



On the intensity of liquidity spillovers in the Eurozone[☆]



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ABSTRACT

This paper seeks to elucidate dimensions and directions of the liquidity spillover phenomenon in the Eurozone equity markets during the global financial crisis of 2007–2008. The research examines questions relevant to the shift-contagion in the Eurozone countries during the time of crisis, as well as the role of a liquidity channel of transmission relaying external shocks among those countries. The findings document the existence of non-linearities in the transmission mechanisms across selected markets; we use a structural model introduced by Favero and Giavazzi (2002) while controlling for interdependence. The result is in line with the crisis-contingent theories that suggest transmission of shocks through an endogenous liquidity channel. Furthermore, we notice a pattern of liquidity spillover from small markets to the German, French, Italian and UK markets even after controlling for monetary policy shocks, and we confirm the persistence of liquidity co-movements, supporting the argument that financial contagion in the Eurozone market was transmitted and intensified via the liquidity channel.

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1. Introduction

Financial crisis events are known to spread rapidly across the globe, further destabilizing financial markets and leading to ever more serious ramifications. Examples include the Mexican peso collapse of 1994, which impacted multiple Latin American countries; and the Thai crisis of 1997, which started in a number of Asian nations but then was transmitted to other developing nations including those of Latin America. Russian default in 1998 and the subsequent fall of LTCM resulted in

the collapse of a number of financial institutions throughout the world. This turmoil in financial markets—which shook the markets' stability—was accompanied by a substantial decline of market liquidity across several related and unrelated markets, all witnessing a surge of participants toward safe and liquid assets (the flight-to-quality effect). In this critical economic circumstance national banks and the Bank of International Settlements seek to understand the main drivers of market liquidity in order to develop effective preventive policies for the future.¹

The recent 2008 global financial crisis (GFC) has put a heavy burden on the European countries (EU), especially the Eurozone nations (or the Euro Area (EA)) in general. In fact, the GFC has revealed severe shortcomings in the overall economic system, some of which are due to fundamental structural weaknesses. Moreover, at the market level, we witness that liquidity in the major stock markets diminishes as a

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¹ See the reports by the Bank of International Settlements (1999a), (1999b).

precursor to crisis in the global economy. The European market is not immune to liquidity shortage, given the number of countries being forced to take dramatic measures to support the long-term health of their economies (e.g. Portugal, Ireland, Italy, Greece, and Spain). In 2009, real GDP dropped by 4.2% in the EU and by 4.0% in the EA: e.g. 18% in Latvia to 1.7% in Poland. The unemployment rate rose above 9.0% in the EA, with Spain showing a double figure, and inflation averaged 0.3% for the whole EA. The European Commission simulated the effect of the crisis as it began to unfold and suggested that potential growth in the EA could be contracted by half, from 1.3–1.6% in 2008 to 0.7–0.8% in 2009–2010² (see e.g. European Commission (2009)). The GFC has not only led to worldwide recession, unemployment, macro-economic imbalances, and banking sector problems, it has also put the limelight on the underlying microstructure foundations and liquidity discrepancies within each nation and in relation to other EA countries, supporting the “wake-up call” hypothesis and the need for more stable markets (Bekaert, Ehrmann, Fratzscher, and Meh (2012); Sgherri and Zoli (2009); Van Rijckeghem and Weder (2001); Bernanke, Gertler, and Gilchrist (1996)).

Contagion/spillover phenomenon literature has proven to be helpful given the state of the financial market and greater global economy, because shocks may be transmitted from one nation to another via real and financial linkages.³ Though the trade links have a crucial role in explaining contagion and spillover phenomena in the EA during the GFC, they cannot explain all forms of propagation (Bekaert, Harvey, and Ng (2005)). The degree of financial market integration is an important link in explaining the spillover of a financial shock in one nation to the economy of another country. For instance, financial crisis can be spread through a reduction of capital flows in the form of FDI, but the banking channel can also influence and propagate the crisis. If we are in a situation with one international bank playing a key lending role in two or more countries, when its position weakens because of a shock in one nation, it may revise or reduce its overall risk exposure by restricting credit elsewhere, which may trigger a spillover effect from the financial sector to real sectors.⁴

The present study examines two major research questions: What is the role of the liquidity channel of transmission of external shocks and spillovers among the EA countries?⁵ Is there a shift-contagion in the Eurozone countries during a global financial crisis?⁶ Given the differences among the economic states of the multiple countries in the EA plus the UK, one would assume a priori that the intensity of liquidity during the GFC differs. In that context, to our knowledge none of past studies have provided an empirical procedure to capture the effect of the GFC and estimate its dynamic spillover effect on returns and liquidity of the EA countries, thus indirectly our paper connects two strands of

² Some estimates suggest an increase in the share-age-related spending of 4.4% of GDP from 2010 to 2050, which will enhance this share to about 28% of GDP (European Commission (2009)).

³ The terms “contagion” and “spillover” are used interchangeably in this study. The World Bank website defines contagion as transmission of shocks to other countries or the cross-country correlation beyond any fundamental link among the countries and beyond common shocks. Yet in the finance literature, the term “shift-contagion” is used more precisely to mean “a significant increase in cross-market linkages after a shock” (see e.g. Claessens and Forbes (2001)). Also, Bekaert et al. (2005) identified contagion as “excess correlation”—that is, cross-country correlations of the model residuals during crisis episodes.

⁴ Lane and Milesi-Ferretti (2005) show that the EA is second after the US in terms of portfolio equity investment, and they find that the EA stock market is biased toward Euro-area nations, especially those with whom there is bilateral trade in goods and services.

⁵ These questions are essential if we are to capture the nature and extent of liquidity spillovers among Euro-area nations as well as spillovers between Euro-area and non-Euro-area countries (the United Kingdom, UK).

⁶ Though the empirical design of some of our empirical examination used the VAR causality test which can only aim at the question of the casual relationship between liquidity series in different EA countries, our main focus is to examine via various methods the importance of liquidity channel and its role—if any—in the transmission of external shocks among the EA countries.

Table 1
Descriptive statistics of return stock markets.

	Mean	Median	Std. dev.	Skewness	Kurtosis	J-B
AUS	0.00143	0.0043	0.0357	−0.857	9.3	836.7***
BEL	−0.00028	0.0031	0.0331	−0.452	7.47	407.8***
FIN	−0.00088	0.0018	0.0407	−0.407	4.9	83.87***
FRA	−0.00085	0.0020	0.0335	−0.262	5.55	133.7***
GER	−0.00001	0.0041	0.0368	−0.287	5.45	124.2***
IRL	−0.00153	0.0035	0.0368	−0.717	7.15	378.2***
ITA	−0.00140	0.0024	0.0337	−0.506	5.94	190.0***
NETH	−0.00119	0.0030	0.0371	−0.481	6.73	291.5***
POR	−0.00041	0.0024	0.0265	−0.993	8.68	709.2***
SPA	0.00015	0.0043	0.0321	−0.859	8.9	741.9***
UK	−0.00089	0.0012	0.0304	−0.286	6.56	255.4***

Notes: The symbols ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

J-B is the statistic of the Jarque and Bera (1980) normality test.

the literature. The first focuses on the market microstructure literature on liquidity, as we intend to show the relevance of the behavior of the stock market and how it is linked to macroeconomic understandings (e.g. Naes, Skjeltorp, and Odegaard (2011); Longstaff (2004); Harvey (1988); Levine and Zervos (1998); Levine (1991)). The second strand is the economic literature, notably those studies related to the contagion and spillover phenomenon and particularly under a common currency (e.g. Euro currency and the Eurozone equity markets) (e.g. Askari and Chatterjee (2005); Von Hagen and Neumann (1994); Layard et al. (1981); Danthine, Giavazzi, and Von Thadden (2000); Buitert (1999)).

The rest of this paper is structured as follows. The second section looks at the relevant related studies and provides a meticulous background to show the basis of our exploratory research questions. The third section discusses the data collection method and definitions of the measures we use, provides sources of the data, and offers some descriptive statistics. The fourth section outlines the econometric framework and tests for the cross-market linkages (through the liquidity channel) between the European stock markets after the US subprime crisis; while the fifth section presents the empirical method and tests for the presence of liquidity shift-contagion (or lack thereof) in light of frameworks proposed by Rigobon (2003) and by Favero and Giavazzi (2002). Finally, the sixth section contains the conclusion and future research.

2. Related studies and background

It is well documented and commonly stated that the financial transmission channels dominate other channels (e.g. trade and commodity) across all nations; yet other channels are only significant for some countries with a high degree of trade partnership (see e.g. Benelli and Ganguly (2007); Forbes and Rigobon (2002); Hoggarth and Sapporta (2001)). The traditional analysis of the transmission of shocks identifies the trade channel as the main source of spillovers (trade financing)⁷ (see also Keppel and Worz (2010)). The financial channels appear to be rather weak if one excludes the role of financial variables, as did early studies that omitted them from their analyses. However, financial variables including liquidity contain additional explanatory power to predict business cycles, as recent studies have confirmed (see e.g. Naes et al. (2011); Smimou (2014)). The original shock of the GFC was financial in nature, thus the financial variables serve to satisfactorily explain further transmission of this contraction and the process of magnifying global economic interactions. In fact, liquidity has acted as a potent spillover of recession across the globe, including the Eurozone.⁸

⁷ Alun (2009) stresses that trade is usually financed via short-term credit lines, which are cut back during times of crisis.

⁸ Here we should ignore the strong interaction that exists between financial channels and trade channels given the fact that trade will be enhanced in the presence of strong liquid capital markets, as in many instances trade requires availability of trade financing that is free from short-lived restrictions. Thus, it is very difficult to disentangle the various channels at play during the global financial crisis.

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