Capacity, Willingness, and Sovereign Default Risk: Reassuring the Market in Times of Crisis

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Abstract

Preserving the trust of bond markets is crucial for the world's many indebted countries, but it is still unclear when and how national or international actors can contribute to this goal. We present a set of arguments addressing this question and test them on the case of the Eurozone debt crisis. Distinguishing between actors' capacity and willingness to avoid defaults, we argue that the crisis was marked by a lack of capacity at the national level, and limited or uncertain willingness at the European level. Accordingly, we find that European-level efforts to reassure markets had considerably stronger effects than similar efforts at the national level. Furthermore, national efforts appear to have mattered the least in countries with the least capacity. These findings are based on a comprehensive new dataset of political events and relevant news, and they hold across a number of robustness checks and placebo tests.

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In a world where most governments are heavily indebted, preserving the trust of bond markets is a key task for policy-makers. Failing this task and losing investors' trust can have dramatic consequences, even pushing otherwise solvent states to the brink of default. Yet, the role of politics in determining default risk has received little attention in the academic literature, especially when it comes to advanced economies. Furthermore, most studies on sovereign debt focus exclusively on national factors, and leave aside the role of external actors, such as other states, the International Monetary Fund (IMF), or the European Union (EU). Thus, how and under what conditions national or international actors can reassure investors that states' financial obligations will be honored is still an open question.

The European debt crisis is particularly well-suited for studying this topic. Compared to other sovereign debtors, the members of the Eurozone (EMU) are especially weak, as they have abandoned their national currencies and lost the ability to conduct their own monetary policy: Economic imbalances within the monetary union can no longer be solved through adjustments in exchange rates, and national central banks can no longer act as lenders of last resort if their governments face liquidity problems (De Grauwe and Ji, 2012). This crucial function now primarily lies with the EU and the European Central Bank (ECB), and EMU member states are therefore thought to be more vulnerable to sudden stops in debt financing than countries possessing their own currencies (De Grauwe and Ji, 2013; De Haan et al., 2014). Debt issued by governments within the Eurozone thus appears particularly risky, and during the crisis, the task of preserving or regaining investors' trust became paramount. The crisis thus offers an exceptional amount of attempts to reassure the market and reduce the cost of borrowing.[1]

This study develops and tests a set of theoretical arguments regarding when such efforts will be effective. In particular, we argue that investors distinguish between actors' capacity and willingness to avoid defaults, and that signals of willingness lose their relevance as an actor's capacity declines. We further argue that the European debt crisis was marked by considerable skepticism regarding the capacities of Greece, Ireland, Italy, Portugal and Spain (GIIPS). In contrast, we argue that the capacities of the ECB and the EU-level actors were seen as high, while their willingness was surrounded by great uncertainty. This leads to the expectation that key political signals at the European level would matter more than those at the national level. To test our arguments, we have collected a comprehensive new dataset of relevant events during the crisis. Specifically, we analyze how the spreads on sovereign bonds react to crisis-measures by the ECB and the EU (i.e. the European Council, ECOFIN, and the Euro-Group), as well as to national reforms and other political events in the GIIPS-countries. The results, which we discuss

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[1]While our analysis focuses on the secondary debt market, it is still highly relevant to states' debt financing, as primary market auctions tend to stay close to the yields in the secondary market.

in more detail below, are generally in line with our expectations.

Capacity and Willingness to Avoid Defaults

A key focus in the literature on sovereign debt has been on national debt servicing capacity – often also referred to as fiscal space. According to Heller (2005), fiscal space is the "room in a government's budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position or the stability of the economy". Alternatively, Ghosh et al. (2013, 133) define a "debt limit" – beyond which "debt dynamics become explosive and the government becomes unable to fully meet its obligations" – and they proceed to define fiscal space as the "distance between current (or projected) debt levels and this debt limit". In practice, however, fiscal space is normally captured by narrower proxies, such as public deficit- or debt-to-GDP ratios. Recently, more refined definitions have also been proposed – in particular one defining "a *de facto* fiscal space as being inversely related to the tax-years it would take to repay the public debt" (Aizenman and Jinjarak, 2010). Stock and flow measures of this concept have been operationalized as "outstanding government debt and government deficits, relative to the *de facto* tax base" (Aizenman et al., 2013), and we employ these measures below.

While many studies have focused solely on capacity and debt sustainability, a few have also noted that the repayment of public debt partly depends on political willingness. For instance, Tomz (2007, 15) notes that "[w]hen a government pleads poverty in negotiations with international creditors, this almost never implies that the government is penniless", but rather "signals a lack of political will to elevate the foreign debt over other concerns". This illustrates how default risk is not simply a question of economics, but may also crucially depend on political factors. Nevertheless, studies of political willingness are relatively rare, and say little about when governments might be able to reassure markets of their willingness to honor their debts. One line of research has treated willingness as a government's purely rational analysis of economic costs and benefits, and developed formal models of the calculations involved (Eaton and Gersovitz, 1981; Eaton et al., 1986). Another line of research has had a more empirical focus, but relied on fairly crude proxies of willingness that tend to show little variation over time (e.g. Breen and McMenamin, 2013; Cantor and Packer, 1996; Stasavage, 2011). A key aim of the present study is therefore to examine the effects of more specific signals of political willingness in times of crisis, and theorize when these should be effective.[2]

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[2]By doing so, our study also adds to a growing number of studies on the effects of news on financial markets in times of crisis (e.g. Mink and de Haan, 2013; Beetsma et al., 2013). While such studies mainly differentiate between good and bad news, our more fine-grained data allows us to show that investors indeed do distinguish between news about what policy makers say and do and more general news about

While the existing literature overwhelmingly focuses on national sources of default risk, we argue that the role of international actors also should be accounted for, and that the distinction between capacity and willingness is equally important in this regard. A country's probability of default is therefore best understood as a function of several more specific probabilities (as we discuss in detail in the appendix). In line with the existing literature, we argue investors have to assess the probability that countries are willing and able to service their debt in full (without external support), and we refer to the subjective assessment of this probability as *primary trust*.[3] However, investors also have to assess the probability that a country will be rescued by external actors in case it is no longer able to service its liabilities on its own, which we refer to as *secondary trust*.

We further argue that investors distinguish between actors' capacity and willingness to avoid defaults. Such considerations are, for instance, evident in the methodologies of the major rating agencies, who assess not only countries' debt servicing capacities, but also political risk – even if the latter is largely assessed qualitatively or by way of proxies. We define actors' *capacity* as their scope for avoiding default, and we consider this scope at any particular time point as given, representing factors that lie outside of the actors' control. We further define actors' *willingness* to avoid default as their intended use of their capacity – whether they will indeed avoid defaults if they have the capacity to do so. We argue that willingness (or the lack of it) can be signaled through relevant statements and decisions, and the focus of this study is the question of when such signals are effective at shaping investors' trust. We argue not only that investors assess both capacity and willingness, but also that sufficient capacity and willingness are considered to be individually necessary and jointly sufficient conditions for successful efforts to avoid default. A key implication of our model (which is detailed in the appendix) is that the effect of signals regarding an actor's willingness is conditioned by this actor's capacity. As an actor's capacity declines, the relevance of this actor's willingness (and signals regarding this willingness) is also diminished.

The Eurozone Crisis

Applying this argument to the Eurozone crisis requires consideration of how the relevant actors score in terms of perceived capacity and willingness. Starting with the capacities of the GIIPS countries, it is worth noting that even before the crisis, several these countries (i.e. Greece, Italy, and Portugal) "had more limited fiscal space ... than other high-

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the political and economic situation of a country.

[3]Using the term trust is in line with a number of earlier studies (e.g. De Grauwe and Ji, 2013; Mosley, 2004). We use the term in a rationalist sense, where investors' expected gains depends on other actors and trust refers to the subjectively assessed probability that these act in accordance with investors' interests.

income groups" – but they also faced lower yields than their fundamentals would predict (Aizenman et al., 2013, 44). Once the crisis struck, the situation for the GIIPS countries got significantly worse, and their capacity to service their debt was widely questioned (Beirne and Fratzscher, 2013; Bernoth and Erdogan, 2012; De Haan et al., 2014; Ghosh et al., 2013; Goldbach and Fahrholz, 2011).[4] In the next section, we provide data on the countries' fiscal space and discuss the differences among them in this regard. For now, however, our main argument is that their capacities were generally seen as low, thus undermining investors' primary trust.

In contrast, the willingness of the GIIPS countries caused investors less concern. This observation is in line with the existing literature, which suggests that governments generally should have a rather high willingness to avoid defaults. Ghosh et al. (2013, 113) state, for example, that "[c]onsistent with empirical evidence ... we posit that governments typically act responsibly, raising the primary balance in response to rising public debt". Such behavior is normally rational, as defaults are costly, not least to the domestic investors and banks, and ultimately to the whole economy (Borensztein and Panizza, 2009; Hatchondo et al., 2007; Mendoza and Yue, 2012; Panizza et al., 2009). Unordered defaults may also require closing a primary deficit immediately, which in the case of Greece, for example, could have necessitated leaving the Euro according to some observers. Thus, as long as governments can avoid defaulting, we generally expect that they will try to do so. Yet, what ultimately matters is a country's willingness in a broader sense, as governments need the consent of their electorates, and these may be highly opposed to reforms improving the primary balance. Domestic political constraints can thus give rise to considerable uncertainty about the national willingness to avoid defaults, even if defaulting is generally unattractive.

At the European level, this picture is reversed. Here, we focus on the coordinated actions of the Eurozone countries (which we refer to as the EU), as well as actions by the ECB. At this level, capacity refers to the actors' ability to avoid defaults in particular Eurozone countries. Given the size of the non-GIIPS Eurozone economies, their governments have considerable capacity to bail out the GIIPS countries (although this capacity is somewhat more questionable for the largest debtors, as we discuss further below). Furthermore, the ECB is generally thought to have extensive capacity to bail out any country, acting as a lender of last resort, should it choose to do so.[5] In sum, we argue that the actors at the European level are seen as having considerable capacity to

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[4]The case of Ireland is particular in the sense that its public finances were sound before the crisis and deteriorated as the government took on the obligations of the troubled banking sector.

[5]See, for instance, De Grauwe (2013). Note that we consider questions regarding formal constraints on the ECB's capacity as reflecting European-level willingness avoid defaults, and thus argue that the capacity of the ECB as a central bank is considerable, provided there is willingness to use it.

avoid defaults in Eurozone countries.

During the crisis, the key question regarding the European level was rather whether sufficient willingness indeed was present. The Maastricht treaty explicitly ruled out bail-outs, yet the markets largely seemed to ignore this clause. Before the onset of the debt crisis in October 2009, sovereign bond yields in the Eurozone were converging, despite the relatively unfavorable fundamentals of the GIIPS countries. In other words, investors apparently saw EMU as reducing the risk of bonds in the periphery, considering the Eurozone countries jointly responsible for bonds issued within the union (Ghosh et al., 2013; Goldbach and Fahrholz, 2011). Once doubts were raised about the capacities of the GIIPS countries to service their debt, the issue of European willingness to bail them out gained salience. After the negotiations on Greece's rescue package dragged on for several months with Germany insisting on strict conditionality, markets began to realize that European willingness could be much lower than earlier market prices would imply. During this early phase of the crisis, many officials (not least German ones) were voicing their opinions against bail-outs, and we argue that European willingness at this time was seen as low (or uncertain at best), thus undermining investors' secondary trust (see, for instance, Paterson, 2011; Bechtel et al., 2014).

Further Considerations and Expectations

The arguments above, which are in line with standard accounts of the crisis, have several implications for the effects we would expect of relevant signals during the crisis. However, before we develop these implications into hypotheses, a few additional considerations require attention. First, we argue it is important to distinguish between statements and decisions, and thus also to consider when markets should react to either type of signal. In line with Bølstad and Elhardt (2015), we argue that statements only carry useful information insofar as they are credible and allow the anticipation of later decisions (see also Bechtel and Schneider, 2010). Political actors generally lack such credibility, as they have strategic incentives to please both markets and domestic constituencies. Under such conditions, statements carry little information, and investors are likely to await actual decisions. In other words, both for national governments and the EU, we would expect decisions to have greater effects than statements. In contrast, the technocratic ECB is far more credible, and therefore able to use statements as a tool for signaling its intentions – as in the case of forward guidance. The ECB's statements have thus been found to matter more than its decisions (Bølstad and Elhardt, 2015). Accordingly, we refer to *key signals* for the different actors: Decisions for political actors (both at the national and European level), and statements for the ECB.

As we discuss further in the analysis section and the appendix, we also distinguish between positive and negative signals. At the national level, we generally consider state-

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Table 1: Average GIIPS fiscal spaces in terms of tax-years, 2009-2012.

	Greece	Ireland	Italy	Portugal	Spain
Fiscal balance to tax base (FB)	-0.27	-0.45	-0.08	-0.19	-0.27
Public debt to tax base (PD)	3.77	1.99	2.06	2.32	0.99
FB-ratio times PD-ratio	-0.99	-0.88	-0.17	-0.43	-0.26

Note: The measures in the first two rows follow the definitions of Aizenman and Jinjarak (2010); Aizenman et al. (2013). Tax base is calculated annually as general government revenue over GDP, averaged over the previous five years to account for business cycle fluctuations. The FB-ratio is calculated as: Government net fiscal balance over GDP, divided by tax base. The PD-ratio is calculated as: Government net debt over GDP, divided by tax base. The data have been obtained from the International Monetary Fund (2014).

ments and decisions positive if they involve efforts to raise the primary balance, and negative if they involve rejection of such efforts. At the European level, positive signals generally involve increased risk-sharing and provision of financial support to avoid defaults, while negative signals reflect actors' rejection of such measures. If such statements and decisions have any effect, positive signals should reduce spreads and negative signals should increase them, and given the considerable media attention afforded such signals during the period in question, one might indeed expect that they had effect. Nevertheless, our arguments suggest that investors may largely have ignored policy-making at the national level. In particular, the generally low perceived capacity of the GIIPS countries compared to European-level actors leads to the following expectation:

Hypothesis 1: *The effects of key political signals at the national level are weaker than those of key signals at the European-level.*

However, differences between the GIIPS countries and European-level actors add nuances to this expectation, and they also provide an additional opportunity to test our argument. While the capacities of the GIIPS were generally doubted during the crisis, some countries did better than others, and it is instructive to examine the countries' fiscal spaces, using the measures of Aizenman et al. (2013). Table 1 shows the average fiscal-balance-to-tax-base ratios and public-debt-to-tax-base ratios for the GIIPS over the period in question. In terms of debt, Greece was by far the worst placed country – just as it was before the crisis – while Ireland was the weakest in terms of fiscal balance. In contrast, Italy had by far the most favorable fiscal balance, while Spain had notably less debt than the other countries. As a simple, but convenient way to consider the two fiscal space measures together, Table 1 also shows their product, which further illustrates the already outlined picture: Italy and Spain had considerably more fiscal space than the other GIIPS countries, while Greece and Ireland were in particularly dire circumstances, leaving Portugal in the middle.

We argue that investors and observers pay close attention to fundamentals and fiscal space measures, and that their assessments of countries' capacities are strongly influenced by these measures.[6] This allows us to derive further predictions regarding the effects of national political signals. While it is interesting to analyze each country separately (and we report such analyses as supporting information), doing so is unattractive from a practical point of view, as it entails a significant loss of statistical power. To reduce this challenge, we group the countries according to their level of capacity, based on the measures discussed above. More specifically, we categorize Greece, Ireland, and Portugal as low capacity countries, and Italy and Spain as medium capacity countries (but it should also be noted that placing Portugal in the latter category would yield substantively similar results to those reported). Implementing our analysis separately for these groups of countries, our expectation is the following:

> Hypothesis 2: *The effects of national political signals are stronger in countries with higher capacity (medium rather than low).*

This hypothesis is based on the assumption that the levels of capacity and willingness at the European-level are similar across the GIIPS countries, which deserves some further discussion. While we believe this assumption is plausible considering the EU and ECB together, the relative importance of the actors is likely to differ by country. First, it should be noted that while the capacity of the Eurozone countries to bail out the GIIPS is considerable, the extent to which they can let their own fiscal balances deteriorate is also limited. Thus, when it comes to large economies like Italy and Spain, questions have been raised as to whether these are too large to be bailed out. If this were a widely shared view, we might expect the effect of key EU signals (decisions) to be weaker in countries with larger economies. In contrast, as the ECB's capacity has fewer limitations, making it a particularly important actor for larger economies, we might expect the effect of key ECB signals (statements) to be stronger in countries with larger economies. While this is not the primary focus of this study, the analysis will also shed some light on how whether the effects of European-level signals vary in such a manner.

Analysis

Testing our hypotheses requires data on political events and other relevant news during the Eurozone debt crisis. We have thus collected a comprehensive new dataset covering the period from January 1, 2009, until December 31, 2012. Due to space constraints,

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[6]This argument is consistent, for example, with the fact that a ranking of the countries in terms of CDS spreads during the crisis would give exactly the same pattern as that outlined above (for relevant CDS data, see Aizenman et al., 2013, 43).

we will only briefly discuss these data here, while we provide a more detailed discussion as online supporting information. We employ two different sets of event data: One containing European-level events, and another containing country-specific national-level events. At both levels, we distinguish between political statements and decisions and code these as positive or negative.[7] We further include a host of other events, which at the national level entail elections, protests, strikes, and other relevant news (e.g. regarding economic fundamentals or downgrades by rating agencies). At the European level, in addition to EU and ECB statements and decisions, we include statements and decisions by Germany, as well as ECB interest rate changes. This results in a total of 300 events at the European level, while we have 1036 at the national level.

As we are interested in the effects of particular events on financial time series, our analysis shares some features with most event studies. However, in contrast to most such studies, we analyze the effects of a large number of different event types, and we retain the time series format of our dependent variable. It would, for instance, not be feasible to implement the market model for normal returns, as there would rarely be a sufficient period of uninterrupted movement before the events to base the model on. In line with a number of existing studies (e.g. De Grauwe and Ji, 2013), we rather calculate daily spreads between the yields on 10-year bonds issued by the GIIPS-countries and the yields on similar German bonds.[8] We further log-difference these series to capture continuously compounded returns, and we find that an AR(3) model with a [0,1] event-window is appropriate. We analyze the data both as time series cross-sectional data (or panel data) and as separate time series.[9] More detailed discussions of time series diagnostics, window selection, and model specification are provided as online supplementary information (due to space constraints).

To set up our model, we create binary event indicators for all observed combinations of signal direction, actor, and form. To simplify the presentation, let the vector $\mathbf{x}_{ct}$ contain the national level indicators for country c, and the vector $\mathbf{z}_t$ contain the European level indicators. To capture the [0,1]-window of interest, our model will include lagged versions of these vectors, as well as contemporaneous ones. In other words, we use a distributed lag (DL) model, estimating separate coefficients for each time point inside the window,

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[7]At the European-level we also code mixed signals.

[8]Our data on bond yields contain daily closing values and originate from Thomson Reuters ECOWIN. Credit Default Swaps (CDS) would be an alternative measure, but recent studies conclude that bond spreads are more relevant (e.g. Badaoui et al., 2013). For further discussion of the relationship between default risk and bond spreads, see footnote 1 in the online supplementary information.

[9]While the inclusion of a lagged dependent variable gives rise to Hurwicz/Nickell-type bias, it should be noted that our estimator is still consistent in T. While such bias can pose a serious challenge for panels with very low T, the order of the bias is $1/T$, and we have $T > 1000$. Any bias will in other words be negligible and thus insufficient to justify the higher RMSE of alternative estimators.

and thus avoid making assumptions regarding the specific impulse response within this time frame.[10] As a safeguard to capture any remaining trends in the spreads, we also include a set of dummies capturing quarter-fixed effects, represented by the vector $\mathbf{q}_t$. We finally define the vector $\mathbf{v}_{ct}$ as $[y_{ct-1}, y_{ct-2}, y_{ct-3}]'$, which allows the AR(3)DL panel model with a [0,1]-window to be expressed as:

$$y_{ct} = \alpha + \mathbf{x}'_{ct}\beta_0 + \mathbf{x}'_{ct-1}\beta_1 + \mathbf{z}'_t\pi_0 + \mathbf{z}'_{t-1}\pi_1 + \mathbf{q}'_t\gamma + \mathbf{v}'_{ct}\rho + \varepsilon_{ct}, \tag{1}$$

where y is the log-differenced bond spread, α is a constant, β_0, β_1, π_0, π_1, γ, and ρ are vectors of coefficients, and ε is an error term.

Results

To assess hypothesis 1, we start with a single model estimating average effects across the GIIPS-countries. Summary information regarding this model (1) is reported in table 2, together with information about our other key models. The main results are shown in figure 1, which reports cumulative effects over the [0,1]-window.[11] (Please note that the figures only report theoretically relevant effects, while the full sets of estimates are reported in the appendix.) Starting with the negative national signals, these all have the expected sign, but neither political statements nor decisions have significant effects – which must be seen in relation to the fact that negative signals (and negative decisions in particular) are rare. Negative news, in contrast, have a weak, but significant effect in the direction we would expect, increasing the spreads. Turning to positive national signals, the effect of positive decisions has the expected sign, but is barely below the threshold for significance at the 95% level of confidence.[12] Neither the effect of positive news reaches statistical significance.

At the European level, we find strong and statistically significant effects for EU decisions and ECB statements,[13] but not for EU statements and ECB decisions. This is consistent with the expectation that EU statements are largely ignored by the market,

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[10]While multicollinearity can be a challenge for distributed lag models, generalized variance inflation factors show that this is a negligible issue in this case.

[11]For each type of event, the effect is calculated by adding the respective coefficients of the contemporaneous and lagged event indicators. To calculate the *full* cumulative effects, one would strictly speaking have to consider the impulse response functions implied by the auto-regressive components of our models, but we leave this issue aside here, as it is of minimal practical relevance and not substantively interesting. The full cumulative effects will be marginally larger than those reported here, which is also what we find if we implement a static model with a robust consistent covariance matrix.

[12]For similar results, showing no positive effect of national efforts to reassure markets, see Büchel (2013); McMenamin et al. (2015).

[13]These results stand in notable contrast to those of Smeets and Zimmermann (2013).

Table 2: Summary Information for the Models Reported in Figures 1, 2, and 3.

|	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Reported in Figure	1	2	2	3	3	3
Countries	GIIPS	GIP	IS	GIIPS	GIIPS	GIIPS
AR(l)	3	3	3	3	3	3
National events	Incl.	Incl.	Incl.	Incl.	Incl.	Incl.
European events	Incl.	Incl.	Incl.	Incl.	Incl.	Incl.
Placebo events	Excl.	Excl.	Excl.	Incl.	Incl.	Incl.
Quarter, Fixed Eff.	Incl.	Incl.	Incl.	Incl.	Incl.	Incl.
No. of Parameters	65	65	65	91	67	91
Observations	5185	3111	2074	5185	5185	5185
Event window	[0,1]	[0,1]	[0,1]	[-1,1]	[0,1]	[0,2]
HC cov. matrix	Yes	Yes	Yes	Yes	Yes	Yes
AR-test, p-value	0.596	0.504	0.988	0.556	0.557	0.812

Note: AR-test refers to a weighted Ljung-Box-type portmanteau test for serial correlation, using 8 lags (Fisher and Gallagher, 2012; Ljung and Box, 1978).

whereas ECB statements are more credible and thus seen as key signals. More importantly, hypothesis 1 receives strong support: The effects of key signals at the European level are considerably larger than those at the national level (where no political signals have significant effects).[14] In substantive terms, the reported effects can be interpreted approximately as percentage changes (an effect of 0.05 implies a 4.88% change, while a 0.10 effect equals a 9.52% change). According to our estimates, if initial spreads (measured in percentage points) were at 6, they would drop to 5.68 after a positive EU decision, and to 5.59 after a positive ECB statement.

To assess hypothesis 2, we estimate separate models for low and medium capacity countries (i.e. Greece, Ireland and Portugal versus Italy and Spain, respectively). These models are referred to as number 2 and 3 in table 2, and the main results are reported in figure 2. Starting with negative signals, the estimate for negative decisions is larger for the medium capacity countries, but neither estimate is significant. We further see that the effect of negative news is significant in the low capacity countries, although it is weak also here. Turning to positive national signals, where the number of observations is higher and the statistical power is greater, decisions again have a larger effect in countries

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[14]The finding that national signals have no significant effects also discredits the potential counter-hypothesis that national policy-making should matter for investors due to the conditionality inherent in EU bail-out programs. During the time period under consideration here, the market does not appear to have believed that the European actors would enforce very strict conditionality. In the case of Greece, this may of course have changed after the party Syriza with its anti-austerity position entered government in January 2015. Negotiating with this new government, the European actors appeared much stricter in June and July 2015 than in earlier years. Here, however, we focus on the period ending in 2012, when this was less relevant.

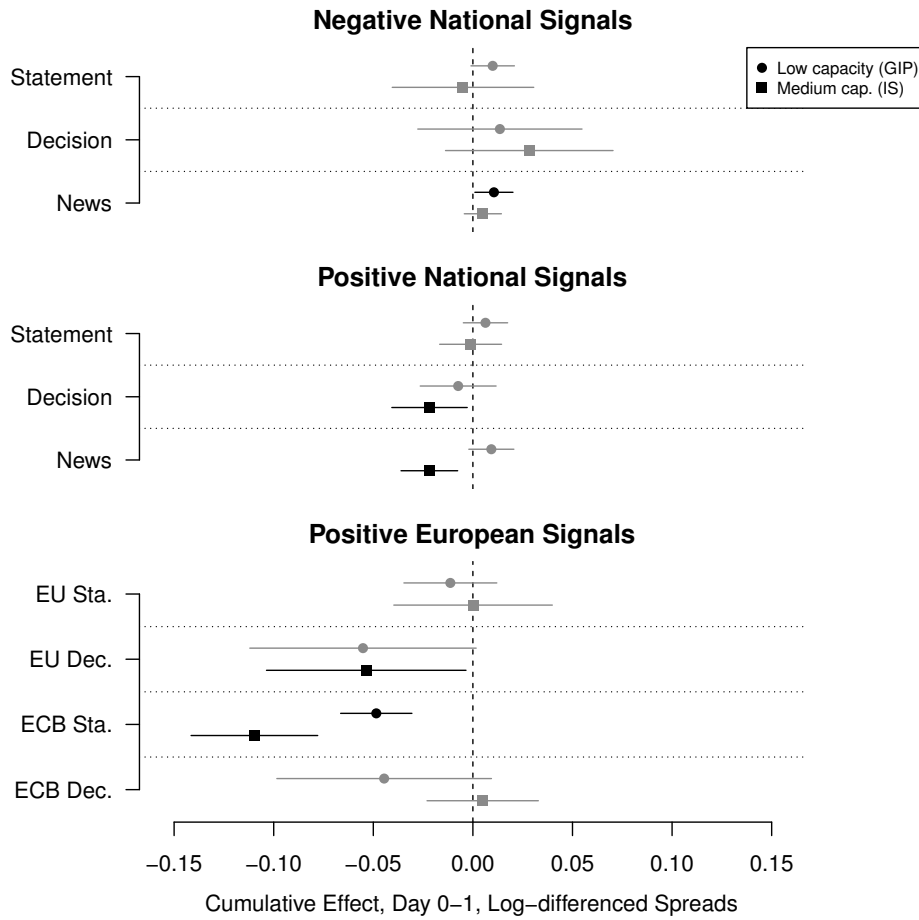**Figure 1:** General Results across the GIIPS Countries.
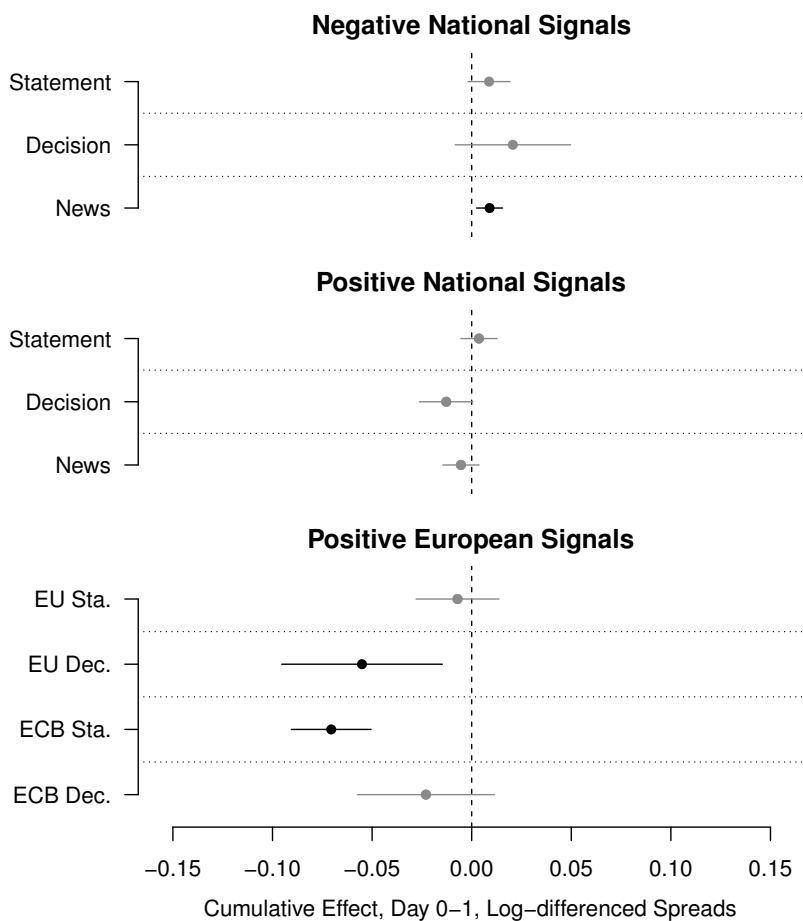
Note: This figure only reports theoretically relevant effects, while the complete results are provided as supplementary information. The error bars give 95% confidence intervals; statistically significant estimates are shown in black, insignificant ones in gray. The standard errors are calculated using generally heteroskedasticity consistent covariance matrices.

with medium rather than low capacity. This is consistent with hypothesis 2, but while the estimate for the countries with higher capacity is significantly different from zero, it is not significantly different from the estimate for the low capacity countries, precluding any strong conclusions in this regard. Lastly, we see that positive news also have a significant effect in these countries.

As mentioned, we may also expect differences in the impact of European-level signals. First, EU signals could matter less in larger economies (i.e. the same countries that we categorize as having medium capacity, namely Italy and Spain). However, this notion receives no support, as the estimated effects of EU decisions are virtually identical in our two groups of countries, and the estimate in the low capacity countries barely fails to reach statistical significance. It seems investors consider EU decisions as relevant signals regarding default risk even in the largest economies, despite some observers' worries that these are too large to be bailed out. Lastly, we might expect ECB signals to matter more in larger countries, as the ECB's capacity has fewer limits, making the ECB a

Figure 2: Results by National Capacity to Avoid Default.

Negative National Signals

Positive National Signals

Positive European Signals

Cumulative Effect, Day 0–1, Log–differenced Spreads

Note: This figure only reports theoretically relevant effects, while the complete results are provided as supplementary information. Low capacity refers to Greece, Ireland and Portugal; Medium capacity refers to Italy and Spain. The error bars give 95% confidence intervals; statistically significant estimates are shown in black, insignificant ones in gray. The standard errors are calculated using generally heteroskedasticity consistent covariance matrices.

particularly important actor for these countries. This notion does indeed receive support, as the estimate for the larger countries is considerably larger than that for the smaller ones.

Having presented the results of our main models, we will briefly discuss the robustness of our results. While there are strong theoretical (and empirical) reasons to expect the events in our data mainly to have effects within the [0,1]-window, it is worth checking whether alternative windows would yield notably different results. We thus report (as supplementary information) analyses expanding the event window one day in each direction, and we find that the results are very robust to these alternative specifications. Furthermore, while the focus of this paper is not on the issue of potential contagion, it is worth noting that the results still hold if we control for national-level events taking place in the other GIIPS countries. This is in line with the finding that such such events have limited effects even for the countries in which they take place. It is also worth assess-

ing whether our approach to address auto-regressive heteroskedasticity (ARCH) is valid, and examine how the results would look if the analysis were implemented by country. We thus report (as supplementary information) country-specific OLS and GARCH(1,1) models, showing that the results are comparable across countries and that GARCH and OLS models yield similar results.

Lastly, we conduct a placebo test to increase our confidence in the results.[15] For many of the event types we examine, not least statements, it would be difficult to identify relevant placebo treatments. Yet, for one event type of notable theoretical importance, namely EU decisions, this task is more straightforward. More specifically, we examine EU meetings that did not lead to decisions or statements of relevance to international bond markets. We have 10 such 'no decision'-meetings occurring from March 2, 2009 until November 23, 2012. The rationale of our test is as follows: As explained above, we argue that markets react to the content of EU decisions – spreads drop when positive decisions are made. One could, however, speculate that EU meetings coincide with other factors that truly move the markets, or that markets simply react to the fact that a meeting is held. Alternatively, the results could be some kind of methodological artifact. For each of the three event windows used in the robustness checks, we thus re-estimate our model, including EU meetings without relevant decisions. Summary information for these three models is reported in table 2, and the results are shown in figure 3. As the figure shows, the placebo meetings are not found to have significant effects in any of the models, in contrast to the meetings with positive decisions. This increases our confidence that these results represent valid causal inferences.

Conclusion

The Eurozone debt crisis underlined how important it is – and how difficult it can be – for states to maintain the trust of bond markets, but existing studies still provide few answers as to when policy-makers can succeed at this task. This study contributes towards answering this question by presenting theoretical arguments regarding the effects of political signals both from national and international actors. Our main argument is that investors distinguish between actors' capacity and willingness to avoid defaults when determining the relevance of their signals. A key point is that avoiding default requires both sufficient capacity and willingness to do so, and that the lower an actor's perceived capacity is, the less important this actor's perceived willingness becomes. In addition,

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[15]Different authors present different types of placebo tests, some focusing on placebo treatments, others outcomes. The tests do, however, generally share the feature that finding placebo effects would undermine the credibility of the research design, which is also the case here, where we focus on placebo treatments.

Figure 3: Placebo Tests for EU Meetings
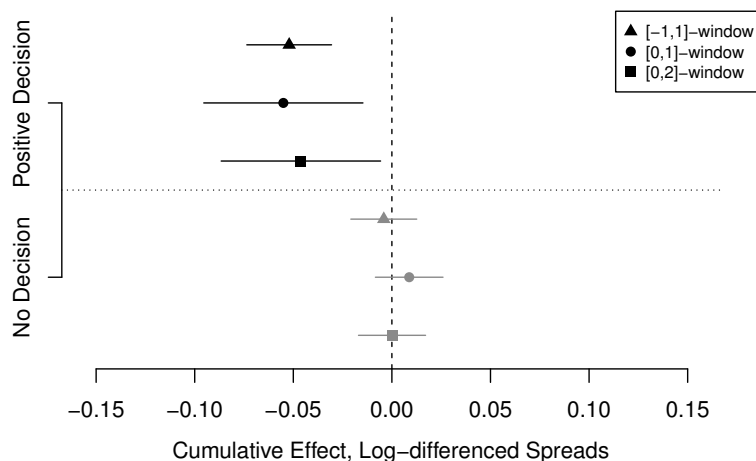
Note: This figure only reports effects relevant to the placebo test, while the complete results are provided as supplementary information. The error bars give 95% confidence intervals; statistically significant estimates are shown in black, insignificant ones in gray. The standard errors are calculated using generally heteroskedasticity consistent covariance matrices.

the perceived probability of there being both sufficient capacity and willingness at the international level (which we refer to as secondary trust), becomes more important as the equivalent probability at the national level (primary trust) decreases.

Applying this argument to the Eurozone, we argue that the debt crisis was triggered by a perceived lack of capacity on part of the GIIPS-countries, which limited the relevance of their willingness. The low capacity of these countries was partly due to their limited fiscal space (high debts and deficits relative to their tax base), but they were also particularly weak due to their EMU membership, which removed their ability to conduct their own monetary policy. Conversely, the European-level actors had greater capacities than international actors have in most other cases. Thus, the issue undermining investors' secondary trust was not the question of whether European-level actors had the capacity to prevent defaults, but whether they were actually willing to do so, amidst resurfacing nationalist sentiments and questions of whether bail-outs were permitted by existing European treaties and national legal frameworks.

Accordingly, we find considerably larger effects of political signals at the European level than the national level.[16] Our findings are largely consistent with the very few existing studies looking at related questions, and our theoretical arguments thus help explain the findings of these earlier studies, but we also add further nuances by predicting differences among the actors at each level. We note, for example, that a couple of countries

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[16]While this finding is in line with our expectations, it should be treated with some caution. Our datasets were collected in two different ways, which could potentially undermine comparability across levels (even if each separate dataset has high validity and reliability).

(Italy and Spain) had somewhat more capacity than the others, which should make their political decisions more important to investors. We also argue that the ECB is particularly important for larger economies, due to its extensive capacity, and we do indeed find larger effects of ECB statements in the two largest GIIPS economies.

Turning to the implications of our arguments, it is worth noting that, while we argue that the distinction between capacity and willingness is relevant and useful – because it is applied by investors and observers – it is not necessarily clear-cut. While capacity can be considered given at any specific point in time – defining the options available – the distinction between factors that can be influenced by the actors and those that cannot is hard to sustain over a longer time frame. In the long-run, it may be more accurate to say that an actor's capacity depends on its previous course of action. This is particularly important at the national level: The notion that a state needs sufficient capacity to avoid defaulting also implies that it needs to maintain this capacity by adjusting its finances in good time – once its capacity is questioned, it may be too late. These points do not change the argument that rating agencies and investors distinguish between capacity and willingness, but future research should examine exactly where they draw the line between the two.

As mentioned, the Eurozone is particular in how the existence of a common central bank weakens the capacity of national actors and strengthens the influence of external actors. In this setting, with considerable capacity residing at the European-level, it is vital that the actors at this level are willing to share the responsibility for guaranteeing sovereign debt. While this situation sets Eurozone members apart from most other countries, our general arguments can easily be applied also to other cases: Even where external actors (such as the IMF) are weaker, default risk is partly a function of the probability that they will prevent defaults when national actors fail to do so. Furthermore, when assessing the probability that national and international actors will succeed at preventing defaults, we would generally expect investors to separately assess the actors' capacity and willingness.

Lastly, it could be noted that this topic is intrinsically linked to economic crises: It is when investors lose faith in sovereign debtors that we will see explicit efforts to reassure them, and it is also at this time that such efforts are likely to have the greatest effect (if they are successful). Our study has focused on a time of exceptional volatility in Europe's sovereign debt market, and during another time period we would neither observe as many relevant events, nor expect them to have as strong effects as we find for some events in this study. In fact, political signals may already matter less for European bond markets than they did during the period examined here, but we leave this for future research to assess.

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