Journal of International Money and Finance 70 (2017) 26–44

Contents lists available at ScienceDirect

Journal of International Money and Finance

journal homepage: www.elsevier.com/locate/jimf

Euro area government bonds – Fragmentation and contagion during the sovereign debt crisis

Michael Ehrmann [a,*], Marcel Fratzscher [b]

[a] European Central Bank, 60640 Frankfurt am Main, Germany
[b] DIW Berlin, Mohrenstrasse 58, 10117 Berlin, Germany

ARTICLE INFO

Article history:
Available online 15 August 2016

JEL Classification:
F3
E5
G15

Keywords:
Sovereign debt
European crisis
Integration
Fragmentation
Contagion
Identification

ABSTRACT

The paper analyzes the integration of euro area sovereign bond markets during the European sovereign debt crisis. It tests for contagion (i.e., an intensification in the transmission of shocks across countries), fragmentation (a reduction in spillovers) and flight-to-quality patterns, exploiting the heteroskedasticity of intraday changes in bond yields for identification. The paper finds that euro area government bond markets were well integrated prior to the crisis, but saw a substantial fragmentation from 2010 onward. Flight to quality was present at the height of the crisis, but has largely dissipated after the European Central Bank's (ECB's) announcement of its Outright Monetary Transactions (OMT) program in 2012. At the same time, Italy and Spain became more interdependent after the OMT announcement, providing our only evidence of contagion. This suggests that countries have been effectively ring-fenced, and Italy and Spain benefited from the joint reduction in yields following the OMT announcement.

1. Introduction

As the euro area is starting to emerge from its deep crisis, a debate is taking place about the lessons from the crisis and about the effectiveness of policy responses. A key motivation for many of the crisis policies was to prevent a spillover of the crisis across countries and markets. Containing the crisis was an important consideration when the European Union (EU) and the International Monetary Fund (IMF) granted Greece a large rescue program in May 2010, and the decision of the European Central Bank (ECB) to purchase the government debt of troubled euro area countries under its Securities Markets Program (SMP) aimed to avoid the transmission of shocks and a panic across sovereign debt markets.

* Corresponding author.
E-mail addresses: michael.ehrmann@ecb.europa.eu (M. Ehrmann), mfratzscher@diw.de (M. Fratzscher).

http://dx.doi.org/10.1016/j.jimonfin.2016.08.005

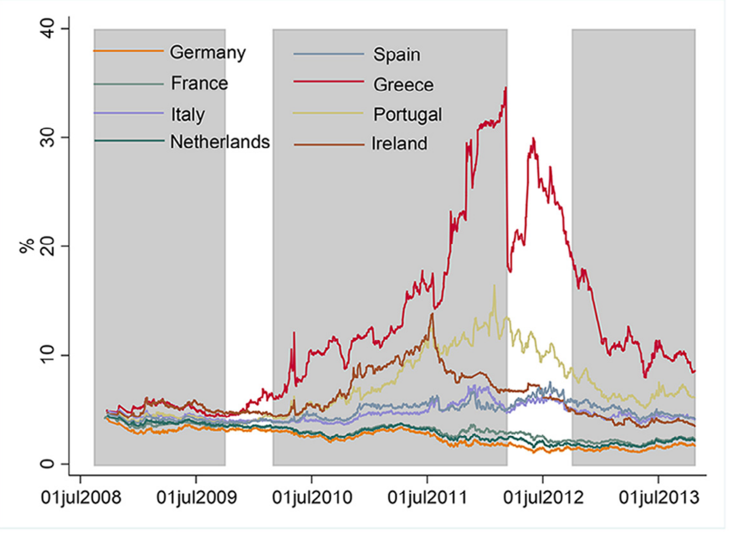

Fig. 1. Sovereign yields in the euro area.
Notes: The figure shows the ten-year yields of the eight euro area countries included in the analysis of the paper. Shaded areas denote the three subsamples analyzed in this paper.

These attempts culminated in the ECB's Outright Monetary Transactions (OMT) program, announced between July and September 2012, with the aim of preventing a speculative attack in sovereign debt markets of the euro area.

With hindsight, it is therefore important to assess the transmission of shocks across sovereign debt markets of the euro area, whether this transmission intensified during the crisis, and how it was influenced by policy. The difficulty is that while the European crisis may have started in Greece, it also affected many other countries such as Ireland, Portugal, Cyprus and Spain – all of which received rescue programs. Did the crisis in Greece trigger financial stress in other euro area countries? And to what extent were problems in the large euro area countries, such as Spain and Italy, contagious for other countries?

If we want to address these questions, it is important at the outset to define the terminology. There is a large body of literature on contagion in financial markets, which has adopted various definitions of the concept of contagion.[1] While some contributions define contagion as the transmission of shocks across countries or markets (e.g. Allen and Gale, 2000), others understand contagion as a *strengthening* in the transmission of shocks (Bekaert et al., 2005, 2014). We will use the latter definition of contagion in this paper, too, as it provides us with a natural way of studying the dynamics of bond markets in the euro area. It is well known that euro area government bond markets have been highly integrated prior to the crisis, hence the question that we would like to focus on is whether there has been an intensification in this integration, i.e. spillovers were larger than one should have expected, or whether the opposite was true, i.e. markets saw less spillovers, indicating a degree of market fragmentation. Indeed, the objective of euro area policy-makers may not have been to merely prevent an increase in the shock transmission, but to ring-fence a crisis country. In other words, policy-makers might have been trying to *reduce* or even completely *eliminate* the transmission of shocks across sovereign debt markets during the crisis. We will refer to such an outcome as fragmentation.

Fig. 1 shows the evolution of 10-year government bond yields among eight euro area countries since 2008. Initially, spreads across countries were low and there was a high degree of co-movement

[1] Bae et al. (2003) and Forbes and Rigobon (2002) are just two examples of seminal contributions to this literature. See Dungey and Martin (2007) for an excellent review.