



## Fair value disclosure, liquidity risk and stock returns



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### ABSTRACT

This paper aims to investigate the impact of company liquidity risk on the stock prices of financial and non-financial companies by analyzing investors' reactions to 106 crisis events over the period from 2008 to 2010. Companies' liquidity risk shows up in the three levels of fair value information (level 1-mark to market, level 2-market observable input and level 3-mark to model) disclosed in their balance sheets, with level 3 illiquid assets representing a greater liquidity risk and resulting in a greater company liquidity risk. The role played by liquidity risk information in investors' decision-making is explored by analyzing their reactions to liquidity-constraining events, capital injections and bank bailouts for 313 European companies. The empirical evidence is based on the fixed effects model and *Partial Least Squares* regressions. These findings demonstrate that investors' reactions to the crisis events are affected by the liquidity risk conveyed by the levels of fair value hierarchy in both financial and non-financial firms. During liquidity-constraining events, investors have stronger negative reactions to companies with more level 3 illiquid assets and liabilities on their balance sheets. During liquidity-expanding events, investors react more positively to companies with more illiquid assets.

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### 1. Introduction

The period from 2007 to 2010 featured major economic upheavals that have profoundly affected the financial industry. Rare negative events with high economic impact have occurred. These events have led to high volatility in the financial markets, leading to losses and spreading a fear of a depression among investors comparable to that of 1929. This framework provides an opportunity to deepen our understanding of the relationship between the information disclosed by companies to the markets on fair value assets/liabilities held on their balance sheets and stock returns during crisis events.

According to international accounting standards (IAS 39 and IFRS 7), the value of financial securities is determined using the *fair value* principle, by which asset values are assessed using three valuation methodologies (Fair Value Hierarchy). The first of these is the market price, where the security is listed in a liquid and active market (*mark-to-market* or 1st level). If the market price is not available, then the fair value of the security is estimated using the price of a similar financial instrument listed in a liquid and

active market, or by referring to the price of a recent comparable transaction between knowledgeable and willing parties (*similar transaction* or 2nd level). In the event that such information is unavailable, the fair value can be estimated using financial and statistical models of common acceptance (*mark-to-model* or 3rd level). This approach may require the use of assumptions not entirely disclosed to investors, and leads to greater information asymmetry between the firm and financial markets.

By defining liquidity risk as the inability to sell assets on the market for a "foreseeable price" (*asset liquidity risk*) (Brunnermeier and Pedersen, 2009), Level 1 of the *Fair Value Hierarchy* appears to be the most liquid asset class, as it is composed of assets/liabilities with values based on their market prices. In contrast, the value of securities included in level 3 of the *Fair Value Hierarchy* is estimated through financial models, resulting in assets/liabilities with higher liquidity risk. The higher the level 3 amounts are, the greater the assets' liquidity risk will be and, therefore, the higher the total liquidity risk of the company (Brunnermeier and Pedersen, 2009). If the relationship between liquidity risk and fair value disclosure exists, then during a liquidity contraction in the financial markets, investors will tend to penalize illiquid companies (i.e., those with high percentages of level 3 assets) (Lev and Zhou, 2009). This increased uncertainty should generate a negative impact on company value. In an efficient financial market, this

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would be reflected in stock prices. Therefore, a high level of liquidity risk may lead to a decline in corporate stock prices. This could explain the price decrease that occurred during the financial crisis for companies where assets and liabilities became illiquid and investors decided to no longer include the stocks of illiquid companies in their portfolios.

The aim of this paper is to investigate the impact of company liquidity risk on the stock prices of financial and non-financial companies by analyzing investors' reactions to key crisis events during the period from 2008 to 2010. The firm liquidity risk is measured by the three levels of fair value information (level 1-mark to market, 2-market observable input and 3-mark to model) disclosed on the balance sheet. The presence of level 3 illiquid assets and liabilities represents a greater asset liquidity risk and therefore a higher company liquidity risk. The effect of liquidity risk information on investors' decision-making is explored by analyzing their reactions to 106 events with liquidity-constraining and liquidity-expanding effects for European financial and non-financial companies. This analysis will indicate whether firm liquidity risk as conveyed by the fair value hierarchy affected investment decisions during the crisis. Building on the analysis of Lev and Zhou (2009), this paper investigates investors' reactions to crisis events during the period between February 17th, 2008 and June 22nd, 2010. This study uses data collected on the fair value disclosures of 313 European financial and non-financial companies under IAS 39 and IFRS 7 (for the list of companies, see Table A1 in the Appendix).

In the analysis, 106 liquidity crisis events were classified as follows: 14 *Distress/Liquidity-Constraining Events*, 26 *Bank Bailout Events* and 66 *Capital Injection Events*. In this classification, the *Capital Injection* group consists of events that signal expanded liquidity across the economy, while *Distress Events* signal constrained liquidity. The *Bank Bailouts*<sup>1</sup> group consists of events in which financial institutions have been financially helped or bailed out by governments or other financial institutions with the aim of stabilizing the financial system. The second group, *Distress Events*, consists of episodes related to the failure or financial trouble of financial firms, increases in interest rates by Central Banks (such as the ECB rate increases on July 3, 2008) and the expiration of guarantee programs for monetary market funds (such as the expiration of US guarantee program on September 18, 2009). The third group, *Capital Injection Events*, includes announcements of liquidity injections into the financial markets and interest rate cuts by major Central Banks (e.g., ECB, FED, Bank of England), and government policies and legislative actions by major governments intended to address the crisis.

We applied cross-sectional regressions of the event group returns<sup>2</sup> on the levels of fair value assets and liabilities,<sup>3</sup> along with control variables, using all 106 events registered in the investigated period. Using fixed effects models and a non-parametric methodology (PLS), this paper demonstrates a complex reaction to the liquidity risk information conveyed by the three fair value levels. The liquidity risk information captured by the three fair value levels affects investors' reactions to the crisis events.

We improve upon the existing literature in several ways. First, differently from Lev and Zhou (2009), these findings demonstrate a negative reaction by investors to bank bailout events, especially for banks with higher degrees of liquidity risk and higher leverage. Second, this analysis is based on a large database of crisis events over a longer period of time, allowing us to investigate investors' reactions for both financial and non-financial firms in the European financial markets. We also investigate the effect of

recording liabilities at fair value, a topic that has received little attention in the mainstream research. Finally, the findings are based on partial least squares regressions in addition to the traditional fixed effect models.

The paper is structured as follows. Section 2 surveys the most relevant literature. In Section 3, the hypotheses are stated. Section 4 describes the data. Sections 5 and 6 are devoted to measuring investors' reactions to crisis events. In particular, the groups of crisis events and the cumulative abnormal returns (CARs) are introduced. Section 7 provides the results of the empirical analysis, and Section 8 presents the conclusions.

## 2. Literature review

This paper is mainly related to three broad strands of the literature on financial firms: event studies investigating the impact of policy interventions on stock prices, value-relevance studies of fair value information and market discipline.

The first strand focuses on the stock market reaction to regulatory events, especially during the financial crisis. Several papers (Bomfin, 2003; Veronesi and Zingales, 2010; Elyasiani et al., 2011; Rangel, 2011; Fiordelisi et al., 2014; Pennathur et al., 2014) have investigated the effects of policy interventions on companies' stock prices. For instance, Veronesi and Zingales (2010) examined the costs and benefits for investors of the U.S. government plan that injected equity into nine U.S. commercial banks. These authors conducted an event study of bonds and common equity value around the date of the planned infusion, concluding that the government intervention reduced the enterprise value by 2.5%. In contrast, Elyasiani et al. (2011) examined the market reactions to TARP capital infusions and found that investors reacted positively to the news of injections but negatively to the news of capital injections through non-TARP programs.

Pennathur et al. (2014) investigated the effects of policy interventions during the financial crisis on several types of institutions (banks, insurance companies, savings and loan associations and REITs). They demonstrated that the interventions were wealth-decreasing and risk-increasing events for financial institutions. In particular, they found that seven of the nine interventions events elicited highly significant negative market reactions. Semaan and Drake (2011) noted a decrease in the market risk for firms following deregulation, expected in the case of insurance brokers.

Fiordelisi et al. (2014) analyzed the effect of monetary policy interventions on the stock returns of 27 Globally-Systemically Important Financial institutions (G-SIFIs) throughout the period from June 1st, 2007 to June 30th, 2012. Using cumulative abnormal returns around the announcement of each monetary policy intervention, they found that non-conventional monetary policy measures (liquidity support or monetary easing decisions) have been more effective than traditional measures (interest rate cuts) in restoring the stability of the banking system. In addition, they observed positive CARs around expansionary monetary policy actions, while policy inaction and restrictive measures had negative effects on bank stock prices.

The second strand of the literature relevant to this paper is value-relevance studies, which examine the effects of the use of market prices for asset and liability pricing and the value-relevance of fair value information. Starting in the early nineties, most researchers focused primarily on the value-relevance of fair value (Barth, 1994; Barth et al., 1995, 2001; Eccher et al., 1996; Holthausen and Watts, 2001). Barth (1994) supported the existence of a strong relationship between fair value information and stock prices and believed that banks' stock price changes can be measured using the securities at market

<sup>1</sup> As previously asserted by Lev and Zhou (2009), *Bank Bailouts* indirectly signal expanded liquidity across the economy.

<sup>2</sup> We run separate regressions for each group of events.

<sup>3</sup> For the list of variables, see Table A2 in the Appendix.

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