

Public Statements on Sovereign Yield Spreads: The Greek Case †

Panagiotis Petrakis* , Emmanuel Papadakis and

Nikoleta Daniilopoulou

Faculty of Economics, University of Athens

Abstract

This paper aims to examine whether the shaping of Greece's sovereign yield spreads in the last two years (1/2010 - 11/2011) under extreme pressure from the financial markets was affected, inter alia, by the statements of political and institutional factors related to the Greek crisis. By implementing probit methodology, we conclude that positive statements, as a whole, do not have any effect on the probability of change of the sovereign yield spread, yet the same does not apply to negative statements, which increase the probability of an upward spread movement. Having distinguished the statements per originating country/institution, we find that only Germany's and France's negative statements affect the probability of an increase of the sovereign spread, while France's positive statements are, also, proven statistically and economically significant.

Keywords: Binary choice model, economic crisis, public statements, spread.

1. Introduction

The increasing concern of the financial markets, as an echo of the European crisis (2009-2010), on the ability of some countries inside the Euro zone to meet their future debt obligations, reflected in soaring rates of borrowing. The sovereign spreads' rise, besides the higher costs of borrowing incurred, signals the reluctance of investors to fund these debt issuers. In the Greek case, unprecedented levels of uncertainty and risk aversion resulted in Greece's exclusion from capital markets and, in fact, the collapse of the Greek bond market. Despite that, bid, as well as ask

† The paper is funded by the Research Fund of the Economic Department of the National and Kapodistrian University of Athens.

* Corresponding author. Address: 5 Stadiou Street, PC 10562, Athens, Greece.
E-mail: ppetrak@econ.uoa.gr

prices for Greek bonds continue to be reported. The bid-ask spread constitutes another indication of the Greek bond market collapse. For the purpose of our analysis we chose the average of the bid and ask prices being quoted, i.e. the mid spreads.

Sovereign spreads constitute a key factor that relates to the effectiveness of consolidation policies. According to IMF (2010), a fiscal consolidation program has milder contractionary effects to the economy when sovereign spreads for this economy are high, in comparison to the case where sovereign spreads are low. This conclusion can be explained on the basis that the consolidation policy restores and increases investors' and consumers' confidence with positive effects on their behavior. However, when a consolidation program results in even higher sovereign spreads (Greek case 2010-2011), then the, obviously, negative economic policy environment might reverse the expected behavior of key variables. The risk that lurks can be summarized in Blanchard's words: "it does not take large multipliers for the joint effects of fiscal consolidation and the implied lower growth to lead in the end to an increase, not a decrease, in risk spreads on government bonds" (Blanchard, 2011). Hence, the research on how the spreads go up (endogenous or/ and exogenous factors) is of special value.

The present paper examines whether and to what extent the unprecedented widening in the Greek sovereign spread during the period 01/2010 to 11/2011 can be attributed, among others, to external influences, i.e. a set of positive and negative statements and announcements coming from institutional and political factors. We estimate the likelihood of a spread movement because of them. The paper uses daily data and focuses on a short period, as it seeks to examine, exclusively, this period of extreme market pressure, rather than to study the effects of change in the structural relationships involving greater intervals. Section 2 provides a brief review of the literature on the determinants of sovereign spreads, section 3 describes the data, section 4 presents the methodology and the results, section 5 provides a discussion on the policy implications of the results and section 6 concludes.

2. Literature review

In general financial markets require a higher default premium for bonds of countries that borrow excessively (Goldstein and Woglom, 1992). On the same logic, there is an inverse relationship between sovereign bond yields and sovereign credit ratings (Cantor and Packer, 1996).

The economic literature on sovereign spreads formation focuses mainly on three factors. Codogno et al. (2003) and Geyer et al. (2004) highlight the importance of credit risk, as it is found that the primary role in explaining sovereign yield spreads in the Euro area is played by international exogenous risk-related factors and common factors, i.e. factors which affect spreads of all issuers.

The second factor has to do with the country's macroeconomic position. Faini (2006), at Eurozone level, finds that the budgetary stance of an individual country, as reflected in the levels of its debt and fiscal deficit, affects not only the country's sovereign spreads but also the level of interest rates for all countries in the union. Earlier Feldstein (1986), as well as Lloyd and Danhua (2009), has argued that future rather current deficits and deficits that are expected to be persistent rather than transitory are likely to have a stronger impact on bond yields. Moreover, government bond yields in European countries are found to react positively in response to better growth forecasts/negative forecasts regarding the budget balance to GDP ratios (Afonso, 2010), while Genberg and Sulstarova (2008) argue that the riskiness of a sovereign bond depends not only on the expected path of a macroeconomic variable, but also on its entire probability distribution.

Nevertheless, mixed evidence is found with respect to liquidity, which constitutes the third factor. Gomez-Puig (2006) and Manganelli and Wolswijk (2009) recognize the role of liquidity risk in explaining the euro area bond spreads. Beber et al. (2009) argue that liquidity becomes relevant mainly in times of high uncertainty as in such times investors pay less attention to the credit quality of the underlying bond and turn to more liquid markets, while Schuknecht et al. (2009) consider the liquidity effect negligible. On the contrary, Favero et al. (2010) suggest that in times of high risk liquidity's impact on sovereign spreads is reduced.

Apart from the aforementioned factors, financial markets, when pricing the default risk, take into account the quality of fiscal institutions such as the strength of the finance minister in the budget process in the country (Hallerberg and Wolff, 2008). Sound fiscal institutions strengthen the credibility of government policies and are, thus, associated with a lower risk premium. Likewise, the accuracy of officially reported fiscal data

proves essential, as financial markets seem to reward fiscal transparency (Bernoth and Wolff, 2008).

An emerging line of recent empirical research examines the evolution of bond yield differentials after the outbreak of the financial crisis in the middle of 2007, where from then onwards liquidity shrank substantially. Longstaff et al. (2011) reports that during the 2007-2010 crisis period in the global financial markets, the link between sovereign credit spreads and global macroeconomic forces became stronger compared to the pre-crisis period. Attinasi (2010) finds that during the period of financial distress more than half of the daily change in sovereign spreads can be attributed to international risk aversion, while the other half owes to the country's expected fiscal position, liquidity concerns as well as the announcements of bank rescue packages.

Furthermore, it is found that, after September 2008 (Lehman Brothers collapse) markets have significantly tightened sanctions as a result of existent fiscal/budgetary/financial imbalances (Von Hagen et al., 2011). This result is consistent with the important relationship of interaction between international risk aversion and macroeconomic aggregates that Barrios et al. (2009) detect, suggesting that in times of crisis the impact of the deteriorating fiscal aggregates on bond yields intensifies.

Another important factor that contributed to the shaping of sovereign spreads is the contagion phenomenon. Matei (2010) finds that during the crisis cross-market interdependences increased significantly, which implies that imbalances in some countries can be caused, not because of real economic linkages with the rest, but as a result of changes in investors' beliefs and expectations. Finally, in a more recent study, Melander et al. (2011) attempt to explain the great impact of the crisis in the Euro zone periphery (Greece and Ireland) in other European markets. The results prove that the emerging and the other countries in the Euro zone periphery were more vulnerable to contagion from the crisis in Greece and Ireland, compared to the core countries, suggesting, thus, the existence of contagion risks.

3. Data description

In this section, we use econometric techniques to investigate the importance of positive and negative public statements concerning the economic situation in Greece. In more detail, we are interested in the impact of such statements by dignitaries of other EU countries or other institutional representatives like the International Monetary fund, the European Central Bank, Moody's etc.

Our research aims to assess the possibility from a negative pronouncement to revive the already existent negative scenery and give place for further speculation against the country under probation. We use a data set consisting of a time series for Greece's 10 year sovereign spreads from January 2010 to November 2011, extracted from Reuters Datastream. The time period selected is based on the fact that in the last two years Greece has been at the forefront of the straitened circumstances and we have recent data.

Moreover, in our dataset we have a time series of public pronouncements from the Athens Associated Press, which is a collection of every statement from all over the world about the economic scene in Greece. We have processed this series and we formed one time series with the same time-span for each country or institutional player that has made at least one statement about the economic crisis in Greece. Furthermore, we divided the positive and negative statements and constructed two series with their total numbers per day.

Table 1 gives a picture of the statements from a statistical perspective. In particular, it presents the total number of statements made per country/Institution, the rate of statements corresponding to each country/Institution, as well as the rate of positive and negative statements in relation to the total number of positive and negative statements made. It is worth noting that almost half of the total negative statements made can be attributed to Germany, while the majority of positive statements were made by representatives of the European Commission in an effort to conciliate the intensified negative climate towards Greece. Figure 1 displays the number of statements on the left axis, while the right axis displays the Greek Spread rates. A closer look at this graph shows that the peaks of the public statements coincide with the upward trend in the Greek spread time path.

4. Methodology and results

The econometric methodology we employ relies on discrete choice family models because the ultimate goal is to conclude, primarily, whether negative pronouncements affect the probability of an upward movement in the spread. This kind of conclusion would be of great importance for policy makers in order to decide measures, remedies for new stabilizing policies in critical times.

TABLE 1

Statistical data on public statements: January 2010-November 2011

	Number of statements	Total statements %	Positive statements %	Negative statements %
Germany	123	39.55	14.63	44.3
European Commission	35	11.25	21.62	8.02
Belgium	28	9	10.81	8.44
France	27	8.68	13.51	7.17
Austria	22	7.07	8.11	6.75
Eurogroup	16	5.14	8.11	4.22
Slovakia	10	3.21	0	4.22
ECB	9	2.89	4.05	2.53
Netherlands	8	2.57	1.35	2.95
Britain	4	1.29	0	1.69
Other	29	9.35	17.81	9.71
Total	311	100	100	100

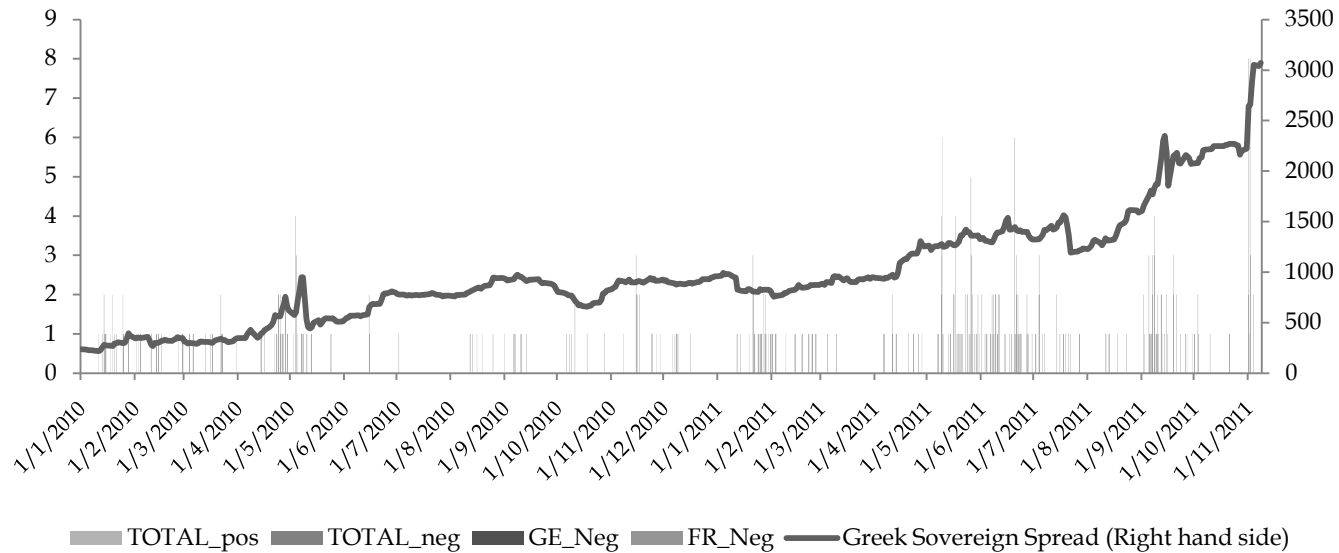
Taking into account the statistical properties of the available discrete choice models, we concluded that probit best serves our needs. The choice set exhibits the appropriate characteristics of mutual exclusiveness, exhaustiveness and finiteness as defined in the literature. Interested readers should consult Greene (2011), Hayashi (2000) and the references therein. The probability that decision maker n chooses alternative i is:

$$P_{ni} = \Pr(\varepsilon_{nj} - \varepsilon_{ni} < v^*) = \int_{\varepsilon} I(\varepsilon_{nj} - \varepsilon_{ni} < v^*, \forall i \neq j) f(\varepsilon_n) d\varepsilon_n$$

This probability is the probability that each random term $(\varepsilon_{nj} - \varepsilon_{ni})$ is below the observed quantity v^* . In our case, it is the probability of Greek spreads moving upwards. The $I(\cdot)$ is the usual indicator function and that ε_n is distributed normally with zero mean covariance matrix Σ .

FIGURE 1

Number of public statements and the Greek spread line graph



Note: The ending of the name of time series indicates whether positive or negative statement. The initial letters indicate the country of origin of the public statement.

4.1 Public statements on sovereign risk

Table 2 below summarizes the estimation results of the set of probit models. As explanatory variables we use successively the total negative (*total neg*), the total positive, the negative and positive time series for each country and every institutional player.

Our findings suggest that the negative statements, as a whole, do ruffle international markets. On the contrary, the positive statements do not impact the probability of a Greek spread movement.

As far as the individual country's/Institution's effect is concerned, only Germany's (*Germany neg*) and France's (*France neg*) negative public statements affect the probability of Greek sovereign spreads increasing. It is worth mentioning that the individual effect of the underlying statements is bigger than the effect of the total number of public statements on probability of higher spreads for Greek.

TABLE 2
Probit estimation results

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Athex	0.000189* {5.0863} [0.0000]	0.000159* {4.0643} [0.000]			0.0001* {3.6128} [0.0003]	
France pos.	-0.6721** {-1.7961} [0.0725]					
Germany neg.		0.1901** {1.655} [0.09]		0.3467* {3.047} [0.002]		
France neg.			0.5414** {1.688} [0.09]			
Total neg.					0.146* {2.2951} [0.0217]	0.2475* {3.666} [0.0002]
BIC	1.356	1.356	1.3926	1.3668	1.3516	1.3648

Notes: In the curly brackets we report the z-statistics and in the square brackets the corresponding p-values. One star indicates statistically significant coefficients with five percent confidence and two stars indicate statistically significant coefficients with ten percent confidence. The last row shows the Bayesian Information Criterion.

With respect to the effect of the positive pronouncements of an individual country or Institution, the econometric results suggest no statistically significant relation with the Greek spread movement, apart from France's case (*France pos*). One intuitive explanation of the result that French positive commentaries appear more effective than German ones could be the fact that the vast majority of statements deriving from Germany was negative and rarely did they make any positive statement. Taking into account the coefficient of the variables we can infer that public statements made by France (positive and negative) are being valued by the financial markets, as they seem to have the most powerful effect on the Greek sovereign spread movement.

Finally, the statements from the major Rating Agencies do not prove to have a statistically significant impact on the Greek spread movement. This fact prompted us to further examine the result. For this purpose, we collected monthly data of the Greek sovereign spread and took into account the downgrades from S&P, Moody's and Fitch for the period under examination. The results point out to a small negative influence of S&P's downgrades to the Greek spread movement. However, our main findings remain of critical importance with the policy implications being discussed below.

5. Discussion

There is a two way relationship concerning the serious deterioration of the Greek sovereign spreads and the conditions that prevailed in the Greek economy between 01/2010 and 11/2011. The sovereign spreads during this period of extreme market tense, served on the one hand as an indicator of the servicing cost of the Greek debt while, on the other, constituted an indicator of market expectations with regards to Greece's growth prospects and, more specifically, to its probability of default. Expectations, however, relate directly to the level of confidence towards an economy which, in turn, may relate to liquidity, insolvency and remuneration risk that regard either the sovereign or the banking sector, or both. In this sense, sovereign spreads might as well critically affect the course of a fiscal consolidation program.

It is, therefore, important to understand the sovereign spreads' degree of sensitivity on non-economic and structural events, such as political communication at European level. Our analysis suggest, in accordance with a recent contribution by Mohl and Sondermann (2013), that political and institutional statements impacted Greek bond spreads. Thus, it is

obvious that there exists a mechanism of institutional nature that is associated with the formation of expectations.

Our analysis, furthermore, points out that bond markets react asymmetrically with regards to good and bad statements. While good statements, in general, are not found to have an impact in the Greek spread path, bad statements have increased the pressure in the bond market. An inverse trend in public statements regarding Greece could have prevented the unprecedented rise in bond spreads, allowing the Greek economy to reach a better equilibrium point in contrast to the point it stands today. Certainly, positive statements might not prove sufficient for the transition to a better equilibrium point. Nevertheless, when more favorable conditions exist, positive statements and, more importantly, the avoidance of negative and disastrous statements might be necessary to restore a “good” dynamic equilibrium (low level of sovereign cost).

6. Conclusion

This paper attempts to examine whether the shaping of the sovereign spreads of Greece in the last two years (1/2010 - 11/2011) of intense upheaval of the financial markets was affected, *inter alia*, by the statements of political and institutional factors related to the Greek crisis. The probit methodology adopted allows us to decide on whether a negative/positive statement affects the possibility of an upward/downward spread movement. In parallel, having distinguished the statements per originating country/Institution, we may draw conclusions as to the significance attributed to them by the markets (in terms of sovereign spread change).

The empirical results may be summarised as follows: The set of positive statements doesn't seem to have any effect on the possibility of change of the sovereign spread, yet the same does not apply to negative statements, which increase the possibility of an increase. The separation of statements depending on country/Institution of origin indicates that the only countries whose negative statements affect the possibility of an increase of the sovereign spread are Germany and France. Furthermore, of the positive statements, only those of France prove statistically significant. Judging by the coefficients of the variables, it seems that the public statements of France (positive and negative) have the most powerful effect on the Greek sovereign spread movement.

A future research could study the movements of the sovereign spread using DSGE models (Brzoza-Brzezina et al. 2010), introducing financial frictions or monetary shocks (Agénor et al. 2011) in an attempt to endogenise the spread movements.

References

- Agénor, P., Bratsiotis, J. G., and Pfajfar, D., (2011) 'Monetary shocks and the cyclical behavior of loan spreads', Working Paper.
- Afonso, A., (2010) 'Long-term government bond yields and economic forecasts: evidence for the EU', *Applied Economics Letters* 17(15): 1437-41.
- Attinasi, G. M., Checherita, C., and Nickel C., (2010) 'What explains the surge in euro area sovereign spreads during the financial crisis of 2007-2009?', *Public Finance and Management* 10(4): 595-645.
- Brzoza-Brzezina, M., Kolasa, M., and Makarski, K., (2010) 'The anatomy of standard DSGE models with financial frictions', National Bank of Poland Working Paper No. 80.
- Barrios, S., Iversen, P., Lewandowska, M., and Setzer R., (2009) 'Determinants of intra-euro area government bond spreads during the financial crisis', *European Commission Economic Papers*, 338.
- Beber, A., Brandt, M. W., and Kavajecz K. A., (2009) 'Flight-to-quality or flight to liquidity? Evidence from the euro-area bond market', *Review of Financial Studies* 22: 925-57.
- Bernoth, K., and Wolff, G. B., (2008) 'Fool the markets? Creative accounting, fiscal transparency and sovereign risk premia', *Scottish Journal of Political Economy* 55(4): 465-87.
- Blanchard, O. (2011) 'In review: Four hard truths', *VoxEU.org*, 21 December.
- Cantor, R. M., and Packer, F., (1996) 'Determinants and impact of sovereign credit ratings', *Federal Reserve Bank of New York Economic Policy Review* 2(2): 37-53.
- Codogno, L., Favero, C., and Missale, A., (2003) 'Yield spreads on EMU government bonds', *Economic Policy* 18: 503-32.
- Faini, R., (2006) 'Fiscal policy and interest rates in Europe', *Economic Policy* 21(47): 443-489.
- Favero, C., Pagano, M., and Von Thadden, E., (2010) 'How does liquidity affect government bond yields?', *Journal of Financial and Quantitative Analysis* 45 (1): 107-134.
- Feldstein, M., (1986) 'Budget deficits, tax rules, and real interest rates', NBER Working Paper No. 1970.
- Genberg, H., and Sulstarova, A., (2008) 'Macroeconomic volatility, debt dynamics and sovereign interest rate spreads', *Journal of International Money and Finance* 27 (1): 26-39.
- Geyer, A., Kossmeier, S., and Pichler, S., (2004) 'Measuring systematic risk in EMU government yield spreads', *Review of Finance* 8(2): 171-97.

Goldstein, M., and Woglom, G., (1992) 'Market based fiscal discipline in monetary unions: Evidence from the US municipal bond market', in M. Canzoneri, V. Grilli, and P. Masson (eds.) *Establishing a Central Bank*, Cambridge University Press.

Gomez-Puig, M., (2006) 'Size matters for liquidity: spreads', *Economics Letters* 90: 156-62.

Greene, W. H. (2011) *Econometric Analysis*, Prentice Hall.

Hallerberg, M., and Wolff, G. B., (2008) 'Fiscal institutions, fiscal policy and sovereign risk in EMU', *Public Choice* 136(3-4): 379-96.

Hayashi, F., (2000) *Econometrics*, Princeton University Press.

IMF (2010) 'Recovery, risk and rebalancing', *World Economic Outlook*.

Lloyd, B. T., and Danhua, W., (2009) 'Long-term interest rates and expected future budget deficits: evidence from the term structure', *Applied Economics Letters* 16(4): 365-68.

Longstaff, F., Pan, J., Pedersen, L., and Singleton, K., (2011) 'How sovereign is sovereign credit risk', *American Economic Journal: Macroeconomics* 3(2): 75-103.

Manganelli, S., and Wolswijk, G., (2009) 'What drives spreads in the euro area bond market?', *Economic Policy* 24: 191-240.

Matei, I., (2010) 'Contagion and causality: An empirical analysis on sovereign bond spreads', *Economics Bulletin* 30 (3): 1885-96.

Melander, O., Pant, M., Segoviano, M., and Vamvakidis, A., (2011) 'Dancing spreads: Market assessment of contagion from the crisis in the euro periphery based on distress dependence analysis', *International Advances in Economic Research* 17 (3): 347-363.

Mohl, P., and Sondermann, D., (2013) 'Has political communication during the crisis impacted sovereign bond spreads in the euro area?' *Applied Economics Letters* 20(1): 48-61.

Schuknecht, L., Von Hagen, J., and Wolswijk, G., (2009) 'Government risk premiums in the bond market: EMU and Canada', *European Journal of Political Economy* 25(3): 371-84.

Von Hagen, J., Schuknecht, L., and Wolswijk, G., (2011) 'Government bond risk premiums in the EU revisited: The impact of the financial crisis', *European Journal of Political Economy* 27: 36-43.