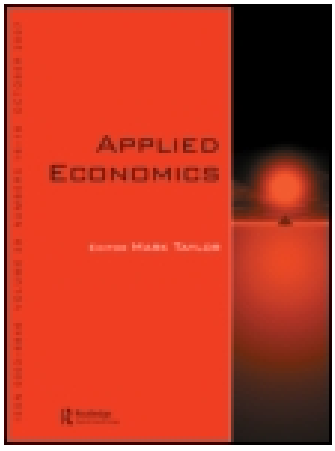

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How has the financial crisis affected earnings management? A European study

Riccardo Cimini[a]
[a] Department of Business, Government and Philosophy studies, University of 'Tor Vergata', Rome, Italy
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How has the financial crisis affected earnings management? A European study

Riccardo Cimini

Department of Business, Government and Philosophy studies, University of 'Tor Vergata', Rome, Italy
E-mail: riccardo.cimini@uniroma2.it

The article aims to investigate whether and how in the European Union (EU), the burst of the 2008 financial crisis affected misrepresentation of financial information due to earnings management. By analysing a sample of 11 844 firm-year observations listed in the EU over the period 2006–2012, an event study methodology allows us to calculate and compare country-by-country abnormal accruals over the estimation period and over the event period. Our findings validate our research hypothesis and suggest a decrease of misrepresentation in the large majority of the European countries after the burst of the financial crisis. The results take part in the debate in the accounting literature about the change of earnings management over a financial crisis and have several implications for standard setters and regulators that could learn how the common incentives of entities to attract potential investors during a crisis could lead them to provide a high-quality financial reporting.

Keywords: earnings management; financial crisis; event study; Monte Carlo simulations

JEL Classification: M41

I. Introduction

Due to the presence of asymmetric information and conflicting interests between insiders and the different groups of firm's stakeholders, managers have an incentive to behave opportunistically, using financial information to misrepresent the performance of the firm by carrying out earnings management.

We consider earnings management as the insiders' attempt to manipulate earnings against the interest of outsiders. Earnings management has been the focus of considerable amount of empirical research in the last decades (Healy and Wahlen, 1999; Dechow and Skinner, 2000; McNichols, 2000; Garcia Osma *et al.*, 2005; Ronen and Yaari, 2008; Garcia-Meca and Sanchez-Ballesta, 2009; Mechelli and Cimini, 2012; Alves, 2013). However, no single definition of the concept of earnings management exists, and multiple measures have been used to estimate the degree of earnings management in previous empirical studies (e.g. Schipper, 1989; Healy and Wahlen, 1999; Beneish, 2001; Leuz *et al.*, 2003; Ewert and Wagenhofer, 2005; Garcia Osma *et al.*, 2005; Callao and Jarne, 2010; Chen *et al.*, 2010).

This article addresses a specific research question about whether and how the financial crisis affects the

tendency of insiders to manipulate the substance of annual reports by carrying out earnings management. Our research hypothesis, grounded in the accounting literature (Chia *et al.*, 2007; LaFond and Watts, 2008; Francis *et al.*, 2013), is that earnings management decreases probably because of both the high quality of financial reporting and audit quality over a financial crisis.

We test our research hypothesis with a methodology based on the event study approach, that is, comparing abnormal accruals before and after an event, which is in this case the burst of the financial crisis since fiscal year 2008. Data have been collected by using the Datastream database for a sample of 11 844 non-financial firm-year observations, listed over the period 2006–2012, in the 15 countries that belonged to the EU at the time of issuance of Regulation 1606/2002, and referring to the consolidated financial statements issued complying with the IASB standards.

The methodology followed is based on the use of event study, heavily used in the accounting literature by the pioneering earnings management works of McNichols and Wilson (1988), Jones (1991) and Dechow *et al.* (1995) and, more recently, by Callao and Jarne (2010). To adopt an event study methodology, we use as the estimation period fiscal years 2006 and 2007, assumed as pre-crisis years, and as the event period fiscal years 2008–2012, assumed as the crisis years. For each country, we estimate abnormal accruals over both the estimation period (before the event) and the event period (after the event), using an accrual estimation model, similar to that used by Larcker and Richardson (2004) and Callao and Jarne (2010). This model is a modified Jones (1991) model, introduced by Dechow *et al.* (1995), that also includes between regressors the current cash flow from operations and the market value of equity. To test whether and how the event, that is, the burst of the financial crisis, affected earnings management, country-by-country we compare abnormal accruals estimated before and after such event, using a non-parametric Wilcoxon (1945) sign-rank test.

Our findings suggest that earnings management decreased in the large majority of the European countries after the burst of the financial crisis, confirming our research hypothesis. Among the sensitivity analyses that validate the robustness of our results, we re-estimated abnormal accruals not considering data of fiscal year 2008, to avoid that the market volatility of such year could bias our results.

These results contribute to the debate in literature about the effect of the 2008 financial crisis on the earnings management carried out by insiders in non-financial European listed entities, because in the accounting literature there are few studies that investigate similar topics. On the one hand, there are scholars (Bornemann *et al.*, 2012; Balasubramanyan *et al.*, 2013) who analyse a sample of European financial entities and find an increase of earnings management due to specific accruals manipulations. On the other hand, there are scholars (Filip and Raffournier, 2012; Iatridis and Dimitras, 2013; Kousenidis *et al.*, 2013) who investigate a sample of non-financial entities. In a working paper, Filip and Raffournier (2012) compare opportunistic behaviour before and after the burst of a financial crisis by having as a reference the whole EU; without using a country-by-country approach, they found a decrease of earnings management. When scholars used a country-by-country approach (Iatridis and Dimitras, 2013; Kousenidis *et al.*, 2013), they achieved contradictory results in terms of increase or decrease of earnings management, depending on the country analysed.

This article is one of the first studies that uses as a reference all the non-financial entities listed in the EU to investigate whether and how the burst of the financial crisis affected the tendency of insiders to misrepresent financial information by carrying out earnings management. In this regard, its contribution is twofold, both for the sample analysed and for the methodology used to detect earnings management. To the best of our knowledge, this is the first paper published in an academic journal that tests the research hypothesis by having as a reference the non-financial entities listed in the 15 countries that belong to the EU at the time of issuance of EU Regulation 1606/2002. In fact, the other scholars who investigate similar topics detect earnings management by analysing only a portion of the European countries. For instance, Iatridis and Dimitras (2013) investigate a sample of 66 Portuguese, 48 Irish, 273 Italian, 245 Greek and 157 Spanish non-financial-listed entities audited by the Big 4; Kousenidis *et al.* (2013) investigate a sample of non-financial entities listed in Greece, Ireland, Italy, Portugal and Spain. Only the working paper of Filip

and Raffournier (2012) analyses all the European countries, but they adopt a country-by-country approach only to control the robustness of results achieved in the main analysis, where they investigate the EU as a whole. Methodologically, this is the first study that, detecting earnings management, reconciles old research methodology (e.g. the event study, used in the 'first-generation' models) with the latest ones (e.g. the method to calculate discretionary accruals introduced by Kothari *et al.*, 2005 and in all the 'second-generation' models). None of the above-referenced scholars used an event-study methodology to verify whether and how the burst of the financial crisis affects the tendency of insiders to misrepresent financial information. Despite the scepticism of several scholars about the event study (McNichols, 2000), as far we are concerned it is the most suitable methodology for the research design of this investigation. In addition, none of the aforementioned studies used Monte Carlo simulations to estimate abnormal performance derived from robust simulated coefficients of an accruals estimation model.

The research results have several implications for standard setters and regulators who could learn how financial crises may affect the quality of financial reporting. Actually, during a crisis, entities have common incentives to attract potential investors through a high-quality financial reporting. In this regard, standard setters are aware that, because of the presence of such incentives, a set of accounting standards, stand-alone is not enough to limit misrepresentation of financial information due to earnings management.

This work continues as follows. In Section II, we reference the literature that allows the development of the research hypothesis; in Section III, we detail the methodology used to answer our research question, addressed in the title of the article, and to test the hypothesis; in Section IV, we provide several descriptive statistics of accounting variables used in our models. Section V shows our findings and Section VI concludes the work with its possible improvement and future developments.

II. Literature Review and Research Hypothesis

In recent year, earnings management has been the topic of thousands of research papers. Scholars have been interested in the detection of the so-called accrual-accounting earnings management or real-activities earnings management. While in the first case (accrual accounting earnings management), they detect the manipulation of those components of earnings that in the literature are well known as accruals, in the second case (real activities earnings management) scholars focus on real activities, that is, reductions in expenditures on research and development, price discounts to increase sales or overproduction to disclose lower cost of goods sold that, differently from the manipulation of accruals, has a direct impact on cash flow. In addition, scholars who investigated accrual-accounting earnings management focused on specific accruals or assessed abnormal accruals as a whole to detect earnings management. Despite the relevant number of research papers that deal with specific accruals,[1] in this article we are interested in the so-called accrual-accounting earnings management investigated as a whole.

In this section, we reference those papers that detect earnings management before and after a financial crisis, with particular attention to papers that investigate this phenomenon after the burst in the EU of the 2008 financial crisis.

With respect to the impact that the financial crisis had on accrual-accounting earnings management, few scholars investigated this issue by having the EU as a reference; in addition, they achieved different findings depending on whether they analysed financial or non-financial entities and the methodological choices made to detect earnings management.

[1] About depreciation estimates and bad debt provisions: Jackson and Liu (2010), McNichols and Wilson (1988) and Teoh *et al.* (1998); about pension costs under the SFAS 87: Ali and Kumar (1993); about loan loss provisions of firms that belong to the financial sector: Beatty *et al.* (1995), Beaver *et al.* (1989), Beaver and Engel (1996), Chen and Daley (1996), Chamberlain (1996), Collins *et al.* (1995), Liu and Ryan (1995), Liu *et al.* (1997), Moyer (1990), Robb (1998), Scholes *et al.* (1990), Wahlen (1994); about property-casualty insurance claim loss reserves: Anthony and Petroni (1997), Beaver and McNichols (1998), Beaver *et al.* (2000), Beaver *et al.* (2003), Penalva (1998), Petroni (1992), Petroni *et al.* (1999); about deferred tax valuation allowances of FAS no. 109: Ayers (1998), Blaylock *et al.* (2012), Chamberlain (1996), Chen and Daley (1996), Dunbar *et al.* (2004), Hanlon (2005), Lev and Nissim (2004), Miller and Skinner (1998), Phillips *et al.* (2003), Phillips *et al.* (2004), Visvanathan (1998).

Scholars who investigated financial entities generally found an increase in specific accruals and thus an increase of misrepresentation. In the analysis of manipulations of loan loss provisions in annual reports of 469 commercial banks listed in the EU, Balasubramanyan *et al.* (2013) investigated the change of earnings management in 27 countries over the period 2005–2010 and found an increase of earnings management directed to the manipulation of book value of equity and regulatory capital. Similar findings have been achieved by Bornemann *et al.* (2012). They show the extent to which insiders built hidden reserves to avoid a fall of earnings by analysing annual reports of listed and non-listed German banks over the period 1997–2009.

As to the detection of earnings management in non-financial entities, the seminal working paper of Filip and Raffournier (2012) investigated the impact of the 2006–2009 financial crisis on the earnings management behaviour of a sample of non-financial firms (8266 firm-year observations) listed in 16 European markets. Following Leuz *et al.* (2003), they calculated two indexes that aim to detect earnings smoothing and the residuals of the Jones (1991) model as measure of accruals quality. Their findings suggest an earnings management decrease over the crisis years (e.g. 2008–2009) with respect to the expansion period (e.g. 2006–2007). More specifically, detecting earnings management by using the whole EU as a reference, they found an income smoothing decrease during the crisis years associated with an increase of accruals quality. They consider this methodology (using the whole EU as a reference for the detection of earnings management) more robust than a country-by-country approach. They argue that extending the analysis to the EU as a whole neutralizes country-specific influences and provides stronger evidence. However, to test their findings achieved in the main analysis, they also compare income smoothing and the quality of reported accruals by adopting a country-by-country approach. In this robustness tests, they found that despite the decrease of earnings management observed analysing the EU as a whole, not all countries show the same trend. In fact, they found an increase of earnings management in Austria, Belgium, France, Norway and Portugal that do not validate their research hypothesis of earnings management decrease.

Other scholars who adopt a country-by-country analysis to detect earnings management before and after the burst of the financial crisis also achieve contradictory findings in terms of increase or reduction of earnings management. Investigating the European context, Iatridis and Dimitras (2013) explore the change of value relevance and earnings management over the period 2005–2008 and 2009–2011 in a sample of 66 Portuguese, 48 Irish, 273 Italian, 245 Greek and 157 Spanish non-financial listed entities audited by the Big 4. Their findings suggest that Portugal, Italy and Greece display a stronger tendency towards earnings management, Ireland exhibits less evidence of earnings manipulation, while the findings for Spain are somewhat conflicting (Iatridis and Dimitras, 2013, p. 160). Also Kousenidis *et al.* (2013) address the same issues but achieve homogeneous results investigating whether and how the financial crisis affects earning quality (conditional conservatism, timeliness, value relevance and earnings management) across the EU. In their work, these scholars analysed a sample of 552 non-financial entities listed in Greece, Ireland, Italy, Portugal and Spain over the period 2008–2011. The countries analysed are those with weak fiscal sustainability and that are under the supervision of the European authorities. For the period investigated, they considered fiscal years 2008 and 2009 as pre-crisis and the 2010–2011 as a crisis period. As to the evidence about earnings management, they found a reduction of manipulations after the financial crisis, due to a greater interest of entities in disclosing less smoothed and less managed earnings, because firms that rely on external financing and struggle with liquidity problems have very strong incentives for increasing their financial reporting quality in order to attract prospective investors (Kousenidis *et al.*, 2013, p. 351).

Outside the EU, other scholars also address similar research questions. In investigating other worldwide countries, Charoenwong and Jiraporn (2009) found that the pre- and post-analyses of the 1997 financial crisis indicate that in Thailand non-financial companies stop managing their earnings reports after the crisis. On the contrary, in Singapore, the evidence of earnings management exists both in the pre- and post-crisis periods (Charoenwong and Jiraporn, 2009, p. 222).

The analysis of the literature shows the presence of an open debate about whether and how the financial crisis affects the tendency of insiders to misrepresent financial information by carrying out earnings management. However, as far we are concerned, we have several reasons to believe that in the EU the burst of

the financial crisis reduced earnings management. The recent work of Francis *et al.* (2013) provides evidence that the recent financial crisis increases the demand for high financial reporting quality and high audit quality. We believe that both the quality of financial reporting, which scholars measured by conditional conservatism, and the audit quality, that is, the presence of a Big 4 as auditor, cause earnings management to decrease. This is especially true in the EU, where companies have complied with a high-quality set of accounting standards, after the burst of the financial crisis. With respect to the quality of financial reporting, conservatism plays an important role in mitigating information asymmetries and addressing agency problems between managers and outside shareholders, so we expect that conservative accounting impacts shareholder value significantly during the crisis period (Francis *et al.*, 2013, p. 324). Moreover, LaFond and Watts (2008) argue that conservatism reduces the ability of managers to manipulate and overstate financial performance. Based on the arguments of such scholars, an increase of conditional conservatism during the financial crisis should increase the earnings quality and reduce earnings management. With respect to the quality of the auditor activity, the majority of the entities listed in the EU are audited by Big 4. More than other audit firms, they are able to constrain earnings management thanks to their monitoring activity. In this regard, Chia *et al.* (2007), investigating how the choice of auditors during the Asian financial crisis constrained earnings management within a rule-based reporting framework, found that the presence of Big 6 as auditor reduces earnings management. Generally speaking, the reason why the presence of Big 4 reduces earnings management, especially during a financial crisis, is twofold. The first reason is due to the increased monitoring from the auditors during a crisis compared to that when the economy is good. The second reason involves the direct relation between audit quality and conditional conservatism, since big auditors are overly conservative (Cano-Rodríguez, 2010). Therefore, audit quality not only affects earnings management directly, but also indirectly through a higher level of conditional conservatism.

All these arguments lead us to formulate our research hypothesis.

H1: *In the EU countries*, a*ccrual-accounting earnings management decreases after the burst of the 2008 financial crisis.*

III. Research Design

To verify our research hypothesis that earnings management decreased after the burst of the 2008 financial crisis, we used an event study approach that is typical of much research that dealt with earnings management. Our sample numbers 11 844 non-financial firm-year observations, listed in the 15 countries that belonged to the EU at the time of issuance of Regulation 1606/2002 and that issued their consolidated annual reports complying with the IAS/IFRS standards over the period 2006–2012.

Every event study requires the identification of an event, of an estimation period prior to the event and of an event period after the event, over which abnormal performance is calculated.

In our research, the event is the burst of the financial crisis. For the estimation period (t), we consider fiscal years 2006 and 2007, during which we assume that the financial crisis had not yet manifested. Taking into account that our research involves the IAS/IFRS compliant entities, the decision to exclude fiscal year 2005 from the estimation period – the year of IFRS first-time adoption in the consolidated annual reports – is to avoid biases due to the IAS/IFRS transition effects. As to the event period (τ), in the main analysis we consider fiscal years 2008, 2009, 2010, 2011 and 2012, that is, the period of the crisis. As sensitivity analysis, we re-estimated abnormal accruals not considering data of fiscal year 2008, to avoid that the market volatility of such year could bias our results.

Both over the estimation period and over the event period, we calculate abnormal accruals, used as a proxy of earnings management, as the difference between the total accruals reported by each firm – calculated by subtracting cash flow from earnings – and predicted by using an accruals prediction model.

In this section, first we explain how we calculate abnormal accruals over the estimation period and then we give the methodology used to calculate abnormal accruals over the event period.

Over the *estimation period*, we follow three steps to calculate abnormal accruals. In the first step, we select an accrual estimation model and we estimate its coefficients using the OLS. In the second one, we perform a Monte Carlo experiment to avoid biases due to the limited number of observations for certain countries and to the absence of nonrandom samples (Dechow *et al.*, 2012). In the third one, we estimate

the residuals of the accruals estimation model because, according to Kothari *et al.* (2005), these are our measure of abnormal accruals.

In the selection of an accruals estimation model (e.g. first step), we recall that in the literature there are a large variety of specifications. By adopting an evolutionary approach, we can differentiate the 'first-generation' accruals estimation models from the 'second-generation' models. Among the 'first-generation' models, there are those that regress total accruals on several financial variables (correlated with them) and use the event study methodology to assess discretionary accruals. The most common are the Jones (1991) model and the modified Jones (1991) model introduced by Dechow *et al.* (1995). Among the 'second-generation' models, there are those that regress total accruals on several financial variables (correlated with them) and consider the residuals of such regressions as abnormal accruals. The most common are the modified Jones (1991) model corrected with operating cash flows introduced by McNichols (2002) and the modified Jones (1991) model corrected with return on assets (ROA), introduced by Kothari *et al.* (2005).

In this article, for the accruals estimation model, we regress the reported total accruals on the explicative variables – that are considered associated with nondiscretionary accruals – also used by Dechow *et al.* (1995) in the so-called modified Jones (1991) model, other than adding between regressors the market value and the cash flow from operation. This is a specification similar to that used by Larcker and Richardson (2004) and Callao and Jarne (2010).

In detail, the accruals prediction model estimated over the estimation period is the following:

$$\begin{aligned}\frac{\mathrm{TA}_{ict}}{\mathrm{A}_{ict-1}} = {} & \alpha_0 + \alpha_1 \frac{1}{\mathrm{A}_{ict-1}} \\ & + \alpha_2 \frac{\Delta\mathrm{REV}_{ict} - \Delta\mathrm{REC}_{ict}}{\mathrm{A}_{ict-1}} \\ & + \alpha_3 \frac{\mathrm{PPE}_{ict}}{\mathrm{A}_{ict-1}} + \alpha_4 \frac{\mathrm{MV}_{ict}}{\mathrm{A}_{ict-1}} \\ & + \alpha_5 \frac{\mathrm{CFO}_{ict}}{\mathrm{A}_{ict-1}} + e_{it}\end{aligned} \tag{1}$$

where TA_{ict} are the total accruals of the firm i listed in the country c during fiscal year t; A_{ict-1} are the lagged total assets of the firm i listed in the country c during fiscal year t; REV_{ict} are the revenues of the firm i listed in the country c during fiscal year t; REC_{ict} are the receivables of the firm i listed in the country c during fiscal year t; PPE_{ict} are the property, plant and equipment of the firm i listed in the country c during fiscal year t; MV_{ict} is the market value at each fiscal year end of the firm i listed in country c during fiscal year t; CFO_{ict} is the cash flow of the firm i listed in country c during fiscal year t, with $t = 2006$ and 2007.

With respect to the model used by Larcker and Richardson (2004) and Callao and Jarne (2010), we include the constant term and we control for the expected growth in the firm's operations using its market capitalization. The presence of the constant term, as suggested by Kothari *et al.* (2005), reduces the heteroscedasticity, similar to the lagged total assets used as the deflator of the regression variables. Instead, the use of market value between regressors not only allows controlling for size but also for several firms' characteristics, such as income persistence, wealth of the entity (Barth *et al.*, 1998), and for their different levels of risk (Kothari and Zimmerman, 1995; Barth *et al.*, 1998; Hope, 2007; Van Der Meulen *et al.*, 2007). As in Larcker and Richardson (2004) and Callao and Jarne (2010), the presence of cash flow from operations between the explicative variables avoids the concern of Dechow *et al.* (2012) that all models are misspecified when applied to samples of firms with extreme financial performance. In this regard, Cheng *et al.* (2012) demonstrate that the best performing model is the one in which operating cash flow is used as a controlling variable in the firm-specific regressions, adopted in our research design, which estimate accruals using observations for the same firm over time. This is followed by the one in which ROA is used as a control variable in industry-specific regressions that involve estimating accruals using observations from all firms within an industry at a point in time.

After estimating the regression coefficients of Equation 1, we use a Monte Carlo simulation (e.g. second step) to avoid biases to the regression coefficients caused by the limited number of observations – due to our country-by-country analysis – used to estimate Equation 1. Actually, the number of firm-year observations over the estimation period is under 100 – this number according a rule of thumb is the minimum sample size required to run regression

without biases – in six countries: Austria, Belgium, Greece, Ireland, Luxemburg and Portugal. In this regard, Verbeek (2004) argues that to obtain some idea about small sample properties, Monte Carlo simulation studies are often performed. In a Monte Carlo study, a large number (e.g. 1000) of simulated samples are drawn from a data generating process specified by the researcher. Each (pseudo) random sample is used to compute an estimator and/or a test statistic, and the distributional characteristics over the different replications are analysed (Verbeek, 2004, p. 36). In finance, scholars have already used simulation studies to validate small sample properties. For instance, Driessen *et al.* (2012) studying a new methodology to estimate abnormal performance and risk exposure for mutual funds, used a Monte Carlo simulation to provide numerical evidence of the statistical consistency of their method. They increased the number of projects per fund analysed in their model from 15 to 50 and then from 50 to 100. Other than providing a solution to issues related to a small sample size, the choice to use simulations to estimate abnormal accruals comes from the concerns of Dechow *et al.* (2012) according to whom all of the models generate well-specified test statistics when applied to random samples. In our model, we generate pseudo-random samples of each variable included in Equation 1 from normal distributions to guarantee that the regression residuals are normally distributed. In this regard, the econometric literature suggests that when residuals are normally distributed the inference is not biased (Gourieoux *et al.*, 1984; Lancaster and Chesher, 1985; Chesher and Irish, 1987). To run the Monte Carlo simulation, we replicate the pseudo-random sample generating process 1000 times to estimate each time Equation 1 and in order to collect the simulated regression coefficients, *t*-statistics and *p*-values, for each repetition.

Finally, country-by-country we calculate the residuals of Equation 1 (e.g. third step) that, as suggested by Kothari *et al.* (2005), are our measure of abnormal accruals, subtracting the predicted total accruals estimated by using the average simulated coefficients of Equation 1 from the reported ones. Country-by-country we calculate the mean of such residuals estimated for each entity in order to obtain 15 values that we will compare using a test statistic with the abnormal accruals estimated over the event period.

Over the *event period*, two steps are required to calculate abnormal accruals. In the first step, we calculate normal predicted accruals; in the second step, we calculate abnormal accruals by subtracting normal accruals from the reported total accruals.

Algebraically, the predicted normal accruals (e.g. first step) are a linear combination between the average simulated regression coefficients, estimated over the estimation period and the explicative variable of Equation 1 reported by our entities over the event period. Therefore, normal accruals are calculated as follows:

$$\frac{\mathrm{NA}_{ic\tau}}{\mathrm{A}_{ic\tau-1}} = \alpha_0 + \alpha_1 \frac{1}{\mathrm{A}_{ic\tau-1}} + \alpha_2 \frac{\Delta\mathrm{REV}_{ic\tau} - \Delta\mathrm{REC}_{ic\tau}}{\mathrm{A}_{ic\tau-1}} + \alpha_3 \frac{\mathrm{PPE}_{ic\tau}}{\mathrm{A}_{ic\tau-1}} + \alpha_4 \frac{\mathrm{MV}_{ic\tau}}{\mathrm{A}_{ic\tau-1}} + \alpha_5 \frac{\mathrm{CFO}_{ic\tau}}{\mathrm{A}_{ic\tau-1}} \quad (2)$$

where $\mathrm{NA}_{ic\tau}$ are predicted normal accruals of the firm i listed in the country c during fiscal year τ and the other variables have the well-known meaning with τ = 2008, 2009, 2010, 2011 and 2012.

After calculating normal accruals, the abnormal accruals (e.g. second step) are the difference between the reported total accruals disclosed at each fiscal year end of the event period by the firm i listed in country c and the normal accruals estimated at each fiscal year end of the event period by the firm i listed in country c. In other words, abnormal accruals over the event period are the difference between the reported total accruals and the predicted normal accruals that the entities would have reported hypothesizing the absence of the event (i.e. the burst of the financial crisis) that could have affected the magnitude of earnings management. By algebraic calculation, we calculate abnormal accruals as follows:

$$\mathrm{AA}_{ic\tau} = \mathrm{TA}_{ic\tau} - \mathrm{NA}_{ic\tau} \quad (3)$$

where $\mathrm{AA}_{ic\tau}$ are the abnormal accruals of the firm i listed in the country c during fiscal year τ; $\mathrm{TA}_{ic\tau}$, are the reported total accruals of the firm i listed in the country c during fiscal year τ; and $\mathrm{NA}_{ic\tau}$, are the predicted normal accruals of the firm i listed in the country c during fiscal year τ, with τ = 2008, 2009, 2010, 2011 and 2012.

Also over the event period, country-by-country we calculate the mean of such residuals estimated for each entity in order to obtain 15 values that we compare using a test statistic with the abnormal

accruals estimated over the estimation period. Before matching and testing the differences between abnormal accruals, we argue that to observe a decrease of earnings management after the burst of the financial crisis, one of the following conditions is required:

(1) If the abnormal accruals calculated over the estimation period are positive, our research hypothesis is validated if abnormal accruals over the event period are positive, but lower than those calculated over the estimation period or negative. In the first case (positive abnormal accruals), earnings management decreases because the total accruals reported after the burst of the financial crisis are lower than the ones that before the burst of the crisis. In the second case (negative abnormal accruals), earnings management decreases because the total accruals reported after the burst of the financial crisis are lower than the ones that the firms would have reported if the crisis had never burst;
(2) If the abnormal accruals over the estimation period are negative, earnings management decreases if abnormal accruals over the event period continue to be negative and lower than the ones calculated over the estimation period. In this case, the gap between the total accruals that the firms would have reported if the crisis had never burst and the effectively reported ones increases and suggests a decrease of earnings management.

The last part of our research methodology requires the comparison, always country-by-country, of abnormal accruals estimated over both the estimation and the event periods. For this, we used a nonparametric Wilcoxon (1945) signed-rank test. This test allows us to understand whether abnormal accruals calculated over the event period are statistically different from the ones calculated over the estimation period. If the test statistic fails to reject the null hypothesis that no differences exist between abnormal accruals estimated over the two different periods, there is no statistical evidence of any manipulations since the average abnormal accruals calculated over the estimation period are statistically equivalent to those assessed over the event period. Otherwise, if the Wilcoxon (1945) signed-rank test rejects the null hypothesis, there is statistical evidence that abnormal accruals, estimated after the financial crisis, are statistically different from those estimated before its burst. In this case, if abnormal accruals estimated over the event period are higher than those estimated over the estimation period, earnings management increases; on the contrary, earnings management decreases.

IV. Sample Selection and Descriptive Statistics

To verify our research hypothesis, we detect earnings management using as a reference 1692 non-financial entities listed over the period 2006–2012 in the 15 countries that belonged to the EU at the time of issuance of Regulation 1606/2002. The initial sample included all the non-financial entities. After eliminating missing data, to avoid biases to our research results, our final sample numbers 11 844 firm-year observations. In the following Tables, we tabulate the number of non-financial entities listed in each country analysed and provide several descriptive statistics of accounting numbers that we use to test our research hypothesis. Table 1 shows the geographical portrait of the 11 844 firm-year observations included in our sample.

For each European country, we disclose the number of entities considered in each year over the estimation period and over the event period, whose data have been collected by using the Thomson Reuters Datastream database. The table suggests that 3384 non-financial firm-year observations have been used to estimate the abnormal accruals over the estimation period (e.g. 2006–2007) and 8460 non-financial firm-year observations have been used to estimate abnormal accruals during the event period (e.g. 2008–2012).

In the subsequent two tables, we provide several descriptive statistics – the percentiles, the means, the SDs and the correlation coefficients – of accounting amounts disclosed in the consolidated financial statements by non-financial entities, always distinguishing the estimation period (t) and the event period (τ). While Table 2 focuses on earnings and its components, that is, total accruals and cash flow, Table 3 focuses on the determinants of nondiscretionary accruals, that is, the explicative variables of Equation 1.

Descriptive statistics disclosed in panel (A) suggest that the number of loss firms represents at least

Table 1. Geographical portrait of the entities included in our sample

	2006	2007	2008	2009	2010	2011	2012	FYO
	Estimation period		Event period					
Austria	16	16	16	16	16	16	16	112
Belgium	13	13	13	13	13	13	13	91
Denmark	72	72	72	72	72	72	72	504
Finland	84	84	84	84	84	84	84	588
France	386	386	386	386	386	386	386	2702
Germany	215	215	215	215	215	215	215	1505
Greece	40	40	40	40	40	40	40	280
Ireland	26	26	26	26	26	26	26	182
Italy	140	140	140	140	140	140	140	980
Luxembourg	4	4	4	4	4	4	4	28
The Netherlands	87	87	87	87	87	87	87	609
Portugal	31	31	31	31	31	31	31	217
Spain	76	76	76	76	76	76	76	532
Sweden	145	145	145	145	145	145	145	1015
UK	357	357	357	357	357	357	357	2499
Total	**1692**	**1692**	**1692**	**1692**	**1692**	**1692**	**1692**	**11844**
		3384			**8460**			

Notes: The table tabulates the number of entities available in each fiscal year for each of the 15 European countries that belong to the EU at the time of issuance of the EU Regulation 1606/2002. As we adopt an event study methodology, the table tabulates the number of entities listed over the estimation period (e.g. 2006–2007) and over the event period (e.g. 2008–2012).

Table 2. Descriptive statistics of earnings and its components

Panel (A)

			Percentiles						
M/€		FYO	5%	25%	50%	75%	95%	Mean	SD
Earnings	t	3384	−24	5	32	152	2000	436	1771
	τ	8460	−144	−1	18	119	1700	346	1710
Cash flow	t	3384	−200	−9	0.3	17	300	14	602
	τ	8460	−210	−8	0.0	17	382	30	782
Accruals	t	3384	−96	2	25	157	1900	422	1940
	τ	8460	−245	−4	15	105	1792	316	1805

Panel (B)

		FYO	Earnings	Cash flow	Accruals
Earnings	t	3384	1		
	τ	8460	1		
Cash flow	t	3384	−0.1053***	1	
	τ	8460	0.1226***	1	
Accruals	t	3384	0.9512***	−0.4069***	1
	τ	8460	0.9029***	−0.3159***	1

Notes: Panel (A) provides several descriptive statistics (percentiles, mean, SD) of earnings and its components (cash flow and total accruals) disclosed by non-financial entities used to test our hypothesis, by distinguishing the estimation period (t) from the event period (τ).
Panel (B) provides the Pearson correlation coefficients of earnings and its components (cash flow and total accruals) disclosed by non-financial entities used to test our hypothesis, by distinguishing the estimation period (t) from the event period (τ).

Table 3. Descriptive statistics of the determinants of nondiscretionary accruals

Panel (A)

			Percentiles						
M/€		FYO	5%	25%	50%	75%	95%	Mean	SD
A_i	$t-1$	3384	24	152	619	2700	30 000	6902	23 800
	$\tau-1$	8460	38	219	817	3500	42 000	8863	30 000
ΔREV_i	t	3384	−100	2	36	200	2300	506	2894
	τ	8460	−600	−11	6	100	2000	259	4121
ΔREC_i	t	3384	−85	−0.2	6.5	41	524	55	2073
	τ	8460	−240	−11	0.1	15	300	15	1362
PPE_i	t	3384	0.1	20	128	851	13 000	2482	9442
	τ	8460	1.0	24	159	996	14 000	3096	12 800
MV_i	t	3384	30	221	1429	17 800	223 000	88 900	651 000
	τ	8460	18	127	933	13 000	201 000	89 700	690 000
CF_i	t	3384	−200	−9	0.3	17	300	14	602
	τ	8460	−210	−8	0.0	17	382	30	782

Panel (B)

		FYO	A_i	ΔREV_i	ΔREC_i	PPE_i	MV_i	CF_i
A_i	$t-1$	3384	1					
	$\tau-1$	8460	1					
ΔREV_i	t	3384	0.51***	1				
	τ	8460	0.20***	1				
ΔREC_i	t	3384	0.06***	0.28***	1			
	τ	8460	0.01	0.49***	1			
PPE_i	t	3384	0.84***	0.56***	0.12***	1		
	τ	8460	0.84***	0.23***	0.07***	1		
MV_i	t	3384	0.25***	0.09***	−0.001*	0.24***	1	
	τ	8460	0.26***	0.18***	0.02*	0.29***	1	
CF_i	t	3384	0.001	−0.014	−0.05***	0.09***	−0.04***	1
	τ	8460	0.07***	0.29***	0.19***	0.01	0.02***	1

Panel (C)

	A_{it}	ΔREV_{it}	ΔREC_{it}	PPE_{it}	MV_{it}	CF_{it}
VIF	3.46	1.37	1.20	3.55	1.10	1.06
Condition number: 4.02						

Notes: Panel (A) provides several descriptive statistics (percentiles, mean, SD) of the determinants of nondiscretionary accruals of the modified Jones (1991) model and of several control variables (cash flow and market value), disclosed by 11 844 European non-financial entities included in our sample to test our research hypothesis, by distinguishing the estimation period (t) from the event period (τ).
(***) 1% and (*) 10% level of significance.
Panel (B) provides the Pearson correlation coefficients of the determinants of nondiscretionary accruals of the modified Jones (1991) models and of several control variables (cash flow and market value) disclosed by 11 844 European non-financial entities included in our sample to test our research hypothesis, by distinguishing the estimation period (t) from the event period (τ).
Panel (C) discloses the variance inflation factor (VIF) and the condition number of explicative variable of Equation 1 estimated during the estimation period by having as a reference 11 844 European non-financial entities included in our sample to test our research hypothesis.

5% of the statistical distribution of the earnings variable over the estimation period and at least 25% over the event period. Moreover, over time, firms included in the first percentiles (5%) increase the reported losses (from −24 to −144); also the other values of the other percentiles over the event period are always lower than those of the estimation period, probably because of the burst of the financial crisis in the EU since year 2008. As to descriptive statistics of cash flow, at least 25% of the entities register a net outflow in their statement of cash flow, both during the estimation period and the event period. Also total accruals reported during the event period are lower than those reported during the estimation period. According to Healy (1985) – who assumed total accruals to be the proxy of abnormal discretionary accruals which, in turn, is a measure of earnings management – this is the first clue of a decrease of misrepresentation after the burst of the financial crisis. Indeed, this is not enough to validate our research hypothesis because total accruals have to be compared with the ones that the firms would have reported if the crisis had never burst. As to panel (B), the negative correlation coefficients between cash flow and total accruals (−0.41 over the estimation period and −0.32 over the event period) confirm the conclusions of Dechow (1994) about the negative sign of the correlation coefficient between these two variables. All the Pearson correlation coefficients are statistically significant at 1%, suggesting that we always reject the null hypothesis that the correlation between our variables is zero.

Table 3 tabulates several descriptive statistics of the determinants of nondiscretionary accruals, used to estimate Equation 1 over the estimation period.

Panel (A) of Table 3 shows that over the estimation period at least 5% of the firms registered a decrease of revenues over the estimation period and at least 25% over the event period. Moreover, the values of the change in revenues in all the percentiles of the event period are lower than those of the estimation period. Similar to the change in revenues, the market value of equity is lower during the event period than that observed over the estimation period, because of the fall of price per share after the burst of the financial crisis. All these findings confirm our assumption about the effect of the burst of the financial crisis since fiscal year 2008, similarly to the decrease of earnings disclosed in Table 2.

Panel (B) suggests that explicative variables of Equation 1 are correlated with each other and that the large majority of such correlations are statistically significant at 1%. Since a high correlation between regressors could bias results, we perform a multicollinearity test assessing the VIF and the condition number. According to the econometric literature, we do not have a specific level of the VIF or of the condition number that provides evidence of the absence of multicollinearity, but, when both VIF and condition number are under 10, our results could be considered not biased by multicollinearity. Therefore, results disclosed in Table 3, panel (C) provide evidence that there are not multicollinearity problems in our regressions.

V. Results and Sensitivity Analyses

To verify whether and how the burst of the 2008 financial crisis affects the earnings management carried out by insiders in the EU, we assessed abnormal accruals over the estimation period and over the event period with a country-by-country approach, and we compare them by using a nonparametric Wilcoxon (1945) signed-rank test. In the following table, we tabulate our results.

In Table 4, Column (A) suggests that when we calculate abnormal accruals following the methodology described in Section III, the Wilcoxon (1945) signed-rank test always rejects the null hypothesis that abnormal accruals estimated over the estimation period are statistically equivalent to those estimated over the event period. There are only two countries (France and Luxembourg) in which the average abnormal accruals estimated over the event period are higher than those estimated over the estimation period. The increase of earnings management in France confirms the result achieved by Filip and Raffournier (2012) when they adopted a country-by-country approach to verify results achieved in the main analysis detecting earnings management for the EU as a whole. Although this finding does not validate our research hypothesis, in the other thirteen European countries the average abnormal accruals estimated over the event period are lower, and statistically different, than those estimated over the estimation period, suggesting that earnings management decreases with respect to fiscal years 2006–2007, after the burst of the financial crisis. In most of the countries, the abnormal accruals after the crisis are more negative than the ones before the crisis, suggesting that the gap between the total accruals

Table 4. Research results

	Column (A)			Column (B)			Column (C)		
Austria	AA_{ct}	▼	0.027	AA_{ct}	▼	0.027	AA_{ct}	▼	0.027
	$AA_{c\tau}$		−0.007	$AA_{c\tau}$		−0.001	$AA_{c\tau}$		−0.007
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Belgium	AA_{ct}	▼	−0.001	AA_{ct}	▼	−0.001	AA_{ct}	▼	0.039
	$AA_{c\tau}$		−0.002	$AA_{c\tau}$		−0.003	$AA_{c\tau}$		0.008
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Denmark	AA_{ct}	▼	−0.233	AA_{ct}	▼	−0.233	AA_{ct}	▲	−0.719
	$AA_{c\tau}$		−0.260	$AA_{c\tau}$		−0.252	$AA_{c\tau}$		−0.535
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Finland	AA_{ct}	▼	−0.009	AA_{ct}	▼	−0.009	AA_{ct}	▼	−0.009
	$AA_{c\tau}$		−0.018	$AA_{c\tau}$		−0.025	$AA_{c\tau}$		−0.017
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
France	$TA_{ic\tau}$	▲	−0.042	$AA_{ic\tau}$	▲	−0.042	AA_{ct}	▲	−0.037
	$NA_{ic\tau}$		1.232	$AA_{ic\tau}$		1.763	$AA_{c\tau}$		1.132
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Germany	AA_{ct}	▼	−398.36	AA_{ct}	▼	−398.36	AA_{ct}	▲	−389.76
	$AA_{c\tau}$		−405.51	$AA_{c\tau}$		−405.49	$AA_{c\tau}$		−386.23
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Greece	AA_{ct}	▼	0.102	AA_{ct}	▼	0.102	AA_{ct}	▼	−0.002
	$AA_{c\tau}$		0.017	$AA_{c\tau}$		−0.001	$AA_{c\tau}$		−0.005
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Ireland	AA_{ct}	▼	−0.011	AA_{ct}	▼	−0.011	AA_{ct}	▼	−0.016
	$AA_{c\tau}$		−0.038	$AA_{c\tau}$		−0.034	$AA_{c\tau}$		−0.027
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Italy	AA_{ct}	▼	−0.011	AA_{ct}	▼	−0.011	AA_{ct}	▼	−0.012
	$AA_{c\tau}$		−0.032	$AA_{c\tau}$		−0.034	$AA_{c\tau}$		−0.033
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Luxembourg	AA_{ct}	▲	−0.004	AA_{ct}	▲	−0.004	AA_{ct}	=	−0.004
	$AA_{c\tau}$		0.026	$AA_{c\tau}$		0.024	$AA_{c\tau}$		−0.017
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.203*
The Netherlands	AA_{ct}	▼	−8.991	AA_{ct}	▼	−8.991	AA_{ct}	▼	−8.859
	$AA_{c\tau}$		−9.000	$AA_{c\tau}$		−8.995	$AA_{c\tau}$		−8.870
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Portugal	AA_{ct}	▼	−0.004	AA_{ct}	▼	−0.004	AA_{ct}	▼	−0.004
	$AA_{c\tau}$		−0.013	$AA_{c\tau}$		−0.009	$AA_{c\tau}$		−0.013
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Spain	AA_{ct}	▼	−0.016	AA_{ct}	▼	−0.016	AA_{ct}	▲	−0.104
	$AA_{c\tau}$		−0.037	$AA_{c\tau}$		−0.040	$AA_{c\tau}$		−0.063
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
Sweden	AA_{ct}	▼	−0.049	AA_{ct}	▼	−0.049	AA_{ct}	▼	−0.036
	$AA_{c\tau}$		−0.076	$AA_{c\tau}$		−0.080	$AA_{c\tau}$		−0.074
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*
UK	AA_{ct}	▼	−0.030	AA_{ct}	▼	−0.030	AA_{ct}	▼	−0.016
	$AA_{c\tau}$		−0.050	$AA_{c\tau}$		−0.041	$AA_{c\tau}$		−0.038
	H_0: $AA_{ct} = AA_{c\tau}$ (p-value)		*0.000*			*0.000*			*0.000*

Notes: Table 4 shows the abnormal accruals estimated over the estimation period (AA_{ct}) and those estimated over the event period ($AA_{c\tau}$). Column (A) tabulates the results of the event study that considered as estimation period fiscal years 2006–2007 and as event period fiscal years 2008–2012 and as sample all the non-financial entities listed in the EU over the period analysed (11 844 FYO). Column (B) tabulates the results of the event study that considered as estimation period fiscal years 2006–2007 and as event period fiscal years 2009–2012 and as sample all the non-financial entities listed in the EU over the period analysed (10 152 FYO). Column (C) tabulates the results of the event study that considered as estimation period fiscal years 2006–2007 and as event period fiscal years 2008–2012 and as sample both non-financial and financial entities listed in the EU over the period analysed (12 719 FYO). For each country, we indicate if earnings management has increased (▲), has decreased (▼) or has not changed (=). Using a Wilcoxon (1945) signed rank test, we compare abnormal accruals before and after the burst of financial crisis to test whether earnings management changes over time. The numbers in italics are the *p*-values of the test.

that the firms would have reported if the crisis had never burst and the effectively reported ones increases. This evidence that suggests a decrease of earnings management is probably due to both the high quality of financial reporting (LaFond and Watts, 2008; Francis *et al.*, 2013) and audit quality over a financial crisis (Chia *et al.*, 2007). All these results validate our research hypothesis that by analysing non-financial entities listed in the 15 countries that belong to the EU at the time of issuance of EU Regulation 1606/2002, accrual-accounting earnings management decreases after the burst of the 2008 financial crisis.

To test the robustness of these findings, we did several sensitivity analyses.

First, we re-estimate abnormal accruals over the event period not considering data of fiscal year 2008, characterized by very volatile stock markets that could biases our results. Consequently, we re-estimate abnormal accruals by considering as event period fiscal years 2009–2012 and to analyse a sample of 10 152 firm-year observations. Results disclosed in Column (B) of Table 4 replicate those of the main analysis disclosed in Column (A). While in two countries (France and Luxembourg) abnormal accruals calculated over the event period are higher than those disclosed over the estimation period, in the other thirteen European countries the average abnormal accruals estimated over the event period are lower, than those estimated over the estimation period, suggesting that earnings management decreases. The nonparametric Wilcoxon (1945) test led us to reject the null hypothesis (H_0) that abnormal accruals before and after the burst of the financial crisis are equivalent. Therefore, also excluding fiscal year 2008, our research hypothesis continues to be validated.

As second test, we re-estimated abnormal accruals country-by-country over the estimation period and the event period by analysing a sample of entities that also includes financial institutions. This sensitivity analysis leads us to consider a sample of 12 719 firm-year observations (3634 firm-year observations over the estimation period and 9085 firm-year observations over the event period) listed in the 15 European countries that belonged to the EU at the time of issuance of the EU Regulation 1606/2002. The different results reported by scholars who analyse financial institutions instead of non-financial firms when detecting earnings management before and after a financial crisis lead us to expect results partially different from those of the main analysis. Nevertheless, results disclosed in Column (C) of Table 4 show that re-estimating abnormal accruals, our research hypothesis continues to be validated in most of the European countries. Our results allow us to group the 15 European countries in three clusters. The first cluster includes those countries where the test statistic fails to reject its null hypothesis. Only for Luxembourg, abnormal accruals over the event period statistically are equivalent to those reported over the estimation period, showing neither an increase nor a decrease in earnings management. The second cluster includes those countries where the test statistic rejects the null hypothesis of abnormal accruals' equivalence giving evidence of a change in earnings management over time. In these countries, our research hypothesis is not validated because of an increase of earnings management over time. This is the case for Denmark, France, Germany and Spain. In the third cluster, there are those countries where the test statistic rejects the null hypothesis of abnormal accruals' equivalence giving evidence of a decrease of earnings management over time. This is the case of Austria, Belgium, Finland, Greece, Ireland, Italy, Netherland, Portugal, Sweden and UK. With respect to the second cluster, in the third cluster, our research hypothesis is validated due to a decrease of earnings management over time.

In the last sensitivity, we re-estimate abnormal accruals both over the estimation period and over the event period, giving up the country-by-country approach, but considering the EU as a whole, similar to the approach of Filip and Raffournier (2012). Untabulated results validated our findings, because the abnormal accruals after the burst of the 2008 financial crisis (e.g. −49.37) continue to be lower than those estimated before 2008 (e.g. −48.05), with a difference statistically significant at 1% (e.g. p-value $\leq$ 1%) according to the nonparametric Wilcoxon (1945) signed-rank test.

VI. Concluding Remarks

Despite motivations during a financial crisis that lead insiders to manipulate earnings, scholars who investigated whether and how a burst of the financial crises affects misrepresentation of financial information due to earnings management generally found a decrease in such manipulations. This was the result

of an increase in both the quality of financial reporting and audit quality, even though the results they achieved are not always homogeneous. By analysing a sample of 11 844 non-financial entities listed in the 15 countries that belonged to the EU at the time of issuance of EU Regulation 1606/2002, we test the hypothesis of reduction in earnings management after the burst of the financial crisis. We are reasonably confident about reduction in earnings management during the crisis because, on the one hand, the increase of conditional conservatism during the financial crisis should raise earnings quality and impair earnings management; on the other hand, the close monitoring activity of the auditor (most of the cases were represented by a Big 4 auditor) during the crisis contributes to an increase in the quality of financial reporting, which reduces earnings management, thanks to the scrutiny of the auditor (Chia *et al.*, 2007; LaFond and Watts, 2008; Francis *et al.*, 2013). As a consequence, a set of accounting standards, standalone is not enough to limit earnings management.

Using an event study, we found that in the large majority of the European countries, the gap between the total accruals that the firms would have reported if the crisis had never burst and the effectively reported ones increases. These findings validate our research hypothesis and suggest a decrease of earnings management after 2008, probably due to common incentives, especially during a crisis, to attract potential investors through a high-quality financial reporting.

Despite the usefulness of this work for both academics and regulators, future research could improve it in several ways. For instance, further research should include in the sample other European countries whose listed firms adopt the IASB standards or those entities listed in other countries in order to have global evidence about whether and how a financial crisis affects misrepresentation of financial information due to earnings management.

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