European Stock Reactions to Corporate Earnings Announcements: a First Market Assessment for Capital Markets Union's Project

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Abstract

The European Commission in February 2015 has published the Green Paper on Building a Capital Markets Union (CMU). As a green paper, it aimed to generate debate and discussion on possible areas for action in order to develop and integrate European capital markets. The CMU would cut, inter alia, the cost of raising capital, notably for Small and Medium Enterprises (SMEs), so to reduce the very high dependence on bank funding and increase the attractiveness of Europe as a place to invest. This paper, through the analysis of the stock market reaction to more than 40.000 European earnings announcements over the period 2005-2017, aims to verify the potential benefits derivable from the CMU's implementation in Europe. In order to achieve that objective, the paper considers the most relevant facets proposed by CMU's project, which here are tested as potential determinants of abnormal stock's variability around the earnings announcements period. Our findings confirm the relevance of most of the features suggested by the CMU project, together with a strong evidence of potential scarcity of financing for SMEs, which are characterized by a larger stock's variance if compared to larger corporate. The evidence becomes even more significant for countries which refer most to bank lending activity compared to capital markets, as well as for countries where a potential credit crunch is occurring, as represented by evidence emerging from European quarterly Banking Lending Survey (BLS).

JEL Classification codes: G10, G14, G31

Keywords: Capital Markets Union, Event Study, Earnings Announcements, SMEs, Bank Lending Survey

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1 Introduction

The European Commission in February 2015 has published the Green Paper on Building a Capital Markets Union (CMU). As a *green paper*, it aimed to generate debate and discussion on possible areas for action in order to develop and integrate European capital markets. The CMU would cut, inter alia, the cost of raising capital, notably for Small and Medium Enterprises (SMEs), so to reduce the very high dependence on bank funding and increase the attractiveness of Europe as a place to invest. Afterwards, in September 2015 the Action Plan on Building a Capital Markets Union has been published, which underlined that "*the information gap between SMEs and investors can be a hurdle to non-bank funding*" and that efficient markets are therefore a critical link in the finance chain. A condition for European capital markets to add value would be sufficient comparability of key data, so that prospective investors across the EU have an accurate and reliable insight of issuers and in particular of SMEs. For investors, access to high growth SMEs on public market exchanges can be appealing due to potential returns and diversification benefits. Yet, they can be put off by poorer information sources and lower liquidity. European Union consultation responses highlighted "*a lack of research on SMEs by investor analysts and additional reporting requirements as two major challenges for SMEs trying to list on public market exchanges*". Many SMEs admitted to trading on multilateral trading facilities (MTFs) report financial information only on the basis of national accounting standards, which may not be sufficient to meet the needs of international investors due to the lack of comparability. According to the Action Plan, the Commission will also explore a voluntary tailor-made accounting solution, which could be used for companies admitted to trading on SME Growth Markets. Moreover the project considers that deeper financial integration will need to be accompanied by increased focus by ESMA (European Securities and Markets Authority) on achieving convergence of supervisory outcomes across the EU, including on accounting, to ensure that the single market works well.

In light of above, in order to contribute to the literature in deepening the quality and transparency of European financial markets, with this paper we aim to fill that gap of knowledge, by taking into account the following relevant questions. How do share prices reflect financial information across European markets? What is the impact of national enforcement and regulation on the relevance of financial information? Do other market factors (e.g. market liquidity, trading venues or accounting requirements) impact the relationship between share prices and accounting results? Do SMEs highlight a different impact of earnings announcements? Could corporate governance factors (ownership structure) improve price efficiency?

As explained below, the literature in this field has not performed a comparative analysis taking into account all 28 European member states to explore how the relevance of financial information on share prices varies and which factors could have impact on the above relationship. In particular, to solve the above questions, this study, by the use of an event analysis approach, attempts to ascertain the information content of financial results announcements by examining the market reaction in a short window surrounding the announcement. By this perspective, the empirical analysis is aimed at infer whether the differences between listed SME and large companies affect the information contained in the prices. By this manner, our research could support the view of European Union to

plan on the development of SME capital market. At the same time, is also aimed at testing whether the diversity in corporate governance structures, in terms of the presence of significant institutional shareholder in the ownership structure, and other ESG variables have an impact on share prices. Therefore, the answers to these questions could also suggest policy intervention in order to apply the Capital Markets Union, identifying some elements of diversity in European financial markets. The rest of the paper is structured as follows. The available literature is surveyed in Section 2. Section 3 presents our methodology and comments the results of our econometric estimates. Finally, in Section 4 we summarize and evaluate the main implications for regulators.

2 Literature review

2.1 Event studies in economic literature

According to Fama (1970), a stock market is efficient if prices always fully reflect available information. Information is divided into three subsets, distinguishing between weak, semi-strong and strong form efficiency with respect to historical prices, publicly available information, and private information, respectively. Some related studies analyze the theoretical modeling of how the disclosure of information affects investors are reflected in stock prices and trading volume. In particular, Grossman and Stiglitz (1980) find that prices can only fully reflect costless information, since there must be a return to acquiring information at a cost, otherwise there will be no information acquisition. This insight indeed led to a revised definition of efficiency in Fama (1991), where two versions of the hypothesis that security prices fully reflect all available information are given. The strong version stipulates that information and trading costs are always zero, while the weaker version states that prices should reflect information to the point where the marginal benefits of acting on information do not exceed the cost. As noted in Ball (1994) this in essence involves a reclassification from the three earlier and more statistically-based information subsets to subsets based on the cost of information. The empirical literature on the stock market's reaction to information disclosures is vast and covers such diverse information as stock splits and changes in inventory accounting. An area that has received particular focus is the question of how earnings and stock market prices are related. This area of the literature began with the work by Beaver (1968) and Ball and Brown (1968). These two studies and those following them can be grouped into two categories: event studies and association studies. Event studies attempt to ascertain the information content of Earnings Announcements by examining the market reaction in a short window surrounding the announcement. Association studies are concerned with the long-term association between earnings and stock prices.

Event studies attempt to determine the information content of earnings announcements by examining the market reaction in a short window surrounding the announcements. In fact, researches on the information content of share prices examine the correlations among individual stocks and measure the explanatory power of the market model to analyze the information content. According to Beaver (1968) both stock price volatility and trading volume increase significantly during the earnings announcement period in the US markets. Beaver suggests that stock price

changes reflect the average change in investors' beliefs about an earnings announcement, whereas trading volume reflects individual investor's interpretation of the announcement. In light of above, both stock price volatility and trading volume measure the content of earnings announcements. The greater the content, the more the average investors' beliefs are likely to change or the more likely investors interpret the content of earnings announcements differently and trade more as a result of their divergent interpretations[1]. Landsman and Maydew (2002) find that the information content of quarterly earnings announcements in the US increases significantly over the period 1972–1998. Following the study of Beaver (1968) they observe abnormal return variance and abnormal trading volume measured immediately around the earnings announcements. In deep, Landsman and Maydew (2002) document that the information content of quarterly earnings announcements, as measured by abnormal trading volume and abnormal return volatility around earnings announcement dates, has increased in the past three decades. The study also suggests that changes in many firm-specific factors in the composition of the sample account for a significant portion of this increase but do not fully explain the trend. In a follow-up study, Francis et al. (2002) investigate three competing explanations for the Landsman and Maydew findings: (1) increases in the absolute amount of unexpected earnings at earnings announcements; (2) increases in the intensity of investors' average reaction to unexpected earnings; and (3) an over-time expansion in the amount of concurrent information disclosed in firms' earnings announcement press releases. They conclude that expanded concurrent disclosures in firms' earnings announcement press releases, especially the inclusion of detailed income statement information, explain the increased informativeness of quarterly earnings announcements over time. The implication of their findings is that the disclosure of more detailed accounting earnings numbers has contributed to the increased informativeness of quarterly earnings announcements over time. Studies on the information content of international stock markets mainly focus on the cross-country factors in order to research factors that facilitate or block the capitalization of firm-specific information into stock prices. For example, Morck et al. (2000), Jin and Myers (2006), and Bartram et al. (2009) find that R^2 from the market model is higher in countries with less developed financial systems and poorer corporate governance. According to these studies in countries with poor property protection rights, less firm-specific information is incorporated into stock prices, leading to an increase in market-wide price fluctuations. In a related research, DeFond et al. (2007) conduct a comprehensive study that examines the information content of earnings announcements in an international setting using 26 countries. They identify structural factors in the financial reporting environment to explain differences in the information content of annual earnings announcements across international markets. They find that abnormal return variance and abnormal trading volume surrounding earnings announcements are higher in countries with better quality earnings, better enforced insider trading laws, and in countries with lower frequency of interim financial reporting. They suggest that higher quality of earnings is associated with more reliability to earnings information,

[1] Several follow-up studies by Kiger (1972), Morse (1980, 1981) and Ziebart (1987, 1990) employ different samples and alternative methodologies and continue to confirm that earnings announcements are a vital source of information for equity investors.

Strong enforcement of insider trading laws and a low frequency of financial reporting reduce the likelihood that share prices already reflect earnings information in the pre-earnings announcement period and hence earnings announcements contain more valuable information to investors. Much existing research on the information content of stock markets focuses on structural and institutional factors that could explain the cross-section of the information content. Some researchers suggest that the documented determinants of the information content are generally exogenous to investors of a market. As some scholars (Nguyen and Truong, 2013) point out, the behavioral biases and risk preferences can extensively affect how international investors process firm-specific information[2]. Although many studies have been conducted in the US on both topics, most of the sparse European evidence has concentrated on association studies and pertains mostly to the UK, as noted in the review by Dumontier and Raffournier (2002). A list of the European evidence regarding the market's reaction to Earnings Announcements is short and covers only a few countries. Studies have been conducted in the UK by Firth (1981), Pope and Inyangete (1992), Rippington and Taffler (1995), and Elsharkawy and Garrod (1996), in Finland by Kallunki (1996), in Spain by Pellicer and Rees (1999), and in France by Gajewski and Que´re´ (2001)[3]. The evidence presented in these articles is generally consistent with the results of US studies. Earnings announcements do appear to contain information that is relevant to the stock market, and for the most part it appears that the stock market reacts efficiently to this information. In particular, the methodology used in these studies is the event study methodology, see for example Campbell et al. (1997). This method builds on the assumption that it is possible to isolate the part of a stock's return which concerns a particular event. This is done by using a model to estimate the normal return, i.e. the stock's return if the event had not happened. The abnormal return, which the event generates, is found as the difference between the actual return and the estimated normal return. The information content of an event is then examined by evaluating the abnormal returns around the announcement date.

Some studies attribute the rising usefulness of earnings announcements to an expansion of information disclosed around earnings announcements or to an increase in the popularity of non-GAAP measures (Francis et al., 2002; Collins et al., 2009). In particular Collins et al. (2009) attribute the rising trend in the information content of earnings announcements partially to increased market's reliance on alternative performance measures. Non-GAAP street earnings, defined as

[2] Roll (1988) argues that it is the relative amount of firm-level versus market-level information that affects the co-movement of stock prices. When more firm-level information is capitalized into stock prices, this effect would increase firm-specific stock price variation and decrease stock return synchronicity with the market. Campbell et al. (2001) document a pronounced increase in the idiosyncratic stock volatility and at the same time a pronounced decrease in stock price synchronicity in the U.S. over the period from 1962 to 1997. They interpret this phenomenon as evidence of increasing stock price informativeness.

[3] Evidence on the information content of earnings announcements outside the United States has been relatively sparse. European evidence regarding the market's reaction to earnings announcements include studies conducted in the UK (Firth, 1981; Pope and Inyangete, 1992; Frost and Pownall, 1994; Rippington and Taffler, 1995; Elsharkawy and Garrod, 1996), in Finland (Booth et al., 1996, 1997; Kallunki, 1996), in Spain (Pellicer and Rees, 1999), in France (Gajewski and Que´re´ , 2001) and in Denmark (Sponholtz, 2004).7 Evidence of a pronounced market reaction to earnings announcements has also been documented in Canada (Chudek et al., 2011), in Australia (Brown, 1970; Brown et al., 1977), in Singapore (Ariff and Finn, 1989), in China (Truong, 2011) and in New Zealand (Emanuel, 1984; Truong, 2010).

earnings disseminated through analyst estimate clearing houses like IBES, Zacks and First Call, are often announced simultaneously with earnings announcements, and this practice adds additional information content to the conventional earnings announcements. Bradshaw and Sloan (2002) document that over the past 20 years there has been a dramatic increase in the frequency and magnitude of cases where Street earnings differ from GAAP earnings. For these reasons the market's increased reliance on non-GAAP Street earnings for equity valuation provides a competing explanation also for the Landsman and Maydew (2002) finding[4]. Although the bulk of the prior evidence has focused on the earnings surprise, little attention has been paid to non-earnings information. However, considering non-earnings related news make sense for several reasons. For instance, Liu and Thomas (2000) show that a significant portion of the market reaction around earnings announcement is due to nonearnings related information. It is also obvious that some important non-earnings related news are released at the time of an announcement. For example, firms provide information about components of earnings such as sales, and operating margins (see Jegadeesh and Livnat, 2006). Still further, earnings announcements tend to be accompanied by conference calls and press releases where some additional valuable information is disseminated. A number of empirical findings suggest that market participants incorrectly value non-financial information. For instance, Ragjopal et al (2003) find that investors overestimate the valuation implications of order backlogs, while Gu (2005) and Deng et al (1999) show that investors systematically underweight patent counts, as well as the level change in patent citations. In other words, it is in within those stocks that suffer from larger degrees of information uncertainty and/or higher limits to arbitrage that we find the strongest evidence of abnormal behavior. Several authors document how limits to arbitrage prevent investors form completely eliminating stock market inefficiencies (see for instance Shleifer and Vishny, 1997; Mendenhall, 2004; Pontiff, 2005). Moreover, Zhang (2006) demonstrates that investors under-reaction to public information is even more pronounced in cases of greater information uncertainty. The author's findings are in line with Hirshleifer (2001) who posits that greater uncertainty combined with the lack of accurate feedback about fundamentals leave more room for behavioural biases. Abnormal volume effect could be more pronounced in settings of higher information uncertainty, when the dispersion of beliefs about valuations is the largest. However, investigations of the information content of earnings announcements have almost exclusively focused on the US security markets. Some recent researches (Truong, 2012) show that firm size is negatively related to the information content of earnings announcements. This is consistent with the hypothesis that larger firms often have a larger amount of pre-disclosed information, thereby reducing the surprise component of financial disclosures (see for example, Atiase, 1985; Rippington and Taffler, 1995). Moreover researches find that idiosyncratic volatility is positively related to the information content of earnings announcements. Thus, firms with high idiosyncratic volatility in the normal period also exhibit a tendency of high idiosyncratic volatility in the earnings announcement period. Truong also finds in New Zealand that (i) trading volume and stock price are positively related to the information content of earnings announcements and this finding suggests that firms with higher liquidity and

[4] What drives the increased informativeness of earnings announcements over time? (2009)

lower transaction costs exhibit a higher level of earnings informativeness; (ii) the magnitude of unexpected earnings and the number of analysts following are positively related to the information content of earnings announcements. Moreover in this study is analyzed the relation between the adoption of International Financial Reporting Standards (IFRS) and the information content of earnings announcements. Results suggest that the information content of earnings announcements, often regarded as a dimension of the quality of accounting information, increases considerably in the post-IFRS-adoption period in New Zealand. This finding point out that IFRS could be an improvement in reporting standards and the results could be justified also by the rising trend in the information content of earnings announcements. This finding are in line with a body of literature that appraises the quality of accounting information associated with the adoption of IFRS in international markets (Barth et al., 2008; Armstrong et al., 2010; Landsman et al., 2010). In the light of these findings, that firm characteristics and financial reporting standards relate to the level of earnings informativeness and also determine the progression of earnings informativeness over time in New Zealand.

3 Empirical Analysis

3.1 Description of the dataset

The sample is composed of 7.907 issuers of shares in 28 European Countries with a total market capitalization of about € 10.5 trillion in 2017, equal to about 73% of European Gross Domestic Product. In total the announcement events considered equal 40.392, with larger capitalizations observed in UK, France, Germany, Sweden, Spain and Italy. About 87% of the issuers considered in the sample are IAS adopters, whilst Small and Medium Enterprises (SMEs) represent about 38% of the total sample. From 2006 to 2017 market capitalization improved about 8,2% per year, especially in countries with a more developed financial markets. Issuers operating in the *Financial* industries are characterized by the largest capitalizations. The main other industries represented in the sample – based on Bloomberg GICS Sector – are *Consumer Discretionary*, *Industrials* and *Consumer Staples*. *Information Technology* is also characterized by a significant number of SMEs. Issuers with a significant presence of *Institutional Investors* in shareholders' structure represent about 58% of the total sample. Otherwise, in large companies institutional investors represent about 95% of the total.

– Table 1 and Table 2 about here –

3.2 Methodology

In order to perform our analysis, we consider companies with listed common shares in the whole European Union – all stock exchanges of the 28 member states are considered. The composition of the sample comes from the intent to consider a setting of the study corresponding to the Capital Markets Union. For that reason, data are assessed starting from 2006 to 2017, so to consider the most relevant changes occurred in the European financial enforcement regime during last decade.

By this perspective, since 2011 – in response to the financial crisis generated from 2007 – the European System of Financial Supervision (ESFS) has been established in Europe as a framework for financial supervision in the European Union. The system consists of the European Supervisory Authorities, the European Systemic Risk Board, the Joint Committee of the European Supervisory Authorities, together with the national supervisory authorities of EU member states. The test is based on standard event study techniques (Campbell et al., 1997). The abnormal return AR_{it} for issuer *i* at time *t* is the difference between the actual stock return R_{it} and a measure of ''normal'' return generated by a market model. Using the market-adjusted return model, abnormal returns for stock *i* on day *t*, AR_{it} – which would be expected to be zero if announcements provide no new price-relevant information – is defined as the difference between the actual return and the market return on day t:

$$AR_{it} = R_{it} - R_{mt}$$

where R_{it} is the return on stock *i* for day *t* and R_{mt} is the return on the market portfolio for day *t*. Therefore the Abnormal Returns (AR_{it}) around the announcement are computed as the difference between the normal return that would have occurred if the announcement had not taken place and the actual return that occurred because of the announcement. The (logarithm) stock returns are calculated on the basis of the share prices provided by Bloomberg LLP. To detect any abnormal return over each event window, we take the market model relating the return of any given security to the market portfolio return, via the following Fama-French (1993) specification[5]:

$$R_{it} = \alpha_i + \beta_{im} R_{mt} + \beta_{ismb} SMB_t + \beta_{ihml} HML_t + \epsilon_{it} \qquad [1]$$

with R_{mt} = Market Portfolio (Country Index), SMB_t = European small minus big (MSCI) and HML_t = European value minus growth (MSCI), where

$$E(\varepsilon_{it} = 0) \qquad var(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2$$

We consider that specification like the most valuable for our purpose, because of its capacity to control for the specific element characterizing European corporates, together with other facets which can be related to the differences between high vs low growth firms, rather than small vs larger firms. By this manner, we estimated the parameters of the model using an estimation window

[5] To perform this analysis we identified all the listed firms in the Eurozone. Next, we defined the estimation procedure, by choosing the estimation window and checking for any presence of shocks during the estimation window. In turn, we checked for availability of stock data in the estimation window.

which goes from *t - 130* and *t – 31,* and *t + 31* and *t + 130,* from where *t* is the event day of the first event we considered in our analysis, so to determine the following abnormal returns:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} - \hat{\beta}_{ismb} SMB_t - \hat{\beta}_{ihml} HML_t \qquad [2]$$

over the event window which goes from *t - 10* and *t + 10,* as determined from formula [1]. The length of estimation window is consistent with previous research (Konchitchki et al., 2011), whilst several checks are performed in order to verify that the estimation window does not overlie on a previous event window. Prices surrounding the announcements of quarter results (-10, +10) are excluded in order to not consider abnormal values related to those events. A time gap between the end of the estimation window and the beginning of the event window (from day *t – 30* to day *t – 2*) is employed to avoid using unusual price or volume data (due to information leakage) for model estimation. Nevertheless, according to Kwok and Brooks (1990) the length of the estimation period does not materially affect test results. The abnormal return, which the event generates, is found as the difference between the actual return and the estimated normal return. The information content of an event is then examined by evaluating the abnormal returns around the announcement date. Nevertheless, since a positive or negative abnormal return could be determined by the announcement of earning (compared to estimated one), which was available only for a limited number of observation (less then 30%), as already performed in economic literature, we considered the average Abnormal return VARiance (AVAR) like the measure of abnormal return, or Abnormal Volatility. Therefore, similarly to Landsman and Maydew (2002), we define abnormal volatilty $AVAR_{it}$, according to the following formula:

$$AVAR_{it} = {u_{it}^2}/{\sigma_i^2}$$

where $AVAR_{it}$ is considered for windows (0;+1), (-1;+1), (-2;+2) relative to announcement day 0 for firm *i*, where $u_{it} = R_{it} - (\alpha_i + \beta_{im} R_{mt} + \beta_{ismb} SMB_t + \beta_{ihml} HML_t)$, and σ_i^2 is the variance of firm *i*'s Fama-French model adjusted returns, each of which is calculated during the period *t −130* to *t −31* and *t + 31* to *t + 130*. By this way, as in Landsman and Maydew (2002, 2012) computing AVAR using both pre- and post-announcement period data mitigates against potential time trend in AVAR arising from temporal increases in volatility during the sample period. Therefore, the AVAR volatility measure must be positive, with a value between zero and one indicative of smaller than normal volatility, whilst when $AVAR_{it}$ is greater than one the volatility is larger than normal. Afterwards, because we were interested in potential effects which could span over the event windows, we provide two alternative measure of Cumulative AVAR. More in particular, we provide alternative measures of AVAR1 over different windows as resulting

from the sum of $AVAR_{it}$ over the event windows, whilst the AVAR2 considers the medium $AVAR_{it}$ for each day upon the event window.

Standard event study techniques typically are based on the following two-step of analysis: a first step – characterized as an *univariate analysis* – followed by a second step – characterized as a *multivariate analysis*. In our univariate analysis we compute the market performance achieved by different sub-samples of firms, around the corporate earnings announcements. Those sample are realized by considering the most relevant actions included in the Capital Markets Union's, which we proxy by some micro and macro-economic variables obtained from different sources. We in particular implemented stock and market's index return – we obtained from Bloomberg PLC - with other information about firms characteristics – we obtained from Thomson Reuters – and macro-economic variables – we collected from World Bank Financial Development Database. In order to test, the significance of the cumulative AVAR analyzed, we refer to ordinary cross-sectional method (Charest, 1978), following the assumption that $AVAR_{it}$ are independently and identically distributed with mean zero (null hypothesis) and variance σ^2. By this way, the market performance achieved by different sub-samples of firms over alternative time window – including several robustness checks – is analyzed based on the explanatory variables detailed in section 3.3.

Afterwards, a multivariate analysis is conducted in order to verify the results detected through the univariate analysis. At this step we refer to a multivariate cross-section analysis to study the determinants of a firm's Cumulative Abnormal Return Variance over the window (0;+2), so to control for the most relevant factors that can influence market reactions, through the following approach:

$$AVAR_i = \alpha_0 + \alpha_{1i} \sum_{i=1}^{N} X_i + \alpha_{2i} \sum_{i=1}^{N} Y_i + \varepsilon_i$$

with Xi determined as a vector of micro-economic variables representing of the firm analyzed, whilst Yi represent a vector of macro-economic representative of the country where the firms in listed.

– Table 3, Table 4 and Table 5 about here –

3.3 Explanatory variables for abnormal volatility in Europe

Other than dummy variable referred to the European country in which a security is traded, the model is set up to take into the following variables, which can be interpreted as the most representative of the Capital Markets Union's Project:

Figure 1. Variables considered in this paper as proxy of Capital Markets Union's Actions

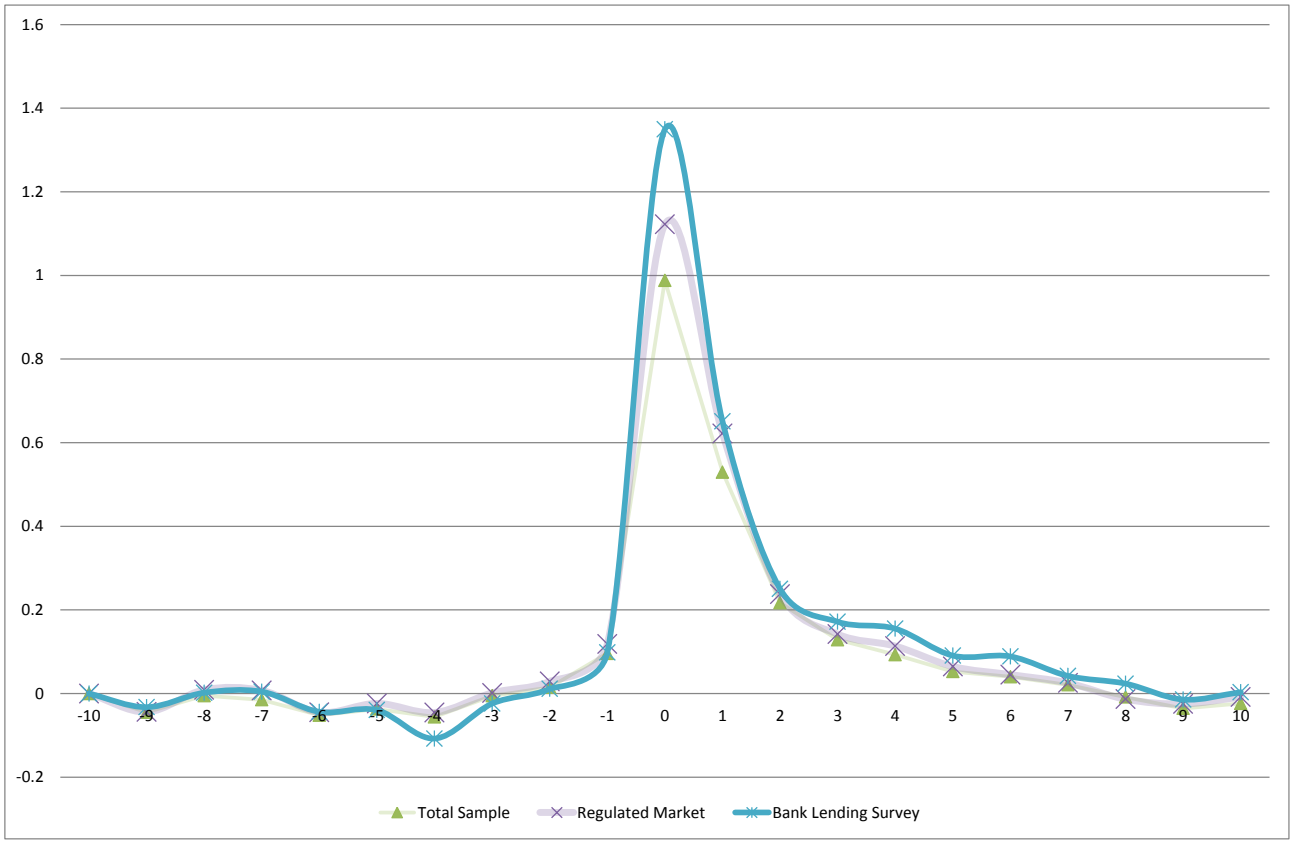
Capital Markets Union Project: main actions	**Key drivers assessed in this paper**
Financing for innovation, start-ups and non-listed companies	
• Support venture capital and equity financing • Overcome information barriers to SME investment • Promote innovative forms of corporate financing	✓ *Dummy SME* ✓ *Dummy analyst coverage* ✓ *Dummy BLS*
Making it easier for companies to enter and raise capital on public markets	
• Strengthen access to public markets • Support equity financing	✓ *Dummy IAS adopter* ✓ *Credit InfoIndex* ✓ *Legal Rights Index*
Investing for long term, infrastructure and sustainable investment	
• Support infrastructure investment • Ensure consistency of EU financial services rulebook • Support sustainable investment • Expand opportunities for institutional investors and fund managers	✓ *Dummy Institutional investor as shareholder* ✓ *Banks Asset, Mutual Funds Assets, Pensions Assets*
Facilitating cross-border investing	
• Remove national barriers to cross-border investment • Improve market infrastructure for cross-border investing • Foster convergence of insolvency proceedings • Remove cross-border tax barriers • Strengthen supervisory convergence and capital market capacity building • Enhance capacity to preserve financial stability	✓ *Country differences (Stock Cap, Stock Trade, GDP Growth, GDP Pro-capita)* ✓ *Dummy Investor protection and enforcement regime*

In depth, the European Commission is proposing new rules to give small and medium enterprises better access to financing through public markets. Therefore, in this paper listed Small and Medium Enterprises, are identified on the basis of the provisions under the Accounting Directive (2013/34/UE). As stated in the Capital Markets Union Project, insufficient financial knowledge is an obstacle restricting SMEs' access to external funding and the lack of awareness about credit reports and credit history and their importance for funding purposes also restricts the external finance options. In line with this, a variable (analyst coverage) is set up explaining the number of equity analysts that follow a firm during the year of the earnings announcement (Defond et al. 2007). One of the main driver of the CMU Project is the interaction between bank and market-based funding. Indeed banks and capital markets are two vital components of the financial system. The euro area bank lending survey (BLS) carried out by the European Central Bank provides information on bank lending conditions in the euro area. It supplements existing statistics with information on the supply of and demand for loans to enterprises and households.

Following European Commission study about the development of SMEs markets, a dummy referred to the presence of institutional investors as a significant shareholder of the company and the adoption of IAS/IFRS (IAS adopter) are assessed. We considered also a variable to verify the level of enforcement activity on capital markets. In particular the investor protection rank and the minority investor protection index calculated by World Bank have been considered (Enforcement).

3.4 Findings

3.4.1 Information content of financial results announcement in Europe



The figure above reports daily AVAR in event time surrounding the earnings announcements. As Landsman and Maydew (2002) reported for U.S. firms, we observe in Europe a spike in AVAR in the days immediately surrounding the earnings announcements because the market experiences large price reactions on the day of the announcement. Therefore can be confirmed that the earning announcements spread on European capital markets contain relevant and unexpected information for the investors, despite stringent disclosure regulation that requires disseminating more information to the market between earnings announcements.

The spike is greater for European issuers listed in Regulated Markets, instead of MTF Markets. This is not surprising, since firms listed in Regulated Markets adopt International Financial Reporting Standards (IFRS). Moreover, we find that AVAR is even more pronounced in countries where a worsening in lending availability occurs, as highlighted by information obtained by the European Bank Lending Survey overall the period analyzed.

3.4.2 Evidence from Univariate Analysis

Table 6 illustrates that earning announcements contain significant information for stock performance. The market experiences large price reactions on the day of the announcement. Therefore it can be concluded that the earning announcements have relevant and unexpected information for the investors. The findings shows a strong evidence of potential scarcity of financing for SMEs which are characterized by a larger stock's variance if compared to larger corporate. This implies that almost always in the SME panel, investors are unable to predict the share trend and this could be justified by the lack of an appropriately set of information. The table also shows that where a potential credit crunch is occurring or for countries which refer most to bank lending activity there is a significant different market reaction to earnings announcement compared to large issuers. More in particular, Table 6 shows that earnings announcements of listed SMEs are characterized by an higher market volatility compared to larger issuers (NO_SME). When credit contraction take place especially for SMEs (BLS10_SME) results confirm the increase in volatility. The presence of institutional investors as a significant shareholders (INSTI) contribute to bring forward the impact of earnings announcements (NO_ISTI shows a larger impact only after two days from the announcement date). The analyst coverage (ANALYST) contribute to lower the effects related to earnings announcements. The study also analyzed the impact of the investor protection regime and its efficacy on the abnormal return. According to Djankov, Simeon, Rafael La Porta, Florencio López-de-Silanes and Andrei Shleifer, stronger legal protections (ENFOIP) make minority investors more confident about their investments, reducing the need for concentrated ownership to mitigate weaknesses in corporate governance Following DeFond and Hung (2003, 2004) and Leuz et al. (2003), investor protection efficacy is captured using the measures of La Porta et al. (1998). Results suggest that on the total sample in countries characterized by an higher investor protection regime, the information content of earnings announcement, measured by the cumulative abnormal return, is higher. This result is in line with DeFond et al. (2007) that find evidence that the insider trading enforcement factors are associated with cross-country differences in the information content of annual earnings announcements and that stock markets are not informationally efficient in countries with weak investor protection institutions. These findings are also in line with other studies (Landsman et al., 2012) that suggest that firms from IFRS adopting countries experienced a greater increase in abnormal return volatility and abnormal trading volume than firms from non-IFRS adopting countries. In particular, we observe from 2006 to 2017 in Europe an higher information content of earnings for IAS adopter issuers and this could be justified by the presence of both direct and indirect effects of mandatory IFRS adoption on the information content of earnings with indirect effects arising through reducing the reporting lag, increasing analyst following, and increasing foreign portfolio investment.

– Table 6 about here –

3.4.3 Evidence from Multivariate Analysis

Table 7 presents the results from assessing eight regressions where the dependent variable is the cumulative abnormal return volatility registered from 1 day before the announcement date to 1 day after that event and the main variables identified above are tested. Findings reported in the table suggest that the cumulative abnormal volatility depends on the size of the issuer (SME), on the

enforcement of rules and procedures set up in a jurisdiction, on the level of banking lending activity. Results suggest that the coefficient of these variables is significant at conventional levels and confirm the univariate analysis represented above.

– Table 7 about here –

3.4.4 Robustness check

The above results are confirmed by the robustness check performed. In particular we assessed the market reactions to event announcement in a sample composed of 27 European countries excluding UK. We have also verified the AVAR in the crisis period.

– Table 8 and Table 9 about here –

The same analysis are performed based on a multivariate framework. Findings confirmed the goodness of the results.

– Table 10 and Table 11 about here –

4 Conclusions

This paper examines the relationship between security prices and financial information on European capital markets to explore the factors that could affect the above relationship and could influence market's reaction to the dissemination of annual financial statements. The study is aimed at contributing to the literature by covering the lack of recent papers with a research setting based on all 28 European countries, and to deepen, through a comparison between stock exchanges and some characteristics of the issuers, the main factors that could lead policy intervention in order to improve capital markets. This research could also contribute to assess whether investors actually use accounting information provided in annual financial statements. This paper, through the analysis of the stock market reaction to more than 40.000 European earning announcements on the 28 European capital markets over the period 2006-2017, aims to perform an empirical investigation upon the most relevant factors potentially influencing market's reaction to the dissemination of annual financial statements in Europe. In order to achieve that objective, the paper considers the most relevant drivers which area highlighted by Capital Markets Union project launched by European Commission, which are tested as potential determinants of abnormal stock's variability during the earning announcements period. The results document the presence of a significant abnormal return volatility in the days around the publication of annual financial results, confirming the evidence of semi-strong form efficiency in European capital markets, despite stringent disclosure regulation that requires disseminating more information to the market between earnings

announcements. Furthermore, examining European cross-country differences in the information content of annual earnings announcements, this research infers whether market participants actually use the reported earnings information and identify factors in countries' financial reporting environments that explain these differences. Indeed results provide a support to European literature that accounting standards and the level of enforcement and investor protection over financial markets is associated with cross-country differences in the information content of annual earnings announcements. Findings confirms the relevance of most of the features suggested by the CMU project. Furthermore an important finding of this study provides a strong evidence of potential scarcity of funding for SMEs, which are characterized by a larger stock's variance if compared to larger corporate. In fact, we document that smaller the listed firm, the higher is the return volatility around its earnings announcements, since investors are unable to predict the share trend because of the lack of an appropriately set of information. In this respect, we found evidence that equity analysts contribute to reduce this volatility. Much of the evidence in this study becomes even more significant for countries in which normally the bank lending activity is more relevant compared to capital markets. Findings are confirmed from the assessment of the market reactions during crisis period when credit contractions take place as represented by the evidence emerging from European Banking Lending Survey.

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Annexes

Table 1. Descriptive Statistics – Total Sample

Stats	SME	Institutional	IAS	EnforcementIP	Analyst	index_country	bank_assets_gdp	mutual_assets_gdp	pension_assets_gdp	stock_cap_gdp	stock_return	stock_volatility	credit_info_index	legal_rights_index	gdp_growth
p90	1.000	1.000	1.000	1.000	1.000	22.700	187.150	68.210	92.672	120.273	26.270	33.620	8.000	7.000	3.986
p75	1.000	1.000	1.000	1.000	1.000	3.600	151.060	51.340	76.470	103.700	16.710	25.530	8.000	7.000	2.864
p50	-	1.000	1.000	-	-	-	123.770	39.090	15.660	74.014	4.600	18.550	7.000	6.000	1.743
p25	-	-	1.000	-	-	-	98.090	11.420	5.550	36.420	- 7.600	14.220	6.000	4.000	0.490
p10	-	-	-	-	-	- 7.690	65.670	4.190	0.420	27.350	- 24.120	11.960	5.000	3.000	- 2.819
mean	0.385	0.591	0.877	0.428	0.329	3.558	125.147	41.400	35.889	72.381	3.887	20.765	6.889	5.850	1.371
sd	0.487	0.492	0.328	0.495	0.470	15.076	41.974	62.247	38.747	37.152	26.696	8.253	1.311	1.730	2.879
N	37295	24679	39385	40392	25542	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392

The table reports some descriptive statistics of the total sample. SME is a dummy variable representing Small and Medium Enterprises. INSTITUTIONAL is the dummy variable representing significant ownership in equity by Institutional investors. ENFORCEMENTIP is a dummy variable representing high enforcement regime of the jurisdiction. ANALYST is the dummy variable representing relevant coverage of equity analysts. INDEX_COUNTRY is Bank Lending Survey indicator of supply conditions (growth rates of bank loans to enterprises). BANK_ASSETS_GDP is the ratio of Bank assets to GDP by country. MUTUAL_ASSETS_GDP is the ratio of mutual fund assets to GDP by country. STOCK_CAP_GDP is the Stock Market Capitalization To GDP Ratio. STOCK_RETURN is the macroeconomic value of stock returns by country. STOCK_VOLATILITY is the volatility of stocks by country. CREDIT_INFO_INDEX is the credit information index measured by World Bank. LEGAL_RIGHTS_INDEX is the Strength of legal rights index provided by World Bank. GDP_GROWTH is the yoy growth in GDP. N is the number of announcement events.

Table 2. Descriptive Statistics – Description by Country

Country	SME	Institutional	IAS	EnforcementIP	Analyst	index_country	bank_assets_gdp	mutual_assets_gdp	pension_assets_gdp	stock_cap_gdp	stock_return	stock_volatility	credit_info_index	legal_rights_index	gdp_growth
AUSTRIA	0,166	0,613	0,930	-	0,473	14,439	107,091	50,389	5,101	31,394	0,332	24,561	7,000	4,000	1,249
BELGIUM	0,284	0,605	0,929	-	0,300	- 1,450	81,062	30,291	4,478	66,683	6,914	18,626	5,000	4,000	1,235
BULGARIA	0,448	0,174	0,988	1,000	-	-	65,614	0,871	5,927	19,997	- 3,731	20,319	5,000	9,000	2,974
CROATIA	0,078	0,470	0,995	-	0,053	-	90,414	4,956	15,533	42,729	- 1,596	16,544	6,000	5,000	0,072
CYPRUS	0,660	0,259	0,980	-	0,124	9,534	223,476	9,283	6,218	42,005	7,417	38,000	3,359	7,000	1,824
CZECH REPUBLI	-	0,392	1,000	-	0,818	-	63,005	4,591	6,562	19,105	- 0,561	21,513	7,000	5,595	1,983
DENMARK	0,140	0,460	0,962	1,000	0,418	-	196,129	78,656	66,722	61,970	15,178	20,254	6,000	8,000	0,774
ESTONIA	0,452	0,756	1,000	-	-	2,542	80,481	2,786	9,229	11,119	1,778	16,639	7,000	7,000	1,515
FINLAND	0,262	0,633	0,987	-	0,412	-	92,745	30,949	57,346	80,990	4,229	20,897	6,000	7,000	0,616
FRANCE	0,344	0,501	0,829	-	0,349	6,241	109,622	71,400	0,290	76,780	2,032	21,603	6,000	4,000	0,937
GERMANY	0,475	0,401	0,653	-	0,321	0,466	108,293	48,186	14,186	43,951	12,226	21,171	8,000	6,000	1,413
GREECE	0,445	0,339	0,994	-	0,238	21,436	117,508	4,301	0,164	38,095	- 7,455	31,314	7,000	3,000	- 1,676
HUNGARY	0,042	0,343	0,856	-	0,435	-	66,420	12,902	6,511	17,118	- 2,675	23,297	5,000	7,640	1,374
IRELAND	0,364	0,715	0,888	1,000	0,420	12,901	134,249	558,257	47,442	51,403	5,952	22,499	7,000	7,000	4,461
ITALY	0,239	0,565	0,948	-	0,324	8,508	120,130	14,280	3,256	31,166	- 1,112	24,682	7,000	2,000	- 0,282
LATVIA	0,375	0,447	0,693	-	-	- 0,362	74,971	1,531	8,153	6,268	4,422	19,227	6,101	9,000	2,530
LITHUANIA	0,483	0,533	0,990	-	-	-	54,143	0,715	4,182	12,008	7,366	15,879	8,000	6,000	2,623
LUXEMBOURG	0,292	0,672	0,895	-	0,432	9,303	98,352	52,066	3,065	137,569	2,851	19,672	-	3,000	2,630
MALTA	0,400	0,657	1,000	-	-	-	129,994	124,214	7,886	43,882	21,783	10,352	0,688	2,000	4,456
NETHERLANDS	0,228	0,762	0,864	-	0,613	-	127,637	9,955	147,506	84,287	0,421	19,664	6,000	2,000	1,166
POLAND	0,297	0,513	0,844	-	0,165	-	63,018	5,816	12,680	32,421	- 16,061	21,957	8,000	7,000	3,362
PORTUGAL	0,130	0,805	0,980	-	0,435	32,227	155,930	8,073	10,667	34,301	2,435	18,954	7,000	2,000	0,071
ROMANIA	0,303	0,337	0,322	-	0,142	-	42,586	1,235	1,321	11,230	2,120	27,479	7,000	9,000	2,175
SLOVAKIA	0,259	0,524	1,000	-	-	-	61,540	5,211	8,152	5,287	- 2,910	19,348	6,000	7,000	3,766
SLOVENIA	0,089	0,577	0,915	1,000	0,108	9,102	82,292	5,599	5,022	22,936	4,197	17,269	4,000	3,000	1,462
SPAIN	0,157	0,635	0,990	-	0,672	9,102	173,692	19,845	10,314	79,998	1,737	23,236	7,000	5,000	0,702
SWEDEN	0,293	0,560	0,966	1,000	0,345	-	130,847	44,576	20,262	100,102	21,057	20,860	5,000	6,000	2,139
UNITED KINGDO	0,560	0,839	0,910	1,000	0,321	2,861	165,136	40,514	83,948	115,979	3,814	17,232	8,000	7,000	1,277
Total	0,385	0,591	0,877	0,429	0,329	3,563	125,240	41,452	35,930	72,477	3,899	20,768	6,890	5,849	1,368

The table reports some descriptive statistics of the total sample by country. (see Table 1 for variable description)

Table 3. Abnormal Volatility – Total Sample

stats	AVAR1_01	AVAR1_11	AVAR1_02	AVAR1_22	AVAR1_32	AVAR1_23	AVAR1_55	AVAR1_1010	AVAR2_01	AVAR2_11	AVAR2_02	AVAR2_22	AVAR2_32	AVAR2_23	AVAR2_33	AVAR2_55	AVAR2_1010	abnormal_ return	sd_residual
p90	15.88	18.78	18.89	23.97	26.22	26.51	37.38	58.13	7.93	6.27	6.29	4.81	4.39	4.43	4.11	3.41	2.79	0.06	0.06
p75	5.68	7.38	7.48	10.67	12.12	12.26	19.28	32.35	2.84	2.46	2.49	2.13	2.02	2.04	1.95	1.75	1.54	0.02	0.04
p50	1.61	2.51	2.55	4.33	5.15	5.24	9.54	18.21	0.80	0.84	0.85	0.87	0.86	0.87	0.87	0.87	0.87	0.00	0.02
p25	0.33	0.70	0.71	1.57	2.03	2.07	4.55	9.82	0.16	0.23	0.24	0.31	0.34	0.35	0.36	0.41	0.47	- 0.01	0.02
p10	0.05	0.14	0.15	0.45	0.66	0.67	1.97	5.07	0.03	0.05	0.05	0.09	0.11	0.11	0.13	0.18	0.24	- 0.05	0.01
mean	13.59	15.40	17.01	20.25	21.48	22.76	33.33	63.87	6.80	5.57	5.67	4.40	4.02	4.01	3.71	3.24	3.16	0.00	0.03
sd	548.35	552.10	608.98	613.90	614.04	688.52	1,067.06	3,247.52	274.17	261.64	202.99	181.07	176.72	147.77	142.07	119.50	159.44	0.07	0.03
N	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392	40392

The table reports the cumulative abnormal return volatility, AVAR, based on the mean of the squared market model adjusted returns divided by the variance of firm i's market model residuals during the non-event period. Cumulative AVAR volatility measure must be positive, with a value between zero and one indicative of smaller than normal volatility, whilst when AVARit is greater than one the volatility is larger than normal. Afterwards, because we were interested in potential effects which could span over the event windows, we provide two alternative measure of Cumulative AVAR. More in particular, we provide alternative measures of AVAR1 over different windows as resulting from the sum of AVARit over the event windows, whilst the AVAR2 considers the medium AVARit for each day upon the event window.

Table 4. Abnormal Volatility – Description by Country

Country	AVAR1_01	AVAR1_11	AVAR1_02	AVAR1_22	AVAR1_32	AVAR1_23	AVAR1_55	AVAR1_1010	AVAR2_01	AVAR2_11	AVAR2_02	AVAR2_22	AVAR2_32	AVAR2_23	AVAR2_33	AVAR2_55	AVAR2_1010	abnormal_ return	sd_residual
AUSTRIA	4.05	5.46	5.10	7.73	8.67	8.58	14.40	33.36	2.02	1.82	1.70	1.55	1.45	1.43	1.36	1.31	1.59	0.00	0.02
BELGIUM	7.45	8.71	8.82	11.27	12.29	12.79	18.99	29.50	3.72	2.90	2.94	2.25	2.05	2.13	1.97	1.73	1.40	0.00	0.02
BULGARIA	3.22	5.42	4.59	7.75	8.65	8.59	16.05	29.73	1.61	2.00	1.53	1.70	1.64	1.53	1.48	1.55	1.47	0.00	0.04
CROATIA	14.72	18.84	57.51	69.07	70.46	70.45	85.58	146.19	7.36	6.28	19.17	13.81	11.74	11.74	10.26	7.78	6.96	0.00	0.03
CYPRUS	6.08	7.76	22.22	25.46	28.45	27.45	37.20	53.83	3.04	2.58	7.40	5.09	4.74	4.57	4.34	3.37	2.56	- 0.00	0.04
CZECH REPUBLIC	2.57	3.09	3.57	5.71	6.73	6.14	11.36	19.63	1.29	1.03	1.19	1.14	1.12	1.02	1.02	1.03	0.93	- 0.00	0.02
DENMARK	7.65	8.95	9.11	11.96	13.05	13.20	18.95	32.47	3.82	2.98	3.04	2.39	2.18	2.20	2.04	1.72	1.55	0.00	0.03
ESTONIA	4.86	5.89	5.95	7.56	8.14	8.34	12.21	22.98	2.43	1.96	1.98	1.51	1.36	1.39	1.27	1.11	1.09	- 0.01	0.03
FINLAND	9.35	10.91	10.71	13.37	14.41	14.52	19.62	30.66	4.68	3.65	3.57	2.68	2.41	2.43	2.23	1.79	1.46	- 0.01	0.02
FRANCE	6.87	8.15	9.81	12.18	13.49	13.52	19.66	31.45	3.43	2.72	3.27	2.44	2.25	2.25	2.12	1.79	1.50	0.00	0.03
GERMANY	4.00	5.46	5.23	7.94	9.19	9.14	15.33	26.73	2.00	1.82	1.74	1.59	1.53	1.52	1.48	1.40	1.28	0.00	0.04
GREECE	4.68	6.01	5.88	8.25	9.18	9.32	14.24	25.17	2.34	2.00	1.96	1.65	1.53	1.55	1.47	1.29	1.20	- 0.00	0.04
GUERNSEY	9.74	10.65	12.04	13.74	14.51	14.98	20.90	42.43	4.87	3.78	4.01	2.93	2.64	2.61	2.40	2.01	2.08	0.01	0.03
HUNGARY	3.38	4.66	5.02	7.34	8.79	8.56	14.56	51.91	1.69	1.55	1.67	1.47	1.46	1.43	1.43	1.32	2.47	- 0.00	0.03
IRELAND	9.14	10.61	10.59	13.22	14.20	14.28	22.19	37.03	4.57	3.55	3.53	2.66	2.38	2.39	2.19	2.03	1.77	0.01	0.04
ISLE OF MAN	83.44	85.12	85.20	87.88	88.64	89.22	93.87	110.05	41.72	28.37	28.40	17.58	14.77	14.87	12.85	8.53	5.24	- 0.03	0.04
ITALY	5.21	6.46	6.65	9.28	10.65	10.85	20.26	31.67	2.60	2.22	2.21	1.91	1.85	1.85	1.80	1.89	1.55	0.01	0.02
JERSEY	120.69	122.93	122.52	125.72	127.96	127.02	134.79	148.00	60.34	41.04	40.84	25.19	21.39	21.20	18.51	12.28	7.07	- 0.01	0.03
LATVIA	49.68	95.64	50.48	98.42	100.50	103.96	111.74	124.63	24.84	31.88	16.83	19.68	16.75	17.33	15.15	10.16	5.93	- 0.00	0.03
LITHUANIA	5.51	6.60	7.24	9.53	10.33	10.79	15.54	26.88	2.75	2.20	2.41	1.91	1.72	1.80	1.66	1.41	1.28	- 0.00	0.03
LUXEMBOURG	7.13	8.71	8.76	10.99	11.78	36.23	43.94	56.37	3.56	2.97	2.92	2.28	2.07	6.09	5.36	4.05	2.71	0.00	0.03
MALTA	7.55	9.24	9.39	12.62	13.53	14.77	23.96	34.85	3.77	3.08	3.13	2.53	2.26	2.46	2.24	2.18	1.66	0.00	0.02
NETHERLANDS	23.98	25.45	25.14	29.33	30.31	30.63	220.49	233.82	11.99	8.49	8.38	5.87	5.06	5.11	4.52	20.05	11.14	- 0.00	0.03
POLAND	4.42	5.92	5.76	8.26	9.21	9.36	14.65	26.53	2.21	1.98	1.92	1.67	1.57	1.57	1.50	1.36	1.28	0.00	0.04
PORTUGAL	2.82	3.51	3.87	5.46	6.85	6.38	12.48	22.70	1.41	1.17	1.29	1.09	1.14	1.06	1.11	1.13	1.08	0.00	0.03
ROMANIA	4.80	9.85	6.10	12.56	13.76	14.60	26.41	55.61	2.40	3.28	2.03	2.51	2.29	2.43	2.26	2.40	2.65	0.00	0.05
SLOVAKIA	4.86	5.21	5.81	6.58	6.79	7.72	10.72	22.75	2.43	1.74	1.94	1.32	1.13	1.29	1.13	0.97	1.08	0.00	0.02
SLOVENIA	2.52	3.57	4.20	6.73	7.34	8.71	15.22	25.15	1.26	1.19	1.40	1.35	1.22	1.45	1.33	1.38	1.20	0.00	0.04
SPAIN	4.30	5.63	5.42	7.93	8.93	9.81	15.12	28.26	2.15	1.97	1.81	1.66	1.58	1.68	1.61	1.42	1.37	- 0.00	0.02
SWEDEN	8.45	10.05	9.75	12.59	13.73	13.70	19.55	34.63	4.22	3.35	3.25	2.52	2.29	2.28	2.12	1.78	1.65	- 0.01	0.04
UNITED KINGDOM	27.99	29.73	31.34	34.35	35.75	40.11	46.97	123.47	13.99	11.62	10.45	8.24	7.67	7.54	7.03	5.05	6.34	0.00	0.03
Total	13.61	15.42	17.03	20.27	21.50	22.78	33.36	63.93	6.80	5.58	5.68	4.41	4.03	4.02	3.72	3.24	3.17	0.00	0.03

The table reports the cumulative abnormal return volatility by country, AVAR, based on the mean of the squared market model adjusted returns divided by the variance of firm i's market model residuals during the non-event period. Cumulative AVAR volatility measure must be positive, with a value between zero and one indicative of smaller than normal volatility, whilst when AVARit is greater than one the volatility is larger than normal. Afterwards, because we were interested in potential effects which could span over the event windows, we provide two alternative measure of Cumulative AVAR. More in particular, we provide alternative measures of AVAR1 over different windows as resulting from the sum of AVARit over the event windows, whilst the AVAR2 considers the medium AVARit for each day upon the event window.

Table 5. Abnormal Volatility – Description by Time

Year	AVAR1_01	AVAR1_11	AVAR1_02	AVAR1_22	AVAR1_32	AVAR1_23	AVAR1_55	AVAR1_1010	AVAR2_01	AVAR2_11	AVAR2_02	AVAR2_22	AVAR2_32	AVAR2_23	AVAR2_33	AVAR2_55	AVAR2_1010	abnormal_ return	sd_residual
2005	27.07	28.42	28.80	31.39	32.44	39.72	45.47	58.96	13.53	9.47	9.60	6.28	5.41	6.62	5.82	4.13	2.81	0.01	0.03
2006	11.48	15.08	12.96	17.72	18.86	19.15	26.08	40.44	5.74	5.03	4.32	3.55	3.15	3.20	2.90	2.38	1.95	0.00	0.02
2007	10.27	11.85	11.87	14.61	16.21	16.28	22.86	35.97	5.13	3.98	3.96	2.95	2.74	2.73	2.58	2.10	1.73	0.00	0.03
2008	6.81	8.24	8.34	10.86	11.93	12.03	17.88	30.63	3.40	2.75	2.78	2.17	2.00	2.01	1.88	1.63	1.47	0.00	0.04
2009	9.15	10.66	11.59	14.43	15.80	15.71	23.83	36.49	4.58	3.56	3.86	2.89	2.64	2.62	2.44	2.17	1.74	0.00	0.04
2010	8.11	9.95	11.20	14.04	15.45	15.23	21.75	33.75	4.05	3.33	3.73	2.84	2.62	2.56	2.41	2.00	1.63	0.00	0.03
2011	8.83	10.80	10.19	14.93	16.13	16.28	22.97	36.00	4.42	3.61	3.40	2.99	2.69	2.72	2.50	2.09	1.72	0.00	0.03
2012	10.77	12.17	12.01	14.72	15.69	15.79	21.12	35.44	5.39	4.07	4.00	2.95	2.63	2.64	2.40	1.93	1.70	- 0.00	0.03
2013	10.61	12.18	12.78	16.22	17.34	17.74	68.30	92.08	5.30	4.09	4.26	3.27	2.92	2.97	2.72	6.23	4.40	- 0.00	0.03
2014	49.13	50.59	66.61	69.52	70.71	81.23	88.80	105.00	24.57	21.33	22.20	17.48	16.25	15.77	14.65	10.11	6.17	- 0.00	0.03
2015	9.84	11.39	11.37	14.10	15.32	16.63	22.85	198.97	4.92	3.85	3.79	2.87	2.61	2.80	2.59	2.11	9.50	0.00	0.03
2016	11.55	14.25	14.60	18.65	19.99	19.89	27.37	40.99	5.77	4.76	4.87	3.74	3.34	3.32	3.04	2.49	1.96	- 0.00	0.03
2017	5.88	7.08	7.27	9.39	10.04	11.44	16.59	53.14	2.94	2.36	2.42	1.88	1.67	1.91	1.73	1.51	2.53	- 0.00	0.03
Total	13.59	15.40	17.01	20.25	21.48	22.76	33.33	63.87	6.80	5.57	5.67	4.40	4.02	4.01	3.71	3.24	3.16	0.00	0.03

The table reports the cumulative abnormal return volatility by year, AVAR, based on the mean of the squared market model adjusted returns divided by the variance of firm i's market model residuals during the non-event period. Cumulative AVAR volatility measure must be positive, with a value between zero and one indicative of smaller than normal volatility, whilst when AVARit is greater than one the volatility is larger than normal. Afterwards, because we were interested in potential effects which could span over the event windows, we provide two alternative measure of Cumulative AVAR. More in particular, we provide alternative measures of AVAR1 over different windows as resulting from the sum of AVARit over the event windows, whilst the AVAR2 considers the medium AVARit for each day upon the event window.

Table 6. Empirical Evidence

	AVAR1_01	AVAR1_02	AVAR1_11	N
Total	13.5909***	17.0066***	15.4045***	40392
	4.981	*5.613*	*5.608*	
SME	22.1554***	25.0689***	24.0673***	14356
	2.933	*3.225*	*3.18*	
NO_SME	7.2286***	9.2647***	8.5828***	22939
	32.829	*19.585*	*36.302*	
INSTI	17.3905**	19.3151***	19.0553***	14575
	2.515	*2.785*	*2.754*	
NO_INSTI	14.2502***	22.3899***	15.8412***	10104
	3.44	*3.375*	*3.786*	
IAS	13.9654***	17.7117***	15.5560***	34541
	4.399	*5.019*	*4.891*	
NO_IAS	10.9359***	12.3454***	14.4514***	4844
	5.077	*5.684*	*4.602*	
ENFOIP	22.7825***	25.3363***	24.4612***	17285
	3.612	*3.905*	*3.872*	
NO_ENFOIP	6.7152***	10.7756***	8.6298***	23107
	9.657	*5.079*	*10.121*	
ANALYST	8.5636***	9.6858***	9.6839***	8400
	10.44	*11.791*	*11.722*	
NO_ANALYST	10.4060***	13.4143***	11.9102***	17142
	9.749	*6.999*	*11.111*	
BLS10	22.7288***	25.7435***	24.4005***	13658
	2.864	*3.153*	*3.07*	
NO_BLS10	8.9225***	12.5430***	10.8086***	26734
	11.936	*6.647*	*12.555*	
BANKASSET	21.9663***	24.7692***	23.5990***	18711
	3.757	*4.11*	*4.03*	
NO_BANKASSET	6.3628***	10.3074***	8.3326***	21681
	10.402	*4.697*	*10.337*	
STOCKCAP	21.0437***	23.6573***	22.6504***	20693
	3.979	*4.346*	*4.276*	
NO_STOCKCAP	5.7621***	10.0203***	7.7931***	19699
	8.776	*4.123*	*8.906*	
SME_BLS10	41.6145**	46.0332**	43.4915**	5802
	2.233	*2.402*	*2.33*	
SME_NO_BLS10	8.9566***	10.8492***	10.8923***	8554
	9.471	*9.971*	*10.761*	
NO_SME_BLS10	8.2018***	10.2238***	9.4268***	7242
	16.788	*12.958*	*18.953*	
NO_SME_NO_BLS10	6.7797***	8.8222***	8.1934***	15697
	29.532	*15.012*	*31.727*	
SME_BANKASSET	37.3009***	41.4435***	39.1567***	7572
	2.606	*2.814*	*2.731*	
SME_NO_BANKASSET	5.2506***	6.7922***	7.2252***	6784
	10.895	*13.673*	*11.111*	
NO_SME_BANKASSET	9.1239***	11.0731***	10.4337***	9850
	20.527	*12.484*	*22.974*	
NO_SME_NO_BANKASSET	5.8024***	7.9039***	7.1899***	13089
	30.299	*16.084*	*30.787*	
SME_STOCKCAP	34.9533***	38.8694***	36.7035***	8374
	2.699	*2.918*	*2.83*	
SME_NO_STOCKCAP	4.2400***	5.7500***	6.3782***	5982
	18.694	*22.894*	*11.574*	
NO_SME_STOCKCAP	9.5059***	11.2787***	10.8060***	10956
	23.883	*19.735*	*26.879*	
NO_SME_NO_STOCKCAP	5.1465***	7.4233***	6.5500***	11983
	24.397	*10.042*	*24.933*	

***, **, * denote significance at the 1%, 5% and 10% level, respectively. t-statistics (traditional cross-sectional method) based on standard errors are shown. Findings represent the summary statistics for regressions of earnings announcement of Cumulative Abnormal Return Volatility (AVAR) for event windows [0;1], [0;2] [-1;1] on variables that justify Capital Markets Union actions. See table 1 for variable definitions (NO_ before the name of the dummy variable takes the value of zero of the relevant variable).

Table 7. Multivariate analysis

	Mod_01	Mod_02	Mod_03	Mod_04	Mod_05	Mod_06	Mod_07	Mod_08
SME	0.9482**	0.9589**	0.8780*	0.9280*	1.0400**	0.9641**	0.9691**	0.8733*
	2,000	*2,022*	*1,849*	*1,956*	*2,188*	*2,032*	*2,039*	*1,841*
EnforcementIP	2.1563***	2.2308***	2.0089***	1.6583**	1.5054**	2.0749***	2.3111***	0,86
	3,522	*3,634*	*3,267*	*2,255*	*2,284*	*3,344*	*3,511*	*1,321*
BLS10	1.0972**	1.3670***	0,80	1.1803**	0.8271*	1.0736**	1.1635**	0.8298*
	2,260	*2,684*	*1,611*	*2,408*	*1,668*	*2,207*	*2,344*	*1,702*
stock_cap_gdp	0.0669***	0.0643***	0.0674***	0.0690***	0.0549***	0.0672***	0.0678***	0.0467***
	7,897	*7,486*	*7,964*	*7,981*	*5,732*	*7,928*	*7,892*	*5,096*
stock_return	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
	1,330	*0,659*	*1,417*	*1,354*	*0,884*	*1,205*	*1,306*	*1,603*
IAS	0,34	0,38	0,54	0,45	0,55	0,37	0,38	0,35
	0,466	*0,518*	*0,727*	*0,611*	*0,742*	*0,507*	*0,520*	*0,476*
gdp_growth_pct		0.1554*						
		1,752						
credit_info_index			0.4392***					
			2,620					
legal_rights_index				0,19				
				1,223				
insurance_assets_gdp					0.0254***			
					2,665			
mutual_assets_gdp						0,00		
						0,812		
bank_assets_gdp							0,00	
							-0,641	
pension_assets_gdp								0.0464***
								5,789
_cons	1,01	0,84	-2,03	-0,16	0,43	0,87	1,36	1.4597*
	1,193	*0,994*	*-1,418*	*-0,126*	*0,491*	*1,007*	*1,348*	*1,724*
N	43018	43018	43018	43018	43018	43018	43018	43018
chi2	268,57	271,64	275,43	270,06	275,67	269,23	268,98	302,08

***, **, * denote significance at the 1%, 5% and 10% level, respectively. t-statistics (traditional cross-sectional method) based on standard errors are shown. Findings represent the summary statistics for multivariate analysis of Cumulative Abnormal Return Volatility (AVAR). See table 1 for variable definitions.

Table 8. Robustness check – Univariate analysis – Sample without UK

AVAR1_01	Total Sample	N	NO UK	N
Total	13.5909***	40392	6.9368***	29547
	4.981		*12.575*	
SME	22.1554***	14356	5.0834***	8632
	2.933		*13.045*	
NO_SME	7.2286***	22939	6.3598***	18477
	32.829		*30.903*	
INSTI	17.3905**	14575	7.8205***	9328
	2.515		*9.637*	
NO_INSTI	14.2502***	10104	7.3862***	9030
	3.44		*5.33*	
IAS	13.9654***	34541	7.0446***	24790
	4.399		*11.64*	
NO_IAS	10.9359***	4844	6.3011***	3894
	5.077		*3.906*	
ENFOIP	22.7825***	17285	7.7318***	6440
	3.612		*18.168*	
NO_ENFOIP	6.7152***	23107	6.7152***	23107
	9.657		*9.657*	
ANALYST	8.5636***	8400	8.0418***	5804
	10.44		*6.946*	
NO_ANALYST	10.4060***	17142	6.4984***	11478
	9.749		*10.617*	
BLS10	22.7288***	13658	4.9173***	6733
	2.864		*21.734*	
NO_BLS10	8.9225***	26734	7.5328***	22814
	11.936		*10.59*	
BANKASSET	21.9663***	18711	8.6201***	8508
	3.757		*7.726*	
NO_BANKASSET	6.3628***	21681	6.2561***	21039
	10.402		*9.934*	
STOCKCAP	21.0437***	20693	9.2866***	9848
	3.979		*9.223*	
NO_STOCKCAP	5.7621***	19699	5.7621***	19699
	8.776		*8.776*	
SME_BLS10	41.6145**	5802	4.1266***	2251
	2.233		*12.954*	
SME_NO_BLS10	8.9566***	8554	5.4209***	6381
	9.471		*10.527*	
NO_SME_BLS10	8.2018***	7242	5.3493***	4303
	16.788		*17.207*	
NO_SME_NO_BLS10	6.7797***	15697	6.6665***	14174
	29.532		*26.552*	
SME_BANKASSET	37.3009***	7572	5.2536***	2141
	2.606		*12.383*	
SME_NO_BANKASSET	5.2506***	6784	5.0273***	6491
	10.895		*10.075*	
NO_SME_BANKASSET	9.1239***	9850	7.8489***	5666
	20.527		*15.467*	
NO_SME_NO_BANKASSET	5.8024***	13089	5.7011***	12811
	30.299		*29.392*	
SME_STOCKCAP	34.9533***	8374	6.9873***	2650
	2.699		*6.019*	
SME_NO_STOCKCAP	4.2400***	5982	4.2400***	5982
	18.694		*18.694*	
NO_SME_STOCKCAP	9.5059***	10956	8.5984***	6494
	23.883		*19.717*	
NO_SME_NO_STOCKCAP	5.1465***	11983	5.1465***	11983
	24.397		*24.397*	

***, **, * denote significance at the 1%, 5% and 10% level, respectively. t-statistics (traditional cross-sectional method) based on standard errors are shown. Findings represent the summary statistics for regressions of earnings announcement of Cumulative Abnormal Return Volatility (AVAR) for event windows [0;1], [0;2] [-1;1] considering the sample without UK.

Table 9. Robustness check – Univariate analysis – Crisis Period

AVAR1_01	Total Sample	N	Crisis	N
Total	13.5909***	40392	14.2140***	30100
	4.981		*3.929*	
SME	22.1554***	14356	25.6649**	10716
	2.933		*2.541*	
NO_SME	7.2286***	22939	7.0345***	17156
	32.829		*29.285*	
INSTI	17.3905**	14575	18.8206**	12451
	2.515		*2.325*	
NO_INSTI	14.2502***	10104	13.9876***	8889
	3.44		*3.075*	
IAS	13.9654***	34541	15.0365***	26025
	4.399		*3.602*	
NO_IAS	10.9359***	4844	8.0532***	3450
	5.077		*4.152*	
ENFOIP	22.7825***	17285	25.6440***	12705
	3.612		*3.004*	
NO_ENFOIP	6.7152***	23107	5.8658***	17395
	9.657		*10.562*	
ANALYST	8.5636***	8400	8.5320***	6312
	10.44		*7.917*	
NO_ANALYST	10.4060***	17142	10.8189***	13088
	9.749		*7.931*	
BLS10	22.7288***	13658	24.4694***	12225
	2.864		*2.76*	
NO_BLS10	8.9225***	26734	7.2002***	17875
	11.936		*12.059*	
BANKASSET	21.9663***	18711	23.7895***	14736
	3.757		*3.221*	
NO_BANKASSET	6.3628***	21681	5.0300***	15364
	10.402		*24.558*	
STOCKCAP	21.0437***	20693	24.8416***	14112
	3.979		*3.221*	
NO_STOCKCAP	5.7621***	19699	4.8335***	15988
	8.776		*23.116*	
SME_BLS10	41.6145**	5802	44.3440**	5382
	2.233		*2.207*	
SME_NO_BLS10	8.9566***	8554	6.8177***	5334
	9.471		*7.675*	
NO_SME_BLS10	8.2018***	7242	8.1570***	6300
	16.788		*14.777*	
NO_SME_NO_BLS10	6.7797***	15697	6.3832***	10856
	29.532		*31.379*	
SME_BANKASSET	37.3009***	7572	42.7613**	5926
	2.606		*2.341*	
SME_NO_BANKASSET	5.2506***	6784	4.5138***	4790
	10.895		*16.341*	
NO_SME_BANKASSET	9.1239***	9850	9.1115***	7898
	20.527		*19.05*	
NO_SME_NO_BANKASSET	5.8024***	13089	5.2627***	9258
	30.299		*29.927*	
SME_STOCKCAP	34.9533***	8374	43.6979**	5810
	2.699		*2.346*	
SME_NO_STOCKCAP	4.2400***	5982	4.3090***	4906
	18.694		*16.465*	
NO_SME_STOCKCAP	9.5059***	10956	9.6792***	7456
	23.883		*20.025*	
NO_SME_NO_STOCKCAP	5.1465***	11983	5.0017***	9700
	24.397		*24.558*	

***, **, * denote significance at the 1%, 5% and 10% level, respectively. t-statistics (traditional cross-sectional method) based on standard errors are shown. Findings represent the summary statistics for regressions of earnings announcement of Cumulative Abnormal Return Volatility (AVAR) for event windows [0;1], [0;2] [-1;1] considering only the crisis periods (financial crisis 2008-2009, sovereign crisis 2010-2012, economic crisis 2013-2015).

Table 10. Robustness check – Multivariate analysis - Sample without UK

	Mod_01	Mod_02	Mod_03	Mod_04	Mod_05	Mod_06	Mod_07	Mod_08
SME	4.9194***	5.0836***	4.9194***	4.9194***	4.9348***	4.9383***	5.1365***	4.9443***
	5,718	*5,905*	*5,718*	*5,718*	*5,736*	*5,739*	*5,961*	*5,746*
BLS10	4.0734***	4.7189***	4.0734***	4.0734***	5.7588***	2.8483**	3.7362***	2.7374**
	4,494	*5,158*	*4,494*	*4,494*	*3,958*	*2,128*	*4,108*	*2,179*
stock_cap_gdp	-0,05	-0.3695***	-0,05	-0,05	-0,01	-0,10	-0.3729***	-0,10
	-0,679	*-3,896*	*-0,679*	*-0,679*	*-0,085*	*-1,224*	*-3,671*	*-1,229*
stock_return	0,06	0,07	0,06	0,06	0,06	0,09	0.2545***	0,06
	0,874	*0,989*	*0,874*	*0,874*	*0,900*	*1,211*	*3,070*	*0,793*
IAS	-4.4139***	-4.0169**	-4.4139***	-4.4139***	-4.3105***	-4.5751***	-3.3761**	-4.4623***
	-2,706	*-2,460*	*-2,706*	*-2,706*	*-2,641*	*-2,796*	*-2,050*	*-2,736*
gdp_growth_pct		2.1209***						
		5,222						
insurance_assets_gdp					-0,22			
					-1,481			
mutual_assets_gdp						0,10		
						1,244		
bank_assets_gdp							-0.1267***	
							-4,538	
pension_assets_gdp								0,08
								1,536
_cons	17.7066**	51.2444***	17.7066**	17.7066**	33.1831**	20.5325**	74.5716***	17.5821**
	2,139	*4,892*	*2,139*	*2,139*	*2,489*	*2,392*	*4,966*	*2,124*
N	11723	11723	11723	11723	11723	11723	11723	11723
chi2	64,63	91,90	64,63	64,63	66,82	66,18	85,22	66,99

***, **, * denote significance at the 1%, 5% and 10% level, respectively. t-statistics (traditional cross-sectional method) based on standard errors are shown. Findings represent multivariate analysis without considering UK. See tables above for variable explanations.

Table 11. Robustness check – Multivariate analysis - Crisis Period

	Mod_01	Mod_02	Mod_03	Mod_04	Mod_05	Mod_06	Mod_07	Mod_08
SME	1.2722**	1.2648**	1.2070**	1.2508**	1.3172**	1.2913**	1.3091**	1.1940**
	2,319	*2,305*	*2,197*	*2,278*	*2,395*	*2,352*	*2,383*	*2,176*
EnforcementIP	1.5678**	1.6030**	1.4048*	1,07	1,25	1.4310*	1.9159**	0,27
	2,114	*2,161*	*1,886*	*1,213*	*1,579*	*1,897*	*2,425*	*0,343*
BLS10	1.0476*	1.2680**	0,55	1.1112*	0.9636*	1.0294*	1.1920**	0,60
	1,851	*2,168*	*0,914*	*1,952*	*1,689*	*1,818*	*2,065*	*1,049*
stock_cap_gdp	0.0822***	0.0800***	0.0849***	0.0845***	0.0754***	0.0829***	0.0850***	0.0602***
	7,561	*7,289*	*7,765*	*7,617*	*6,098*	*7,612*	*7,664*	*5,186*
stock_return	0.0327**	0,02	0.0270*	0.0315**	0.0286*	0.0303**	0.0308**	0,02
	2,248	*1,369*	*1,831*	*2,154*	*1,913*	*2,057*	*2,106*	*1,620*
IAS	1,25	1,28	1,42	1,37	1,37	1,30	1,35	1,20
	1,429	*1,457*	*1,619*	*1,550*	*1,548*	*1,483*	*1,530*	*1,370*
gdp_growth_pct		0,15						
		1,493						
credit_info_index			0.4705**					
			2,365					
legal_rights_index				0,19				
				1,048				
insurance_assets_gdp					0,01			
					1,160			
mutual_assets_gdp						0,00		
						0,979		
bank_assets_gdp							-0,01	
							-1,277	
pension_assets_gdp								0.0506***
								5,357
_cons	-0,56	-0,66	-3.8269**	-1,73	-0,88	-0,77	0,25	-0,08
	-0,572	*-0,666*	*-2,257*	*-1,164*	*-0,864*	*-0,767*	*0,216*	*-0,077*
N	32192	32192	32192	32192	32192	32192	32192	32192
chi2	257,15	259,38	262,74	258,25	258,49	258,11	258,78	285,84

***, **, * denote significance at the 1%, 5% and 10% level, respectively. t-statistics (traditional cross-sectional method) based on standard errors are shown. Findings represent multivariate analysis without considering crisis periods (financial crisis 2008-2009, sovereign crisis 2010-2012, economic crisis 2013-2015). See tables above for variable explanations.