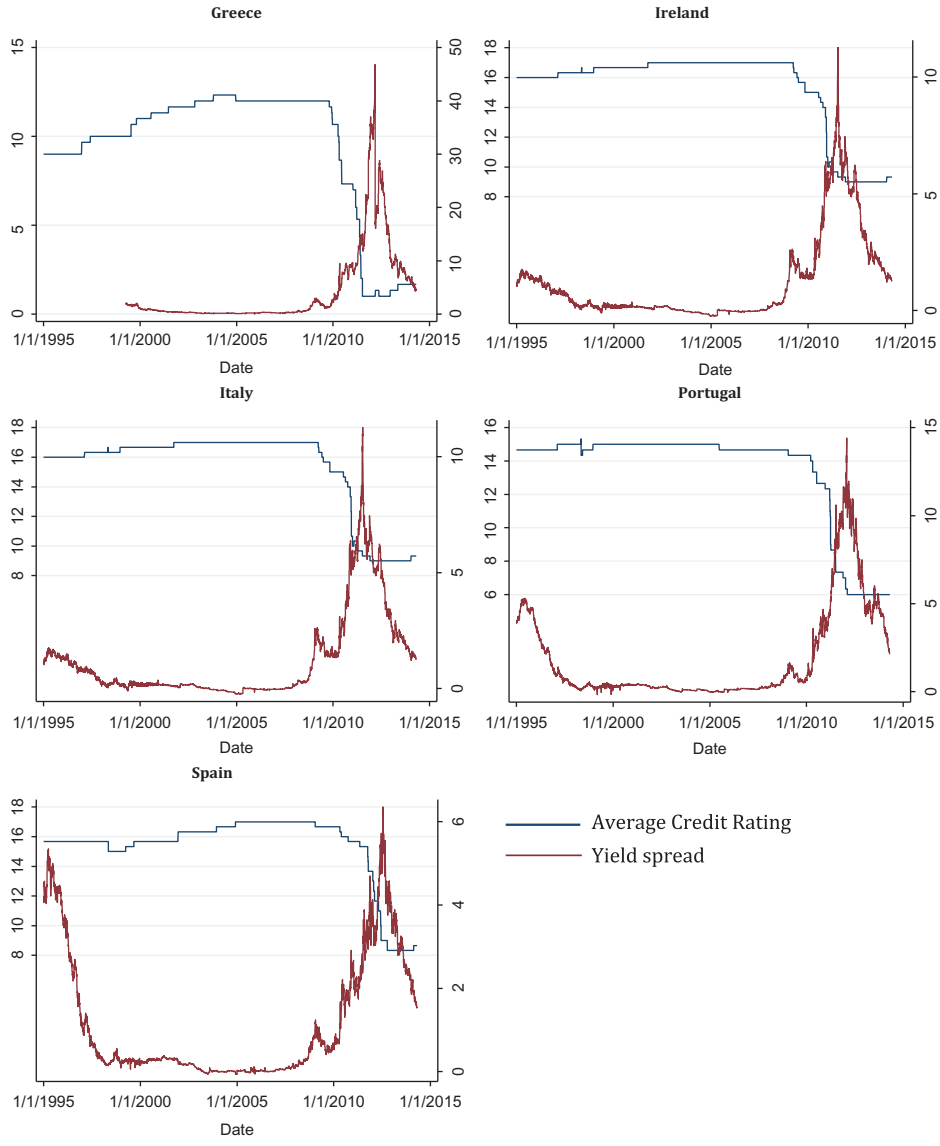


Figure 1. Credit ratings and bond spreads in GIIPS, 1995–2014.

*Notes*: Left-hand side of the *y*-axis represents the average transformed credit ratings of Moody's, S&P's and Fitch (AAA = 17). Right-hand side of the *y*-axis represents the spread *vis-à-vis* the yield on German bonds.

whatever it takes to preserve the euro. And believe me, it will be enough', bond spreads of GIIPS countries started to decline substantially, reflecting market beliefs that the break-up risk had vanished.[1] Therefore, bond spreads and credit ratings should now mainly reflect sovereign credit risk. So why then do credit ratings and bond spreads diverge?

## III. The impact of credit ratings on bond spreads

One explanation for the divergence of credit ratings and bond spreads is that a change in the impact of credit ratings on bond spreads has occurred after 2012. To examine whether this is the case, we have estimated the following model:

$$Spread_{it} = \beta_0 + \beta_1 Rating_{it} + \beta_2 Rating_{it}^2 + \beta_3 Fin_{it} + \varepsilon_{it} \quad (1)$$

We include both the level of the rating and the squared term to allow for a nonlinear relationship. As sovereign spreads are also driven by liquidity and risk aversion, we follow De Haan, Hessel, and Van Den End (2014) and also include a variable called

[1]See https://www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html. To implement those words, the ECB introduced Outright Monetary Transactions (OMTs) in September 2012.

financial market conditions (*Fin*), which is the first principle component of liquidity (approximated by the yearly average of daily bond bid/ask spreads), and risk aversion (approximated by the yearly average of daily differences between high and low bond price). The data are from Bloomberg. The models are estimated for 1995–2011 using data for Austria, Belgium, Finland, France, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. All coefficients are significant and have the expected sign, while the $R^2$-squared is 0.94 (see Table A1 in the Appendix). We use this model to predict bond spreads for 2012–2014. If credit ratings have a different impact on yield spreads after 2012, the model predicted yield spreads should deviate from actual bond spreads. Table 1 compares actual yield spreads in 2012–2014 for the GIIPS with yield spreads generated by the estimated model (using the coefficient estimates of Equation 1 and the actual values of credit ratings and financial market conditions). The main conclusion following from Table 1 is that after 2012 bonds spreads are much lower than predicted by credit ratings, suggesting that the impact of credit ratings on bonds spreads has changed. A possible explanation is that the abundant liquidity that has been created by unconventional monetary policies has led to such a search for yield by financial markets that bond spreads are no longer in line with the assessment of sovereign credit risk by CRAs.

**Table 1.** Actual and predicted bond spreads of GIPPS, 2012–2014.

| Year | 2012 | 2013 | 2014 |
|---|---|---|---|
| Actual yearly average spread in basis points | | | |
| Greece | 2317 | 847 | 561 |
| Ireland | 465 | 217 | 142 |
| Italy | 390 | 268 | 190 |
| Portugal | 890 | 472 | 305 |
| Spain | 434 | 295 | 184 |
| Predicted spread | | | |
| Greece | 1848 | 1313 | 1258 |
| Ireland | 526 | 342 | 284 |
| Italy | 313 | 300 | 289 |
| Portugal | 1121 | 706 | 641 |
| Spain | 445 | 389 | 342 |
| Difference | | | |
| Greece | **−469** | **466** | **697** |
| Ireland | **61** | **125** | **142** |
| Italy | **−77** | **32** | **99** |
| Portugal | **231** | **234** | **336** |
| Spain | **11** | **94** | **158** |
| Average | **−49** | **190** | **286** |

*Note*: This table shows actual and predicted bond spreads. The predictions are based on the coefficient estimates reported in Table A1 and the actual values of the credit ratings.

## IV. Modelling sovereign credit ratings

A second explanation for the divergence of credit ratings and bond spreads is that CRAs have changed their assessment of sovereign credit risk of the GIIPS countries. In order to examine this, we need to know the determinants of credit ratings. CRAs do not publish their models, but some previous papers have identified several determinants of sovereign credit ratings (see Afonso, Gomes, and Rother 2011; Hill, Brooks, and Faff 2010). Based on these findings, we estimate the following model:

$$\begin{aligned} R_{it} = {} & \alpha_i + \beta_1 \Delta GDP_{it} + \beta_2 GDPpcapita_{it} \\ & + \beta_3 Inv/GDP_{it} + \beta_4 Inflation_{it} \\ & + \beta_5 Unemploy_{it} + \beta_6 Govbalance/GDP_{it} \\ & + \beta_7 Debt/GDP_{it} + \beta_8 CurrAccount/GDP_{it} + \varepsilon_{it} \end{aligned} \tag{2}$$

where GDP growth, GDP per capita, investment as share of GDP, inflation, unemployment, the government budget balance as share of GDP, government debt as share of GDP and the current account balance as share of GDP are the explanatory variables. Following Afonso, Gomes, and Rother (2011), we estimate the model using random effects. The model is estimated for the period 1995 to 2011 using annual data for Austria, Belgium, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, the Netherlands, Portugal and Spain. The coefficients of all variables except for the government budget balance are significant and have the expected sign (see Table A2 in the Appendix). Figure 2 demonstrates that this relatively straightforward model fits the data quite well.

Next, we use this model to predict credit ratings for 2012–2014. If CRAs have changed their approach to assess sovereign credit risk, these predictions will deviate from actual ratings. Table 2 compares actual credit ratings and the predicted credit ratings (using the coefficient estimates of Equation 1 and the actual values for the included fundamentals) for the GIIPS countries for 2012–2014. The results suggest that actual ratings are lower than predicted. In 2014, actual credit ratings are on average 4.92 notches lower than predicted by fundamentals. This suggests a similar pattern as

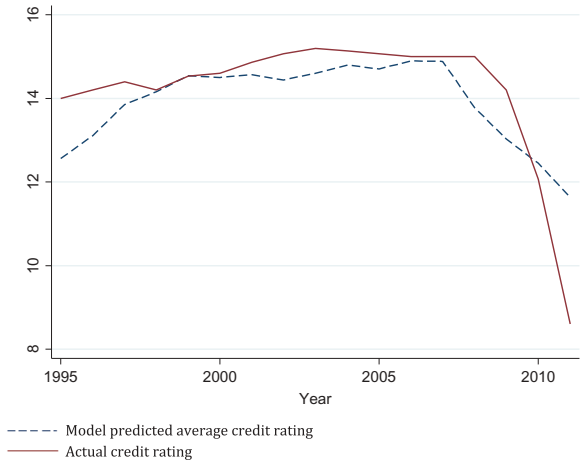


Figure 2. Predicted and actual credit rating for the GIIPS countries, 1995–2011.

*Note*: This graph shows average actual credit ratings for the GIIPS and in sample predicted credit ratings according to the model reported in Table A2.

Table 2. Actual and predicted ratings of GIIPS, 2012–2014.

| Year | 2012 | 2013 | 2014 |
|---|---|---|---|
| Actual rating | | | |
| Greece | 1.33/CCC | 1.67/B– | 1.67/B– |
| Ireland | 9/BBB | 9/BBB | 9.33/BBB |
| Italy | 10/BBB+ | 9.33/BBB+ | 9.33/BBB+ |
| Portugal | 6/BB | 6/BB | 6/BB |
| Spain | 8.33/BBB– | 8.33/BBB– | 8.66/BBB |
| Rating according to fundamentals (Equation 2) | | | |
| Greece | 7.99/BBB– | 8.19/BBB– | 8.67/BBB |
| Ireland | 13.58/AA– | 14.22AA– | 14.78/AA |
| Italy | 12.83/A+ | 12.87/A+ | 13.31/A+ |
| Portugal | 10.58/A– | 11.16/A– | 11.53/A |
| Spain | 10.92/A– | 10.78/A– | 11.31/A– |
| Difference (model predicted – actual rating) | | | |
| Greece | 6.66 | 6.52 | 7 |
| Ireland | 4.58 | 5.22 | 5.45 |
| Italy | 2.83 | 3.54 | 3.98 |
| Portugal | 4.58 | 5.16 | 5.53 |
| Spain | 2.59 | 2.45 | 2.65 |
| Average | **4.25** | **4.58** | **4.92** |

*Note*: This table shows actual and predicted credit ratings. The predictions are based on the coefficient estimates reported in Table A2 and the actual values of the determinants used in Table A2.

reported by Ferri et al. (1999) for the period after the Asian sovereign debt crisis when credit rating agencies became very conservative in order to regain their reputation.

## V. Conclusions

This article has examined the recent divergence of sovereign credit ratings and yield spread for GIIPS countries. Yield spreads have almost returned to pre-crisis levels, while credit ratings remain very low. With EMU break-up risk being eliminated after Mario Draghi's speech, yield spreads and credit ratings should both reflect sovereign credit risk. We provide support for two explanations for the divergence of credit ratings and yield spreads: (1) bond spreads are no longer in line with the risk assessments of CRAs, and (2) CRAs have become more conservative in assessing sovereign credit risk after 2012.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## References

Afonso, A., D. Furceri, and P. Gomes. 2012. "Sovereign Credit Ratings and Financial Markets Linkages: Application to European Data." *Journal of International Money and Finance* 31: 606–638. doi:10.1016/j.jimonfin.2012.01.016.

Afonso, A., P. Gomes, and P. Rother. 2011. "Short- and Long-Run Determinants of Sovereign Debt Credit Ratings." *International Journal of Finance & Economics* 16 (1): 1–15. doi:10.1002/ijfe.v16.1.

Barroso, J. M. D. 2010. *Statement to the European Parliament prior to the meeting of the Heads of State and Government of the Euro Area*. Brussels: European Parliament Plenary, May 5.

De Haan, L., J. Hessel, and J. W. Van Den End. 2014. "Are European Sovereign Bonds Fairly Priced? the Role of Modelling Uncertainty." *Journal of International Money and Finance* 47: 239–267. doi:10.1016/j.jimonfin.2014.06.001.

Ferri, G., L.-G. Liu, and J. E. Stiglitz. 1999. "The Procyclical Role of Rating Agencies: Evidence from the East Asian Crisis." *Economic Notes* 28 (3): 335–355. doi:10.1111/ecno.1999.28.issue-3.

Hill, P., R. Brooks, and R. Faff. 2010. "Variations in Sovereign Credit Quality Assessments across Rating Agencies." *Journal of Banking & Finance* 34: 1327–1343. doi:10.1016/j.jbankfin.2009.11.028.

## Appendix

**Table A1.** The relationship between credit ratings and bond spreads (annual, 1995–2011).

| | Equation 1 |
|---|---|
| Rating average | −1.74*** (−12.22) |
| Squared rating | 0.0523*** (8.27) |
| Fin | 0.559*** (4.79) |
| $R^2$ | 0.94 |

*Notes*: This table shows random effect estimates of the relationship between credit ratings and bond spreads (Equation 1). Countries included: Austria, Belgium, Finland, France, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. *t*-Statistics are reported in parentheses.

*, ** and *** indicate significance at 1%, 5% and 10% levels, respectively.

**Table A2.** Estimating the drivers of sovereign credit ratings.

| | 1995–2011 |
|---|---|
| GDP growth | 0.086*** (3.16) |
| GDP per capita | 0.0001*** (3.81) |
| Investment/GDP | 0.124** (2.39) |
| Inflation | −0.194*** (−3.73) |
| Unemployment rate | −0.194*** (−4.23) |
| Government debt/GDP | −0.0127*** (−2.74) |
| Current account balance/GDP | 0.117*** (4.05) |
| Constant | 12.52 (6.55) |
| $R^2$ | 0.60 |
| Countries | 13 |

*Notes*: This table shows random effects panel data regression results using variables found to be significant drivers of credit ratings by Afonso, Gomes, and Rother (2011) for the period 1995–2011 (annual data). As the government budget balance turned out to be insignificant, it was dropped from the regression. Countries included: Austria, Belgium, Finland, France, Germany, Greece, Italy, Ireland, the Netherlands, Portugal, Slovakia, Slovenia and Spain. *t*-Statistics are reported in parentheses.

*, ** and *** indicate significance at 1%, 5% and 10% levels, respectively.