

# European Sovereign Bailouts, Political Risk and the Economic Consequences of Mrs. Merkel

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## Abstract

The European economy was hit by a severe shock in late 2009 when the newly elected Greek government of Papandreou discovered the true amount of the effective public deficit. The subsequent loss of trust in the governance of Europe's Stability Pact reduced financial markets' willingness to lend to highly indebted governments. The European Union established various mechanisms such as the EFSF to bail out debt-ridden member states, yet they had little lasting success. The continuously rising spread suggests that the information transmitted from political leaders was not successful in reducing investors' risk perceptions. Because of Germany's dominant role, Mrs. Merkel's communication is of particular interest. We develop a formal model, according to which the financial market participants do not know the real rate of return on Greek assets but infer it from the signals emitted by informed governments. Based on a unique news dataset, we investigate the impact of good and bad political news on the Greek interest spread. The results demonstrate that the noise and the uncertainty around the European decision making process has substantially raised the cost of the bailout.

## 1. Introduction

The Greek debt crisis has caused the euro's first financial crisis and pushed the Union to the brink of collapse. This crisis has raised important questions about the management of macroeconomic stabilization policies in the Euro Area. Good crisis management reassures markets, avoids panics, and then concentrates on fixing fundamentals. By contrast, bad management signals uncertainty among policy makers, confuses observers and generates panics. Of course, there is also nothing new about confusions in a financial crisis. The 15th century Tuscan banker Alamanno Acciaiuoli wrote during the 1465 banking crisis in Florence: "the poor are without bread, the rich without brains, and learned men without good sense" (Goldthwaite, R. 2009:456). Little has changed since then.

Prior to the Euro crisis, it was thought that markets would discipline member states with large or excessive deficits (Codogno, et. al, 2003). This turned out to be wrong. From the beginning of

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monetary union until the Lehman crisis, sovereign bond yields in the Euro Area moved together with minimal spreads. During this time some governments, like Greece, did not face hard budget constraints imposed by markets and they borrowed more than allowed under the Stability and Growth Pact. Others, like Ireland and Spain enjoyed a property bubble fuelled by low interest rates and that filled their treasury. These happy days ended with Lehman Brothers. In many Southern European member states, sovereign bond spreads suddenly shot up to levels that, if they persisted, would make sovereign debt unsustainable. While markets first were negligent to default risk, they now panicked. Greece was the first to be cut off from market liquidity, Ireland and Portugal followed. Spain and Italy were also coming repeatedly under pressure. When the European authorities started to bail out some of these countries, they encountered a lot of political resistance, especially in Germany. But in the end, governments intervened to stabilise markets and prevent the melt down of the euro.

All financial crises are in the end banking crises. They start with a bubble caused by exuberant optimism in the private sector, when investors speculate on sustained rises in asset prices. In Europe, major asset bubbles occurred in Ireland's and Spain's property markets. But even before European Monetary Union (EMU) began in 1999, so-called convergence trades caused sustained rises in prices for Southern European government bonds. Banks kept a large part of these securities in their portfolio. However, when shocks hit inflated asset prices, a crisis is unavoidable. Given that they are subject to asymmetric information, investors change their perception of risk and raise their liquidity preference. In the Euro Area, the initial shock was the Lehman bankruptcy, which generated fears about other banks defaulting. The resulting credit crunch caused a sudden and deep recession and public revenue collapsed. Governments found it increasingly difficult to finance the huge deficits by borrowing from risk averse and panicked investors. Hence the supply of securities increased, while demand fell; not surprisingly, bond prices of Southern governments collapsed and yields shot up. At this point, the crisis became systemic, because the falling asset prices deteriorated the balance sheets of banks, which had previously bought southern bonds during the convergence boom. With the decline in the value of assets and liabilities nominally fixed, banks' capital shrank and the capital adequacy ratio (the ratio of capital to assets) fell. Hence banks had to sell assets and the price rod accelerated. Liquidity in the interbank market dried up as banks were unable to judge which banks were safe and which were not. This is the European version of a

bank run.<sup>1</sup> Now the European Central Bank had to step in as a lender of last resort (Freixias et al., 2000). Thus, the link between a sovereign debt crisis and a banking crisis are bond prices.

Norton (1988) has made the analytic distinction between panics based on a “failure hypothesis” when investors fear either the default of a large corporation, and others based on the “recession hypothesis” when they fear a deep recession. But these two aspects interact. The bankruptcy of Lehman generated fears of further corporate failures, and this fear aggravated the recession because it caused a credit crunch. But the recession reduced government revenue, which in return generated the fear of sovereign defaults. The European economy was hit by a second shock in late 2009 when the newly elected Greek government of Papandreou discovered that the previous Karamanlis administration had knowingly deceived voters and lied to European authorities on the effective public deficit in Greece. The subsequent loss of trust in the governance of Europe’s Stability Pact reduced financial markets’ willingness to lend to highly indebted governments. It is possible that without this shock, the Euro Area could have muddled through the crisis, as Japan did in the 1990s or the USA after Lehman. However, this was only the beginning. The crisis deepened as a consequence of political uncertainty. Were national governments going to bail out distressed sovereign debtors or not? The German government said no and then did it anyhow. Some actors sought to involve the ECB, which could have weakened its credibility. Politicians, Journalist and academics made sometimes outrageous claims, which gave them media spotlight - and confused everyone. National governments seemed to be “without good sense”, although in the end they always came at the euro’s rescue in the last moment.

The German government had a particular role in this respect. Germany is seen as the *économie dominante* in the Euro Area. It had pulled out of the recession more quickly than others, and fiscal consolidation was more advanced than elsewhere. German current accounts were in surplus and it seemed evident that Germany had the means to rescue Greece. Instead, Chancellor Merkel and the leading political establishment in Germany signaled that they would prefer to expel Greece from European Monetary Union<sup>2</sup> rather than commit taxpayers’ money to bail out lazy southerners.<sup>3</sup>

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<sup>1</sup> Most of the literature on banking crises models bank runs as loss of trust in their bank by depositors. But arguably, with deposit insurance the interbank market has become more important. Freixias et al., 2000 have shown that the freezing of the interbank money market is equivalent to a classical bank run.

<sup>2</sup> See her declaration in: Deutscher Bundestag – 17. Wahlperiode – 30. Sitzung. Berlin, Mittwoch, den 17. März 2010, Seite 2719

<sup>3</sup> Chancellor Merkel declared on 17 May 2011: „We cannot have one currency and someone has a lot of holiday and the other very little. In the long run this does not go together.” See:

<http://www.tagesspiegel.de/politik/merkel-fordert-einheitliches-rentenalter-in-europa/4187960.html>

Repeated conflicts between France and Germany also caused a sense of lack of leadership. Not surprisingly, these contradicting signals irritated markets. As the crisis got worse, the German and French governments finally pulled in the same direction, but a lot of damage was done.

The major vulnerability results from the impact of government bonds on the balance sheet of banks. When governments are no longer able to fund their public borrowing requirements from private markets, the excess supply of bonds will cause the price of debt to fall and yields to go up. If governments can no longer refund their debt service, they will have to default. Either way, the value of bank assets is negatively affected. If banks deleverage to restore their balance sheets, the credit crunch will cause a recession and make the debt problems worse. Thus, in the interest of maintaining the functioning of the euro banking system, illiquid governments have to be bailed out. We define a bailout as the discretionary provision of liquidity to a borrower, here governments but also banks, in reaction to an adverse shock that causes abnormal demands in liquidity that cannot be met from an alternative source. This definition implies that bailouts are effectively made by a lender of last resort (see Freixas et al., 2000). For foreign debt, this requires often the IMF to intervene; in nation states with national currencies, the bailout is usually done by the central bank for debt denominated in national currency, although this bears the risk of higher inflation. In the European monetary union, which has established price stability as the primary objective and financial stability as a necessary condition for it, the ECB may assume the role of lender of last resort in the very short term but in the long run it must maintain the hard budget constraint by keeping money scarce. In the last instance, the bailout would therefore have to come from other Euro Area member states.

Traditionally, the function of lender of last resort (LLR) is fulfilled by central banks with respect to banks that are hit by a run. In the Euro Area, the ECB has assumed this LLR-role impeccably by implementing unorthodox measures such as the Securities Markets Programme (SMP) and the by open market purchases of excessively high yielding sovereign debt (see ECB, 2011). Since Thornton and Bagehot it is generally accepted that central banks can and should provide all the necessary liquidity for solvent debtors against “good” securities. In reality it is not always clear whether a debtor’s difficulties are due to liquidity or solvency problems. However, if the function of banks is maturity transformation and the central bank issues liquidity to banks against sound long term debt, then the lender of last resort is in principle unproblematic, as long as the banks’ assets are “good”.

But if the solvency of a debtor is in doubt, this is no longer true. The central bank could then refuse “bad” paper issued by risky sovereigns in its refinancing operation to the banking sector, but that would push banks into a liquidity crisis. Alternatively, if the central bank buys government bonds in open market operations and the debt issued by the sovereign is unsustainable, the central bank liability (which is always a claim on an asset) becomes worthless and if this effect is large, the central bank could lose control over money supply. It is sometimes claimed that central banks need to be backed by strong governments, because these have infinite power to tax and print money. But governments’ power is not absolute. Their taxing capacities are politically constrained and printing fiat money without real asset backing generates currency crises and high inflation.<sup>4</sup> It is therefore a myth that central banks have an unlimited capacity to supply money, even in traditional nation states (Goodhart, 1999). The Greek crisis shows that the willingness-to-tax by the Papandreou government did not solve the debt crisis but made it worse by throwing the Greek economy into depression. The real constraint on central bank bailouts is therefore the commitment to monetary (i.e. in this case price) stability and not, as de Grauwe (2011) and others have claimed that governments issue debt in “foreign” currency. However, contrary to what some German economists seem to believe, the commitment to price stability is not a sufficient condition to solve the problem of financial instability and writing off sovereign debt and pushing the cost on banks will make a return to satisfactory economic growth even more difficult.<sup>5</sup>

In any country that issues its own currency, including Euroland, unsustainable public debt would cause a currency crisis. The Euro exchange rate has remained reasonably stable, because aggregate Euro debt is not excessive when compared to the United States or Japan. However, the problem is distributional: some member states have large debt ratios, others do not. In principle high deficit countries could be funded by low-debt member states. A priori this does not impose undue burdens on lenders, for credit is a form of wealth, and taxpayers in lending states would build up assets which they should be able to liquidate in the future. From this point of view, bailing out a member state in the Euro Area is, like banking: a form of maturity transformation. Illiquid claims on, say, future Greek tax payers are liquidified by other member states, say Germany, which dispose of greater liquidity margins. However, this story turns nasty if the borrowing state defaults, for then the foreign taxpayer loses the asset claim and her wealth is reduced. Given this possibility, each

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<sup>4</sup> Buiter (2008) has pointed out that the return on the inflation tax has a Laffer curve shape, meaning it becomes ever less efficient the higher inflation rises.

<sup>5</sup> See: Plenum der Ökonomen (2011).

member state has a desire to minimize its own contribution to the collective bailout and the resulting collective action problem is likely to generate the under-provision of bailout funds. This collective action problem, which resembles a prisoner dilemma, is likely to cause a further fall in bond prices and could (re-)ignite a banking crisis.

The Euro Area's problem is therefore, first of all, a problem of governance. Because, by definition, member state governments have to serve their national constituencies first, they will limit the exposure of national tax payers to potential losses from defaults, and their communication in a crisis is dominated by discourses that say "no, we can't". Not by coincidence have the media named Mrs. Merkel "Madame No". Nevertheless, assuming that the benefits from having the European Union, a single market and a stable currency are clearly recognized, the rationality of preserving the system should be high enough on the priority list that ultimately governments will provide the necessary bailout. Saying No may then simply be a step in a drawn out bargaining process that aims at limiting national bailout contributions. But even if governments made *ultimately* optimal decisions, the noise around the decision making process will raise the cost of a bailout more than it would be if the decision making authority were centralized at the level of a European economic government. A centralized European economic government could minimise these costs by eliminating collective action problems and reducing the noise and uncertainty in the bailout process. By contrast, the cost of decentralized governance shows up in the high yield differentials on sovereign debt between deficit countries and the benchmark German Bund, in the need for larger bailouts and the higher risk of bank failure. It follows that a centralized macroeconomic government is in the interest of all European tax payers, as it reduces the cost of bailouts and risks of defaults and bank crises.

This paper seeks to estimate the evidence for such cost. We will first present a model for optimal bailouts. Section 3 describes the political and economic setting and the independent variables. Section 4 discusses the explanandum and presents the results of a GARCH model, by which we estimate the political noise. Section 5 concludes.

## 2. The model

We propose a model<sup>6</sup> for the Euro Area, where all public sector borrowing is financed by issuing bonds. Private markets hold a portfolio of two assets, risky and riskless government bonds. For

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<sup>6</sup> The model was inspired by Calvo, 1993; Grossman and Stiglitz, 1980

linguistic convenience, we will call the risky bonds “Greek” and the riskless “German”. For risky bonds the return varies with different states of the world. To keep things simple, we look at the comparative statics of one period, where decisions are influenced by previous realisations and future expectations.

When deciding how much of these bonds they will keep in their optimal portfolios, private investors use all publicly available information. If the supply of risky Greek bonds exceeds what markets are willing to hold at given prices, the excess supply will push bond prices down and yields up, unless other governments or the European Union “bail out” Greece. By *bailout* we mean a non-market intervention with the purpose of stabilising bond prices and yield spreads. In the context of the Euro Area, the intervening authorities are a syndicate of governments or a lender of last resort like the ECB or the EFSF.<sup>7</sup> We will refer to these authorities alternatively as “governments” or “the Union”. While bond prices vary in private markets, bailouts are modelled as bond purchases at par.<sup>8</sup>

The purpose of the bailout is to prevent a fall in bond prices that could destabilise the banking system. Falling bond prices would not only damage banks’ balance sheets, but generate yield spreads between risky and risk-free assets that may make Greek debt unsustainable. Thus, yield spreads depend on investment decisions made by private operators and on bailout decisions made by governments. Governments have privileged information about Greece’s macroeconomic variables and policies, especially fiscal policies (i.e. the supply of bonds) and monetary policy (i.e. the supply of liquidity to banks). This assumption reflects the close cooperation within the European institutions (Council, Commission, ECB).

Because of asymmetric information, the private sector takes decisions after observing what governments reveal about their intended policies. In the European Union, policy decisions are the result of messy negotiations between member states and with European authorities. They often reflect compromises and/or the preferences of the most powerful member state government(s).

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<sup>7</sup> Thus, our definition of bail-out is compatible with TEU art 125.1, which says: “1. The Union shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of any Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project. A Member State shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of another Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project.” The reason is that if the Union buys bonds issued by member states, they are and remain a liability of the issuer, while they are an asset in the portfolio of the institution (member state) that buys them.

<sup>8</sup> This is equivalent to saying that the Union lends money directly to the Greek government.

These compromises are easily challenged by domestic opposition within member states, or by other member states, and as a consequence the communication about public policies is frequently disturbed by noise (signalling errors). The higher the noise, the larger is the uncertainty among investors about government's intended policies. Investors are risk averse, so that higher uncertainty lowers the willingness of the private sector to hold risky assets.

Let  $\bar{B}_i$  and  $\bar{X}_i$  denote the given total supply of safe German and risky Greek bonds respectively. The bonds are held by investors in the private sector  $P$  or by Union governments  $G$ . The total supply of riskless German assets is  $\bar{B} = \sum_i^{P,G} \bar{b}_i$ , for  $i = \{P, G\}$  and of risky Greek assets it is:  $\bar{X} = \sum_i^{P,G} \bar{x}_i$ .

The individual investor's budget constraint satisfies

$$(1) \quad px_i + b_i = \bar{b}_i + p\bar{x}_i$$

The price of risky assets in terms of the safe asset is  $p$ . Hence, the price of German assets is always equal to 1. The return for safe German assets is  $\rho$  and for risky Greek assets  $r_t$ . Thus, future wealth of actor  $i$  is

$$(2) \quad W_i = \rho b_i + rpx_i$$

The demand of assets is determined by the optimal portfolio allocation at given prices  $p_t$ . The change of the relative bond price  $p$  is a negative function of the excess supply of bonds:

$$(3) \quad \Delta p = p(\bar{X} - x_p(p_t) - x_G), \text{ with } p' < 0.$$

Changes in bond prices determine the bond spread, which is  $\frac{r}{p} - \rho$ , and the extra return required for holding a risky bond in the private sector's portfolio at given prices is  $r - \rho p$ .

We will assume that the private market's asset allocation is dependent, *ceteris paribus*, on the relative bond price  $p$ , but the Union will bail out Greece's risky assets at face value. Following Grossman and Stiglitz (1980) we assume an exponential utility function for wealth

$$(4) \quad V(W_i) = -e^{-\beta W_i}$$

Where  $\beta > 0$  is the coefficient for absolute risk aversion. Before we determine the optimal portfolio, we need to discuss the returns on assets. We take the return on riskless German assets as given and model the return on risky Greek assets as a stochastic process

$$(5) \quad r_t = s_t + \varepsilon_t$$

$s_t$  is the function of a set of fundamental economic parameters, such as capital productivity, the debt ratio, deficits, growth, and competitiveness, all of which determine jointly the solvability of Greek bonds. Thus,  $s_t$  is the accurate signal for the return on Greek bonds given the state of economic fundamentals and  $\varepsilon_t$  is a white noise error. We assume that  $s$  and  $\varepsilon$  are normally distributed  $s \sim N(\bar{s}, \sigma^2)$ ,  $\varepsilon \sim N(0, \nu^2)$ . It follows that  $s - \rho P$  the extra return required for holding Greek bonds, given full knowledge of the economic policies pursued by the Union.

*Proposition 1. Uncertainty in the private sector is higher than for governments.*

*Proof:*<sup>9</sup> Insiders in governments do not know  $\varepsilon_{t+1}$ , but  $s_t$  and the two respective distributions, while private operators do not know  $\varepsilon_{t+1}$  or  $s_t$  and only the distributions of  $s$  and  $\varepsilon$ . It follows that the expected return for governments from bailing out Greece is  $E_t(r_{t+1} | G) = s_t$  and the expected return for the private market of holding Greek bonds is  $E_t(r_{t+1} | P) = \bar{s}$ . The forecast error variance for governments is

$$(6) \quad E_t[(r_{t+1} - s_t)^2] = E_t(\varepsilon_{t+1}^2) = \sigma^2.$$

If we assume<sup>10</sup> momentarily that  $\{s_t\}$  is a stationary AR(1) process such as  $s_t = a_0 + a_1 s_{t-1} + \varepsilon_t$ , with mean  $\bar{s} = \frac{a_0}{1 - a_1}$  and  $0 < a_1 < 1$ , the error variance for the private sector will be

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<sup>9</sup> See Enders, 1995.

<sup>10</sup> The argument that follows does not depend on this assumption, but it simplifies the argument and exposition.

$$(7) \quad E_t[r_{t+1} - \bar{s}]^2 = \frac{\sigma^2}{1 - a_1^2}$$

which is larger than the forecast error for governments because  $(1 - a_1^2) < 1$ . *Q.e.d.*

The private sector could improve its investment performance if it knew the model  $s_t$  by which governments decide to bail out Greece. However, the  $\{s_t\}$  process is based on confidential information available to governments while private investors only know actual realisations of  $r_t$ . They could try to obtain information from past realisations which would improve on the unconditional error variance by calculating the conditional variance of the risky return as:

$$(8) \quad \text{Var}(r_{t+1} | r_t) = E_t(r_{t+1} - a_0 - a_1 r_t)^2 = E_t(\varepsilon_{t+1}^2)$$

The question for private operators is then what drives the error process  $\{\varepsilon_t\}$ ? Given the messy governance of the Euro Area, there will be lots of noise and uncertainty as to what governments will actually do. One may, therefore, model the conditional variance of the return on Greek bonds as a multiplicative conditionally heteroskedastic process first proposed by Engle (1982):

$$(9) \quad \varepsilon_t = \kappa_t \sqrt{\alpha_0 + \alpha_1 \varepsilon_{t-1}^2}$$

Where  $\{\kappa_t\}$  is a white noise process with  $\sigma_t^2 = 1$  and  $\kappa_t$  and  $\varepsilon_t$  are independent from each other and  $\alpha_0$  and  $\alpha_1$  are constants such that  $\alpha_0 > 0$  and  $0 < \alpha_1 < 1$ . In this case, the error sequence  $\{\varepsilon_t\}$  still has the unconditional mean of zero, the constant variance  $\nu^2$  and the errors are uncorrelated. However, the conditional variance of the error process is now dependent on the past history of  $\varepsilon_{t-1}$ .

$$(9a) \quad E(\varepsilon_t^2 | \varepsilon_{t-1}) = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2$$

If previous periods' errors were large, the conditional variance in  $t$  will also be large and the private sector has a noisy perception of risky returns. The conditional variance of the error term can be estimated by a GARCH (q, p) model from the observed data; it captures alternating periods of tranquillity and volatility.

It follows from equation (8) and (9a) that the conditional variance of the risky returns from Greek assets will go through periods of high volatility, depending on the nature and occurrence of shocks

that hit the system. So far our system says nothing about how these shocks are generated. However, while the return  $s_t$  is known to policy makers (in fact their policies largely generate it), the forecast errors in the private sector must reflect political noise. When statements made by political leaders are clear and credible, markets will understand what governments will do and they will adjust their own strategies. By contrast, if the signals from governments are unclear, confused and contradictory, private investors will hesitate to take risky Greek bonds into their deposit for fear of making “errors”. Thus, there is an additional risk factor for holding Greek bonds that is purely political and unrelated to the risk in economic fundamentals. We will refer to this as “political risk”.

If the errors were normally distributed and investors were risk neutral, shocks should not affect the return on Greek assets. However, risk averse investors will ask for a premium that compensates them for holding risky assets. To assess that risk, they look at past errors, so that the conditional variance becomes the measure of noise. In this case, the rate of return that reflects fundamentals must be augmented by the political risk premium, which can be assumed to be an increasing function in the conditional variance of  $\{\varepsilon_t\}$ . For heteroskedastic political shocks, the return should be higher in periods of large noise and uncertainty. This political risk premium can then be estimated as an ARCH-M process.<sup>11</sup>

$$(10) \quad s_t = s_t^* + \delta h_t$$

where  $s_t^*$  is the risky return based on fundamentals (which may change over time, but, given our static framework, we take as exogenously set) and  $\delta h_t$  the political risk premium caused by noise in government communication.  $h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2$  stands for the conditional variance of the error process (9) and  $\delta > 0$  is a coefficient that measures the impact of noise on the rate of return.

*Proposition 2. The larger the political noise, the larger is the need for bailouts.*

*Proof.* We re-write equation (5) as

$$(5a) \quad r_t = s_t^* + \delta h_t + \varepsilon_t$$

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<sup>11</sup> See Engle, R. F., D. Lilien and R. Robins. 1987.

and maximise public and private investors' utility function (4) for holding risky bonds (see Grossman and Stiglitz, 1980). If the private portfolio is negatively related to the noise function for given bond prices, and Greek bond supply is fixed, then the Union has to absorb the excess supply of Greek bonds.

First, we determine the optimal portfolio for European authorities for bailing out Greece. Because the bailout price for the Greek bonds is always at par, the optimal portfolio for governments must satisfy:

$$(11) \quad x_G = \frac{s_t^* - p\rho}{\beta V^2}$$

Because bailouts are at par,  $p=1$  in (11) and the optimal bailout portfolio is proportional to the extra return that would be required if bond holders had the insider knowledge of governments. If the two returns were identical, the extra return would be zero, which would imply that Greek assets are no riskier than German assets. Governments would not have to intervene in the bond market because private investors would buy up all the newly issued public debt at market determined prices.

However, private investors do not know  $s_t^*$  and they will therefore seek to infer its value from governments' will to bail out Greece. But the information about policies is subject to noise when policy makers make contradictory declarations. After a while the noise may subside and the effective actions by governments may become clearer to markets, but in the meantime private investors will either request a political risk premium or they reduce the share of risky Greek bonds in their portfolio.

One way to model this investment behaviour under uncertainty is to assume that private investors discount the value of government bailouts by the political risk premium that is generated by noisy governments. We can describe this discounted variable as

$$(12) \quad \tilde{x} = x_G - z,$$

Such that  $z = x_G - \left(\frac{1}{1+\mu}\right)x_G = \left(\frac{\mu}{1+\mu}\right)x_G$ , for  $\mu = \frac{\delta h_t}{s_t^*}$ .

Where  $z$  represents the noise variable. The higher  $\delta h_t$ , the louder the noise and the larger the risk premium.

Combining (11) and (12), we get

$$(13) \quad x_p = \frac{s_t^*}{s_t^* + \delta h_t} \frac{s_t^* - p\rho}{\beta v^2}$$

The portfolio of private market operators will shrink when the political noise  $\delta h_t$  increases. Remember that  $\delta h_t$  is the conditional variance which exhibits heteroskedastic clusters of high and low uncertainty. Furthermore, if markets have a long memory, the negative effects of noisy political communication can be rather persistent.

If bond prices are to remain stable, bailout intervention is required to absorb the excess supply of Greek bonds. Hence, the excess supply, which is the difference between total Greek bond issuance and the optimal portfolio of private markets at a given price  $p_t$  and noise:

$$(14) \quad \hat{x}_G = \bar{X} - x_p(p_t, \delta h_t)$$

Because  $x_p(p_t)$  falls, as the political noise  $\delta h_t$  increases, larger bailouts are necessary at given levels of Greek bond prices. *Qed.*

*Proposition 3. Bond prices will fall as public borrowing and political noise increase unless governments bail out Greece.*

*Proof.* Inserting (13) into (14) and solving for  $p_t$  yields:

$$(15) \quad p_t = \frac{1}{\rho} \frac{s_t^{*2} - (s_t^* + \delta h_t)(\bar{X} - x_G)\beta v^2}{s_t^*}$$

Bond prices fall when the supply of risky Greek assets increases

$$(16) \quad \frac{\partial p_t}{\partial \bar{X}} = \frac{-\beta v^2 (s_t^* + \delta h_t)}{\rho s_t^*} < 0$$

They also fall with higher political noise

$$(17) \quad \frac{\partial p_t}{\partial \delta h_t} = \frac{-(\bar{X} - x_G)\beta v^2}{\rho s^*_t}$$

This expression is negative for  $(\bar{X} - x_G) > 0$ , meaning that the Union does not bail out the full excess supply. If the Union buys all Greek bond supply, bond prices are stable, even if the political noise increases.

The results in (16) and (17) are important when the private banking system is holding a substantial share of risky Greek bonds in its portfolio. For in that case, the losses in the bond market could destabilize banks balance sheets and cause bank runs. Hence, governments may have to set a lower floor for bond prices in order to avoid financial crashes. Assuming this floor price is  $\hat{p}$ , the necessary bailout amount is  $\hat{x}_G = \bar{X} - x_p(\hat{p}, \delta h_t)$  and only reducing the political noise or the Greek borrowing requirements can reduce the need for the Union to buy risky Greek bonds. A strategy to minimize government bailouts must therefore aim at reducing deficits and communicate clearly and coherently.

We will now estimate the impact of political miscommunication on Greek bond spreads. We take the communication of the German Chancellor Angela Merkel as a proxy for political noise. The reason is that Germany is the dominant player in the Euro economy and Mrs Merkel's statements have frequently created uncertainty about Germany's commitment to support Greece or the euro.

### 3. The media-based variables: data description

Our independent variables are based on a unique set of media data that contains information about political opinions and actions as well as about economic announcements of the Greek economy between January 2008 and September 2011. The data were published by Dow Jones International News, a real time newswire focusing on business, financial and economic news from around the world. Its coverage involves foreign exchange, capital markets, and political news so that it is a crucial source of information for financial markets about the economic and political conditions in Greece.

We focus on Greece as it was the epicenter of the Euro Area debt crisis and the first to need financial assistance. As such Greece provides a suitable case to test the impact of media news on the interest spread between Greek and German government bonds. To assess the responsiveness of

bond ratings to positive and negative news, we extracted news data from the Dow Jones International News through FACTIVA and coded the material with the software program MAXQDA. The coding of the variables is based on a codebook in line with the standards of a qualitative content analysis (Mayring 2008). It comprises all details regarding the search specifics and the coding guidelines for allocating text passages to the respective categories. It includes key words for finding important media articles and coding details for determining the tone of the article. High levels of coding accuracy and robustness of the data was achieved by repetitive sampling and coding.

In the coding guidelines we distinguish between two political and one economic news category. The following provides an overview of the independent variables that we generated from the Dow Jones International News Bulletin:

1. *Political Variable*: captures news from European institutions.
  - POL: a binary variable with 1 if European news are reported on a day and 0 otherwise.
  - POLB: support/solution is rejected or opposed.
  - POLU: support/solution is postponed or uncertain.
  - POLG: support/solution is implemented or supported.
2. *Merkel Variable*: captures news from Angela Merkel.
  - MERKEL: a binary variable with 1 if MERKEL news with respect to Greece are reported on a day and 0 otherwise.
  - FMerkel2W: captures the average number of Merkel statements over the previous two weeks.
3. *Economic Variable*: captures news from the three main rating agencies (S&P, Moody's and Fitch)
  - ECON: a binary variable with 1 if news from the rating agencies are reported on a day and 0 otherwise.

We designed the Political and the Merkel variables to capture political aspects that influence investors' risk perceptions for holding Greek bonds. The POL variable includes statements from informed representatives of the European Commission, the Parliament, the European Central Bank as well as the heads of the member states about their support for cooperation and financial aid. For instance, the statement "European Union officials insist there won't be a bailout for Greece..." (DJ

17 March 2010) is coded as negative whereas the claim *that “European Central Bank President Jean-Claude Trichet sees no reason to doubt the solidity of other euro-zone countries after Greek’s debt crisis...”* (DJ 29 January 2010) is coded as positive due to their expected negative and positive effects on the interest spread. By contrast, Merkel is a binary variable controlling for when Angela Merkel participates in the discussion. We further constructed a variable indicating the frequency, with which Merkel news circulate as the effect of recurrent signals may be different than those of sporadic ones. The frequency is measured by the average numbers of Merkel statements over the previous two weeks.<sup>12</sup>

To test the effect of economic news on the interest spread, we designed the Economic variable, which documents the pronouncements of the three major rating agencies, S&P, Moody’s and Fitch. The rating agencies integrate past and present aspects of economic growth and unemployment of various actors and are therefore a powerful way to measure wide-ranging economic sentiments. Initially, we distinguished between a pessimistic and a positive outlook where we coded a downgrading of Greek bonds as negative whereas a stable or good outlook or a potential upgrading was coded as positive. However, in all but one case the data on the Economic variable belongs to negative the category so that it basically captures the effect of bad news.

The media-extracted categories were consequently transformed into categorical variables to allow for a better interpretation of their impact on bond ratings. More specifically, for each variable we build a dummy indicating whether the Dow Jones database releases corresponding news on a certain day. The distribution of these variables is summarized in Table 1. From the beginning of 2008 until the end of September 2011, we recorded statements from Merkel on 79 days, from rating agencies on 45 and from the European institutions on 156 days. As noted above the ECON variable mainly captures negative news effects whereas the MERKEL data are mostly classified as positive and as such reflect good news. The good-bad continuum is more evenly distributed for the EUS variable. Table 1 shows that although the category “good” dominates, “uncertain” and “bad” news are also present on numerous days.

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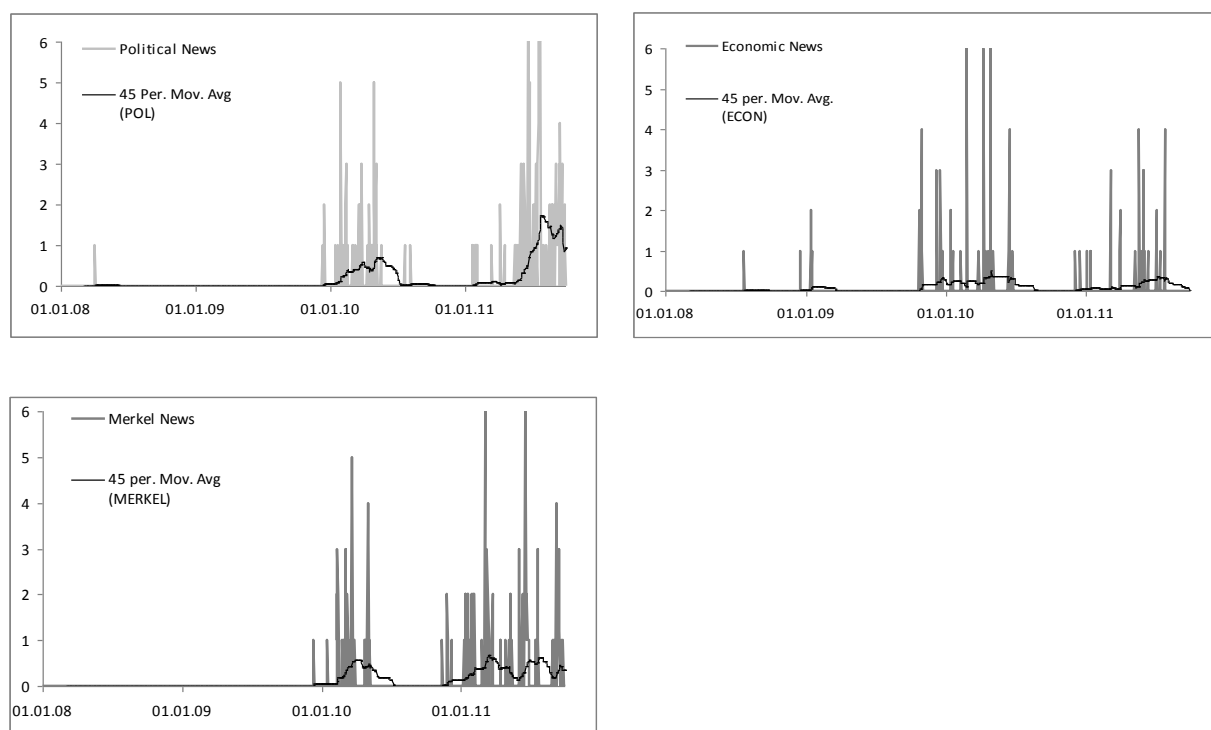
<sup>12</sup> We have experimented with several time lags but opted for the two weeks period due to its better performance in the estimates.

Table 1 Distribution of the news variables

from 01/1/2008 to 30/09/2011					
	MERKEL	ECON	POLG	POLU	POLB
0	900	934	919	936	926
1	79	45	60	43	53

In figure 1 we plot the distribution of the three news categories, Political, Merkel and Economic, over time: the similarities of the timings are striking, above all between the political and the Merkel news as they exhibit similar strong concentrations in specific time periods. For all three categories the media coverage frequency picks up in December 2009. During this period, Greece's bonds were downgraded by Fitch to BBB+. Shortly thereafter Papandreou outlined the reforms with which his government planned to cut the public deficit. Among others, he proposed to cut social security spending by 10 percent, to impose a 90 percent tax on private bankers' bonuses, to fight tax evasion and corruption and to drastically overhaul the pension system. The situation in Greece keeps deteriorating in the ongoing year: in February 2010 Papandreou announced further austerity measures and in April 2010 he started talks about financial support with the EU. The media coverage remained dense until mid May 2010, when the European Union agreed on the first bailout package.

Figure 1: Timing and frequency of media statements



The first bailout package provided a short period of tranquility: the EFSF, which issues bonds and is backed by the member states' guarantees, aimed to safeguard financial stability in Europe by providing financial assistance to euro area Member States. Among others, it provides loans to countries with financial difficulties; it can intervene in the debt markets and recapitalize financial institutions. Yet, the phase of tranquillity did not continue for long: end of 2010 the news coverage picked up, once more and has not come to a halt since.

Since the beginning of 2011 the news has oscillated between negative and positive information. On the one hand, bad news have mainly emanated from or transmitted by the rating agencies. Greece sovereign bonds have continuously been lowered to junk status as the economic outlook has not recovered and default risk kept increasing. Yet, it is not only economic news that can be classified as bad. Also a substantial amount of political news can be grouped into that category (Table 1). In fact, almost two thirds of the political news is classified as bad or uncertain. It means that financial support was either postponed, rejected or disapproved of by European political actors. On the other hand, these actors, including Merkel, provided a substantial amount of information and political action, which signalled their willingness to provide financial support to Greece and to keep it in the Euro Area. In sum, the information provided to uninformed financial market participants is quite

ambiguous, which can enhance uncertainty and risk perceptions. It therefore seems crucial to disentangle the effects of the good and bad news. Do they significantly impact the interest rate spread in the Eurozone as investors change their preferences respectively? And if yes, in which direction do mixed signals from the European institutions influence the behaviour of market participants?

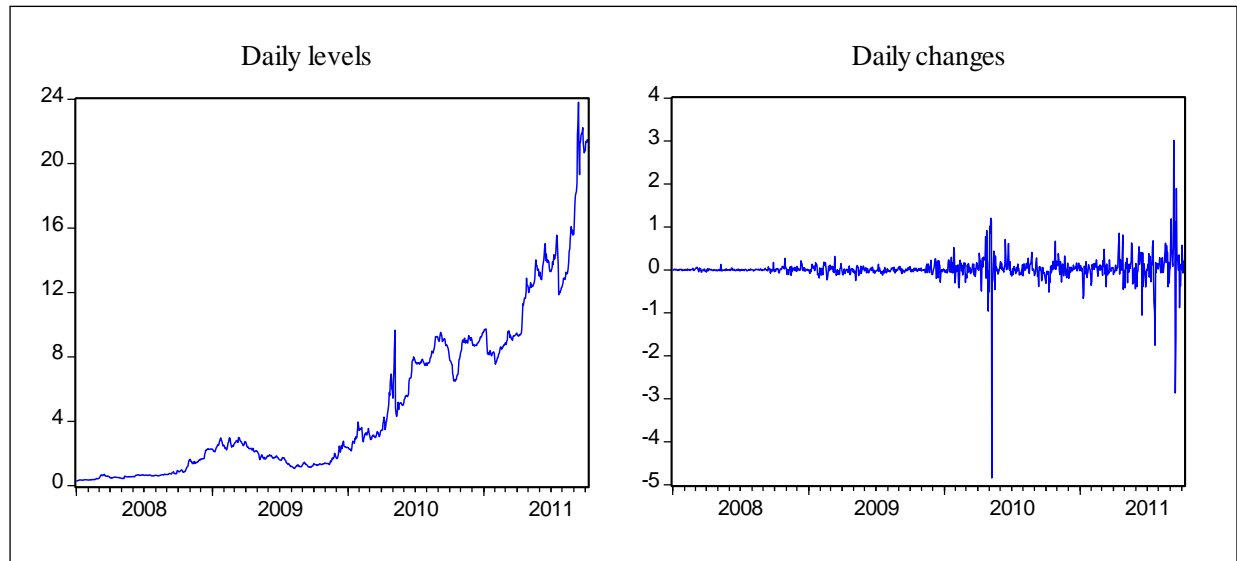
In the following section, we further discuss the role of positive and negative news and their influences on the interest spread. The news variables, ECON, POL and MERKEL and FMERKEL2W are introduced in the estimates both, as a direct determinant of the interest rate spread (the real rate of return  $s_t$ ) and indirectly as a determinant of the volatility (the noise  $h_t$ ). We first describe the dependent variable before elaborating the estimations strategy employed in this project.

## **4. Effect of political and economic news on the Greek's spread**

### ***4.1 Data and descriptive statistics***

Our dependent variable is the Greek interest rate spread, which is the difference between the Greek and German interest rates on 10 years bonds; the data are from Bloomberg. The evolution of the Greek interest rate spread and its daily changes are shown in Figure 2. Volatility started to increase modestly with the global financial crisis in the last quarter of 2008 but accelerated when Papandreous' government uncovered the real situation of Greek public finances, leading to the bailout on 10 May 2010. The bailout had the immediate effect of reducing the spread by 500 base points, as the second panel of Figure 2 demonstrates. Yet, smoothing effect of the bailout was not of lasting nature and the spread continued to rise despite of the political efforts of the EU and the IMF to provide financial guarantees. Finally, the recent speculative attacks starting in July 2011 caused the spread to rise to over 20 percent in mid-September.

**Figure 2: Interest rates spread between the Greek and German 10 year bonds**



Source: Bloomberg

#### **4.2 Econometric strategy and results**

In this section we test whether there is a significant noise effect of a news announcement about the profitability of Greek 10 year bonds. According to the model developed in section 2, governments know the real rate of return on Greek assets while the private sector can only infer it from the signal emitted by the informed agents. Due to a noise component the perceived rate of return on Greek assets by private investors is biased downward, causing fire sales which lead to increasing interest rate spreads and therefore to a higher risk of default.

Recalling the relation between relative bond prices and interest rate spreads  $Spread = r / p - \rho$  and by substituting equation (17) into the spread equation, its change can be expressed as a function of the accurate signal of the profitability of Greek bonds  $s_t$ , the supply of Greek assets and the noise variable  $h_t$ :

$$\Delta Spread = f(s, h, \bar{X}) \quad (18) \quad \text{with} \quad \frac{\partial f}{\partial s} > 0; \frac{\partial f}{\partial h} > 0; \frac{\partial f}{\partial \bar{X}} > 0;$$

The effect described above can be estimated by financial econometrics models which allow studying the behaviour of high frequency series characterised by a strong noise component and by a time varying variance. The latter is a measure of the volatility of a time series and in the analysis of

portfolio selection represents an important variable to be predicted. The most popular tool for predicting financial volatility is the class of autoregressive conditional heteroskedasticity models (ARCH) introduced by Engle (1982). From this seminal work a number of models arose in order to better capture the different features of financial data. In order to investigate the effect of explicit political and economic news on the Greek spread we need a model where volatility has a direct effect on the mean of the spread. The ideal solution is a Mean-GARCH specification (Engle et al., 1987), where volatility enters directly into the mean equation. An additional desired characteristic of the model is the possibility to allow for asymmetry in the response to economic news. Several models, such as the Exponential-GARCH (Nelson, 1990; Engle and Ng, 1993) or the Asymmetric-GARCH (Engle, 1990), have been developed in order to allow for this feature. Ding et. al. (1993) propose an Asymmetric Power Arch model (A-PARCH) in order to account for the common finding in the empirical financial literature of high serial correlation between the absolute asset returns and their power transformations. This class of models has been frequently studied in order to test their applicability to financial data (He and Teräsvirta, 1999; Brooks et. al. 2000, Mittnik and Paoletta, 2000; Giot and Laurent, 2004) and to compare it with other models (Karanasos and Kim, 2006). As it is often the case with high frequency financial time series, the error distribution has fatter tails so that the assumption of normality of the residuals is rejected (see Appendix). This feature makes the A-PARCH model particularly useful as the variance in standard ARCH models has better explanatory power only when errors are normally distributed (Brooks et al., 2000). The A-PARCH representation allows us to avoid the imposition of a specific form on the variance term as the power parameter  $\delta$  of the standard deviation is estimated within the model so that asymmetric effects – if present - are captured together with the potentially significant serial correlation of the power transformation of the residuals. Further, it nests different models, including the GARCH-in-mean specification and the asymmetric GARCH so that the best representation will be decided by the estimated parameters. The A-PARCH mean equation for the Greek spread over the German Bund is the following:

$$\Delta Spread_t = X_t' \theta + \lambda \sigma_t^\delta + e_t \quad (19)$$

Where  $X_t' = [\Delta Spread_{t-1}, Merkel, FrMerkel2W, ECON, POLG, POLB, POLU]$ ,  $\sigma_t^\delta$  is the delta power of the standard deviation and  $e_t$  is the error term. The variance equation of the PARCH (Ding et. al., 1993) is expressed as function of a constant term,  $q$  lags of the dependent variable (the GARCH structure) and  $p$  lags of the news from the previous periods. In order to capture

asymmetries up to order  $r$  between positive and negative news the latter term is expressed as difference between the absolute error and its real value, weighted by the asymmetry parameters  $\gamma_i$ :

$$\sigma_t^\delta = \omega + \sum_{j=1}^q \beta_j \sigma_{t-j}^\delta + Z_t' \varphi + \sum_{i=1}^p \alpha_i (|e_{t-i}| - \gamma_i e_{t-i})^\delta \quad (20)$$

where  $\delta > 0$ ,  $|\gamma_i| \leq 1$  for  $i=1, \dots, r$ ,  $\gamma_i = 0$  for all  $i > r$ , and  $r \leq p$ .

$Z' = [\text{Merkel}, \text{FrMerkel2W}, \text{ECON}, \text{POLG}, \text{POLB}, \text{POLU}]$  is a vector of exogenous volatility determinants. The system of equations (19) and (20) is estimated via Maximum Likelihood with a backcasting parameter for the MA term equal to 0.7; the GARCH structure is  $p=2$  and  $q=1$  as this is the structure that maximises the information criteria. The A-PARCH model will be estimated assuming a fat tails, described by a Student-t distribution for the error term (Beine et al, 2002, Chuang et. Al, 2007, Zhu and Galbraith, 2011) with the number of degrees of freedom (i.e. the tails' width) to be estimated by the model.

The expected sign for the Merkel variable is positive in the variance equation, as it captures a noise effect, while it is negative in the mean equation. ECON is expected to increase the average spread because it includes only negative or uncertain news while its effect on volatility is *a priori* not certain. POLB should exert mainly a direct positive effect on the spread changes as bad news are less noisy, while a negative impact should be expected for POLG. In reality, what we classify as good news may not be considered so by the markets and the effect of POLG could potentially be positive, especially in the variance equation. Finally, the expected impact for POLU is positive but it is not clear *a priori* whether the direct or indirect effect dominate.

Estimation results are shown in Table 3, where we report the results for the mean equation in the upper panel and we estimate volatility in the lower panel together with the delta parameter and the degrees of freedom of the error distribution. The first 5 columns report the results up to end of September 2011 while columns 6 to 10 exclude the last quarter from the estimates. This is done in order to check whether the announcement effect has changed its effectiveness when the Greek debt crisis worsened and spread to other Southern European countries, above all Italy. After several attempts with the political variables we kept POLU in the mean equation and POLG in the volatility equation; and the other variables were always insignificant. For the same reason FrMerkel2W is introduced only in the variance equation while the ECON variable has been retained in the mean equation only.

Although the explanatory power of the estimates is low, we find significant results for the signal variables in all cases. The significance of the Garch term indicates that volatility has a direct impact on spread's changes. The estimated delta is always below one, although not always statistically lower. In any case, the asymmetry of the model is confirmed and increases with the full specification, thanks especially to the POLU variable. The estimated number of degrees of freedom for the error distribution is always around 3.2 indicating the presence of particularly fat tails. The most important result is the significance of the Merkel dummy both in the mean and variance equations. A Merkel announcement has a direct negative impact on the interest rate change ranging from four to almost six base points in the full specification. The effect on volatility is positive confirming the impact of incoherent and contradictory communication that was developed in our theoretical model.  $FrMerkel2W$  is significant and with a negative sign, indicating that the noise of a news announcement decreases with more frequent statements. In other words, when Merkel makes a statement its meaning is confusing, but subsequently clarified. News about the worsening of the economic situation has the expected positive effect on mean spread changes although their impact is rather low, between two and five base points. Nevertheless, on a debt of €350 billion, the Merkel communication costs between €100 and 170 million, a non-negligible amount.<sup>13</sup> On the other hand, the effect of uncertain political support from EU institutions to the problem of the Greek debt is stronger, around 10 base points. The low effect of the economic conditions (i.e. debt rating) can be explained by the fact that markets are already aware of developments well before the rating agencies officially certify their existence while, so that political news are the novel information for the investors. Finally, news of positive EU support does not affect the spread directly but causes a volatility increase by over six base points.

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<sup>13</sup> If the impact were the same in Italy, Europe's messy governance would cost Italy between ½ to 1 billion euros.

Table 3 Power Garch estimates of the volatility of the Greek's spread over the German Bund

	01/1/2008-30/9/2011					01/1/2008-30/6/2011				
	<i>Mean equation</i>									
	1	2	3	4	5	6	7	8	9	10
<i>Garch</i>	0.231*** [0.084]	0.257*** [0.086]	0.254*** [0.086]	0.235*** [0.060]	0.212*** [0.074]	0.290*** [0.122]	0.348*** [0.129]	0.297** [0.124]	0.311*** [0.121]	0.326*** [0.126]
<i>D(speard)(t-1)</i>	0.219*** [0.029]	0.212*** [0.028]	0.210*** [0.028]	0.205*** [0.023]	0.205*** [0.025]	0.232*** [0.030]	0.228*** [0.029]	0.228*** [0.029]	0.224*** [0.029]	0.221*** [0.028]
<i>Cost</i>	0.002** [0.001]	0.002** [0.001]	0.002** [0.001]	0.002** [0.001]	0.002** [0.001]	0.002** [0.001]	0.002** [0.001]	0.002* [0.001]	0.002** [0.001]	0.002** [0.001]
<i>Merkel</i>	-0.041* [0.022]	-0.047* [0.025]	-0.051** [0.025]	-0.058** [0.022]	-0.054** [0.023]	-0.045** [0.022]	-0.058** [0.025]	-0.055** [0.025]	-0.063*** [0.024]	-0.061*** [0.024]
<i>ECON</i>			0.020** [0.009]		0.020** [0.009]			0.021** [0.010]		0.020** [0.010]
<i>POLU</i>				0.106** [0.043]	0.102** [0.042]					0.086 [0.054]
	<i>Variance Equation</i>									
<i>Merkel</i>	0.025* [0.015]	0.075*** [0.026]	0.080*** [0.026]	0.050** [0.024]	0.058** [0.024]	0.021** [0.014]	0.059** [0.024]	0.065** [0.025]	0.046** [0.023]	0.046** [0.023]
<i>FrMerkel2W</i>		-0.004*** [0.001]	-0.004*** [0.001]	-0.004*** [0.001]	-0.004*** [0.001]		0.001 [0.001]	0.001 [0.001]	-0.003** [0.001]	-0.003** [0.001]
<i>POLG</i>				0.066*** [0.025]	0.066*** [0.026]				0.039 [0.025]	0.039* [0.024]
<i>Garch order</i>	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
<i>Delta</i>	0.916*** [0.192]	0.831*** [0.176]	0.822*** [0.174]	0.713*** [0.154]	0.756*** [0.161]	0.876*** [0.197]	0.890*** [0.194]	0.924*** [0.201]	0.840*** [0.186]	0.863*** [0.198]
<i>T dof</i>	3.227*** [0.371]	3.215*** [0.375]	3.175*** [0.366]	3.236*** [0.361]	3.165*** [0.350]	3.262*** [0.387]	3.309*** [0.396]	3.179*** [0.376]	3.274*** [0.392]	3.221*** [0.372]
<i>Adjusted R-squared</i>	-0.053	-0.055	-0.054	-0.039	-0.047	-0.05	-0.054	-0.049	-0.049	-0.061
<i>DW</i>	2.054	2.045	2.046	2.029	2.037	2.133	2.138	2.145	2.138	2.138
<i>SIC</i>	-1.904	-1.906	-1.907	-1.981	-1.908	-2.149	-2.149	-2.15	-2.140	-2.141
<i>Obs</i>	977	977	977	977	977	911	911	911	911	911
<i>Total Merkel effect</i>	-0.035	-0.028	-0.031	-0.046	-0.042	-0.039	-0.037	-0.042	-0.049	-0.046

The results do not change much, especially for the Merkel variable, when excluding the last quarter from the estimates. If we look at the full specification in column 10, the Garch term increases from 0.21 to 0.33, indicating a lower impact of the noise in the third quarter of 2011. The effect of political uncertainty turns insignificant and the volatility effect of good political news halves. Again, although these results may be due to a reduced explanatory power of the model when the spread increases in an uncontrolled fashion, they suggest that the effect of political indecision has been particularly severe during summer 2011. This means that stronger political actions are necessary in order to avoid a default in the Greek debt.

Summing up, the econometric analysis validates the theoretical assumption of a detrimental noise effect of Merkel announcements regarding political solutions to the Greek problem. By comparing the direct mean effect with the total Merkel effect (last row of Table 1) we find that the noise component reduced this effect on average by one third or approximately two base points. An additional finding is that the effect of political uncertainty has been particularly strong in the third quarter of 2011.

## **5. Conclusions**

While the euro is in its deepest crisis since its creation in 1999, a policy debate is ravaging Europe about the usefulness of public debtor bailouts. We have argued that such bailouts are necessary to prevent a banking crisis, which would have devastating consequences for the real economy and employment. However, the costs of such bailouts depend significantly on the political and institutional setup. As long as intergovernmental policy making dominates, coordination failure on bailout issues is nearly inevitable. The reason is that in monetary union, bailout funds are a common resource good, which makes cooperative solutions hard to achieve: it is in the interest for each member state to withhold its own financial contribution.<sup>14</sup> The turning point is only reached, when the system itself is under threat.

Our study has revealed evidence for a significant political risk which substantially increases bailout costs. Our estimates suggest that Merkel's uncooperative attitude at least in the early period of the crisis, did cost Greece up to €170mio. If her behaviour is a proxy for the cacophony of Europe's intergovernmental governance system, the cost for Europe's South (Greece, Italy, Spain, Portugal, Ireland) would be between 1 and 1.6 billion euros.

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<sup>14</sup> For the theory behind this statement see Collignon, 2003.

If the European Union wishes to avoid such unnecessary cost, it must eliminate the institutional source of political noise and uncooperative behaviour and set up a fiscal union that centralises fiscal policy control at the European level. ECB President Jean-Claude Trichet (2011) got it right when he said:

“We can see before our eyes that membership of the EU, and even more so of EMU, introduces a new understanding in the way sovereignty is exerted. Interdependence means that countries *de facto* do not have complete internal authority. They can experience crises caused entirely by the unsound economic policies of others.... In the present concept, all the decisions remain in the hands of the country concerned, even if the recommendations are not applied, and even if this attitude triggers major difficulties for other member countries.”

And he asked provocatively:

“Would it go too far if we envisaged, at this second stage, giving Euro Area authorities a much deeper and authoritative say in the formation of the country’s economic policies if these go harmfully astray? A direct influence, well over and above the reinforced surveillance that is presently envisaged? “

A more “direct influence” over European budget policies may not only be necessary to save the euro, it may also be cheaper for tax payers.

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## Appendix:

Table A.1 Standardised residuals of the APARCH specification (column 5 in table 3)

