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Article

Financial crises and the transfer of risk between the private and public sectors: Evidence from European financial markets[☆]

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ABSTRACT

The recent financial crisis in Europe has been especially interesting, since it started mainly as a private sector (banking) phenomenon but then evolved into a public (sovereign debt) crisis. Given that prices of a financial asset must reflect the risks associated to said asset, we expect the relationship between financial markets related to “private” and “public” assets to have changed fundamentally during the crisis: private markets should have led the incorporation of information during the early years of the crisis whereas the markets for government securities should have attained preeminence during the years of the sovereign debt crisis. We investigate this change in the leading role of information (risk) incorporation by looking at the relationships between the markets for sovereign CDSs, sovereign bonds and equity for thirteen European countries during the period 2008–2012. Our results suggest that during 2008–2009 equity markets led the process of incorporation of new information but during 2010 this leading role was assumed by sovereign CDS markets, thus suggesting a private-to-public risk transfer during the subprime crisis and a reversal to a public-to-private risk transfer during the sovereign debt crisis. In supplementary analyses we show, first, that the role of CDSs with respect to the other two markets is state dependent, i.e., sovereign CDSs play a stronger role in economies with higher perceived credit risk. Second, we perform a price discovery analysis between CDS markets of the different European countries, showing evidence that during the years 2007–2009 the Spanish CDSs led the price discovery process, while the Italian and French CDSs took over in 2011, results which are consistent with trading volume in the CDS markets.

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1. Introduction

The relationship between the markets of Credit Default Swaps (hereafter CDS) and other asset markets has attracted increasing attention, especially since CDSs became liquid enough to serve as effective hedging instruments. For example, since both CDS premiums and bond spreads are measures of credit quality, the co-movement between these two markets, at least at a firm level, has been extensively documented by, e.g., Norden and Weber (2009), Blanco et al. (2005), Zhu (2006) and Forte and Peña (2009). These papers find evidence that the CDS market leads the incorporation

of new information when considered along with the bond market. Also, financial theory posits that prices in an efficient stock market must reflect the default probability of firms. Thus, Bystrom (2008) and Fung et al. (2008), among others, have studied the relationship between corporate equity prices and CDS spreads and found evidence which suggests that firm specific information is embedded into stock prices before it is embedded into CDS spreads. Fung et al. (2008) additionally document that the lower the credit quality of a company the stronger the feedback effect between the CDS market and the stock market.

However, the relationship between the markets of sovereign CDSs, sovereign bonds and stocks has been overlooked until very recently, probably because of the limited liquidity of some markets for sovereign CDSs. During the debt crisis of 2010 sovereign CDS markets started to receive increasing attention (e.g., Lonstaff et al., 2011; Dieckmann and Plank, 2011, or Gündüz and Kaya, 2012) and, as a consequence, the relationship between sovereign bonds and sovereign CDSs became the focus of many analyses (see, e.g., the papers by Arce et al., 2012; Coudert and Gex, 2010; Fontana and Scheicher, 2010; Delatte et al., 2012).

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However, whether, and how, these two markets are related to stock markets has, to our knowledge, not been explored (one notable exception is the paper by Chan-Lau and Kim, 2004). In principle, stock markets should react to risk factors that affect the private sector, whereas the markets for sovereign securities (bonds or CDSs) should react to risk factors which affect the public sector. Thus, we would expect that in contexts of increased risk in the private sector the stock market would be the leading market in the incorporation of information (i.e. it would react first, and then the markets for sovereign securities would react if the private risk gets transferred to the public sector). In context of increased sovereign risk the opposite would be true, that is, sovereign markets would react first and, if there is a public-to-private risk transfer, then the stock market would follow. Interestingly, the recent financial crisis provides us with a perfect testing ground for this risk transfer between markets, given that the crisis started mainly as a private sector (banking) crisis, but then, at least in Europe, it evolved into a sovereign crisis.

In this paper we take advantage of this evolution to investigate the relationships (i.e. information or risk transfer) between the markets for sovereign bonds and CDSs and the stock markets for a wide sample of European countries, some of which have been affected quite substantially by the sovereign debt crisis. More specifically, we look at the process of information incorporation into the three markets in order to detect which market leads such process, and to test our hypothesis that in the early stages of the crisis private (stock) markets should lead the process whereas in the later stages the direction of the risk transfer probably changed, and sovereign markets would lead. Our results indeed confirm this hypothesis, and show that stock markets led the incorporation of information during 2008 and 2009 whereas the CDS markets seemed to take the leading role during 2010. In 2011 the stock market regains its leading role and, even though the relationships between the three markets weaken, sovereign bonds gain in importance. Further, we assess whether these relationships are state dependent, i.e., whether they depend on the level of perceived sovereign credit risk. To this end, we pool together the different countries in terms of their risk level. In line with previous research (Fontana and Scheicher, 2010; Delatte et al., 2012), we find that CDSs play a stronger leading role in economies with higher perceived credit risk.

As a final step, we study the relationship between the different European CDSs before and during the crisis. Several studies (e.g., Gündüz and Kaya, 2012; Lonstaff et al., 2011; Ang and Longstaff, 2011; Fontana and Scheicher, 2010, or Dieckmann and Plank, 2011) have shown that there is a high level of synchronicity in the movements of sovereign credit spreads due to systemic sovereign risk. Given this, we suggest the existence of an equilibrium relationship between the CDSs of pairs of countries and estimate equilibrium (error correction) models. We find evidence that the Spanish CDS led the price discovery process during 2007–2009. During 2010, however, the different CDS markets lost their equilibrium relationship (this is understandable, given the effects on the term premiums induced by the European sovereign debt crisis) so we test, alternatively, for Granger causality to examine whether a specific market exercises some sort of price leadership. Our findings point to the German CDS market as the leader of the incorporation of risk information during 2010. In 2011 this leadership position changes again: many sovereign CDSs in our sample recover an equilibrium path and the Italian CDS, as well as the French, lead the process of price discovery. These results are consistent with trading activity in the CDS markets.

Although the Sovereign debt crisis is far from being solved, during this last year it has become obvious that Greek debt restructuring will imply large losses for debt holders. ISDA has declared a

Greek credit event,¹ but the legitimacy of sovereign CDS settlement has been called into question during 2011 and 2012, given the ability of governments to influence the event of default. An interesting discussion about the future of CDSs can be found in Gelpern and Gulati (2012) who argue that the economic function of sovereign CDSs after Greece's situation is limited and uncertain, partly thanks to ISDA's insistence on reconciling the competing political demands of state regulators and its market constituents. European sovereign CDSs have continued to be traded though, suggesting that this view about the future of sovereign CDSs is not shared by all agents. For example, during 2012, the Italian, Spanish, French and German CDSs have been among the top ten most liquid worldwide CDSs, and as of January 2013, they are still within the top ten CDSs in terms of volume of trade.²

The rest of the paper is structured as follows. In Section 2, we briefly justify the existence of a relationship between sovereign credit markets and the domestic stock market. In Section 3, we describe our data. In Section 4, we estimate models that relate – at a country level and for pools of countries – the markets of sovereign CDSs, sovereign bonds and stocks. In Section 5, we report the results of a price discovery process among European CDSs. Finally, in Section 6 we conclude.

2. The link between sovereign CDSs and stock markets

Sovereign CDSs and bonds are quite different financial instruments, but the link between their markets has been vastly studied, both at the corporate and at the sovereign level. However, the link between sovereign CDSs and a country's stock market has been much less explored and usually only in indirect ways, since it is not immediately intuitive why we would expect a direct relationship between these markets. Lonstaff et al. (2011) find that emerging sovereign credit spreads are strongly linked to global factors such as US stock market returns and volatility indices, and Berndt and Obreja (2010) show that European corporate CDSs are significantly related to a factor which captures “economic catastrophe risk”. Fontana and Scheicher (2010) also find that common factors drive the CDS market. Finally, Manasse and Zavalloni (2013) show that fundamentals and structural fragilities matter for sovereign risk.

Chan-Lau and Kim (2004) directly linked the CDS and stock markets by extending Merton's theory of the firm to sovereign issuers. An efficient stock market should incorporate in a timely manner the information relevant to the default probability of firms: the value of any credit derivative must be linked to the probability of the underlying entity being exposed to a credit event at some point in the future (Merton, 1974). For entities with traded equity this probability is, in fact, often estimated using information from the stock market. Chan-Lau and Kim (2004) extend this reasoning to sovereign securities and suggest that the only substantial difference between a corporate and a sovereign issuer with the same amount of debt is that default risk is higher for the sovereign for every asset value because a sovereign issuer may choose to default even when it is technically solvent. Their analysis of eight emerging markets shows that the correlation patterns between sovereign CDS spreads and stock market performance suggest a strong link

¹ On March 9, 2012 ISDA declared unanimously that Greece triggered the payment on default insurance contracts by using legislation that forces losses on all private creditors. This is the first sovereign credit event in an advanced euro-economy. Since DTCC began tracking CDS in 2003, the only other sovereign credit event to trigger a payout was Ecuador in January 2009.

² Data from 2013-02-01 Weekly Activity Report and Market Activity Report June 20, 2012–September 19, 2012 Depository Trust and Clearing Corporation.

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