



# Regulation of capital flows: Effects on liquidity and the role of financial reporting quality

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## ABSTRACT

Capital controls as restrictions on capital flows are a tool proposed as a cure to the destabilizing market movements of the 1970s (i.e., Tobin, 1978) despite the criticism that they have received (Edwards, 1999). Capital controls resurfaced during the European Financial Crisis and the restrictions imposed on capital flows in Cyprus and Greece. These were the first instances of capital control implementation in the European Union's history and had various effects on firms' financial positions. By using a sample of EU countries and distinguishing between austerity and capital controls periods, we assess the effects of capital controls on the stock liquidity of firms. All of the sample countries have a common financial reporting framework (International Financial Reporting Standards -IFRS), and some of them implemented a range of different measures from less intensive, such as increases in tax rates, to more intensive, such as the enforcement of capital controls, in their effort to stabilize their economies. For the task at hand, we specifically engage two accounting determinants of information asymmetry, namely, conditional conservatism and the level of earnings management. Our results show that financial reporting quality as measured by higher conditional conservatism and lower earnings management is beneficial for liquidity. However, during the capital controls period, the relation between conditional conservatism and liquidity becomes negative, and this negative relation relates to less risky firms. Thus, the negative relation between conditional conservatism and liquidity is likely due to investors keeping more conservative firms in their portfolios as a measure against the crisis.

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## 1. Introduction

The European Financial Crisis, which started as a debt crisis and continued as a generalized financial crisis, had a significantly more adverse impact on a number of South-European countries in relation to the rest of the Eurozone countries. The inability of these countries to borrow money through the markets due to escalating interest rates led to a number of measures that were targeted at limiting the negative effects of the crisis. These measures ranged from increases in tax rates or decreases in wages and pensions to restrictions of capital flows (Cyprus in 2013 and Greece in 2015). These circumstances were the first in which an extreme measure such as capital controls was used in the European Union, which certainly had

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an impact on the capital flows of the firms domiciled in the affected countries. The present study attempts to examine how such regulations on capital flows may help an economy to break free from the crisis downward spiral. To this extent, we emphasize the usefulness of financial reporting quality as a protecting mechanism against the crisis and underline the presence of the “flight to quality” phenomenon.

Capital controls were devised as a measure of fiscal policy to limit market turbulence. For example, Tobin (1978) proposed the use of an international uniform tax on foreign exchange transactions (Edwards, 1999). These measures were particularly common until the 70s (Johnson and Mitton, 2003). However, due to the continuous effort by institutions such as the IMF for more liberalized emerging markets, the use of capital controls was reduced until the Asian Crisis (Bhagwati, 1998). Therefore, despite the controversy around the usefulness of capital controls (Edwards, 1999), there is a tendency of using these measures as a final solution during a financial crisis from a macroeconomic perspective (Krugman, 1998). For example, during the Asian Crisis, Malaysia used capital controls as a measure of reducing the effects of the crisis (Johnson and Mitton, 2003). Moreover, in the European Union, the financial crisis that affected the countries of the South and in particular, Cyprus and Greece, also led to the implementation of capital control measures to limit the drain of their banking systems.

However, the implementation of capital controls on capital flows has a number of negative side effects on the economy. Firms face cash liquidity problems, which lead to problems in production due to limited access to imported raw materials and problems due to the increase of accounts receivable. Apart from these first-order effects on firms, a limitation on capital flows also affects the stock market due to decreased market liquidity. As Levine and Zervos (1998a) argue, market liquidity increases after the liberalization of markets, and given that liquidity is an indicator of long-run GDP growth (Levine and Zervos, 1998b), it can be asserted that the negative impact of capital controls on market liquidity should also have a negative impact on the real economy.

Under these conditions, investors may choose to rebalance their portfolios by resorting to safer investments. Such a phenomenon has been termed as “flight to quality” and is related to transferring to less-risky investments (Caballero and Kurlat, 2008). Put differently and from a capital market perspective, investors seek to sell riskier securities and retain less-risky securities to protect their investments from the turbulence in the market. Chen et al. (2018a) show that a critical factor for investors to resort to safer investments during a turbulent period is the financial reporting quality of the firms so that their securities are considered as prospective investments. Under these circumstances, it is highly important to discover the factors that play a role in this procedure and provide investors with valuable information for decision making. In turn, these factors, such as financial reporting quality, may be critical in reducing the negative impact of capital controls.

In this study, we attempt to provide evidence on the effects of the enforcement of regulation on capital flows. We specifically target liquidity and uncover the role of the financial reporting quality of firms in the market in limiting the negative impact of capital controls. Liquidity is chosen as our dependent variable because it is important since it is directly affected by restrictions in capital flows and is a good proxy for the well-being of a firm. Moreover, liquidity has been found to predict growth and productivity (Levine and Zervos, 1998b), and it may also reflect decreases in information asymmetry (through higher quality financial disclosures; Graham et al., 2005) and the cost of equity capital (Butler et al., 2005).

Our main research motivation is to examine the presence of the “flight to quality” phenomenon as a response to the effects of capital controls on capital flows and to trace the factors that limit their adverse impact on the stock market with specific attention on financial reporting quality. The first research question of the study is how efficient are capital controls especially after a prolonged period of austerity measures that have also taken a toll on the economies under investigation. As Edwards (1999) notes, capital controls lead to an increase in the cost of capital, and the countries that intend to enforce them as a countermeasure to a crisis should carefully analyze their impact on the cost of capital. In this respect, the implementation of capital controls as a final measure to protect the economy from a deterioration of the banking crisis may generally lead to adverse effects on firms and specifically lead to a more vertical downward spiral of the economy rather than alleviating any of the crisis problems. For the task at hand, we base our methodological analysis on market liquidity as the main variable of interest and use a research framework that enables us to disentangle the effects of austerity and capital controls on market liquidity.

The second research question originates from the expected effects of capital controls on the cost of equity (Edwards, 1999) and in turn information asymmetry. Because financial reporting quality has been found to decrease information asymmetry and to thus decrease the cost of equity, we examine whether financial reporting quality decreases any (negative) impact of the capital controls on liquidity. To answer this question, we focus on two accounting characteristics that proxy for financial reporting quality, namely, conditional conservatism and earnings management. Conditional conservatism is found to be negatively related to information asymmetry (i.e., Guay and Verrecchia, 2018), while earnings management is found to be positively related to information asymmetry (i.e., Richardson, 2000). Our target is to assess whether financial reporting quality plays a limiting role in the exacerbation of any negative effects due to the enforcement of capital controls.

The purpose of this study is to analyze the impact of capital controls and any favorable effects of financial reporting quality by using a sample of the firms domiciled in Eurozone countries that were forced to take harsh measures that range from a number of austerity measures (Cyprus, Greece, Ireland, Italy, Portugal and Spain) to even final solution-type measures such as capital controls (Cyprus and Greece). The sample has a number of interesting characteristics. First, it represents the countries that were hit by the financial crisis with different severities at different time periods. Specifically, one of the countries, Cyprus, implemented limitations on capital flows in 2013, while another country, Greece, took a number of very harsh austerity measures, which eventually led to the enforcement of capital controls in 2015. Moreover, Portugal and Spain were also affected by the crisis and sought the help of institutions (the ECB, the IMF and the EC), while Italy had to also

take a number of austerity measures. This setting enables an assessment of the effects of the crisis on liquidity from its less to its more severe stages.

Second, all of these countries have a common financial reporting framework (IFRS). Therefore, any financial reporting measures that are found to relate to reductions in the severity of the financial crisis should be because of the ability of these measures to act as protecting mechanisms, and not because of differences in financial reporting. In this respect, the sample offers a research setting where we can examine the effects of financial reporting quality on limiting the negative effects of capital controls.

The results of the study indicate a negative relation between austerity and liquidity, which becomes even larger during the capital controls period for the affected countries. Moreover, we find a positive relation between conditional conservatism and liquidity, which changes to negative during the austerity and capital controls periods. An additional analysis shows that these findings are likely related to the “flight to quality” phenomenon, where investors resort to less-risky investments as a countermeasure to the crisis effects. This result is manifested as investors keeping firms of higher financial reporting quality in their portfolio, which, in turn, leads to less liquidity for these firms. However, we have some indications that earnings management is negatively related to liquidity. Thus, the empirical analysis of the study implies that capital controls may have profound effects on information asymmetry, which in turn reduces liquidity. As a consequence, investors turn their attention to conditionally conservative firms as a last resort against these harsh fiscal measures. These results should be useful especially for regulators that consider capital controls as a measure of final defense against a financial crisis, due to showing that capital controls may have a (positive) impact on information asymmetry.

The remainder of this study is organized as follows. [Section 2](#) provides a literature review and develops the research hypotheses. [Section 3](#) develops the model, [Section 4](#) describes the data and [Section 5](#) analyzes the empirical results. Finally, [Section 6](#) concludes the study and offers implications for future research.

## 2. Literature review and research hypotheses

The free flow of capital (capital mobility) has been at the center of a debate regarding its merits and its role in increasing financial vulnerability ([Edwards, 2007](#)). On the one hand, some supporters of restricting capital mobility underline the role of capital control in the Asian Crisis in Malaysia and contend that capital controls helped in reducing the negative outcome of the crisis and enabled the country to achieve growth faster ([Kaplan and Rodrick, 2002](#)).

On the other hand, [Chanda \(2005\)](#) argues that from a long-run perspective, the enforcement of capital controls had a negative impact on growth for more than half of the countries that employed them. [Levine and Zervos \(1998a\)](#) also provide evidence for the likely negative effects of capital controls on the real economy. The authors argue that market liquidity increases after the liberalization of markets. Therefore, since liquidity can be considered to be a long-run GDP growth proxy ([Levine and Zervos, 1998b](#)), it can be argued that the negative impact of capital controls on market liquidity should also have a negative impact on the real economy. Therefore, market liquidity seems to be a good candidate for a proxy of the well-being of firms because it summarizes key information about a firm’s growth and productivity ([Levine and Zervos, 1998b](#)), decreases information asymmetry (through higher quality financial disclosures; [Graham et al., 2005](#)) and decreases the cost of equity capital ([Butler et al., 2005](#)).

[Balakrishnan et al. \(2015\)](#) examine the effects of the liberalization of financial markets on the cost of equity capital. By liberalization, the authors mean the removing of capital controls on foreign investors so that they can invest in the domestic firms of a country. The authors find that the liberalization of financial markets leads to decreases in the cost of equity capital (see also, [Chinn and Ito, 2006](#)). However, this decrease is economically larger for the firms domiciled in countries with lower political risk, better institutions and a more positive attitude towards investments. Moreover, [Chinn and Ito \(2006\)](#) argue that the liberalization of the market may lead to lower information asymmetry. Therefore, it is expected that the enforcement of capital controls leads to opposite results than liberalization and specifically leads to an increase in information asymmetry and the cost of equity capital. [Edwards \(1999\)](#) argues that the enforcement of capital controls as a countermeasure to a crisis should be chosen after carefully considering the effects on the cost of capital. This is due to the fueling effect that the enforcement of capital controls may have on the already severe consequences of the financial crisis.

Our first set of research hypotheses concerns the effect of austerity and capital controls on market liquidity during the austerity and capital controls periods. Moreover, the hypotheses regard the additive effects of the enforcement of capital controls on an economy that has suffered a severe financial crisis and uses them as a final measure. That is, we seek to examine the incremental economic consequences of capital controls on firms by controlling for the effects of austerity. Therefore, the first set of research hypotheses is formulated as follows.

**H<sub>1A</sub>**- The enforcement of austerity measures leads to lower market liquidity.

**H<sub>1B</sub>**- The enforcement of capital controls leads to lower market liquidity.

**H<sub>1C</sub>**- Capital controls have incremental negative effects on liquidity in relation to austerity.

Conditional conservatism has long been found to relate to decreases in information asymmetry and to decreases in the cost of equity capital (i.e., [Garcia Lara et al., 2011](#)). In this respect, conditional conservatism has been found to relate to higher financial reporting quality ([Ball and Shivakumar, 2008](#)). By assuming that increases in conditional conservatism lead

to decreases in information asymmetry, we expect that firms with a high level of conditional conservatism face less information asymmetry due to the enforcement of capital controls, and, in turn, they have higher market liquidity. However, as Vayianos (2004) shows, during periods of high-volatility, risk-averse investors may resort to less risky investments. This phenomenon, which has been termed as “flight to quality”, leads to the assertion that investors may seek firms with higher financial reporting quality to invest. In this vein, Chen et al. (2018a) show that during periods of political instability, which are characterized by higher volatility, fund managers turn to firms with higher financial reporting quality because they are less-risky. Chen et al. (2018b) also find that during period with political uncertainty information asymmetry increases, while Baloria and Mamo (2017) find that analysts’ forecast accuracy decreases during period of political uncertainty. Moreover, Yung and Root (2019) find that political uncertainty is also related to higher earnings management. Given the positive relation of earnings management with information asymmetry the results of the study of Yung and Root (2019) point towards the positive relation between information asymmetry and political instability. Since conditional conservatism has been found to relate to higher financial reporting quality due to lower information asymmetry, we expect that managers resort to more conservative firms during periods of instability such as austerity and capital controls periods. As a result, investors keep a higher percentage of conditionally conservative firms in their portfolio, and the stock liquidity of these firms decreases. Therefore, our second set of research hypotheses involves the effects of conditional conservatism on liquidity and is formulated as follows:

**H<sub>2A</sub>.** Conditionally conservative firms have higher market liquidity;

**H<sub>2B</sub>.** Conditionally conservative firms have lower market liquidity during more unstable periods.

Some authors propose that institutions are one of the factors that affect the efficiency of capital controls. Specifically, Johnson and Mitton (2003) argue that political connections and the presence of cronyism played a role in Malaysia during the Asian Crisis and the enforcement of capital controls in Malaysia; however, after the enforcement of capital controls, firms with political connections managed to have a better performance. According to Johnson and Mitton (2003), these results provide support to the argument of Blanchard (2000) who pinpoints the importance of the short-run effects of institutions for macroeconomic dynamics.

A similar finding about the importance of incentives in the implementation of regulation has also emerged in the accounting literature. Ball et al. (2003, see also, Ball, 2006) argue that the existence of incentives may affect the implementation of accounting standards. Accordingly, it can be assumed that the existence of incentives for the preparers of financial statements to engage in earnings management may also be manifested during the capital controls. In such instances, earnings quality will decrease and will lead to higher information asymmetry. That is, it is expected that incentives for earnings management may be affected by the enforcement of capital controls, and, in turn, earnings will become more opaque. However, a lower earnings quality will lead to information asymmetry and, in turn, will also negatively affect liquidity. Thus, the third research hypothesis is formulated as follows:

**H<sub>3</sub>.** The market liquidity of firms with higher earnings management is more affected by capital controls.

### 3. The model

The model of the study expresses the illiquidity proxy as a function of a number of variables based on opacity and conditional conservatism, a number of binary variables that are a proxy for the austerity and capital controls periods and a number of control variables used in previous studies. Therefore, before the development of the main model, we present the models used to compute the conditional conservatism and the earnings management measures. Specifically, for the estimation of the level of conditional conservatism, we use the methodology of Khan and Watts (2009), which is based on the Basu (1997) model. In particular, the first step is to estimate the following regression for each quarter following Tan (2013):

$$\begin{aligned} \frac{EPS_{i,t}}{Pr_{i,t-1}} = & \alpha_0 + \alpha_1 DT_{i,t} + \alpha_2 Ret_{i,t} + \alpha_3 DT_{i,t} \times RET_{i,t} + \alpha_4 MC_{i,t-1} \\ & + \alpha_5 Lev_{i,t-1} + \alpha_6 MtB_{i,t-1} + \alpha_7 DT_{i,t} \times MC_{i,t-1} + \alpha_8 DT_{i,t} \times Lev_{i,t-1} \\ & + \alpha_9 DT_{i,t} \times MtB_{i,t-1} + \alpha_{10} Ret_{i,t} \times MC_{i,t-1} + \alpha_{11} Ret_{i,t} \times Lev_{i,t-1} \\ & + \alpha_{12} Ret_{i,t} \times MtB_{i,t-1} + \alpha_{13} DT_{i,t} \times Ret_{i,t} \times MC_{i,t-1} \\ & + \alpha_{14} DT_{i,t} \times Ret_{i,t} \times Lev_{i,t-1} + \alpha_{15} DT_{i,t} \times Ret_{i,t} \times MtB_{i,t-1} + v_{i,t} \end{aligned} \quad (1)$$

where  $DT$  is a binary variable that takes the value of 1 if a firm  $i$  has a negative stock return in quarter  $t$  and is zero otherwise,  $Ret$  is the stock return of firm  $i$  at quarter  $t$ ,  $MC$  is the logarithm of market capitalization that acts as a proxy for the size of firm  $i$  at quarter  $t$ ,  $Lev$  is the leverage ratio calculated as the ratio of long-term liabilities to total assets for firm  $i$  at quarter  $t$ ,  $MtB$  is the market-to-book ratio for firm  $i$  at quarter  $t$  and the rest of the variables are cross-terms between the main variables (the Appendix presents the definitions for each variable). In the second step, the firm-specific conditional conservatism measure is estimated as follows based on the aforementioned variables and the coefficients of  $\alpha_3$ ,  $\alpha_{13}$ ,  $\alpha_{14}$  and  $\alpha_{15}$  estimated from Eq. (1):

$$C\_Score_{i,t} = \alpha_3 DT_{i,t} \times RET_{i,t} + \alpha_{13} DT_{i,t} \times Ret_{i,t} \times MC_{i,t-1} + \alpha_{14} DT_{i,t} \times Ret_{i,t} \times Lev_{i,t-1} + \alpha_{15} DT_{i,t} \times Ret_{i,t} \times MtB_{i,t-1} \quad (2)$$

For the earnings management measure, we follow [Leuz et al. \(2003\)](#) and estimate a cumulative earnings management proxy based on firms' *EM3* and *EM4* measures. Specifically, *EM3* is the ratio of the median of absolute accruals to absolute operating cash flows estimated quarterly, while *EM4* is the ratio of the frequency of small profits divided by the frequency of small losses for every quarter. A small loss is defined as a loss between  $[-0.01, 0]$ , and a small profit is defined as a profit between  $[0, 0.01]$ . After the estimation of *EM3* and *EM4*, we rank the countries of the sample according to each measure and then estimate our *EM* measure as the mean of the ranks of *EM3* and *EM4*.

The main model of the study expresses the liquidity proxy as a function of *C\_Score*, *EM*, a binary variable denoted as *Austerity* that takes the value of 1 for Cyprus, Greece, Ireland, Italy, Portugal and Spain for the period that each country was forced to take austerity measures and is zero otherwise, a binary variable denoted as *Cap\_Controls* that takes the value of 1 for the period that Cyprus and Greece were under capital controls, the cross-terms of *Austerity* and *Cap\_Control* with *C\_Score* and *EM* and a number of control variables that follow [Chai et al. \(2010\)](#) and [Chordia et al. \(2000\)](#). The model is as follows in algebraic terms:

$$\begin{aligned} Liquidity_{i,t} = & \gamma_0 + \gamma_1 C\_Score_{i,t} + \gamma_2 EM_{i,t-1} + \gamma_3 Austerity_{i,t} + \gamma_4 Austerity_{i,t} \times C\_Score_{i,t} + \gamma_5 Austerity_{i,t} \times EM_{i,t} \\ & + \gamma_6 Cap\_Control_{i,t} + \gamma_7 Cap\_Controls_{i,t} \times C\_Score_{i,t} + \gamma_8 Cap\_Controls_{i,t} \times EM_{i,t} + \gamma_9 Trade\_Vol_{i,t} \\ & + \gamma_{10} StDev_{i,t} + \gamma_{11} Pri_{i,t} + \gamma_{12} ABSR_{i,t} + \gamma_{13} Beedles_{i,t} + \gamma_{14} Size_{i,t-1} + \gamma_{15} MTB_{i,t-1} + \gamma_{16} ROA_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

where *liquidity* is a proxy for liquidity following [Bekaert et al. \(2007\)](#) and is calculated as the proportion of zero daily returns for firm *i* at quarter *t*, *Trade\_Vol* is the quarterly sum of daily trading volatility for firm *i* at quarter *t*, *StDev\_Ret* is the quarterly standard deviation of daily returns for firm *i* at quarter *t*, *Pri* is the closing quarterly stock price for firm *i* at quarter *t*, *ABSR* is the quarterly mean of the absolute daily stock returns for firm *i* at quarter *t*, *Beedles* is a proxy for thin trading developed by [Beedles et al. \(1988\)](#); see also, [Chai et al., 2010](#)), *Size* is the logarithm of market capitalization, *MtB* is the market to book ratio and *ROA* is the return on assets ratio. In order to avoid any multicollinearity effects, due to the presence of *Size* and *MtB* in [Eq. \(1\)](#), we use them in a lagged form.

The second model aims at providing a deeper understanding of the relation among conditional conservatism, earnings management and liquidity. For the task at hand, we construct a binary variable that takes the value of 1 if a firm ranks in the lower 50% of the firms in a country by using the earnings management measure and is zero otherwise, and we estimate the following model:

$$\begin{aligned} Liquidity_{i,t} = & \gamma_0 + \gamma_1 C\_Score_{i,t} + \gamma_2 Low\_EM_{i,t} + \gamma_3 Austerity_{i,t} + \gamma_4 Austerity_{i,t} \times C\_Score_{i,t} \\ & + \gamma_5 Austerity_{i,t} \times Low\_EM_{i,t} + \gamma_6 Austerity_{i,t} \times C\_Score_{i,t} \times Low\_EM_{i,t} + \gamma_7 C\_Score_{i,t} \times Low\_EM_{i,t} \\ & + \gamma_8 Cap\_Controls_{i,t} + \gamma_9 Cap\_Controls_{i,t} \times C\_Score_{i,t} + \gamma_{10} Cap\_Controls_{i,t} \times Low\_EM_{i,t} \\ & + \gamma_{11} Cap\_Controls_{i,t} \times C\_Score_{i,t} \times Low\_EM_{i,t} + \gamma_{12} Trade\_Vol_{i,t} + \gamma_{13} StDev_{i,t} \\ & + \gamma_{14} Pri_{i,t} + \gamma_{15} ABSR_{i,t} + \gamma_{16} Beedles_{i,t} + \gamma_{17} Size_{i,t-1} + \gamma_{18} MTB_{i,t-1} + \gamma_{19} ROA_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (4)$$

where *LOW\_EM* is a binary variable that takes the value of 1 if a firm is in the lower 50% of the firms of a country based on the level of *EM* in a certain quarter and is zero otherwise. Moreover, we also use the *LOW\_VOL\_EM*, which is a binary variable that takes the value of 1 if a firm is in the lower 50% of the firms of a country based on the level of *EM* in a certain quarter and is zero otherwise and the lower 50% of the firms of a country based on the level of volatility in a certain quarter and is zero otherwise.

#### 4. The data

The sample used in the data comes from the Compustat Global database for the period of 2005–2018. Two separate samples are used. The first sample has a daily frequency and is used to compute not only the liquidity variables (the quarterly percentage of nonzero daily stock returns and the quarterly percentage of non-negative daily stock returns) but also the standard deviation of stock returns, the cumulative trading volume, the closing price, the mean of the absolute stock return and the *Beedles* measure for each quarter. For this sample, following previous studies on liquidity, we exclude penny shares, which are defined as the shares that have a value of less than one euro ([Galariotis and Giouvris, 2015](#)). In addition, one of the key measures that we use, namely, the *c-score*, is also estimated without penny stocks ([Khan and Watts, 2009](#)). However, we later relax this restriction by providing robustness checks without excluding penny stocks.

The second dataset is the main dataset of the study, which has a quarterly frequency and is used to estimate the main models. A number of filters was applied to this dataset. First, financial firms were excluded due to their different financial reporting practices. Moreover, firms with negative book values and observations that fall at the higher or lower 1% of the distribution of each continuous variable were deleted to avoid the effects of extremely poor financial performance and outliers, respectively. Last, following [Khan and Watts \(2009\)](#), we exclude firms with a stock price of less than 1 euro, but as we note above, we exclude this filter in the robustness checks section. The final sample comprises 43,921 firm-quarterly observations from 1708 firms. The definitions of the variables are presented in the [Appendix](#).

Graphs 1–2 present the quarterly sum of trading volume for the two countries that implemented capital controls for three quarts prior and after the capital controls enforcement. The graphs present some preliminary evidence on the increase of trading volume of low volatility firms after the start of the capital controls period. [Table 1](#) presents the descriptive

**Table 1**  
Descriptive statistics.

| <i>Panel A: Whole sample</i>                       |       |        |       |      |           |
|--|-------|--------|-------|------|-----------|
|  | Mean  | Median | Q1    | Q3   | Std. Dev. |
| LIQUIDITY  | 0.83  | 0.91   | 0.74  | 0.94 | 0.19      |
| C_SCORE  | 0.05  | 0.04   | −0.01 | 0.10 | 0.09      |
| EM   | 0.70  | 0.69   | 0.58  | 0.78 | 0.15      |
| TRADE_VOL  | 0.10  | 0.11   | −2.18 | 1.93 | 3.07      |
| STDEV  | 0.18  | 0.16   | 0.12  | 0.23 | 0.08      |
| PRI  | 2.53  | 2.53   | 1.33  | 3.41 | 1.38      |
| ABSR   | 0.13  | 0.10   | 0.04  | 0.18 | 0.12      |
| BEEPLES  | 0.29  | 0.00   | 0.00  | 0.98 | 0.42      |
| SIZE_Lag   | 5.68  | 5.47   | 3.76  | 6.68 | 2.05      |
| MTB_Lag  | 2.06  | 1.60   | 0.99  | 2.65 | 1.65      |
| ROA  | 0.01  | 0.01   | 0.00  | 0.02 | 0.02      |
| AUSTERITY  | 0.06  | 0.00   | 0.00  | 0.00 | 0.23      |
| CAP_CONTROL  | 0.01  | 0.00   | 0.00  | 0.00 | 0.11      |
| <i>Panel B: Only firms during opacity period</i>   |       |        |       |      |           |
| LIQUIDITY  | 0.77  | 0.86   | 0.55  | 0.94 | 0.24      |
| C_SCORE  | 0.05  | 0.05   | −0.01 | 0.13 | 0.10      |
| EM   | 0.64  | 0.64   | 0.55  | 0.71 | 0.11      |
| TRADE_VOL  | 0.50  | 0.40   | −2.24 | 2.41 | 3.01      |
| STDEV  | 0.19  | 0.17   | 0.13  | 0.24 | 0.08      |
| PRI  | 1.47  | 1.35   | 0.57  | 2.10 | 0.99      |
| ABSR   | 0.13  | 0.09   | 0.04  | 0.18 | 0.11      |
| BEEPLES  | 0.23  | 0.00   | 0.00  | 0.50 | 0.39      |
| SIZE_Lag   | 5.56  | 5.50   | 3.71  | 6.56 | 1.96      |
| MTB_Lag  | 1.43  | 1.02   | 0.63  | 1.75 | 1.26      |
| ROA  | 0.00  | 0.00   | −0.01 | 0.01 | 0.02      |
| CAP_CONTROL  | 0.20  | 0.00   | 0.00  | 1.00 | 0.40      |
| <i>Panel C: Only firms during capital controls</i> |       |        |       |      |           |
| LIQUIDITY  | 0.65  | 0.74   | 0.34  | 0.85 | 0.26      |
| C_SCORE  | 0.04  | 0.02   | −0.02 | 0.08 | 0.09      |
| EM   | 0.57  | 0.55   | 0.44  | 0.68 | 0.13      |
| TRADE_VOL  | −1.04 | −1.06  | −3.55 | 0.74 | 2.69      |
| STDEV  | 0.17  | 0.16   | 0.12  | 0.22 | 0.08      |
| PRI  | 1.43  | 1.35   | 0.49  | 2.02 | 0.90      |
| ABSR   | 0.11  | 0.07   | 0.03  | 0.14 | 0.10      |
| BEEPLES  | 0.23  | 0.00   | 0.00  | 0.50 | 0.39      |
| SIZE_Lag   | 4.87  | 4.65   | 3.42  | 5.89 | 1.74      |
| MTB_Lag  | 1.26  | 0.92   | 0.63  | 1.69 | 0.95      |
| ROA  | 0.01  | 0.01   | −0.01 | 0.01 | 0.01      |

Notes: The Sample comes from the Compustat Global database, covers the period 2005–2018 and includes quarterly data for all non-financial firms domiciled in the Eurozone Countries. Variables Definitions are provided in the [Appendix](#).

statistics of the main sample and is divided in three Panels. Panel A corresponds to the descriptive statistics by using the entire sample. As is shown, there are not large differences between the means and the medians for the continuous variables, which implies that extreme observations do not seem to affect the sample. Panels B and C present the descriptive statistics for the austerity and capital controls periods, respectively, for the affected countries. As expected, the liquidity variable decreases successively in the austerity and capital controls periods. In contrast, the level of conditional conservatism remains relatively stable, while the level of earnings management decreases in Panels B and C.

[Table 2](#) presents the correlation coefficients for the main variables. The results show that liquidity is related to most of the independent variables and that high correlations among the independent variables do not seem to exist, which implies no likely presence of multicollinearity. Regarding the sign of the correlation coefficients, liquidity is negatively correlated with conditional conservatism and positively related to earnings management. Since conditional conservatism has been found in previous studies to relate to lower information asymmetry and the cost of equity capital, one would expect a positive rather than a negative correlation coefficient. [Cheng et al. \(2018\)](#) show that conditional conservatism is lower for the firms with more liquidity, and this result originates from the stock return generation process. To control for this issue, we include the quarterly cumulative volume as an independent variable, which as shown in [Table 2](#), has a negative correlation coefficient with conditional conservatism. Therefore, we expect that by controlling for the effects of trading volume, any incremental information of conditional conservatism for stock liquidity will be related mainly to conditional conservatism.

**Table 2**  
Correlation matrix.

|                 | 1.       | 2.       | 3.       | 4.       | 5.       | 6.       | 7.       | 8.       | 9.       | 10.      | 11.      | 12.     | 13.  |
|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|------|
| 1. LIQUIDITY    | 1.00     |          |          |          |          |          |          |          |          |          |          |         |      |
| 2. C_SCORE      | -0.16*** | 1.00     |          |          |          |          |          |          |          |          |          |         |      |
| 3. EM           | 0.04***  | -0.01    | 1.00     |          |          |          |          |          |          |          |          |         |      |
| 4. TRADE_VOL    | 0.67***  | -0.21*** | 0.09***  | 1.00     |          |          |          |          |          |          |          |         |      |
| 5. STDEV        | -0.09*** | 0.14***  | 0.01     | -0.04*** | 1.00     |          |          |          |          |          |          |         |      |
| 6. PRI          | 0.10***  | -0.18*** | -0.03*** | -0.17*** | -0.29*** | 1.00     |          |          |          |          |          |         |      |
| 7. ABSR         | 0.09***  | 0.03***  | 0.02***  | 0.10***  | 0.40***  | -0.09*** | 1.00     |          |          |          |          |         |      |
| 8. BEEDLES      | -0.28*** | 0.08***  | -0.06*** | -0.26*** | 0.08***  | -0.09*** | 0.00     | 1.00     |          |          |          |         |      |
| 9. SIZE_Lag     | 0.50***  | -0.34*** | 0.01     | 0.64***  | -0.30*** | 0.47***  | -0.07*** | -0.26*** | 1.00     |          |          |         |      |
| 10. MTB_Lag     | 0.17***  | -0.10*** | 0.08***  | 0.15***  | -0.06*** | 0.18***  | -0.02*** | -0.04*** | 0.24***  | 1.00     |          |         |      |
| 11. ROA         | 0.09***  | -0.09*** | 0.02***  | 0.03***  | -0.21*** | 0.25***  | -0.07*** | -0.08*** | 0.19***  | 0.17***  | 1.00     |         |      |
| 12. AUSTERITY   | -0.08*** | 0.02***  | -0.09*** | 0.03***  | 0.03***  | -0.19*** | 0.00     | -0.03*** | -0.01*** | -0.09*** | -0.03*** | 1.00    |      |
| 13. CAP_CONTROL | -0.10*** | -0.01**  | -0.09*** | -0.04*** | 0.00     | -0.09*** | -0.02*** | -0.02*** | -0.04*** | -0.05*** | 0.01     | 0.44*** | 1.00 |

Notes: The Sample comes from the Compustat Global database, covers the period 2005–2018 and includes quarterly data for all non-financial firms domiciled in the Eurozone Countries. Variables Definitions are provided in the [Appendix](#). Variables Definitions are provided in the [Appendix](#). \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% level of significance respectively.

**Table 3**  
Effects of conditional conservatism and earnings management on percentage of non-zero returns (Liquidity), controlling for austerity and capital controls periods excluding penny stocks.

|                         | Coef     | t-stat | p-value |
|-------------------------|----------|--------|---------|
| INTERCEPT               | 0.85***  | 30.21  | 0.00    |
| C_SCORE                 | 0.02***  | 3.15   | 0.00    |
| EM                      | -0.02**  | -4.26  | 0.00    |
| AUSTERITY               | -0.04    | -1.27  | 0.20    |
| AUSTERITYxC_SCORE       | -0.09*** | -2.63  | 0.01    |
| AUSTERITYxEM            | 0.06     | 1.67   | 0.10    |
| CAP_CONTROL             | 0.02     | 0.49   | 0.62    |
| CAP_CONTROLxC_SCORE     | -0.24**  | -2.33  | 0.02    |
| CAP_CONTROLxEM          | -0.11*   | -1.93  | 0.05    |
| TRADE_VOL               | 0.05***  | 14.56  | 0.00    |
| STDEV                   | -0.10*** | -3.12  | 0.00    |
| PRI                     | 0.04***  | 6.59   | 0.00    |
| ABSR                    | 0.06***  | 5.99   | 0.00    |
| BEEDLES                 | -0.04*** | -5.25  | 0.00    |
| SIZE_Lag                | -0.02*** | -3.49  | 0.00    |
| MTB_Lag                 | 0.00***  | 3.15   | 0.00    |
| ROA                     | 0.19**   | 2.46   | 0.01    |
| Adjusted R <sup>2</sup> | 0.57     |        |         |
| Obs.                    | 43,921   |        |         |
| Firms                   | 1,708    |        |         |

Notes: The Sample comes from the Compustat Global database, covers the period 2005–2018 and includes quarterly data for all non-financial firms domiciled in the Eurozone Countries. The equation is estimated using country and period fixed effects as well as robust standard errors. Variables Definitions are provided in the [Appendix](#). \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% level of significance respectively.

## 5. The results

### 5.1. Main results

Table 3 presents the results of the estimation of Eq. (3). First, most of the coefficients of the control variables have the expected signs. Specifically, in agreement with [Chai et al. \(2010\)](#), the trading volume (*TRADE\_VOL*), the stock price (*PRI*) and the absolute stock return (*ABSR*) are positive and significant, while the standard deviation of daily returns (*STDEV*) and the [Beedles et al. \(1988\)](#) measure (*BEEDLES*) are negative and significant. Moreover, regarding the set of firm characteristics, firm size (in a lagged form) is negatively related to liquidity, while the market-to-book (in a lagged form) and the return on assets ratios are found to positively relate to liquidity.

More interestingly, the proxy for conditional conservatism is positively related to liquidity (*C\_SCORE*) and is statistically significant at the 1% level of significance. This result offers support for the contention that conditional conservatism, likely through the reduction of information asymmetry, is positively related to liquidity and is in agreement with research hypothesis  $H_{2A}$ . In addition, the austerity and capital controls intercept dummies are insignificant, which indicates that any changes of stock liquidity during the enforcement of austerity measures or capital controls were related to specific characteristics and do not support research hypotheses  $H_{1A}$ ,  $H_{1B}$  and  $H_{1C}$ .

**Table 4**

Effects of conditional conservatism and earnings management on the percentage of non-negative stock returns, controlling for austerity and capital controls periods excluding Penny stocks.

|                         | Coef     | t-stat | p-value |
|-------------------------|----------|--------|---------|
| INTERCEPT               | 0.56***  | 37.89  | 0.00    |
| C_SCORE                 | -0.04*** | -6.31  | 0.00    |
| EM                      | 0.01*    | 1.75   | 0.08    |
| AUSTERITY               | 0.03*    | 1.84   | 0.07    |
| AUSTERITYxC_SCORE       | 0.08***  | 3.62   | 0.00    |
| AUSTERITYxEM            | -0.05*   | -1.92  | 0.05    |
| CAP_CONTROL             | 0.02     | 0.85   | 0.40    |
| CAP_CONTROLxC_SCORE     | 0.17**   | 2.44   | 0.01    |
| CAP_CONTROLxEM          | 0.04     | 1.22   | 0.22    |
| TRADE_VOL               | -0.02*** | -13.69 | 0.00    |
| STDEV                   | -0.04**  | -2.04  | 0.04    |
| PRI                     | -0.01*** | -3.47  | 0.00    |
| ABSR                    | 0.04***  | 6.36   | 0.00    |
| BEEDLES                 | 0.02***  | 4.66   | 0.00    |
| SIZE                    | 0.01***  | 2.77   | 0.01    |
| MTB                     | 0.00***  | -5.62  | 0.00    |
| ROA                     | 0.25***  | 5.37   | 0.00    |
| Adjusted R <sup>2</sup> | 0.42     |        |         |
| Obs.                    | 43,921   |        |         |
| Firms                   | 1,708    |        |         |

Notes: The Sample comes from the Compustat Global database, covers the period 2005–2018 and includes quarterly data for all non-financial firms domiciled in the Eurozone Countries. The equation is estimated using country and period fixed effects as well as robust standard errors. Variables Definitions are provided in the [Appendix](#). \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% level of significance, respectively.

We then move to the variables of interest regarding financial reporting quality, namely, conservatism (*C\_SCORE*) and earnings management (*EM*), during the austerity and capital controls periods. The coefficient of the cross-term between austerity and conditional conservatism (*AUSTERITYxC\_SCORE*) is negative and significant, while the cross-term of austerity and earnings management (*AUSTERITYxEM*) is marginally insignificant. Moreover, the respective coefficient of conditional conservatism for capital controls (*CAP\_CONTROLxC\_SCORE*) is also negative and significant, which supports research hypotheses  $H_{2B}$ , while the coefficient of the cross-term between earnings management and capital controls (*CAP\_CONTROLxEM*) is negative and significant, which supports research hypothesis  $H_3$ . These results cumulatively show that more conservative firms or firms with higher earnings management have lower stock liquidity during more volatile periods. As discussed in [Section 2](#), the negative relation between conservatism and liquidity may indicate that more conservative firms have fewer liquid stocks that are being kept in the portfolios of more risk-averse investors during periods of instability and likely indicates a “flight to quality” phenomenon.

To further examine this possibility, we assert that if the relation between conditional conservatism and liquidity is due to the “flight to quality” phenomenon, then firms with a high conservatism level may have stock returns that are non-negative. That is, if investors resort to highly conservative firms as a safe haven during more volatile periods, then their stock return should not be negative because it is being kept in investors’ portfolios. The assertion is that highly conservatism firms present better investment opportunities due to their higher financial reporting quality. To examine this possibility, we re-estimate [Eq. \(3\)](#) and substitute the percentage of nonzero returns with the percentage of non-negative returns. When this variable is higher, the likelihood that investors sell the stock is lower. The results are presented in [Table 4](#). As is depicted, the coefficient of the *C\_SCORE* variable is now negative and significant, while the coefficients of the cross-term for the more volatile periods (*AUSTERITYxC\_SCORE* and *CAP\_CONTROLxC\_SCORE*) are positive and significant. This is a direct indication that firms with higher financial reporting quality have less negative stock returns during the austerity and capital controls periods likely because they act as safe havens. Moreover, this effect becomes stronger during the capital controls period as indicated by the positive and significant coefficient of the relevant cross-term.

Next, we estimate [Eq. \(4\)](#), which incorporates a set of intercept and slope dummies, to examine the effects of low earnings management and to observe if some of the above effects are attenuated in this instance. The results are reported in [Table 5](#) and show that the coefficient of conditional conservatism during the capital controls period (*CAP\_CONTROLxC\_SCORE*) is now insignificant, while the triple interaction term that considers the low earnings management level (*CAP\_CONTROLxC\_SCORExHIGH\_EM*) has a negative and significant coefficient. Given the negative relation between conditional conservatism and liquidity due to the “flight to quality” phenomenon, these results imply that for conservatism to act as a positive financial reporting attribute, it is critical for the firm to have a low earnings management level.

As a final illustration, we estimate a variant of [Eq. \(4\)](#) to examine the contemporaneous effects of low volatility and low earnings management on the relation between non-negative returns and conditional conservatism. The results are tabulated in [Table 6](#) and reveal that the level of conservatism is positively related to the percentage of non-negative returns condi-



**Table 5**

Effects of conditional conservatism and low earnings management on the percentage of non-zero returns (Liquidity), controlling for austerity and capital controls periods.

|                             | Coef     | t-stat | p-value |
|-----------------------------|----------|--------|---------|
| INTERCEPT                   | 0.83***  | 29.67  | 0.00    |
| C_SCORE                     | 0.04***  | 3.92   | 0.00    |
| LOW_EM                      | 0.01***  | 7.00   | 0.00    |
| AUSTERITY                   | 0.02**   | 2.18   | 0.03    |
| AUSTERITYx_C_SCORE          | -0.04    | -0.68  | 0.49    |
| AUSTERITYxLOW_EM            | -0.01*   | -1.96  | 0.05    |
| AUSTERITYx_C_SCORExLOW_EM   | -0.05    | -0.64  | 0.52    |
| C_SCORExLOW_EM              | -0.04*** | -2.68  | 0.01    |
| CAP_CONTROL                 | -0.05**  | -2.56  | 0.01    |
| CAP_CONTROLx_C_SCORE        | 0.00     | 0.02   | 0.98    |
| CAP_CONTROLxLOW_EM          | 0.01     | 0.39   | 0.70    |
| CAP_CONTROLx_C_SCORExLOW_EM | -0.33*   | -1.79  | 0.07    |
| TRADE_VOL                   | 0.05***  | 14.56  | 0.00    |
| STDEV                       | -0.10*** | -3.12  | 0.00    |
| PRI                         | 0.04***  | 6.58   | 0.00    |
| ABSR                        | 0.06***  | 6.01   | 0.00    |
| BEEDLES                     | -0.04*** | -5.25  | 0.00    |
| SIZE                        | -0.02*** | -3.47  | 0.00    |
| MTB                         | 0.00***  | 3.16   | 0.00    |
| ROA                         | 0.19**   | 2.44   | 0.01    |
| Adjusted R <sup>2</sup>     | 0.57     |        |         |
| Obs.                        | 43,921   |        |         |
| Firms                       | 1,708    |        |         |

Notes: The Sample comes from the Compustat Global database, covers the period 2005–2018 and includes quarterly data for all non-financial firms domiciled in the Eurozone Countries. The equation is estimated using country and period fixed effects as well as robust standard errors. Variables Definitions are provided in the [Appendix](#). \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% level of significance respectively.

**Table 6**

Effects of conditional conservatism, low earnings management and low volatility on percentage of non-negative stock returns, controlling for austerity and capital controls periods excluding Penny stocks.

|                                 | Coef     | t-stat | p-value |
|---------------------------------|----------|--------|---------|
| INTERCEPT                       | 0.56***  | 38.64  | 0.00    |
| C_SCORE                         | -0.04*** | -5.70  | 0.00    |
| LOW_VOL_EM                      | 0.00     | -1.30  | 0.19    |
| C_SCOREDUMxLOW_VOL_EM           | 0.01     | 0.52   | 0.61    |
| AUSTERITY                       | 0.00     | -0.78  | 0.44    |
| AUSTERITYx_C_SCORE              | 0.08***  | 3.11   | 0.00    |
| AUSTERITYxLOW_VOL_EM            | 0.02**   | 2.44   | 0.01    |
| AUSTERITYx_C_SCORExLOW_VOL_EM   | 0.01     | 0.18   | 0.86    |
| CAP_CONTROL                     | 0.05***  | 5.15   | 0.00    |
| CAP_CONTROLx_C_SCORE            | 0.05     | 0.64   | 0.52    |
| CAP_CONTROLxLOW_VOL_EM          | -0.02    | -1.57  | 0.12    |
| CAP_CONTROLx_C_SCORExLOW_VOL_EM | 0.26**   | 2.16   | 0.03    |
| TRADE_VOL                       | -0.02*** | -13.70 | 0.00    |
| STDEV                           | -0.04**  | -2.04  | 0.04    |
| PRI                             | -0.01*** | -3.47  | 0.00    |
| ABSR                            | 0.04***  | 6.34   | 0.00    |
| BEEDLES                         | 0.02***  | 4.65   | 0.00    |
| SIZE                            | 0.01***  | 2.78   | 0.01    |
| MTB                             | 0.00***  | -5.66  | 0.00    |
| ROA                             | 0.25***  | 5.41   | 0.00    |
| Adjusted R <sup>2</sup>         | 0.42     |        |         |
| Obs.                            | 43,921   |        |         |
| Firms                           | 1,708    |        |         |

Notes: The Sample comes from the Compustat Global database, covers the period 2005–2018 and includes quarterly data for all non-financial firms domiciled in the Eurozone Countries. The equation is estimated using country and period fixed effects as well as robust standard errors. Variables Definitions are provided in the [Appendix](#). \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% level of significance respectively.

**Table 7**

Effects of conditional conservatism and earnings management on the percentage of non-zero returns (Liquidity), controlling for austerity and capital controls periods for all firms.

|                         | Coef     | t-stat | p-value |
|-------------------------|----------|--------|---------|
| INTERCEPT               | 0.82***  | 29.67  | 0.00    |
| C_SCORE                 | 0.03***  | 3.69   | 0.00    |
| EM                      | -0.02*** | -4.64  | 0.00    |
| AUSTERITY               | -0.03    | -1.05  | 0.29    |
| AUSTERITYxC_SCORE       | -0.07*** | -2.69  | 0.01    |
| AUSTERITYxEM            | 0.06     | 1.66   | 0.10    |
| CAP_CONTROL             | -0.01    | -0.52  | 0.60    |
| CAP_CONTROLxC_SCORE     | -0.08    | -1.45  | 0.15    |
| CAP_CONTROLxEM          | -0.04    | -0.91  | 0.36    |
| TRADE_VOL               | 0.05***  | 17.17  | 0.00    |
| STDEV                   | -0.11*** | -4.89  | 0.00    |
| PRI                     | 0.05***  | 9.91   | 0.00    |
| ABSR                    | 0.05***  | 5.54   | 0.00    |
| BEEEDLES                | -0.03*** | -5.07  | 0.00    |
| SIZE                    | -0.02*** | -4.08  | 0.00    |
| MTB                     | 0.00***  | 2.61   | 0.01    |
| ROA                     | 0.22***  | 2.92   | 0.00    |
| Adjusted R <sup>2</sup> | 0.62     |        |         |
| Obs.                    | 51,704   |        |         |
| Firms                   | 1,834    |        |         |

Notes: The Sample comes from the Compustat Global database, covers the period 2005–2018 and includes quarterly data for all non-financial firms domiciled in the Eurozone Countries. The equation is estimated using country and period fixed effects as well as robust standard errors. Variables Definitions are provided in the [Appendix](#). \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% level of significance respectively.

tional on the low level of volatility and earnings management, which again implies the presence of the “flight to quality phenomenon”.

### 5.2. Robustness checks

We run a number of robustness checks (not reported but available on request) to ensure that our results are not sensitive to changes in the research methodology (not reported but available on request). First, we estimate the models by using the lags of conditional conservatism and the opacity proxies to address any issues of endogeneity between liquidity and these variables. The results are robust to this alternative specification. Moreover, we relax the exclusion of penny stocks, and the results are provided in [Table 7](#). As is shown the main results regarding the conservatism hold, however, the coefficient of the cross-term of capital controls and conservatism is insignificant.

## 6. Conclusions

The present study examines the regulation on capital flows and specifically the effects on stock liquidity. The sample used comes from firms domiciled in the Eurozone countries and thus includes countries that were under austerity measures (Cyprus, Greece, Ireland, Italy, Portugal and Spain) or capital controls (Cyprus and Greece). The variable under consideration is stock liquidity due to the role that this variable has in summarizing information for the well-being of a firm and its ability to predict growth and productivity ([Levine and Zervos, 1998b](#)) and to reflect decreases in information asymmetry (through higher quality financial disclosures; [Graham et al., 2005](#)) and the cost of equity capital ([Butler et al., 2005](#)). Moreover, liquidity is directly affected by restrictions in capital flows. We assert that financial reporting quality, as measured by higher conditional conservatism and lower earnings management, acts as a barrier against the negative effects of capital controls.

The methodological path of the study consists of several models that express liquidity as a function of conditional conservatism and earnings management, which act as proxies for information asymmetry and a number of control variables that have been found to relate to liquidity. The results reveal a positive relation between conditional conservatism and liquidity, while earnings management seems to have a negative relation to liquidity. However, conditionally conservative firms tend to have lower liquidity during the austerity and especially capital controls periods. We assert that the lower liquidity of conservative firms during these volatile periods is a manifestation of the “flight to quality” phenomenon, where firms of higher financial reporting quality (firms with higher conditional conservatism levels) are considered to be a final resort for investors during a volatile period. We test this assumption by showing that these conditionally conservative firms with low liquidity are simultaneously firms with a low volatility of stock returns. However, we also have some evidence that the beneficial role of conditional conservatism under capital controls is conditional on the presence of low earnings management.

In response to our research questions, our results imply that caution should be exercised before imposing capital controls even as a final action against a financial crisis. Specifically, capital controls seem to affect the information asymmetry in firms, and as a result, liquidity decreases, which leads to additional problems. However, financial reporting quality, especially

in the role of conditional conservatism, is a determinant that may be sought by investors to limit the effects of the crisis and underlining the presence of the “flight to quality” phenomenon.

This study should be useful to regulators, academics and practitioners since it is one of the first studies on the effects of capital controls on firms in the Eurozone countries and provides evidence of the role of financial reporting quality during capital controls. The empirical implications of the study should be particularly useful for regulators, due to showing that capital controls may increase information asymmetry and therefore any decision on their use as final measure of defense should take into consideration these likely effects. One possible future extension would be to consider the enforcement of capital controls in Asian countries (such as Malaysia) to compare their aftermath on the firms and the role of financial reporting quality.

## Appendix. Variables’ definitions

| Variable           | Definition   |
|--------------------|--|
| <i>LIQUIDITY</i>   | A proxy for illiquidity following Bekaert et al. (2007) calculated as the quarterly proportion of zero daily returns.  |
| <i>C_SCORE</i>     | The firm-specific conditional conservatism score of Khan and Watts (2009).   |
| <i>EM</i>          | The earnings management measure of Leuz et al. (2003) calculated based on their EM3 and EM4 measures.  |
| <i>LOW_EM</i>      | A binary variable that takes the value of 1 for firms domiciled in a specific country and in a specific quarter that are in the lower 50% ranked on the earnings management measure of this country and zero otherwise.  |
| <i>LOW_VOL_EM</i>  | A binary variable that takes the value of 1 if a firm is in the lower 50% of the firms of a country based on the level of EM in a certain quarter and is zero otherwise and the lower 50% of the firms of a country based on the level of volatility in a certain quarter and is zero otherwise. |
| <i>TRADE_VOL</i>   | The logarithm of the quarterly sum of the daily trading volume.  |
| <i>STDEV</i>       | The quarterly standard deviation of daily returns.   |
| <i>PRI</i>         | The logarithm of the closing stock price in every quarter.   |
| <i>ABSR</i>        | The quarterly mean of the absolute value of the daily stock returns.   |
| <i>BEEDLES</i>     | A proxy for thin trading developed by Beedles et al. (1988, see also Chai et al., 2010) and calculated as $\{100-(100/(n-1))\}/100$ , where n is the difference between the last trading day of the quarter and the last day with a stock price.   |
| <i>SIZE_Lag</i>    | The logarithm of market capitalization at the beginning of each quarter.   |
| <i>MTB_Lag</i>     | The Market-to-Book ratio at the beginning of each quarter.   |
| <i>ROA</i>         | The quarterly Return on Assets ratio.  |
| <i>AUSTERITY</i>   | A dummy variable that takes the value of 1 during the period that a country imposed austerity measures (Cyprus, Greece, Ireland, Italy, Portugal and Spain) and zero otherwise.  |
| <i>CAP_CONTROL</i> | A dummy variable that takes the value of 1 during the period that a country imposed capital controls (Greece and Cyprus) and zero otherwise.   |

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