



“Whatever it takes” to resolve the European sovereign debt crisis? Bond pricing regime switches and monetary policy effects



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ABSTRACT

This paper investigates the role of unconventional monetary policy as a source of time-variation in the relationship between sovereign bond yield spreads and their fundamental determinants. We use a two-step empirical approach. First, we apply a time-varying parameter panel modelling framework to determine shifts in the pricing regime characterising sovereign bond markets in the euro area over the period January 1999 to July 2016. Second, we estimate the impact of ECB policy interventions on the time-varying risk factor sensitivities of spreads. Our results provide evidence of a new bond-pricing regime following the announcement of the Outright Monetary Transactions (OMT) programme in August 2012. This regime is characterised by a weakened link between spreads and fundamentals, but with higher spreads relative to the pre-crisis period and residual redenomination risk. We also find that unconventional monetary policy measures affect the pricing of sovereign risk not only directly, but also indirectly through changes in banking risk. Overall, the actions of the ECB have operated as catalysts for reversing the dynamics of the European sovereign debt crisis.

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1. Introduction

The European sovereign debt crisis has dominated the international economic debate in recent years. It has posed an existential threat for the European Economic and Monetary Union (EMU), largely monopolised the agenda of policy makers and triggered a vast academic literature on the subject. Within the latter, one may distinguish four related but distinct branches. First, theoretical models of the EMU crisis highlighting the role of changes in market expectations as a key driver of the crisis' evolution (Arghyrou and Tsoukalas, 2011; De Grauwe and Ji, 2013). Second, empirical studies investigating the fundamental determinants of EMU long-term government bond yield spreads against Germany. These document significant time-variation in the relationship, specifically a shift from a pre-crisis to a crisis-related bond pricing regime (Arghyrou and Kantonikas, 2012; Bernoth and Erdogan, 2012; Afonso et al., 2014, 2015). Third, the role of banking risk in transforming

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the global financial crisis of 2008/09 into the sovereign debt crisis, and the nexus between banking risk and sovereign risk (Alter and Schüler, 2012; De Bruyckere et al., 2013; Acharya et al., 2014). Finally, a fourth branch investigates the effectiveness of unconventional monetary policy actions by the European Central Bank (ECB) to stabilise sovereign bond markets. Most of these studies analyse the Security Markets Programme (SMP) and the effect of the Outright Monetary Transactions (OMT) announcement, while a few more recent papers consider the ECB's Quantitative Easing (QE) programme.¹ They typically find that the ECB policy interventions are associated with lower spreads without, however, identifying the channels via which they affect spreads.²

This paper brings together multiple branches of the literature on the European debt crisis by investigating the hypothesis that the relationship linking spreads with fundamentals is affected by the behavior of the ECB. In other words, we posit that policy interventions may alter the underlying bond pricing regime. This hypothesis reflects notably the insights from the theoretical models of the European sovereign debt crisis quoted above. The key prediction of these models relates to the possibility of multiple equilibria in the relationship between spreads and fundamentals. Drawing on models of currency crises (e.g. Obstfeld, 1986, 1996), they predict that the variable determining which of the possible multiple equilibria will eventually prevail is the status of redenomination/default expectations held by the private sector. Under favourable expectations, markets impose small penalties on risk factors, determining spreads at relatively low levels. An adverse shift in expectations results into higher penalties on risk factors and relatively high spread values. The ECB, through its actions and a conditional guarantee that it is ready to operate as a lender of last resort (LLR), can improve expectations and thereby generate a shift in bond pricing behavior.

To explore this hypothesis, we adopt a two-step empirical approach. First, we employ a time-varying parameter (TVP) panel econometric methodology to capture changes in the relationship between 10-year sovereign bond yield spreads against Germany and their fundamental determinants (global financial risk, liquidity risk and credit risk). We present results for a panel of ten EMU countries over the period January 1999 to July 2016, as well as its core and periphery countries constituent sub-panels. This part of our analysis extends previous research on the time-varying relationship between spreads and fundamentals, whose samples typically end in 2010/11, into the period following the announcement of the OMT and Quantitative Easing (QE) programmes. The evolution of the TVP estimates obtained for the EMU panels allows us, in combination with results obtained for a non-EMU control panel, to shed light on the validity of the multiple equilibria view of the European sovereign debt crisis vis-à-vis alternative explanations of the crisis, such as the wake-up call hypothesis (Goldstein, 1998; Beirne and Fratzscher, 2013; Bekaert et al., 2014); and changes in the market's assessment regarding future macroeconomic convergence/divergence (Aizenman et al., 2013). Second, we model the series of TVP coefficients estimated for each of the spreads' determinants on a dummy variable capturing the effects of the OMT announcement and empirical measures of ECB monetary policy (conventional and unconventional). Moreover, we control for the effects of bank credit risk in the euro area.

With regards the determinants of spreads, we confirm the main finding of previous studies and extend them with a significant new one. Specifically, we document a change in the EMU bond-pricing regime from risk under-pricing before the global financial crisis, where the sensitivity of spreads to fundamentals is zero or near zero, to a regime involving increasingly larger penalties on risk factors and very high spreads.³ In addition to these two regimes, however, we identify a third pricing regime, triggered by the announcement of the OMT in August 2012 and characterised by a weakening of the link between spreads and their underlying fundamentals. This regime-shift has not been reported in previous studies, except from Delatte et al. (2017) who conclude that it represents a restoration of the first (pre-crisis/non-crisis) regime, driven by a decline in bank credit risk. We argue, however, that the third regime is new and different from the first one, with the main distinguishing factors being higher spreads relative to the pre-crisis era and a residual redenomination risk in periphery countries, carried over from the second (crisis) regime.

The second part of our analysis provides evidence that the transition from the second regime to the third is determined by factors relating to monetary policy, especially unconventional interventions. Specifically, we find that the OMT announcement reduced the responsiveness of spreads to their fundamental determinants. Expansions in the ECB balance sheet due to the SMP and QE programmes, also had a similar effect. Finally, we show that the impact of monetary policy on the relationship between spreads and fundamentals can materialise not only directly but also indirectly through reductions in bank

¹ The SMP commenced on May 2010 and involved the purchase of sovereign bonds from euro area periphery countries (Greece, Ireland, Italy, Portugal and Spain) during 2010–2011. For studies on the impact of SMP on spreads see, among others, Eser and Schwaab (2013), Ghysels et al. (2014) and Trebesch and Zettelmeyer (2014). The OMT was announced on 2 August 2012, following the statement by President Draghi on 26 July 2012 that the “ECB is ready to do whatever it takes to preserve the euro”. The technical framework for the OMT was revealed on 6 September 2012 and on the same date the SMP was terminated. Altavilla et al. (2014) evaluate the reaction of spreads to the OMT announcement, while Krishnamurthy et al. (2015), Szczerbowicz (2015) and Gibson et al. (2016) examine both the SMP and the OMT. The QE programme was announced in January 2015 and is effective since March 2015. It involves the monthly purchase of euro area sovereign bonds, as well as other assets. The impact of QE on spreads is analysed in Altavilla et al. (2015) and De Santis (2016).

² An exception is the study of Krishnamurthy et al. (2015), who decompose the policy impact on sovereign yields into effects via default risk, market segmentation and redenomination risk. They find that default risk and market segmentation are the dominant channels through which the SMP and OMT worked in Italy and Spain, while redenomination risk may have been a policy channel in Spain and Portugal.

³ Earlier studies typically document the switch from a pre-crisis to a crisis-related bond pricing regime using fixed-parameter models and imposing exogenous break points on the data. These include Barrios et al. (2009), Arghyrou and Kontonikas (2012), Caggiano and Greco (2012). Another strand of the literature identifies the regime shift using time-varying coefficients models and endogenously determined structural breaks. Such studies include work by Aßmann and Boysen-Hogrefe (2012), Bernoth and Erdogan (2012), Constantini et al. (2014), D'Agostino and Ehrmann (2014), Afonso et al. (2015), Paniagua et al. (2017) and Delatte et al. (2017).

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