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Fragmentation and heterogeneity in the euro-area corporate bond market: Back to normal?☆

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ABSTRACT

We assess the degree of market fragmentation in the euro-area corporate bond market by disentangling the determinants of the risk premium paid on bonds at origination. By looking at over 2400 bonds we are able to isolate the country-specific effects which are a suitable indicator of the market fragmentation. We find that, after peaking during the sovereign debt crisis, fragmentation shrank in 2013 and receded to pre-crisis levels only in 2014. However, the low level of estimated market fragmentation is coupled with a still high heterogeneity in actual bond yields, challenging the consistency of the new equilibrium.

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1. Introduction

The economic literature traditionally highlights the advantages of financially integrated markets, as integration leads to more opportunities for risk sharing and diversification, better allocation of capital among investment opportunities and potential for higher economic growth (Lane and Milesi-Ferretti, 2008; Jappelli and Pagano, 2008; Fecht et al., 2012). During the most acute phase of the euro-area sovereign debt crisis it also became evident that integrated financial markets are of utmost relevance for the effective conduct of monetary policy (ECB, 2013).

After a prolonged period of increasing financial market integration in the euro area, the process records an abrupt halt during the global financial crisis. The sudden drop of cross-border banking activities and the ring-fencing of domestic financial markets lead to a freeze in the euro-area interbank market and a strong dependence on the European Central Bank (ECB) liquidity. Particularly hit is also the bond market, both in the sovereign and corporate segments, in which dispersion in bond yields increases significantly and the spreads with respect to core countries record unprecedented spikes. This large heterogeneity is soon labelled financial market fragmentation. However, the fact that bond yields and risk premia are different across countries is not enough for a market to be called fragmented. Actually, the definition of fragmentation is usually referred to as the absence of perfect market integration. The latter, relying on the law of one price, envisages a situation in which yield spreads on bonds from different countries do not depend on the country of residence of the issuer, but only on the factors that have a bearing on the riskiness of the bond (Baele et al., 2004). Thus, the reason why the mere heterogeneity in bond yields cannot be directly used as a measure of market fragmentation is that actual spreads are primarily influenced by bond features, such as duration and liquidity, and the different creditworthiness of the issuer. This in turn implies that the first step when assessing financial markets' integration is to control for all potential determinants of bond risk premia; then, if after this filtering out there is evidence of significant country-specific effects, we can speak of a market fragmented along national borders.

The aim of this paper is to shed light on the (possible) fragmentation in the euro-area corporate bond market by assessing whether the quoted heterogeneity in spreads across countries can be attributed to a change in the fundamental determinants of the credit risk or in an increase in the country-specific effects. Thus, we

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first estimate a model of risk premia to disentangle the different sources of risk priced in bond yields and to isolate the country-specific effects; then, we use the estimated country-specific effects to compute a measure of the degree of market fragmentation.

We focus on the spread paid at origination by non-financial corporations on around 2400 bonds issued over the period from 2006 to 2014. The time span allows us to cover the unfolding of the global financial crisis and the subsequent great recession period, which in the euro area is also characterized by a significant turmoil in the sovereign debt market. In addition, we are able to compare the two phases of the crisis with the tranquil period before its explosion and the period of easing tensions started immediately after the *whatever-it-takes* speech of the ECB President Draghi in July 2012.

To preview our results, we find that in the years before the global financial crisis the evidence of market fragmentation is weak (only Belgium and Portugal in 2006 and Portugal alone in 2007 show significantly higher funding costs than Germany), suggesting that financial integration was achieved in the euro-area corporate bond market. In the 2 years after the outburst of the crisis (2008–2009), the overall market integration does not deteriorate significantly even though the spread to Germany increases for some countries while it declines for others. Instead, during the sovereign debt crisis, actual spreads with respect to Germany become positive everywhere and the estimated country-specific effects peak to unmatched heights making indeed the market fragmentation a source of concern.

While the intervention of the ECB in trying to ease the tensions and reduce the pricing of tail risks (such as the break-up of the euro) leads, from the second half of 2012, to an improvement of the market access for both sovereigns and corporations, a broad heterogeneity in the actual spreads at origination persists. In addition, in two economies (Italy and Portugal), the estimated country-specific component of the spread in 2014 is still significantly different from zero. However, the overall euro-area measure of fragmentation (the sum of all country-specific coefficients) suggests a return to a level of integration similar to that achieved before the crisis.

Nevertheless, the empirical evidence provided in the paper raises some doubts on the consistency of the new equilibrium which seems to prevail at the end of the sample period in the corporate bond market. Indeed, the still large heterogeneity in actual yield spreads across countries is coupled with an overall measure of market integration which points to a very mild degree of fragmentation, if not to the successful return to market integration. The most likely interpretation of this puzzling evidence is that market agents might be currently mispricing some sources of risk. The recent literature points, in particular, to a wrong assessment of the sovereign risk which directly and indirectly influences the corporate cost of funding (De Grauwe and Ji, 2014; Gibson et al., 2015; Bedendo and Colla, 2015).

The paper is organized as follows. In Section 2 we briefly review the empirical literature on market fragmentation; in Section 3 we describe the dataset; in Section 4 we introduce the econometric methodology and analyse the factors determining bonds' risk premium at origination; in Section 5 we estimate the country-specific effects and compute a measure of fragmentation for the corporate bond market; in Section 6 we provide robustness checks; in Section 7 we draw the conclusions.

2. Literature review

Since the early 1990s, in the euro area, legal and institutional reforms, along with the development of new financial instruments and trading platforms, have facilitated financial market integration leading to a strong increase in both capital and trade flows across countries (Hartmann et al., 2003; Baele et al., 2004). The creation of the monetary union in 1999 was a milestone on the road to more integrated financial markets, eliminating the exchange rate risk within the euro area. As a result, from its establishment up to 2007, the euro area witnessed a rapidly growing financial integration, evident in terms of both volume and prices (De Sola Perea and Van Nieuwenhuyze, 2014).

Starting from the subprime crisis in 2007, and especially after the collapse of Lehman Brothers in 2008, the euro area has experienced an increasing turmoil in financial markets with a freeze in interbank markets, a heavy reliance on ECB liquidity facilities and a growing heterogeneity in sovereign debt yields. Also bank lending rates started to differ systematically across countries and portfolios of financial intermediaries and households showed a significant bias towards domestic securities, suggesting a possible fragmentation of several market segments along national borders (Battistini et al., 2014).[1]

The financial conditions deteriorate even further from mid-2010: after a massive involvement of governments in sustaining the domestic financial systems hit hardly by the first wave of the crisis, some small euro-area countries face significant strains in the access to capital markets. The market starts to price-in the possibility of a break-up of the monetary union due to the exit of some peripheral countries. In 2011, contagion effects, often unjustified by economic fundamentals (Blommestein et al., 2012; Giordano et al., 2013; De Santis, 2014), involve much larger countries as Italy and Spain leading to a surge in the spread on sovereign bond across countries. The sovereign debt market turbulence soon spills over to the corporate bond market. Not only do corporate risk premia reach unprecedented levels, but also the heterogeneity across countries increases significantly, leading to a worrying widening in the yield spreads between bonds issued by firms headquartered in the countries most involved in the crisis and bonds issued by firms headquartered in countries showing sounder public finances. In addition, the misalignment of rates across countries starts raising concerns about the effective transmission of monetary policy impulses, becoming a relevant policy issue (ECB, 2013).

Since the interbank market was the first market segment hit by the crisis, several empirical studies focus on the analysis of that market. Angelini et al. (2011) suggest that borrower characteristics were not a significant determinant of the banks' cost of funds during the pre-crisis period and that the most important determinant of the widening of spreads in the inter-bank markets after the Lehman Brother default is the rise in aggregate risk aversion. Instead, Garcia de Andoain et al. (2014), by directly estimating the country fixed effects, show that several banks were facing higher funding cost just because of their nationality, and identify several episodes of significant market fragmentation. Finally, Mayordomo et al. (2015) provide a measure of market fragmentation over the period 2005–2012 by looking at the spread between each country-specific (average) interbank rate and an ad hoc benchmark. By filtering out the credit risk of domestic banks and the changes in the ECB official rate from the spread, they report significant country differences, with peripheral economies experiencing much higher spreads.

Another rich strand of the literature on fragmentation focuses instead on the second wave of the crisis and the government bond market. Even though the methods employed are often different, as well as the reference measure of sovereign creditworthiness (mainly CDS spreads or sovereign yield spreads to German Bunds), the gathered evidence suggests that the fragmentation in the sovereign bond market was due to an increased reaction to

[1] See Giannetti and Laeven (2012) for an analysis of the rebalancing of loan portfolio in favour of domestic borrowers during the crisis based on data from the global syndicated loan market.

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