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# News spillovers from the Greek debt crisis: Impact on the Eurozone financial sector

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ABSTRACT

We examine the impact of changes in Greek sovereign yield spreads on abnormal returns of financial sector stocks for a sample of Eurozone countries, during the Greek debt crisis. We find that increases in yield spreads are associated with negative abnormal returns on financial stocks in the Portugal, Spain and Netherlands. These abnormal returns are driven in part by ratings downgrades and other unfavorable news announcements about Greece. We isolate the effects of known transmission channels–impairment of financial firms' asset base due to cross-holdings of Greek bonds, from increases in domestic interest rates and higher funding costs. Our analysis indicates that news events lead to spillovers in excess of what can be explained by these channels of transmission.



## 1. Introduction

The sharp increase in yield spreads of Greek sovereign bonds relative to German sovereign bonds starting in the latter part of 2009 (Fig. 1), was covered extensively by the financial press and dubbed "the Greek debt crisis". The crisis started when the Greek government announced that its debt service relative to receipts was much larger than previously acknowledged. Eurozone policymakers and multilateral organizations raised concerns that the Greek debt crisis could spread and impact Portugal, Italy, and Spain—countries viewed by many to have similar underlying weaknesses as Greece.[4] The crisis also caught the attention of the rating agencies who responded by adjusting their credit ratings for Greece and other countries, while multilateral organizations, such as the International Monetary Fund (IMF), urged Eurozone member nations to take collective action. The link between the outcome in Greece and the possible impairment of the assets of Europe's largest banks due to their investment in Greek sovereign bonds was at the fore in many discussions.[5] This link between Greek bond yield spreads and financial sector returns is the focus of this research.

In this article we investigate whether increases in the yield spreads of Greek sovereign bonds led to negative abnormal returns in banks and other financial firms (herein after, financial firms) of Portugal, Italy, Greece, and Spain in the period after the start of the Greek debt crisis in November 2009. In particular, we focus on Greek yield spread changes around news announcements and their spillover to financial stocks in the Eurozone. As these news announcements occur frequently during this time period we can assess their impact on cross-market linkages.

Even though the Greek economy is a small component of the Eurozone (less than 3% of total GDP), news about the ability of Greece to service its debt possibly impacts domestic financial firms and firms in other Eurozone countries for a number of reasons. First, if financial firms hold Greek bonds as part of their portfolio

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[4] See, for example, "Who's Next? Spain? Italy?", Wall Street Journal, February 4, 2010 by Neil Shah. However, the Managing Director of the International Monetary Fund contended that contagion from Greece to Portugal or Spain was unlikely (see, "Greek Woes 'Unlikely to Spread'," BBC News March 08, 2010).

[5] See, for instance, "Greek contagion fears spread to other EU banks," Financial Times June 15, 2011 by M. Murphy, K. Hope, J. Thompson, and J. Wilson (http://www.ft.com/intl/cms/s/0/ac918946-975a-11e0-9c9d-00144feab49a.html#axzz1TR8tvAUu). See also "Containing Contagion", Bloomberg Magazine, September 2011 and "Greece: time for a haircut", Financial Times, July 15, 2011.

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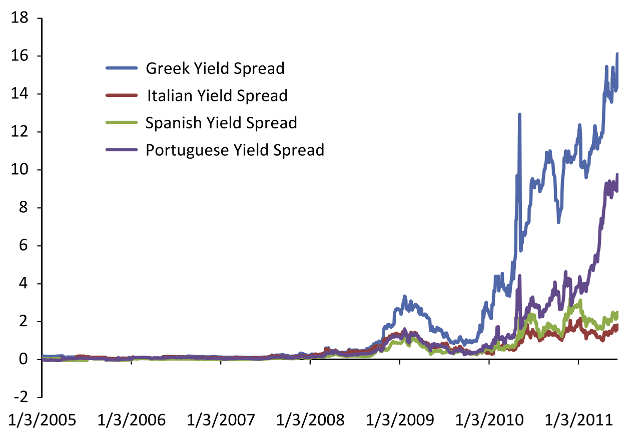


**Fig. 1.** Greek Sovereign Debt Yield Spreads. The figure below depicts Greek, Italian, Spanish, and Portuguese sovereign 5-year bond yield spreads relative to a German bond yield of the same maturity. The sample period spans 1/2005 to 6/2011.

of assets, then negative news that leads investors to reassess the probability of default should reduce the value of the assets. The value of equity claims of firms that hold Greek debt declines and, correspondingly, the index of financial stocks also adjusts downward. Second, investors possibly use the news to infer higher default probabilities of their own sovereign bonds as well as sovereign bonds in other Eurozone countries with high debt-to-GDP ratios. This impacts the value of domestic assets of the financial sector as well as the funding costs for these assets. Kaminsky and Schmukler (1999) refer to this as the "wake-up call hypothesis" in which the initial crisis leads the market to reassess the risks faced by countries with similar characteristics. Hence, news about Greece may impact other sovereign bond prices and reduce financial firm values, via the domestic interest rate channel, even if these firms do not hold Greek sovereign bonds, but hold the bonds of their home governments.

To examine the role of news as a channel of transmission we consider news announcements regarding changes in credit ratings as well as other announcements pertaining to the crisis. We explore for evidence of news spillovers by examining whether Greek yield spread changes had a greater impact on abnormal returns of financial stocks in the aftermath of relevant announcements. We investigate whether an increase in the yield spread of Greek bonds leads to a decline in financial firms' stock return beyond any decline in the aggregate market, especially during periods of news announcements (we term this as a spillover). We also glean information on other channels of transmission—specifically we include proxies for the depreciation in asset values via increases in domestic yields and holdings of Greek debt.

The literature offers different empirical approaches to find evidence of spillovers, and there is evidence that the approach influences the inference about the existence of spillovers (see e.g. Forbes and Rigobon, 2002; Bekaert et al., 2005. Our empirical approach addresses the concern that inferences about linkages are likely to be overstated if we do not account for the increased volatility associated with crises. We estimate a model that relates the abnormal returns of the financial firms' index of Portugal, Italy, Greece, and Spain to changes in Greek yield spreads. In our model we allow lagged changes in Greek yield spreads to affect the conditional means of the financial firms' abnormal returns prior to and during the crisis. The variance of the error term is modeled using a GARCH specification.

We find that positive changes in Greek yield spreads have a significant negative impact on the abnormal returns of Portuguese financial firms during the crisis period. Specifically, during the crisis period a one percentage point increase in Greek yield spreads results in abnormal returns of 3.16% per day, on average, in Portuguese financial firms. We also find economically important evidence of spillovers on days when there are ratings downgrades. Since ratings downgrades occurred during and as a result of the crisis, these effects are directly attributable to the crisis and are, therefore, a spillover. These spillovers affect financial firms from Spain. Likewise, when there is (good) news about bailout possibilities from multilateral organizations financial firms tend to experience positive abnormal returns. We also examine whether there is a link between Greek bond yield spreads and financial firms of non-crisis Eurozone countries—Austria, Belgium, France, and the Netherlands. We find that ratings downgrades and bad news from the multilateral agencies cause spillovers to the Netherlands while Austria and Belgium experienced spillovers on days when there was news about the possibility of a bailout.

Our results are consistent with information effects from the news announcements driving changes in the Greek bond market, as well as changes in the prices of financial firms in other countries. The significant impact of changes in Greek yield spreads on Portuguese and Spanish financial firms' abnormal returns due to announcements of ratings downgrades and other news reflects the fact that these countries were under scrutiny from the very outset of the crisis. A key implication of the above is that a bailout might be able to contain the risk of spillover from Greece via the banking sector, and to quarantine Greece from its impact on other Eurozone countries.

Our study contributes to the growing literature on the European crisis. Other recent research examines the impact of ratings news in the Eurozone on credit markets: Arezki et al. (2011) examines financial spillovers in the Eurozone CDS markets from ratings downgrades, while Missio and Watzka (2011) and de Santis (2012) find evidence of changes in spreads due to ratings downgrades in Greece. More generally, Beetsma et al. (2013) show yield spreads change in response to the number of times a Eurozone crisis country is mentioned in the news, and that this relation is stronger when the cross-border financial claims in the banking sector are greater. More closely related to our research, Mink and De Haan (2013) examine the response of European banks' stock prices over twenty event days associated with the highest volatility in Greek bonds in 2010 using an event-study methodology. In contrast, our research accounts for the effects of increased volatility on correlations by modeling volatility in a GARCH framework, and by using a comprehensive time-series spanning the period before and during the crisis, thus increasing the efficiency of our estimates and enabling a comparison of pre-crisis and the crisis period. In addition, our other key contribution is that we separate out the channels of transmission to glean the spillover component of returns.

More broadly, our research ties into work on the role of news in the transmission of shocks (Baig and Goldfajn, 1999; Jiang et al., 2012) and the spillover effects resulting from ratings changes (Kaminsky and Schmukler, 2002; Gande and Parsley, 2005). It is similar in spirit to Kyle and Wirick (1990) who examine the effect of the Latin American debt crisis on bank equities. Our analysis points to the impact of yield spread increases on excess returns beyond that arising from cross-holdings of distressed assets and an increase in domestic funding costs that depreciate the value of related domestic assets when there are news announcements. Our research is also related to the literature on financial contagion, an overview of which can be found in Kaminsky et al. (2003). Our work differs from previous work in its focus on crisis originating in and affecting developed financial markets. Several studies examine contagion originating in emerging markets (see, e.g., Baig and Goldfajn, 1999; Bae et al., 2003; Kaminsky and Reinhart, 2001). Here, greater information asymmetry drives contagion (Kodres and Pritsker, 2002) whereas linkages and spillovers originating in and affecting developed markets is more likely to arise from correlated information.