How are market preferences shaped? The case of sovereign debt of stressed euro-area countries

Emmanuel Mamatzakis [a], Mike G. Tsionas [b],*

[a] University of Sussex, United Kingdom
[b] Lancaster University Management School, United Kingdom

A B S T R A C T

This paper reveals the underlying market preferences for sovereign debt of distressed euro area countries. We employ a generalised flexible market loss, as it nests both the linear and the non-linear form, as a function of the 'basis', the difference between sovereign bond spread and the Credit Default Swap. Our evidence shows that market preferences lean towards pessimism for some countries, in particular Greece. Those preferences do not remain stable over time as they shift further towards pessimism post the Greek bail out in spring 2010. As part of sensitivity analysis we apply a multivariate loss function to account for contagion effects in forming market preferences among different sovereign bonds. We also examine the impact of specific financial and fiscal governance factors on market preferences. Our results suggest that the market closely monitor fiscal fundamentals so as to shape preferences.

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1. Introduction

Unraveling the Ariadne's thread of the euro area debt crisis and its far reaching implications is by no means an easy task. During the crisis several euro area countries were put under financial stress and under enormous pressure to finance their debt, while other countries, as a result of investors' flight to safety, were faced with unprecedented low debt-servicing cost. By December 2009, when it became clear that Greece was significantly constrained from accessing the sovereign debt markets, and especially after May 2010 when Greece received financial assistance from euro area countries and the IMF, concerns about debt financing spread to the rest of fiscally vulnerable southern euro area countries and Ireland. Subsequently, sovereign bond spreads and Credit Default Swaps (CDSs) of stressed euro area countries increased dramatically during the crisis, exhibiting also elevated volatility.

These developments have fuelled a large body of research on sovereign bond spreads and CDS in recent years (see for example

Manganelli and Wolswijk, 2009; Haugh et al., 2009; Sgherri and Zoli, 2009; Dieckmann and Plank, 2010). Fontana and Scheicher (2010) were the first to study the movement of euro area sovereign spreads and CDS using various covariates. The authors built on the earlier study of Blanco et al. (2005) that reports a long run linear relationship between US corporate bond and CDS (see also similar findings for EU markets by Norden and Weber, 2004; Zhu, 2006; De Wit, 2006). According to Blanco et al. (2005), in the absence of market imperfections one would expect that CDS spreads and sovereign bond spreads of the same maturity are bounded by no-arbitrage conditions. No-arbitrage would imply that the price of the CDS approximates the sovereign bond spread. However, other studies have found that arbitrage opportunities exist in the short-run. In fact, Levin et al. (2005) show that market frictions generate arbitrage opportunities between CDS and bond spreads, whilst these market frictions are due to a plethora of factors, both systematic and idiosyncratic (De Wit, 2006; Levin et al., 2005; Favero et al., 2010). Setting aside these factors, the documented short-run frictions would imply arbitrage opportunities that could be reflected in the difference between the CDS premium and the sovereign bond spread. Blanco et al. (2005) refer to this difference as the 'basis', which market participants monitor to define their

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* Corresponding author at: Lancaster University Management School, Bailrigg LA1 4YX, United Kingdom. Tel.: +44 (0)1524 592668.
  E-mail address: m.tsionas@lancaster.ac.uk (M.G. Tsionas).

trading strategies.[1] Negative or positive 'basis' would imply specific trading strategy.[2]

In this paper, we build on the notion of market frictions and thereby on 'basis' to reveal market preferences with respect to sovereign debt markets in the euro area. In particular, we test whether market preferences are symmetric and thereby market participants attach equal weight to both positive 'basis' and negative 'basis'. In case that deviations from symmetry would be observed that would indicate that market underlying preference leaning towards a 'basis' with certain sign and thereby leaning towards a specific trading strategy.

In order to reveal such preferences, we fit a generalised loss function similar to Elliott et al. (2005) and estimate the shape parameter of this loss function. A market of sovereign bonds is a function of the 'basis'. No arbitrage would imply that the 'basis' tends to zero. In principle, the market participants should be indifferent for the sign of the 'basis', and they would primarily focus on take advantage of arbitrage. This, in turn, would imply that the underlying loss function is symmetric regarding the sign of the 'basis' away from the case of no-arbitrage. Thus, deviations from symmetry would reveal market preferences, if any, towards a positive or a negative 'basis'.

One of the advantages of fitting a loss function is that it is not necessary to observe the underlying model that forms sovereign bond spreads and CDS, that forms the 'basis'. In addition to the univariate loss function based on a single 'basis' we estimate the shape parameter of a multivariate loss function where complementarities, if any, among sovereign bonds could be captured. A multivariate loss function would imply that the euro area sovereign debt crisis lead to a non-separable loss function among stressed countries. Moreover, we employ data from euro area countries in need of financial assistance, namely the three countries that have been in conditionality by EU and IMF, namely Greece, Ireland and Portugal, plus Spain and Italy.[3]

Overall, our empirical evidence shows that market preferences shift towards pessimism, notably for Greece post the first bail out programme in spring 2010. As part of a sensitivity analysis, we also examine the potential existence of structural breaks over time in market preferences using the test proposed by Giacomini and Rossi (2009). Such breaks could be caused by unexpected events, but also policy interventions to address the crisis, which could alter the shape of the loss function, and thereby market preferences. We also examine the impact of fiscal and financial factors on market preferences. The evidence finds that fiscal fundamentals such as outstanding debt ratio, but also fiscal governance such as fiscal rules, drive market preferences. In addition, corporate credit risk affects market preferences over sovereign debt in the short run.

This paper contributes to the literature in several aspects. First, this is the first study to estimate market preferences for sovereign bonds of stressed euro area countries using a generalised flexible loss function based on arbitrage due to the 'basis'. Second, we test for structural breaks in market preferences over time, which is particularly important in an environment of an on-going saga over euro area debt crisis. Third, in order to take into account the fact that during the debt crisis contagion effects could be at play, we extend our model to a multivariate loss function. Forth, we explore the impact of specific financial and fiscal factors on market preferences. This analysis gives insights of some of the factors that affect market preferences.

The remainder of the paper is organised as follows: Section 2 provides a discussion of some stylized facts of the euro area debt crisis and the data set, whilst Section 3 presents the methodology. In Section 4 we discuss the empirical results, and lastly we offer some concluding remarks.

2. Stylised facts of the euro area sovereign debt crisis and the data set

In spring 2007 there was hardly any evidence of the subsequent turbulence in sovereign bond markets in the euro-area. At the time, the yields of sovereign bonds across euro area Member States appeared to be converging. In fact, in July 2007 the yield of the 10-year German sovereign bond was somewhat lower than the Irish equivalent. However, this situation changed dramatically with the advent of the global financial crisis. As investors fled to safety, German bonds became more appealing to them than bonds of fiscally exposed economies within the euro area. As a result these countries faced the reality of rising borrowing costs. By December 2009 it became clear that Greece was significantly constrained from accessing the markets in order to finance its sovereign debt. The Greek sovereign bonds spread over five years maturity reached 215 basis points above the swap rate at the end of December 2009. The equivalent spread for Ireland was about 45 basis points and 28 basis points for Portugal. In spring 2010, Greece requested financial assistance from the EU and the IMF as spreads and CDS reached record high levels and borrowing from the market was hardly possible. Greek spreads continued to rise despite financial assistance was provided, reaching 1100 basis points in March 2011, whilst contagion effects to Irish and Portuguese spreads meant that their sovereign spreads hiked to 772 basis points and 636 basis points respectively. Regarding the borrowing cost of Spain and Italy the situation deteriorated in 2011 as the contagion from the Greek sovereign debt crisis also affected them. The first financial assistance programme to Greece was designed to contain the crisis. Alas, the programme proved to be rather insufficient to deal with the chronic rigidities and anachronistic structures of the Greek economy that had led to the crisis. As a result, the Greek spread reached values close 6000 basis points in the first quarter of 2012 prior to the Private Sector Involvement (PSI). In spring 2012, an unprecedented haircut to private investors in Greek sovereign bonds took place of the value of 100 billion euros.

As in the case of spreads, CDS for the euro area countries in the periphery follows similar trends, though they reached values above spreads in the pick of the sovereign debt crisis in the euro area, prior to the Greek PSI.[4] It is interesting to note that prior to the euro area sovereign debt crisis sovereign CDS had been rather neglected. Alas, the surge in Greek CDS in 2010 enhanced the importance of

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[1] There is a plethora of trading strategies in the sovereign CDS market. A trader could take a long and short position simultaneously to exploit misalignments between spread and CDS. One could sell CDS protection on sovereign bonds and buy CDS protection on corporate bonds in the same country. Another strategy could be to have a net buyer position in sovereign CDS. The last case is particularly popular among hedge funds. Portfolio managers often buy sovereign CDS to hedge against macroeconomic risks. There are also synthetic options such as first to default CDS on sovereign risk. These strategies are only a portion of the existed ones and point out to the direction of complexities one could face attempting to disentangle the impact of market expectations on sovereign CDS spreads.

[2] When the basis is negative government bonds are more expensive than CDS, because bond spreads are lower than CDS. This would suggest that sovereign bonds are costlier than CDS. A trading strategy would provide profit by short selling the bond, and writing CDS protection. On the other hand, if the 'basis' is positive then the trader could arbitrage away by buying the bond and simultaneously buying protection in the CDS market. It is worth noting that in the immediate months post bail out for Greece in spring 2010, the Greek 'basis' was negative. However, it is worth noting that liquidity constraints could imply that during crisis implementing such trading strategies could prove costly (Duffie, 2010).

[3] Cyprus has been excluded from our analysis due to the small size of its economy and the particular features of its banking system.

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[4] CDS reflect the premium investors are willing to pay to insure against a credit event. In this respect CDS provide credit risk assessment in a forward-looking way. CDS are traded over the counter and as such are trading instruments and not pure insurance instruments. Given CDS are forward-looking taking an outright position at CDS would depend on trader's expectations over a short horizon.