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Investor induced contagion during the banking and European sovereign debt crisis of 2007–2012: Wealth effect or portfolio rebalancing?☆

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A B S T R A C T

This study investigates the way a crisis spreads within a country and across borders by testing the investor induced contagion hypothesis through the liquidity channel on stock-bond relationships of the US and five European countries before and during the global banking and European sovereign debt crisis of 2007–2012. We provide evidence consistent with the wealth effect as a source of contagion for the majority of countries. Nevertheless, we uncover evidence of investor induced contagion sourced by the portfolio rebalancing effect for correlations involving Spanish and Italian bonds during the debt crisis. Further, we find that tight (narrow) credit spreads reduce (magnify) the wealth and portfolio rebalancing effects, which are offset by the opposite effects of risk aversion amongst investors, a dynamic that is not restricted to crisis periods.

1. Introduction

One of the most prominent characteristics in the recent financial crisis is the global loss of confidence in the financial system with unprecedented levels of risk aversion amongst investors, the lack of

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liquidity and freezing of the credit markets. The European sovereign debt crisis that followed was not entirely unexpected (Reinhart and Rogoff, 2009). In fact, the contagion effect of past crises, which is defined as the transmission mechanism that occurs during a financial crisis, continues to dominate the views of economists, academics and policy makers (Caporale et al., 2006 on the Asian financial crisis; Yang et al., 2006 on the Russian crisis; and Ravichandran and Maloain, 2010 on the recent financial crisis).

The objective of this study is to investigate what causes a crisis to spread by testing the investor induced contagion hypothesis on the relationship between stock and bond markets. In a recent paper, Boyer et al. (2006) suggested that investor induced contagion stems from either the wealth effect or the portfolio rebalancing hypothesis. Therefore, motivated by Boyer et al. (2006), we investigate whether investor induced contagion between stock and bond markets sources from the wealth effect or portfolio rebalancing hypothesis before and during the banking and European sovereign debt crisis over the period 2007–2012. Moreover, given that a prominent characteristic of the recent financial crisis was the collapse in confidence in the financial system, the third aim is to uncover cross regional evidence on the effect of credit market liquidity and level of risk aversion on the transmission channel of the stock-bond relationship. Both sources of risk provide a barometer on the liquidity in the financial system and the degree of investor uncertainty associated with taking on high risk assets. A crucial feature of the wealth effect and portfolio rebalancing hypothesis, especially in light of credit market liquidity and investor risk aversion, is the underlying assumption that a crisis spreads through the liquidity channel. This envisages a scenario where a shock causes liquidity in the financial system to decline. Hence, the wealth effect in a stock-bond relationship stipulates that during a crisis, a shock to the funding constraints of investors causes risk aversion, a liquidation of positions, and an increase in volatility in both markets (Brunnermeier and Pedersen, 2009); similarly, under the portfolio rebalancing hypothesis, risk aversion and the associated decline in liquidity in the stock market from a shock encourages investors to sell high risk assets in search for quality (Chordia et al., 2005; Baur and Lucey, 2009).

To test for investor induced contagion, we use the Dynamic Conditional Correlation (DCC) EGARCH to test the wealth effect versus portfolio rebalancing hypothesis on stock index and benchmark bond yield data at different times to maturity for the UK, US, France, Germany, Spain and Italy. A key feature of this approach is that proxies of credit market liquidity conditions and investor risk aversion are modelled within the conditional mean as the means of investigating the transmitting effects of both risk barometers on the transmission channel of the stock-bond relationship. The appealing feature of this framework is that we propose an asymmetric DCC estimator along the lines of Cappiello et al. (2006) that allows for conditional asymmetries to govern the dynamics of the stock-bond relationship. Additionally, we introduce a DCC(Z)-EGARCH risk factor model using interactive dummy variables on DCC estimates to identify whether the wealth effect and portfolio rebalancing hypothesis is sensitive to credit market stress and risk aversion under different market conditions. As a result, this allows us to draw fruitful conclusions on the drivers that cause a crisis to spread within a country and across borders.

In brief, we report that stock-bond correlations strengthened considerably during the banking crisis for all countries. The increase in correlation is consistent with the investor induced contagion hypothesis caused by the wealth effect. However, for stock-bond correlations involving Spanish and Italian bonds, we report a dramatic decline in correlation and diminishing investor induced contagion immediately after the banking crisis up to 2009. However, for both countries' stock-bond relationships, we report investor induced contagion sourced by the portfolio rebalancing effect throughout the sovereign debt crisis from 2010 to 2012. The inclusion of proxies for credit market liquidity conditions and investor risk aversion reveals further interesting results. We find that high levels of risk aversion magnify investor induced contagion sourced by the wealth effect during the banking crisis and by portfolio rebalancing effects during the debt crisis for correlations involving Spanish and Italian bonds. Despite this, the manifestation of investor induced contagion due to risk aversion is countered by the opposite effects of changes in credit market conditions, a finding that is not necessarily limited to crisis periods.

This paper makes a number of contributions to the literature. Firstly, this study is the first to our knowledge to formally test the wealth effect versus portfolio rebalancing hypothesis on stock-bond relationships as a transmission mechanism that could explain how the banking crisis and sovereign