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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.
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1. 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 CRAs was criticized. For instance, according to the 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). Indeed, Arezki et al. (2011) conclude that while markets generally expected sovereign downgrades, the extent of the downgrades sometimes surprised them. Sovereign downgrades generally lead to higher bonds spreads and thus higher borrowing costs for the government concerned (Afonso et al., 2012).

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 paper 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.

2. The changing relationship between ratings and yield spreads

Cantor and Packer (1996) find that sovereign credit ratings explain 92% of the cross sectional variation in sovereign yield spreads. Likewise, Afonso et al. (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 et al. (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.

[Insert Figure 1 here]

During the euro crisis, spreads of the GIIPS countries to some extent reflected the risk of a break-up of EMU. However, after ECB President Draghi told an investment conference in London in July 2012 that: "Within our mandate, the ECB is ready to do 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?

3. 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:

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

We include both the level of the rating and the squared term to allow for a non-linear relationship. As sovereign spreads are also driven by liquidity and risk aversion (see De Haan et al., 2013), we also include a variable called 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) in the third model. The data are from Bloomberg. The models are estimated for 1995-2011 using data for Austria, Belgium, Finland, France, Greece, Ireland, Italy, Netherlands, Portugal, and Spain. All coefficients are significant and have the expected sign, while the R-squared is 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

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[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.

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. Apparently, 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.

4. Modeling 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 et al., 2011; Hill et al., 2010). Based on these findings, we estimate the following model:

$$R_{it} = \alpha_i + \beta_1 \Delta GDP_{it} + \beta_2 GDPpcapita_{it} + \beta_3 Inv/GDP_{it} + \beta_4 Inflation_{it} + \beta_5 Unemploy_{it} + \beta_6 Govbalance_{it} + \beta_7 Debt/GDP_{it} + \beta_8 CurrAccount/GDP_{it} + \varepsilon_{it} \ (2)$$

where GDP growth, GDP per capita, investment as share of GDP, inflation, unemployment, the government budget balance, government debt as share of GDP and the current account balance are the explanatory variables. Following Afonso et al. (2011) we estimate the model using random effects. The model is estimated for the period 1995-2011 using 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.

[Insert Figure 2 here]

Next, we use this model to predict credit ratings for 2012-14. 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 2012-14. 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 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.

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.

5. Conclusions

This paper 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) because of unconventional monetary policy, and the subsequent search for yield by financial markets, 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.

References

Afonso, A., Gomes, P., Rother, P. (2011). Short- and long- run determinants of sovereign debt credit ratings. International Journal of Finance & Economics 16(1), 1-15

Afonso A., Furceri, D., Gomes, P., 2012. Sovereign credit ratings and financial markets linkages: Application to European data. Journal of International Money and Finance 31, 606–638.

Arezki R., Candelon B., Sy, A., 2011. Sovereign rating news and financial markets spillovers: Evidence from the European debt crisis. IMF Working Paper 11/68.

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. European Parliament Plenary, Brussels, 5 May 2010.

Cantor, R., Packer, F. (1996). Determinants and impact of sovereign credit ratings. The Journal of Fixed Income 6(3), 76-91.

De Haan, L., Hessel, J., Van den End. J., (2013). Are European sovereign bonds fairly priced? The role of modelling uncertainty. DNB Working paper 399; forthcoming in: Journal of International Money and Finance.

Ferri, G., Liu, L.G., Stiglitz, J. E. (1999). The procyclical role of rating agencies: Evidence from the East Asian crisis. Economic Notes 28(3), 335-355.

Hill, P., Brooks, R., Faff, R. (2010). Variations in sovereign credit quality assessments across rating agencies. Journal of Banking and Finance 34, 1327–1343.

Appendix

Table A1. The relationship between credit ratings and bond spreads (1995-2011)

	Equation (1)
Rating average	-1.74***
	(-12.22)
Squared rating	0.0523***
	(8.27)
Fin	0.559***
	(4.79)
R-squared	0.94

Note: 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, Netherlands, Portugal, and Spain. T-statistics are reported in parentheses. *,**,*** means significant at 1%, 5%, and 10%, 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)
R2	0.60
Countries	13

Note: This table shows random effects panel data regression results using variables found to be significant drivers of credit ratings by Afonso et al. (2011) for the period 1995-2011. 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, Netherlands, Portugal, Slovakia, Slovenia, and Spain. T-statistics are reported in parentheses. *,**,*** means significant at 1%, 5%, and 10%, respectively.

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
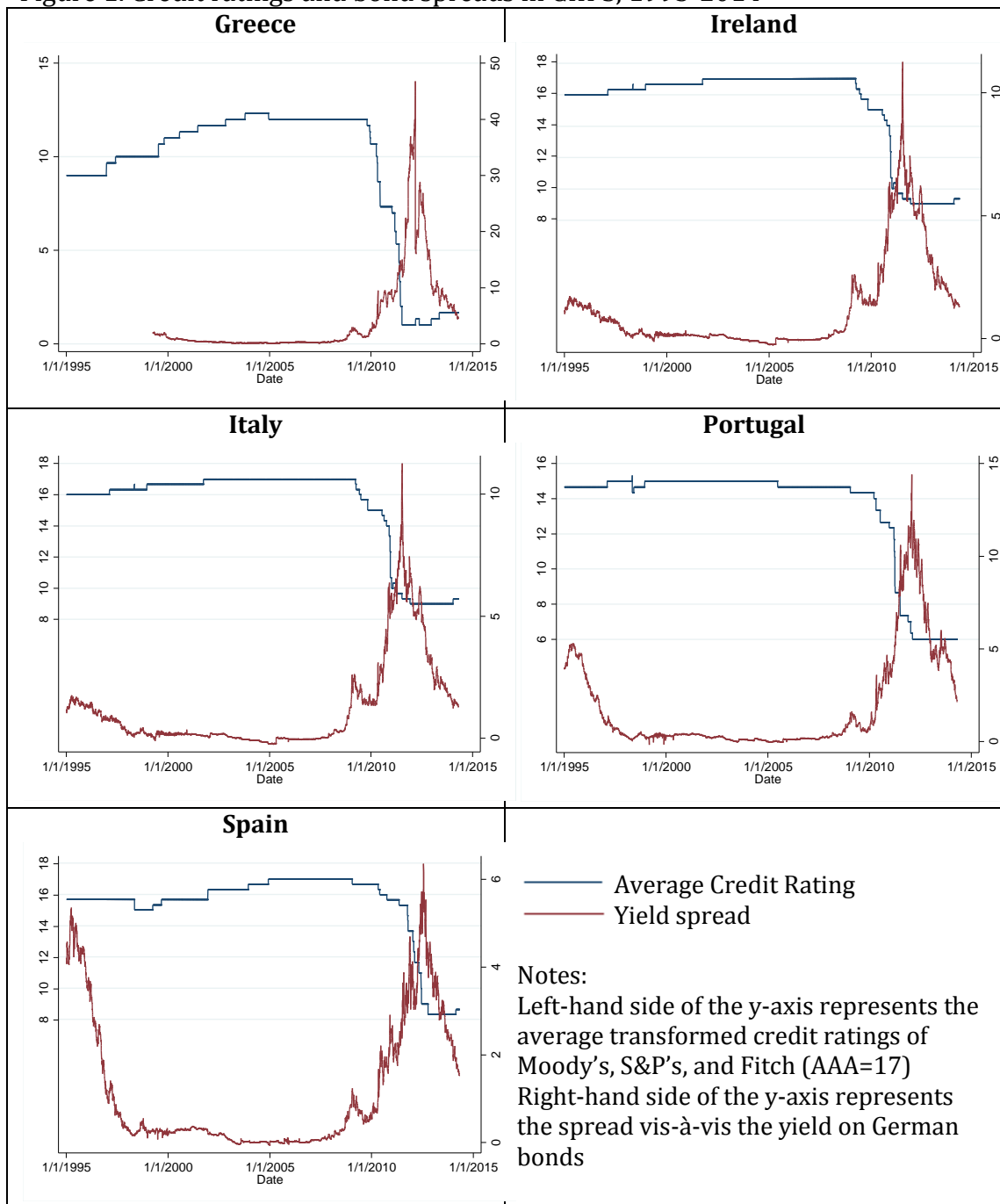
Figure 2. Predicted and actual credit rating for the GIIPS countries, 1995-2011
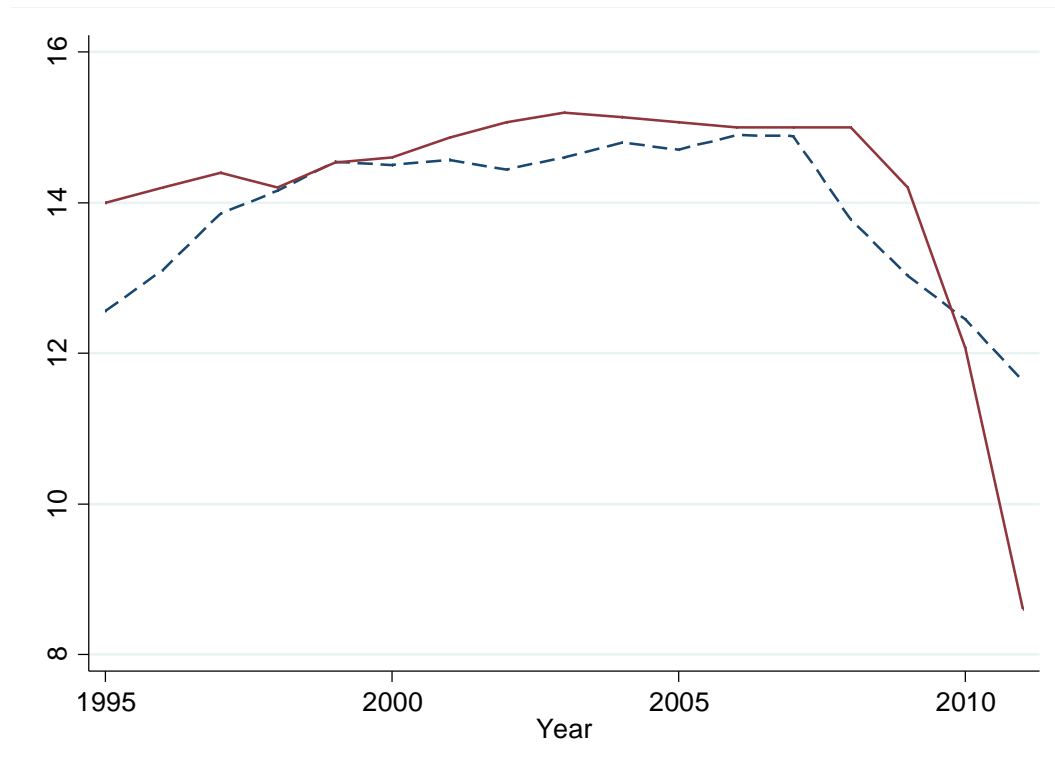
Model predicted average credit rating
Actual credit rating

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.

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