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Causes and hazards of the euro area sovereign debt crisis: Pure and fundamentals-based contagion

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ABSTRACT

This paper tries to contribute to the understanding of sovereign debt crises' pattern by empirically investigating the determinants of the recent euro area crisis to assess if its transmission was due to "pure" or "fundamentals-based" contagion. Using sovereign bond yield spreads with respect to Germany for a sample of ten central and peripheral countries from January 1999 to December 2012, we firstly examine the dynamic evolution of Granger-causality within the 90 pairs of yield spreads in our sample to detect episodes of contagion (associated with episodes of significant intensification in causality). Secondly, we make use of a logit model to explore whether there is evidence of "pure contagion" or "fundamentals-based contagion", by trying to determine which factors might have been behind the detected contagion episodes. Our results suggest that contagion episodes are concentrated just after the inception of the EMU and matching the Global Financial Crisis, yielding more accurate and sensible indicators than those obtained from DCC-GARCH models used in prior studies. Indeed, they preceded the outburst of the Global Financial Crisis (causality intensification is detected from March 2008), and reached a peak during January–May 2011. Furthermore, they underline the coexistence of "pure" and "fundamentals-based contagion" during the recent European debt crisis.

1. Introduction

The announcement of Greece's distressed debt position in late 2009 triggered a sudden loss of investor confidence and marked the beginning of the euro area sovereign debt crisis. Indeed, in May 2010 Greece's financial problems became so severe that the country needed to be bailed out. An important reason for providing financial support to Greece was fear of contagion (see, e.g., Constâncio, 2012). This fear could be mainly explained by two facts: (1) several European Union (EU) banks had a high exposure to Greece (see Gómez-Puig and Sosvilla-Rivero, 2013); and (2) investors then turned their attention to the macroeconomic and fiscal imbalances within European Economic and Monetary Union (EMU) countries. So, from late 2009 onwards, in parallel with the higher demand for the German bund which benefited from its safe haven status, yield spreads of euro area issues with respect to Germany spiralled (see Fig. 1). Besides, since May 2010, not only has Greece been rescued three times, but also Ireland, Portugal and Cyprus needed bailouts to stay afloat.

These events raised some important questions for economists, policymakers, and practitioners. To what extent was the sovereign risk premium increase in the euro area during the European sovereign debt crisis due only to deteriorated debt sustainability in member countries? Did contagion play any significant role in the increase in the sovereign risk premium? In fact, the sovereign debt crisis in Europe has rekindled the literature on contagion applied to the euro area [see Kalbaska and Gatkowski (2012); Metieu (2012); Caporin et al. (2013); Beirne and Fratzscher (2013); Mink and De Haan (2013), or Ludwig (2014) to name a few], even though the empirical evidence is not conclusive. The inconsistencies between studies using different empirical approaches and applying different definitions of the crisis transmission channel have made it difficult to compare results and therefore to reach meaningful conclusions (Dungey et al., 2005). The main objective of this paper is to shed some light on this challenging avenue of research and to contribute to our understanding of the pattern we observe in sovereign debt crises.

In this context, since the term contagion has not been used with accuracy in the literature (as it will be explained in Section 2.1, two main groups of theories have been used to explain contagion), nor is there any agreement on the econometric methodology to be used to quantify it, our first contribution is to provide an operational definition of the

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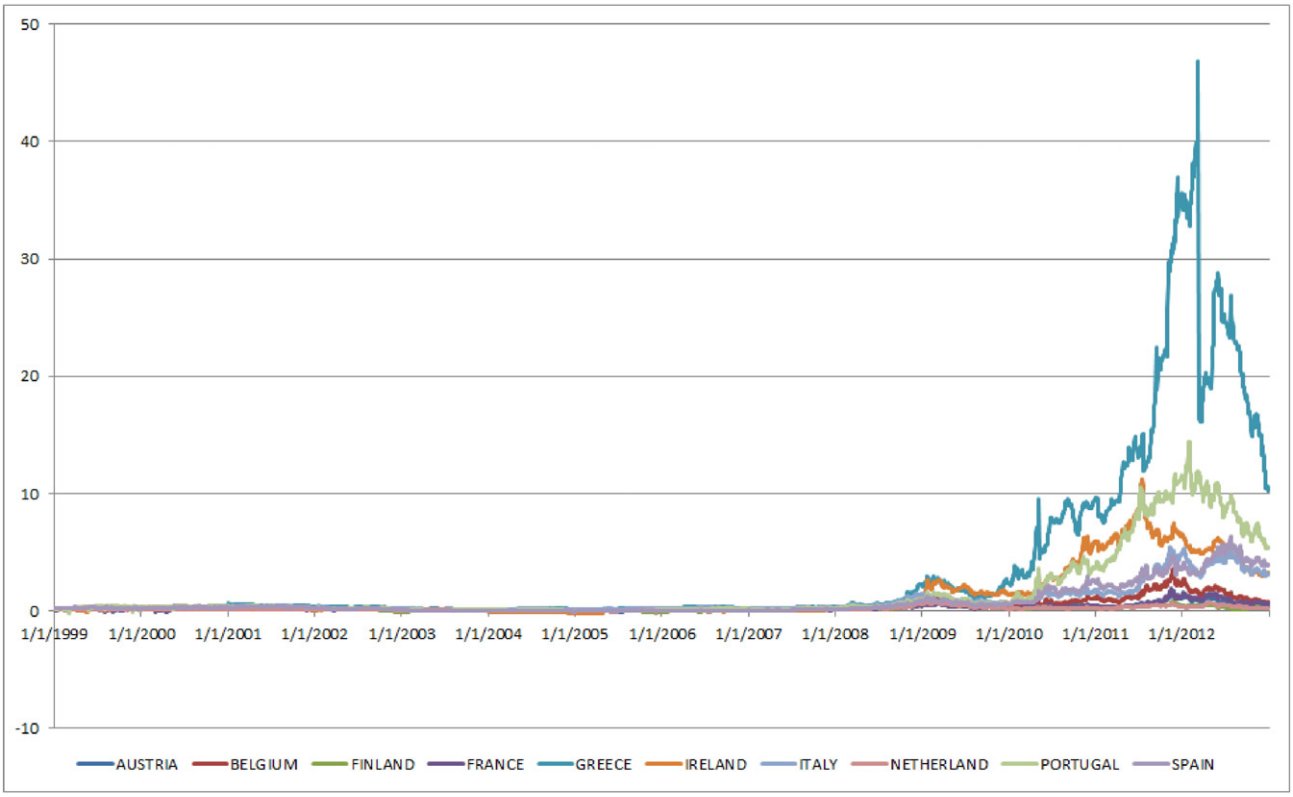

Source: Datastream
Note: Percentage points.

Fig. 1. Daily 10-year sovereign yield spreads over Germany: 1999–2012. Source: Datastream Note: Percentage points.

term "contagion": an abnormal increase in the intensity of causal relationships. This definition will allow us to explore whether there is evidence of "fundamentals-based contagion" (if the abnormal increase can be explained by macroeconomic fundamentals, financial linkages or common regional/global shocks) or "pure contagion" (if it is only triggered by a shift in idiosyncratic market sentiments). The second contribution is an empirical one: contagion is an unobservable shock, and therefore most empirical techniques have problems dealing with latent variables. In this paper in order to tackle this issue, we first test for the existence of possible Granger-causal relationships between 10-year sovereign yield spreads over Germany of 10 EMU countries, both central (Austria, Belgium, Finland, France and The Netherlands) and peripheral (Greece, Ireland, Italy, Portugal and Spain) and, then, we examine the time-varying nature of these relationships in order to detect episodes of significant intensification in the causality between them.[1] Finally, the last and main contribution of the paper is the investigation of whether transmission of the recent crisis in euro area sovereign debt markets was due to pure or fundamentals-based contagion. To that end, we try to determine which factors (changes in local risk sentiment in each different country, fundamental variables, financial linkages, or common regional/global risk factors) might have been behind these intensification episodes.

The rest of the paper is organised as follows. Section 2 reviews the literature on financial contagion and on the determinants of euro-area sovereign bond spreads. The Granger-causality analysis and our approach for the detection of episodes of causality intensification (which we associate with contagion) are presented in Section 3. In Section 4 we carry out the empirical exploration of the determinants of these episodes. Finally, Section 5 summarises the findings and offers some concluding remarks.

[1] As it is shown in Section 4.3, our methodology yields to more accurate and sensible indicators than those obtained from DCC-GARCH models used in prior studies.

2. Literature review

2.1. Financial contagion

Considerable ambiguity surrounds the precise definition of contagion. There is no theoretical or empirical definition on which all researchers agree; therefore, the debate on exactly how to define contagion is not just academic, but has important implications for measuring the concept and for evaluating policy responses. Pericoli and Sbracia (2003) note five definitions of contagion used in the literature, whilst the World Bank defines three layers within contagion.[2] First, in a broad sense, contagion is the cross-country transmission of shocks; in this sense, contagion can take place both during "good" and "bad" times and does not need to be related to crises. Second, in a restrictive sense, contagion is the transmission of shocks to other countries, or the cross-country correlation, beyond any fundamental link[3] between the countries and beyond common shocks. When either fundamentals or common shocks do not fully explain the relationship between countries, spillover effects are attributed to herding behaviour, either rational or irrational. Finally, in a very restrictive sense, according to the World Bank, contagion refers to increases in cross-country correlations during "crisis times" relative to correlations during "tranquil times".

[2] http://go.worldbank.org/JIBDRK3YC0.

[3] The World Bank distinguishes three different categories of fundamental links: financial, real, and political. The first ones exist when two economies are connected through the international financial system. Real links are fundamental economic relationships between countries. These links have usually been associated with international trade, but other types of real links, like foreign direct investment across countries, may also be present. Finally, political links are the political relationships between countries. Although this link is much less stressed in the literature, when a group of countries share an exchange rate arrangement – a common currency in the case of the euro area countries – crises tend to be clustered.